Human Health Risk Assessment
Eighteenmile Creek Superfund Site
OU2, Niagara County, New York

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Table of Contents

Section **Page**

Executive Summary 1
ES.1 Data Collection and Evaluation 2
ES.2 Exposure Assessment 2
ES.3 Toxicity Assessment 4
ES.4 Lead 5
ES.5 Risk Characterization 5
ES.6 Cancer Risks 5
ES.6.1 Creek Channel 5
ES.6.2 Former Flintkote Plant Property 6
ES.6.3 Upson Park 6
ES.6.4 White Transportation Property 7
ES.6.5 Former United Paperboard Company Property 7
ES.7 Non-Cancer Hazards 8
ES.7.1 Creek Channel 8
ES.7.2 Former Flintkote Plant Property 9
ES.7.3 Upson Park 9
ES.7.4 White Transportation Property 10
ES.7.5 Former United Paperboard Company Property 11
ES.8 Lead 12
ES.9 Vapor Intrusion Associated with Groundwater 12

1 Overview 1-1
1.1 Introduction 1-1
1.2 Site Overview 1-1
1.2.1 General Site Description 1-1
1.2.2 Site History 1-2
1.3 OU2 Summary of Existing Site Conditions 1-9
1.3.1 Creek Channel 1-10
1.3.2 Former Flintkote Plant Property 1-10
1.3.3 Upson Park 1-11
1.3.4 White Transportation Property 1-11
1.3.5 The Former United Paperboard Company Property 1-12
1.4 Report Organization 1-12

2 Sample Data 2-1
2.1 Sediment and Surface Water 2-1

Table of Contents (cont.)

Section **Page**

2.2 Soil Sample Collection 2-2
2.3 Groundwater Investigation 2-17
2.4 Fish Tissue 2-17
2.5 Additional Analytical Parameters 2-18

3 Risk Assessment Approach 3-1

4 Hazard Evaluation and Identification of Chemicals of Potential Concern 4-1
4.1 Data Evaluation 4-1
4.1.1 Sediment 4-1
4.1.2 Soils 4-2
4.1.3 Groundwater 4-2
4.1.4 Surface Water 4-3
4.1.5 Fish Tissue 4-3
4.2 Selection of Chemicals of Potential Concern 4-3
4.2.1 Soil and Sediment 4-4
4.2.2 Groundwater 4-4
4.2.3 Surface Water 4-5
4.2.4 Fish Tissue 4-6
4.3 Exposure Point Concentration Datasets 4-6
4.3.1 Soil and Sediment 4-6
4.3.2 Groundwater 4-7
4.3.3 Surface Water 4-7
4.3.4 Fish Tissue 4-7

5 Exposure Assessment 5-1
5.1 Exposure Areas 5-1
5.2 Exposure Pathways and Receptors 5-2
5.3 Data Available for the Human Health Risk Assessment 5-5
5.4 Derivation of Exposure Point Concentrations 5-6

6 Toxicity Assessment 6-1
6.1 Development of Toxicity Values 6-1
6.1.1 Classification of Chemicals as Carcinogens or Non-carcinogens 6-1
6.1.2 Assessment of Oral and Dermal Exposures 6-2
6.1.2.1 Assessment of Non-carcinogens 6-2
6.1.2.2 Assessment of Carcinogens 6-3
6.1.2.3 Dermal Route Reference Doses and Slope Factors 6-4
6.1.2.4 Route-to-Route Extrapolation of Reference Doses and Slope Factors 6-5
6.1.3 Assessment of Inhalation Exposures 6-5
6.2 Quantitative Toxicity Values 6-7
6.3 Early Life Stage Adjustments 6-8
6.4 Lead 6-9

Table of Contents (cont.)

Section **Page**

6.5 Thallium Soluble Salts 6-10
6.6 PCBs 6-10

7 Risk Characterization 7-1
7.1 Cancer Assessment 7-1
7.1.1 Evaluation of Carcinogens with a Mutagenic Mode of Action 7-1
7.2 Non-Cancer Assessment 7-3
7.3 Combining Risks across Chemicals and Exposure Pathways 7-4
7.4 Lead 7-4
7.5 Thallium Soluble Salts 7-5
7.6 Risk Assessment Results 7-5
7.6.1 Creek Channel 7-6
7.6.2 Former Flintkote Plant Property 7-10
7.6.3 Upson Park 7-14
7.6.4 White Transportation Property 7-17
7.6.5 Former United Paperboard Company Property 7-22

8 Uncertainty Assessment 8-1
8.1 Chemicals Not Evaluated 8-1
8.2 Exposure Scenarios Not Evaluated 8-2
8.3 Exposure Point Concentrations 8-2
8.4 Outliers 8-2
8.4.1 Creek Channel 8-3
8.4.2 Former Flintkote Plant Property 8-3
8.4.3 Upson Park 8-4
8.4.4 White Transportation Property 8-4
8.4.5 Former United Paperboard Property 8-5
8.5 Background Concentrations 8-5
8.6 Chemical Absorption 8-6
8.7 Human Exposure Parameters 8-7
8.8 Uncertainties in Toxicity Values 8-7
8.9 Polychlorinated Dioxins, Furans, and Dioxin-like PCBs 8-8
8.10 Uncertainties in Risk Estimates 8-9

9 Risk Assessment Summary and Conclusions 9-1
9.1 Creek Channel 9-1
9.1.1 Cancer Risks: Creek Channel 9-1
9.1.2 Non-Cancer Hazards: Creek Channel 9-1
9.1.3 Lead 9-2
9.2 Former Flintkote Plant Property 9-2
9.2.1 Cancer Risks: Former Flintkote Plant Property 9-2
9.2.2 Non-Cancer Hazards: Former Flintkote Plant Property 9-3
9.2.3 Lead 9-3
9.3 Upson Park 9-3
9.3.1 Cancer Risks: Upson Park 9-3

Table of Contents (cont.)

Section **Page**

9.3.2 Non-Cancer Hazards: Upson Park 9-3
9.3.3 Lead 9-4
9.4 White Transportation Property 9-4
9.4.1 Cancer Risks: White Transportation Property 9-4
9.4.2 Non-Cancer Hazards: White Transportation Property 9-5
9.4.3 Lead 9-6
9.5 Former United Paperboard Company Property 9-6
9.5.1 Cancer Risks: Former United Paperboard Company Property 9-6
9.5.2 Non-Cancer Hazards: Former United Paperboard Company Property 9-6
9.5.3 Lead 9-8
9.6 Vapor Intrusion Associated with Groundwater 9-8

10 References 10-1

Appendix

A Data Evaluation Summary Reports for OU2 ..... A-1

B Exposure and Risk Calculations B-1

List of Tables

Table		Page
1-1	Future Use for the OU2 Properties	1-9
5-1	EPC Datasets	5-6
7-1	Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 Creek Channel Exposure Area	7-9
7-2	Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 Former Flintkote Plant Property Exposure Area	7-13
7-3	Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 Upson Park Exposure Area	7-16
7-4	Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 White Transportation Exposure Area	7-21
7-5	Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 Former United Paperboard Exposure Area	7-27
8-1	Comparison of PCB Risk Estimates based on PCB Aroclor and Congener Data	8-10

List of Figures

Figure		Page
1-1	Site Location Map, Eighteenmile Creek Superfund Site, Lockport, NY	1-3
1-2	Operable Unit Overview, Eighteenmile Creek Superfund Site, Lockport, NY	1-5
1-3	Eighteenmile Creek RI OU2	1-7
2-1	Sediment Sample Locations, Eighteenmile Creek RI OU2	2-3
2-2	Toxicity, Bioaccumulation and Fish Sample Locations Spring 2015, Eighteenmile Creek RI OU2	2-7
2-3	Sediment, Surface Water and Fish Sample Background Locations, Eighteenmile Creek RI OU2	2-11
2-4	Soil Sample Locations, Eighteenmile Creek RI OU2	2-13
2-5	Soil Sample Background Locations, Eighteenmile Creek RI OU2	2-19
2-6	OU2 Monitoring Well Locations and with VOC Results, Eighteenmile Creek RI OU2	2-21
5-1	Conceptual Model of Potential Human Exposures to Contaminants in Operable Unit 2 of the Eighteenmile Creek Superfund Site	5-3

List of Abbreviations and Acronyms

ADAF	age-dependent adjustment factor
ALM	adult lead methodology
ATSDR	Agency for Toxic Substances and Disease Registry
AWA	Age-weighted average
BERA	baseline ecological risk assessment
BGS	below ground surface
Cal EPA	California Environmental Protection Agency
Canal	New York State Barge Canal
CDC	Centers for Disease Control and Prevention
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CNS	central nervous system
COPC	chemicals of potential concern
Cr	chromium
Creek Corridor	Eighteenmile Creek Corridor
Creek	Eighteenmile Creek
CTE	central tendency exposure
E & E	Ecology and Environment, Inc.
EC	exposure concentration
EPA	(United States) Environmental Protection Agency
EPC	exposure point concentration
GI	gastrointestinal
GLLA	Great Lakes Legacy Act
HEAST	Health Affects Assessment Summary Table
HHRA	Human Health Risk Assessment
HI	hazard index

List of Abbreviations and Acronyms (cont.)

HQ	hazard quotient
HEC	human equivalent concentration
IEUBK	Integrated Exposure Uptake Biokinetic Model
IRIS	Integrated Risk Information System
IUR	inhalation unit risk
KM	Kaplan-Meier
LATA	Los Alamos Technical Associates
mg/kg-day	milligrams per kilogram-day
mg/L	milligrams per liter
MMOA	mutagenic mode of action
MRL	minimal risk level
NCP	National Contingency Plan
NCSWCD	Niagara County Soil and Water Conservation District
NHL	non-Hodgkin lymphoma
NJDEP	New Jersey Department of Environmental Protection
NOAEL	no-observed-adverse-effect level
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRC	National Research Council
NYSDEC	New York State Department of Environmental Conservation
NYSDOH	New York State Department of Health
OSWER	Office of Solid Waste and Emergency Response
OU	operable unit
OU2	Operable Unit 2
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCDD/PCDF	polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran or diox-ins/furans
ppm	parts per million
PPRTV	Provisional Peer-Reviewed Toxicity Values
QA/QC	quality assurance/quality control
QAPP	quality assurance project plan
RA	reserved area

List of Abbreviations and Acronyms (cont.)

RAGS	*Risk Assessment Guidance for Superfund*
RAR	Remedial Alternatives Report
RBA	relative bioavailability adjustment
RfC	reference concentration
RfD	reference dose
RI/FS	remedial investigation/feasibility study
RME	reasonable maximum exposure
ROD	Record of Decision
RSL	Regional Screening Level
SF	slope factor
SHPO	State Historic Preservation Office
SI	site investigation
Site	Eighteenmile Creek Superfund Site
STSC	Superfund Health Risk Technical Support Center
SVOC	semi-volatile organic compound
TCDD	tetrachlorodibenzodioxin
TCE	trichloroethylene
TCL/TAL	Target Compound List/Target Analytical List
TEQ	toxic equivalent
TEF	toxicity equivalency factor
TIC	tentatively identified chemical
TRK	trackdown study
UF	uncertainty factor
UR	unit risk
UCL	upper confidence limit
USACE	United States Army Corps of Engineers – Kansas City
VISL	vapor intrusion screening level
VOC	volatile organic compound

Executive Summary

This baseline Human Health Risk Assessment (HHRA) presents assessment results for chemicals found at the Eighteenmile Creek Superfund Site (the Site) Operable Unit 2 (OU2). The Site is located in the city of Lockport in the town of Lockport in Niagara County, New York (EPA ID Number: NYN000206456). This HHRA evaluated potential exposures to chemicals found in the Eighteenmile Creek Corridor, which comprises the Creek Channel and adjacent industrial properties, including the Former Flintkote Plant Property, Upson Park, White Transportation, and the Former United Paperboard Company Property. The HHRA is part of the Site Remedial Investigation/Feasibility Study (RI/FS) for OU2 at the Site and supports remedial decisions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Superfund Amendments and Reauthorization Act of 1986, and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) (EPA 1990).

The HHRA quantitatively evaluates cancer risks and non-cancer health hazards from exposure to chemical contaminants in soil and sediment in the Creek Channel; surface and subsurface soil from adjacent industrial properties; and Sitewide groundwater. The HHRA relied on an investigation of the Creek Channel and properties performed by the New York State Department of Environmental Conservation (NYSDEC) in 2002, 2005, 2007, and 2009 (NYSDEC 2006a; EEEPC 2009a, 2009b) and Niagara County in 2003 and 2006 (TVGA 2005a; NCSWCD 2007). A data gap investigation was conducted by U. S. Environmental Protection Agency (EPA) from 2014 to 2016 (Ecology and Environment, Inc. [E & E] 2016). The main chemicals of potential concern (COPCs) identified on the properties included: metals, polychlorinated biphenyls (PCBs), and polynuclear aromatic hydrocarbons (PAHs). The HHRA evaluated current and future risks to indoor, outdoor and construction workers; Site visitors/trespassers, recreational Creek users (including anglers) and future residents including children, adolescents and adults. Risks were evaluated under baseline conditions, in the absence of any remedial action and/or institutional controls to prevent exposure.

The HHRA followed EPA guidelines, guidance, and policies, and more specifically the Risk Assessment Guidance for Superfund (RAGS) Parts A through E developed for Superfund sites (EPA 1989, 1991a, 1991b, 2001, 2004, 2009). The HHRA evaluated risks to the Reasonably Maximally Exposed (RME) individual expected to occur under current and/or future land use at the Site. The RME individual is defined as "the highest exposure that might reasonably be expected to

occur" (EPA 1989) and is well above the average case of exposure but within the range of possibility. EPA guidance also recommends evaluation of central tendency exposures (CTE) or average exposures at a site (EPA 1992a, 1995, 2000a). The RME and CTE are used to estimate cancer risks and non-cancer hazards, although the RME is the basis for the remedial decision. The HHRA process consists of the following four steps:

- **Data collection and evaluation**, to determine the nature and extent of chemical contamination in environmental media, such as soil, sediment, and fish;
- **Exposure assessment**, to determine the potential for exposure and an estimation of human chemical intake through exposure routes, such as ingestion, inhalation of fugitive dust and skin contact;
- **Toxicity assessment**, to determine cancer risks and non-cancer health effects from exposure to chemicals; and
- **Risk characterization**, to quantify the likelihood and degree of chemical exposures at the Site and the possible adverse health effects associated with such exposures and associated uncertainties.

ES.1 Data Collection and Evaluation

Data used for the HHRA were collected within OU2 from 2002 through 2015 and compiled from five historical investigations and additional data collected by the EPA for a supplemental RI (E & E 2016). Use of historical data for risk assessment purposes was assessed, and data gaps were identified and summarized in the "Evaluation of Existing Data Eighteen Mile Creek Superfund Site" (see LATA/E & E 2014a, Appendix A). Appendix A provides the summary sheets of the data evaluations, by media, to identify samples that meet appropriate requirements for inclusion in the HHRA. Review of the data determined the data to be appropriate for the HHRA.

ES.2 Exposure Assessment

The residential properties on the west side of the Creek along Water Street were addressed separately under OU1 and will not be discussed further in this HHRA. The remaining potential human exposure areas within OU2 include the following:

1. Creek Channel – the soil and sediment forming the Creek banks were evaluated as soils by combining soil and sediment data into a single exposure point concentration (EPC). Angler exposure is expected to be limited to soils and sediments on the Creek banks and the island north of the former Flintkote Building. Outdoor workers, Site visitors/trespassers, and recreational users are expected to be exposed to surface soils and sediment anywhere on the properties they are visiting. In addition, the Creek bank samples in each exposure area were used to assess surface soil exposure on each property. The Creek banks throughout OU2 are referred to as the Creek Channel area, where angler exposure is expected to occur.

2. Former Flintkote Plant Property – a 6-acre former industrial facility. The Creek bank between the Former Flintkote Plant Property and the northern border of OU2 at Harwood Street is considered part of this exposure area. The Creek bank soils include a few samples on the west side of the Creek, north of the Water Street properties. The assessment evaluated current/future exposures to surface soil/sediment by the Site visitor, outdoor worker, and trespasser. The future assessment considered exposures to a construction worker.
3. Former United Paperboard Company Property – an active 4.8-acre industrial facility. The Creek bank soils include samples on the opposite side that are part of the Water Street properties. The assessment evaluated current/future exposures to surface soil and sediment for the Site visitor, trespasser, indoor worker, and outdoor worker. Future exposures to subsurface soil (0 to 10 feet) were evaluated for the construction worker. Future exposures to subsurface soil (0 to 2 feet) were evaluated for the future resident.
4. Upson Park – a 5.9-acre public park at the south end of the Creek Corridor that is mostly wooded with walking paths and a few picnic tables. The assessment evaluated exposures to a park recreational user, outdoor worker, and construction worker under current/future conditions.
5. White Transportation Property – an inactive 2.6-acre former commercial/industrial facility. The assessment evaluated current/future exposures to a Site visitor, trespasser, and outdoor worker. Future exposures to an indoor worker were also evaluated in case a building is constructed on the property in the future. Current/future exposures to a future construction worker exposed to subsurface soil (0 to 10 feet) were also evaluated. Future residential exposures were evaluated based on the updated land use on the property.
6. Groundwater was assessed Sitewide, based on the historical contamination identified on the south side of the Creek in Upson Park and opposite the Former United Paperboard Company Property. Groundwater associated with the Former Flintkote Plant Property was assessed separately. This exposure assessment evaluated consumption of groundwater under future conditions at the United Paperboard and White Transportation locations.

Potential receptors include:

- Anglers and other recreational users of the Creek banks and channel;
- Recreational users and outdoor workers of Upson Park;
- Indoor workers at the Former United Paperboard Company and White Transportation properties (future scenario only);
- Site visitors/trespassers and outdoor workers at the White Transportation, the Former United Paperboard Company, and the Former Flintkote Plant properties;
- Construction workers at Upson Park and White Transportation, the Former United Paperboard Company, and the Former Flintkote Plant properties; and

- Potential future residents of White Transportation and the Former United Paperboard Company properties.

Recreational users, Site visitors/trespassers, workers and future residents may be exposed to Site contaminants in soil and sediment via direct contact with these environmental media, including incidental ingestion via hand-to-mouth contact, dermal contact, and inhalation of particles and/or vapors emanating from these media as a result of volatilization and wind erosion. In addition to these pathways, anglers and their families may consume fish caught from the Creek. The fish bioaccumulate contaminants from sediment include PCBs found in Creek surface water and sediment.

Surface water is classified by NYSDEC as a Class D water that is not expected to be used for swimming or wading and, therefore, the risks associated with direct surface water contact were assessed qualitatively. Groundwater is classified as GA by NYSDEC, indicating that it may be used as a source of potable water in the OU2 area. As a result, a future use of groundwater in OU2 as a potable water source was evaluated for future residents.

Exposure parameters used to calculate exposure intakes and doses were obtained from the Superfund standard default exposure assumptions (EPA 2014b). EPA's Exposure Factors Handbook and the 1991 standard default exposure assumptions were used (EPA 2011a, 1991). Parameters, such as the quantity of soil, sediment, and surface water ingested by recreational visitors, are estimates based on professional judgment. Exposure parameters were selected to be health-protective consistent with the definition of RME discussed above.

ES.3 Toxicity Assessment

The toxicity assessment provides an estimate of the relationship between the extent of exposure to a contaminant and the likelihood and/or severity of adverse effects. The toxicity assessment has two parts: hazard identification and dose-response assessment. Hazard identification is a qualitative description of the potential toxicity of COPCs at this Site. The dose-response assessment provides a quantitative estimate of toxicity for each COPC. For carcinogenic effects, the slope factor (SF) is determined for oral and dermal exposure, and the inhalation unit risk (IUR) is used for inhalation exposure; for non-carcinogenic effects, the reference dose (RfD) is used to evaluate oral and dermal exposures while the reference concentration (RfC) is used to evaluate inhalation exposures. Chemical-specific toxicological parameters (i.e., RfDs, RfCs, SFs, and IURs) were obtained following EPA's tiered process for selecting toxicity values (EPA 2003b).

Chemicals identified with a Mutagenic Mode of Action (MMOA), such as PAHs and chromium assumed to have a valence state of VI, and cancer risks were estimated in accordance with the *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (EPA 2005b).

ES.4 Lead

Lead is evaluated consistent with recommendations from the Lead Technical Review Workgroup (http://www.epa.gov/superfund/lead-superfund-sites-technical-assistance). Concentrations in surface water were compared with the lead action level of 0.015 milligrams per liter (mg/L) of 15 parts per billion for drinking water; and sediment and soil concentrations were compared with concentrations of 400 parts per million (ppm) for young children (seven years and younger) and 800 ppm for adults. The evaluation of lead is based on a comparison of the average lead concentration in soils or sediment to lead concentrations identified for young children and adults.

ES.5 Risk Characterization

Risk characterization, the final step of the risk assessment process, combines the information from the Exposure Assessment and Toxicity Assessment steps of the HHRA to yield estimated cancer risks and non-cancer hazards from exposure to chemicals in media of concern (e.g., soil, sediment, groundwater, and fish). The risk characterization step also involves an evaluation of the uncertainty associated with the quantified cancer risks and non-cancer health hazards.

Consistent with the NCP, EPA uses the cancer risks and non-cancer Hazard Quotient (HQ) for individual chemicals and the Hazard Index (HI) for total chemicals calculated based on RME exposure values in determining whether conditions at the Site are above or below the risk range established under the NCP (1×10^{-6} to 1×10^{-4} or one in a million to one in ten thousand) and the goal of protection of an HQ/HI = 1 (EPA 1990, 1991b). The Central Tendency Exposure (CTE) cancer risks and non-cancer hazards are also provided in the report to more fully characterize the variability and uncertainty of the calculated cancer risk and non-cancer health hazards among individuals within the potentially exposed population, by describing the health effects associated with average exposures. The CTE values are not, however, used as the basis for decisions.

ES.6 Cancer Risks

Appendix B provides the RAGS Part D Tables summarizing the results of the HHRA. Table 9 series provides the total risks and Table 10 series summarizes risks above the risk range where remedial actions for specific chemicals may be appropriate. The cancer risks for specific receptors at the following exposure areas exceeded the risk range and are provided below organized by exposure area. The risks presented here reflect the information provided in the RAGS Part D Table 9 series.

ES.6.1 Creek Channel

The risk assessment evaluated cancer risks for the recreational user and angler. The assessment found:

Angler. Cancer risks for anglers in the Creek Channel were 8.6×10^{-5} for the young child, 1.1×10^{-4} for the adolescent, and 1.2×10^{-4} for the adult. The total risk to the child/adult was 2.1×10^{-4}. The total risk for adolescent, adult and

child/adult exceeds the risk range. The main contributor to the risk was from ingestion of fish tissue. The main COPCs in the fish tissue were PCBs (presented as risks from exposure to individual Aroclors). Cancer risks from exposure to the sediment/soil for the anglers were within the risk range.

The CTE exposures for the angler were 9.8×10^{-6} for the young child, 6.6×10^{-6} for the adolescent, and 2.7×10^{-6} for the adult. The total CTE risk to the adult/child was 1.3×10^{-5}. All these risks were within the risk range.

Cancer risks to the recreational user of the Creek Channel were within the risk range.

ES.6.2 Former Flintkote Plant Property

The risk assessment evaluated cancer risks for the visitor/trespasser, outdoor worker, and construction worker. The assessment found:

Visitor/Trespasser. Cancer risk from exposure to soil/sediment by the young child visitor/trespasser was 1.5×10^{-4}; for the adolescent risk is 9×10^{-5}; and for the adult risk is 1.4×10^{-5}. The risk for child visitor/trespasser exceeds the risk range. The combined risk to the adult/child was 1.6×10^{-4} that exceeds the risk range. The main COPCs were PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthene, benzo(k)fluoroanthene and dibenzo(a,h)anthracene) and PCBs (based on total Aroclors).

The CTE or average risks were 3.0×10^{-5} for the young child, 1.2×10^{-5} for the adolescent, and 9.8×10^{-7} for the adult. The total risk to the CTE individual adult/child were 3.1×10^{-5} that is within the risk range.

Outdoor Worker. The cancer risks to the outdoor worker were 1.5×10^{-4}, exceeding the risk range, and the main contributors were PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthene, benzo(k)fluoroanthene and dibenzo(a,h)anthracene) and PCBs (based on total Aroclors). The CTE risks were 1.6×10^{-5} which is within the risk range.

Construction Worker. Cancer risk to the construction worker was 7.6×10^{-6}, which is within the risk range. The CTE risks were 1.8×10^{-6}. However, non-cancer hazards to this RME individual exceeded the goal of protection of an HI = 1 and are discussed in Section ES.7.2, Non-Cancer Hazards.

ES.6.3 Upson Park

The risk assessment evaluated cancer risks for the recreational user, outdoor worker, and construction worker. Cancer risks to the recreational user, the outdoor worker, and the construction worker of Upson Park were within the risk range. However, non-cancer hazards to these RME individuals exceeded the goal of protection of an HI = 1 and are discussed in Section ES.7.3, Non-Cancer Hazards.

ES.6.4 White Transportation Property

The risk assessment evaluated cancer risks for the visitor/trespassers, indoor worker, outdoor worker, construction worker, and future resident. The assessment found:

Future Resident. Future exposures to the young child and adult RME resident from exposure to groundwater (tap water consumption) and exposure to soil at a depth of 0 to 10 feet that may be brought to the surface and not managed had total risks of 1.6×10^{-4} for the young child and 9.7×10^{-5} for the adult, resulting in a total risk of 2.6×10^{-4}. The total risks to the young child and child/adult exceed the risk range. The main COPCs in soil were PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene). The main COPCs in groundwater (tap water) were manganese and trichloroethylene (TCE).

CTE risk to the young child was 4.3×10^{-5} and to the adult was 2.0×10^{-5} which is within the risk range. The total risk to the future resident was 6.2×10^{-5}, primarily based on exposure to groundwater.

Cancer risks were within the risk range for the visitor/trespasser, indoor worker, outdoor worker, and construction worker at White Transportation and non-cancer hazards were below the goal of protection of an HI = 1 as described in Section ES.7.4, Non-Cancer Hazards.

ES.6.5 Former United Paperboard Company Property

The risk assessment evaluated cancer risks for the visitor/trespassers, indoor worker, outdoor worker, construction worker and future resident. The assessment found:

Future Resident. Future exposures to the young child and adult RME resident from exposure to groundwater (tap water consumption) and exposure to soil at a depth of 0 to 10 feet that may be brought to the surface and not managed had total risks of 7.3×10^{-4} for the young child and 2.1×10^{-5} for the adult, resulting in a total risk of 9.3×10^{-4}. All the risks exceed the risk range. The main COPC were PAHs (benzo(a)pyrene) and PCBs (presented as Aroclors) in soil.

The cancer risk to the future CTE resident young child was 1.0×10^{-4} and to the adult was 2.7×10^{-5} and the total risk to the adult/child was 1.3×10^{-4}, which exceeds the risk range.

Cancer risks were within the risk range for the visitor/trespasser, indoor worker, outdoor worker, and construction worker at United Paperboard but non-cancer hazards exceeded the goal of protection of an HI = 1 as described in Section ES.7.5, Non-Cancer Hazards.

ES.7 Non-Cancer Hazards

The evaluation of non-cancer health effects compares the average daily exposure (ADD) expressed in units of milligrams per kilogram-day (mg/kg-day) to the RfDs expressed in the same units. The evaluation of inhalation exposures compares with exposure concentration (EC) divided by the RfC expressed in units of mass of chemical in air per day (e.g., milligrams/cubic meter or micrograms/cubic meter). Chronic RfDs and RfCs are specifically developed to be protective for long-term exposure to a chemical, with chronic duration ranging from seven years or longer (EPA 1989). Unlike the evaluation of cancer effects, exposures of less than lifetime duration are averaged over the duration of exposures (EPA 1989). Similar to the evaluation using the RfD described above, individual HQs are combined to calculate a total HI.

Potential health hazards from non-cancer health effects are expressed as HQ for individual chemicals and the individual HQs are combined to develop a total Hazard Index (HI). The HQ compares the calculated exposures (average daily exposures, calculated as part of the exposure assessment) to the RfD (summarized as part of the toxicity assessment). Unlike the evaluation of carcinogenic effects, exposures of less than lifetime duration are averaged over the duration of exposures (EPA 1989).

Appendix B provides the RAGS Part D Tables summarizing the results of the Risk Assessment. The Table 9 series provides the total non-cancer hazards and the Table 10 series summarizes non-cancer hazards above the goal of protection of an HQ or HI = 1 based on health endpoints. The non-cancer hazards for specific receptors at the following exposure areas exceeded the goal of protection of an HI/HQ = 1 organized by exposure area.

ES.7.1 Creek Channel

The risk assessment evaluated exposure to soil/sediment for the recreational user and angler. The assessment found:

Angler. The non-cancer HI for fish consumers was an HI = 15.6 for the young child, an HI = 10.1 for the adolescent, and an HI = 8.5 for the adult. The main contributors were exposure mercury and PCBs, expressed as total Aroclors, from ingestion of fish tissue. The non-cancer HI from exposure to mercury in fish tissue was an HI = 2.6 for the young child, an HI = 1.7 for the adolescent, and an HI = 1.5 for the adult. The non-cancer health effects for mercury were effects on the central nervous system (CNS). The total non-cancer HI for PCBs, based on total Aroclors, was an HQ = 6.3 for the adult. The potential health effects from exposures to PCBs are immune effects.

The CTE non-cancer HI was an HI = 1.7 for the young child, an HI = 1.2 for the adolescent, and an HI = 0.9 for the adult. The HI based on health effects were less than the goal of protection on an HI = 1 for mercury and total PCBs, expressed as Aroclors.

The non-cancer HI for the recreational user of the Creek Channel did not exceed the goal of protection of an HI = 1.

ES.7.2 Former Flintkote Plant Property

The risk assessment evaluated hazards to the outdoor worker and construction worker, and to the visitor/trespasser from exposure to soil/sediment. The assessment found:

Visitor/Trespasser. The non-cancer HI to the RME individual was greater than the goal of protection of an HI = 1 for the visitor/trespasser with an HI = 3.9 for the young child; an HI = 2.1 for the adolescent, and an HI = 0.4 for the adult. The main COPCs based on immune effects from exposure to PCBs was an HI = 3.1 for the young child, an HI = 1.8 for the adolescent; and an HI = 0.4 for the adult. The HI for all other chemicals were below the goal of protection of an HI = 1.

The non-cancer HI to the CTE individual was an HI = 1.2 for the young child; an HI = 0.8 for the adolescent; and an HI = 0.1 for the adult. Health effects for all the individual chemicals were below the goal of protection of an HI = 1 for the young child.

Outdoor Worker. The RME non-cancer hazards to the outdoor worker was an HI = 3.6, that exceeds the goal of protection of an HI = 1. The main contributors to the HI was primarily from PCB exposure based on potential impacts on the immune system with an HI = 2.8. Health effects from the remaining chemicals were below the goal of protection of an HI = 1.

Construction Worker. The RME non-cancer hazards to the construction worker was an HI = 10.3, that exceeds the goal of protection of an HI = 1. The main contributors to the HI were primarily from PCB exposure based on potential impacts on the immune system with an HI = 5.8. In addition, antimony contributed an HI = 2.3 based on hematological effects. Health effects from the remaining chemicals were below the goal of protection of an HI = 1.

ES.7.3 Upson Park

The risk assessment evaluated hazards to the outdoor worker and construction worker, and to the recreational user from exposure to soil/sediment. The assessment found:

Recreational User. The non-cancer hazard to the RME young child was an HI = 7.8 with PCB representing the majority of the hazard (HI = 7.1). All other HIs based on health effects were below the goal of protection of an HI = 1. The non-cancer hazard to the adolescent was an HI = 3.2 with the majority of the hazard associated with PCBs based on immune effects. The non-cancer HI to the adult was 0.9, which is below the goal of protection of an HI = 1.

The non-cancer HI to the CTE individual for the young child was an HI = 3.9 with the majority of the hazard from PCBs (HI = 3.5). The non-cancer HI for the

adolescent was an HI = 1.6 with the majority of the hazard from PCBs associated with immune effects (HI = 1.5). The non-cancer HI to the adult was 0.4, which is below the goal of protection of an HI = 1.

Outdoor Worker. The non-cancer HI for the outdoor worker had an HI = 3.5 with the majority of the HI associated with exposures to PCBs and potential impacts on the immune system (HI = 3.2). The CTE HI was 2.9 which exceeds the goal of protection of an HI = 1 with the majority of the hazard from PCBs associated with immune effects (HI = 2.6).

Construction Worker. The non-cancer HI for the construction worker was an HI = 8.9 which exceeds the goal of protection of an HI = 1. The main contributor was from exposure to PCBs which may impact the immune system (HI = 7.9). The HI associated with other chemicals was below the goal of protection of an HI = 1. The CTE non-cancer HI for this receptor was an HI = 2.1 primarily based on exposure to PCBs (HI = 1.9) which exceeds the goal of protection of an HI = 1.

ES.7.4 White Transportation Property

The risk assessment evaluated hazards to the indoor worker, outdoor worker and construction worker, and to the visitor/trespasser from exposure to soil/sediment and young child and adult future resident from exposure to groundwater (tap water). The assessment found:

Future Young Child Resident. Non-cancer RME hazards to the future young child resident was HI = 7.1, which exceeds the goal of protection of an HI = 1. The main contributors were exposure to PCBs and metals in surface soils with a total HI = 2.5 and exposure to metals and TCE in groundwater with a total HI = 4.6. All the individual HI values were below the goal of protection of HI = 1 except for exposure to groundwater from manganese (HQ = 1.7). Health effects were primarily to the CNS from aluminum and manganese (HI = 2.2).

The CTE non-cancer hazards from exposure to soils was HI = 0.6 which is below the goal of protection of an HI = 1. The non-cancer hazards from exposure to the groundwater was an HI = 2.4. All the individual HI values were below the goal of protection of an HI = 1.

Future Adult Resident. Non-cancer hazards to the future adult resident was a total HI = 3.5 with an HI = 0.3 from exposure to surface soil and an HI = 3.2 from exposure to groundwater. All the individual HI values were below the goal of protection of HI = 1 except for exposure to groundwater from manganese (HQ = 1.0) and TCE (HQ = 1.0). Health effects were primarily to the CNS from manganese in groundwater and soil (HI = 1.1).

The CTE non-cancer hazards from exposure to soils was HI = 0.1, which is below the goal of protection of an HI = 1. The non-cancer hazards from exposure to the groundwater was an HI = 1.9. All the individual HI values were below the goal of protection of HI = 1. TCE was the main contributor to the non-cancer HI for

groundwater based on vascular, immune and developmental effects (HQ = 0.7) but the HI was below the goal of protection of an HQ = 1.

The non-cancer HI for the indoor worker, outdoor worker and construction worker, and to the visitor/trespasser at White Transportation did not exceed the goal of protection of an HI = 1.

ES.7.5 Former United Paperboard Company Property

The risk assessment evaluated hazards to the indoor worker, outdoor worker, construction worker, and future young child and adult resident from exposure to soil/sediment; and young child and adult resident from exposure to groundwater (tap water). The assessment found:

Visitor/Trespasser. The total non-cancer HI to the RME visitor/trespasser young child was an HI = 2.3. The main contributor to the HI was associated with immune effects from PCBs (HI = 2.1). The CTE HI was 0.7, which is below the goal of protection of an HI = 1.

The non-cancer HI to the RME visitor/trespasser adolescent was an HI = 1.3 with the main contributor associated with PCB exposures and potential immune effects (HI = 1.2). The CTE HI was 0.5, which is below the goal of protection of an HI = 1. The non-cancer HI for the RME adult was below the goal of protection of an HI = 1.

Indoor Worker. The non-cancer HI to the indoor worker was a total HI = 1.5 with the main contributor associated with immune effects from exposure to PCBs (HI = 1.5). The CTE exposure was less than the goal of protection of an HI = 1.

Outdoor Worker. The non-cancer HI to the outdoor worker was a total of HI = 2.1 with the main contributor associated with immune effects from exposure to PCBs (HI = 1.9). The CTE exposure was less than the goal of protection of an HI = 1.

Construction Worker. The non-cancer HI to the construction worker was a total of HI = 12 with the main contributor associated with immune effects from exposure to PCBs with an HI = 10. In addition, antimony contributed an HI = 1.0 based on hematological effects. The CTE exposure was a total of HI = 2.9 with the main contribution associated with immune effects from exposure to PCBs (HI = 2.5).

Future Young Child Resident. The total non-cancer HI to the RME future young child resident was an HI = 65.2, which exceeds the goal of protection of HI = 1. The main contributors were exposure from soils at a depth of 0 to 10 feet (HI = 60.6) assuming the soil is brought to the surface without appropriate management and therefore available for exposure, and from exposure to groundwater used as a future drinking water source (HI = 4.6). The main health effects by chemical were antimony in soil (HI = 4.7 associated with impacts on the blood); copper and

iron (HI = 2.0 from effects on the GI tract); manganese and mercury based on potential CNS effects (HI = 2.3); and impacts on the immune system from PCBs (HI = 52.2). The main contaminants in groundwater were manganese based on CNS effects (HI = 1.7) and developmental, immune, and vascular effects from TCE (HI = 0.9).

The non-cancer HI for the CTE young child future resident was HI = 15.6 with a total HI = 13.2 from soil and a total HI = 2.4 from exposure to groundwater. In soil, the HI contribution from antimony was an HQ = 1.2 and from PCBs was a total HI = 11.1. All individual HIs from exposure in groundwater were below the goal of protection of an HI = 1. The main health effects were an HI = 1.5 associated with impacts on the blood (primarily from antimony) and HI = 11.1 associated with impacts on the immune system (primarily PCBs).

Future Adult Resident. The non-cancer HI to the RME individual future adult resident was a total HI = 9.9 with a total HI = 6.7 from soil and a total HI = 3.2 from groundwater. The main contributors from exposure to soil were PCBs with a total HI = 5.8 associated with immune effects. The main contributors from exposure to groundwater were manganese based on CNS effects (HI = 1.0) and developmental, immune, and vascular effects from TCE (HI = 1.0).

The non-cancer HI for the CTE future adult resident was HI = 3.1 with a total HI = 1.3 from soil and a total HI = 1.9 from exposure to groundwater. In soil, the HI main contributor was from PCBs with a total HI = 1.1. All individual HI from exposure in groundwater were below the goal of protection of an HI = 1.

ES.8 Lead

The commercial/industrial lead screening level of 800 ppm was exceeded at the Creek Channel, Former Flintkote Plant Property, and Former United Paperboard Company Property exposure areas. The residential lead screening level of 400 ppm was exceeded at the Former United Paperboard Company Property exposure area.

ES.9 Vapor Intrusion Associated with Groundwater

The maximum concentration of volatile organic compounds (VOCs) in groundwater was compared to the vapor intrusion screening levels (VISLs) in groundwater to evaluate potential need for further vapor intrusion sampling.

The main plume reported a maximum concentration of 14.0 micrograms per liter (µg/L) TCE in groundwater. This concentration exceeds the screening level for TCE of 1.2 µg/L at a risk level of 1×10^{-6}. The chloroform concentration of 3.3 µg/L exceeds the screening level in groundwater of 0.12 µg/L based on a cancer risk of 1×10^{-6}. The concentration of tetrachloroethylene of 2.8 µg/L is below the screening level of 15 µg/L based on a risk of 1×10^{-6}.

The concentrations in groundwater at the Former Flintkote Plant Property included 2.0 µg/L of chloroform and 200 µg/L of pentachlorophenol. The concentration

of chloroform exceeds the screening level of 0.8 µg/L in groundwater associated with a cancer risk of 1 x 10^{-6}. A comparison value for pentachlorophenol was not available since it is not considered a volatile chemical.

The results of this analysis indicate the need for evaluation of vapor intrusion in the event that a building is constructed on the Site.

1 Overview

1.1 Introduction

This report for the Eighteenmile Creek Superfund Site (the Site) Operable Unit 2 (OU2) was prepared by Ecology and Environment Inc. (E & E) for the United States Environmental Protection Agency (EPA) under the United States Army Corps of Engineers (USACE) Northwestern Division Contract W912DQ-11-D-3006, Task Order 0009. The Human Health Risk Assessment (HHRA) is part of the Remedial Investigation/Feasibility Study (RI/FS) for OU2 at the Site. The work is based on the data evaluation completed under the EPA Region 2 contract with Los Alamos Technical Associates (LATA) for the Site to assure that the data meets quality assurance/quality control (QA/QC) requirements for the HHRA. E & E was a Team Subcontractor to LATA on that contract and had the lead technical role.

1.2 Site Overview

The Site is located in Niagara County, New York, on the south side of Lake Ontario (see Figure 1-1). The main channel of Eighteenmile Creek flows north from the New York State Barge Canal (Canal) for approximately 15 miles and discharges into Lake Ontario in Olcott, New York. The Eighteenmile Creek watershed also includes its two main tributaries, the East Branch and the Gulf Creek. The Eighteenmile Creek Corridor (Creek Corridor) is the part of the Site that extends from the Canal to Harwood Street in the City of Lockport. The Creek Corridor includes Eighteenmile Creek and adjacent upland properties. The Site is a National Priorities List (NPL) hazardous waste site under investigation pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund. On September 16, 2011, EPA proposed to place the Site on the NPL and on March 15, 2012, EPA placed the Site final on the NPL.

1.2.1 General Site Description

The EPA has divided the Site into three separate OUs, as shown in Figure 1-2. OU1 includes contaminated soil at nine residential properties on Water Street in Lockport, New York, and the building at the Former Flintkote Plant Property (former Flintkote Building). EPA issued a Record of Decision (ROD) for OU1 on September 30, 2013. Pursuant to the OU1 ROD, the relocation of residents from five houses on six properties, demolition of the houses and the former Flintkote Building, and off-site disposal of the demolition debris was completed by the EPA in September 2015 (EPA 2013a, EPA forthcoming). As indicated in the

OU1 ROD, the portion of the remedial action involving the soil excavation at the nine residential properties will be performed during cleanup of the sediments in the Creek Corridor (part of OU2) to prevent the Creek from re-contaminating the residential properties. OU2 addresses the Creek Corridor, which comprises the Creek Channel and adjacent industrial properties, including the Former Flintkote Plant Property, Upson Park, White Transportation, and the Former United Paperboard Company Property (as shown in Figure 1-3). OU3 addresses Eighteenmile Creek from the north end of the Creek Corridor in Lockport to the mouth of the Creek in Olcott, New York, where it discharges into Lake Ontario (see Figure 1-2).

In March 2006, the New York State Department of Environmental Conservation (NYSDEC) selected a remedy to address the former Flintkote Plant Site (NYSDEC 2006b). In March 2010 (NYSDEC 2010b), NYSDEC selected a remedy to address the Creek Corridor, which comprises the Creek Channel and adjacent industrial properties, including the former Flintkote Plant, Upson Park, White Transportation, and the former United Paperboard Company.

In order to meet the requirements of the National Contingency Plan (NCP), past studies, Site information, and existing analytical data were evaluated to determine the additional data/information needed to complete a RI/FS for OU2. The evaluations included the development of a complete conceptual model, understanding the fate and transport of sediment in the Creek, and assessing risk to humans and ecological receptors at the contaminated properties in the Creek Corridor. As part of this process, additional data were collected to fill the identified data gaps and prepare the HHRA for OU2. The additional field investigations, completed in 2014 to 2016, are described in the OU2 supplemental RI report (E & E 2016).

1.2.2 Site History

NYSDEC listed a portion of the Former Flintkote Plant Property as a Class 3 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York State in 1983. NYSDEC listed the entire Creek Corridor as a Class 2 site in 2008 (NYSDEC 2010a). NYSDEC divided the Creek Corridor into the following six geographic OUs: OU1, Eighteenmile Creek Corridor and millrace; OU2, Former Flintkote Plant Property; OU3, former United Paperboard Company; OU4, Upson Park; OU5, White Transportation; and OU6, Water Street Residential Properties (EEEPC 2009c).

NYSDEC in conjunction with the Niagara County Department of Planning, Development, and Tourism prepared a Site Investigation (SI) Report in July 2005 and Remedial Alternatives Report (RAR) in October 2005 for the Former Flintkote Plant Property (TVGA 2005a, b). NYSDEC selected a remedy for the Former Flintkote Plant Property (NYSDEC OU2) in 2006 (NYSDEC 2006b), and prepared an RI Report, Supplemental RI Report, and FS Report for the remaining portions of the Creek Corridor (NYSDEC 2006a; EEEPC 2009a, b, c). NYSDEC selected a remedy and issued a ROD for the Creek Corridor (NYSDEC OU1, OU3, OU4, OU5, and OU6) in 2010 (NYSDEC 2010b).

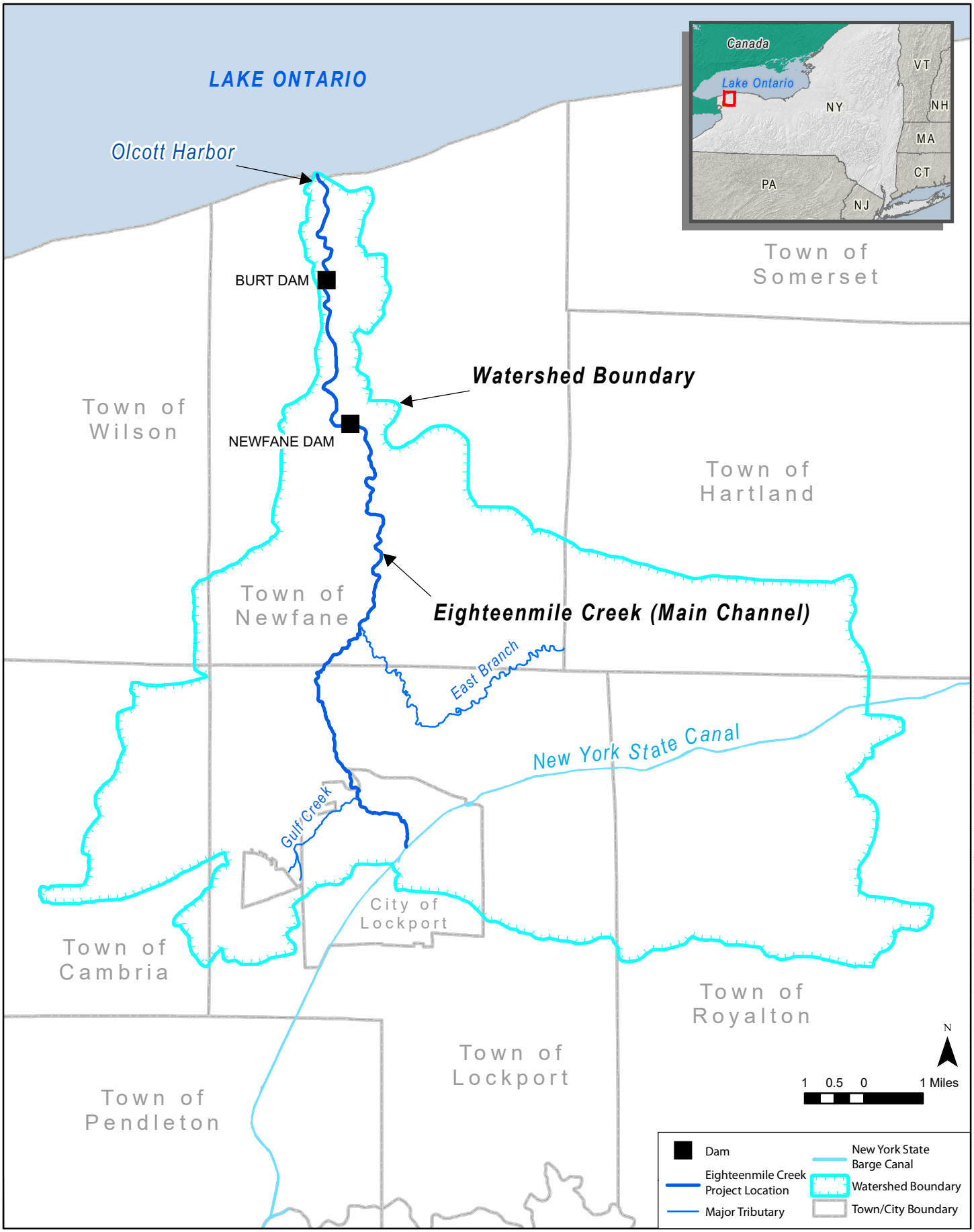

Figure 1-1 Site Location Map
Eighteenmile Creek Superfund Site
Lockport, NY

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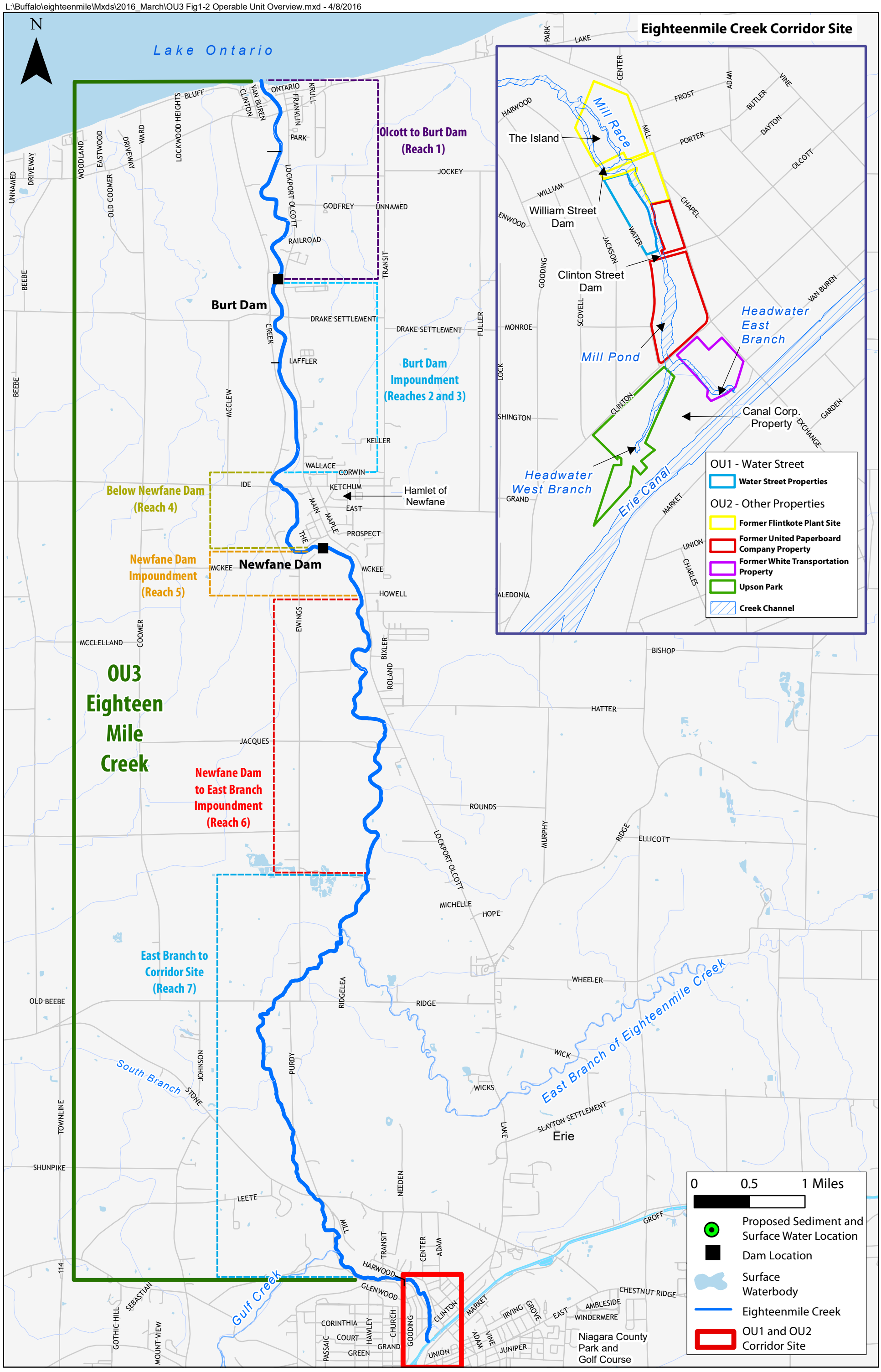

Figure 1-2 Operable Unit Overview, Eighteenmile Creek Superfund Site
Lockport, NY

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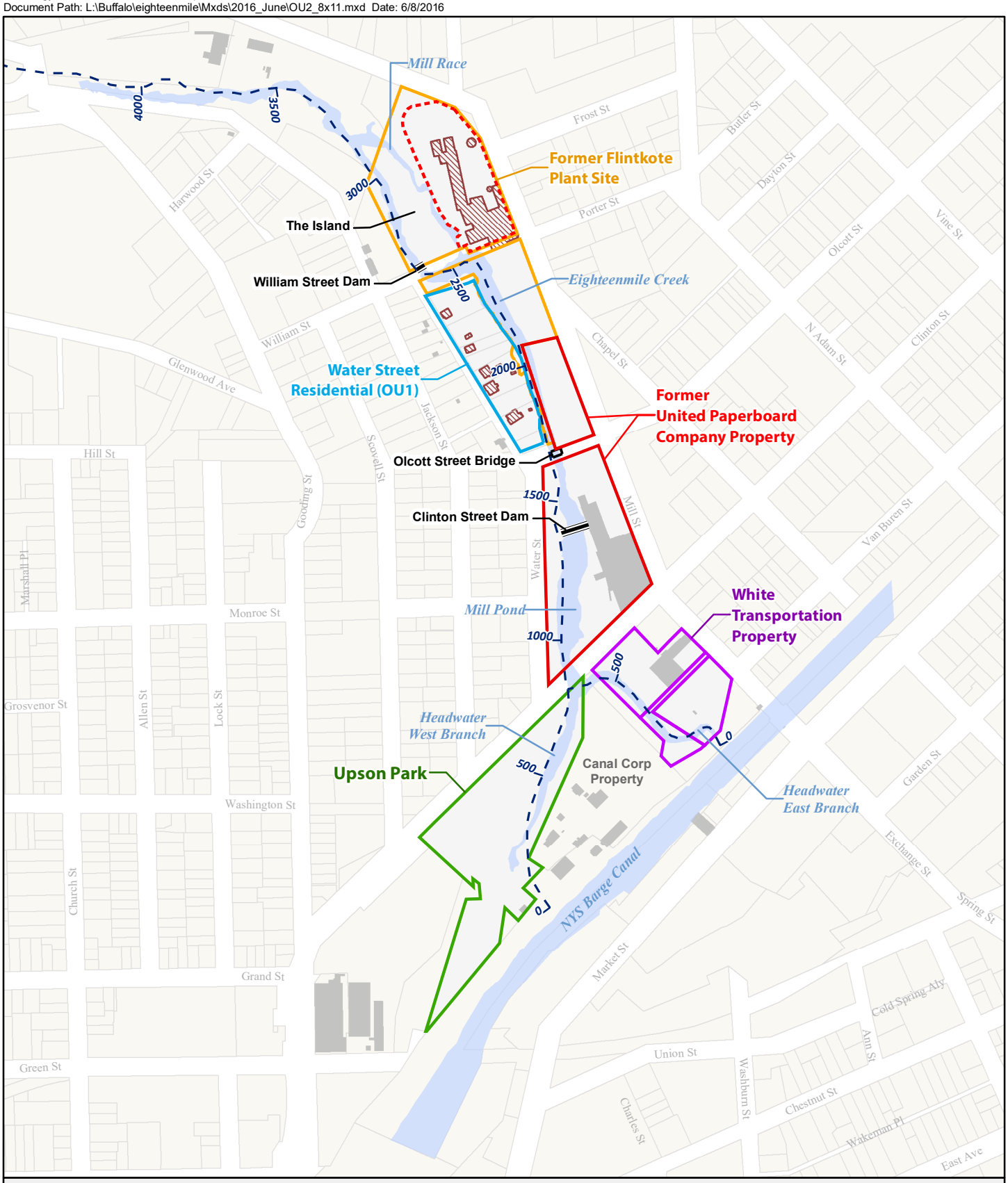

Eighteenmile Creek / Headwater East Branch Centerline (500-ft marker)

Building

Former Building Footprint

Demolition Area

Tax Parcels

Figure 1-3
Eighteenmile Creek RI OU2

0 200 400 800 Feet

N

Data Source: Esri 2012, Niagara County 2014.

In 2011, NYSDEC requested that the EPA consider the Site for inclusion on EPA's NPL, and in March 2012, the EPA listed the Site on the NPL. The NPL Site Identification Number is EPA ID Number: NYN000206456. As described above, EPA conducted an RI/FS for OU1 that included remedial actions on the future residential properties and demolition of the Flintkote building.

In addition, in March 2015, EPA completed an RI report under the Great Lakes Legacy Act (GLLA) program for the contaminated sediment in the creek channel from the north of the OU2 creek corridor to the mouth of the Eighteenmile Creek at Lake Ontario (i.e., Olcott Harbor) (CH2M Hill, Inc. and EEEPC 2015). The EPA GLLA RI report is relevant to OU2 because all sediment data for both OU2 and OU3 were compiled and evaluated together.

1.3 OU2 Summary of Existing Site Conditions

OU2 encompasses the entire Creek Corridor except for the Water Street residential properties and the former Flintkote Building, which are part of OU1. OU2 is divided based on site ownership and the areas described in detail in the Supplemental RI reports (EEEPC 2009a; E & E forthcoming). A brief summary of each area is provided below along with a description of current and future land use.

The City of Lockport Comprehensive Plan (Nutter Associates 1998) has been the basis of future use scenarios in all previous studies. However, in December 2015, the City of Lockport released the final Tourism Focus Area Nomination Study under the New York State Brownfield Opportunity Area Program. The objective of the Nomination Study was to identify key properties along Main Street, the Erie Canal, and the Eighteenmile Creek Corridor that possess the potential for redevelopment (Bergmann 2015). Comparing the City of Lockport Future Land Use Concept in the Comprehensive Plan with the Tourism Focus Area, Future Land Use Plan, shows a change in the community vision for the OU2 properties (see Table 1-1).

Table 1-1 Future Use for the OU2 Properties

Area/Property	Comprehensive Plan Future Use	Nomination Study Future Use
Creek Channel	Park land and recreational area, including a proposed nature trail	Open Space[1] and Waterfront Mixed Use[2]
Former Flintkote Plant Property	Industrial	Open Space
Upson Park	Park land	Open Space
White Transportation Property	Commercial	Waterfront Mixed Use
Former United Paperboard Company Property	Industrial	Open Space and Waterfront Mixed Use

Notes:
[1] Mix of developed and maintained active park land and undeveloped, naturalized areas.
[2] Predominantly residential with some smaller-scale commercial businesses that support the adjacent neighborhoods or the tourism industry.

1.3.1 Creek Channel

The Creek Channel contains contaminated sediments in Eighteenmile Creek and the creek banks. To delineate boundaries between sediment and upland soil within OU2, the bankfull width of the creek was field-delineated by NYSDEC in 2008. The bankfull width is commonly known as the width at which water begins to leave the channel and discharge to the floodplain. The Creek Channel outlined in blue on Figure 1-3 represents the bankfull width. The headwaters of Eighteenmile Creek consist of an east and west branch, which begin immediately north of the Canal. The Canal is located at the most upstream portion of the Creek Corridor and is a potential source area for OU2. Water from the headwater east branch originates at the spillway on the south side of the Canal, where it is directed northward underneath the Canal and the Mill Street Bridge through a culvert. Water from the headwater west branch originates from the dry dock on the north side of the Canal and then flows northward. The headwater east branch and west branch converge just south of Clinton Street in Lockport. The Canal contributes the majority of the flow for the OU2 portion of Eighteenmile Creek.

The City of Lockport Comprehensive Plan (Nutter Associates 1998) shows the future use of the Creek Channel as park land and as a recreational area, including a proposed nature trail. The Comprehensive Plan proposes extension of the Canalway Trail west from the locks and improved fishing access. The City of Lockport Tourism Focus Area Nomination Study (Bergmann 2015) shows a similar future use scenario. Therefore, future use scenarios considered the potential for this change in use from undeveloped open space to recreational area(s). The potential use as Waterfront Mixed Use will be considered as part of the former United Paper and White Transportation properties

1.3.2 Former Flintkote Plant Property

The Former Flintkote Plant Site (198, 225, and 300 Mill Street) in the city of Lockport, Niagara County, New York, is bounded by Eighteenmile Creek to the west, Mill Street to the east, a commercial property to the north, and vacant land owned by the former United Paperboard Company to the south (see Figure 1-3). A small portion of the site, however, is located along the western bank of Eighteenmile Creek and is bounded to the south by the Water Street residential properties. A dam approximately 10 feet high diverts the Creek westward for approximately 300 feet along William Street (located on top of the dam). The two sluice gates located at the east end of the dam have been closed for at least 30 years. A millrace containing a sluggish stream approximately 6 inches to 1 foot deep runs along the west side of the buildings at 300 Mill Street, and the section of 300 Mill Street between Eighteenmile Creek and the millrace is referred to as the Island. The building structure on 300 Mill Street was demolished by the EPA as part of the OU1 remedial action (EPA forthcoming).

The city of Lockport currently zones this parcel as heavy industrial (i.e., District I-3). The City of Lockport Comprehensive Plan (Nutter Associates 1998) shows future use of the Flintkote properties as industrial. Under the industrial zoning

requirements, uses that are incompatible with industry, such as residential properties or day care centers, are not to be permitted. The City of Lockport Tourism Focus Area Nomination Study (Bergmann 2015) shows a future use as Open Space. Therefore, future use scenarios considered both industrial and open space uses.

1.3.3 Upson Park

Upson Park is located at 100 Clinton Street in the City of Lockport, Niagara County, New York (see Figure 1-3). Upson Park is bordered by Clinton Street and a residential area to the north, the West Branch of Eighteenmile Creek and the Canal Authority to the east, the Canal to the south, and a wooded area to the west. The land is currently a town park and contains picnic areas and a walking trail along the Canal. There is a parking area on the site but no standing buildings. The City of Lockport Assessor's Office lists the parcel (Parcel ID 109.10-1-76) as consisting of 5.9 acres of land owned by the City of Lockport.

The City of Lockport currently zones this parcel as reserved area (RA). The purpose of the RA District is to delineate those areas where substantial development of the land in the form of buildings or structures is prohibited due to various conditions listed in the zoning regulations. Therefore, development of future structures is not anticipated for Upson Park. The City of Lockport Comprehensive Plan (Nutter Associates 1998) shows future use of Upson Park as park land and the area designated as part of the Erie Canal Tourism Area. The park is also listed on the state and national registers of historic places as the Lockport Industrial District (#90NR01975), and the area is deemed to have "archaeological sensitivity" by the State Historic Preservation Office (SHPO) (http://pwa.parks.ny.gov/nr/). The City of Lockport Tourism Focus Area Nomination Study (Bergmann 2015) shows a similar future use scenario. Therefore, future use scenarios considered recreational area and maintenance of the area by a worker.as the primary future uses.

1.3.4 White Transportation Property

The White Transportation property is located at 30-40 Mill Street in the city of Lockport, Niagara County, New York (see Figure 1-3). The property is bordered by the Canal to the south, Mill Street to the east, Clinton Street to the north, and the East Branch of Eighteenmile Creek to the west. No commercial or industrial activities are currently conducted at the Site.

Lockport currently zones this parcel as light industrial (i.e., District I-2). Under the industrial zoning requirements, uses incompatible with industry such as residential properties or day care centers are not permitted. The City of Lockport Comprehensive Plan (Nutter Associates 1998) shows the future use of White Transportation as commercial although there are no specific projects designated for this area in the plan. Lockport's current zoning requirements do not include zoning for commercial areas. The City of Lockport Tourism Focus Area Nomination Study (Bergmann 2015) shows a future use as Waterfront Mixed Use. There-

fore, future use scenarios considered both industrial and residential as potential future uses.

1.3.5 The Former United Paperboard Company Property

The Former United Paperboard Company Property is located at 62 and 70 Mill Street (see Figure 1-3). Sixty-two Mill Street is the larger of the two parcels and is bordered by Olcott Street to the north, Mill Street to the east, Clinton Street to the south, and Water Street to the west. The property is currently occupied by Duraline Abrasives, Inc., and contains one warehouse building. Seventy Mill Street is a vacant lot with fill material and building ruins and is bordered by the Former Flintkote Plant Property to the north, Mill Street to the east, Olcott Street to the south, and Eighteenmile Creek to the west. The dam located in the Creek Channel behind the building on 62 Mill Street is called the Clinton Street Dam, and the ponded water behind the dam is referred to as the Mill Pond. A storm sewer line also crosses the Creek approximately 25 to 50 feet downstream of the dam, and several sewer manholes were observed on both banks (east and west) of the Creek. The City of Lockport Assessor's Office lists the parcel (Parcel ID 109.10-1-57) as consisting of 3.7 acres and Parcel ID 109.06-3-11 as consisting of 1.2 acres of land owned by Tri-Side LLC.

Lockport currently zones this parcel as heavy industrial (i.e., District I-3). The City of Lockport Comprehensive Plan (Nutter Associates 1998) shows future use of United Paper Board as industrial. Under the industrial zoning requirements, uses incompatible with industry, such as residential properties or day care centers, are not to be permitted. However, the City of Lockport Tourism Focus Area Nomination Study (Bergmann 2015) shows a future uses as Open Space and Waterfront Mixed Use. Therefore, future use scenarios considered both industrial and residential as potential future uses. The area is also deemed to have "archaeological sensitivity" by the SHPO (http://pwa.parks.ny.gov/nr/) (Hartgen 2015).

1.4 Report Organization

This Pathway Analysis Report is organized as follows:

- **Section 1 Overview.** Brief description of the Site history and existing conditions.
- **Section 2 Sample Data.** Review of available analytical data.
- **Section 3 Risk Assessment Approach.** Description of the risk assessment process used within the Superfund program including a discussion of the sources of toxicity and exposure information.
- **Section 4 Hazard Evaluation and Identification of Chemicals of Potential Concern.** Review of screening of media-specific data against risk-based criteria to identify chemicals of potential concern (COPCs) to carry through the remainder of the HHRA.

- **Section 5 Exposure Assessment.** Description of conceptual Site models, current and future land use of the Site, exposed receptors, and selection and quantification of exposure pathways, scenarios, and parameters.
- **Section 6 Toxicity Assessment.** Discussion of the toxicity and potency of selected COPCs.
- **Section 7 Risk Characterization.** A summary of cancer risks and non-cancer hazards for the individual exposure areas and media for various receptors.
- **Section 8 Uncertainty Assessment.** A discussion of key uncertainties that may impact the calculated cancer risks and non-cancer health hazards.
- **Section 9 Risk Assessment Summary and Conclusions.** Summary of key risk assessment results highlighting cancer risks exceeding the risk range and the goal of protection of a non-cancer Hazard Quotient/Index = 1.
- **Section 10 References.**

2 Sample Data

Data used for the HHRA were collected within OU2 from 2002 through 2015 and have been compiled from five historical investigations and additional data collected by the EPA for a supplemental RI (E & E 2016). Use of historical data for risk assessment purposes was assessed, and data gaps were identified and summarized in the "Evaluation of Existing Data Eighteen Mile Creek Superfund Site" (see LATA/E & E 2014a, Appendix A). Appendix A provides the summary sheets of the data evaluations, by media, to identify samples that meet appropriate requirements for inclusion in the HHRA. Appendix A, Table 1, lists all of the samples selected to be used in the HHRA. The qualified data to be used in the HHRA to evaluate risks were assessed as follows:

- Estimated values flagged with a J, J+, J- or NJ qualifier were treated as unqualified detected concentrations.
- Data qualified with an R (rejected) were not used in the risk assessment.
- For duplicate samples, the average concentration between the two samples was used as the sample concentration. If an analyte was detected only in one sample, then the detected value was used. If the analyte was not detected in the duplicate samples, the highest reporting limit was used.

2.1 Sediment and Surface Water

Sediment has been extensively sampled as part of previous investigations at locations depicted on Figure 2-1. Sediments collected by NYSDEC in 2002 and 2005 (DEC-SED) were analyzed for polychlorinated biphenyls (PCBs) and selected metals. The original data packages were validated by the EPA or E & E data validators and electronic data were compiled. A few sediments and one surface water sample [Flintkote Study (FS)] collected by TVGA Consultants for Niagara County in 2005 were analyzed for Target Compound List/Target Analytical List (TCL/TAL) parameters, and qualifiers from the validation memo were added to the database. Sediment samples collected in July 2006 [Trackdown Study (TRK)] for the Niagara County Soil and Water Conservation District (NCSWCD) were analyzed for PCBs and metals, and the validated data were imported to the OU2 database. Sediment samples collected for NYSDEC in 2007 (18MC) were analyzed for PCBs and metals, with a portion of the samples analyzed for TCL semivolatile organic compounds (SVOCs) and pesticides, and the validated data were uploaded directly to the OU2 database. Surface water samples (18MC) were collected for NYSDEC in 2008 as part of an additional investigation of dissolved

PCBs from the Canal. Three sediment and surface water samples collected for the EPA in 2015 (OU2) were analyzed for TCL/TAL parameters, and OU2-SED02 was also sampled for PCB congeners, dioxins/furans (i.e., polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran), and hexavalent chromium (see Figure 2-2).

Consistent with requirements described in Section 4.1 of the OU2 supplemental RI report (E & E 2016), all sediment and surface water data were reviewed and it was determined that the data met the QA/QC criteria for risk assessment except for DEC-SED-37, for which no data package was available; the data for DEC-SED-37 were not used in the HHRA because of the lack of QA/QC information. The results for TRK sediment samples, which were analyzed by a modified PCB method for medium-level screening, were not used because of the lack of QA/QC information and data validation.

Sediment and surface water samples [Barge Canal (BC)] were collected in the New York State Canal for NYSDEC in 2007. The Canal is not part of OU2 and the sample results will not be used in the HHRA. Sediment samples and one surface water sample [Background (BG)] were collected from a background area in the East Branch of Eighteenmile Creek in 2015 (see Figure 2-3). The samples were analyzed for TCL/TAL parameters. All of these samples were mid-channel samples that were used in the ecological risk assessment but not in the HHRA.

Sediment samples were collected in January 2016 to assess bioaccumulation testing for the ecological risk assessment. The samples also were analyzed for TCL/TAL parameters. All of these samples were mid-channel samples that were not used in the HHRA.

2.2 Soil Sample Collection

Surface and subsurface soils have been extensively sampled as part of previous investigations at the locations depicted on Figure 2-4. Soils collected by NYSDEC in 2002 and 2005 (DEC-SS or DEC-SB) were analyzed for PCBs, metals, and SVOCs. The original data packages were validated by EPA or E & E data validators, and electronic data were compiled. Soil samples collected for Niagara County in 2005 (FS) were analyzed for TCL/TAL parameters and qualifiers from the validation memo were added to the electronic data. Soil samples collected for NYSDEC in 2007 (18MC) were analyzed for PCBs and metals, with a portion of the samples analyzed for TCL SVOCs and pesticides. The validated electronic data were imported into the database. Surface and subsurface soil samples were collected for the EPA in 2014-2015 from Upson Park and the former Flintkote Plant Property (OU2). Samples were analyzed for TCL/TAL parameters, and several samples were analyzed for hexavalent chromium, dioxins/furans, and PCB congeners. Additional surface soils were collected in Upson Park to delineate PCB concentrations in an area where historical data had revealed elevated levels of PCBs in soil. The validated electronic data were uploaded directly to the OU2 database and were used in the HHRA to evaluate cancer risks and noncancer hazards.

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Document Path: L:\Buffalo\eighteenmile\Mxds\2016_June\Fig2-1a Sediment_Samples.mxd Date: 6/17/2016

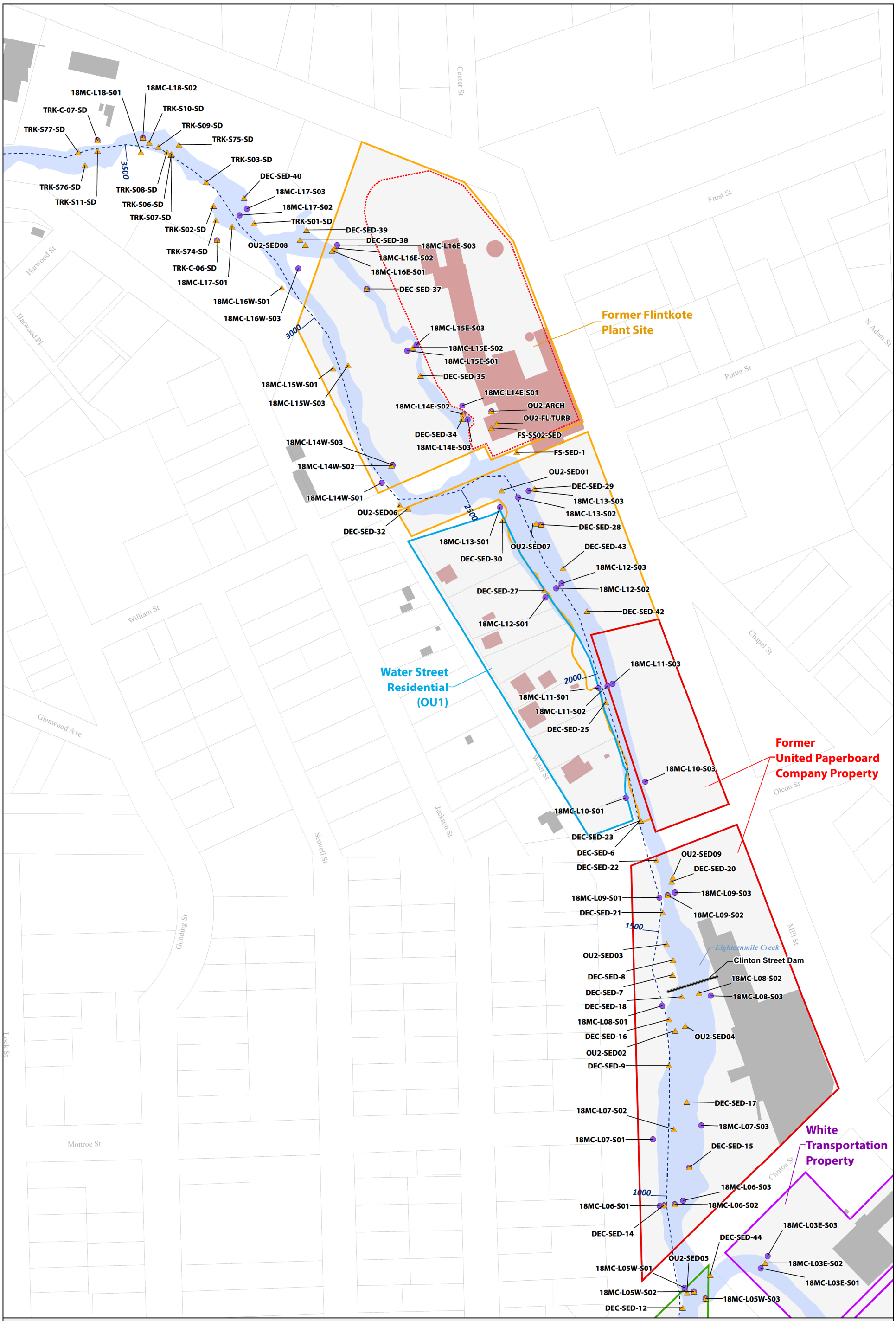

Figure 2-1
Sediment Sample Locations, Eighteenmile Creek RI OU2
Map 1 of 2

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Document Path: L:\Buffalo\eighteenmile\Mxds\2016_June\Fig2-1b Sediment_Samples.mxd Date: 6/17/2016

Clinton Street Dam
DEC-SED-7
18MC-L08-S03
DEC-SED-18
18MC-L08-S02
18MC-L08-S01
OU2-SED04
DEC-SED-16
OU2-SED02
DEC-SED-9
Former United Paperboard Company Property
DEC-SED-17
18MC-L07-S02
18MC-L07-S03
18MC-L07-S01
DEC-SED-15
White Transportation Property
18MC-L06-S03
1000
18MC-L06-S01
18MC-L06-S02
DEC-SED-14
18MC-L03E-S03
DEC-SED-44
OU2-SED05
18MC-L03E-S02
18MC-L05W-S01
18MC-L03E-S01
18MC-L05W-S02
18MC-L05W-S03
DEC-SED-12
18MC-L02E-S03
18MC-L01E-S01
18MC-L04W-S02
18MC-L02E-S02
18MC-L01E-S03
18MC-L04W-S01
18MC-L04W-S03
18MC-L02E-S01
Headwater East Branch
18MC-AS-S01
DEC-SED-13
DEC-SED-11
18MC-L03W-S01
500
18MC-L03W-S03
Upson Park
BC-L04-S01
18MC-BC05
18MC-L03W-S02
BC-L04-S02
BC-L04-S03
18MC-L02W-S02
Headwater West Branch
18MC-L02W-S01
18MC-L02W-S03
18MC-BC04
DEC-SED-10
18MC-L01W-S03
18MC-L01W-S02
Erie Canal
18MC-L01W-S01
BC-L03-S02
BC-L03-S01
0
BC-L03-S03
18MC-BC03
18MC-BC02
18MC-BC01
BC-L02-S01
BC-L02-S02
BC-L02-S03
Monroe St
Jackson St
Scovell St
Clinton St
Water St
Mill St
Van Buren St
Chapel St
Market St
Union St
Washburn St
Charles St
Wakeman Pl
Chestnut St

Subsurface Sediments
Surface Sediments
Eighteenmile Creek Centerline (500-ft marker)
Clinton Street Dam
Tax Parcels
Buildings

0 100 200 400 Feet
N

Data Source: Esri 2012, Niagara County 2014.

Figure 2-1
Sediment Sample Locations, Eighteenmile Creek RI OU2
Map 2 of 2

© Ecology & Environment, Inc. GIS Department
Document Path: L:\Buffaloleighteenmile\Mxds\2016_June\Fig2-2a OU2_Creek_Sample_Locations_Northern.mxd Date: 6/17/2016

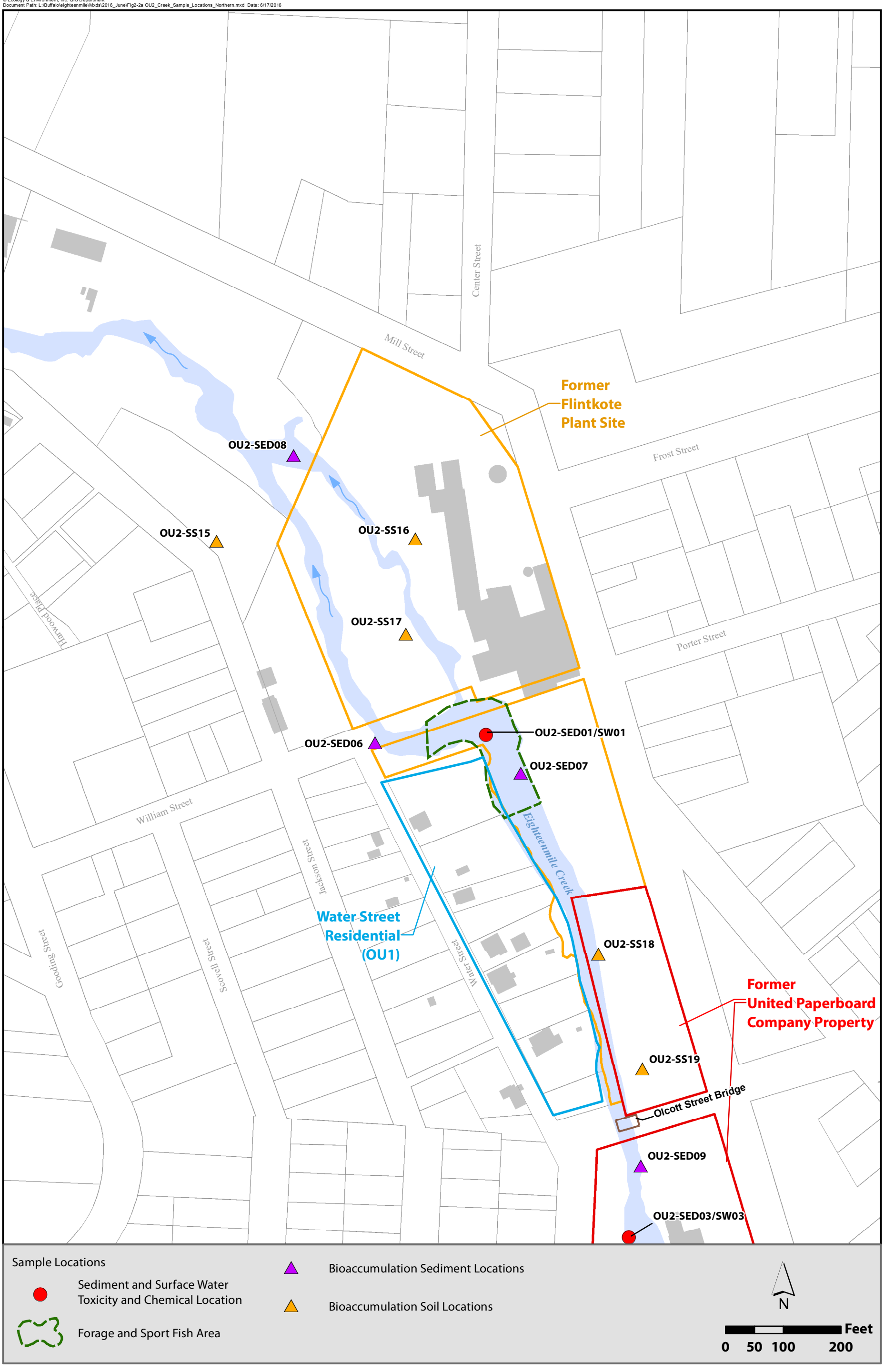

Figure 2-2 Toxicity, Bioaccumulation and Fish Sample Locations
Eighteenmile Creek RI OU2
Map 1 of 2

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Document Path: L:\Buffalo\eighteenmile\Mxds\2016_June\Fig2-2b OU2_Creek_Sample_Locations_Southern.mxd Date: 6/17/2016

OU2-SED03/SW03
Storm Sewer Pipe
Clinton Street Dam
Former
United Paperboard
Company Property
OU2-SS20
OU2-SS21
OU2-SED04
OU2-SED02/SW02
Mill Street
Monroe Street
Eighteenmile Creek
White
Transportation
Property
OU2-SED05
OU2-SS22
Upson Park
Headwater
East Branch
OU2-SS23
Headwater
West Branch
Clinton Street
OU2-SS24
Erie Canal

Sample Locations
Sediment and Surface Water Toxicity and Chemical Location
Forage and Sport Fish Area
Bioaccumulation Sediment Locations
Bioaccumulation Soil Locations
N
Feet
0 50 100 200

Figure 2-2 Toxicity, Bioaccumulation and Fish Sample Locations
Eighteenmile Creek RI OU2
Map 2 of 2

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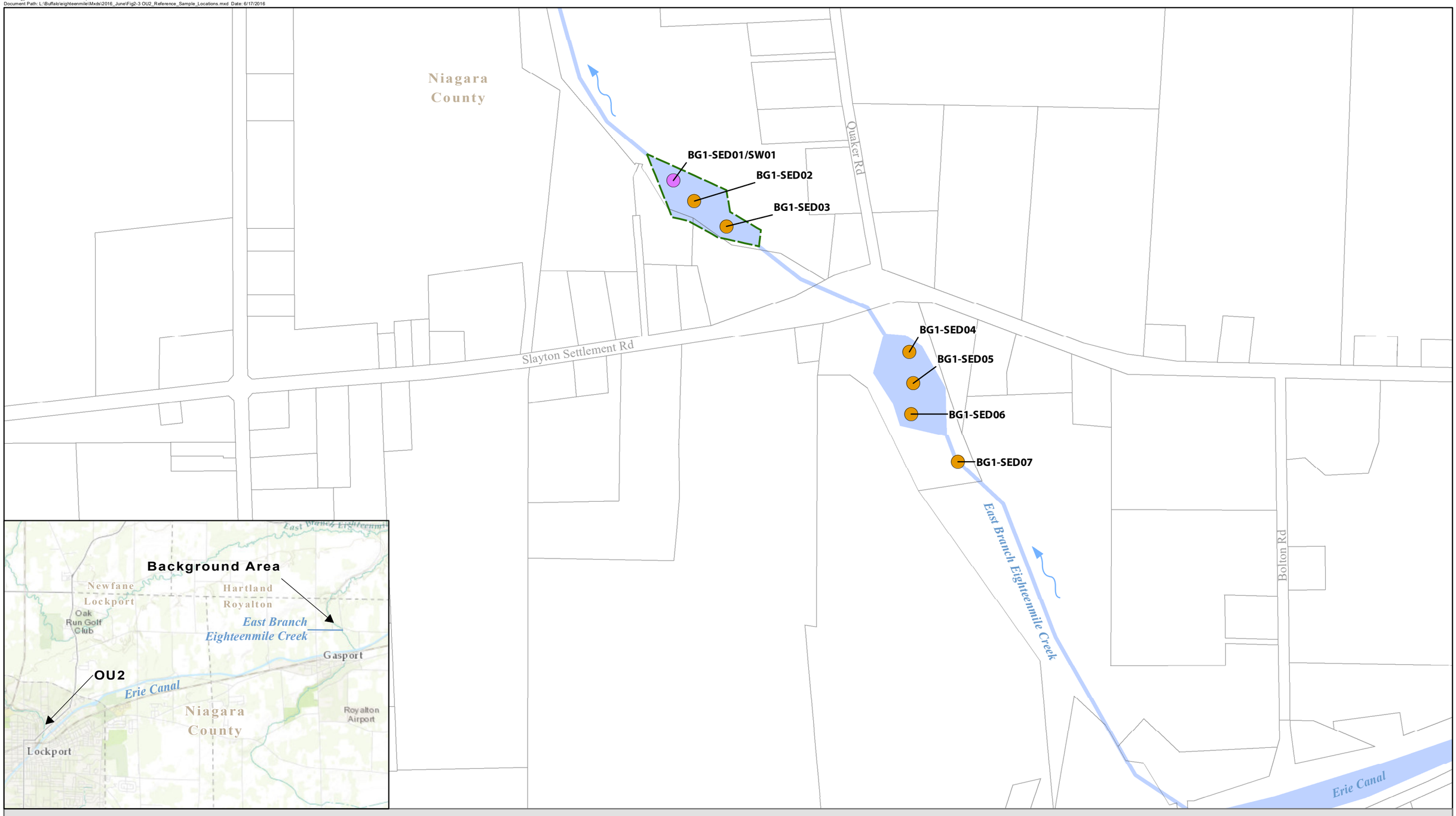
Document Path: L:\Buffalo\eighteenmile\Mxds\2016_June\Fig2-3 OU2_Reference_Sample_Locations.mxd Date: 6/17/2016



Background Sediment and Chemical Location
Background Sediment and Surface Water Toxicity and Chemical Location
Forage and Sport Fish Area
Tax Parcels (2015)
Water Feature

N

0 250 500 1,000 Feet

Figure 2-3
Sediment, Surface Water and Fish Sample Background Locations
Eighteenmile Creek RI OU2

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Document Path: L:\Buffalo\eighteenmile\Mxds\2016_June\Fig2-4a Soil_Sample_Locations.mxd Date: 6/17/2016

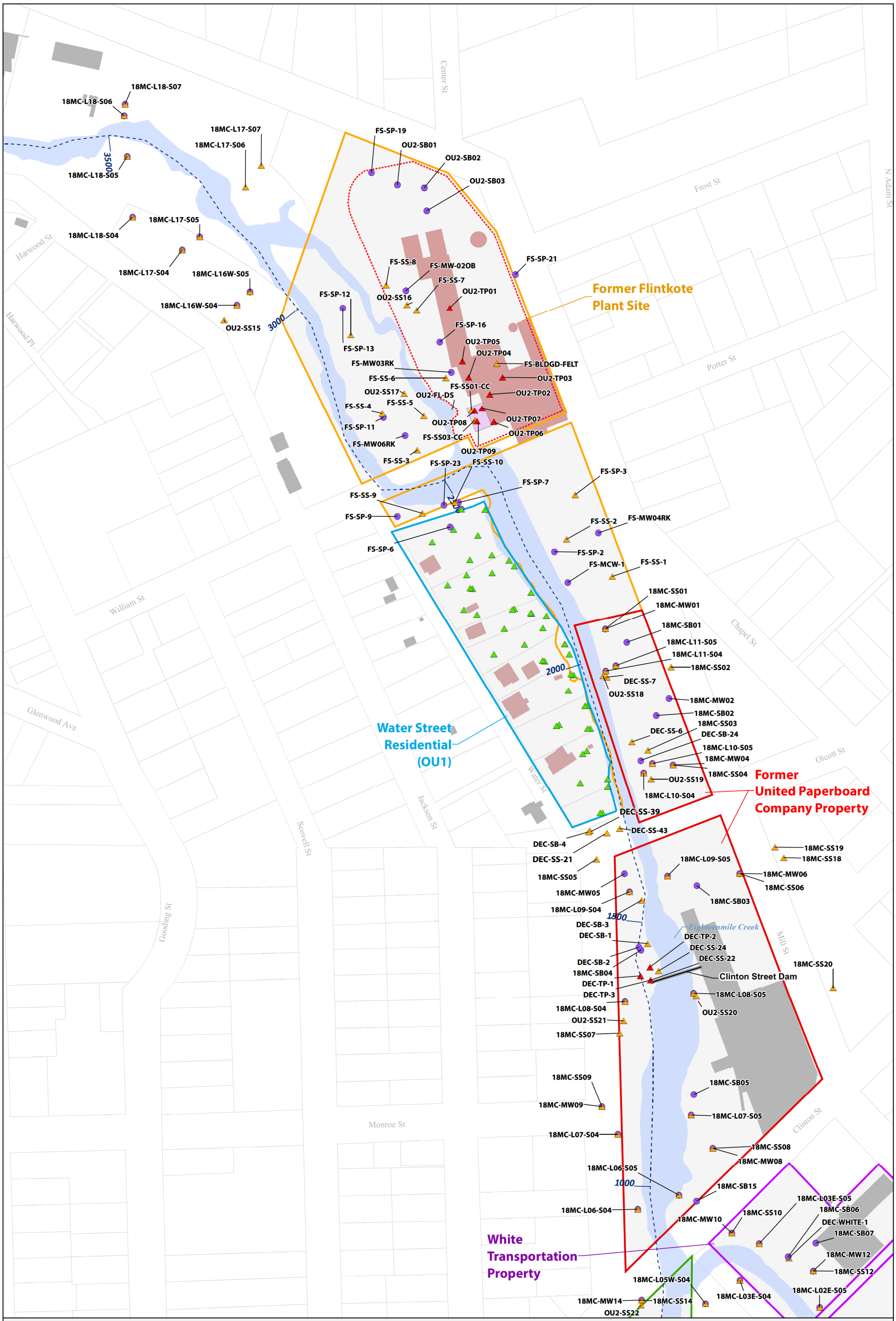

Figure 2-4
Soil Sample Locations, Eighteenmile Creek RI OU2
Map 1 of 2

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Document Path: L:\Buffalo\eighteenmile\Mxds\2016_June\Fig2-4b Soil_Sample_Locations.mxd Date: 6/17/2016

DEC-SS-24
DEC-TP-1
DEC-SS-22
DEC-TP-3
18MC-L08-S04
OU2-SS21
18MC-SS07
Clinton Street Dam
18MC-L08-S05
OU2-SS20
18MC-SS20
Former
United Paperboard
Company Property
18MC-SB05
18MC-L07-S05
18MC-SS08
18MC-MW08
18MC-MW09
18MC-SS09
18MC-L07-S04
18MC-MW11
18MC-SS11
White Transportation
Property
18MC-L06-S05
18MC-SB15
18MC-L06-S04
1000
18MC-SS10
DEC-WHITE-1
18MC-MW10
18MC-SB07
18MC-SB08
18MC-L03E-S05
18MC-SB06
18MC-MW12
18MC-SS12
18MC-SB09
18MC-SS14
18MC-MW14
OU2-SS22
18MC-L02E-S05
18MC-L04W-S04
18MC-L03E-S04
18MC-SS13
18MC-L05W-S04
18MC-MW13
DEC-WHITE-2
18MC-SB11
18MC-L04W-S05
18MC-L02E-S04
18MC-SB10
Headwater
East Branch
18MC-SB12
18MC-MW15
18MC-L03W-S04
OU2-SS23
18MC-L03W-S05
18MC-SS15
18MC-L03W-S06
500
DEC-UPSON-1
Upson Park
OU2-SS10
18MC-L02W-S04
18MC-SS16
OU2-SS14
Headwater
West Branch
18MC-MW16
18MC-L02W-S05
OU2-SS13
OU2-SS09
18MC-L02W-S06
18MC-SB13
OU2-SS12
OU2-SS11
DEC-UPSON-2
OU2-SS08
OU2-SS24
18MC-SB14
18MC-L01W-S06
Erie Canal
18MC-L01W-S05
OU2-SS07
18MC-L01W-S04
OU2-SS06
0
OU2-SS05
18MC-SS17
18MC-MW17
OU2-SS04
OU2-SS02
OU2-SS03
OU2-SS01
Monroe St
Jackson St
Scovell St
Clinton St
Water St
Mill St
Van Buren St
Chapel St
Market St
Union St
Washburn St
Charles St
Wakeman Pl
Chestnut St

Subsurface Soils
Surface Soils
Test Pit
Eighteenmile Creek Centerline (500-ft marker)
Clinton Street Dam
Buildings
Tax Parcels

0 100 200 400 Feet
N

Data Source: Esri 2012, Niagara County 2014.

Figure 2-4
Soil Sample Locations, Eighteenmile Creek RI OU2
Map 2 of 2

Background soil samples (BG) were collected for the EPA in 2014 from seven locations adjacent to the Canal east of the Creek as depicted in Figure 2-5. All soil samples were analyzed for TCL/TAL parameters, and several samples were analyzed for hexavalent chromium, dioxins/furans, and PCB congeners. The data were validated and uploaded directly to the OU2 database and used in the HHRA to quantify cancer risks and non-cancer hazards.

All soil data met the QA/QC criteria for risk assessment. Soil samples collected from within the OU1 Water Street residential properties were not used in this HHRA. Because an HHRA was previously completed by the EPA for the OU1 Site, the samples were not used in this HHRA.

Soil samples were collected in January 2016 to assess bioaccumulation testing for the ecological risk assessment. The samples also were analyzed for TCL/TAL parameters. The sample results were obtained after the data were evaluated for the HHRA. The Eighteenmile Creek Supplemental RI (E & E 2016) presented the sample results and determined the results were within the range of existing data and therefore would not impact the conclusions of the HHRA or the FS.

2.3 Groundwater Investigation

Groundwater has been extensively sampled as part of previous investigations. Groundwater samples from the Former Flintkote Plant Property for Niagara County in 2003 (FS) were analyzed for TCL/TAL parameters, and analytical results with qualifiers from the validation memo were added to the OU2 database. Groundwater sampled for NYSDEC in 2007 (18MC) was analyzed for TCL/TAL parameters and the validated data were imported to the OU2 database. The data identify groundwater containing low-level VOCs south of the Creek (see Figure 2-6). One additional monitoring well was installed for the EPA in 2015 (MW18). The groundwater in this area was sampled in December 2014 and May 2015 and analyzed for TCL/TAL parameters (see Figure 2-6).

All groundwater data collected in 2014 and 2015 met the QA/QC criteria for risk assessment. Historical sample results are usable for assessing contaminant trends.

2.4 Fish Tissue

Fish were collected from the OU2 Creek Corridor for the EPA in May 2015 (see Figure 2-2), and tissue samples were analyzed for PCB Aroclors, TCL pesticides, dioxins/furans, TAL metals and TCL SVOCs. Fish were sampled following the NYSDEC guidelines, and both sport fish and smaller forage fish were collected. Fish also were collected from a background location (see Figure 2-3) and tissue samples were analyzed as noted above. The sampling approach is discussed in Section 4.1.5.

All tissue data collected from sport fish met the data quality objectives identified in the QA/QC criteria for risk assessment. Tissue sample results for fish collected in the background area are evaluated as a part of the data uncertainty in Section 8 of this report.

2.5 Additional Analytical Parameters

Consistent with EPA risk assessment guidance, policies, and procedures, full TCL/TAL analyses are needed for at least some fraction of the samples to provide assurance that no significant COPCs are missed in the RI and risk assessment process. Limited data were collected for hexavalent chromium, dioxins/furans, and PCB congeners in all media as part of previous investigations (see "Evaluation of Existing Data Eighteen Mile Creek Superfund Site" [see LATA/E & E 2014a, Appendix A]). A limited number of samples were analyzed for these additional parameters for the Eighteenmile Creek OU2 Supplemental RI to provide the data as described in the Project-Specific Quality Assurance Project Plan (QAPP) (LATA/E & E 2014b, 2015) and summarized below.

PCB congener data is important to understanding dioxin-like PCBs that may be present in the sampling media (EPA 1996). Data on dioxins and furans is important to the evaluation of cancer risks and non-cancer hazards based on toxicity equivalency factors (TEFs) that represent the toxicity of specific dioxins/furans compounds (EPA 2010).

Total chromium concentrations appear to be elevated in environmental media in the Creek. Chromium (Cr) can exist in two valence states, Cr(III), and Cr(VI). The Cr(VI) is generally much less common in environmental media, but it is much more toxic than Cr(III) and, therefore, it is important to know the chemical form of the chromium present. The industry's practices/actions that occurred in what is now OU2 did not indicate any potential sources of Cr(VI) in the sediment and surface water, therefore, Cr(VI) is not expected to be present in the sediments and surface water of OU2 or OU3. Samples collected by EPA's Removal Program in the soils at the Water Street residential yards (OU1) did not find Cr(VI). Therefore, further analyses for Cr(VI) for all samples are not recommended. However, about 10% of all samples were analyzed for Cr(VI) to confirm there are no other potential sources of Cr(VI) in OU2. A total of 10 samples were collected: one sediment sample from the Creek Channel and background area; one subsurface soil; three surface soils from OU2 and two from the background area; and two groundwater samples. Cr(VI) was detected in only four samples at concentrations less than 7% of the total chromium, confirming that more than 90% of the chromium present is Cr(III).

Selected sediment samples from several early NYSDEC investigations were analyzed for dioxins/furans or 2,3,7,8-tetrachlorodibenzodioxin (TCDD) only because dioxins/furans were identified as potential COPCs in the lake-wide management plan for Lake Ontario. Dioxins/furans were detected in the sediment samples in the early studies, indicating historical upstream sources above the locks could potentially contribute dioxins/furans to canal sediment. No specific sources of dioxins/furans upstream of the locks or in the Eighteenmile Creek Corridor were identified. Ash samples collected during NYSDEC's Site investigation

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Document Path: L:\Buffalo\eighteenmile\Mxds\2016_June\Fig2-5 Background_Soil_Locations.mxd Date: 6/17/2016

Niagara County

Lake Ave

Day Rd

N Canal Rd

Groff Rd

Erie Canal

Old Niagara Rd

Lockport Town and Country Club

Market St

Cold Springs Rd

Chestnut Ridge Rd

BG1-SS01

BG1-SS02

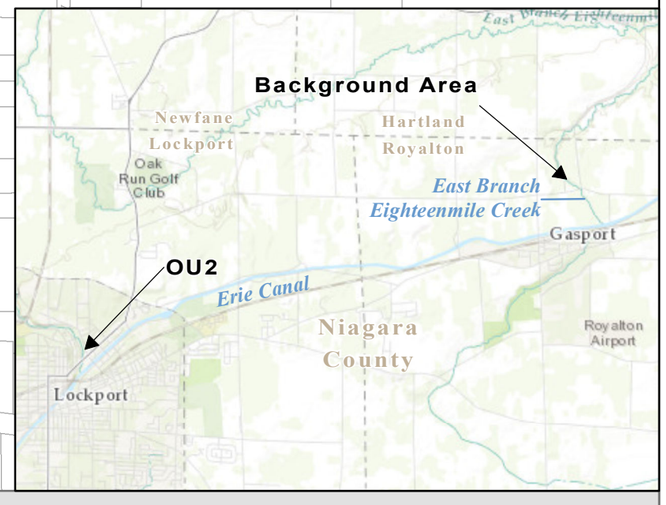
BG1-SS03

BG1-SS04

BG1-SS05

BG1-SS06

BG1-SS07



Soil Sample Location - 11-24-2014

Tax Parcels (2014)

N

0 250 500 1,000 Feet

Figure 2-5
Soil Sample Background Locations
Eighteenmile Creek RI OU2

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Document Path: L:\Buffalo\eighteenmile\Mxds\2016_June\Fig2-6 MonitoringWells_with_VOC.mxd Date: 6/17/2016

Former United Paperboard Company Property

Canal Corp. Property

Upson Park

Olcott Street Bridge

Storm Sewer Pipe

Clinton Street Dam

Monroe Street

Jackson Street

Water Street

Mill Street

Chapel Street

Clinton Street

Market Street

Eighteenmile Creek

Headwater East Branch

Headwater West Branch

Erie Canal

MW05

MW06

MW08

MW09

MW10

MW11

MW12

MW13

MW14

MW15

MW16

MW17 (Damaged)

MW18

MW05	Screen Elevation - 456-466 ft AMSL	SC [1]	Jul-07	Feb-09	Dec-14	May-15
VOCs (µg/L)						
Cis-1,2-Dichloroethene		3.6	7.1	9.4	5.2	16
Vinyl Chloride		0.019	0.52	0.51 J	ND	ND

MW18	Screen Elevation - 462-472 ft AMSL	SC [1]	Jul-07	Feb-09	Dec-14	May-15
VOCs (µg/L)						
Chloroform		0.22	NA	NA	3.3 J	ND

MW09	Screen Elevation - 488-493 ft AMSL	SC [1]	Jul-07	Feb-09	Dec-14	May-15
VOCs (µg/L)		--	NA	NA	ND	ND

MW14	Screen Elevation - 471-476 ft AMSL	SC [1]	Jul-07	Feb-09	Dec-14	May-15
VOCs (µg/L)						
1,1-Dichloroethane		2.7	0.40 J	ND	ND	ND
Chloroform		0.22	0.49	ND	ND	ND
Cis-1,2-Dichloroethene		3.6	33	29	11	17
Tetrachloroethene (PCE)		4.1	1.4	ND	1.5 J	2.8 J
Trans-1,2-Dichloroethene		5.0	0.31 J	0.26 J	ND	ND
Trichloroethene (TCE)		0.28	20	19	9.4	14
Vinyl Chloride		0.019	0.40 J	ND	ND	ND

MW15	Screen Elevation - 483-488 ft AMSL	SC [1]	Jul-07	Feb-09	Dec-14	May-15
VOCs (µg/L)						
1,1,1-Trichloroethane		5.0	0.26 J	0.29 J	ND	ND
Cis-1,2-Dichloroethene		3.6	0.83	0.94 J	0.23 J	ND
Trichloroethene (TCE)		0.28	1.2	0.81 J	0.51 J	ND

MW16	Screen Elevation - 493-503 ft AMSL	SC [1]	Jul-07	Feb-09	Dec-14	May-15
VOCs (µg/L)		--	ND	ND	ND	ND

MW17	Screen Elevation - 491-501 ft AMSL	SC [1]	Jul-07	Feb-09	Dec-14	May-15
VOCs (µg/L)		--	ND	NA	NA	NA

Overburden Groundwater Monitoring Well
Bedrock Groundwater Monitoring Well
May 2015 Groundwater Contours (10ft Interval)
May 2015 Inferred Goundwater Contours (10ft Interval)
Topographic Contours (10ft Interval)
Creek Flow Direction
Direction of Groundwater Flow
Railroad
Bridge
Vegetation
Water

Key:
J = Estimated value
NA = Not Applicable
ND = Not Detected
AMSL = Above Mean Sea Level

N

0 50 100 200 Feet

Figure 2-6 Monitoring Well Locations with VOC Results, Eighteenmile Creek RI OU2

Notes for Groundwater Standards and Guidance Values:

[1] New York State Department of Environmental Conservation, Technical and Operational Guidance #1.1.1: Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, 1998 (and subsequent addenda), or United States Environmental Protection Agency Regions 3, 6, and 9. (11/13/2014). Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm. The lowest value between the two references was used for screening purposes.

of the Former Flintkote Plant Property were analyzed for dioxins/furans, but they were not detected and the site was then eliminated as a potential source of dioxins/furans (NYSDEC 2000). Therefore, dioxins/furans were not analyzed as part of the NYSDEC investigations. As discussed in the QAPP for OU2, a limited number of samples for the EPA OU2 Supplemental RI were analyzed for dioxins/furans to confirm there are no sources and to qualitatively evaluate the potential contribution to the total risks (see LATA/E & E, 2014b, Appendix A).

PCB congener data have been collected for the Eighteenmile Creek system in several investigations. PCB congener data are useful for assessing exposure instances when PCB patterns from Aroclors are weathered or degraded and for comparison with available historical tissue data. Thus, about 10% of all samples also were analyzed for PCB congeners in order to evaluate total PCB concentrations. This approach is consistent with the examples provided in the evaluation of cancer toxicity of PCBs (EPA 1996).

PCB and polychlorinated dibenzo-p-dioxin/polychlorinated dibenzofuran (PCDD/PCDF) congeners were analyzed in a small number of samples of soil, sediment, surface water and fish tissue, and were detected in soil/sediment and surface water, but not in game fish tissue. Not enough samples were analyzed for PCB or PCDD/PCDF congeners to support quantitative risk evaluations for these chemicals. The results of this analysis are provided in Section 8, Uncertainty Assessment, of this report.

3 Risk Assessment Approach

The goal of the Superfund human health evaluation process is to provide a framework for developing the risk information needed to assist in the determination of possible remedial actions at the Site (EPA 1987, 1991b). The EPA uses risk assessment as a tool to characterize contaminants, evaluate the toxicity of the chemicals, assess the potential ways in which an individual may be exposed to the contaminants, and characterize the cancer risks and non-cancer health hazards and associated uncertainty (EPA 1989, 1992a, 1995, 2000a). In accordance with EPA guidance, actions at Superfund sites are based on an estimate of the reasonable maximum exposure (RME) expected to occur under current and/or future conditions at the Site. The RME is defined as the highest exposure that is reasonably expected to occur at a site. EPA guidance also recommends that the agency estimate risks based on central tendency exposures (CTE) or average exposures at a site (EPA 1992a, 1995, 2000a). The RME and CTE are used to estimate cancer risks and non-cancer health hazards, although the RME is the basis for the Site remedial decision as outlined in the NCP.

A systematic framework for human health risk assessment was first outlined in 1983 by the National Research Council (NRC) of the National Academy of Sciences (NRC 1983). Building upon that foundation, the risk assessment process described in EPA's "Risk Assessment Guidance for Superfund Volume I Human Health Evaluation Manual (Part A)" (EPA 1989) and subsequent Agency guidance, including RAGS Parts B through F, consists of the following components:

- **Data Collection and Evaluation** - involves gathering and evaluating data to define the nature and extent of contamination and location-specific COPCs.
- **Exposure Assessment** - entails an estimate of the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways to which people could be potentially exposed. Actual and/or potential chemical release and transport mechanisms are identified, potentially exposed human populations and possible exposure pathways are described, concentrations of COPCs at potential points of human exposures are determined, and human exposures to the COPC are estimated.
- **Toxicity Assessment** - examines the type of adverse health effects associated with chemical exposure and the relationship of the magnitude of exposure to the health response. Qualitative and quantitative toxicity information for

COPCs are summarized and toxicity values with which to characterize risks are identified.

- **Risk Characterization** - summarizes the results from the first three steps of the assessment (both quantitative and qualitative). The likelihood and magnitude of adverse health effects in the form of incremental lifetime cancer risks and non-cancer HQs are estimated. Sources of uncertainty in the HHRA are discussed.

4 Hazard Evaluation and Identification of Chemicals of Potential Concern

4.1 Data Evaluation

Data collection and evaluation involves gathering and analyzing the Site data relevant to the risk assessment and identifying the chemicals found in environmental media at the Site that are the focus of the risk assessment process. The data that were evaluated for the HHRA for the Site are described in this section.

4.1.1 Sediment

Sediment has been extensively sampled as part of previous investigations at the locations depicted on Figure 2-2. Sediment samples associated with NYSDEC's RI of the Creek Corridor were validated and used for the HHRA (NYSDEC 2006a). Sediment samples collected as part of older investigations were not used for the HHRA because data were not available for validation. Systematic sampling of sediments in the Creek Corridor occurred as part of the NYSDEC Supplemental RI in 2007. Twenty transects spanning the Creek and its banks were established. Sampling stations along each transect were as follows:

- The mid-channel of the Creek Channel was sampled, if possible, and the samples collected were classified as a sediment samples and were designated as station S2. These "mid-channel" samples were not included in exposure point concentration (EPC) calculations (see Section 5.2). In most cases, the Creek is too shallow, flows too rapidly, and is too difficult to access due to steep and densely vegetated banks to be a plausible venue for swimming or wading. Consequently, any exposure to surface water and mid-channel sediment at this Site is expected to be limited to infrequent, incidental contact. This assessment is consistent with NYSDEC's classification of this waterbody as a Class D waterbody indicating it is not suitable for swimming.
- Samples collected from each shoreline were classified as sediment samples and designated as stations S1 (west bank) and S3 (east bank) and are referred to as "inner bank" samples.
- Two samples were collected from each side of the upper banks of the Creek Channel. These were classified as soil samples, were designated as stations

S4 and S5 (west bank), and S6 and S7 (east bank) and are referred to as "outer bank" samples.

Additionally, three sediment samples were collected in 2015 for chemical and toxicity studies. The sediment above and below the Clinton Street Dam and adjacent to the former Flintkote Building was sampled and analyzed for TCL/TAL parameters.

4.1.2 Soils

Surface and subsurface soils have been extensively sampled as part of previous investigations except for soils near and beneath the former Flintkote Building (see Figure 2-4). Many of the soil samples were analyzed for PCBs and select metals to support evaluation of the nature and extent of contamination. A limited number of samples were analyzed for TCL/TAL parameters.

Additional soil samples were collected in 2014 and 2015 in Upson Park and in the former Flintkote Building demolition area. Samples from Upson Park were collected to determine current concentrations of TCL/TAL parameters in the surface soils in Upson Park for the purpose of evaluating a potential risk to human receptors, such as recreational users of the park and park maintenance workers (groundskeepers). Samples at the former Flintkote building were collected to characterize potential fill material and site-related contamination, such as PCBs and metals in the area north of the former Flintkote plant, where limited historical data are available. The results also will be used to evaluate potential risks to human receptors, such as trespassers and construction workers, entering the area.

4.1.3 Groundwater

Fifteen groundwater monitoring wells were installed within the Site in 2007 and 2009 as part of the Supplemental RI conducted for NYSDEC (see Figure 2-6). One additional monitoring well (MW-18) was installed along Jackson Street in 2014, and two rounds of groundwater samples were collected from all wells and analyzed for TCL/TAL parameters. Samples could not be collected from MW-17 in 2014 because the well had been destroyed. At MW-09, only VOCs were collected because of low recharge rates. Nine wells on the east side of the Creek and two on the west side of the Creek were installed as overburden wells, and the remaining five on the west side of the Creek were installed as bedrock wells. Bedrock was encountered at depths ranging from 9 feet below ground surface (BGS) to 26 feet BGS, and in some cases, bedrock was not encountered to depths of 26 feet BGS on the north side of Upson Park and 30 feet BGS on the east side of the Creek in the northern parcel of the Former United Paperboard Company Property. Chlorinated VOCs were detected in some of the wells, indicating contamination centered on MW-14 (see Figure 2-6).

Groundwater was investigated as part of the Flintkote site investigation for Niagara County but was not investigated during the NYSDEC Supplemental RI of the Creek Corridor (TVGA 2005a; EEEPC 2009a). No significant contamination was

found except for one low PCB detection. The groundwater samples from this investigation will be assessed separately in the HHRA.

4.1.4 Surface Water

Surface water has not been extensively sampled as part of previous investigations due to high flow rates in the Creek and lack of standing water. Studies of dissolved PCBs in water indicate that there is a source of PCBs to the surface water within OU2 (NYSDEC 2010a). It is expected that the source is beneath the former Flintkote Building. Three surface water grab samples were collected in 2015 at locations above and below the Clinton Street Dam and adjacent to the former Flintkote Building for chemical and toxicity studies. Samples were analyzed for TCL/TAL parameters.

4.1.5 Fish Tissue

Fish samples were collected by electroshocking at two locations in the Creek Corridor and one location on the East Branch of the Creek (see Figure 2-2). The game fish obtained, large enough for human consumption, were filleted and the fillets were analyzed. The results of these analyses were used in the HHRA. Smaller forage fish were composited and homogenized as whole fish. The homogenate was analyzed and these results were used in the Baseline Ecological Risk Assessment (BERA) Problem Formulation (E & E 2015). The game fish collected in the Creek Corridor included silver redhorse (*Moxostoma anisurum*), walleye (*Sander vitreus*), and smallmouth bass (*Micropterus dolomieu*); fish collected in the background area primarily consisted of carp (*Cyprinus carpio*) and one largemouth bass (*Micropterus salmoides*).

4.2 Selection of Chemicals of Potential Concern

COPCs were identified using the screening process described in *Risk Assessment Guidance for Superfund* (RAGS) Parts A and D (EPA 1989, 1992b, 1998a). Appendix B contains the tables consistent with RAGS Part D. Appendix A, Tables 2.1 through 2.11, present the selected COPCs. The general screening process is summarized in the following paragraphs.

First, a comparison concentration was selected for each chemical screened. The comparison concentration was the greater of the chemical's maximum detected concentration and the highest detection limit for its non-detected results. Risk-based soil residential screening levels were used to evaluate exposure to sediment, and residential tap water samples were used to evaluate exposures to surface water and groundwater. Screening levels were obtained from the EPA Regional Screening Level (RSL) Tables published in November 2015 (EPA 2015b). The tables were evaluated against the May 2015 RSLs to determine if there were significant differences in the selection of COPCs based on the latest RSL (EPA 2016). No significant differences were identified. Chemical-specific concentrations were calculated for fish consumption by adults and young children, assuming ingestion rates of 54 grams per day and 18 grams per day, respectively, based on the absence of an RSL for this pathway. EPA RSLs and calculated fish exposures were used in the screening process (EPA 2015c). For all media, the screen-

ing levels were the lower of the concentrations in each medium associated with a cancer risk of 1 x 10^{-6} (one in a million) or a target HQ of 0.1 to account for potential exposures to multiple chemicals.

Ubiquitous elements that are present at low concentrations and are essential human nutrients were eliminated as COPCs for the HHRA provided the concentrations did not exceed their respective screening level (EPA 1989). Essential human nutrients include iron, magnesium, calcium, potassium, and sodium. These chemicals are toxic only at very high doses and are considered human nutrients essential to a diet.

Substances detected in less than 5% of the Site samples were not retained as COPCs unless they also were detected in other environmental media at the Site. Known human or Group A carcinogens were retained regardless of detection frequency.

Because the Site consists of multiple parcels and exposure areas, different groups of receptors could be exposed to COPCs in different exposure areas. For this reason, each exposure area is assessed separately in the HHRA and the COPC identification and selection process was carried out for individual exposure areas. Contamination has been found in soil, groundwater, surface water, sediment, and fish at the Site. Because there are different risk-based screening levels relevant to each of these media, the media were screened separately as described in the following subsections.

4.2.1 Soil and Sediment

Groups of receptors who may come in direct contact with Site soils include Site visitors/trespassers, anglers, recreational users, outdoor workers, potential future residents, and construction/utility workers where future construction is anticipated. Further discussion of potential exposure scenarios and receptors is provided in Section 5. The risk-based criteria used to screen soil chemical contaminants for direct contact pathways were the EPA RSLs for Residential Soil (EPA 2015b) including evaluation of the latest RSLs (EPA 2016). The exposure areas in OU2 are not currently designated for residential use but the Lockport Tourism Focus Area Nomination Study (Bergmann 2015) supports the potential residential use for some exposure areas in the future (see Section 1.3). All of the potential exposure areas except Upson Park are currently zoned for industrial use and, according to the City of Lockport Comprehensive Plan, will continue to be used for industrial purposes in the future. Upson Park, however, is zoned as reserved for parks and wooded areas and is projected to continue in that use according to the Master Plan. Consistent with EPA Region 2 practices, the soil and sediment data were screened using residential soil RSLs to assure COPCs are not prematurely excluded from the HHRA evaluation.

4.2.2 Groundwater

The groundwater underlying the Site is fresh water and is classified as “GA” by NYSDEC, indicating that its best potential use is as a source of potable water

supply. The Site is served by a public water supply system, and regulations require that any water used as drinking water at the Site be obtained from that source. This is a common requirement in areas served by a public water supply system. Therefore, even though the groundwater at the Site is classified as a source of potable water, the presence of a public water supply system makes it unlikely that groundwater at the Site would ever be used for that purpose. Nevertheless, the NCP (EPA 1990) and RAGS Part A (EPA 1989) recommend that potential Site risks be assessed in the absence of any institutional controls or remedial actions; therefore, since the best use of Site groundwater is as a source of potable water supply, groundwater contaminants were screened and COPCs selected, assuming that the groundwater may be used as tap water under a future land use scenario. The risk-based criteria used to screen groundwater contaminants were the EPA RSLs for tap water (EPA 2015b) The tables were evaluated against the recent May 2016 RSLs to determine if there were significant differences in the selection of COPCs based on the latest RSL (EPA 2016). No significant differences were identified.

4.2.3 Surface Water

The reach of the Creek in OU2 is classified by NYSDEC as Class D fresh surface waters.

> *The best usage of Class D waters is fishing. Due to such natural conditions as intermittency of flow, water conditions not conducive to propagation of game fishery, or stream bed conditions, the waters will not support fish propagation. These waters shall be suitable for fish, shellfish, and wildlife survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes. (NYS Code, Chapter X, §701.9).*

The best use of Class D waters does not include use as a source of drinking water.

The EPA has established surface water criteria for human health based on consumption of aquatic organisms living in the water, however, that pathway will be evaluated more directly based on fish consumption exposure. Exposure to surface water at this Site is expected to be limited to occasional dermal contact and incidental ingestion via hand-to-mouth contact, a much more limited exposure than using the water as a drinking water source. In most places, the Creek is too shallow, flows too rapidly, and is too difficult to access due to steep and densely vegetated banks to be a plausible venue for swimming or wading. EPA tap water RSLs were used to screen this pathway.

The most recent NYSDEC *Lake Ontario and Minor Tribes Basin Waterbody Inventory/Priority Waterbodies List Report* was issued as a final draft report in August 2007 (NYSDEC 2007). The report indicates that the segment of the Creek above Newfane (0301-0055), which includes the segment in OU2, is impaired

with respect to fish consumption, aquatic life, and recreational use due to the presence of PCBs and other possible toxic contaminants in sediment.

4.2.4 Fish Tissue

Fish tissue data from fillets of edible sport fish species were screened using chemical-specific concentrations that were calculated for fish consumption by adults and young children, assuming ingestion rates of 54 grams per day and 18 grams per day, respectively. This evaluation was based on the absence of fish consumption RSLs.

4.3 Exposure Point Concentration Datasets

Appendix A, Table 1, lists all of the OU2 samples meeting QA/QC data usability requirements for the HHRA as described in Section 2. The following samples included in the OU2 database were not included in the pathway analysis for the following reasons:

- Canal sediments that were located outside of the study area.
- Sediments that were collected for screening purposes as part of the previous investigations with moderate to high detection limits were useful only for screening and nature and extent, not for the HHRA (NCSWCD 2007).
- Water samples that were neither surface water nor groundwater, including standing water from the basement of the Former Flintkote Building, water that pooled during the demolition of the Former Flintkote Building, water collected from outfall pipes, and National Pollutant Discharge Elimination System (NPDES) discharge samples.
- Sediment samples that were collected from the mid-channel of the stream bed: significant exposure to these samples is unlikely based on limitations in accessing this area.

4.3.1 Soil and Sediment

Sample location maps for soil and sediment along with information about transect sample positions were reviewed to classify soil and sediment samples as stream bank or upland samples. Stream bank samples were those collected from areas with closely packed contour lines indicating steep slopes. The upland samples were collected from areas outside of those with steep slopes. These classifications were then used along with information on the depths from which samples were collected to assemble datasets representative of the soils and sediments to which the various receptor groups were likely to be exposed.

It was assumed that anglers, outdoor workers, recreational users, and Site visitors/trespassers would be exposed primarily to surficial soil and sediment. Surface soils and sediments were nominally considered to be those collected from 0 to 2 feet BGS. However the available datasets comprise samples collected in a number of studies that used different sample depth intervals. The depth interval used to select surface samples, less than or equal to 0.5 feet to less than or equal to 2 feet will capture samples that begin no more than 6 inches BGS and end no

more than 2 feet below the surface. These samples were considered reasonably representative of surface soils and sediments. Angler exposure is expected to be limited to soils and sediments on the Creek banks and the island north of the former Flintkote Building. Outdoor workers, Site visitors/trespassers, and recreational users are expected to be exposed to surface soils and sediment anywhere on the properties they are visiting.

The Former United Paperboard Company Property has current indoor workers that have no direct contact with outdoor soils. However, exposure to surface soils (0 to 2 feet) may occur through ingestion, dermal contact, or inhalation of contaminated soils that have been incorporated into indoor dust and the inhalation of contaminants present in indoor air. The White Transportation Property is currently inactive but could potentially have future indoor workers.

Upson Park and the former industrial properties have the potential for redevelopment, which could involve soil excavation during the future construction of basements, foundations, and subsurface utilities. Construction workers could be exposed to surface and subsurface soils, nominally from 0 to10 feet BGS. Samples collected at a starting depth of less than 10 feet but extending to an ending depth of less than 12 feet were accepted so as to not exclude samples that extended to greater depths. Utility workers were not considered to be a separate receptor since any utility work would be done as the property redevelopment by construction workers.

4.3.2 Groundwater

All of the groundwater samples collected from OU2 were initially included in the groundwater dataset for COPC selection purposes. Those carried forward to the EPC dataset will depend on the COPCs selected, identification of the core of the plume, the age of the samples, and any temporal trends.

4.3.3 Surface Water

Twenty surface water samples collected from OU2 were available for assessing this exposure medium; however, 15 of these samples were collected in 2008, one in 2003, and only four in 2015. The 2015 samples were screened against tap water RSLs to identify potential COPCs; however, the small number of available samples will not support a quantitative evaluation of surface water exposure and the maximum concentration will be used as the EPC.

4.3.4 Fish Tissue

Fish samples were collected from Eighteenmile Creek in the OU2 area and from background locations in the East Branch of the Creek. Game fish of a size suitable for human consumption were collected by electrofishing. The game fish collected from OU2 included three silver redhorse, four smallmouth bass, and three walleye; those collected from background locations included nine carp and one largemouth bass. There are a sufficient number of samples to assess risks associated with fish consumption. The fish were filleted and the fillets analyzed for metals, PCBs, polycyclic aromatic hydrocarbon (PAHs), pesticides, and SVOCs.

5 Exposure Assessment

5.1 Exposure Areas

The Creek Corridor area originally included residential properties on the west side of the Creek along Water Street, but these parcels were assessed separately as OU1 and are not evaluated as part of OU2. An HHRA was completed for OU1 Water Street residences by the EPA in July 2013 and a ROD was signed in September 2013. The remaining potential human exposure areas within OU2 include the following:

1. Creek Channel – the soil and sediment forming the Creek banks were evaluated as soils since the exposure pathways for bank soils and sediments are comparable. The Creek bank samples throughout OU2 were used to evaluate angler exposure. In addition, the Creek bank samples in each exposure area were used to assess surface soil exposure on each property. The Creek banks throughout OU2 are referred to as the Creek Channel area, where angler and other recreational users of the area may be exposed through direct contact.
2. Former Flintkote Plant Property – a 6-acre former industrial facility. The Creek bank between the Former Flintkote Plant Property and the northern border of OU2 at Harwood Street is considered part of this exposure area. The Creek bank soils include a few samples on the west side of the Creek, north of the Water Street properties. The assessment evaluated current/future exposures to surface soil/sediment by the Site visitor, outdoor worker, and trespasser. The assessment evaluated future exposures to the Site visitor, trespasser, and outdoor worker. The future assessment considered exposures to a construction worker.
3. Former United Paperboard Company Property – an active 4.8-acre industrial facility. The Creek bank soils include samples on the opposite side that are part of the Water Street properties. The assessment evaluated exposures to surface soil and sediment for the Site visitor, trespasser, indoor worker, and outdoor worker. Future exposures to subsurface soil (0 to 10 feet) were evaluated for the construction worker. Future exposures to subsurface soil (0 to 2 feet) were evaluated for the future resident.
4. Upson Park – a 5.9-acre public park at the south end of the Creek Corridor that is mostly wooded with walking paths and a few picnic tables. The assessment evaluated exposures to a park recreational user, outdoor worker, and construction worker under current/future conditions.

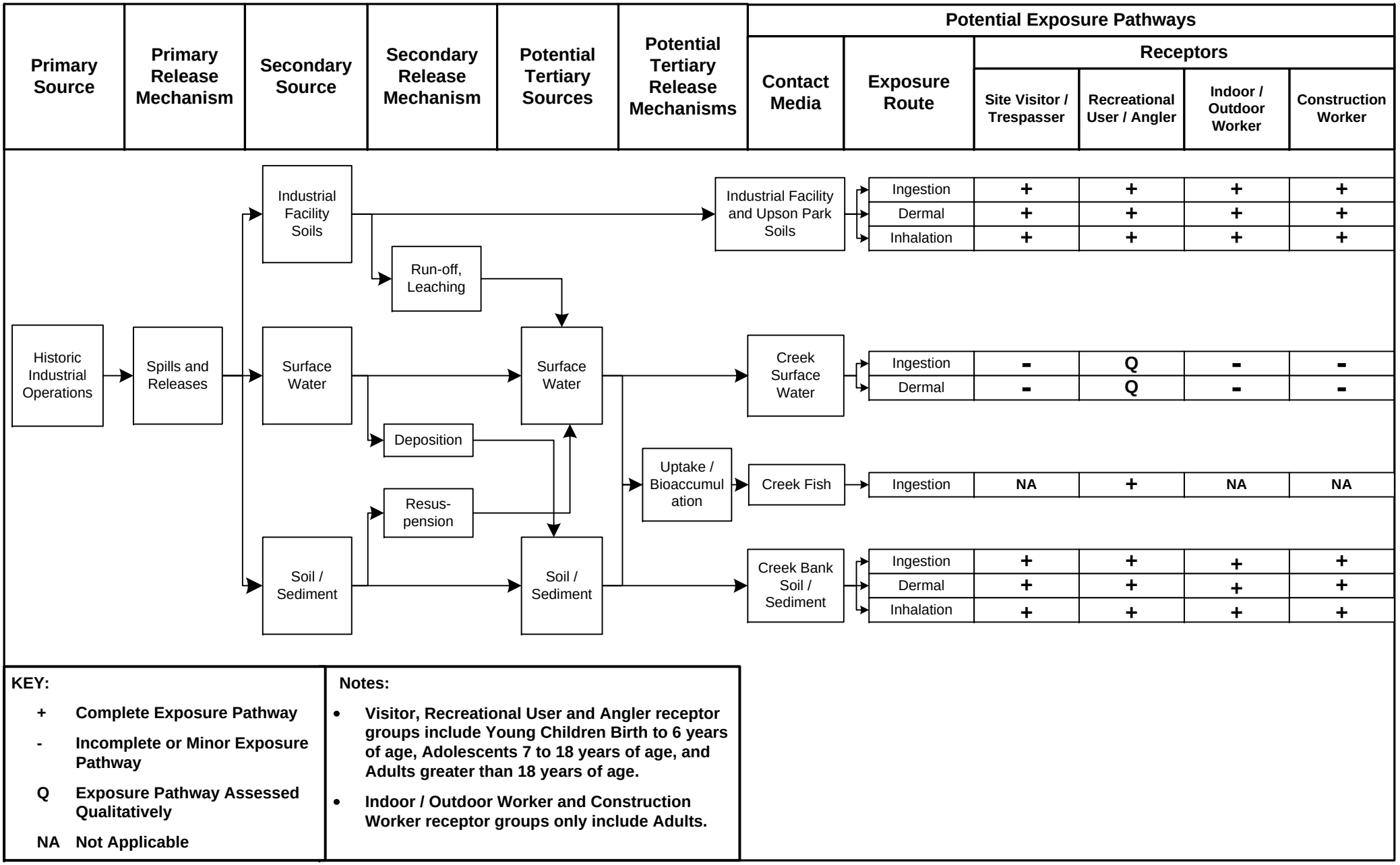
5. White Transportation Property – an inactive 2.6-acre former commercial/industrial facility. The assessment evaluated current/future exposures to a Site visitor, trespasser, and outdoor worker. Future exposures to an indoor worker were also evaluated in case a building is constructed on the property in the future. Current/future exposures to a future construction worker exposed to subsurface soil (depth of 0 to 10 feet) were also evaluated. Future residential exposures were evaluated based on the updated land use on the property
6. Groundwater was assessed Sitewide, based on the historical contamination identified on the south side of the Creek in Upson Park and opposite the Former United Paperboard Company Property. Groundwater associated with the Former Flintkote Plant Property is assessed separately. This exposure assessment evaluated consumption of groundwater under future conditions at the United Paperboard and White Transportation locations.

Sampling of the soil and sediment in the Creek Corridor area was conducted as described in Section 2. In general, the COPCs identified in the screening assessment that may pose health risks to humans contacting soil and/or sediment include PCBs, metals, PAHs, and pesticides.

5.2 Exposure Pathways and Receptors

Potential exposure pathways and receptors are summarized in Figure 5-1 and described in detail in Appendix B, Table 1. Appendix B, Table 1 describes the land use, potential receptors, exposure routes, assessment type (e.g., either quantitative or qualitative) and the rationale. Potential receptors include:

- Anglers and other recreational users of the Creek banks and channel who may be exposed to surface soils/sediment on the Creek banks;
- Recreational users and outdoor workers of Upson Park who may be exposed to surface soils and sediment at depths of 0 to 2 feet;
- Indoor workers at the Former United Paperboard Company and White Transportation properties (future scenario only) who may be exposed to dust derived from surface soils at depths of 0 to 2 feet and the inhalation of contaminants in indoor air;
- Site visitors/trespassers and outdoor workers at the White Transportation facility, the Former United Paperboard Company, and the Former Flintkote Plant Property based on soil depths of 0 to 2 feet;
- Construction workers at Upson Park and White Transportation, the Former United Paperboard Company, and the Former Flintkote Plant properties who may be exposed to soils at depths of 0 to 10 feet during construction of future buildings; and
- Potential future residents of White Transportation and the Former United Paperboard Company properties who may be exposed to surface soil, soils at depths that may be brought to the surface during construction if not properly managed, and exposure to groundwater classified as a drinking water source.



KEY:

+	Complete Exposure Pathway
-	Incomplete or Minor Exposure Pathway
Q	Exposure Pathway Assessed Qualitatively
NA	Not Applicable

Notes:

- Visitor, Recreational User and Angler receptor groups include Young Children Birth to 6 years of age, Adolescents 7 to 18 years of age, and Adults greater than 18 years of age.
- Indoor / Outdoor Worker and Construction Worker receptor groups only include Adults.

Figure 5-1 Conceptual Model of Potential Human Exposures to Contaminants in Operable Unit 2 of the Eighteenmile Creek Superfund Site, Niagara County, New York

Exposure factors used in the HHRA are presented in the RAGS Part D Series 4 Tables in Appendix B, Tables 4.1 to 4.9. Separate tables are provided for RME and CTE scenarios. Most exposure factor values were obtained from EPA's recently updated guidance on Standard Default Exposure Factors (EPA 2014b) and other EPA guidance documents including the 1991 Standard Default Exposure Assumptions and the EPA *Exposure Factors Handbook* (EPA 1991 and 2011a). Some exposure factors (e.g., exposure frequencies for recreational users of Upson Park, visitors/trespassers to the former industrial properties, and anglers) are Site-specific and based on professional judgment.

In order to estimate RMEs for these groups, adult and child recreational users of Upson Park were assumed to visit the Site 56 days per year or two days per week during the warmer six months of the year. Adolescents, ages seven to 18 years, were assumed to be exposed 84 days per year or three days per week during the warmer six months of the year. Visits were assumed to last four hours. Young children were assumed to generally visit these areas in the company of their parents. Because of the difficult access to the Creek banks, adult and child recreational users and anglers were assumed to visit the Site 13 days per year or one day per week during the 13 weeks of summer. Adolescents were assumed to visit the same area 39 days per year or three days per week during the 13 weeks of summer. Site visitors/trespassers to other industrial properties were assumed to visit the Site 28 days per year (RME) for adult and child and 56 days per year for adolescents. Central tendency, or average exposure frequencies, were assumed to be half of the RME rate.

Standard default exposure factors were used for potential outdoor, indoor and construction workers, recreational users, and future residents.

Ingestion rates for fish caught from Eighteenmile Creek were taken from the 1991 New York Angler Survey (Connelly et al. 1992), a statewide mail survey to determine New York anglers' awareness and knowledge of fishing advisories and to determine fish consumption patterns during the 1991 fishing season (Connelly et al. 1992). EPA evaluated responses indicating consumption of fish from flowing waterbodies to derive the fish ingestion rate distribution for the Hudson River that is applied here based on similarities in fish consumed (EPA 2000b). The 90^{th} percentile rate derived from the survey after removing outliers was used to estimate the RME ingestion rate and the 50^{th} percentile rate was used to estimate fish ingestion rates for the average CTE individual. Consumption rates for adolescents and young children were apportioned from the adult rate-estimated to be approximately two thirds that of an adult for an adolescent and one third for young child (EPA 2000b).

Future use plans for the Creek banks indicate potential expansion of use as a trail and fishing location. The Creek banks are associated with individual properties but from an exposure standpoint the areas are all similar. Therefore, soil and sediment samples collected from the Creek banks can be considered as a group for evaluating this exposure pathway for future recreational users. The samples also

will be considered as part of the individual properties for exposure to specific users of property.

5.3 Data Available for the Human Health Risk Assessment

The historical analytical data for soil and sediment samples in OU2 have been reviewed to determine whether data of sufficient quality and quantity are available to support the HHRA. In general, the number of samples is adequate for risk assessment purposes (generally 10 or more), although the number of detected values for some COPCs is quite small. ProUCL, a statistical software package developed by the EPA, was used to calculate EPCs that represent exposures at the Site in various media. For datasets with too few detected values to support reliable statistical analysis, the maximum detected value will be used as the EPC unless ProUCL statistical software provides a different recommendation. Chemicals, such as PCB and PCDD/PCDF congeners, were not assessed as individual chemicals. Instead, total 2,3,7,8-TCDD equivalent (TEQ) concentrations were calculated for PCDDs, PCDFs, and dioxin-like PCBs using the World Health Organization 2005 TEFs, adopted in EPA's publication on TEFs in 2010 (EPA 2010). The limited number of samples (1 to 4) analyzed for PCB and PCDD/PCDF congeners are not sufficient to support quantitative risk assessment and the data was evaluated as described in Section 6.6.

Groundwater data for OU2 collected prior to 2009 is appropriate for trend analysis. Generally, groundwater monitoring data in a designated plume area needs to be completed within the last year or two and have a recommended two rounds of data. Recent EPA guidance on assessing groundwater (EPA 2014a) indicates that the EPC dataset should be limited to samples from the "core of the plume." Only 10 samples collected from six wells during 2014 and 2015 are available for assessing groundwater contamination under these considerations. Other than metals commonly found in groundwater, the number of detected values is small. The groundwater assessment guidance recommends that a minimum of 10 samples from at least three wells be used to calculate EPCs for groundwater plumes. However, when data are limited, the maximum detected concentrations can be used as the EPCs. When a dataset includes non-detected values, ProUCL generally calculates its statistical values using the detected concentrations only, although some of the upper confidence limit (UCL) estimates make inferences about the non-detected values. Recommendations provided by ProUCL will be followed in assessing potential risks associated with groundwater contamination.

Twenty surface water samples collected from OU2 are available for assessing this exposure medium; however, 15 of these samples were collected in 2008, one in 2003, and only four in 2015. The 2015 samples were screened against tap water RSLs to identify potential COPCs. However, the small number of available samples do not allow reliable 95% UCLs to be calculated nor do they support a quantitative evaluation of surface water exposure; therefore, risk from surface water was evaluated qualitatively.

Fish samples were collected from Eighteenmile Creek in the OU2 area and from the background area in the East Branch of the Creek. Game fish of a size suitable for human consumption were collected by electrofishing. The game fish collected from OU2 included three silver redhorse, four smallmouth bass, and three wall-eye; those collected from the background area included nine carp and one large-mouth bass – sufficient samples to assess risks associated with fish consumption. The fish were filleted and the fillets analyzed for the chemicals of interest that bi-oaccumulate from the surface water and sediments into fish. The fillet data was used for calculated EPCs.

5.4 Derivation of Exposure Point Concentrations

EPC datasets included all of the analytical results for the chemicals identified as COPCs by the COPC selection process described in Section 4 for the exposure area and depth intervals under consideration. This resulted in a total of 13 EPC datasets as summarized in Table 5-1.

EPCs were calculated using ProUCL version 5, a statistical software package for analysis of environmental data sets developed by the EPA. All of the possible statistical distributions available in the ProUCL's UCL calculations, normal, gamma, lognormal and nonparametric, were considered in deriving the 95% UCL values. ProUCL recommends which of the available statistical procedures for calculating the 95% UCL is or are most appropriate based on the characteristics of the dataset under consideration. One of the statistics recommended by ProUCL was selected as the 95% UCL for the dataset. Consistent with EPA guidance, the lower of the 95% UCL and the maximum detected value was selected as the EPC. EPCs are provided in the RAGS Part D Series 3 tables in Appendix B, Tables 3.1 to 3.13.

Table 5-1 EPC Datasets

Exposure Areas	Media	Description	Start Depth (feet BGS)	End Depth (feet BGS)[1]
Eighteenmile Creek Corridor	Soil and Sediment	Creek Banks	0	2
	Fish Tissue	Sport Fish Fillets		
	Surface Water	Limited Data Set		
Former Flintkote Plant Property	Soil and Sediment	Creek Banks and Upland	0	2
	Soil		0	10
Upson Park	Soil and Sediment	Creek Banks and Upland	0	2
	Soil		0	10
Former United Paper-board Property	Soil and Sediment	Creek Banks and Upland	0	2
	Soil		0	10
White Transportation Property	Soil and Sediment	Creek Banks and Upland	0	2
	Soil		0	10

Table 5-1 EPC Datasets

Exposure Areas	Media	Description	Start Depth (feet BGS)	End Depth (feet BGS)[1]
Groundwater – Sitewide	Groundwater	Two rounds of sampling (2014, 2015) in six wells in core of plume		
Groundwater – Former Flintkote Plant Property	Groundwater	One round of sampling (2003) on Flintkote properties		

Note:
[1] Feet BGS with depth ranges as described in Section 4.3.1.

Key:
BGS = below ground surface

6 Toxicity Assessment

The toxicity assessment provides an estimate of the relationship between the extent of exposure to a contaminant and the likelihood and/or severity of adverse effects. The toxicity assessment has two parts: hazard identification and dose-response assessment. Hazard identification is a qualitative description of the potential toxic properties of COPCs at this Site. The dose-response assessment is a process that results in a quantitative estimate of toxicity for each COPC. For carcinogenic effects, the slope factor (SF) is determined for oral and dermal exposure, and the inhalation unit risk (IUR) for inhalation exposure; for non-cancer effects, the reference dose (RfD) is used to evaluate oral and dermal exposures while the reference concentration (RfC) is used to evaluate inhalation exposures. Section 6.1 describes the procedures generally used to develop the quantitative toxicity values and the process for incorporating the toxicity values into the risk evaluation. Section 6.2 presents the toxicity values used to estimate risks associated with exposure to COPCs along with their bases and sources. Section 6.3 discusses early life stage adjustments to cancer SFs for chemicals with a Mutagenic Mode of Action (MMOA). Section 6.4 discusses the assessment of lead exposure using EPA's Adult Lead Methodology (ALM); Section 6.5 discusses the assessment of thallium; and Section 6.6 discusses assessment of PCB congeners. Toxicity values are provided in the RAGS Part D Series 5 and 6 tables in Appendix B, Tables 5.1 and 5.2 and Tables 6.1 and 6.2.

6.1 Development of Toxicity Values

Carcinogenic and non-carcinogenic health effects are both evaluated quantitatively in the risk assessment. Endpoints for these two different types of effects are assessed differently because the mechanisms by which chemicals cause most cancers are fundamentally different from the process(es) that cause non-carcinogenic effects. Several chemicals are evaluated for both cancer and non-cancer health effects. The principal difference in the evaluation reflects the assumption that non-carcinogenic effects exhibit a threshold dose below which no adverse effects occur, whereas no such threshold has been shown to exist for most carcinogenic effects.

6.1.1 Classification of Chemicals as Carcinogens or Non-carcinogens

As used in this risk evaluation, the term carcinogen refers to a chemical for which there is sufficient evidence that exposure may result in cancer in humans and/or animals. Conversely, the term non-carcinogen refers to a chemicals' health ef-

fects, such as changes in the normal functions of organs within the body (e.g., changes in the effectiveness of the immune system). Some chemicals can cause both cancer and non-cancer health effects and these effects are evaluated separately. The likelihood that a chemical is a human carcinogen is specified by the EPA's weight-of-evidence classification. Data derived from human and animal studies are reviewed and the chemical is characterized as follows:

The EPA classification system for the characterization of the overall weight of evidence for carcinogenicity (animal, human, and other supportive data) was issued in 1986 (EPA 1987). The classification system at that time included: Group A – Known Human Carcinogen; Groups B1 and B2 – Probable Human Carcinogen; Group C – Possible Human Carcinogen; Group D – Not Classifiable as to Human Carcinogenicity; and Group E – Evidence of Noncarcinogenicity for Humans. Many chemicals on the Integrated Risk Information System (IRIS), EPA's consensus toxicity database, maintain these classifications and these classifications will be updated when the chemical file is updated. The HHRA includes the classifications provided in the IRIS Chemical Files for chemicals that have not been reassessed or updated to include the new classifications based on the 2005 Cancer Guidelines (EPA 2005a) described below.

The EPA Cancer guidelines (EPA 2005a) updated the cancer classifications for chemicals to include a narrative and the following recommended standard hazard descriptors: "*Carcinogenic to Humans*," "*Likely to Be Carcinogenic to Humans*," "*Suggestive Evidence of Carcinogenic Potential*," "*Inadequate Information to Assess Carcinogenic Potential*," and "*Not Likely to Be Carcinogenic to Humans*." Based on the available information in IRIS, EPA's consensus database for toxicity information, the descriptions include classifications from the 1986 categories described above, and the updated narrative categories are provided for those chemicals updated since 2005. The IRIS category provided in the chemical file is presented in the RAGS tables in Appendix B (Tables 6.1 and 6.2).

Exposure to some chemicals may result in both carcinogenic and non-carcinogenic effects. In those cases, both types of effects were considered and evaluated in the quantitative risk assessment.

6.1.2 Assessment of Oral and Dermal Exposures

6.1.2.1 Assessment of Non-carcinogens

The potential for non-cancer adverse health effects (e.g., organ damage, immunological effects, developmental effects, skin irritation) is usually assessed by comparing the estimated Site-related exposure expressed as an average daily exposure that is compared to the RfD. The RfD is defined as an estimate (with uncertainty spanning perhaps an order of magnitude or greater) of a daily exposure level for the human population, including sensitive subpopulations, that is likely to be without an appreciable risk of deleterious effects during a lifetime (EPA 1989). The EPA develops the chronic RfD by identifying the no-observed-adverse-effect level (NOAEL) or lowest-observed-adverse-effect level in the scientific literature, or a benchmark dose that corresponds to a small (1% to 10%) but defined re-

sponse in the studied population, and adjusting that value using uncertainty factors (UFs). The UFs reflect the data limitations of the critical study or studies and the uncertainties associated with differences between the study conditions and the human exposure situation (e.g., different species, doses, routes of exposure, length of exposure) and variability in the human population, so that the resulting RfD is protective of the human population. RfDs are expressed in units of mg/kg-day.

The RfD is used as a reference point for identifying potential effects of other exposures. Generally, exposures that are less than the RfD are not likely to be associated with adverse health effects. As the exposure increases beyond the RfD and as the size of the excess increases, the potential for health effects also increases, although exceedance of the RfD does not predict a specific disease. Non-carcinogenic hazards are usually assessed by calculating a HQ for each chemical exposure by each exposure pathway, as follows:

$$HQ = CDI/RfD$$

where:
HQ = Hazard quotient,
CDI = Chronic daily intake, and
RfD = Reference dose (mg/kg-day)

HQs are summed across all chemical and all exposure pathways to obtain an HI. If the HI is 1 or less, adverse non-cancer health effects are unlikely to occur. If the HI exceeds 1, consideration is given to separating the chemicals into groups based on effects on common target organs/systems. If the HIs for the groups of chemicals are 1 or less, then adverse non-cancer health effects on the target organs/systems associated with the specific chemical groups are again unlikely to occur. However, if the HI for a particular target organ/system is greater than 1, adverse non-cancer health effects may occur. An HQ or an HI does not predict any specific disease.

6.1.2.2 Assessment of Carcinogens

In contrast to non-carcinogenic effects for which thresholds are thought to exist, thresholds have not been demonstrated for most carcinogenic effects. Consequently, unless evidence exists that supports a nonlinear low dose extrapolation method, it is assumed that any exposure to a carcinogen entails some finite risk of cancer. However, depending on the potency of a specific carcinogen and the level of exposure, such a risk could be extremely small.

Several mathematical models have been developed to estimate low-dose carcinogenic risks from high-dose cancer bioassays. Unless evidence exists that supports a different low-dose extrapolation model, the EPA generally uses the linearized multi-stage model to estimate toxicity values and the 95% UCL of the slope of the dose-response curve to estimate low-dose SFs (EPA 2005a). The results of this procedure are unlikely to underestimate the actual SFs for humans. SFs are expressed as the inverse of the daily dose per unit body weight ($[mg/kg\text{-}day]^{-1}$). The

IRIS chemical file details the development of the SF along with the weight of evidence for the chemical.

Using SFs, excess lifetime cancer risks associated with each chemical exposure by each pathway can be estimated by:

$$Risk = LADI \times SF$$

where:
LADI = Lifetime average daily intake, and
SF = Slope factor $(mg/kg\text{-}day)^{-1}$.

However, this linear equation is valid only at moderate to low risk levels (i.e., below estimated cancer risks of 1×10^{-2}, a risk of one in a hundred). EPA (1989) recommends that if cancer risk estimates from the linear low-dose model exceed 1×10^{-2}, then an alternate calculation, the one-hit equations, are recommended to be used instead. The one-hit equation for high carcinogenic risk levels is:

$$Risk = 1 - e(-LADI \times SF)$$

where:
e = The base of natural logarithms.

The separate cancer risks are summed across chemicals and exposure pathways that apply to a given receptor group to obtain the total excess lifetime cancer risk for that group.

6.1.2.3 Dermal Route Reference Doses and Slope Factors

Dermal exposures are calculated on an absorbed dose basis (the amount of a substance that is absorbed through the skin and circulates throughout the body), whereas most oral RfDs and SFs are based on the dose administered by the oral route rather than the dose absorbed from the gastrointestinal tract and distributed throughout the body. Therefore, if substantially less than 100% of the oral dose of a substance is actually absorbed from the gastrointestinal tract, it is necessary to adjust oral RfDs and SFs to account for this incomplete oral absorption to obtain absorbed dose RfDs and SFs that are appropriate for use with the absorbed doses that result from dermal exposure (EPA 2004). This adjustment is made by multiplying oral RfDs and dividing oral SFs by the oral absorption fraction. The oral absorption factors (fractions) used to make this adjustment for each COPC are obtained from the EPA RAGS Part E document (EPA 2004) and are included in the toxicity worksheets (RAGS Part D, Tables 5.1 and 6.1) in the exposure and risk calculation in Appendix B, along with the resulting dermal route RfDs and SFs that are adjusted to reflect GI absorption.

6.1.2.4 Route-to-Route Extrapolation of Reference Doses and Slope Factors

Oral RfDs and SFs may be used to evaluate inhalation route exposures (except in the case of exposure point effects) if inhalation RfDs and SFs are not available. RAGS Part F (EPA 2009) does not generally recommend conducting route-to-route extrapolations to develop inhalation values. Determinations regarding route to route extrapolations are made in the toxicity assessments including those conducted by IRIS.

6.1.3 Assessment of Inhalation Exposures

The EPA assesses exposures to airborne contaminants using the airborne concentrations directly rather than calculating a daily intake rate. The methodology is described in RAGS Part F (EPA 2009) and is consistent with EPA's Inhalation Dosimetry Methodology. The methodology uses RfCs to assess non-cancer effects and IURs to assess carcinogenic effects.

Non-carcinogens

For non-carcinogens:

$$RfC = NOAEL_{[HEC]}/(UF)$$

where:

RfC (mg/m^3) = Reference concentration

$NOAEL_{[HEC]}$ (mg/m^3) = The NOAEL or analogous exposure level obtained with an alternate approach, dosimetrically adjusted to a human equivalent concentration (HEC); and

UF = Uncertainty factor(s) applied to account for the extrapolations required from the characteristics of the experimental regimen.

An HEC is adjusted from animal toxicity data to take into account physiological differences between humans and the test species.

Exposure concentrations are calculated as follows:

For acute exposures to non-carcinogens:

$$EC = CA$$

where:

EC ($\mu g/m^3$) = Exposure concentration

CA ($\mu g/m^3$) = Contaminant concentration in air

and for subchronic or chronic exposures to non-carcinogens:

$$EC = (CA \times ET \times EF \times ED)/AT$$

where:
EC ($\mu g/m^3$) = Exposure concentration
CA ($\mu g/m^3$) = Contaminant concentration in air
ET (hours/day) = Exposure time
EF (days/year) = Exposure frequency
ED (years) = Exposure duration
AT (ED in years x 365 days/year x 24 hours/day) = Averaging time

Note: If the duration of the exposure period is less than one year, the units in the above equation can be changed to the following: EF (days/week); ED (weeks/exposure period); and AT (hours/exposure period) (EPA 2009).

The HQ for the inhalation pathway can be calculated with the following general equation:

$$HQ = EC/(\text{Toxicity Value} \times 1{,}000\ \mu g/mg)$$

where:
HQ (unitless) = Hazard quotient
EC ($\mu g/m^3$) = Exposure concentration
Toxicity Value (mg/m^3) = Inhalation toxicity value (e.g., RfC) that is appropriate for the exposure scenario (acute, subchronic, or chronic).

Carcinogens

For exposure to carcinogens:

$$IUR = 0.1/LEC_{10[HEC]}$$

where:
IUR $(\mu g/m^3)^{-1}$ = Inhalation unit risk and
$LEC_{10[HEC]}$ ($\mu g/m^3$) = the lowest effective concentration using a 10% response level, dosimetrically adjusted to an HEC.

Exposure concentrations (EC) for assessing cancer risks are given by

$$EC = (CA \times ET \times EF \times ED)/AT$$

where:
EC ($\mu g/m^3$) = Exposure concentration
CA ($\mu g/m^3$) = Contaminant concentration in air
ET (hours/day) = Exposure time
EF (days/year) = Exposure frequency
ED (years) = Exposure duration
AT (lifetime in years x 365 days/year x 24 hours/day) = Averaging time

ECs for mutagenic carcinogens are calculated for each age group separately and then summed (see Section 6.3).

The excess cancer risk for a receptor exposed via the inhalation pathway can be estimated with the following equation:

$$\text{Risk} = \text{IUR} \times \text{EC}$$

where:
IUR $(\mu g/m^3)^{-1}$ = Inhalation unit risk and
EC $(\mu g/m^3)$ = Exposure concentration.

6.2 Quantitative Toxicity Values

The toxicological information used in this assessment is based on non-carcinogenic (threshold) and carcinogenic (non-threshold) effects caused by exposure to chemicals that have been observed in humans and/or laboratory animals associated with a particular dose of that compound. The toxicological information is used in conjunction with the exposure assessment to characterize risk associated with each COPC via the identified exposure pathways. Chemical-specific toxicological parameters (i.e., RfDs, RfCs, SFs, and IURs) were obtained from established EPA sources with the following priority (EPA 2003b):

- **Tier 1.** IRIS (EPA 2015a);
- **Tier 2.** Provisional Peer Reviewed Toxicity Values (PPRTVs) from EPA's Superfund Health Risk Technical Support Center (STSC) at the National Center for Environmental Assessment; and
- **Tier 3.** Additional EPA and non-EPA sources of toxicity information. Priority should be given to those sources of information that are the most current, the basis for which is transparent and publicly available, and which have been peer reviewed.

The IRIS remains in the Tier 1 source in the recommended hierarchy as the generally preferred source of human health toxicity values. IRIS is an electronic database containing the most current descriptive and quantitative EPA regulatory toxicity information for various chemicals. Files maintained in IRIS contain information related to non-carcinogenic and carcinogenic health effects of chemicals. IRIS represents an Agency consensus toxicity database.

Tier 2 is EPA's PPRTVs. Generally, PPRTVs are derived for one of two reasons. First, the National Center for Environmental Assessment may nominate a chemical for evaluation or, secondly, regional Superfund offices may request a PPRTV for chemicals lacking a relevant IRIS value. The STSC uses the same methodologies to derive PPRTVs including EPA guidelines, guidance, and peer-review comparable to the procedures used by the IRIS program and consistent with EPA's peer-review process.

Tier 3 includes other sources of information. Priority is given to sources that provide toxicity information based on similar methods and procedures as those used for Tier 1 and Tier 2 and contain toxicity values that are peer reviewed, are available to the public, and are transparent about the methods and processes used to develop the toxicity values. Additional sources may be identified for Tier 3. Toxicity values that fall within the third tier in the hierarchy include, but need not be limited to, the following sources:

- The California Environmental Protection Agency (Cal EPA) toxicity values are peer reviewed and address both cancer and non-cancer effects (Cal EPA 2015). Cal EPA toxicity values are available on the Cal EPA website at http://oehha.ca.gov/tcdb/index.asp.
- The Agency for Toxic Substances and Disease Registry (ATSDR) minimal risk levels (MRLs) are estimates of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse non-cancer health effects over a specified duration of exposure. The ATSDR MRLs are peer reviewed and are available at http://www.atsdr.cdc.gov/mrls/index.html (ATSDR 2015).
- The Health Effects Assessment Summary Tables (HEAST) (EPA 1997) are Tier 3 values. The HEAST values are available at: http://cfpub.epa.gov/ncea/risk/recordisplay.cfm?deid=2877&CFID=48852498&CFTOKEN=98990701.

Toxicity values were selected following the Office of Solid Waste and Emergency Response (OSWER) directive on toxicity hierarchy (EPA 2003b). These values, along with associated metadata, e.g., toxicity values, health effects, and sources of toxicity information, are provided in Appendix B, Tables 5.1 through 6.2.

6.3 Early Life Stage Adjustments

The EPA has identified several chemicals with an MMOA, which would be expected to cause changes to DNA and exhibit a greater effect with exposure early in life rather than later in life (EPA 2005b). The EPA has adopted the following approach for adjusting cancer potency estimates (SFs) for exposures that occur early in life to compensate for these differences in effective potencies:

- For exposures before two years of age (i.e., spanning a two-year time interval from birth to a child's second birthday), a 10-fold adjustment.
- For exposures between two and less than 16 years of age (i.e., spanning a 14-year time interval from a child's second birthday up until their 16th birthday), a three-fold adjustment.
- For exposures after turning 16 years of age, no adjustment.

The EPA notes that it is important for the risk assessor to consider life stage differences in both exposure and dose-response when assessing cancer risk resulting from early-life exposures. The EPA's recent Supplemental Guidance for As-

sessing Susceptibility from Early-Life Exposure to Carcinogens (EPA 2005b) recommends an integrative approach that can be used to assess total lifetime risk resulting from lifetime or less-than-lifetime exposure during a specific portion of a lifetime. The general approach recommended by the EPA is to calculate the risk for each portion of a lifetime having a different adjustment factor, i.e., age 0 to less than two years, age two to less than 16 years, and 16 years and above, then sum the risks for all relevant age intervals. When exposure also differs with age, as it often does, the age intervals should be further subdivided to account for significant differences in exposure within these age intervals. The general equation for calculating the cancer risk for a particular age interval is as follows:

$$\text{Risk} = \text{SF} \times \Sigma_i^j(\text{ADAF}^{i\text{-}j} \times \text{CDI}^{i\text{-}j} \times \text{ED}^{i\text{-}j}) \times 1/\text{AT}^c$$

where:
SF = Slope factor
$\text{ADAF}^{i\text{-}j}$ = Age Dependent Adjustment Factor for age interval
$\text{CDI}^{i\text{-}j}$ = Chronic Daily Intake during age interval
$\text{ED}^{i\text{-}j}$ = Duration of age interval
AT^c = Averaging time for carcinogenic effects (70-year lifetime)
i = Age at the beginning of the interval
j = Age at the end of the interval.

Risks are then summed across all relevant age intervals for a particular receptor to calculate a total cancer risk. Chemicals with an MMOA identified as COPCs for Eighteenmile Creek OU2 include the PAHs and hexavalent chromium.

Mutagenic chemicals identified as COPCs for Eighteenmile Creek OU2 include the carcinogenic PAHs and hexavalent chromium.

6.4 Lead

Lead is evaluated consistent with recommendations from the Lead Technical Review Workgroup (http://www.epa.gov/superfund/lead-superfund-sites-technical-assistance). Concentrations in surface water were compared with the lead action level of 0.015 mg/L; and sediment and soil concentrations were compared with 400 parts per million (ppm) for young children (six years and younger) and 800 ppm for adults. The evaluation of lead is based on the average lead concentration in soils or sediment.

The value of 800 ppm is based on the ALM and model used to evaluate hazards associated with nonresidential adult exposures to lead in soil (or sediment for this assessment). The model focused on estimating fetal blood concentrations in women exposed to lead in soil (EPA 2003a, 2003c). It was used in this risk evaluation to be protective of potentially sensitive receptors within the industrial worker population and recreational population that may be exposed to overflow sediment. Because the lead model is a probabilistic model, several of the EPA default parameters are based on central tendency (i.e., average) values (EPA

2003d). Therefore, the arithmetic means for sediment concentration served as the input value for the soil (sediment) concentrations.

ALM spreadsheets provided by the EPA (version date June 21, 2009) were used to calculate blood lead concentrations for the industrial worker where the screening level of 800 ppm was exceeded. The model results are expressed as the predicted geometric mean blood lead level for adults (that is, women of child-bearing age) and the corresponding 95th percentile fetal blood lead concentrations and the percent of the population potentially experiencing concentrations above 10 micrograms per deciliter (µg/dL), below which adverse manifestations are not expected.

The Integrated Exposure Uptake Biokinetic Model for Lead in Children (IEUBK) was used to evaluate potential exposures to lead by children during recreational activities. The IEUBK Model is designed to model exposure from lead in air, water, soil, dust, diet, and paint and other sources with pharmacokinetic modeling to predict blood lead levels in children six months to seven years old.

6.5 Thallium Soluble Salts

Thallium soluble salts were reported in the data sheets for chemicals analyzed at the Site. The PPRTVs available for this chemical are screening level toxicity values. This designation indicates that the toxicity information may be used in the screening of chemicals but not in the quantification of the risks. In this case, the chemical was identified as a COPC but the risks were not quantified and the results are discussed in Section 8, Uncertainty Assessment.

6.6 PCBs

The class of chemicals known as PCBs consists of 209 individual congeners. Aroclors are commercial mixtures of PCB congeners that contain many of the individual congeners in varying ratios. When Aroclors are released into the environment, the original congener composition of the PCB mixture changes due to differential fate and transport processes. This can result in enrichment of the more toxic 12 dioxin-like PCB congeners in the congener mixture present in environmental media. If this happens, the congener mixture present in a sample may be more toxic than the commercial Aroclor mixture it resembles. Chemical analyses of environmental samples often report PCB concentrations in terms of the Aroclor mixture(s) they most closely resemble. At this Site, PCBs were measured both as Aroclors and as individual congeners for a limited number of samples. In most of the samples available for the risk assessment, PCBs were measured only as Aroclors.

Consistent with EPA's 1996 assessment of PCB cancer toxicity titled "PCBs: Cancer Dose-Response Assessment and Application to Environmental Mixtures," cancer risks and non-cancer hazards were evaluated based on congeners where data are available (EPA 1996). The congener analysis will follow the example provided in the guidance document (Example 3) and, where appropriate, the EPA

Advanced Kaplan-Meier TEQ Calculator was used to evaluate non-detects in the development of the TEQ.

The assessment calculated a total EPC for the dioxin-like PCBs and a separate EPC for non-dioxin-like PCBs. Consistent with the guidance, risks and non-cancer hazards were calculated based on the dioxin-like and non-dioxin-like PCBs and the results evaluated to determine which has the greater risks or hazards. If the risks or hazards for the dioxin-like PCBs are greater than those for the non-dioxin-like PCBs, the individual congeners were evaluated to determine the relative percentage of PCB-126, the most potent of the dioxin-like PCBs, based on TEFs, among the total TEQ.

7 Risk Characterization

The risk characterization step involves combining exposure estimates with toxicity information to generate incremental lifetime cancer risks and non-cancer hazards for each of the human exposure scenarios evaluated in the HHRA. This section presents and discusses the cancer risks and non-cancer health hazards from the analysis for each exposure area and receptor. Risk and hazard estimates for the RME case will be described for all exposure areas and receptor groups. If either the risk or hazard estimates exceed generally acceptable levels, the corresponding estimates for the CTE case are also discussed.

7.1 Cancer Assessment

Cancer risks are expressed as the increased risk of developing cancer as a result of a given exposure to a given chemical. These "excess" cancer risks are summed across all carcinogenic chemicals and all exposure pathways for each receptor category. Cancer risks less than one in a million (expressed as 1×10^{-6}) are not considered further in the assessment. Risks greater than 1×10^{-4} are further evaluated for remedial action (EPA 1988, 1991b). Excess cancer risks between 1×10^{-4} (one in 10,000) and 1×10^{-6} (one in 1,000,000) are generally evaluated on a case-by-case basis, and EPA may determine that risks in this range warrant remedial action or that they do not require remedial action. The excess risk of cancer from ingestion and dermal exposure to a chemical is calculated as follows (EPA 1989):

$$\text{Excess cancer risk} = 1 - \exp(-\text{DIL} \times \text{SF})$$

where:
exp = the exponential
DIL = Daily intake, averaged over a lifetime (mg/kg-day)
SF = Slope factor $(\text{mg/kg-day})^{-1}$

In most cases (except when the product of DIL x SF is larger than about 0.01), this equation may be accurately approximated by the following:

$$\text{Excess cancer risk} = \text{DI}_L \times \text{SF}$$

7.1.1 Evaluation of Carcinogens with a Mutagenic Mode of Action

For chemicals identified as having a MMOA for carcinogenesis, cancer risks were estimated in accordance with the *Supplemental Guidance for Assessing Suscepti-*

bility from Early-Life Exposure to Carcinogens (EPA 2005b). In brief, because chemical-specific data are not available for these chemicals, the default age-dependent adjustment factors (ADAFs) were applied to the non-age-dependent CSF to account for differences in potency that may occur from exposure during early life (up to age 16 years). The supplemental guidance further indicates that any grouping of ages in the exposure assessment will need to be integrated with the ADAF age groupings to derive age group-specific risk estimates (EPA 2005b).

Of the COPCs identified in this assessment, PAHs and Cr(VI) are the only chemicals identified as having a mutagenic mode of action. Therefore, cancer risk for a young child (younger than six years) and an adolescent (ages six to younger than 16 years) exposed to PAHs and Cr(VI) in soils were calculated to account for early life susceptibility as follows:

$$Risk_i = C \times HIF_i \times SF \times ADAF_i$$

where:
$Risk_i$ = Excess cancer risk for age interval 'i'
C = Concentration of chemical in the exposure medium (e.g., milligrams per kilogram [mg/kg] for sediment)
HIF_i = Human intake factor for the exposure medium for age interval 'i' (e.g., kg/kg-day for sediment)
SF = Cancer slope factor $(mg/kg\text{-}day)^{-1}$
$ADAF_i$ = Age-dependent adjustment factor for age interval 'i' (unitless).

The ADAFs recommended in EPA (2005b) were applied to the different age intervals as:

Age Interval (yrs)	ADAF
0 (birth) - < 2	10
2 - < 16	3
16+	1

Age-weighted average (AWA) ADAFs were calculated for each receptor group as follows and are presented below.

$$AWA\ ADAF = \frac{(ED_{0-<2} \times 10) + (ED_{2-<16} \times 3) + (ED_{16+} \times 1)}{(ED_{0-<2} + ED_{2-<16} + ED_{16+})}$$

where:
$ED_{0-<2}$ = Years receptor spends in the 0 - <2 age range,
$ED_{2-<16}$ = Years receptor spends in the 2 - <16 age range, and
ED_{16+} = Years receptor spends in the 16 and greater age range.

Age Interval (yrs)	AWA ADAF
0 (birth) - < 6	5.3
6 - < 18	2.7
18+	1

For chemicals with a MMOA, the chemical's standard SF was multiplied by the receptor's AWA ADAF to obtain the receptor-specific SFs used to estimate cancer risks for that receptor. The following chemicals exhibit a MMOA: chromium IV; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene (TCE). The risk for TCE was evaluated for each of the mutagenic cancer risks associated with kidney cancer and the non-mutagenic cancer risks associated with non-Hodgkin lymphoma (NHL) and liver cancer. The kidney lifetime oral slope factor of 9.3×10^{-3} mg/kg/day was subtracted from the total TCE lifetime slope factor of 4.6×10^{-2} mg/kg/day to calculate the slope factor associated with NHL and liver cancer (3.7×10^{-2} mg/kg/day) (EPA 2011). The TCE unit risk associated to NHL and liver cancer due to inhalation was calculated in a similar manner. The total lifetime unit risk for TCE in air is 4.1×10^{-6} µg/m^3 and the kidney lifetime unit risk is 1×10^{-6} for a calculated unit risk of 3.1×10^{-6} for NHL and liver cancer (EPA 2011). Because cancer risk to the kidney is considered mutagenic, an AWA ADAF was applied to the slope factor associated with the kidney. Each risk is presented separately in Series 7 tables for groundwater, and the cancer risks are summed together and presented in the Series 9 tables.

7.2 Non-Cancer Assessment

The potential for non-cancer effects is evaluated by comparing the estimated exposure intake or dose for a receptor over a specified time period to a reference dose that represents the threshold exposure below which it is unlikely for even sensitive populations to experience adverse health effects (EPA 1989). This ratio of estimated exposure dose to RfD is the HQ. If the HQ for a chemical is equal to or less than 1, there is less concern about non-cancer health effects. If the HQ exceeds 1, there is some possibility that non-cancer effects may occur. Non-cancer HQs for each chemical are calculated as described below (EPA 1989):

$$HQ = CDI/RfD$$

where:
CDI = Chronic daily intake (mg/kg-day)
RfD = Reference dose (mg/kg-day)

Exposure to multiple chemicals and multiple pathways were evaluated by summing the non-cancer HIs across pathways and chemicals (EPA 1989, 2000b). Pathways with an HI greater than the goal of protection of an HI = 1 were further evaluated based on health effects to determine if the health effects from multiple chemicals with the same health effect exceeded an HI = 1.

7.3 Combining Risks across Chemicals and Exposure Pathways

In this HHRA, the cancer risks and HQs for the CTE and RME receptors are summed across all pathways and all chemicals to develop total cancer risks and an HI for non-cancer health effects. These results are provided in Section 7.6 for the exposure areas evaluated in Eighteenmile Creek OU2. Appendix B includes the RAGS D Series 7, 9, and 10 tables for individual exposure areas, including specific chemical and exposure pathway calculations. For non-cancer effects, an initial estimate of the total non-cancer hazard is derived simply by summing the HQ values across all chemicals to calculate an HI. If the HI is greater than 1, it may be appropriate to examine individual chemical HQs and only sum HQs for COPCs that affect the same target tissue or organ system (e.g., the liver). This approach provides HIs for chemicals that affect the same target organs and have the same mode of action, consistent with EPA (1989) guidance. Target-organ-specific HIs are presented in Appendix B - RAGS D Series 7, 9, and 10 for the individual properties and for those chemicals with readily available target organ information.

7.4 Lead

No RfD or RfC has been established for lead. Instead, the toxicity of lead is evaluated by the EPA based on blood-lead uptake using a physiologically based pharmacokinetic model, IEUBK Model. The IEUBK model is used to evaluate lead exposure to young children, birth to seven years of age, mainly from soil and house dust in a residential setting, but the model can also consider other sources of exposure to lead in food and drinking water, and from sources outside the home. In order to manage young children's exposure to lead, EPA seeks to limit exposure to soil lead levels such that a typical child or group of similarly exposed children would have an estimated risk of no more than 5% of exceeding a 10 µg/dL blood lead level. Based on the IEUBK model, lead concentrations less than 400 milligrams per kilogram (mg/kg) in soil and house dust are considered adequately protective of human health under residential land-use conditions (EPA 1994, 1998b).

An interim approach to assessing risks associated with adult exposures to lead was developed by EPA's Technical Review Workgroup for Lead and updated in 2005 (EPA 2003b). This methodology is a variation of the IEUBK model. The ALM is used to evaluate risks associated with nonresidential adult exposures to lead in soil (or sediment for this assessment). The model focuses on estimating fetal blood concentrations in women exposed to lead in soil (EPA 2003b). It was used in this risk evaluation to be protective of potentially sensitive receptors within the industrial worker population and recreational population that may be exposed to lead in soil or sediment. Because the lead model is a probabilistic model, several of the EPA default parameters are based on central tendency (i.e., average) values (EPA 2003b). Therefore, the arithmetic means for soil concentration served as the input value for the soil (sediment) concentrations. Lead concentra-

tions less than 800 mg/kg in soil and sediment are considered adequately protective of human health under industrial land-use conditions.

In 2012, a Report of the Advisory Committee on Childhood Lead Poisoning Prevention of the Centers for Disease Control and Prevention (CDC) made the following recommendation subsequently adopted by the CDC (CDC 2012):

- Until 2012, children were identified as having a blood lead "level of concern" if the test result is 10 or more µg/dL of lead in blood. The CDC is no longer using the term "level of concern" and is instead using the reference value to identify children who have been exposed to lead and who require case management.
- Experts now use a reference level of 5 µg/dL to identify children with blood lead levels that are much higher than most children's levels. This new level is based on the U.S. population of children ages one to five years who are in the highest 2.5% of children when tested for lead in their blood.

These recommendations are under review by EPA.

7.5 Thallium Soluble Salts

Thallium soluble salts were reported in the data sheets for chemicals analyzed at the Site. The PPRTVs available for this chemical are Screening Level Toxicity Values. This designation indicates that the toxicity information may be used in the screening of chemicals but not in the quantification of the risks. In this case, the chemical was identified as a COPC but the risks were not quantified.

7.6 Risk Assessment Results

The results of the risk characterization are presented in this section for each exposure area. Risk and hazard estimates are provided for each receptor group and age range under both the RME and CTE scenarios.

The cancer risk estimates refer to the overall excess risk of a cancer occurring during a lifetime attributable to the concentrations of COPCs measured in the environmental media to which exposures might occur. The cancer risk estimates are calculated on a lifetime basis so are additive for adults and children. For the visitor/trespasser and recreational user receptors, the assessment was performed for young child (birth to six years of age), adolescents (seven to <18 years of age), and adults (18 years and older). Consistent with guidance that provides exposure scenarios for a child exposed for six years and an adult exposed for 20 years, the total cancer risks were calculated for the lifetime exposure of 26 years by summing the young child and adult risks. Exposures to the adolescent were also evaluated, but not combined with the risks for the adult and child. The non-cancer hazard estimates presented below are the overall estimates used for screening purposes. The non-cancer hazards are presented for the individual age groups; but the HIs are not additive across the age groups.

A summary of risks from each pathway and detailed estimates for particular tissues and organs are provided in the Series 9 risk calculation tables in Appendix B. A summary of total risks and hazards for each chemical with cancer risks greater than 1.0×10^{-4} and non-cancer hazards greater than 1 are provided in the Series 10 tables in Appendix B. Chemicals with an HI greater than 1 for the same organ are listed in the Table 10 series. These chemicals are considered to drive the risk for each scenario. For the PCBs, if one Aroclor exceeded either criteria, all Aroclors were included in the Series 10 tables. In addition, if one PAH or a combination of PAHs exceeded the risk range they were maintained in the Table 10 series. The main contributors to the cancer risks and non-cancer hazards are described below.

As shown below, a number of the risk and hazard estimates for specific chemicals and exposure pathways exceed the risk range established under the NCP of a cancer risk of 1×10^{-6} or 1 in 1,000,000 to 1×10^{-4} or 1 in 10,000 and/or the goal of protection of a non-cancer HQ or HI = 1 (EPA 1988, 1991b).

7.6.1 Creek Channel

The estimated excess cancer risks and non-cancer hazards calculated for the Eighteenmile Creek Channel exposure area, which consists of the Creek banks throughout OU2, are summarized in Table 7-1 and described below. Two groups of receptors, recreational users and anglers, may spend some of their time at OU2 along the banks of the Creek.

Recreational Users – Soil and Sediment

Young Child. The total cancer risk to the RME young child recreational users is 2.2×10^{-5} and the non-cancer HI is 0.6. The cancer risks are within the risk range and the non-cancer HI is less than the goal of protection of an HI = 1. The main chemical contributors to the cancer risks are PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthene, and dibenz(a,h)anthracene) and PCBs. The total PAH risk is 2.0×10^{-5}, and the total PCB risk is 1.8×10^{-6}. The non-cancer HI is 0.6, which is less than the goal of protection. PCBs are the main contributor to the non-cancer risk with an HI of 0.5.

The total cancer risk to the CTE young child recreational users is 5.5×10^{-6}, which is within the acceptable risk range. The non-cancer HI is 0.2, which is below the goal of protection of an HI = 1.

Adolescent. The total cancer risk to the RME adolescent recreational users is 2.6×10^{-5} and the non-cancer HI is 0.6. The main chemical contributors to the cancer risks are PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, and dibenzo(a,h)anthracene). The cancer risks are within the risk range and the non-cancer HI is less than the goal of protection of an HI = 1. The total PAH risk is 2.1×10^{-5}, and the total PCB risk is 4.1×10^{-6}.

The total cancer risk to the CTE adolescent recreational users is 3.9 x 10^{-6}, which is within the acceptable risk range. The non-cancer HI is 0.3, which is below the goal of protection of an HI = 1.

Adult. The total cancer risk to the RME adult recreational users is 3.7 x 10^{-6}, which is within the acceptable risk range. The total PAH risk is 2.3 x 10^{-6} and the total PCB risk is 1.1 x 10^{-6}. The non-cancer HI is 0.1, which is less than the goal of protection of an HI = 1.

The total cancer risk to the CTE adult recreational users is 2.6 x 10^{-7} which is below the risk range, and the non-cancer HI is 0.04, which is below the goal of protection of an HI = 1.

Adult and Young Child Recreational Users. The total cancer risk to the RME adult and young child is 2.6 x 10^{-5}. The total cancer risk to the CTE adult and young child is 9.7 x 10^{-6}. The main chemical contributors to the cancer risks are PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthene, and dibenzo(a,h)anthracene) with minor contributions from PCBs. The non-cancer HIs are not additive across the age groups.

Anglers – Soil and Sediment and Fish Tissue Ingestion

Young Child. The total cancer risk to the RME young child angler is 8.6 x 10-^{5} with a risk of 6.4 x 10^{-5} from consuming fish and 2.2 x 10^{-5} from exposure to soil and sediment. The total risk within the risk range. The total non-cancer HI is 16 with HI = 14.9 from consuming fish and HI = 0.6 from exposure to soil and sediment. The non-cancer HI exceeds the goal of protection of an HI = 1. The main chemical contributors to the non-cancer HI are PCBs and mercury from fish ingestion. The total immune system HI = 11.5, due to PCBs, and the total central nervous system (CNS) HI = 2.7, which is primarily due to mercury in fish. Both of these specific organ system HIs exceed the goal of protection of HI = 1, and all other organ-specific HIs are less than 1.

The total cancer risk for CTE young child anglers is 9.8 x 10^{-6}, which is within the acceptable risk range. The total non-cancer HI for the CTE young child angler is 1.7 which exceeds the goal of protection of an HI = 1. The organ-specific HI for PCBs impacts to the immune system is HI = 1.1. Mercury non-cancers HI is below the goal of protection of an HI = 1.

Adolescent. The total cancer risk to the RME adolescent angler is 1.1 x 10^{-4} which exceeds the risk range and the non-cancer HI is 10, which exceeds the goal of protection of HI = 1. The main chemical contributors to the cancer risks are PCBs from ingestion of fish tissue and exposure to soils and sediment.. The total PCB risk is 5.2 x 10^{-5}. The main chemical contributors to the non-cancer HI are mercury and PCBs from ingestion of fish. The total immune system HI is 7.6 primarily due to PCBs, and the total CNS HI is 1.7, which is primarily due to

mercury. Both of these specific organ system HIs exceed the goal of protection of HI = 1, and all other organ-specific HIs are less than 1.

The total cancer risk for CTE adolescent anglers is 6.6×10^{-6} which is within the acceptable risk range and the non-cancer HI is 1.2, which exceeds the goal of protection of HI = 1. The organ-specific HIs for PCBs impacts to the immune system is HI = 0.9.

Adult. The total cancer risk to the RME adult angler is 1.2×10^{-4} which exceeds the risk range and the non-cancer HI is 8.4, which exceeds the goal of protection of HI = 1. The main chemical contributors to the cancer risks are PCBs from ingestion of fish tissue. The total PCB risk is 7.2×10^{-5}. The main chemical contributors to the non-cancer HI are mercury and PCBs from ingestion of fish tissue. The total immune system HI is 6.3 primarily due to PCBs, and the total CNS HI is 1.5, which is primarily due to mercury in fish. Both of these specific organ system HIs exceed the goal of protection of HI = 1, and all other organ-specific HIs associated with other chemicals are less than the goal of protection of an HI = 1.

The total cancer risk for CTE adult anglers is 2.7×10^{-6} and the non-cancer HI = 0.9, which are within the acceptable risk range and below the goal of protection.

Adult and Young Child Anglers. The total cancer risk to the RME adult and young child anglers is 2.1×10^{-4} which exceeds the risk range. The main chemical contributors to the cancer risks are PCBs. Potential effects on the immune system are due to PCBs from fish ingestion, and potential effects on the CNS are due to mercury from fish ingestion. The total cancer risk to the CTE adult and young child angler is 1.3×10^{-5}. The non-cancer HIs are not additive across the age groups.

Note that total arsenic was measured in fish tissue, and for assessment purposes, this arsenic was assumed to be inorganic. Organo-arsenic compounds, which are less toxic than inorganic arsenic, are commonly found in fish tissue. The standard analytical method used to measure arsenic does not distinguish between these two forms of arsenic, so the entire amount was assumed to be inorganic arsenic. This assumption may potentially overestimate risks. As with arsenic, total mercury was measured in fish tissue. Mercury in aquatic sediment and fish tissue is often found partially in the form of methyl mercury, which is somewhat more toxic than elemental mercury or inorganic mercury compounds, such as mercuric chloride. Therefore, for assessment purposes, the mercury in fish tissue was assumed to be methyl mercury.

Evaluation of Lead

Exposure to lead in sediment was evaluated based on soil concentrations. As discussed in Section 7.4, 400 mg/kg lead in soil is considered an appropriate screening level for unrestricted residential contact with soil, and 800 mg/kg is considered an appropriate screening level for soil commercial/industrial (non-residential) sites. For the Creek Channel exposure area, the average concentration of lead in soils at depths of 0 to 2 feet is 827 mg/kg, which exceeds both the residential and commercial/industrial screening levels.

Table 7-1 Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 Creek Channel Exposure Area

Receptor	Exposure Medium	Age	Tables	Reasonable Maximum Exposure		Central Tendency Exposure	
				Excess Cancer Risk	Non-cancer Hazard Index	Excess Cancer Risk	Non-cancer Hazard Index
Recreational User	Soil/ Sediment	Young Child	9.1a RME/CTE	2.2E-05	0.6	5.5E-06	0.2
		Adolescent	9.1b RME/CTE	2.6E-05	0.6	3.9E-06	0.3
		Adult	9.1c RME/CTE	3.7E-06	0.1	2.6E-07	0.04
Recreational User Totals: Young Child + Adult				2.6E-05	NA*	9.7E-06	NA*
Angler	Soil/ Sediment	Young Child	9.2a RME/CTE	2.2E-05	0.6	5.5E-06	0.2
		Adolescent	9.2b RME/CTE	2.6E-05	0.6	3.85E-06	0.3
		Adult	9.2c RME/CTE	3.7E-06	0.1	2.6E-07	0.04
Angler	Fish Tissue	Young Child	9.2a RME/CTE	6.4E-05	**14.9**	4.3E-06	**1.4**
		Adolescent	9.2b RME/CTE	8.0E-05	**9.5**	2.8E-06	0.9
		Adult	9.2c RME/CTE	**1.2E-04**	**8.4**	2.5E-06	0.8
Angler Totals: Young Child				8.6E-05	**15.6**	9.8E-06	**1.7**
Angler Totals: Adolescent				**1.1E-04**	**10.1**	6.6E-06	**1.2**
Angler Totals: Adult				**1.2E-04**	**8.5**	2.7E-06	0.9
Angler Totals: Young Child + Adult				**2.1E-04**	NA*	1.3E-05	NA*

NA* = Not Applicable; non-cancer HIs are not additive across age groups.

Values shown in **Bold** exceed EPA's risk range (cancer risk = $1x10^{-4}$) and hazard index = 1.

Due to rounding, the values presented as the total in the summary table may differ slightly from those presented in the Appendix B Table 7 and 9's.

7.6.2 Former Flintkote Plant Property

The estimated cancer risk and non-cancer hazards calculated for the Former Flintkote Plant Property exposure area are summarized in Table 7-2 and described below.

Visitor/Trespasser

Young Child. The total cancer risk to the RME young child visitor/trespasser is 1.5×10^{-4} and the non-cancer HI is 3.9. The cancer risk exceeds the risk range and the non-cancer HI exceeds the goal of protection of an HI = 1. The main chemical contributors to the cancer risks are arsenic, PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenz(a,h)anthracene) and PCBs. The total PAH risk is 1.4×10^{-4} and the total PCB risk is 1.1×10^{-5}. The main chemical contributors to the non-cancer hazard are PCBs with an HI = 3.1, which is associated with potential effects on the immune system.

The total cancer risk to the CTE young child visitor/trespasser is 3.0×10^{-5} and HI for non-cancer is 1.2. The cancer risk is within the acceptable range; however, the HI slightly exceeds the goal of protection of HI = 1.

Adolescent. The total cancer risk to the RME adolescent visitor/trespasser is 9.0×10^{-5} and the non-cancer HI is 2.1. The cancer risk is within the risk range but the non-cancer HI exceeds the goal of protection of an HI = 1. The main chemical contributors to the cancer risks are arsenic, PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, and dibenz(a,h)anthracene) and PCBs. The total PAH risk is 7.6×10^{-5} and the total PCB risk is 1.3×10^{-5}. The HI exceeds the goal of protection of an HI = 1. The main chemical contributors to the non-cancer hazard are PCBs with an HI = 1.8, which is associated with potential effects on the immune system.

The total cancer risk to the CTE young child visitor/trespasser is 1.2×10^{-5} and the non-cancer HI is 0.8. The cancer risk is within the acceptable risk range and the non-cancer hazard is below the goal of protection of HI = 1.

Adult. The total cancer risk to the RME adolescent visitor/trespasser is 1.4×10^{-5} and the non-cancer HI is 0.4. The cancer risk is within the acceptable risk range and the non-cancer hazard is below the goal of protection of HI = 1. The main chemical contributors to the cancer risks are PAHs (benzo(b)fluoranthene) and PCBs. The total PAH risk is 9.4×10^{-6} and the total PCB risk is 4.0×10^{-6}. The main chemical contributors to the non-cancer hazard are PCBs. The total non-cancer hazard from PCBs is 0.4. All of the organ-specific hazards are less than the goal of protection of an HI = 1.

The total cancer risk to the CTE adult visitor/trespasser is 9.8×10^{-7} and the non-cancer HI is 0.1. The cancer risks are within the acceptable risk range and the HI is below the goal of protection of an HI = 1.

Adult and Child Visitor/Trespasser. The total cancer risks to the RME adult and child is 1.6 x 10^{-4}, which is above the risk range. The total cancer risk to the CTE adult and child is 3.1 x 10^{-5}, which is within the risk range. The non-cancer HIs are not additive across the age groups.

Outdoor Worker

Adult. The total cancer risk to the RME adult outdoor worker is 1.5 x 10^{-4}, which slightly exceeds the risk range, and the non-cancer HI is 3.6 which exceeds the goal or protection of HI = 1. The main chemical contributors to the cancer risks are arsenic, PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene), and PCBs. The total PAH risk is 9.6 x 10^{-5} and the total PCB risk is 4.3 x 10^{-5}. The HI exceeds the goal of protection of an HI = 1, and the main chemical contributors are PCBs. The total non-cancer hazard from PCBs is 2.8, which is associated with potential effects on the immune system.

The total cancer risk to the CTE outdoor worker was 1.6 x 10^{-5} and the non-cancer HI is 1.2. The cancer risk is within the acceptable risk range; however, the HI slightly exceeds the goal of protection of an HI = 1.

Construction Worker

Adult. The total cancer risk to the RME adult construction worker is 7.6 x 10^{-6} and the non-cancer HI is 10. The main chemical contributors to the cancer risks are PAHs and PCBs. The total PAHs risk is 3.4 x 10^{-6}. The total PCB risk is 3.4 x 10^{-6}. The HI exceeds the goal of protection of HI = 1, and the main chemical contributors are antimony and PCBs. The total non-cancer hazard from antimony is 2.3 based on hematological effects and PCBs is 5.8, which is associated with potential effects on the immune system.

The total cancer risk to the CTE adult construction worker is 1.8 x 10^{-6} and the non-cancer HI is 2.54. The cancer risk is within the acceptable range; however, the HI exceeds the goal of protection of HI = 1.

Evaluation of Lead

Exposure to lead in sediment was evaluated based on soil concentrations. As discussed in Section 7.4, 400 mg/kg lead in soil is considered for unrestricted residential contact with soil, and 800 mg/kg is used for soil commercial/industrial locations. For the Former Flintkote Plant Property exposure area, the average concentration of lead in soils at depths of 0 to 2 feet is 1,004 mg/kg and 1,355 mg/kg for the depth of 1 to 10 feet. In both instances the lead concentration exceeds the residential and commercial/industrial levels of 400 mg/kg and 800 mg/kg, respectively.

Vapor Intrusion Associated with Groundwater.
The maximum concentration of VOCs in groundwater were compared to the VISLs in groundwater to evaluate potential need for further vapor intrusion sampling.

The concentrations in groundwater at the Flintkote Plant Property included 2.0 µg/L of chloroform and 200 µg/L of pentachlorophenol. The concentration of chloroform exceeds the screening level of 0.8 µg/L in groundwater associated with a cancer risk of 1×10^{-6}. A comparison value for pentachlorophenol was not available since it is not considered a volatile chemical.

The results of this analysis indicates the need for evaluation of vapor intrusion in the event that a building is constructed on the Site.

Table 7-2 Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 Former Flintkote Plant Property Exposure Area

Receptor	Exposure Medium	Age	Tables	Reasonable Maximum Exposure		Central Tendency Exposure	
				Excess Cancer Risk	Non-cancer Hazard Index	Excess Cancer Risk	Non-cancer Hazard Index
Visitor/ Trespasser	Soil/ Sediment	Young Child	9.3a-RME/CTE	**1.5E-04**	**3.9**	3.0E-05	**1.2**
		Adolescent	9.3b-RME/CTE	9.0E-05	**2.1**	1.2E-05	0.8
		Adult	9.3c-RME/CTE	1.4E-05	0.4	9.8E-07	0.1
Visitor/Trespasser Totals: Young Child + Adult				**1.6E-04**	NA*	3.1E-05	NA*
Outdoor Worker	Soil/ Sediment	Adult	9.4a-RME/CTE	**1.5E-04**	**3.6**	1.6E-05	**1.2**
Construction Worker	Soil/ Sediment	Adult	9.5a-RME/CTE	7.6E-06	**10.3**	1.8E-06	**2.5**

NA* = Not Applicable; non-cancer HIs are not additive across age groups.

Values shown in **Bold** exceed EPA's risk range (cancer risk = $1x10^{-4}$) and hazard index = 1.

Due to rounding, the values presented as the total in the summary table may differ slightly from those presented in the Appendix B Table 7 and 9's.

7.6.3 Upson Park

The estimated excess cancer risks and non-cancer hazards calculated for the Eighteenmile Creek Upson Park exposure area are summarized in Table 7-3 and described below.

Recreational Users

Young Child. The total cancer risk to the RME young child recreational user is 8.7×10^{-5} and the non-cancer HI is 7.8. The cancer risk is within the risk range and the HI exceeds the goal of protection of HI = 1. The main chemical contributors to the cancer risk are PAHs (benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene) and PCBs. The total PAH risk is 5.8×10^{-5} and the total PCB risk is 2.4×10^{-5}. The main contributors to the non-cancer hazards are PCBs with a total HI of 7.1, which is associated with potential effects on the immune system.

The total cancer risk to the CTE young child recreational user is 2.9×10^{-5}, which is within the risk range, and the non-cancer HI is 3.9, which exceeds the goal of protection of HI = 1.

Adolescent. The total cancer risk to the RME adolescent recreational user is 4.8×10^{-5} and the non-cancer HI is 3.2. The cancer risks are within the risk range and the HI exceeds the goal of protection of HI = 1. The main chemical contributors to the cancer risks are benzo(a)pyrene and PCBs. The total PCB risk is 2.1×10^{-5}. The main chemical contributors to the non-cancer hazards are PCBs with a total HI of 3.1, which is associated with potential effects on the immune system.

The total cancer risk to the CTE adolescent recreational user is 8.0×10^{-6}, which is within the risk range. The non-cancer HI is 1.6, which exceeds the goal of protection of HI = 1 and is associated with potential effects on the immune system from exposure to PCBs of HI = 1.5.

Adult. The total cancer risk to the RME adult recreational user is 1.5×10^{-5} and the non-cancer HI is 0.9. The cancer risk is within the risk range and the HI is below the goal of protection of HI = 1. The main contributors to the cancer risks. The total PCB risk is 9.4×10^{-6}.

The total cancer risk to the CTE adult recreational user is 1.5×10^{-6}, which is within the risk range and the non-cancer HI is 0.4, which is below the goal of protection of an HI = 1.

Adult and Child Recreational User Total. The total cancer risk to the RME adult and child is 1.0×10^{-4}, which is at the limit of the acceptable risk range. The total cancer risk to the CTE adult and child is 3.0×10^{-5}, which is within the risk range. The non-cancer HIs are not additive across the age groups.

Outdoor Workers

The total cancer risk to the RME outdoor worker is 7.6×10^{-5}, which is within the risk range, and the non-cancer HI is 3.5, which exceeds the goal of protection of an HI = 1. The main chemical contributors to the cancer risks are benzo(a)pyrene and PCBs. The total PCB risk is 4.9×10^{-5}. The main chemical contributors to the non-cancer hazards are PCBs with a total HI of 3.2, which is associated with potential effects on the immune system.

The total cancer risk to the CTE outdoor worker is 8.0×10^{-6} which is within the risk range and the non-cancer HI is 2.9, which exceeds the goal of protection of an HI = 1 and is associated with potential effects on the immune system from exposure to PCBs.

Construction Workers

The total cancer risk to the RME construction worker is 7.5×10^{-6}, which is within the risk range, and the non-cancer HI is 8.9, which exceeds the goal of protection of HI = 1. The main chemical contributors to the cancer risks are benzo(a)pyrene and PCBs. The total PCB risk is 4.6×10^{-6}. The main chemical contributors to the non-cancer hazards are PCBs with a total HI of 7.9, which is associated with potential effects on the immune system.

The total cancer risk to the CTE construction worker is 1.8×10^{-6} and the non-cancer HI is 2.1, which exceeds the goal of protection of HI = 1. The non-cancer HI is associated with PCBs and potential effects on the immune system.

Evaluation of Lead

Exposure to lead in soil/sediment was evaluated based on soil concentrations. As discussed in Section 7.4, 400 mg/kg lead in soil is used for unrestricted residential contact with soil, and 800 mg/kg is used for commercial/industrial (non-residential) sites. For the Upson Park exposure area, the average concentration of lead in soils is 460 mg/kg at a depth of 0 to 2 feet and 420 mg/kg at a depth of 0 to 10 feet, which both exceed the residential screening level, but not the commercial/industrial level.

Table 7-3 Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 Upson Park Exposure Area

Receptor	Exposure Medium	Age	Tables	Reasonable Maximum Exposure		Central Tendency Exposure	
				Excess Cancer Risk	Non-cancer Hazard Index	Excess Cancer Risk	Non-cancer Hazard Index
Recreational User	Soil/ Sediment	Young Child	9.6a-RME/CTE	8.7E-05	**7.8**	2.9E-05	**3.9**
		Adolescent	9.6b-RME/CTE	4.8E-05	**3.2**	8.0E-06	**1.6**
		Adult	9.6c-RME/CTE	1.5E-05	0.9	1.5E-06	0.4
Recreational User Totals: Young Child + Adult [1]				1.0E-04	NA*	3.0E-05	NA*
Outdoor Worker	Soil/ Sediment	Adult	9.7a-RME/CTE	7.6E-05	**3.5**	8.0E-06	**2.9**
Construction Worker	Soil/ Sediment	Adult	9.8a-RME/CTE	7.5E-06	**8.9**	1.8E-06	**2.1**

NA* = Not Applicable; non-cancer HIs are not additive across age groups.

Values shown in **Bold** exceed EPA's risk range (cancer risk = $1x10^{-4}$) and hazard index = 1.

Due to rounding, the values presented as the total in the summary table may differ slightly from those presented in the Appendix B Table 7 and 9's.

1. The caner risk for young child + adult is equal to the risk range, but does not exceed it.

7.6.4 White Transportation Property

The estimated excess cancer risks and non-cancer hazards calculated for the Eighteenmile Creek White Transportation Property exposure area are summarized in Table 7-4 and described below.

Visitor/Trespasser - Soil and Sediment

Young Child. The total cancer risk to the RME young child visitor is 4.2×10^{-6} and the non-cancer HI is 0.2. The cancer risk is within the risk range and the HI is below the goal of protection of an HI = 1. The main chemical contributors to the cancer risk are arsenic and benzo(a)pyrene.

The total cancer risk to the CTE young child visitor is 8.4×10^{-7}, which is below the risk range, and the non-cancer HI is 0.04, which is below the goal of protection of an HI = 1.

Adolescent. The total cancer risk to the RME adolescent visitor/trespasser is 2.7×10^{-6} and the non-cancer HI is 0.06. The cancer risk is within the risk range and the HI is below the goal of protection of an HI = 1.

The total cancer risk to the CTE adolescent visitor/trespasser is 3.3×10^{-7} and the non-cancer HI is 0.02. The cancer risk is below the risk range and the non-cancer HI is less than the goal of protection of an HI = 1.

Adult. The total cancer risk to the RME adult visitor/trespasser is 5.9×10^{-7}, which is below the risk range. The non-cancer HI is 0.02, which is below the goal of protection of an HI = 1.

The total cancer risk to the CTE adult visitor/trespasser is 3.7×10^{-8} and the non-cancer HI is 0.004.

Adult and Child Visitor/Trespasser Total. The total cancer risk to the RME adult and child is 4.8×10^{-6}, which is within the risk range. The total cancer risk to the CTE adult and child is 8.8×10^{-7}, which is below the risk range. The non-cancer HIs are not additive across the age groups.

Indoor Workers

The total cancer risk to the RME indoor worker is 4.1×10^{-6}, which is within the risk range, and the non-cancer HI is 0.08, which is below the goal of protection of HI = 1. The main chemical contributors to the cancer risk are arsenic, cobalt, and benzo(a)pyrene.

The total cancer risk to the CTE indoor worker is 5.2×10^{-7} and the non-cancer HI is 0.02. The cancer risk is within the risk range and the non-cancer HI is less than the goal of protection of an HI = 1.

Outdoor Workers

The total cancer risk to the RME outdoor worker is 5.9 x 10^{-6}, which is within the risk range, and the non-cancer HI is 0.1, which is below the goal of protection of an HI = 1. The main chemical contributors to the cancer risk are arsenic and benzo(a)pyrene.

The total cancer risk to the CTE outdoor worker is 5.95 x 10^{-7} and the non-cancer HI is 0.03. The cancer risk is below the risk range and the non-cancer HI is below the goal of protection of an HI = 1.

Construction Workers

The total cancer risk to the RME construction worker is 7.0 x 10^{-7},which is within the risk range, and the non-cancer HI is 0.5, which is below the goal of protection of HI = 1.

The total cancer risk to the CTE construction worker is 1.7 x 10^{-7}, which is within the risk range, and the non-cancer HI is 0.1, which is below the goal of protection of HI = 1.

Future Resident – Soil/Sediment

Future Young Child Resident. The total cancer risk from exposure to soil at depth of 0 to 10 feet that can be brought to the surface and not managed to the RME young child future resident is 4.7 x 10^{-5} and the non-cancer HI is 2.5. The cancer risks are within the risk range and the main chemical contributors to the cancer risks are arsenic and PAHs (benzo-a-pyrene). The total PAH risk is 3.2 x 10^{-5}. The HI of 2.5 exceeds the goal of protection of HI = 1. PCBs, evaluated as Aroclors, have the highest HI of 0.8, which would be associated with potential immune system effects.

The total cancer risk to the CTE young child future resident is 5.1 x 10^{-6}, which is within the risk range, and the non-cancer HI is 0.6, which is less than the goal of protection of HI = 1.

Future Adult Resident. The total cancer risk from exposure to soil at depth of 0 to 10 feet that can be brought to the surface and not managed to the RME adult future resident is 7.4 x 10^{-6}, and the non-cancer HI is 0.3. The cancer risk is within the risk range and HI is below the goal of protection of an HI = 1.

The total cancer risk to the CTE adult future resident is 4.7 x 10^{-7} and the non-cancer HI is 0.06. The cancer risk is within the risk range and the non-cancer HI is less than the goal of protection of HI = 1.

Future Resident – Groundwater

Future Young Child Resident. The total cancer risk from exposure to groundwater (tap water consumption) to the RME young child future resident is 1.2 x 10^{-4}

and the non-cancer HI is 4.6. The cancer risk exceeds the risk range and the non-cancer HI exceeds the goal of protection of HI = 1. The main chemical contributors to the cancer risks are arsenic and PAHs (benzo(a)anthracene, benzo(a)pyrene, dibenz(a,h)anthracene). The total PAH risk is 9.1×10^{-5}. The main chemical contributors to the non-cancer hazards are manganese and TCE. The potential health effects associated with manganese and TCE are impacts on the CNS and developmental, immune, and vascular health effects, respectively.

The total cancer risk to the CTE young child future resident is 3.8×10^{-5}, which is within the risk range, and the non-cancer HI is 2.4, which exceeds the goal of protection of HI = 1.

Future Adult Resident. The total cancer risk from exposure to groundwater (tap water consumption) to the RME adult future resident is 9.0×10^{-5}, which is within the risk range, and the non-cancer HI is 3.2, which is above the goal of protection of an HI = 1. The main chemical contributors to the cancer risks are arsenic and PAHs. The total PAH risk is 3.5×10^{-5}. The main contributors to the non-cancer hazards are manganese and TCE.

The total cancer risk to the CTE adult future resident is 1.9×10^{-5} and the non-cancer HI is 1.9. The cancer risk is within the risk range and the non-cancer HI exceeds the goal of protection of HI = 1.

Future Resident – Combined Soil/Sediment and Groundwater

Future Young Child and Adult Resident. Considering exposure to both soil/sediment and groundwater, the total RME cancer risk is estimated to be 1.6×10^{-4} for the young child future resident and 9.7×10^{-5} for adult future residents. The combined risks for the young child exceeds the risk range. The combined risks for the adult are within the risk range. However, the combined cancer risk to the future resident (young child and adult) is 2.6×10^{-4}, which exceeds the risk range. The total non-cancer HIs for both soil/sediment and groundwater are 7.1 for the young child and 3.5 for adult future resident. The HIs were summed based on specific target organ effects, and the following systems exceeded the goal of protection HI = 1. CNS effects are primarily due to manganese in groundwater with HI = 2.2 for young child and HI = 1.1 for the adult. Developmental, immune and vascular system effects are primarily due to TCE in groundwater with HI = 1.0 for the adult.

Evaluation of Lead

Exposure to lead in soil/sediment was evaluated based on soil concentrations. As discussed in Section 7.4, 400 mg/kg lead in soil is appropriate for soil lead for unrestricted residential contact with soil, and 800 mg/kg is the comparison level for soil lead at commercial/industrial (non-residential) sites. For the White Transportation Property area, the average concentration of lead in soils is 297 mg/kg at a depth of 0 to 2 feet and 333 mg/kg at a depth of 0 to 10 feet, which are below both the residential and commercial/industrial screening levels.

Vapor Intrusion Associated with Groundwater

The maximum concentration of VOCs in groundwater were compared to the VISLs in groundwater to evaluate potential need for further vapor intrusion sampling.

The main plume reported a maximum concentration of 14.0 µg/L TCE in groundwater. This concentration exceeds the screening level for TCE of 1.2 µg/L at a risk level of 1 x 10^{-6}. The concentration of chloroform of 3.3 µg/L, which exceeds the screening level in groundwater of 0.12 µg/L based on a cancer risk of 1 x 10^{-6}. The concentration of tetrachloroethylene of 2.8 µg/L is below the screening level of 15 µg/L based on a risk of 1 x 10^{-6}.

The results of this analysis indicates the need for evaluation of vapor intrusion in the event that a building is constructed on the Site.

Table 7-4 Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 White Transportation Exposure Area

Receptor	Exposure Medium	Age	Tables	Reasonable Maximum Exposure		Central Tendency Exposure	
				Excess Cancer Risk	Non-cancer Hazard Index	Excess Cancer Risk	Non-cancer Hazard Index
Visitor/ Trespasser	Soil/ Sediment	Young Child	9.9a-RME/CTE	4.2E-06	0.2	8.4E-07	0.04
		Adolescent	9.9b-RME/CTE	2.7E-06	0.06	3.3E-07	0.02
		Adult	9.9c-RME/CTE	5.9E-07	0.02	3.7E-08	0.004
Site Visitor/Trespasser Totals: Young Child + Adult				4.8E-06	NA*	8.8E-07	NA*
Indoor Worker	Soil/ Sediment	Adult	9.10a-RME/CTE	4.1E-06	0.08	5.2E-07	0.02
Outdoor Worker	Soil/ Sediment	Adult	9.11a-RME/CTE	5.9E-06	0.1	5.9E-07	0.03
Construction Worker	Soil/ Sediment	Adult	9.12a-RME/CTE	7.0E-07	0.5	1.7E-07	0.1
Resident	Soil/ Sediment	Young Child	9.13a-RME/CTE	4.7E-05	**2.5**	5.1E-06	0.6
		Adult	9.13a-RME/CTE	7.4E-06	0.3	4.7E-07	0.06
Resident	Tapwater	Young Child	9.13a-RME/CTE	**1.2E-04**	**4.6**	3.8E-05	**2.4**
		Adult	9.13a-RME/CTE	9.0E-05	**3.2**	1.9E-05	**1.9**
Resident Totals: Young Child				**1.6E-04**	**7.1**	4.3E-05	**3.0**
Resident Totals: Adult				9.7E-05	**3.5**	2.0E-05	**1.9**
Resident Totals: Young Child + Adult				**2.6E-04**	NA*	6.2E-05	NA*

NA* = Not Applicable; non-cancer HIs are not additive across age groups.

Values shown in **Bold** exceed EPA's risk range (cancer risk = $1x10^{-4}$) and hazard index = 1.

Due to rounding, the values presented as the total in the summary table may differ slightly from those presented in the Appendix B Table 7 and 9's.

7.6.5 Former United Paperboard Company Property

The estimated excess cancer risks and non-cancer hazards calculated for the Former United Paperboard Company Property exposure area are summarized in Table 7-5 and described below.

Visitor/Trespasser – Soil and Sediment

Young Child. The total cancer risk to the RME young child visitor/trespasser is 4.7×10^{-5}, which is within the risk range, and the non-cancer HI is 2.3, which is above the goal of protection of HI = 1. The main chemical contributors to the cancer risks are PAHs and PCBs. The total PAH risk is 3.8×10^{-5}, and the total PCB risk is 7.3×10^{-6}. The HI = 2.3 is above the goal of protection of an HI = 1, and the non-cancer hazard is primarily from PCB with a total non-cancer hazard of HI = 2.1, which is associated with potential impacts on the immune system.

The total cancer risk to the CTE young child visitor/trespasser is 9.7×10^{-6}, which is within the acceptable risk range. The non-cancer HI is 0.7, which is below the goal of protection of an HI = 1.

Adolescent. The total cancer risk to the RME adolescent visitor/trespasser is 3.1×10^{-5}, which is within the risk range, and the non-cancer HI is 1.3, which exceeds the goal of protection of HI = 1. The main chemical contributors to the cancer risks are PAHs and PCBs. The total PAH risk is 2.1×10^{-5}, and the total PCB risk is 8.5×10^{-6}. The HI = 1.3 is slightly above the goal of protection of an HI = 1, and the non-cancer hazard is primarily from PCBs. The total non-cancer hazard is from PCBs with an HI = 1.2, which is associated with potential impacts on the immune system.

The total cancer risk to the CTE adolescent visitor/trespasser is 4.1×10^{-6}, which is within the acceptable risk range. The non-cancer HI is 0.5, which is below the goal of protection of an HI = 1.

Adult. The total cancer risk to the RME adult visitor/trespasser is 6.1×10^{-6}, which is within the acceptable risk range. PAHs and PCBs exhibited the highest risk with a total PAH risk of 2.8×10^{-6}, and the total PCB risk of 2.8×10^{-6}. The non-cancer HI is 0.3, which is less than the goal of protection of an HI = 1.

The total cancer risk to the CTE adult visitor/trespasser is 4.1×10^{-7} which is below the risk range. The non-cancer HI is 0.09 is below the goal of protection of an HI = 1.

Adult and Child Visitor/Trespasser. The total cancer risks to the RME adult and child is 5.3×10^{-5} which is within the risk range. The total cancer risks to the CTE adult and child is 1.0×10^{-5} which is within the risk range. The non-cancer HIs are not additive across the age groups.

Indoor Worker – Soil and Sediment

Adult. The total cancer risk to the RME adult indoor worker is 4.7×10^{-5}, which is within the acceptable risk range, and the non-cancer HI is 1.5, which exceeds the goal of protection of an HI = 1. The main chemical contributors to the cancer risks are arsenic, PAHs, and PCBs. The total PAH risk is 2.0×10^{-5}, and the total PCB risk is 2.3×10^{-5}. The main chemical contributors to the non-cancer HI are PCBs. The total non-cancer PCB hazard is HI = 1.5, which is associated with potential impacts on the immune system. All other organ-specific HIs are less than the goal of protection of HI = 1.

The total cancer risk for CTE indoor worker is 6.5×10^{-6}, which is within the risk range, and the total non-cancer HI = 0.6, which is below the goal of protection of an HI = 1.

Outdoor Worker – Soil and Sediment

Adult. The total cancer risk to the RME adult outdoor workers is 6.2×10^{-5}, which is within the acceptable risk range, and the non-cancer HI is 2.1, which exceeds the goal of protection of an HI = 1. The main chemical contributors to the cancer risks are PAHs, and PCBs. The total PAH risk is 2.6×10^{-5}, and the total PCB risk is 2.9×10^{-5}. The main chemical contributors to the non-cancer HI are PCBs. The total non-cancer PCB hazard is HI = 1.9, which may he associated with potential effects on the immune system. All other organ-specific HIs are less than the goal of protection of an HI = 1.

The total cancer risk for CTE outdoor worker is 6.6×10^{-6}, which is within the risk range, and the total non-cancer HI = 0.7, which is below the goal of protection.

Construction Worker – Soil and Sediment

Adult. The total cancer risk to the RME adult construction workers is 9.4×10^{-6} which is within the acceptable risk range, and the non-cancer HI is 12, which exceeds the goal of protection of an HI = 1. The main chemical contributors to the cancer risks are PAHs and PCBs. The total PAH risk is 2.5×10^{-6}, and the total PCB risk is 6.0×10^{-6}. The main chemical contributors to the non-cancer HI are PCBs with lesser contribution from antimony. The total non-cancer hazard for PCBs is an HI = 10 and from antimony the HI = 1. The HI = 10 is associated with potential impacts on the on the immune system. The potential health effects from antimony are impacts on the hematological system. All other organ-specific HIs are less than the goal of protection of an HI = 1.

The total cancer risk for CTE construction worker is 2.3×10^{-6}, which is within the risk range. The total non-cancer HI = 2.9, which is below the goal of protection of HI = 1. The main contributor is PCBs with an HI = 2.5, which exceeds the goal of protection of an HI = 1.

Future Resident – Soil and Sediment

Future Young Child Resident. The total cancer risk from exposure to soil at depth of 0 to 10 feet that can be brought to the surface and not managed to the RME young child future resident is 6.1×10^{-4} and the non-cancer HI is 60.6. The cancer risks are exceed the risk range and the main chemical contributors to the cancer risks are PAHs and PCBs. The total PAH risk is 4.0×10^{-4}, and the total PCB risk is 1.8×10^{-4}. The HI of 60.6 significantly exceeds the goal of protection of HI = 1. The main chemical contributors to the non-cancer HI are antimony, copper, and PCBs. The total non-cancer hazard from PCBs is HI = 52.2. The non-cancer HI for antimony was HI = 4.7 and the non-cancer HI for copper = 1.1.

The total cancer risk to the CTE young child future resident is 6.6×10^{-5}, which is within the acceptable risk range. The total non-cancer hazard of an HI = 13.2 exceeds the goal of protection of an HI = 1. The main contributors are an HI = 1.2 from antimony, and an HI = 11.1 from PCBs.

Future Adult Resident. The total cancer risk from exposure to soil at depth of 0 to 10 feet that can be brought to the surface and not managed to the RME adult future resident is 1.2×10^{-4} and the non-cancer HI is 6.7. The cancer risk exceeds the risk range and HI exceeds the goal of protection of an HI = 1. The main chemical contributors to the cancer risks are PAHs and PCBs. The total PAH risk is 2.8×10^{-5}, and the total PCB risk is 8.1×10^{-5}. The total non-cancer risk is mainly from PCBs with an HI = 5.8, which is associated potential impacts on the immune system.

The total cancer risk to the CTE young child future resident is 8.1×10^{-6}, which is within the acceptable risk range. The total non-cancer hazard of an HI = 1.3 exceeds the goal of protection of an HI = 1.

Future Resident – Groundwater

Future Young Child Resident. The total cancer risk from exposure to groundwater (tap water consumption) to the RME young child future resident is 1.2×10^{-4} and the non-cancer HI is 4.6. The cancer risk exceeds the risk range and the non-cancer HI exceeds the goal of protection of HI = 1. The main chemical contributors to the cancer risks are arsenic and PAHs. The total PAH risk is 9.1×10^{-5}. The main chemical contributors to the non-cancer HI are manganese (HI = 1.7) and TCE (HI = 0.9). These chemicals are associated with potential effects on the CNS (manganese), and developmental, immune, and vascular systems (TCE).

The total cancer risk to the CTE young child future resident is 3.8×10^{-5}, which is within the acceptable risk range. The total non-cancer hazard of an HI = 2.4 exceeds the goal of protection of an HI = 1.

Future Adult Resident. The total cancer risk from exposure to groundwater (tap water consumption) to the RME adult future resident is 9.0 x 10^{-5} and the non-cancer HI is 3.2. The cancer risk are within the risk range and the non-cancer HI exceeds the goal of protection of HI = 1. The main chemical contributors to the cancer risks are arsenic and PAHs. The total PAH risk is 3.5 x 10^{-5}. The main chemical contributor to the non-cancer HI are manganese and TCE.

The total cancer risk to the CTE adult future resident is 1.9 x 10^{-5}, which is within the acceptable risk range. The total non-cancer HI is 1.9, which exceeds the goal of protection of an HI = 1.

Future Resident – Combined Soil/Sediment and Groundwater

Future Young Child and Adult Resident. Considering exposure to both soil/sediment and groundwater, the total RME cancer risk for the young child future resident is 7.3 x 10^{-4} and for the adult future resident is 2.1 x 10^{-4} for adult residents, both cancer risks exceed the risk range. The combined cancer risk to the future resident (young child and adult) is 9.3 x 10^{-4}. The total non-cancer HIs for both soil/sediment and groundwater are HI = 65.2 for the young child future resident and HI = 9.9 for adults future resident. The HIs for chemicals were summed based on specific target organ effects, and the following systems exceeded an HI = 1. The immune system is primarily affected by PCBs in soil/sediment has HI = 5.2 for young child and HI = 5.8 for the adult. CNS effects are primarily due to manganese in groundwater with HI = 2.3 for young child and 1.1 for adult. Hematological system effects are primarily due to antimony concentrations in soil/sediment with HI = 5.4 for young child. Developmental, immune and vascular effects are primarily due to TCE concentrations in groundwater with HI = 1.0 for adult. Gastrointestinal effects are primarily due to copper concentrations in soil/sediment with minor contributions from iron in soil/sediment and groundwater with HI = 2.0 for young child. Impacts to the skin and vascular systems are primarily due to arsenic in soil/sediment and groundwater with HI = 1.0 for the young child.

Evaluation of Lead

Exposure to lead in sediment was evaluated based on soil concentrations. As discussed in Section 7.4, 400 mg/kg lead in soil is considered for unrestricted residential contact with soil, and 800 mg/kg is considered for soil commercial/industrial (non-residential) sites. For the Former United Paperboard Company Property exposure area, the average concentration of lead in soils at depths of 0 to 2 feet is 934 mg/kg and at depths of 0 to 10 feet is 1,015 mg/kg, both of which exceed both the residential and commercial/industrial levels. Lead was not detected in groundwater.

Vapor Intrusion Associated with Groundwater

The maximum concentration of VOCs in groundwater were compared to the VISLs in groundwater to evaluate potential need for further vapor intrusion sampling as described in Section 7.6.4. The results of this analysis indicates the need for evaluation of vapor intrusion in the event that a building is constructed on the Site.

Table 7-5 Summary of Estimated Excess Cancer Risks and Non-Cancer Hazards for the OU2 Former United Paperboard Exposure Area

Receptor	Exposure Medium	Age	Tables	Reasonable Maximum Exposure		Central Tendency Exposure	
				Excess Cancer Risk	Non-cancer Hazard Index	Excess Cancer Risk	Non-cancer Hazard Index
Visitor/ Trespasser	Soil/ Sediment	Young Child	9.14a-RME/CTE	4.7E-05	**2.3**	9.7E-06	0.7
		Adolescent	9.14b-RME/CTE	3.1E-05	**1.3**	4.1E-06	0.5
		Adults	9.14c-RME/CTE	6.1E-06	0.3	4.1E-07	0.09
Site Visitor/Trespasser Totals: Young Child + Adult				5.3E-05	NA*	1.0E-05	NA*
Indoor Worker	Soil/ Sediment	Adults	9.15a-RME/CTE	4.7E-05	**1.5**	6.5E-06	0.6
Outdoor Worker	Soil/ Sediment	Adults	9.16a-RME/CTE	6.2E-05	**2.1**	6.6E-06	0.7
Construction Worker	Soil/ Sediment	Adults	9.17a-RME/CTE	9.4E-06	**12**	2.3E-06	**2.9**
Resident	Soil/ Sediment	Young Child	9.18a-RME/CTE	**6.1E-04**	**60.6**	6.6E-05	**13.2**
		Adults	9.18a-RME/CTE	**1.2E-04**	**6.7**	8.1E-06	**1.3**
Resident	Tapwater	Young Child	9.18a-RME/CTE	**1.2E-04**	**4.6**	3.8E-05	**2.4**
		Adults	9.18a-RME/CTE	9.0E-05	**3.2**	1.9E-05	**1.9**
Resident Totals: Young Child				**7.3E-04**	**65.2**	**1.0E-04**	**15.6**
Resident Totals: Adult				**2.1E-04**	**9.9**	2.7E-05	**3.1**
Resident Totals: Young Child + Adult				**9.3E-04**	NA*	**1.3E-04**	NA*

NA* = Not Applicable; non-cancer HIs are not additive across age groups.

Values shown in **Bold** exceed EPA's risk range (cancer risk = $1x10^{-4}$) and hazard index = 1.

Due to rounding, the values presented as the total in the summary table may differ slightly from those presented in the Appendix B Table 7 and 9's.

8 Uncertainty Assessment

Quantitative evaluation of human health risks due to environmental contamination is frequently limited by uncertainty regarding a number of key inputs, including chemical concentrations in the environment, the level of human contact with contaminated media, and the dose-response relationships for non-cancer and cancer effects in humans. This uncertainty is usually addressed by making assumptions or estimates for uncertain parameters based on available information. Because of these assumptions and estimates, the results of non-cancer hazard and cancer risk calculations have some level of uncertainty. This information aids risk managers in the decision-making process. It is also aids the public in understanding the results of the HHRA. The following sections review the main sources of uncertainty in the non-cancer hazard and cancer risk calculations performed for the Site.

8.1 Chemicals Not Evaluated

As discussed above, exposure, non-cancer hazards, and cancer risks were quantified only for a selected subset (the COPCs) of chemicals detected in environmental media. While omission of other chemicals based on screening may underestimate total non-cancer hazards and cancer risks, this is not considered a significant source of uncertainty because the chemicals that were excluded were present at low concentrations.

A group of chemicals not included in the screening process, nor in the quantitative risk assessment, are tentatively identified chemicals (TICs) that are not included in the standard list of target analytes. These are generally organic chemicals detected in gas chromatograms of samples for which no authentic standards are available. These chemicals are usually tentatively identified based on their retention time in the gas chromatogram and their mass spectrum, which can be compared with standard chemical library spectra. Further, because no standards are available, concentrations must be estimated. Consequently the identities and concentrations of these substances are considered tentative. This level of data quality is not adequate for use in quantitative risk assessments. However, detection of TICs in samples and the inability to include them in the quantitative risk assessment adds to the uncertainty of the risk assessment. The amount of uncertainty from this source depends on the number of TICs detected and the levels found relative to those of the standard analytes present. In most cases, the number and apparent concentrations of TICS are low so they are not considered an important source of uncertainty (e.g., it is not anticipated that the cancer risks and non-cancer hazards are significantly underestimated).

8.2 Exposure Scenarios Not Evaluated

All of the receptors and exposure scenario combinations are considered possible under current/future conditions for the different exposure areas (see RAGS Part D, Table 1) and were quantitatively evaluated except for potential exposures to surface water and sediment within Eighteenmile Creek itself. Because Eighteenmile Creek flows rapidly and access to the stream bed is difficult due to steep banks and dense vegetation throughout most of the reach within the OU2 Creek Corridor, the possibility of people swimming or wading in the Creek was not considered a completed exposure pathway. Therefore potential exposures to surface water or stream bed sediments within the Creek proper were considered minor and not a significant contributor to overall exposures. Further, there was very little data available, especially for surface water, with which to quantitatively evaluate any potential exposures to these media within the Creek Channel proper. This is considered an uncertainty unlikely to substantially affect overall risk and hazard estimates and conclusions from the HHRA.

8.3 Exposure Point Concentrations

The EPA recommends that the EPC estimate be based on the 95% UCL of the mean. This approach ensures that the EPC is unlikely to be greater than the estimated EPC used in non-cancer hazard and cancer risk calculations (EPA 1989, 1992). In addition, when a calculated UCL exceeds the maximum detected concentration (e.g., due to limited data), the maximum detected concentration is used as the EPC, thereby assuring that the EPC is within the range of concentrations actually observed at the Site.

When data are robust and inter-sample variability is not large, the UCL may be only slightly higher than the mean of the data. However, when data are sparse or are highly variable, the 95% UCL may be greater than the mean of the available data. At this Site, most soil and sediment data are of sufficient quantity and quality that the 95% UCL of the mean is only moderately larger than the sample mean, so this source of uncertainty is relatively minor. The 95% UCL values computed based on the fish data are generally near the mean values of the available data, although for chemicals with a low detection frequency, the 95% UCL is lower than the sample mean based on detected samples. Surface water data were inadequate for calculating 95% UCLs ($n \leq 4$ or < 2 distinct detected values), so the maximum value was used at the EPC in the non-cancer hazard and cancer risk calculations. Such EPCs reflect the uncertainty that exists when data are limited or highly variable, and in general are likely to result in an overestimate of hazard or risk.

8.4 Outliers

Before calculating EPCs, the statistical distributions of the COPC datasets were examined by preparing quantile-quantile plots. These plots can reveal irregularities in the distribution of the data and are often used to examine data for the presence of outliers. Based on inspection of the quantile-quantile plots, datasets for a number of the COPCs appeared to include one or more high outliers. As dis-

cussed in the ProUCL Technical Guide (EPA 2013), the presence of outliers can distort test statistics, including 95% UCL calculations. From the ProUCL Technical Guide:

> A distorted estimate (e.g., UCL95) computed by accommodating a few low probability outliers (coming from far tails) tends to represent the population area represented by those outliers and not the main dominant population of interest.

As recommended by the technical guide, the approach considered the possible presence of outliers and elected not to exclude potential outliers from the EPC datasets, which is the more conservative and potentially health protective approach. Nevertheless, inclusion of potential outliers in the EPC datasets may have led to EPC values that may be biased high (most often the 95% UCL value recommended by ProUCL). This adds uncertainty to the risk assessment process and risk and hazard estimates may be biased high.

For each chemical exceeding either the risk range or the goal of protection of an HI = 1, or significantly contributing to an organ HI greater than 1, an analysis was conducted to identify potential outliers. Below is a summary of the results of this analysis based on depth of contamination. This information regarding outliers will be considered in the FS.

8.4.1 Creek Channel

Soil/Sediment

PCBs. Sample SED-34B was found to be an outlier for Aroclor 1248 (280 mg/kg) at a significance level of 5%. No outliers were found for Aroclors 1254 or 1260.

Fish Tissue

PCBs. Sample OU2-SMB-03 was found to be an outlier for PCB 1254 (0.46 mg/kg), and Aroclor 1260 (0.15 mg/kg) at significance levels ranging from 1% to 10%. No outliers were found for mercury.

8.4.2 Former Flintkote Plant Property

Soil/Sediment 0 to 2 feet

PAHs. No outliers were found for benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene or dibenz(a,h)anthracene.

PCBs. For PCB 1242, samples 18MC-L13-S03-Z1 (46 mg/kg) and 18MC-L16E-S01-Z1 (31 mg/kg) are outliers at a significance level of 5%. For PCB-1248,

sample SED-34B (280 mg/kg) is an outlier at a significance level of 5%. No outliers were found for PCB 1254.

Soil and Sediment 0 to 10 feet

Metals: Sample OU2-TP06-01 (3,000 mg/kg) is an outlier at a significance level of 1% for antimony. No outliers were found for copper.

PCBs: For PCB- 1242, samples SED-28B (68 U mg/kg) and 18MC-L13-S03-Z1 (46 mg/kg) are outliers at a significance level of 5%. For PCB 1248, sample SED-34B (280 mg/kg) is an outlier at a significance level of 5%. No outliers were found for Aroclor 1254.

8.4.3 Upson Park

Soil and Sediment 0 to 2 feet

PCBs. For Aroclor 1248, sample OU2-SS09-Z2 (250 mg/kg) is an outlier at the 1% significance level, and OU2-SS13-Z2 (3.5 mg/kg) are outliers at the 5% significance level. For Aroclor 1254, samples OU2-SS09-Z2 (140 mg/kg), UPSON-2B (80 mg/kg) and UPSON-2 (23 mg/kg) are outliers at a significance level of 1%. For Aroclor 1260, OU2-SS09-Z2 (3.9 mg/kg) and UPSON-1 (1.6 mg/kg) are outliers at a significance of 5%.

Soil and Sediment 0 to 10 feet

PCBs. For PCB 1248, sample OU2-SS09-Z2 (250 mg/kg) is an outlier at the 1% significance level. For Aroclor 1254, samples OU2-SS09-Z2 (140 mg/kg), UPSON-2B (80 mg/kg), UPSON-2 (23 mg/kg) and OU2-SS13-Z3 (8.5 mg/kg) are outliers at a significance level of 1%. For PCB 1260, samples OU2-SS09-Z2 (180 mg/kg), and OU2-SS13-Z3 (8.5 mg/kg) are outliers at a significance level of 1%. For PCB 1268, samples OU2-SS14-Z2 (26 mg/kg) and OU2-SS13-Z3 (6.7 mg/kg) are outliers at a significance of 1%.

8.4.4 White Transportation Property

Soil/Sediment 0 to 10 feet

PCBs. Sample 18MC-L02E-S01-Z1 is an outlier for PCB 1248 (1.5 mg/kg) at a significance level of 1% and for PCB 1254 (2.3 mg/kg) at a significance level of 5%. No outliers were found for PCB 1260.

Groundwater

Volatiles: Sample OU2-MW14 is an outlier for TCE (14 µg/L) at a significance level of 1%. No other outliers were found.

8.4.5 Former United Paperboard Property

Soil/Sediment 0 to 2 feet

PCBs: Sample 18MC-L09-S01-Z1 is an outlier for PCB 1242 (33 mg/kg) at a significance level of 1%. Sample SED-22 is an outlier for Aroclor 1254 at a significance level of 1%. No outliers were found for antimony, copper, PCB 1248, or PCB 1260.

Soil/Sediment 0 to 10 feet

Metals: Sample 18MC-L09-S04-Z2 is an outlier for antimony (980 mg/kg) at a significance level of 1%. Sample 18MC-L09-S03-Z1 is an outlier for copper (54,900 mg/kg) at a significance level of 1%.

PCBs: Sample 18MC-SB15-Z1 is an outlier for PCB 1248 (550 mg/kg) and PCB 1260 (76 mg/kg), both at a significance level of 1%. Sample SED-22 is an outlier for PCB 1254 (130 mg/kg) at a significance level of 1% and sample SED-18B is an outlier for PCB 1260 (7.4 mg/kg) at a significance level of 5%.

Groundwater

Volatiles: Sample OU2-MW14 is an outlier for TCE (14 µg/L) at a significance level of 1%.

8.5 Background Concentrations

Many of the COPCs identified for exposure areas within OU2 are also present in environmental media outside of the Eighteenmile Creek Superfund Site. Inorganic substances (metals) are natural constituents of soil, sediment, and, to a limited extent, fish tissues. PAHs are formed when organic matter is burned, and man-made chemicals, such as PCBs and pesticides, have been used and released to the general environment for many years and have become widely distributed in environmental media. Some of these substances can pose risks or hazards even at concentrations commonly found in the environment. Therefore, to interpret risk and hazard estimates for exposure areas within OU2, it is important to understand the relationship between background COPC concentrations and those found in OU2.

Background locations were selected as outlined in 2002 EPA Role of Background in the CERCLA Cleanup Program (EPA 2002) to allow comparison of OU2 samples. Background sample locations were selected from an area with the same physical, chemical, geological, and biological characteristics as the OU2 Site, but has not been influenced by the releases from the Site. For sediments and surface water the background area was impoundments located northwest and southeast of the intersection of Quaker Road and Slayton Settlement Road (see Figure 2-3). These ponds are very similar to the Site as they were created by mills and have influence from the Canal. Reviews of historical records indicate there is no

source of contamination associated with the historical mills. These locations were selected because there were in a similar setting, within the same watershed, and with surface water supplied from the Canal farther east and upstream of OU2 (see Figure 2-3). Although the impoundments received the same Canal surface water, the area is not influenced from the source areas within OU2.

One background surface water sample (BG1-SW01) and seven background sediment samples (BG1-SED01 through BG1-SED07) were collected in May 2015 from the surface water impoundments (ponds) located on the East Branch of Eighteenmile Creek in Gasport, New York. Background fish fillet samples also were collected from the East Branch of Eighteenmile Creek north of Gasport, New York (see Figure 2-3). Fish samples were collected by electrofishing and the game fish collected in the Creek Corridor as described in Section 2.4 of the OU2 supplemental RI report. Game fish collected included silver redhorse (*Moxostoma anisurum*), walleye (*Sander vitreus*), and smallmouth bass (*Micropterus dolomieu*); fish collected in the background area primarily consisted of carp (*Cyprinus carpio*) and one largemouth bass (*Micropterus salmoides*). The difference between the species available for OU2 and the background area could contribute to any fish tissue COPC concentration differences between the two areas. As insufficient numbers of largemouth bass were collected at either location, other species captured were used as surrogates for the game fish fillet samples. At OU2, silver redhorse, smallmouth bass, and walleye were collected for fillet analysis. At the background location, one largemouth bass was captured, but the only fish captured was carp (see Table 2-5 of the OU2 Supplemental RI report [E & E 2016]).

Background soil samples were collected from several locations adjacent to the Canal and from locations in Dolan Park and Outwater Memorial Park in the city of Lockport, New York. As part of the OU2 supplemental RI, 14 background soil samples were collected from seven locations from areas adjacent to the Canal east of Eighteenmile Creek (see Figure 2-5 for locations).

The background concentrations in sediment, surface water, soils and fish are presented with descriptive statistics in Section 5 of the Supplemental RI Report, Eighteenmile Creek Superfund Site OU2 (E & E 2016). More statistically rigorous evaluations, as outlined in the EPA guidance *Role of Background in the CERCLA Cleanup Program* (EPA 2002) may be performed as part of the determination of Site-specific preliminary remediation goals if the sample concentrations of the risk drivers are similar to background concentrations.

8.6 Chemical Absorption

The risk from exposure to chemicals depends on absorption. Chemicals may be absorbed differently through gastrointestinal absorption, dermal absorption, and bioavailability. This section discusses the uncertainties associated with this data.

The HHRA evaluated absorption through the skin. The dermal absorption factors for COPCs were obtained from RAGS Part E and were presented in Tables 5 and

6 in Appendix B (EPA 2004b). The default dermal absorption factors were used to evaluate absorption from dermal exposure to sediment. ADAFs were available for the main COPCs and are not anticipated to underestimate risks or hazards.

Oral toxicity values are used to evaluate dermal exposures. The oral adjustment factors account for the absorption efficiency in the critical study that is the basis of the RfD or CSF. Gastrointestinal (GI) absorption factors provided in RAGS Part E were used in this assessment. For organic chemicals, no adjustment is considered necessary, since their gastrointestinal absorption is generally high. Several of the inorganic chemical toxicity values were evaluated in this risk assessment and are summarized in Tables 5.1 and 6.1 in Appendix B. There is a potential that the risks may be overestimated based on the lack of oral adjustment factors for many chemicals.

Relative bioavailability represents differences between humans exposed to substances in the environment compared to results from experimental animals in laboratory studies used to derive toxicity values (EPA 1989, 1992b). Some metals may exist in poorly absorbable forms and the failure to account for this fact may result in a substantial overestimation of exposure and non-cancer hazard or cancer risk. In the absence of data, the default approach is to assume that the relative bioavailability adjustment (RBA) is 100% for most metals except arsenic, for which a default RBA of 60% has been adopted by EPA (2012). Use of this default assumption is likely to overestimate risks or hazards, with the magnitude of the uncertainty depending on the RBA value.

8.7 Human Exposure Parameters

Many of the exposure parameters used to calculate exposure doses/intakes are estimated from the published literature and are based on the Exposure Factors Handbook (EPA 2011a) and the updated Superfund standard default exposure assumptions (EPA 2014b). Some parameters, for example the quantity of soil, sediment, and surface water ingested by recreational visitors, are estimates often based on professional judgment. In general, when exposure data were limited or absent, the exposure parameters were selected to be health-protective. This approach is intended to produce results that are more likely to overestimate than underestimate actual exposure and cancer risks or non-cancer hazards.

8.8 Uncertainties in Toxicity Values

Toxicity information for many chemicals is often limited. Consequently, there are varying degrees of uncertainty associated with toxicity values (i.e., SFs, RfDs). For example, uncertainties can arise from the following sources:

- Extrapolation from animal studies to humans;
- Extrapolation from high dose to low dose;
- Extrapolation from continuous exposure to intermittent exposure; and
- Limited or inconsistent toxicity studies.

EPA uses health protective approaches to develop toxicity factors to ensure that any uncertainties are more likely to result in an overestimation, rather than an underestimation, of non-cancer hazard or cancer risk. The toxicity values were selected consistent with the Superfund program's toxicity hierarchy (EPA 2003b). For chemicals with toxicity values, the risks and hazards are not anticipated to be underestimated. However, there were a number of chemicals identified during sampling that do not have toxicity values, and for specific exposure pathways. In this case, the risks and hazards may be underestimated.

Thallium soluble salts was screened into the analysis as a COPC for several exposure areas (Former Flintkote Plant Property, Former United Paperboard Company Property, and the Creek Channel). Based on the significant uncertainties associated with the toxicity value, the toxicity information on this chemical could not be used in the HHRA, which may result in a potential underestimation of risk.

Cancer risk from the ingestion of chromium in fish tissue was assessed using the oral SF for hexavalent chromium of 0.5 $(mg/kg\text{-}day)^{-1}$ based on a Tier 3 toxicity value (see Section 6.2). The value used was from the New Jersey Department of Environmental Protection (NJDEP) as a Tier 3 toxicity value. The assessment of toxicity for Cr(VI) is being evaluated under the IRIS program, EPA's consensus toxicity database. ADAFs for early life exposure via ingestion and inhalation because Office of Pesticide Programs proposed mutagenic mode of action for Cr(VI) occurs in all cells, regardless of type. Application of ADAFs for all exposure pathways results in more health-protective screening levels.

A number of chemicals were not quantitatively evaluated in the risk assessment for either cancer risks or non-cancer health hazards based on a lack of toxicity values. This may result in a potential underestimate of risk based on the lack of toxicity information necessary to quantify cancer risks and non-cancer health hazards.

8.9 Polychlorinated Dioxins, Furans, and Dioxin-like PCBs

In the environment, PCBs occur as mixtures whose compositions differ from the commercial mixtures (Aroclors). This is because after release into the environment, the mixture composition changes over time through partitioning, chemical transformation, and preferential bioaccumulation (EPA 1996).

PCB congener data are useful for assessing potential risks and hazards from environmental PCB contamination when PCB patterns from Aroclors are weathered or degraded and for comparison with available historical tissue data. Therefore, PCB and PCDD/PCDF congeners were analyzed in a small number of samples of soil, sediment, surface water, and fish tissue, and the congeners were detected in all of these media. A limited number of samples were analyzed for PCB or PCDD/PCDF congeners to support quantitative risk

evaluations for these chemicals. However, the available data were sufficient to support a preliminary comparison between the Aroclor (EPA 1996).

A concern regarding environmental PCB contamination is whether the PCB mixtures present may have become enriched with the higher molecular weight and generally more persistent and more toxic congeners, particularly the dioxin-like PCB congeners. Therefore, the environmental mixtures present may be more toxic than would be indicated based on their quantitation and assessment as Aroclor mixtures. Some of the original Aroclor mixtures may have different congener compositions depending on the particular manufacturing processes used to synthesize a particular batch even though it may have been marketed as a standard Aroclor mixture, such as Aroclor 1254. Some batches of Aroclor 1254 have higher concentrations of the highly toxic dioxin-like PCB congener 126 than others. To investigate this possibility, samples for which both Aroclor and PCB congener data were available were evaluated to see how the different assessment approaches compared. Risks were calculated from the Aroclor data using the standard cancer SFs for the Aroclor mixtures. Risks for non-dioxin-like congeners were calculated using a standard high potency SF of 2 $(mg/kg\text{-}day)^{-1}$. Finally, risks for the dioxin-like congeners were calculated using EPA's 2010 guidance on dioxin TEFs that adopted the World Health Organization 2006 TEF (EPA 2010). The SF for dioxin of 1.5E+05 was used in the calculation of the dioxin like congeners (EPA 1996, 1997, 2010).

The Advanced Kaplan-Meier (KM) Toxicity Equivalence (TEQ) calculator, was used to calculate a simple, quasi-sensitivity analysis that examines the effect of various ways of handling non-detected (ND) or rejected (R-flagged) analytical data results within a sample's congener profile. The TEQ analysis and UCL calculations for incremental samples. The tools are intended for use of TEQ concentrations for dioxins, furans, and dioxin-like PCBs. The risk estimates based on the dioxin-like congeners were compared with those based on the non-dioxin-like congeners and the Aroclor mixtures. The results are presented in Table 8-1. The comparison found that the soil concentrations were comparable for dioxin-like and non-dioxin-like PCBs. The comparison for fish tissue found, in general, that the risks from exposure to non-dioxin like PCBs were higher than the calculated risks for dioxin-like PCBs. The calculated cancer risks from dioxin-like PCBs for rock fish were comparable to those for the non-dioxin-like PCBs. In all cases, the risks from exposure to dioxins in soils and fish were within or below the risk range (see Table 8-1).

8.10 Uncertainties in Risk Estimates

Because cancer risk or non-cancer hazard estimates for a chemical are derived by combining uncertain estimates of exposure and toxicity (see above), the risk or hazard estimates for each chemical are more uncertain than either the exposure estimate or the toxicity estimate alone. Additional uncertainty arises from the issue of how to combine risk or hazard estimates across different chemicals. In some cases, the effects caused by one chemical do not influence the effects caused by other chemicals. In other cases, the effects of one chemical may interact with

effects of other chemicals, causing responses that are approximately additive, greater than additive (synergistic), or less than additive (antagonistic). In most cases, available toxicity data are not sufficient to define what type of interaction can be expected, so EPA generally assumes that effects are additive for carcinogens that act on all target organs/tissues and for non-carcinogens that act on the same target organ/tissue (EPA 2000).

Table 8-1 Comparison of PCB Risk Estimates based on PCB Aroclor and Congener Data

Matrix	Sample ID	Depth Interval (feet BGS)	Relative Risk Estimates		
			Total Aroclors	Total Detected DL Congeners	Total Detected NDL Congeners
Sediment	BG1-SED01	0-0.5	1.6 E-07	4.7 E-07	1.4 E-07
Sediment	OU2-SED02	0-0.5	2.4 E-06	2.2 E-07	1.2 E-06
Soil	BG1-SS01-Z1	0-0.5	NA	3.8 E-07	2.7 E-08
Soil	BG1-SS06-Z1	0-0.5	NA	2.9 E-10	1.2 E-09
Soil	OU2-SB02-Z1	1-1.5	NA	1.1 E-09	2.2 E-08
Soil	OU2-SS02-Z1	0-0.5	NA	1.8 E-06	1.2 E-06
Soil	OU2-SS05-Z1	0-0.5	NA	2.2 E-06	1.0 E-06
Soil	OU2-SS09-Z1	0-0.5	NA	1.1 E-08	9.2 E-08
Soil	OU2-SS13-Z1	0-0.5	1.9 E-06	2.3 E-06	3.8 E-07
Largemouth Bass (fillet)	BG1-LMB-01	NA	1.8 E-06	1.2 E-06	7.5 E-06
Smallmouth Bass (fillet)	OU2-SMB-01	NA	3.2 E-05	3.5 E-06	9.6 E-05
Pumpkinseed (composite)	BG1-PUM-C01	NA	1.3 E-04	3.7 E-06	2.6 E-05
Rock Bass (composite)	OU2-ROC-C01	NA	4.7 E-05	5.0 E-05	3.0 E-05

Key:
BGS = below ground surface
DL = dioxin-like
NA = not analyzed
NDL = non-dioxin-like

9 Risk Assessment Summary and Conclusions

The HHRA evaluated both cancer risks and non-cancer hazards to multiple receptors at five OU2 exposure areas. The assessment included the calculation of cancer risks and non-cancer health hazards and the evaluation of exposure to lead. Conclusions regarding the RMEs for receptors at the OU2 exposure areas are provided below.

9.1 Creek Channel

9.1.1 Cancer Risks: Creek Channel

The risk assessment evaluated cancer risks for the recreational user and angler. The assessment found:

Angler. Cancer risks for anglers in the Creek Channel were 8.6×10^{-5} for the young child, 1.1×10^{-4} for the adolescent, and 1.2×10^{-4} for the adult. The total risk to the child/adult was 2.1×10^{-4}. The total risk for adolescent, adult and child/adult exceeds the risk range. The main contributor to the risk was from ingestion of fish tissue. The main COPCs in the fish tissue were PCBs (presented as risks from exposure to individual Aroclors). Cancer risks from exposure to the sediment/soil for the anglers were within the risk range.

The CTE exposures for the angler were 9.8×10^{-6} for the young child, 6.6×10^{-6} for the adolescent, and 2.7×10^{-6} for the adult. The total CTE risk to the adult/child was 1.3×10^{-5}. All these risks were within the risk range.

Cancer risks to the recreational user of the Creek Channel were within the risk range.

9.1.2 Non-Cancer Hazards: Creek Channel

The risk assessment evaluated exposure to soil/sediment for the recreational user and angler. The assessment found:

Angler. The non-cancer HI for fish consumers was an HI = 15.6 for the young child, an HI = 10.1 for the adolescent, and an HI = 8.5 for the adult. The main contributors were exposure mercury and PCBs, expressed as total Aroclors, from ingestion of fish tissue. The non-cancer HI from exposure to mercury in fish tissue was an HI = 2.6 for the young child, an HI = 1.7 for the adolescent, and an HI

= 1.5 for the adult. The non-cancer health effects for mercury were effects on the central nervous system (CNS). The total non-cancer HI for PCBs, based on total Aroclors, was an HQ = 6.3 for the adult. The potential health effects from exposures to PCBs are immune effects.

The CTE non-cancer HI was an HI = 1.7 for the young child, an HI = 1.2 for the adolescent, and an HI = 0.9 for the adult. The HI based on health effects were less than the goal of protection on an HI = 1 for mercury and total PCBs, expressed as Aroclors.

The non-cancer HI for the recreational user of the Creek Channel did not exceed the goal of protection of an HI = 1.

9.1.3 Lead

The average lead screening level of 800 mg/kg in soil for commercial/industrial use was exceeded for this exposure area.

9.2 Former Flintkote Plant Property

9.2.1 Cancer Risks: Former Flintkote Plant Property

The risk assessment evaluated cancer risks for the visitor/trespasser, outdoor worker, and construction worker. The assessment found:

Visitor/Trespasser. Cancer risk from exposure to soil/sediment by the young child visitor/trespasser was 1.5×10^{-4}; for the adolescent risk is 9×10^{-5}; and for the adult risk is 1.4×10^{-5}. The risk for child visitor/trespasser exceeds the risk range. The combined risk to the adult/child was 1.6×10^{-4} that exceeds the risk range. The main COPCs were PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthene, benzo(k)fluoroanthene and dibenzo(a,h)anthracene) and PCBs (based on total Aroclors).

The CTE or average risks were 3.0×10^{-5} for the young child, 1.2×10^{-5} for the adolescent, and 9.8×10^{-7} for the adult. The total risk to the CTE individual adult/child were 3.1×10^{-5} that is within the risk range.

Outdoor Worker. The cancer risks to the outdoor worker were 1.5×10^{-4}, exceeding the risk range, and the main contributors were PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoroanthene, benzo(k)fluoroanthene and dibenzo(a,h)anthracene) and PCBs (based on total Aroclors). The CTE risks were 1.6×10^{-5} which is within the risk range.

Construction Worker. Cancer risk to the construction worker was 7.6×10^{-6}, which is within the risk range. The CTE risks were 1.8×10^{-6}. However, non-cancer hazards to this RME individual exceeded the goal of protection of an HI = 1 and are discussed in Section 9.2.2, Non-Cancer Hazards.

9.2.2 Non-Cancer Hazards: Former Flintkote Plant Property

The risk assessment evaluated hazards to the outdoor worker and construction worker, and to the visitor/trespasser from exposure to soil/sediment. The assessment found:

Visitor/Trespasser. The non-cancer HI to the RME individual was greater than the goal of protection of an HI = 1 for the visitor/trespasser with an HI = 3.9 for the young child; an HI = 2.1 for the adolescent, and an HI = 0.4 for the adult. The main COPCs based on immune effects from exposure to PCBs was an HI = 3.1 for the young child, an HI = 1.8 for the adolescent; and an HI = 0.4 for the adult. The HI for all other chemicals were below the goal of protection of an HI = 1.

The non-cancer HI to the CTE individual was an HI = 1.2 for the young child; an HI = 0.8 for the adolescent; and an HI = 0.1 for the adult. Health effects for all the individual chemicals were below the goal of protection of an HI = 1 for the young child.

Outdoor Worker. The RME non-cancer hazards to the outdoor worker was an HI = 3.6, that exceeds the goal of protection of an HI = 1. The main contributors to the HI was primarily from PCB exposure based on potential impacts on the immune system with an HI = 2.8. Health effects from the remaining chemicals were below the goal of protection of an HI = 1.

Construction Worker. The RME non-cancer hazards to the construction worker was an HI = 10.3, that exceeds the goal of protection of an HI = 1. The main contributors to the HI were primarily from PCB exposure based on potential impacts on the immune system with an HI = 5.8. In addition, antimony contributed an HI = 2.3 based on hematological effects. Health effects from the remaining chemicals were below the goal of protection of an HI = 1.

9.2.3 Lead

The average lead screening level of 800 mg/kg in soil for commercial/industrial use was exceeded for this exposure area.

9.3 Upson Park

9.3.1 Cancer Risks: Upson Park

The risk assessment evaluated cancer risks for the recreational user, outdoor worker, and construction worker. Cancer risks to the recreational user, the outdoor worker, and the construction worker of Upson Park were within the risk range. However, non-cancer hazards to these RME individuals exceeded the goal of protection of an HI = 1 and are discussed in Section 9.3.2, Non-Cancer Hazards.

9.3.2 Non-Cancer Hazards: Upson Park

The risk assessment evaluated hazards to the outdoor worker and construction worker, and to the recreational user from exposure to soil/sediment. The assessment found:

Recreational User. The non-cancer hazard to the RME young child was an HI = 7.8 with PCB representing the majority of the hazard (HI = 7.1). All other HIs based on health effects were below the goal of protection of an HI = 1. The non-cancer hazard to the adolescent was an HI = 3.2 with the majority of the hazard associated with PCBs based on immune effects. The non-cancer HI to the adult was 0.9, which is below the goal of protection of an HI = 1.

The non-cancer HI to the CTE individual for the young child was an HI = 3.9 with the majority of the hazard from PCBs (HI = 3.5). The non-cancer HI for the adolescent was an HI = 1.6 with the majority of the hazard from PCBs associated with immune effects (HI = 1.5). The non-cancer HI to the adult was 0.4, which is below the goal of protection of an HI = 1.

Outdoor Worker. The non-cancer HI for the outdoor worker had an HI = 3.5 with the majority of the HI associated with exposures to PCBs and potential impacts on the immune system (HI = 3.2). The CTE HI was 2.9 which exceeds the goal of protection of an HI = 1 with the majority of the hazard from PCBs associated with immune effects (HI = 2.6).

Construction Worker. The non-cancer HI for the construction worker was an HI = 8.9 which exceeds the goal of protection of an HI = 1. The main contributor was from exposure to PCBs which may impact the immune system (HI = 7.9). The HI associated with other chemicals was below the goal of protection of an HI = 1. The CTE non-cancer HI for this receptor was an HI = 2.1 primarily based on exposure to PCBs (HI = 1.9) which exceeds the goal of protection of an HI = 1.

9.3.3 Lead

The average lead screening level of 800 mg/kg in soil for commercial/industrial use was not exceeded, but the levels exceeded the residential screening level of 400 mg/kg for this exposure area.

9.4 White Transportation Property

9.4.1 Cancer Risks: White Transportation Property

The risk assessment evaluated cancer risks for the visitor/trespassers, indoor worker, outdoor worker, construction worker, and future resident. The assessment found:

Future Resident. Future exposures to the young child and adult RME resident from exposure to groundwater (tap water consumption) and exposure to soil at a depth of 0 to 10 feet that may be brought to the surface and not managed had total risks of 1.6×10^{-4} for the young child and 9.7×10^{-5} for the adult, resulting in a total risk of 2.6×10^{-4}. The total risks to the young child and child/adult exceed the risk range. The main COPCs in soil were PAHs (benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenzo(a,h)anthracene, and indeno(1,2,3-cd)pyrene). The main COPCs in groundwater (tap water) were manganese and trichloroethylene (TCE).

CTE risk to the young child was 4.3 x 10^{-5} and to the adult was 2.0 x 10^{-5} which is within the risk range. The total risk to the future resident was 6.2 x 10^{-5}, primarily based on exposure to groundwater.

Cancer risks were within the risk range for the visitor/trespasser, indoor worker, outdoor worker, and construction worker at White Transportation and non-cancer hazards were below the goal of protection of an HI = 1 as described in Section 9.4.2, Non-Cancer Hazards.

9.4.2 Non-Cancer Hazards: White Transportation Property

The risk assessment evaluated hazards to the indoor worker, outdoor worker and construction worker, and to the visitor/trespasser from exposure to soil/sediment and young child and adult future resident from exposure to groundwater (tap water). The assessment found:

Future Young Child Resident. Non-cancer RME hazards to the future young child resident was HI = 7.1, which exceeds the goal of protection of an HI = 1. The main contributors were exposure to PCBs and metals in surface soils with a total HI = 2.5 and exposure to metals and TCE in groundwater with a total HI = 4.6. All the individual HI values were below the goal of protection of HI = 1 except for exposure to groundwater from manganese (HQ = 1.7). Health effects were primarily to the CNS from aluminum and manganese (HI = 2.2).

The CTE non-cancer hazards from exposure to soils was HI = 0.6, which is below the goal of protection of an HI = 1. The non-cancer hazards from exposure to the groundwater was an HI = 2.4. All the individual HI values were below the goal of protection of an HI = 1.

Future Adult Resident. Non-cancer hazards to the future adult resident was a total HI = 3.5 with an HI = 0.3 from exposure to surface soil and an HI = 3.2 from exposure to groundwater. All the individual HI values were below the goal of protection of HI = 1 except for exposure to groundwater from manganese (HQ = 1.0) and TCE (HQ = 1.0). Health effects were primarily to the CNS from manganese in groundwater and soil (HI = 1.1).

The CTE non-cancer hazards from exposure to soils was HI = 0.1, which is below the goal of protection of an HI = 1. The non-cancer hazards from exposure to the groundwater was an HI = 1.9. All the individual HI values were below the goal of protection of HI = 1. TCE was the main contributor to the non-cancer HI for groundwater based on vascular, immune and developmental effects (HQ = 0.7) but the HI was below the goal of protection of an HQ = 1.

The non-cancer HI for the indoor worker, outdoor worker and construction worker, and to the visitor/trespasser at White Transportation did not exceed the goal of protection of an HI = 1.

9.4.3 Lead

The average lead screening level of 400 mg/kg in soil for residential use was not exceeded for this exposure area.

9.5 Former United Paperboard Company Property

9.5.1 Cancer Risks: Former United Paperboard Company Property

The risk assessment evaluated cancer risks for the visitor/trespassers, indoor worker, outdoor worker, construction worker and future resident. The assessment found:

Future Resident. Future exposures to the young child and adult RME resident from exposure to groundwater (tap water consumption) and exposure to soil at a depth of 0 to 10 feet that may be brought to the surface and not managed had total risks of 7.3×10^{-4} for the young child and 2.1×10^{-5} for the adult, resulting in a total risk of 9.3×10^{-4}. All the risks exceeds the risk range. The main COPC were PAHs (benzo(a)pyrene) and PCBs (presented as Aroclors) in soil.

The cancer risk to the future CTE resident young child was 1.0×10^{-4} and to the adult was 2.7×10^{-5} and the total risk to the adult/child was 1.3×10^{-4}, which exceeds the risk range.

Cancer risks were within the risk range for the visitor/trespasser, indoor worker, outdoor worker, and construction worker at United Paperboard but non-cancer hazards exceeded the goal of protection of an HI = 1 as described in Section 9.5.2, Non-Cancer Hazards.

9.5.2 Non-Cancer Hazards: Former United Paperboard Company Property

The risk assessment evaluated hazards to the indoor worker, outdoor worker, construction worker, and future young child and adult resident from exposure to soil/sediment; and young child and adult resident from exposure to groundwater (tap water). The assessment found:

Visitor/Trespasser. The total non-cancer HI to the RME visitor/trespasser young child was an HI = 2.3. The main contributor to the HI was associated with immune effects from PCBs (HI = 2.1). The CTE HI was 0.7, which is below the goal of protection of an HI = 1.

The non-cancer HI to the RME visitor/trespasser adolescent was an HI = 1.3 with the main contributor associated with PCB exposures and potential immune effects (HI = 1.2). The CTE HI was 0.5, which is below the goal of protection of an HI = 1. The non-cancer HI for the RME adult was below the goal of protection of an HI = 1.

Indoor Worker. The non-cancer HI to the indoor worker was a total HI = 1.5 with the main contributor associated with immune effects from exposure to PCBs (HI = 1.5). The CTE exposure was less than the goal of protection of an HI = 1.

Outdoor Worker. The non-cancer HI to the outdoor worker was a total of HI = 2.1 with the main contributor associated with immune effects from exposure to PCBs (HI = 1.9). The CTE exposure was less than the goal of protection of an HI = 1.

Construction Worker. The non-cancer HI to the construction worker was a total of HI = 12 with the main contributor associated with immune effects from exposure to PCBs with an HI = 10. In addition, antimony contributed an HI = 1.0 based on hematological effects. The CTE exposure was a total of HI = 2.9 with the main contribution associated with immune effects from exposure to PCBs (HI = 2.5).

Future Young Child Resident. The total non-cancer HI to the RME future young child resident was an HI = 65.2, which exceeds the goal of protection of HI = 1. The main contributors were exposure from soils at a depth of 0 to 10 feet (HI = 60.6) assuming the soil is brought to the surface without appropriate management and therefore available for exposure, and from exposure to groundwater used as a future drinking water source (HI = 4.6). The main health effects by chemical were antimony in soil (HI = 4.7 associated with impacts on the blood); copper and iron (HI = 2.0 from effects on the GI tract); manganese and mercury based on potential CNS effects (HI = 2.3); and impacts on the immune system from PCBs (HI = 52.2). The main contaminants in groundwater were manganese based on CNS effects (HI = 1.7) and developmental, immune, and vascular effects from TCE (HI = 0.9).

The non-cancer HI for the CTE young child future resident was HI = 15.6 with a total HI = 13.2 from soil and a total HI = 2.4 from exposure to groundwater. In soil, the HI contribution from antimony was an HQ = 1.2 and from PCBs was a total HI = 11.1. All individual HIs from exposure in groundwater were below the goal of protection of an HI = 1. The main health effects were an HI = 1.5 associated with impacts on the blood (primarily from antimony) and HI = 11.1 associated with impacts on the immune system (primarily PCBs).

Future Adult Resident. The non-cancer HI to the RME individual future adult resident was a total HI = 9.9 with a total HI = 6.7 from soil and a total HI = 3.2 from groundwater. The main contributors from exposure to soil were PCBs with a total HI = 5.8 associated with immune effects. The main contributors from exposure to groundwater were manganese based on CNS effects (HI = 1.0) and developmental, immune, and vascular effects from TCE (HI = 1.0).

The non-cancer HI for the CTE future adult resident was HI = 3.1 with a total HI = 1.3 from soil and a total HI = 1.9 from exposure to groundwater. In soil, the HI main contributor was from PCBs with a total HI = 1.1. All individual HI from exposure in groundwater were below the goal of protection of an HI = 1.

9.5.3 Lead

The average concentration of lead in soils at depths of 0 to 2 feet and at depths of 0 to 10 feet exceed both the residential and commercial/industrial levels. Lead was not detected in groundwater.

9.6 Vapor Intrusion Associated with Groundwater

The maximum concentration of VOCs in groundwater were compared to the VISLs in groundwater to evaluate potential need for further vapor intrusion sampling.

The main plume reported a maximum TCE concentration of 14.0 µg/L in groundwater. This concentration exceeds the screening level for TCE of 1.2 µg/L at a risk level of 1×10^{-6}. The chloroform concentration of 3.3 µg/L exceeds the screening level in groundwater of 0.12 µg/L based on a cancer risk of 1×10^{-6}. The concentration of tetrachloroethylene of 2.8 µg/L is below the screening level of 15 µg/L based on a risk of 1×10^{-6}.

The concentrations in groundwater at the Former Flintkote Plant Property included 2.0 µg/L of chloroform and 200 µg/L of pentachlorophenol. The concentration of chloroform exceeds the screening level of 0.8 µg/L in groundwater associated with a cancer risk of 1×10^{-6}. A comparison value for pentachlorophenol was not available since it is not considered a volatile chemical.

The results of this analysis indicates the need for evaluation of vapor intrusion in the event that a building is constructed on the Site.

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A Data Evaluation Summary Reports for OU2

Activity	Comment
Field sampling and data evaluation were conducted according to the *Project-Specific Quality Assurance Project Plan for the Eighteen Mile Creek Site – OU2, Remedial Investigation/Feasibility Study, Lockport, New York.* November 2014. Further details regarding data useability are provided in the Section 4.2 of the RI (E & E, 2016)	
Field Sampling	
Discuss sampling problems and field conditions that affect data useability.	The data met the appropriate requirements as outlined in the QAPP.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	The sport fish collected are representative of the receptor exposure and collected consistent with the QAPP. The data are appropriate for use in the HHRA.
Assess the effect of field QC results on data useability.	No relevant field QC.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	Field samples were collected consistent with the QAPP and are appropriate for use in the HHRA.
Analytical Techniques	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. The samples analysis were originally intended to be performed by CLP; however, a laboratory could not be assigned. Therefore, the analytical work was subcontracted and the samples were analyzed by the current SW-846 analytical method *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* The test methods provided sufficient guidance intended to ensure data are of sufficient quality for their intended use and identifies chemical specific analytical methods.
Were detection limits adequate?	Yes. Project Action Limits were not established for fish tissue samples since there are no risk screening values for fish. Yes, the detection limits were adequate. In the case where samples were diluted by the laboratory and elevated reporting limits were provided for non-detect results, the elevated detection limit was

Activity	Comment
	used for risk assessment purposes.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	The analytical method met the requirements outlined in the QAPP and are appropriate for use in the HHRA.

Data Quality Objectives	
Precision - How were duplicates handled?	As per the QAPP 10 fish were collected from each location to allow for statistical comparison. There is no impact to data use in the HHRA. Method precision was assessed by the laboratory by performing Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD) or Matrix Spike and Matrix Spike Duplicate (MS/MSD) analysis.
Accuracy - How were split samples handled?	Accuracy was evaluated through the use of analytical standards, QC samples such as spikes and LCSs, and blank samples.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	No problems noted.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	Data completeness was evaluated in the data validation memos. Rejected sample results are not used in the HHRA.
Comparability - Indicate any problems associated with data comparability.	None
Were the DQOs specified in the QAPP satisfied?	Yes
Summarize the effect of DQO issues on the risk assessment, if applicable.	None
Data Validation and Interpretation	

What are the data validation requirements?	Specific criteria for QC limits were obtained from the project QAPP.
What method or guidance was used to validate the data?	The QAPP indicates the CLP validation SOPs should be used; however, the data analysis were not performed by CLP. Therefore, USEPA Region 2 validation SOPs were used as validation guidance. SOP No. HW-2c, Mercury and Cyanide Data Validation. SOP No. HW-35, Semivolatile Data Validation SOP No. HW-36, Pesticide Data Validation SOP No. HW-37, PCB Aroclor Data Validation SOP No. HW-2b, ICP-MS Data Validation SOP No. HW-19, Data Validation for Polychlorinated Dibenzodioxins/Polychlorinated Dibenzofurans High Resolution Gas Chromatography/High Resolution Mass Spectrometry
Data Validation and Interpretation (continued)	
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes, the data validation method was consistence with the guidance.
Were all data qualifiers defined? Discuss those which were not.	All data qualifiers were defined.
Which qualifiers represent useable data?	EMPCJ = Estimated maximum possible concentration J = Estimated value UJ = Estimated value/Non-detect U = Non-detect
Which qualifiers represent unuseable data?	No data were deemed unusable.
How are tentatively identified compounds handled?	TICs were not used in the HHRA.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	The data meets the requirements outlined in the QAPP, the data was validated, and meets the requirements for use in the risk assessment.
Additional notes:	

Note: The purpose of this Worksheet is to succinctly summarize the data useability analysis and conclusions. Reference specific pages in the Remedial Investigation and/or the Risk Assessment text to further expand on the information presented here.

Activity	Comment
Field sampling and data evaluation were conducted according to the *Site-Specific Quality Assurance Project Plan (QAPP) Supplemental Remedial Investigation and Feasibility Study at the Eighteenmile Creek Corridor Site (Site No. 932121), City of Lockport, New York*, January 2007. *Project-Specific Quality Assurance Project Plan for the Eighteen Mile Creek Site – OU2, Remedial Investigation/Feasibility Study, Lockport, New York.* November 2014. A QAPP was not prepared for the TVGA SI/RAR report. Further details regarding data useability are provided in the Section 4.1 and 4.2 of the RI (E & E, 2016)	
Field Sampling	
Discuss sampling problems and field conditions that affect data useability.	In the case where monitoring wells were purged dry, the well was allowed to recharge and sampled within 24 hours either by peristaltic pump or bailer. Due to limited well volume, MW-09 was sampled for VOCs only. Volatiles are the primary concern in groundwater samples; therefore, there is no impact to the HHRA.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	Due to limited well volume, MW-09 was sampled with a bailer. All other monitoring wells were sampled by low flor purge techniques. Rinsate blank samples exhibited low level detections of metals and phthalates. Most of the sample results were significantly greater than the blank detections. There was no impact to data usability.
Assess the effect of field QC results on data useability.	There was a positive detection for methylene chloride in the trip blank; however, the analyte was not detected in the samples. There is no impact to data usability.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	Field samples were collected consistent with the QAPP. There are no field sampling issues that should affect the HHRA.
Analytical Techniques	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. The samples analysis were either performed by the SW-846 analytical method *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, or performed by CLP analytical Statements of Work.
Were detection limits adequate?	Yes, the detection limits were adequate. In the case where samples were diluted by the laboratory and elevated reporting limits were provided for non-detect results, the elevated detection limit was used for risk assessment purposes.

Activity	Comment
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	The analytical methods met the requirements outlined in the QAPP and are appropriate for use in the HHRA.

Data Quality Objectives	
Precision – How were duplicates handled?	Method precision was assessed by the laboratory by performing Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD) or Matrix Spike and Matrix Spike Duplicate (MS/MSD) analysis. Precision was also assessed between laboratory and field duplicates results. Precision was assessed as described in the QAPP or as noted in the report.
Accuracy – How were split samples handled?	Accuracy was evaluated through the use of analytical standards, QC samples such as spikes and LCSs, and blank samples.
Representativeness – Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	Trip blanks were included in the sample coolers containing samples for volatiles analysis. Methylene chloride was detected in the trip blank; however, the analyte was not detected in the samples. There is no impact to data usability. Rinsate blank samples exhibited low level detections of metals and phthalates. Most of the sample results were significantly greater than the blank detections. There is no impact to data usability. Fall 2014, sample OU2-MW05 was mislabeled as OU2-GW05 on the COC and carried throughout the report. The name correction was changed in RA Database.
Completeness – Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	Data completeness was evaluated in the data validation memos. Rejected sample results are not used in the HHRA.
Comparability – Indicate any problems associated with data comparability.	Low levels of analytes were detected in the method blanks. If the results were less than 5X the blank detection, then the results were qualified as non-detect. However, most samples results were non-detect or 5X greater than the blank detection. There is no impact to data usability. 1,4-Dioxane was qualified as rejected in many samples

	due to calibration failures. Rejected sample results are not used in the HHRA.
Were the DQOs specified in the QAPP satisfied?	Yes.
Summarize the effect of DQO issues on the risk assessment, if applicable.	Rejected sample results are not used in the HHRA.
Data Validation and Interpretation	
What are the data validation requirements?	Specific criteria for QC limits were obtained from the project QAPP.
What method or guidance was used to validate the data?	USEPA Region 2 validation SOPs were used as validation guidance. SOP No. HW-2c, Mercury and Cyanide Data Validation. SOP No. HW-35, Semi-volatile Data Validation SOP No. HW-36, Pesticide Data Validation SOP No. HW-37, PCB Aroclor Data Validation SOP No. HW-2a, ICP-AES Data Validation SOP No. HW-2b, ICP-MS Data Validation SOP No. HW-19, Data Validation for Polychlorinated Dibenzodioxins/Polychlorinated Dibenzofurans High Resolution Gas Chromatography/High Resolution Mass Spectrometry
Data Validation and Interpretation (continued)	
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes, the data validation method was consistence with the guidance.
Were all data qualifiers defined? Discuss those which were not.	All data qualifiers were defined.
Which qualifiers represent useable data?	EMPCJ = Estimated maximum possible concentration J = Estimated value UJ = Estimated value/Non-detect U = Non-detect
Which qualifiers represent unuseable data?	R = Rejected

How are tentatively identified compounds handled?	TICs were not used for HHRA.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	The data meets the requirements outlined in the QAPP, the data was validated, and meets the requirements for use in the risk assessment.
Additional notes:	Only groundwater results from 2014/2015 will be used for risk assessment purposes. Groundwater results obtained prior to 2014 will not be used in the risk assessment.

Note: The purpose of this Worksheet is to succinctly summarize the data useability analysis and conclusions. Reference specific pages in the Remedial Investigation and/or the Risk Assessment text to further expand on the information presented here.

Activity	Comment
Field sampling and data evaluation were conducted according to the *Site-Specific Quality Assurance Project Plan (QAPP) Supplemental Remedial Investigation and Feasibility Study at the Eighteenmile Creek Corridor Site (Site No. 932121), City of Lockport, New York,* January 2007. *Quality Assurance Project Plan (QAPP) for Eighteenmile Creek PCB Source Trackdown Project Niagara County, New York,* May 2006. *Project-Specific Quality Assurance Project Plan for the Eighteen Mile Creek Site – OU2, Remedial Investigation/Feasibility Study, Lockport, New York.* November 2014. QAPP's were not prepared for the NYSDEC RI Report and the TVGA SI/RAR Further details regarding data useability are provided in the Section 4.1 and 4.2 of the RI (E & E, 2016)	
Field Sampling	
Discuss sampling problems and field conditions that affect data useability.	The data met the appropriate requirements as outlined in the QAPP.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	PCB screening samples collected in the PCB Trackdown study are not used in the HHRA. The samples were analyzed by a modified extraction method and were grab samples collected solely to determine where the final samples would be collected. Aside from the samples noted above, the sediment samples collected are representative of the receptor exposure and collected consistent with the QAPP or as detailed in the report. The data are appropriate for use in the HHRA.
Assess the effect of field QC results on data useability.	Rinsate blank and trip blanks exhibited low level detections. Most of the sample results were significantly greater than the blank detections. There was no impact to data usability.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	Field samples were collected consistent with the QAPP. PCB Screening samples are not used in the HHRA and are appropriate for use in the HHRA.
Analytical Techniques	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. The samples analysis were either performed by the SW-846 analytical method *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* or performed by CLP analytical Statements of Work.
Were detection limits adequate?	Yes, the detection limits were adequate. In the case where samples were diluted by the laboratory and elevated reporting limits were provided for non-detect

Activity	Comment
	results, the elevated detection limit was used for risk assessment purposes.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	The analytical methods met the requirements outlined in the QAPP and are appropriate for use in the HHRA.

Data Quality Objectives	
Precision - How were duplicates handled?	Method precision was assessed by the laboratory by performing Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD) or Matrix Spike and Matrix Spike Duplicate (MS/MSD) analysis. Precision was also assessed between laboratory and field duplicates results. Precision was assessed as described in the QAPP or as noted in the report.
Accuracy - How were split samples handled?	Accuracy was evaluated through the use of analytical standards, QC samples such as spikes and LCSs, and blank samples.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	Rinsate blanks were collected from non-dedicated equipment. Most of the sample results were significantly above the blank level or already qualified due to method blank contamination. There is no impact to data usability.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	The data package for sample DEC-SED-37 was unavailable; therefore, the data was not used in the HHRA. Data completeness was evaluated in the data validation memos. Rejected sample results are not used in the HHRA.
Comparability - Indicate any problems associated with data comparability.	Low levels of analytes were detected in the method blanks. If the results were less than 5X the blank detection, then the results were qualified as non-detect. However, most samples results were non-detect or 5X greater than the blank detection. There is no impact to data usability. 1,4-Dioxane was qualified as rejected in many samples due to calibration failures. Rejected sample results are not used in the HHRA.

Were the DQOs specified in the QAPP satisfied?	Yes.
Summarize the effect of DQO issues on the risk assessment, if applicable.	Rejected samples results are not used in the HHRA.
Data Validation and Interpretation	
What are the data validation requirements?	Specific criteria for QC limits were obtained from the project QAPP.
What method or guidance was used to validate the data?	USEPA Region 2 validation SOPs were used as validation guidance. SOP No. HW-2c, Mercury and Cyanide Data Validation. SOP No. HW-35, Semivolatile Data Validation SOP No. HW-36, Pesticide Data Validation SOP No. HW-37, PCB Aroclor Data Validation SOP No. HW-2a, ICP-AES Data Validation SOP No. HW-2b, ICP-MS Data Validation SOP No. HW-19, Data Validation for Polychlorinated Dibenzodioxins/Polychlorinated Dibenzofurans High Resolution Gas Chromatography/High Resolution Mass Spectrometry
Data Validation and Interpretation (continued)	
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes, the data validation method was consistence with the guidance.
Were all data qualifiers defined? Discuss those which were not.	All data qualifiers were defined.
Which qualifiers represent useable data?	EMPCJ = Estimated maximum possible concentration J = Estimated value UJ = Estimated value/Non-detect U = Non-detect
Which qualifiers represent unuseable data?	R = Rejected
How are tentatively identified compounds handled?	TICs were not used for HHRA.

Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	The data meets the requirements outlined in the QAPP, the data was validated, and meets the requirements for use in the risk assessment.
Additional notes:	Sediment samples collected from the New York State Barge Canal for NYSDEC in 2007 were not included in the HHRA since the canal is not part of OU2. The sample results were not used in the HHRA.

Note: The purpose of this Worksheet is to succinctly summarize the data useability analysis and conclusions. Reference specific pages in the Remedial Investigation and/or the Risk Assessment text to further expand on the information presented here.

Activity	Comment
Field sampling and data evaluation were conducted according to the *Site-Specific Quality Assurance Project Plan (QAPP) Supplemental Remedial Investigation and Feasibility Study at the Eighteenmile Creek Corridor Site (Site No. 932121), City of Lockport, New York,* January 2007. *Quality Assurance Project Plan (QAPP) for Eighteenmile Creek PCB Source Trackdown Project Niagara County, New York,* May 2006. *Project-Specific Quality Assurance Project Plan for the Eighteen Mile Creek Site – OU2, Remedial Investigation/Feasibility Study, Lockport, New York.* November 2014. QAPP's were not prepared for the NYSDEC RI Report and the TVGA SI/RAR Further details regarding data useability are provided in the Section 4.1 and 4.2 of the RI (E & E, 2016)	
Field Sampling	
Discuss sampling problems and field conditions that affect data useability.	The data met the appropriate requirements as outlined in the QAPP.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	The soil samples collected from the Water Street Residential Properties in OU1 are not used in the HHRA. An HHRA was previously conducted by the USEPA and used these samples. The samples use will not be duplicated. The soil samples collected are representative of the receptor exposure and collected consistent with the QAPP or as detailed in the report. The data are appropriate for use in the HHRA.
Assess the effect of field QC results on data useability.	Rinsate blank and trip blanks exhibited low level detections. Most of the sample results were significantly greater than the blank detections. There was no impact to data usability.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	Field samples were collected consistent with the QAPP. PCB Screening samples are not used in the HHRA and are appropriate for use in the HHRA.
Analytical Techniques	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. The samples analysis were either performed by the SW-846 analytical method *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* or performed by CLP analytical Statements of Work.
Were detection limits adequate?	Yes, the detection limits were adequate. In the case where samples were diluted by the laboratory and elevated reporting limits were provided for non-detect

Activity	Comment
	results, the elevated detection limit was used for risk assessment purposes.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	The analytical methods met the requirements outlined in the QAPP and are appropriate for use in the HHRA.

Data Quality Objectives	
Precision - How were duplicates handled?	Method precision was assessed by the laboratory by performing Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD) or Matrix Spike and Matrix Spike Duplicate (MS/MSD) analysis. Precision was also assessed between laboratory and field duplicates results. Precision was assessed as described in the QAPP or as noted in the report.
Accuracy - How were split samples handled?	Accuracy was evaluated through the use of analytical standards, QC samples such as spikes and LCSs, and blank samples.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	Rinsate blanks were collected from non-dedicated equipment. Trip blanks were included in coolers containing samples for volatiles analysis. Most of the sample results were significantly above the blank level or already qualified due to method blank contamination. There is no impact to data usability.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	Data completeness was evaluated in the data validation memos. Rejected sample results are not used in the HHRA.
Comparability - Indicate any problems associated with data comparability.	Low levels of analytes were detected in the method blanks. If the results were less than 5X the blank detection, then the results were qualified as non-detect. However, most samples results were non-detect or 5X greater than the blank detection. There is no impact to data usability. 1,4-Dioxane and acetone were qualified as rejected in many samples due to calibration failures. Rejected sample results are not used in the HHRA.

Were the DQOs specified in the QAPP satisfied?	Yes.
Summarize the effect of DQO issues on the risk assessment, if applicable.	Rejected samples results are not used in the HHRA.
Data Validation and Interpretation	
What are the data validation requirements?	Specific criteria for QC limits were obtained from the project QAPP.
What method or guidance was used to validate the data?	USEPA Region 2 validation SOPs were used as validation guidance. SOP No. HW-2c, Mercury and Cyanide Data Validation. SOP No. HW-35, Semivolatile Data Validation SOP No. HW-36, Pesticide Data Validation SOP No. HW-37, PCB Aroclor Data Validation SOP No. HW-2a, ICP-AES Data Validation SOP No. HW-2b, ICP-MS Data Validation SOP No. HW-19, Data Validation for Polychlorinated Dibenzodioxins/Polychlorinated Dibenzofurans High Resolution Gas Chromatography/High Resolution Mass Spectrometry
Data Validation and Interpretation (continued)	
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes, the data validation method was consistence with the guidance.
Were all data qualifiers defined? Discuss those which were not.	All data qualifiers were defined.
Which qualifiers represent useable data?	EMPCJ = Estimated maximum possible concentration J = Estimated value UJ = Estimated value/Non-detect U = Non-detect
Which qualifiers represent unuseable data?	R = Rejected
How are tentatively identified compounds handled?	TICs were not used for HHRA.

Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	The data meets the requirements outlined in the QAPP, the data was validated, and meets the requirements for use in the risk assessment.
Additional notes:	

Note: The purpose of this Worksheet is to succinctly summarize the data useability analysis and conclusions. Reference specific pages in the Remedial Investigation and/or the Risk Assessment text to further expand on the information presented here.

Activity	Comment
Field sampling and data evaluation were conducted according to the *Project-Specific Quality Assurance Project Plan for the Eighteen Mile Creek Site – OU2, Remedial Investigation/Feasibility Study, Lockport, New York.* November 2014. A QAPP was not prepared for the TVGA SI/RAR report. Further details regarding data useability are provided in the Section 4.1 and 4.2 of the RI (E & E, 2016)	
Field Sampling	
Discuss sampling problems and field conditions that affect data useability.	The data met the appropriate requirements as outlined in the QAPP.
Are samples representative of receptor exposure for this medium (e.g. sample depth, grab vs composite, filtered vs unfiltered, low flow, etc.)?	The surface water samples collected are representative of the receptor exposure and collected consistent with the QAPP. The data are appropriate for use in the HHRA.
Assess the effect of field QC results on data useability.	There was a positive detection for methylene chloride in the trip blank; however, the analyte was not detected in the samples. There is no impact to data usability.
Summarize the effect of field sampling issues on the risk assessment, if applicable.	Field samples were collected consistent with the QAPP. There are no field sampling issues that should affect the HHRA.
Analytical Techniques	
Were the analytical methods appropriate for quantitative risk assessment?	Yes. The samples analysis were either performed by the SW-846 analytical method *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods,* or performed by CLP analytical Statements of Work.
Were detection limits adequate?	Yes, the detection limits were adequate. In the case where samples were diluted by the laboratory and elevated reporting limits were provided for non-detect results, the elevated detection limit was used for risk assessment purposes.
Summarize the effect of analytical technique issues on the risk assessment, if applicable.	The analytical methods met the requirements outlined in the QAPP and are appropriate for use in the HHRA.

Data Quality Objectives	
Precision - How were duplicates handled?	Method precision was assessed by the laboratory by performing Laboratory Control Spike and Laboratory Control Spike Duplicate (LCS/LCSD) or Matrix Spike and Matrix Spike Duplicate (MS/MSD) analysis. Precision was also assessed between laboratory and field duplicates results. Precision was assessed as described in the QAPP or as noted in the report.
Accuracy - How were split samples handled?	Accuracy was evaluated through the use of analytical standards, QC samples such as spikes and LCSs, and blank samples.
Representativeness - Indicate any problems associated with data representativeness (e.g., trip blank or rinsate blank contamination, chain of custody problems, etc.).	Trip blanks were included in the sample coolers containing samples for volatiles analysis. Methylene chloride was detected in the trip blank; however, the analyte was not detected in the samples. There is no impact to data usability.
Completeness - Indicate any problems associated with data completeness (e.g., incorrect sample analysis, incomplete sample records, problems with field procedures, etc.).	Data completeness was evaluated in the data validation memos. Rejected sample results are not used in the HHRA.
Comparability - Indicate any problems associated with data comparability.	There was a positive detection for methylene chloride in the trip blank; however, the analyte was not detected in the samples. There is no impact to data usability.
Were the DQOs specified in the QAPP satisfied?	Yes.
Summarize the effect of DQO issues on the risk assessment, if applicable.	Rejected samples results are not used in the HHRA.
Data Validation and Interpretation	
What are the data validation requirements?	Specific criteria for QC limits were obtained from the project QAPP.
What method or guidance was used to validate the data?	USEPA Region 2 validation SOPs were used as validation guidance. SOP No. HW-2c, Mercury and Cyanide Data Validation. SOP No. HW-35, Semivolatile Data Validation

	SOP No. HW-36, Pesticide Data Validation SOP No. HW-37, PCB Aroclor Data Validation SOP No. HW-2a, ICP-AES Data Validation SOP No. HW-2b, ICP-MS Data Validation SOP No. HW-19, Data Validation for Polychlorinated Dibenzodioxins/Polychlorinated Dibenzofurans High Resolution Gas Chromatography/High Resolution Mass Spectrometry
Data Validation and Interpretation (continued)	
Was the data validation method consistent with guidance? Discuss any discrepancies.	Yes, the data validation method was consistence with the guidance.
Were all data qualifiers defined? Discuss those which were not.	All data qualifiers were defined.
Which qualifiers represent useable data?	EMPCJ = Estimated maximum possible concentration J = Estimated value UJ = Estimated value/Non-detect U = Non-detect
Which qualifiers represent unuseable data?	R = Rejected
How are tentatively identified compounds handled?	TICs were not used for HHRA.
Summarize the effect of data validation and interpretation issues on the risk assessment, if applicable.	The data meets the requirements outlined in the QAPP, the data was validated, and meets the requirements for use in the risk assessment.
Additional notes:	Surface water samples collected from the New York State Barge Canal for NYSDEC in 2007 were not included in the HHRA since the canal is not part of OU2. The sample results were not used in the HHRA.

Note: The purpose of this Worksheet is to succinctly summarize the data useability analysis and conclusions. Reference specific pages in the Remedial Investigation and/or the Risk Assessment text to further expand on the information presented here.

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Fish Tissue	Corridor	United	Above Dam	Y	OU2-RED-01	5/21/2015		
Fish Tissue	Corridor	United	Above Dam	Y	OU2-RED-02	5/21/2015		
Fish Tissue	Corridor	United	Above Dam	Y	OU2-RED-03	5/21/2015		
Fish Tissue	Corridor	United	Above Dam	Y	OU2-ROC-C01	5/21/2015		
Fish Tissue	Corridor	United	Above Dam	Y	OU2-ROC-C02	5/21/2015		
Fish Tissue	Corridor	United	Below Dam	Y	OU2-ROC-C03	5/21/2015		
Fish Tissue	Corridor	United	Above Dam	Y	OU2-SMB-01	5/21/2015		
Fish Tissue	Corridor	United	Above Dam	Y	OU2-SMB-02	5/21/2015		
Fish Tissue	Corridor	United	Below Dam	Y	OU2-SMB-03			
Fish Tissue	Corridor	United	Below Dam	Y	OU2-SMB-04	5/21/2015		
Fish Tissue	Corridor	United	Above Dam	Y	OU2-WAL-01	5/21/2015		
Fish Tissue	Corridor	United	Above Dam	Y	OU2-WAL-02	5/21/2015		
Fish Tissue	Corridor	United	Above Dam	Y	OU2-WAL-03	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-BLU-C01	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CAR-01	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CAR-02	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CAR-03	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CAR-04	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CAR-05	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CAR-06	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CAR-07	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CAR-08	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CAR-09	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-CRA-C01	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-LMB-01	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-PUM-C01	5/21/2015		
Fish Tissue	Background Area 5	East Branch	East Branch	N	BG1-ROC-C01	5/21/2015		
Groundwater	OU2	Adjacent Jackson St	NA	Y	OU2-GW01-Z1	12/4/2014	7.5	8.4

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Groundwater	OU2	Adjacent Jackson St	NA	Y	OU2-MW18	12/19/2014	35.9	45.9
Groundwater	OU2	Adjacent Jackson St	NA	Y	OU2-MW18	5/20/2015	35.9	45.9
Groundwater	OU2	Adjacent Jackson St	NA	Y	OU2-MW18	12/19/2014	35.9	45.9
Groundwater	OU2	Flintkote	NA	Y	FS-198-E-MICRO-GW-O	10/3/2003	13	18
Groundwater	OU2	Flintkote	NA	Y	FS-198-F-MICRO-GW-O	10/3/2003	13	18
Groundwater	OU2	Flintkote	NA	Y	FS-MICRO-1-GW-O	10/3/2003	1.1	11.1
Groundwater	OU2	Flintkote	Demo Area	Y	FS-MW01OB-GW-O	10/2/2003	9.6	19.6
Groundwater	OU2	Flintkote	Demo Area	Y	FS-MW01RK-GW-O	10/3/2003	10	20
Groundwater	OU2	Flintkote	Demo Area	Y	FS-MW01RK-GW-O	10/2/2003	10	20
Groundwater	OU2	Flintkote	Demo Area	Y	FS-MW02OB-GW-O	10/2/2003	18.7	28.7
Groundwater	OU2	Flintkote	Demo Area	Y	FS-MW02RK-GW-O	10/2/2003	9	29
Groundwater	OU2	Flintkote	Demo Area	Y	FS-MW03RK-GW-O	10/2/2003	20	30
Groundwater	OU2	Flintkote	NA	Y	FS-MW04RK-GW-O	10/2/2003	18.5	28.5
Groundwater	OU2	Flintkote	NA	Y	FS-MW05RK-GW-O	10/3/2003	15	23
Groundwater	OU2	Flintkote	Island	Y	FS-MW06-MICRO-GW-O	10/3/2003	6.5	11.5
Groundwater	OU2	Flintkote	Island	Y	FS-MW06RK-GW-O	10/3/2003	13.5	21.5
Groundwater	OU2	Flintkote	Demo Area	Y	FS-MW07RK-GW-O	10/2/2003	27.6	37.6
Groundwater	OU2	United	NA	Y	18MC-MW01	7/9/2007	12	22
Groundwater	OU2	United	NA	Y	18MC-MW01-FLT	7/9/2007	12	22
Groundwater	OU2	United	NA	Y	18MC-MW02	7/9/2007	18	28
Groundwater	OU2	United	NA	Y	18MC-MW02-FLT	7/9/2007	18	28
Groundwater	OU2	United	NA	Y	18MC-MW04	7/9/2007	16	26
Groundwater	OU2	United	NA	Y	18MC-MW04-FLT	7/9/2007	16	26
Groundwater	OU2	United	NA	Y	18MC-MW05	2/11/2009	13	23
Groundwater	OU2	United	NA	Y	18MC-MW05	7/10/2007	13	23
Groundwater	OU2	United	NA	Y	18MC-MW05-FLT	7/10/2007	13	23
Groundwater	OU2	United	NA	Y	18MC-MW06	7/9/2007	15	25
Groundwater	OU2	United	NA	Y	18MC-MW06-FLT	7/9/2007	15	25

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Groundwater	OU2	United	NA	Y	18MC-MW08	7/11/2007	6	16
Groundwater	OU2	United	NA	Y	18MC-MW08-FLT	7/11/2007	6	16
Groundwater	OU2	United	NA	Y	OU2-MW05	5/19/2015	13	23
Groundwater	OU2	United	NA	Y	OU2-MW05	12/18/2014	13	23
Groundwater	OU2	United	NA	Y	OU2-MW09	5/20/2015	9	14
Groundwater	OU2	United	NA	Y	OU2-MW09	12/18/2014	9	14
Groundwater	OU2	Upson	NA	Y	18MC-MW14	7/11/2007	20	25
Groundwater	OU2	Upson	NA	Y	18MC-MW14	2/11/2009	20	25
Groundwater	OU2	Upson	NA	Y	18MC-MW14-FLT	7/11/2007	20	25
Groundwater	OU2	Upson	NA	Y	18MC-MW15	2/11/2009	16.7	21.7
Groundwater	OU2	Upson	NA	Y	18MC-MW15	7/11/2007	16.7	21.7
Groundwater	OU2	Upson	NA	Y	18MC-MW15-FLT	7/11/2007	16.7	21.7
Groundwater	OU2	Upson	NA	Y	18MC-MW16	7/11/2007	15	25
Groundwater	OU2	Upson	NA	Y	18MC-MW16	2/11/2009	15	25
Groundwater	OU2	Upson	NA	Y	18MC-MW16-FLT	7/11/2007	15	25
Groundwater	OU2	Upson	NA	Y	18MC-MW17	7/11/2007	16	26
Groundwater	OU2	Upson	NA	Y	18MC-MW17-FLT	7/11/2007	16	26
Groundwater	OU2	Upson	NA	Y	OU2-MW14	12/18/2014	20	25
Groundwater	OU2	Upson	NA	Y	OU2-MW14	5/19/2015	20	25
Groundwater	OU2	Upson	NA	Y	OU2-MW15	5/19/2015	16.7	21.7
Groundwater	OU2	Upson	NA	Y	OU2-MW15	12/19/2014	16.7	21.7
Groundwater	OU2	Upson	NA	Y	OU2-MW16	5/18/2015	15	25
Groundwater	OU2	Upson	NA	Y	OU2-MW16	12/18/2014	15	25
Groundwater	OU2	White	NA	Y	18MC-MW10	7/10/2007	7	17
Groundwater	OU2	White	NA	Y	18MC-MW10-FLT	7/10/2007	7	17
Groundwater	OU2	White	NA	Y	18MC-MW11	7/10/2007	8.5	13.5
Groundwater	OU2	White	NA	Y	18MC-MW11-FLT	7/10/2007	8.5	13.5

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Groundwater	OU2	White	NA	Y	18MC-MW12	7/11/2007	9.5	14.5
Groundwater	OU2	White	NA	Y	18MC-MW12-FLT	7/11/2007	9.5	14.5
Groundwater	OU2	White	NA	Y	18MC-MW13	7/10/2007	4	9
Groundwater	OU2	White	NA	Y	18MC-MW13-FLT	7/10/2007	4	9
Sediment	Barge Canal	Canal Corp	NA	N	18MC-BC01-Z1	6/14/2007	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	18MC-BC02-Z1	6/14/2007	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	18MC-BC03-Z1	6/15/2007	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	18MC-BC04-Z1	6/14/2007	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	18MC-BC05-Z1	6/15/2007	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	18MC-BC06-Z1	6/13/2007	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L02-S01-Z1	12/6/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L02-S01-Z2	12/6/2008	0.167	0.333
Sediment	Barge Canal	Canal Corp	NA	N	BC-L02-S02-Z1	12/6/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L02-S02-Z2	12/6/2008	0.167	0.5
Sediment	Barge Canal	Canal Corp	NA	N	BC-L02-S03-Z1	12/6/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L02-S03-Z2	12/6/2008	0.167	1
Sediment	Barge Canal	Canal Corp	NA	N	BC-L03-S01-Z1	12/6/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L03-S01-Z2	12/6/2008	0.167	3.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L03-S02-Z1	12/6/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L03-S02-Z2	12/6/2008	0.167	1.583
Sediment	Barge Canal	Canal Corp	NA	N	BC-L03-S03-Z1	12/6/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L03-S03-Z2	12/6/2008	0.167	2.917
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S01-Z1	12/6/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S01-Z2	12/6/2008	0.167	0.417
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S02-Z1	12/5/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S02-Z1A	12/5/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S02-Z1B	12/5/2008	0	0.167

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S02-Z1C	12/5/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S02-Z1D	12/5/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S02-Z2	12/6/2008	0.167	0.417
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S03-Z1	12/6/2008	0	0.167
Sediment	Barge Canal	Canal Corp	NA	N	BC-L04-S03-Z2	12/6/2008	0.167	0.167
Sediment	Corridor	Flintkote	West Bank	Y	18MC-L12-S01-Z1	4/24/2007	1	1.6
Sediment	Corridor	Flintkote	Center	Y	18MC-L12-S02-Z1	4/24/2007	0.5	0.9
Sediment	Corridor	Flintkote	East Bank	Y	18MC-L12-S03-Z1	4/24/2007	0.8	1.7
Sediment	Corridor	Flintkote	West Bank	Y	18MC-L13-S01-Z1	4/24/2007	0.8	1.5
Sediment	Corridor	Flintkote	Center	Y	18MC-L13-S02-Z1	4/24/2007	0.5	1
Sediment	Corridor	Flintkote	East Bank	Y	18MC-L13-S03-Z1	4/24/2007	0.5	1
Sediment	Corridor	Flintkote	West Bank	Y	18MC-L14E-S01-Z1	4/24/2007	0.5	0.8
Sediment	Corridor	Flintkote	Center	Y	18MC-L14E-S02-Z1	4/24/2007	0	2
Sediment	Corridor	Flintkote	Center	Y	18MC-L14E-S02-Z2	4/24/2007	1	1.5
Sediment	Corridor	Flintkote	East Bank	Y	18MC-L14E-S03-Z1	4/24/2007	0.8	1.2
Sediment	Corridor	Flintkote	West Bank	Y	18MC-L14W-S01-Z1	4/24/2007	0.9	2
Sediment	Corridor	Flintkote	Center	Y	18MC-L14W-S02-Z1	4/24/2007	0	2
Sediment	Corridor	Flintkote	East Bank	Y	18MC-L14W-S03-Z1	4/24/2007	0.5	1.2
Sediment	Corridor	Flintkote	East Bank	Y	18MC-L14W-S03-Z2	4/24/2007	1.8	2.3
Sediment	Corridor	Flintkote	West Bank	Y	18MC-L15E-S01-Z1	4/24/2007	0.5	0.9
Sediment	Corridor	Flintkote	Center	Y	18MC-L15E-S02-Z1	4/24/2007	0	2
Sediment	Corridor	Flintkote	East Bank	Y	18MC-L15E-S03-Z1	4/24/2007	0.5	1
Sediment	Corridor	Flintkote	West Bank	Y	18MC-L15W-S01-Z1	4/24/2007	0.3	1.2
Sediment	Corridor	Flintkote	East Bank	Y	18MC-L15W-S03-Z1	4/24/2007	0.3	0.8
Sediment	Corridor	Flintkote	West Bank	Y	18MC-L16E-S01-Z1	4/24/2007	0.4	1
Sediment	Corridor	Flintkote	Center	Y	18MC-L16E-S02-Z1	4/24/2007	0	0.5
Sediment	Corridor	Flintkote	East Bank	Y	18MC-L16E-S03-Z1	4/24/2007	0.5	1

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Corridor	Flintkote	East Bank	Y	FS-EMC01-SED-O	9/11/2003	0	0.167
Sediment	Corridor	Flintkote	Island	Y	FS-MW06RK-D810-S-O	9/25/2003	8	10
Sediment	Corridor	Flintkote	East Bank	Y	FS-SP02-D26-S-O	9/9/2003	2	6
Sediment	Corridor	Flintkote	West Bank	Y	FS-SP06-D24-S-O	9/10/2003	2	4
Sediment	Corridor	Flintkote	West Bank	Y	FS-SP07-D24-S-O	9/10/2003	2	4
Sediment	Corridor	Flintkote	Island	Y	FS-SP11-D1012-S-O	9/9/2003	10	12
Sediment	Corridor	Flintkote	Island	Y	FS-SP11-D410-S-O	9/9/2003	4	10
Sediment	Corridor	Flintkote	Center above dam	Y	OU2-SED01	5/26/2015	0	0.5
Sediment	Corridor	Flintkote	East Bank	Y	SB-24	10/6/2005	1.8	2.8
Sediment	Corridor	Flintkote	West Bank	Y	SED-27	9/15/2005	0	0.17
Sediment	Corridor	Flintkote	West Bank	Y	SED-27B	9/15/2005	0.25	0.75
Sediment	Corridor	Flintkote	East Bank	Y	SED-28	9/21/2005	0	0.17
Sediment	Corridor	Flintkote	East Bank	Y	SED-28B	9/21/2005	0.67	0.92
Sediment	Corridor	Flintkote	East Bank	Y	SED-29	9/21/2005	0	0.17
Sediment	Corridor	Flintkote	East Bank	Y	SED-29B	9/21/2005	0.25	0.5
Sediment	Corridor	Flintkote	West Bank	Y	SED-30	9/15/2005	0	0.17
Sediment	Corridor	Flintkote	West Bank	Y	SED-30B	9/15/2005	0.17	0.58
Sediment	Corridor	Flintkote	West Bank	Y	SED-32	9/15/2005	0	0.17
Sediment	Corridor	Flintkote	West Bank	Y	SED-32B	9/15/2005	0.25	0.42
Sediment	Corridor	Flintkote	Center Millrace	Y	SED-34	9/21/2005	0	0.17
Sediment	Corridor	Flintkote	Center Millrace	Y	SED-34B	9/21/2005	0.17	0.58
Sediment	Corridor	Flintkote	Center Millrace	Y	SED-35	9/21/2005	0	0.17
Sediment	Corridor	Flintkote	Center Millrace	Y	SED-35B	9/21/2005	0.25	0.67
Sediment	Corridor	Flintkote	Center Millrace	Y	SED-37	9/21/2005	0	0.17
Sediment	Corridor	Flintkote	Center Millrace	Y	SED-37B	4/26/2005	0.8	1
Sediment	Corridor	Flintkote	Center Millrace	Y	SED-37BB	9/21/2005	0.17	0.58
Sediment	Corridor	Flintkote	East Bank	Y	SED-42	9/15/2005	0	0.17

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Corridor	Flintkote	East Bank	Y	SED-43	9/15/2005	0	0.17
Sediment	Corridor	Flintkote	East Bank	Y	SED-43B	9/15/2005	0.25	0.75
Sediment	Corridor	Flintkote Downstream	West Bank	Y	18MC-L16W-S01-Z1	4/24/2007	0.2	0.8
Sediment	Corridor	Flintkote Downstream	East Bank	Y	18MC-L16W-S03-Z1	4/25/2007	0.5	1
Sediment	Corridor	Flintkote Downstream	West Bank	Y	18MC-L17-S01-Z1	4/25/2007	0.4	0.8
Sediment	Corridor	Flintkote Downstream	Center	Y	18MC-L17-S02-Z1	4/25/2007	0.5	1
Sediment	Corridor	Flintkote Downstream	East Bank	Y	18MC-L17-S03-Z1	4/25/2007	0.5	1
Sediment	Corridor	Flintkote Downstream	West Bank	Y	18MC-L18-S01-Z1	4/25/2007	0.3	0.9
Sediment	Corridor	Flintkote Downstream	Center	Y	18MC-L18-S02-Z1	4/25/2007	0.2	0.9
Sediment	Corridor	Flintkote Downstream	Center	Y	18MC-L18-S02-Z2	4/25/2007	1.2	1.8
Sediment	Corridor	Flintkote Downstream	Center	Y	SED-38	9/22/2005	0	0.17
Sediment	Corridor	Flintkote Downstream	Center	Y	SED-38B	9/22/2005	0.25	0.75
Sediment	Corridor	Flintkote Downstream	East Bank	Y	SED-39	9/22/2005	0	0.17
Sediment	Corridor	Flintkote Downstream	East Bank	Y	SED-39B	9/22/2005	0.25	0.58
Sediment	Corridor	Flintkote Downstream	East Bank	Y	SED-40	9/22/2005	0	0.17
Sediment	Corridor	Flintkote Downstream	East Bank	Y	SED-40B	9/22/2005	0.17	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-C-06-SD-A	8/24/2006	0	0.4
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-C-06-SD-B	8/24/2006	0.42	0.83
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-C-06-SD-C	8/24/2006	0.83	1.25
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-C-07-SD-A	8/24/2006	0	0.4
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-C-07-SD-B	8/24/2006	0.42	0.83
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-C-07-SD-C	8/24/2006	0.83	1.25
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S01-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S02-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S03-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S04-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S05-SD	7/6/2006	0	0.5

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S06-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S07-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S08-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S09-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S10-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S11-SD	7/6/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S74-SD	7/28/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S75-SD	7/28/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S76-SD	7/28/2006	0	0.5
Sediment	Corridor	Flintkote Downstream	Downstream	Y	TRK-S77-SD	7/28/2006	0	0.5
Sediment	Corridor	United	West Bank	Y	18MC-L06-S01-Z1	4/23/2007	1	1.5
Sediment	Corridor	United	Center	Y	18MC-L06-S02-Z1	4/19/2007	0	2
Sediment	Corridor	United	Center	Y	18MC-L06-S02-Z2	4/19/2007	1	2
Sediment	Corridor	United	East Bank	Y	18MC-L06-S03-Z1	4/19/2007	0.5	1.2
Sediment	Corridor	United	East Bank	Y	18MC-L06-S03-Z2	4/19/2007	1.5	2.5
Sediment	Corridor	United	West Bank	Y	18MC-L07-S01-Z1	4/23/2007	3	3.5
Sediment	Corridor	United	Center	Y	18MC-L07-S02-Z1	4/23/2007	0	0.8
Sediment	Corridor	United	East Bank	Y	18MC-L07-S03-Z1	4/23/2007	1.5	2.5
Sediment	Corridor	United	West Bank	Y	18MC-L07-S04-Z2	4/23/2007	2	3
Sediment	Corridor	United	West Bank	Y	18MC-L07-S05-Z2	4/23/2007	1.8	2.5
Sediment	Corridor	United	West Bank	Y	18MC-L08-S01-Z1	4/23/2007	0.5	1.5
Sediment	Corridor	United	Center	Y	18MC-L08-S02-Z1	4/23/2007	0.4	1
Sediment	Corridor	United	East Bank	Y	18MC-L08-S03-Z1	4/23/2007	0.5	1.5
Sediment	Corridor	United	West Bank	Y	18MC-L08-S04-Z2	4/23/2007	1.8	2.5
Sediment	Corridor	United	West Bank	Y	18MC-L09-S01-Z1	4/23/2007	0.5	1.2
Sediment	Corridor	United	Center	Y	18MC-L09-S02-Z1	4/23/2007	0	2
Sediment	Corridor	United	Center	Y	18MC-L09-S02-Z2	4/23/2007	0.8	1.5

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Corridor	United	East Bank	Y	18MC-L09-S03-Z1	4/23/2007	1.5	2.5
Sediment	Corridor	United	West Bank	Y	18MC-L10-S01-Z1	4/23/2007	0.5	1.5
Sediment	Corridor	United	East Bank	Y	18MC-L10-S03-Z1	4/23/2007	0.5	0.9
Sediment	Corridor	United	West Bank	Y	18MC-L11-S01-Z1	4/24/2007	1	1.6
Sediment	Corridor	United	Center	Y	18MC-L11-S02-Z1	4/24/2007	0.5	0.9
Sediment	Corridor	United	East Bank	Y	18MC-L11-S03-Z1	4/24/2007	0.5	0.8
Sediment	Corridor	United	East Bank	Y	18MC-MW01-Z1	6/21/2007	3	4
Sediment	Corridor	United	East Bank	Y	18MC-MW01-Z2	6/21/2007	12	14
Sediment	Corridor	United	West Bank	Y	18MC-MW05-Z1	6/15/2007	4	6
Sediment	Corridor	United	West Bank	Y	18MC-MW05-Z2	6/15/2007	12	14
Sediment	Corridor	United	West Bank	Y	18MC-SB04-Z1	4/27/2007	2	2.5
Sediment	Corridor	United	East Bank	Y	18MC-SB05-Z2	4/27/2007	5.5	6.5
Sediment	Corridor	United	East Bank	Y	18MC-SB05-Z3	4/27/2007	14	14.5
Sediment	Corridor	United	West Bank	Y	OU2-SED02	5/21/2015	0	0.5
Sediment	Corridor	United	West Bank	Y	OU2-SED03	5/26/2015	0	0.5
Sediment	Corridor	United	West Bank	Y	SED-14	9/13/2005	0	0.17
Sediment	Corridor	United	West Bank	Y	SED-14B	9/13/2005	0.25	0.5
Sediment	Corridor	United	West Bank	Y	SED-14C	9/13/2005	0.58	0.75
Sediment	Corridor	United	Center	Y	SED-15	9/13/2005	0	0.17
Sediment	Corridor	United	Center	Y	SED-15B	9/13/2005	0.5	0.75
Sediment	Corridor	United	West Bank	Y	SED-16	9/13/2005	0	0.17
Sediment	Corridor	United	West Bank	Y	SED-16B	9/13/2005	0.25	0.5
Sediment	Corridor	United	Center	Y	SED-17	9/13/2005	0	0.17
Sediment	Corridor	United	Center	Y	SED-17B	9/13/2005	0.25	0.75
Sediment	Corridor	United	Center	Y	SED-18	9/13/2005	0	0.17
Sediment	Corridor	United	Center	Y	SED-18B	9/13/2005	0.25	0.5
Sediment	Corridor	United	East Bank	Y	SED-20	9/15/2005	0	0.17

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Corridor	United	East Bank	Y	SED-20B	9/15/2005	0.25	0.5
Sediment	Corridor	United	West Bank	Y	SED-21	9/15/2005	0	0.17
Sediment	Corridor	United	West Bank	Y	SED-22	4/19/2005	0	0.17
Sediment	Corridor	United	West Bank	Y	SED-23	9/15/2005	0	0.17
Sediment	Corridor	United	West Bank	Y	SED-23B	9/15/2005	0.17	0.42
Sediment	Corridor	United	West Bank	Y	SED-25	9/15/2005	0	0.17
Sediment	Corridor	United	West Bank	Y	SED-25B	9/15/2005	0.42	0.58
Sediment	Corridor	United	West Bank	Y	SED-6	7/23/2002	0	0.17
Sediment	Corridor	United	West Bank	Y	SED-7	11/26/2002	0	0.17
Sediment	Corridor	United	West Bank	Y	SED-8	11/26/2002	0.17	0.33
Sediment	Corridor	United	West Bank	Y	SED-9	11/26/2002	0	0.17
Sediment	Corridor	United	West Bank	Y	TP-2B	9/28/2005	2.8	3.3
Sediment	Corridor	Upson	West Bank	Y	18MC-L01W-S01-Z1	4/18/2007	0	0.167
Sediment	Corridor	Upson	West Bank	Y	18MC-L01W-S01-Z2	4/18/2007	0.5	1
Sediment	Corridor	Upson	Center	Y	18MC-L01W-S02-Z1	4/18/2007	0	0.167
Sediment	Corridor	Upson	Center	Y	18MC-L01W-S02-Z2	4/18/2007	1	2
Sediment	Corridor	Upson	East Bank	Y	18MC-L01W-S03-Z1	4/18/2007	0.3	1
Sediment	Corridor	Upson	West Bank	Y	18MC-L01W-S04-Z3	4/18/2007	2	3
Sediment	Corridor	Upson	West Bank	Y	18MC-L01W-S05-Z3	4/18/2007	2	3
Sediment	Corridor	Upson	West Bank	Y	18MC-L02W-S01-Z1	4/18/2007	1	2
Sediment	Corridor	Upson	West Bank	Y	18MC-L02W-S01-Z2	4/18/2007	2	3.2
Sediment	Corridor	Upson	Center	Y	18MC-L02W-S02-Z1	4/18/2007	0	2
Sediment	Corridor	Upson	Center	Y	18MC-L02W-S02-Z2	4/18/2007	1	2
Sediment	Corridor	Upson	East Bank	Y	18MC-L02W-S03-Z1	4/18/2007	0	2
Sediment	Corridor	Upson	East Bank	Y	18MC-L02W-S03-Z2	4/18/2007	3.2	4
Sediment	Corridor	Upson	West Bank	Y	18MC-L02W-S04-Z3	4/18/2007	2.5	3
Sediment	Corridor	Upson	East Bank	Y	18MC-L02W-S06-Z3	4/18/2007	2	2.5

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Corridor	Upson	West Bank	Y	18MC-L03W-S01-Z1	4/19/2007	0.8	1.8
Sediment	Corridor	Upson	Center	Y	18MC-L03W-S02-Z1	4/19/2007	0	2
Sediment	Corridor	Upson	East Bank	Y	18MC-L03W-S03-Z1	4/19/2007	2	3
Sediment	Corridor	Upson	West Bank	Y	18MC-L03W-S04-Z2	4/19/2007	2	3
Sediment	Corridor	Upson	West Bank	Y	18MC-L03W-S05-Z2	4/19/2007	2	3
Sediment	Corridor	Upson	West Bank	Y	18MC-L04W-S01-Z1	4/19/2007	0.5	1.5
Sediment	Corridor	Upson	Center	Y	18MC-L04W-S02-Z1	4/20/2007	0	2
Sediment	Corridor	Upson	Center	Y	18MC-L04W-S02-Z2	4/20/2007	1	2
Sediment	Corridor	Upson	East Bank	Y	18MC-L04W-S03-Z1	4/20/2007	1	2
Sediment	Corridor	Upson	West Bank	Y	18MC-L05W-S01-Z1	4/19/2007	1	2
Sediment	Corridor	Upson	Center	Y	18MC-L05W-S02-Z1	4/19/2007	0	2
Sediment	Corridor	Upson	Center	Y	18MC-L05W-S02-Z2	4/19/2007	1.5	3
Sediment	Corridor	Upson	East Bank	Y	18MC-L05W-S03-Z1	4/19/2007	0	0.5
Sediment	Corridor	Upson	East Bank	Y	18MC-L05W-S03-Z2	4/19/2007	1	1.5
Sediment	Corridor	Upson	East Bank	Y	18MC-L05W-S03-Z3	4/19/2007	2	2.5
Sediment	Corridor	Upson	Bank?	Y	SED-10	9/13/2005	0	0.17
Sediment	Corridor	Upson	Bank?	Y	SED-10B	9/13/2005	0.17	0.58
Sediment	Corridor	Upson	Bank?	Y	SED-11	9/13/2005	0	0.17
Sediment	Corridor	Upson	Bank?	Y	SED-11B	9/13/2005	0.17	0.58
Sediment	Corridor	Upson	West Bank	Y	SED-12	9/13/2005	0	0.17
Sediment	Corridor	Upson	West Bank	Y	SED-12B	9/13/2005	0.17	0.5
Sediment	Corridor	Upson	Bank?	Y	SED-13	9/13/2005	0	0.17
Sediment	Corridor	Upson	Bank?	Y	SED-13B	9/13/2005	0.25	0.75
Sediment	Corridor	White	West Bank	Y	18MC-AS-S01-Z1	4/25/2007	0	0.167
Sediment	Corridor	White	West Bank	Y	18MC-AS-S01-Z2	4/25/2007	0.8	1.5
Sediment	Corridor	White	West Bank	Y	18MC-L01E-S01-Z1	4/20/2007	0	0.167
Sediment	Corridor	White	East Bank	Y	18MC-L01E-S03-Z1	4/20/2007	0	0.167

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Corridor	White	East Bank	Y	18MC-L01E-S03-Z2	4/20/2007	0.5	1.2
Sediment	Corridor	White	West Bank	Y	18MC-L02E-S01-Z1	4/20/2007	0.8	1.5
Sediment	Corridor	White	Center	Y	18MC-L02E-S02-Z1	4/20/2007	0	0.5
Sediment	Corridor	White	East Bank	Y	18MC-L02E-S03-Z1	4/20/2007	0.5	1
Sediment	Corridor	White	West Bank	Y	18MC-L03E-S01-Z1	4/20/2007	0.5	1.5
Sediment	Corridor	White	Center	Y	18MC-L03E-S02-Z1	4/20/2007	0	2
Sediment	Corridor	White	East Bank	Y	18MC-L03E-S03-Z1	4/20/2007	0.7	1.7
Sediment	Corridor	White	East Bank	Y	18MC-MW10-Z1	6/20/2007	10	11
Sediment	Corridor	White	East Bank	Y	18MC-MW10-Z2	6/20/2007	12	13
Sediment	Corridor	White	East Bank	Y	18MC-SB10-Z2	4/26/2007	10.5	11.5
Sediment	Corridor	White	East Bank	Y	SED-44	9/13/2005	0	0.17
Sediment	Flintkote	Flintkote	NA	Y	FS-MICRO01-D610-S-O	9/9/2003	6	10
Sediment	Flintkote	Flintkote	Demo Area	Y	FS-MW02OB-D2428-S-O	9/24/2003	24	28
Sediment	Flintkote	Flintkote	NA	Y	FS-MW04RK-D35-S-O	9/16/2003	3	5
Sediment	Flintkote	Flintkote	NA	Y	FS-MW04RK-D68-S-O	9/16/2003	6	8
Sediment	Flintkote	Flintkote	Demo Area	Y	FS-SP16-D812-S-O	9/8/2003	8	12
Sediment	Flintkote	Flintkote	Demo Area	Y	FS-SP19-D48-S-O	9/8/2003	4	8
Sediment	Flintkote	Flintkote	Demo Area	Y	FS-SP21-D45-S-O	9/10/2003	4	5
Sediment	Flintkote	Flintkote	Demo Area	Y	FS-SS02-SED-O	9/11/2003		
Sediment	Flintkote	Flintkote	Demo Area	Y	FS-SS07-S-O	9/15/2003	0	0.167
Sediment	Flintkote	Flintkote	Demo Area	Y	FS-SS08-S-O	9/15/2003	0	0.167
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-ARCH-SP	6/30/2015	0	0.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-ARCH-Z1	7/14/2015	28	30
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-FL-TURB	6/30/2015	0	2
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-SB01-Z1	12/4/2014	1	1.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-SB01-Z2	12/4/2014	2	3
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-SB01-Z3	12/4/2014	6.8	7.2

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-SB02-Z1	12/4/2014	1	1.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-SB02-Z2	12/4/2014	2	3
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-SB02-Z3	12/4/2014	5.4	5.9
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-SB03-Z1	12/4/2014	1	1.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-SB03-Z2	12/4/2014	2	2.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-SB03-Z3	12/4/2014	4.5	5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP01-01	5/19/2015	3	3.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP01-02	5/19/2015	4	4.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP02-01	6/29/2015	8	8.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP03-01	6/29/2015	2	2.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP03-02	6/29/2015	4	4.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP05-01	6/29/2015	4	4.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP06-01	6/29/2015	3.5	4
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP07-Z1	7/14/2015	2.5	3
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP07-Z2	7/14/2015	4	4.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP08-Z1	7/14/2015	4.5	5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP09-Z1	7/14/2015	3	3.5
Sediment	Flintkote	Flintkote	Demo Area	Y	OU2-TP09-Z2	7/14/2015	6	6.5
Sediment	OU1	Water Street	Yards	N	OU1-SB-20	10/6/2005	0.2	4
Sediment	OU1	Water Street	Yards	N	OU1-SS-10	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-11	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-12	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-13	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-14	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-15	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-16	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-17	7/23/2002	0	0.17

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	OU1	Water Street	Yards	N	OU1-SS-18	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-19	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-5	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-8	7/23/2002	0	0.17
Sediment	OU1	Water Street	Yards	N	OU1-SS-9	7/23/2002	0	0.17
Sediment	OU1	Water Street	Off Site	N	SB-13C	10/3/2005	4	4.3
Sediment	OU1	Water Street	Yards	N	SS-25	11/1/2005	0	0.17
Sediment	OU1	Water Street	Yards	N	SS-26	11/1/2005	0	0.17
Sediment	OU1	Water Street	Yards	N	SS-27	11/1/2005	0	0.17
Sediment	OU1	Water Street	Yards	N	SS-30	11/2/2005	0	0.17
Sediment	OU1	Water Street	Yards	N	SS-32	11/2/2005	0	0.17
Sediment	OU1	Water Street	Yards	N	SS-33	11/2/2005	0	0.17
Sediment	OU1	Water Street	Yards	N	SS-34	11/2/2005	0	0.17
Sediment	OU1	Water Street	Yards	N	SS-35	11/2/2005	0	0.17
Sediment	OU1	Water Street	Yards	N	SS-36	11/2/2005	0	0.17
Sediment	OU1	Water Street	Yards	N	SS-42	11/3/2005	0	0.17
Sediment	Background Area 3	18MC Upstream	Upstream	N	18MC-UP-S01-Z1	4/25/2007	0.1	0.8
Sediment	Background Area 3	18MC Upstream	Upstream	N	18MC-UP-S01-Z2	4/25/2007	1.1	1.8
Sediment	Background Area 5	East Branch	North Pool	N	BG1-SED01	5/21/2015	0	0.5
Sediment	Background Area 5	East Branch	North Pool	N	BG1-SED02	5/22/2015	0	0.5
Sediment	Background Area 5	East Branch	North Pool	N	BG1-SED03	5/22/2015	0	0.5
Sediment	Background Area 5	East Branch	South Pool	N	BG1-SED04	5/22/2015	0	0.5
Sediment	Background Area 5	East Branch	South Pool	N	BG1-SED05	5/22/2015	0	0.5
Sediment	Background Area 5	East Branch	South Pool	N	BG1-SED06	5/22/2015	0	0.5
Sediment	Background Area 5	East Branch	South Pool	N	BG1-SED07	5/22/2015	0	0.5
Sediment	United	United	Upland	Y	18MC-MW02-Z1	6/12/2007	6	10
Sediment	United	United	Upland	Y	18MC-MW02-Z2	6/25/2007	20	22

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	United	United	Upland	Y	18MC-MW04-Z1	6/22/2007	16	18
Sediment	United	United	Upland	Y	18MC-MW04-Z2	6/22/2007	24	26
Sediment	United	United	Upland	Y	18MC-MW06-Z1	6/20/2007	8	10
Sediment	United	United	Upland	Y	18MC-MW06-Z2	6/20/2007	18	22
Sediment	United	United	Upland	Y	18MC-MW08-Z1	6/11/2007	6	10
Sediment	United	United	Upland	Y	18MC-MW08-Z2	6/11/2007	10	14
Sediment	United	United	Upland	Y	18MC-MW09-Z1	6/18/2007	8	9
Sediment	United	United	Upland	Y	18MC-SB01-Z1	6/8/2007	6	10
Sediment	United	United	Upland	Y	18MC-SB01-Z2	6/8/2007	16	18
Sediment	United	United	Upland	Y	18MC-SB02-Z1	6/8/2007	6	8
Sediment	United	United	Upland	Y	18MC-SB02-Z2	6/8/2007	12	16
Sediment	United	United	Upland	Y	18MC-SB03-Z1	4/27/2007	2.4	2.9
Sediment	United	United	Upland	Y	18MC-SB03-Z2	4/27/2007	8	8.6
Sediment	United	United	Upland	Y	18MC-SB15-Z2	4/27/2007	10	11
Sediment	United	United	Upland	Y	18MC-SS02-Z1	4/16/2007	0	0.167
Sediment	United	United	Upland	Y	18MC-SS06-Z1	4/16/2007	0	0.167
Sediment	United	United	West Bank	Y	OU1-SS-21	7/23/2002	0	0.17
Sediment	United	United	West Bank	Y	SS-39	11/3/2005	0	0.17
Sediment	Upson	Upson	Upland	Y	18MC-MW14-Z1	6/19/2007	12	14
Sediment	Upson	Upson	Upland	Y	18MC-MW15-Z1	6/12/2007	10	12
Sediment	Upson	Upson	Upland	Y	18MC-MW16-Z1	6/12/2007	8	10
Sediment	Upson	Upson	Upland	Y	18MC-MW17-Z1	6/5/2007	16	18
Sediment	Upson	Upson	Upland	Y	18MC-SB11-Z1	6/25/2007	3	4
Sediment	Upson	Upson	Upland	Y	18MC-SB12-Z1	4/26/2007	6	6.8
Sediment	Upson	Upson	Upland	Y	18MC-SB12-Z2	4/26/2007	8.5	11.6
Sediment	Upson	Upson	Upland	Y	18MC-SB13-Z2	4/26/2007	4	6
Sediment	Upson	Upson	Upland	Y	18MC-SB14-Z1	4/26/2007	8	10.2

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	Upson	Upson	Upland	Y	18MC-SB14-Z2	4/26/2007	10.2	11.5
Sediment	Upson	Upson	Upland	Y	18MC-SS16-Z1	4/16/2007	0	0.167
Sediment	Upson	Upson	Upland	Y	18MC-SS17-Z1	4/16/2007	0	0.167
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS01-Z1	12/1/2014	0	0.5
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS01-Z2	12/1/2014	0.5	2
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS02-Z1	12/1/2014	0	0.5
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS02-Z2	12/1/2014	0.5	2
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS03-Z1	12/1/2014	0	0.5
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS03-Z2	12/1/2014	0.5	2
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS04-Z1	12/1/2014	0	0.5
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS04-Z2	12/1/2014	0.5	2
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS05-Z1	12/1/2014	0	0.5
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS05-Z2	12/1/2014	0.5	2
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS06-Z1	12/1/2014	0	0.5
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS06-Z2	12/1/2014	0.5	2
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS07-Z1	12/1/2014	0	0.5
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS07-Z2	12/1/2014	0.5	2
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS08-Z1	12/1/2014	0	0.5
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS08-Z2	12/1/2014	0.5	2
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS10-Z1	12/1/2014	0	0.5
Sediment	Upson	Upson	Public Park Area	Y	OU2-SS10-Z2	12/1/2014	0.5	2
Sediment	White	White	Upland	Y	18MC-MW11-Z1	6/8/2007	8	10
Sediment	White	White	Upland	Y	18MC-MW12-Z1	6/6/2007	10	14
Sediment	White	White	Upland	Y	18MC-MW12-Z2	6/7/2007	12	16
Sediment	White	White	Upland	Y	18MC-MW13-Z1	6/7/2007	6	10
Sediment	White	White	Upland	Y	18MC-SB06-Z2	4/26/2007	14	14.5
Sediment	White	White	Upland	Y	18MC-SB07-Z1	4/26/2007	1	1.7

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Sediment	White	White	Upland	Y	18MC-SB07-Z2	4/26/2007	10	10.5
Sediment	White	White	Upland	Y	18MC-SB08-Z1	4/26/2007	0.5	1.2
Sediment	White	White	Upland	Y	18MC-SB08-Z2	4/26/2007	6.5	7.2
Sediment	White	White	Upland	Y	18MC-SB09-Z1	4/26/2007	0.5	1.5
Sediment	White	White	Upland	Y	18MC-SB09-Z2	4/26/2007	3	3.5
Sediment	White	White	Upland	Y	18MC-SS11-Z1	4/16/2007	0	0.167
Sediment	White	White	Upland	Y	18MC-SS12-Z1	4/16/2007	0	0.167
Soil	89 Mill St	Across Mill St. from United	Off Site	N	18MC-SS18-Z1	6/6/2007	0	0.167
Soil	89 Mill St	Across Mill St. from United	Off Site	N	18MC-SS19-Z1	6/6/2007	0	0.167
Soil	89 Mill St	Across Mill St. from United	Off Site	N	18MC-SS20-Z1	6/6/2007	0	0.167
Soil	Corridor	Flintkote	West Bank	Y	18MC-L13-S04-Z1	4/24/2007	0	0.167
Soil	Corridor	Flintkote	West Bank	Y	18MC-L13-S04-Z2	4/24/2007	1	1.5
Soil	Corridor	Flintkote	Island	Y	FS-MW06RK-D810-S-O	9/25/2003	8	10
Soil	Corridor	Flintkote	East Bank	Y	FS-SP02-D24-S-O	9/9/2003	2	4
Soil	Corridor	Flintkote	East Bank	Y	FS-SP02-D26-S-O	9/9/2003	2	6
Soil	Corridor	Flintkote	West Bank	Y	FS-SP06-D24-S-O	9/10/2003	2	4
Soil	Corridor	Flintkote	West Bank	Y	FS-SP07-D24-S-O	9/10/2003	2	4
Soil	Corridor	Flintkote	West Bank	Y	FS-SP09-D14-S-O	9/10/2003	1	4
Soil	Corridor	Flintkote	Island	Y	FS-SP11-D1012-S-O	9/9/2003	10	12
Soil	Corridor	Flintkote	Island	Y	FS-SP11-D410-S-O	9/9/2003	4	10
Soil	Corridor	Flintkote	Island	Y	FS-SP11-D810-S-O	9/9/2003	8	10
Soil	Corridor	Flintkote	Island	Y	FS-SP12-D02-S-O	9/9/2003	0	2
Soil	Corridor	Flintkote	Island	Y	FS-SP13-D0.53.5-S-O	9/9/2003	0.5	3.5
Soil	Corridor	Flintkote	West Bank	Y	FS-SP23-D14-S-O	9/10/2003	1	4
Soil	Corridor	Flintkote	Island	Y	FS-SS03-S-O	9/15/2003	0	0.167

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	Corridor	Flintkote	Island	Y	FS-SS04-S-O	9/15/2003	0	0.167
Soil	Corridor	Flintkote	Island	Y	FS-SS04-S-ORI	9/15/2003	0	0.167
Soil	Corridor	Flintkote	Island	Y	FS-SS05-S-O	9/17/2003	0	0.167
Soil	Corridor	Flintkote	East Bank	Y	FS-SS06-S-O	9/15/2003	0	0.167
Soil	Corridor	Flintkote	West Bank	Y	FS-SS09-S-O	9/15/2003	0	0.167
Soil	Corridor	Flintkote	West Bank	Y	FS-SS10-S-O	9/15/2003	0	0.167
Soil	Corridor	Flintkote	East Bank	Y	SB-24	10/6/2005	1.8	2.8
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L16W-S04-Z1	4/24/2007	0	0.167
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L16W-S04-Z2	4/25/2007	0.7	1.5
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L16W-S05-Z1	4/24/2007	0	0.167
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L16W-S05-Z2	4/24/2007	0.5	1.4
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L17-S04-Z1	4/25/2007	0	0.167
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L17-S04-Z2	4/25/2007	0.5	1.3
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L17-S05-Z1	4/25/2007	0	0.167
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L17-S05-Z2	4/25/2007	0.5	1.5
Soil	Corridor	Flintkote Downstream	East Bank	Y	18MC-L17-S06-Z1	4/25/2007	0	0.167
Soil	Corridor	Flintkote Downstream	East Bank	Y	18MC-L17-S07-Z1	4/25/2007	0	0.167
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L18-S04-Z1	4/25/2007	0	0.167
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L18-S04-Z2	4/25/2007	0.5	1
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L18-S05-Z1	4/25/2007	0	0.167
Soil	Corridor	Flintkote Downstream	West Bank	Y	18MC-L18-S05-Z2	4/25/2007	0.5	1.5
Soil	Corridor	Flintkote Downstream	East Bank	Y	18MC-L18-S06-Z1	4/25/2007	0	0.167
Soil	Corridor	Flintkote Downstream	East Bank	Y	18MC-L18-S06-Z2	4/25/2007	0.7	1.3
Soil	Corridor	Flintkote Downstream	East Bank	Y	18MC-L18-S07-Z1	4/25/2007	0	0.167
Soil	Corridor	Flintkote Downstream	East Bank	Y	18MC-L18-S07-Z2	4/25/2007	0.8	1.6
Soil	Corridor	United	West Bank	Y	18MC-L06-S04-Z1	4/23/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L06-S04-Z2	4/23/2007	0.5	1.2

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	Corridor	United	West Bank	Y	18MC-L06-S05-Z1	4/23/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L06-S05-Z2	4/23/2007	1	2
Soil	Corridor	United	West Bank	Y	18MC-L07-S04-Z1	4/23/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L07-S04-Z2	4/23/2007	2	3
Soil	Corridor	United	West Bank	Y	18MC-L07-S05-Z1	4/23/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L07-S05-Z2	4/23/2007	1.8	2.5
Soil	Corridor	United	West Bank	Y	18MC-L08-S04-Z1	4/23/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L08-S04-Z2	4/23/2007	1.8	2.5
Soil	Corridor	United	West Bank	Y	18MC-L08-S05-Z1	4/23/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L08-S05-Z2	4/23/2007	0.9	1.5
Soil	Corridor	United	West Bank	Y	18MC-L09-S04-Z1	4/23/2007	0	2
Soil	Corridor	United	West Bank	Y	18MC-L09-S04-Z2	4/23/2007	1.5	2.5
Soil	Corridor	United	West Bank	Y	18MC-L09-S05-Z1	4/23/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L09-S05-Z2	4/23/2007	1	2
Soil	Corridor	United	West Bank	Y	18MC-L10-S04-Z1	4/23/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L10-S04-Z2	4/23/2007	1	2
Soil	Corridor	United	West Bank	Y	18MC-L10-S05-Z1	4/23/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L10-S05-Z2	4/23/2007	1	2
Soil	Corridor	United	West Bank	Y	18MC-L11-S04-Z1	4/24/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L11-S04-Z2	4/24/2007	0.5	1.5
Soil	Corridor	United	West Bank	Y	18MC-L11-S05-Z1	4/24/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-L11-S05-Z2	4/24/2007	0.6	1.4
Soil	Corridor	United	East Bank	Y	18MC-MW01-Z1	6/21/2007	3	4
Soil	Corridor	United	East Bank	Y	18MC-MW01-Z2	6/21/2007	12	14
Soil	Corridor	United	West Bank	Y	18MC-MW05-Z1	6/15/2007	4	6
Soil	Corridor	United	West Bank	Y	18MC-MW05-Z2	6/15/2007	12	14
Soil	Corridor	United	West Bank	Y	18MC-SB04-Z1	4/27/2007	2	2.5

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	Corridor	United	East Bank	Y	18MC-SB05-Z1	4/27/2007	0.5	1.5
Soil	Corridor	United	East Bank	Y	18MC-SB05-Z2	4/27/2007	5.5	6.5
Soil	Corridor	United	East Bank	Y	18MC-SB05-Z3	4/27/2007	14	14.5
Soil	Corridor	United	East Bank	Y	18MC-SS01-Z1	4/16/2007	0	0.167
Soil	Corridor	United	East Bank	Y	18MC-SS03-Z1	4/16/2007	0	0.167
Soil	Corridor	United	West Bank	Y	18MC-SS07-Z1	4/16/2007	0	0.167
Soil	Corridor	United	West Bank	Y	SB-1	9/27/2005	0	1.1
Soil	Corridor	United	West Bank	Y	SB-2	9/27/2005	0.9	2.4
Soil	Corridor	United	West Bank	Y	SB-3	9/27/2005	0	4
Soil	Corridor	United	West Bank	Y	SS-22	11/26/2002	0	0.17
Soil	Corridor	United	West Bank	Y	SS-24	11/26/2002	0	0.17
Soil	Corridor	United	East Bank	Y	SS-6	7/23/2002	0	0.17
Soil	Corridor	United	East Bank	Y	SS-7	7/23/2002	0	0.17
Soil	Corridor	United	West Bank	Y	TP-1	9/28/2005	0	4
Soil	Corridor	United	West Bank	Y	TP-2	9/28/2005	0	1
Soil	Corridor	United	West Bank	Y	TP-2B	9/28/2005	2.8	3.3
Soil	Corridor	United	West Bank	Y	TP-3	9/28/2005	0	0.3
Soil	Corridor	Upson	West Bank	Y	18MC-L01W-S04-Z1	4/18/2007	0	0.167
Soil	Corridor	Upson	West Bank	Y	18MC-L01W-S04-Z2	4/18/2007	0.9	2
Soil	Corridor	Upson	West Bank	Y	18MC-L01W-S04-Z3	4/18/2007	2	3
Soil	Corridor	Upson	West Bank	Y	18MC-L01W-S05-Z1	4/18/2007	0	0.167
Soil	Corridor	Upson	West Bank	Y	18MC-L01W-S05-Z2	4/18/2007	1	2
Soil	Corridor	Upson	West Bank	Y	18MC-L01W-S05-Z3	4/18/2007	2	3
Soil	Corridor	Upson	East Bank	Y	18MC-L01W-S06-Z1	4/18/2007	0	0.167
Soil	Corridor	Upson	East Bank	Y	18MC-L01W-S06-Z2	4/18/2007	1	2
Soil	Corridor	Upson	West Bank	Y	18MC-L02W-S04-Z1	4/18/2007	0	0.167
Soil	Corridor	Upson	West Bank	Y	18MC-L02W-S04-Z2	4/18/2007	1.5	2

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	Corridor	Upson	West Bank	Y	18MC-L02W-S04-Z3	4/18/2007	2.5	3
Soil	Corridor	Upson	West Bank	Y	18MC-L02W-S05-Z1	4/18/2007	0	0.167
Soil	Corridor	Upson	West Bank	Y	18MC-L02W-S05-Z2	4/18/2007	0.2	1
Soil	Corridor	Upson	West Bank	Y	18MC-L02W-S05-Z3	4/18/2007	1	2
Soil	Corridor	Upson	East Bank	Y	18MC-L02W-S06-Z1	4/18/2007	0	0.167
Soil	Corridor	Upson	East Bank	Y	18MC-L02W-S06-Z2	4/18/2007	1	2
Soil	Corridor	Upson	East Bank	Y	18MC-L02W-S06-Z3	4/18/2007	2	2.5
Soil	Corridor	Upson	West Bank	Y	18MC-L03W-S04-Z1	4/19/2007	0	0.167
Soil	Corridor	Upson	West Bank	Y	18MC-L03W-S04-Z2	4/19/2007	2	3
Soil	Corridor	Upson	West Bank	Y	18MC-L03W-S05-Z1	4/19/2007	0	0.167
Soil	Corridor	Upson	West Bank	Y	18MC-L03W-S05-Z2	4/19/2007	2	3
Soil	Corridor	Upson	East Bank	Y	18MC-L03W-S06-Z1	4/19/2007	0	0.167
Soil	Corridor	Upson	East Bank	Y	18MC-L03W-S06-Z2	4/19/2007	1.5	2.5
Soil	Corridor	Upson	West Bank	Y	18MC-L04W-S04-Z1	4/20/2007	0	0.167
Soil	Corridor	Upson	West Bank	Y	18MC-L04W-S04-Z2	4/20/2007	1.5	2.3
Soil	Corridor	Upson	West Bank	Y	18MC-L04W-S05-Z1	4/20/2007	0	0.167
Soil	Corridor	Upson	West Bank	Y	18MC-L04W-S05-Z2	4/20/2007	0.7	1.5
Soil	Corridor	Upson	West Bank	Y	18MC-L05W-S04-Z1	4/20/2007	0	0.167
Soil	Corridor	Upson	West Bank	Y	18MC-L05W-S04-Z2	4/20/2007	0.7	1.5
Soil	Corridor	Upson	Upland	Y	UPSON-1	9/22/2005	0	0.17
Soil	Corridor	Upson	Upland	Y	UPSON-1B	9/22/2005	0.67	0.83
Soil	Corridor	Upson	West Bank	Y	UPSON-2	9/22/2005	0	0.17
Soil	Corridor	Upson	West Bank	Y	UPSON-2B	9/22/2005	0.17	0.83
Soil	Corridor	Water Street	Yards	N	SB-4	9/27/2005	0	1.2
Soil	Corridor	Water Street	West Bank	N	SS-43	11/3/2005	0	0.17
Soil	Corridor	White	West Bank	Y	18MC-L02E-S04-Z1	4/20/2007	0	0.167
Soil	Corridor	White	West Bank	Y	18MC-L02E-S04-Z2	4/20/2007	1	1.5

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	Corridor	White	West Bank	Y	18MC-L02E-S05-Z1	4/20/2007	0	2
Soil	Corridor	White	West Bank	Y	18MC-L02E-S05-Z2	4/20/2007	0.8	1.5
Soil	Corridor	White	West Bank	Y	18MC-L03E-S04-Z1	4/20/2007	0	0.167
Soil	Corridor	White	West Bank	Y	18MC-L03E-S04-Z2	4/20/2007	0.5	2
Soil	Corridor	White	West Bank	Y	18MC-L03E-S05-Z1	4/20/2007	0	0.167
Soil	Corridor	White	West Bank	Y	18MC-L03E-S05-Z2	4/20/2007	0.5	1.2
Soil	Corridor	White	West Bank	Y	18MC-L03E-S05-Z3	4/20/2007	1.3	2
Soil	Corridor	White	East Bank	Y	18MC-MW10-Z1	6/20/2007	10	11
Soil	Corridor	White	East Bank	Y	18MC-MW10-Z2	6/20/2007	12	13
Soil	Corridor	White	East Bank	Y	18MC-SB10-Z1	4/26/2007	1.5	2
Soil	Corridor	White	East Bank	Y	18MC-SB10-Z2	4/26/2007	10.5	11.5
Soil	Corridor	White	East Bank	Y	18MC-SS10-Z1	4/16/2007	0	0.167
Soil	Corridor	White	East Bank	Y	WHITE-2	9/22/2005	0	0.17
Soil	Corridor	White	East Bank	Y	WHITE-2B	9/22/2005	0.17	0.58
Soil	Flintkote	Flintkote	NA	Y	FS-MICRO01-D610-S-O	9/9/2003	6	10
Soil	Flintkote	Flintkote	NA	Y	FS-MICRO01-D68-S-O	9/9/2003	6	8
Soil	Flintkote	Flintkote	Demo Area	Y	FS-MW02OB-D2426-S-O	9/24/2003	24	26
Soil	Flintkote	Flintkote	Demo Area	Y	FS-MW02OB-D2428-S-O	9/24/2003	24	28
Soil	Flintkote	Flintkote	NA	Y	FS-MW03RK-D1415.5-S-O	9/15/2003	14	15.5
Soil	Flintkote	Flintkote	NA	Y	FS-MW04RK-D34-S-O	9/16/2003	3	4
Soil	Flintkote	Flintkote	NA	Y	FS-MW04RK-D35-S-O	9/16/2003	3	5
Soil	Flintkote	Flintkote	NA	Y	FS-MW04RK-D68-S-O	9/16/2003	6	8
Soil	FlintKote	Flintkote	Upland	Y	FS-SP03-D04-S-O	9/8/2003	0	4
Soil	Flintkote	Flintkote	Demo Area	Y	FS-SP16-D812-S-O	9/8/2003	8	12
Soil	Flintkote	Flintkote	Demo Area	Y	FS-SP19-D48-S-O	9/8/2003	4	8
Soil	Flintkote	Flintkote	Demo Area	Y	FS-SP21-D45-S-O	9/10/2003	4	5
Soil	FlintKote	Flintkote	Upland	Y	FS-SS01-S-O	9/15/2003	0	0.167

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	FlintKote	Flintkote	Upland	Y	FS-SS02-S-O	9/15/2003	0	0.167
Soil	Flintkote	Flintkote	Demo Area	Y	FS-SS07-S-O	9/15/2003	0	0.167
Soil	Flintkote	Flintkote	Demo Area	Y	FS-SS08-S-O	9/15/2003	0	0.167
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-SB01-Z1	12/4/2014	1	1.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-SB01-Z2	12/4/2014	2	3
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-SB01-Z3	12/4/2014	6.8	7.2
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-SB02-Z1	12/4/2014	1	1.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-SB02-Z2	12/4/2014	2	3
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-SB02-Z3	12/4/2014	5.4	5.9
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-SB03-Z1	12/4/2014	1	1.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-SB03-Z2	12/4/2014	2	2.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-SB03-Z3	12/4/2014	4.5	5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP01-01	5/19/2015	3	3.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP01-02	5/19/2015	4	4.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP02-01	6/29/2015	8	8.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP03-01	6/29/2015	2	2.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP03-02	6/29/2015	4	4.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP05-01	6/29/2015	4	4.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP06-01	6/29/2015	3.5	4
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP07-Z1	7/14/2015	2.5	3
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP07-Z2	7/14/2015	4	4.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP08-Z1	7/14/2015	4.5	5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP09-Z1	7/14/2015	3	3.5
Soil	Flintkote	Flintkote	Demo Area	Y	OU2-TP09-Z2	7/14/2015	6	6.5
Soil	OU1	Water Street	Yards	N	OU1-SB-20	10/6/2005	0.2	4
Soil	OU1	Water Street	Off Site	N	OU1-SB-23	10/6/2005	0	0.6
Soil	OU1	Water Street	Yards	N	OU1-SS-10	7/23/2002	0	0.17

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	OU1	Water Street	Off Site	N	OU1-SS-20	7/23/2002	0	0.17
Soil	OU1	Water Street	Yards	N	OU1-SS-8	7/23/2002	0	0.17
Soil	OU1	Water Street	Yards	N	OU1-SS-9	7/23/2002	0	0.17
Soil	OU1	Water Street	Off Site	N	SB-10	9/27/2005	0.1	0.9
Soil	OU1	Water Street	Off Site	N	SB-11	9/27/2005	0	1.1
Soil	OU1	Water Street	Off Site	N	SB-12	10/3/2005	0	0.9
Soil	OU1	Water Street	Off Site	N	SB-13A	10/3/2005	0.2	0.9
Soil	OU1	Water Street	Off Site	N	SB-13B	10/3/2005	0.9	1.7
Soil	OU1	Water Street	Off Site	N	SB-13C	10/3/2005	4	4.3
Soil	OU1	Water Street	Off Site	N	SB-14	10/3/2005	0.5	1
Soil	OU1	Water Street	Off Site	N	SB-14B	10/3/2005	1	1.6
Soil	OU1	Water Street	Off Site	N	SB-15	10/3/2005	0	1.3
Soil	OU1	Water Street	Off Site	N	SB-17	10/3/2005	0.1	2.1
Soil	OU1	Water Street	Off Site	N	SB-19	10/3/2005	0.3	5
Soil	OU1	Water Street	Off Site	N	SB-5	9/27/2005	0	1.2
Soil	OU1	Water Street	Off Site	N	SB-7	9/27/2005	0	0.6
Soil	OU1	Water Street	Off Site	N	SB-9	9/27/2005	0	1.6
Soil	OU1	Water Street	Yards	N	SS-25	11/1/2005	0	0.17
Soil	OU1	Water Street	Yards	N	SS-26	11/1/2005	0	0.17
Soil	OU1	Water Street	Yards	N	SS-27	11/1/2005	0	0.17
Soil	OU1	Water Street	Off Site	N	SS-28	11/1/2005	0	0.17
Soil	OU1	Water Street	Off Site	N	SS-29	11/1/2005	0	0.17
Soil	OU1	Water Street	Yards	N	SS-30	11/2/2005	0	0.17
Soil	OU1	Water Street	Off Site	N	SS-31	11/2/2005	0	0.17
Soil	OU1	Water Street	Yards	N	SS-32	11/2/2005	0	0.17
Soil	OU1	Water Street	Yards	N	SS-33	11/2/2005	0	0.17
Soil	OU1	Water Street	Yards	N	SS-34	11/2/2005	0	0.17

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	OU1	Water Street	Yards	N	SS-35	11/2/2005	0	0.17
Soil	OU1	Water Street	Yards	N	SS-36	11/2/2005	0	0.17
Soil	OU1	Water Street	Off Site	N	SS-37	11/2/2005	0	0.17
Soil	OU1	Water Street	Off Site	N	SS-38	11/2/2005	0	0.17
Soil	OU1	Water Street	Off Site	N	SS-40	11/3/2005	0	0.17
Soil	OU1	Water Street	Off Site	N	SS-41	11/3/2005	0	0.17
Soil	OU1	Water Street	Yards	N	SS-42	11/3/2005	0	0.17
Soil	OU1	Water Street	Off Site	N	SS-44	11/3/2005	0	0.17
Soil	Background Area	Dolan Park	Dolan Park	N	FS-SS11-S-O	9/18/2003	0	0.167
Soil	Background Area	Outwater Memorial Park	Outwater Memorial Park	N	FS-SS12-S-O	9/18/2003	0	0.167
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS01-Z1	11/25/2014	0	0.5
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS01-Z2	11/25/2014	0.5	2
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS02-Z1	11/25/2014	0	0.5
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS02-Z2	11/25/2014	0.5	2
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS03-Z1	11/25/2014	0	0.5
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS03-Z2	11/25/2014	0.5	2
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS04-Z1	11/25/2014	0	0.5
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS04-Z2	11/25/2014	0.5	2
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS05-Z1	11/25/2014	0	0.5

Appendix A - Table 1
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Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS05-Z2	11/25/2014	0.5	2
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS06-Z1	11/25/2014	0	0.5
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS06-Z2	11/25/2014	0.5	2
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS07-Z1	11/25/2014	0	0.5
Soil	Background Area	Canal Corp	Adjacent to Barge Canal	N	BG1-SS07-Z2	11/25/2014	0.5	2
Soil	United	United	Upland	Y	18MC-MW02-Z1	6/12/2007	6	10
Soil	United	United	Upland	Y	18MC-MW02-Z2	6/25/2007	20	22
Soil	United	United	Upland	Y	18MC-MW04-Z1	6/22/2007	16	18
Soil	United	United	Upland	Y	18MC-MW04-Z2	6/22/2007	24	26
Soil	United	United	Upland	Y	18MC-MW06-Z1	6/20/2007	8	10
Soil	United	United	Upland	Y	18MC-MW06-Z2	6/20/2007	18	22
Soil	United	United	Upland	Y	18MC-MW08-Z1	6/11/2007	6	10
Soil	United	United	Upland	Y	18MC-MW08-Z2	6/11/2007	10	14
Soil	United	United	Upland	Y	18MC-MW09-Z1	6/18/2007	8	9
Soil	United	United	Upland	Y	18MC-SB01-Z1	6/8/2007	6	10
Soil	United	United	Upland	Y	18MC-SB01-Z2	6/8/2007	16	18
Soil	United	United	Upland	Y	18MC-SB02-Z1	6/8/2007	6	8
Soil	United	United	Upland	Y	18MC-SB02-Z2	6/8/2007	12	16
Soil	United	United	Upland	Y	18MC-SB03-Z1	4/27/2007	2.4	2.9
Soil	United	United	Upland	Y	18MC-SB03-Z2	4/27/2007	8	8.6
Soil	United	United	Upland	Y	18MC-SB15-Z1	4/27/2007	1.5	2
Soil	United	United	Upland	Y	18MC-SB15-Z2	4/27/2007	10	11
Soil	United	United	Upland	Y	18MC-SS02-Z1	4/16/2007	0	0.167

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	United	United	Upland	Y	18MC-SS04-Z1	4/16/2007	0	0.167
Soil	United	United	Upland	Y	18MC-SS05-Z1	4/16/2007	0	0.167
Soil	United	United	Upland	Y	18MC-SS06-Z1	4/16/2007	0	0.167
Soil	United	United	Upland	Y	18MC-SS08-Z1	4/16/2007	0	0.167
Soil	United	United	Upland	Y	18MC-SS09-Z1	4/16/2007	0	0.167
Soil	United	United	West Bank	Y	SS-39	11/3/2005	0	0.17
Soil	Upson	Upson	Upland	Y	18MC-MW14-Z1	6/19/2007	12	14
Soil	Upson	Upson	Upland	Y	18MC-MW15-Z1	6/12/2007	10	12
Soil	Upson	Upson	Upland	Y	18MC-MW16-Z1	6/12/2007	8	10
Soil	Upson	Upson	Upland	Y	18MC-MW17-Z1	6/5/2007	16	18
Soil	Upson	Upson	Upland	Y	18MC-SB11-Z1	6/25/2007	3	4
Soil	Upson	Upson	Upland	Y	18MC-SB12-Z1	4/26/2007	6	6.8
Soil	Upson	Upson	Upland	Y	18MC-SB12-Z2	4/26/2007	8.5	11.6
Soil	Upson	Upson	Upland	Y	18MC-SB13-Z1	4/26/2007	0.5	2
Soil	Upson	Upson	Upland	Y	18MC-SB13-Z2	4/26/2007	4	6
Soil	Upson	Upson	Upland	Y	18MC-SB14-Z1	4/26/2007	8	10.2
Soil	Upson	Upson	Upland	Y	18MC-SB14-Z2	4/26/2007	10.2	11.5
Soil	Upson	Upson	Upland	Y	18MC-SS14-Z1	4/16/2007	0	0.167
Soil	Upson	Upson	Upland	Y	18MC-SS15-Z1	4/16/2007	0	0.167
Soil	Upson	Upson	Upland	Y	18MC-SS16-Z1	4/16/2007	0	0.167
Soil	Upson	Upson	Upland	Y	18MC-SS17-Z1	4/16/2007	0	0.167
Soil	Upson	Upson	Public Park Area	Y	OU2-SS01-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Public Park Area	Y	OU2-SS01-Z2	12/1/2014	0.5	2
Soil	Upson	Upson	Public Park Area	Y	OU2-SS02-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Public Park Area	Y	OU2-SS02-Z2	12/1/2014	0.5	2
Soil	Upson	Upson	Public Park Area	Y	OU2-SS03-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Public Park Area	Y	OU2-SS03-Z2	12/1/2014	0.5	2

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	Upson	Upson	Public Park Area	Y	OU2-SS04-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Public Park Area	Y	OU2-SS04-Z2	12/1/2014	0.5	2
Soil	Upson	Upson	Public Park Area	Y	OU2-SS05-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Public Park Area	Y	OU2-SS05-Z2	12/1/2014	0.5	2
Soil	Upson	Upson	Public Park Area	Y	OU2-SS06-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Public Park Area	Y	OU2-SS06-Z2	12/1/2014	0.5	2
Soil	Upson	Upson	Public Park Area	Y	OU2-SS07-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Public Park Area	Y	OU2-SS07-Z2	12/1/2014	0.5	2
Soil	Upson	Upson	Public Park Area	Y	OU2-SS08-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Public Park Area	Y	OU2-SS08-Z2	12/1/2014	0.5	2
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS09-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS09-Z2	12/1/2014	0.5	2
Soil	Upson	Upson	Public Park Area	Y	OU2-SS10-Z1	12/1/2014	0	0.5
Soil	Upson	Upson	Public Park Area	Y	OU2-SS10-Z2	12/1/2014	0.5	2
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS11-Z1	5/18/2015	0	0.5
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS11-Z2	5/18/2015	1	1.5
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS11-Z3	5/18/2015	1.5	2.8

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS12-Z1	5/18/2015	0	0.5
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS12-Z2	5/18/2015	1	2
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS12-Z3	5/18/2015	2	2.9
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS13-Z1	5/18/2015	0	0.5
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS13-Z2	5/18/2015	0.5	2
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS13-Z3	5/18/2015	2	3
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS14-Z1	5/18/2015	0	0.5
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS14-Z2	5/18/2015	1.5	2
Soil	Upson	Upson	Hazardous Area Confirmation Samples	Y	OU2-SS14-Z3	5/18/2015	2	2.9
Soil	White	White	Upland	Y	18MC-MW11-Z1	6/8/2007	8	10
Soil	White	White	Upland	Y	18MC-MW12-Z1	6/6/2007	10	14
Soil	White	White	Upland	Y	18MC-MW12-Z2	6/7/2007	12	16
Soil	White	White	Upland	Y	18MC-MW13-Z1	6/7/2007	6	10

Appendix A - Table 1

SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Soil	White	White	Upland	Y	18MC-SB06-Z1	4/26/2007	1.5	2
Soil	White	White	Upland	Y	18MC-SB06-Z2	4/26/2007	14	14.5
Soil	White	White	Upland	Y	18MC-SB07-Z1	4/26/2007	1	1.7
Soil	White	White	Upland	Y	18MC-SB07-Z2	4/26/2007	10	10.5
Soil	White	White	Upland	Y	18MC-SB08-Z1	4/26/2007	0.5	1.2
Soil	White	White	Upland	Y	18MC-SB08-Z2	4/26/2007	6.5	7.2
Soil	White	White	Upland	Y	18MC-SB09-Z1	4/26/2007	0.5	1.5
Soil	White	White	Upland	Y	18MC-SB09-Z2	4/26/2007	3	3.5
Soil	White	White	Upland	Y	18MC-SS11-Z1	4/16/2007	0	0.167
Soil	White	White	Upland	Y	18MC-SS12-Z1	4/16/2007	0	0.167
Soil	White	White	Upland	Y	18MC-SS13-Z1	4/16/2007	0	0.167
Soil	White	White	Upland	Y	WHITE-1	9/22/2005	0	0.17
Soil	White	White	Upland	Y	WHITE-1B	9/22/2005	0.17	0.75
Surface Water	Barge Canal	Canal Corp	Confluence	N	BC-AC-W-BD	11/4/2008		
Surface Water	Barge Canal	Canal Corp	Confluence	N	BC-AC-WF-BD	11/4/2008		
Surface Water	Barge Canal	Canal Corp	Near Dry Dock	N	BC-DD-W-BD	11/5/2008		
Surface Water	Barge Canal	Canal Corp	Near Dry Dock	N	BC-DD-W-D	11/19/2008		
Surface Water	Barge Canal	Canal Corp	Near Dry Dock	N	BC-DD-WF-BD	11/5/2008		
Surface Water	Barge Canal	Canal Corp	Near Dry Dock	N	BC-DD-WF-D	11/19/2008		
Surface Water	Barge Canal	Canal Corp	Near Locks	N	BC-NL-W-BD	11/5/2008		
Surface Water	Barge Canal	Canal Corp	Near Locks	N	BC-NL-WF-BD	11/5/2008		
Surface Water	Barge Canal	Canal Corp	Near Locks	N	BC-NL-WF-LD	11/5/2008		
Surface Water	Barge Canal	Canal Corp	Near Locks	N	BC-NL-W-LD	11/5/2008		
Surface Water	Barge Canal	Canal Corp	Near Spillway	N	BC-NS-W-BD	11/4/2008		
Surface Water	Barge Canal	Canal Corp	Near Spillway	N	BC-NS-W-D	11/19/2008		
Surface Water	Barge Canal	Canal Corp	Near Spillway	N	BC-NS-WF-BD	11/4/2008		
Surface Water	Barge Canal	Canal Corp	Near Spillway	N	BC-NS-WF-D	11/19/2008		

Appendix A - Table 1
SELECTION OF SAMPLES FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Sample Matrix	Area	Parcel/ Owner	Secondary Location	Within OU2?	Sample ID	Sample Date	Start Depth ft bgs	End Depth ft bgs
Surface Water	Corridor	Flintkote	NA	Y	FS-EMC01-SW-O	9/11/2003		
Surface Water	Corridor	Flintkote	NA	Y	OU2-SW01	5/20/2015		
Surface Water	Corridor	United	Above Dam	Y	OU2-SW02	5/21/2015		
Surface Water	Corridor	United	Below Dam	Y	OU2-SW03	5/26/2015		
Surface Water	Corridor	Upson	NA	Y	18MC-WB-W-AD	12/1/2008		
Surface Water	Corridor	Upson	NA	Y	18MC-WB-W-BD	11/4/2008		
Surface Water	Corridor	Upson	NA	Y	18MC-WB-W-D	11/19/2008		
Surface Water	Corridor	Upson	NA	Y	18MC-WB-WF-AD	12/1/2008		
Surface Water	Corridor	Upson	NA	Y	18MC-WB-WF-BD	11/4/2008		
Surface Water	Corridor	Upson	NA	Y	18MC-WB-WF-D	11/19/2008		
Surface Water	Corridor	Upson	NA	Y	18MC-WB-WF-LD	11/5/2008		
Surface Water	Corridor	Upson	NA	Y	18MC-WB-W-LD	11/5/2008		
Surface Water	Corridor	White	NA	Y	18MC-EB-W-AD	12/1/2008		
Surface Water	Corridor	White	NA	Y	18MC-EB-W-BD	11/4/2008		
Surface Water	Corridor	White	NA	Y	18MC-EB-W-D	11/19/2008		
Surface Water	Corridor	White	NA	Y	18MC-EB-WF-AD	12/1/2008		
Surface Water	Corridor	White	NA	Y	18MC-EB-WF-BD	11/4/2008		
Surface Water	Corridor	White	NA	Y	18MC-EB-WF-D	11/19/2008		
Surface Water	Corridor	White	NA	Y	18MC-EB-WF-LD	11/5/2008		
Surface Water	Corridor	White	NA	Y	18MC-EB-W-LD	11/5/2008		
Surface Water	Background Area	East Branch	North Pool	N	BG1-SW01	5/21/2015		

B Exposure and Risk Calculations

TABLE 1
SELECTION OF EXPOSURE PATHWAYS FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current / Future	Surface Soil and Sediment (0 to 2 feet)	Surface Soil and Sediment (0 to 2 feet)	Creek Banks	Recreational User	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	Site visitors may contact surface soil (0 to 2 feet) during recreational exposures. Exposures including direct contact (ingestion and dermal) and inhalation of volatilized contaminants. This is a completed pathway for adults, adolescents, and young children.
	Surface Soil and Sediment (0 to 2 feet)	Surface Soil and Sediment (0 to 2 feet)		Anglers	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	Site visitors and anglers may contact surface sediment/soil (0 to 2 feet) during recreational exposures. Exposures including direct contact (ingestion and dermal) and inhalation of volatilized contaminants. This is a completed pathway for adults, adolescents, and young children.
	Fish	Fish	Creek Channel	Anglers	Child Adolescent Adult	Ingestion	Quantitative	Anglers have been observed fishing within the Creek Channel. The potential exists that anglers will fish and consume fish caught in the Creek Channel. It is also assumed that anglers will share fish with younger individuals and this fish will be consumed.
	Surface Water	Surface Water	Creek Channel	Recreational User and Angler	Child Adolescent Adult	Ingestion Dermal	Qualitative	The stream is shallow and fast-flowing in most places. In addition, the stream banks are steep making direct access difficult but possible. Stream is not suitable for swimming or wading. This pathway will be evaluated qualitatively in the baseline HHRA.
Current / Future	Surface Soil and Sediment (0 to 2 feet)	Surface Soil and Sediment (0 to 2 feet)	Flintkote	Site Visitor Trespasser	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	Flintkote is a commercial facility zoned for industrial land use. Site visitors or trespassers may be exposed to surface soils and sediments (0 to 2 feet) through direct contact (dermal, ingestion) and inhalation of volatile compounds from the soil. This is a completed exposure pathway under current and future conditions.
				Outdoor Workers	Adult	Ingestion Dermal Inhalation	Quantitative	Outdoor workers may be exposed to surface soils and sediments during routine maintenance on the former Flintkote plant property. Exposure to surface soils (0 to 2 feet) may occur during maintenance activities. Pathways include direct contact with soil (ingestion and dermal contact) and inhalation of volatile compounds from surface soils. This completed exposure pathway will be evaluated under current and future conditions.
Future	Subsurface Soil (0 to 10 feet)	Subsurface Soil (0 to 10 feet)	Flintkote	Construction Worker	Adult	Ingestion Dermal Inhalation	Quantitative	Construction workers may be exposed to contaminants in soil at depths of 0 to 10 feet on the former Flintkote plant property. Construction workers may be exposed during direct contact (dermal and ingestion) and inhalation of volatile organic compounds from the soil. Exposure pathways may include direct contact (dermal and ingestion) and inhalation of volatile organic compounds from the soil. This is a complete exposure pathway.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current and Future	Surface Soil and Sediment (0 to 2 feet)	Surface Soil and Sediment (0 to 2 feet)	Upson Park	Recreational User	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	The Upson Park provides opportunities for recreational use. Individuals may be exposed to surface soils and sediments (0 to 2 feet) through direct contact (dermal, ingestion) and inhalation of volatile compounds from the soil. This is a completed exposure pathway under current and future conditions..
				Outdoor Workers	Adult	Ingestion Dermal Inhalation	Quantitative	Outdoor workers may be exposed to surface soils during routine park maintenance. Exposure to surface soils and sediment (0 to 2 feet) may occur during maintenance activities. Pathways include direct contact with soil (ingestion and dermal contact) and inhalation of volatile compounds from surface soils. This completed exposure pathway will be evaluated under current and future conditions
	Subsurface Soil (0 to 10 feet)	Subsurface Soil (0 to 10 feet)		Construction Worker	Adult	Ingestion Dermal Inhalation	Quantitative	Construction workers may be exposed to contaminants in soil at depths of 0 to 10 feet. Construction workers may be exposed during direct contact (dermal and ingestion) and inhalation of volatile organic compounds from the soil. This is a complete exposure pathways. This is a completed exposure pathway.
Current and Future	Surface Soil and Sediment (0 to 2 feet)	Surface Soil and Sediment (0 to 2 feet)	White Transportation	Site Visitor Trespasser	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	White Transportation is a commercial facility zoned for industrial land use. Site visitors or trespassers may be exposed to surface soils and sediments (0 to 2 feet) through direct contact (dermal, ingestion) and inhalation of volatile compounds from the soil. This is a completed exposure pathway under current and future conditions.
Future				Indoor Worker	Adult	Ingestion Dermal Inhalation	Quantitative	Indoor workers have no direct contact with outdoor soils. However, exposure to surface soils (0 to 2 feet) may occur through ingestion, dermal contact, inhalation of contaminated soils that have been incorporated into indoor dust, and the inhalation of contaminants present in indoor air. This completed exposure pathway will be evaluated under future conditions.
Current and Future				Outdoor Workers	Adult	Ingestion Dermal Inhalation	Quantitative	Outdoor workers may be exposed to surface soils during routine maintenance of this industrial facility. Exposure to surface soils and sediment (0 to 2 feet) may occur during maintenance activities. Pathways include direct contact with soil (ingestion and dermal contact) and inhalation of volatile compounds from surface soils. This completed exposure pathway will be evaluated under current and future conditions
Current and Future	Subsurface Soil (0 to 10 feet)	Subsurface Soil (0 to 10 feet)	White Transportation	Construction Worker	Adult	Ingestion Dermal Inhalation	Quantitative	Construction workers may be exposed to contaminants in soil at depths of 0 to 10 feet at the White Transportation facility. Construction workers may be exposed during direct contact (dermal and ingestion) and inhalation of volatile organic compounds from the soil. This is a completed exposure pathway under current and future conditions.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current / Future	Surface Soil and Sediment (0 to 2 feet)	Surface Soil and Sediment (0 to 2 feet)	United Paperboard	Site Visitor Trespasser	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	United Paperboard is a commercial facility zoned for industrial land use. Site visitors or trespassers may be exposed to surface soils (0 to 2 feet) through direct contact (dermal, ingestion) and inhalation of volatile compounds from the soil. This is a completed exposure pathway under current and future conditions.
				Indoor Worker	Adult	Ingestion Dermal Inhalation	Quantitative	Indoor workers have no direct contact with outdoor soils. However, exposure to surface soils (0 to 2 feet) may occur through ingestion, dermal contact, inhalation of contaminated soils that have been incorporated into indoor dust, and the inhalation of contaminants present in indoor air. This completed exposure pathway will be evaluated under current and future conditions.
				Outdoor Worker	Adult	Ingestion Dermal Inhalation	Quantitative	Outdoor workers may be exposed to surface soils during routine maintenance of this industrial facility. Exposure to surface soils and sediment (0 to 2 feet) may occur during maintenance activities. Pathways include direct contact with soil (ingestion and dermal contact) and inhalation of volatile compounds from surface soils. This completed exposure pathway will be evaluated under current and future conditions.
Current and Future	Subsurface Soil (0 to 10 feet)	Subsurface Soil (0 to 10 feet)	United Paperboard	Construction Worker	Adult	Ingestion Dermal Inhalation	Quantitative	Construction Workers may be exposed to contaminants in soil at depths of 0 to 10 feet at the United Paperboard facility. Construction workers may be exposed during direct contact (dermal and ingestion) and inhalation of volatile organic compounds from the soil. This is a complete exposure pathway.
Future	Groundwater	Tap Water	United Paperboard and White Transportation	Resident	Child Adult	Ingestion Inhalation	Quantitative	The groundwater is classified by NYSDEC as GA, indicating the potential use of the groundwater as a potable water source. Currently, individuals receive their drinking water from a public water supply system. This pathway will be quantitatively evaluated as a future exposure pathway. Routes of exposures including direct contact (ingestion) and inhalation of volatile compounds while showering.
Future	Surface Soil (0 to 2 feet)	Surface Soil (0 to 2 feet)	White Transportation	Resident	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	The projected future use of White Transportation has changed to less restrictive Waterfront Mixed Use which may be predominantly residential with some smaller-scale commercial businesses that support the adjacent neighborhoods or the tourism industry. Residential exposures may occur in the future through direct contact ingestion, dermal contact, and inhalation of volatile compounds from surface soils and sediments (0-2 feet). These pathways are potentially complete and will be evaluated quantitatively.
	Subsurface Soil (0 to 10 feet)	Surface Soil (0 to 10 feet)		Resident	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	The projected future use of White Transportation has changed to less restrictive Waterfront Mixed Use. Residential exposures may occur in the future through direct contact ingestion and dermal contact) and inhalation of volatile compounds from subsurface soils brought to the surface during construction. These pathways are potentially complete and will be evaluated quantitatively.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS FOR HUMAN HEALTH RISK ASSESSMENT
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Future	Surface Soil (0 to 2 feet)	Surface Soil (0 to 2 feet)	United Paperboard	Resident	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	The projected future use of United Paperboard has changed to less restrictive Waterfront Mixed Use, which may be predominantly residential with some smaller-scale commercial businesses that support the adjacent neighborhoods or the tourism industry. Residential exposures may occur in the future through direct contact ingestion, dermal contact, and inhalation of volatile compounds from surface soils and sediments (0-2 feet). These pathways are potentially complete and will be evaluated quantitatively.
	Subsurface Soil (0 to 10 feet)	Surface Soil (0 to 10 feet)		Resident	Child Adolescent Adult	Ingestion Dermal Inhalation	Quantitative	The projected future use of United Paperboard has changed to less restrictive Waterfront Mixed Use. Residential exposures may occur in the future through direct contact ingestion and dermal contact and inhalation of volatile compounds from subsurface soils brought to the surface during construction. These pathways are potentially complete and will be evaluated quantitatively.

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Eighteenmile Creek Corridor
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
57-12-5	CYANIDE	1.10E+00		3.60E+00		mg/kg	FS-SP12-D02-S-O	5/8	1.10E+00 - 1.80E+00	3.60E+00	NA	2.70E-01	NC	NA	NA	YES	ASL
7429-90-5	ALUMINUM	1.48E+03		1.46E+04	J	mg/kg	18MC-L18-S05-Z1	72/72	No NDs	1.46E+04	NA	7.70E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	6.90E-01		1.66E+02	J	mg/kg	UPSON-1	45/72	3.60E-01 - 8.90E-01	1.66E+02	NA	3.10E+00	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	1.20E+00	J	8.12E+01		mg/kg	UPSON-2B	157/157	No NDs	8.12E+01	NA	6.80E-01	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	1.06E+01	J	3.90E+03		mg/kg	UPSON-2B	71/72	7.00E-02 - 7.00E-02	3.90E+03	NA	1.50E+03	NC	NA	NA	YES	ASL
7440-41-7	BERYLLIUM (7)	1.70E-01		2.50E+00	J	mg/kg	18MC-L03E-S05-Z1	71/72	1.90E-01 - 1.90E-01	2.50E+00	NA	1.60E+01	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (8)	5.00E-02	J	2.74E+01		mg/kg	UPSON-1	66/72	4.00E-02 - 6.00E-02	2.74E+01	NA	7.10E+00	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	9.32E+02		2.11E+05		mg/kg	18MC-L02W-S05-Z1	72/72	No NDs	2.11E+05	NA	NA	NA	NA	NA	NO	NSL, EN
18540-29-9	CHROMIUM, HEXAVALENT (9)	5.30E-01	J	5.30E-01	J	mg/kg	OU2-SED02	1/1	No NDs	5.30E-01	NA	3.00E-01	C	NA	NA	YES	ASL, KHC
7440-47-3	CHROMIUM, TOTAL	2.80E+00		5.05E+02		mg/kg	UPSON-2B	157/157	No NDs	5.05E+02	NA	1.20E+04	NC	NA	NA	NO	BSL
7440-48-4	COBALT	1.90E+00	J	4.39E+01	J	mg/kg	UPSON-1	72/72	No NDs	4.39E+01	NA	2.30E+00	NC	NA	NA	YES	ASL
7440-50-8	COPPER	9.20E+00	J	1.76E+04		mg/kg	FS-SP12-D02-S-O	157/157	No NDs	1.76E+04	NA	3.10E+02	NC	NA	NA	YES	ASL
7439-89-6	IRON	8.42E+03	J	1.60E+05		mg/kg	UPSON-2	72/72	No NDs	1.60E+05	NA	5.50E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD 10)	4.50E+00		2.54E+04		mg/kg	SED-7	164/164	No NDs	2.54E+04	NA	4.00E+02	IEUBK Model	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	1.22E+02		4.34E+04		mg/kg	18MC-SS03-Z1	72/72	No NDs	4.34E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (11)	1.65E+01		2.63E+03		mg/kg	UPSON-2B	72/72	No NDs	2.63E+03	NA	1.80E+02	NC	NA	NA	YES	ASL
7487-94-7	MERCURY (12)	1.10E-02	J	1.08E+01		mg/kg	FS-SS06-S-O	70/72	6.00E-03 - 2.60E-02	1.08E+01	NA	1.10E+00	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (13)	4.80E+00	J	9.09E+02	J	mg/kg	18MC-L18-S06-Z1	72/72	No NDs	9.09E+02	NA	1.50E+02	NC	NA	NA	YES	ASL
7440-09-7	POTASSIUM	1.03E+02		2.68E+03		mg/kg	18MC-L06-S04-Z1	72/72	No NDs	2.68E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	3.70E-01		1.15E+01		mg/kg	18MC-SS01-Z1	30/72	6.60E-01 - 3.80E+00	1.15E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-22-4	SILVER	1.10E-01		8.06E+01		mg/kg	UPSON-1	49/72	6.00E-02 - 9.70E-01	8.06E+01	NA	3.90E+01	NC	NA	NA	YES	ASL
7440-23-5	SODIUM	5.26E+01	J	6.50E+02		mg/kg	FS-SP12-D02-S-O	68/72	3.69E+01 - 2.00E+02	6.50E+02	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (14)	1.80E-01	J	2.16E+01		mg/kg	FS-SP12-D02-S-O	12/72	7.40E-02 - 4.30E+00	2.16E+01	NA	7.80E-02	NC	NA	NA	YES	ASL
7440-62-2	VANADIUM (15)	5.90E+00		3.81E+01		mg/kg	18MC-L11-S04-Z1	72/72	No NDs	3.81E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-66-6	ZINC (16)	1.03E+01	J	2.36E+04		mg/kg	SED-29B	157/157	No NDs	2.36E+04	NA	2.30E+03	NC	NA	NA	YES	ASL
PAHs																	
91-57-6	2-METHYLNAPHTHALENE	9.00E-03	J	3.20E+01	J	mg/kg	FS-EMC01-SED-O*	21/42	2.10E-01 - 8.20E+01	3.20E+01	NA	2.40E+01	NC	NA	NA	YES	ASL
83-32-9	ACENAPHTHENE	8.00E-03	J	1.40E+02		mg/kg	FS-EMC01-SED-O*	20/42	1.90E-01 - 8.20E+01	1.40E+02	NA	3.60E+02	NC	NA	NA	NO	BSL
208-96-8	ACENAPHTHYLENE	1.10E-02	J	3.10E+00	J	mg/kg	FS-EMC01-SED-O*	28/42	2.20E-01 - 8.20E+01	3.10E+00	NA	3.60E+02	NC	NA	NA	NO	BSL
120-12-7	ANTHRACENE	1.00E-02	J	1.90E+02		mg/kg	FS-EMC01-SED-O*	32/42	2.20E-01 - 8.20E+01	1.90E+02	NA	1.80E+03	NC	NA	NA	NO	BSL
56-55-3	BENZO(A)ANTHRACENE	2.20E-02	J	4.80E+02		mg/kg	FS-EMC01-SED-O*	39/42	8.20E+00 - 8.20E+01	4.80E+02	NA	1.60E-01	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	1.70E-02	J	9.80E+01		mg/kg	FS-EMC01-SED-O*	38/42	3.90E+00 - 8.20E+01	9.80E+01	NA	1.60E-02	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	2.30E-02	J	3.90E+02		mg/kg	FS-EMC01-SED-O*	38/42	3.60E-01 - 8.20E+01	3.90E+02	NA	1.60E-01	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	1.20E-02	J	1.20E+01		mg/kg	18MC-L09-S04-Z1	33/42	1.90E+00 - 8.20E+01	1.20E+01	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	5.00E-02	J	2.60E+02		mg/kg	FS-EMC01-SED-O*	27/42	1.90E-01 - 8.20E+01	2.60E+02	NA	1.60E+00	C	NA	NA	YES	ASL
218-01-9	CHRYSENE	1.60E-02	J	4.50E+02		mg/kg	FS-EMC01-SED-O*	39/42	3.90E+00 - 8.20E+01	4.50E+02	NA	1.60E+01	C	NA	NA	YES	ASL
53-70-3	DIBENZ(A,H)ANTHRACENE	1.20E-02	J	1.00E+02		mg/kg	FS-EMC01-SED-O*	28/42	2.20E-01 - 8.20E+01	1.00E+02	NA	1.60E-02	C	NA	NA	YES	ASL
206-44-0	FLUORANTHENE	2.30E-02	J	1.50E+03		mg/kg	FS-EMC01-SED-O*	40/42	8.20E+00 - 8.20E+01	1.50E+03	NA	2.40E+02	NC	NA	NA	YES	ASL
86-73-7	FLUORENE	1.00E-02	J	1.60E+02		mg/kg	FS-EMC01-SED-O*	22/42	1.90E-01 - 8.20E+01	1.60E+02	NA	2.40E+02	NC	NA	NA	NO	BSL
193-39-5	INDENO(1,2,3-C,D)PYRENE	1.00E-02	J	1.00E+02		mg/kg	FS-EMC01-SED-O*	35/42	3.60E-01 - 8.20E+01	1.00E+02	NA	1.60E-01	C	NA	NA	YES	ASL
91-20-3	NAPHTHALENE	8.00E-03	J	1.20E+02		mg/kg	FS-EMC01-SED-O*	21/42	2.10E-01 - 8.20E+01	1.20E+02	NA	3.80E+00	C	NA	NA	YES	ASL
85-01-8	PHENANTHRENE	1.80E-02	J	1.00E+03		mg/kg	FS-EMC01-SED-O*	39/42	8.20E+00 - 8.20E+01	1.00E+03	NA	NA	NA	NA	NA	NO	NSL
129-00-0	PYRENE	2.80E-02	J	4.30E+02		mg/kg	FS-EMC01-SED-O*	40/42	8.20E+00 - 8.20E+01	4.30E+02	NA	1.80E+02	NC	NA	NA	YES	ASL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Eighteenmile Creek Corridor
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
PCBs																	
53469-21-9	AROCLOR 1242	5.10E-01		4.60E+01		mg/kg	18MC-L13-S03-Z1	9/165	3.00E-03 - 3.70E+02	4.60E+01	NA	2.30E-01	C	NA	NA	YES	ASL
12672-29-6	AROCLOR 1248	7.80E-03	J	2.80E+02	J	mg/kg	SED-34B	82/165	1.80E-02 - 2.00E+01	2.80E+02	NA	2.30E-01	C	NA	NA	YES	ASL
11097-69-1	AROCLOR 1254	1.00E-02	J	1.30E+02		mg/kg	SED-22	98/165	3.00E-03 - 8.20E+00	1.30E+02	NA	1.20E-01	NC	NA	NA	YES	ASL
11096-82-5	AROCLOR 1260	6.60E-03	J	3.70E+00	J	mg/kg	OU2-SED03	37/165	1.80E-02 - 3.70E+02	3.70E+02	NA	2.40E-01	C	NA	NA	YES	ASL
37324-23-5	AROCLOR 1262 (17)	1.00E-01		1.30E-01		mg/kg	18MC-L16W-S04-Z1	2/90	3.00E-03 - 3.40E+00	1.30E-01	NA	2.30E-01	C	NA	NA	NO	BSL
11100-14-4	AROCLOR 1268 (17)	4.20E-02		1.10E-01		mg/kg	18MC-L02W-S05-Z2	3/90	3.00E-03 - 3.40E+00	1.10E-01	NA	2.30E-01	C	NA	NA	NO	BSL
Total Aroclors	Total Aroclors (PCBs) (17)	7.80E-03		3.90E+02		mg/kg	SED-34B	116/165	1.80E-02 - 1.20E+01	3.90E+02	NA	2.30E-01	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	1.20E-04	J	9.60E-03	J	mg/kg	18MC-L09-S04-Z1	7/35	4.80E-04 - 3.10E-01	9.60E-03	NA	3.90E-02	C	NA	NA	NO	BSL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	2.70E-04	J+	8.20E-03	J	mg/kg	18MC-L03W-S04-Z1	9/35	3.00E-04 - 3.10E-01	8.20E-03	NA	8.60E-02	C	NA	NA	NO	BSL
959-98-8	ALPHA ENDOSULFAN (18)	7.10E-04	J	1.50E-01		mg/kg	OU2-SED03	12/35	1.80E-03 - 3.10E-01	1.50E-01	NA	4.70E+01	NC	NA	NA	NO	BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	4.90E-04	J	2.00E+00	J	mg/kg	OU2-SED03	6/35	1.80E-03 - 3.10E-01	2.00E+00	NA	3.00E-01	C	NA	NA	YES	ASL
33213-65-9	BETA ENDOSULFAN (18)	7.40E-04	J	3.60E-02	J	mg/kg	18MC-L09-S04-Z1	10/35	2.00E-03 - 6.10E-01	3.60E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	4.80E-04	J	6.40E-01	J	mg/kg	OU2-SED03	12/35	1.90E-03 - 3.10E-01	6.40E-01	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	1.30E-03	J	4.50E-01		mg/kg	18MC-L16W-S04-Z1	11/34	1.80E-03 - 3.90E-02	4.50E-01	NA	3.40E-02	C	NA	NA	YES	ASL
1031-07-8	ENDOSULFAN SULFATE (18)	9.10E-04	J	8.30E-02	J	mg/kg	OU2-SED03	5/35	1.80E-03 - 6.10E-01	8.30E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
72-20-8	ENDRIN	1.80E-03	J	5.30E-01	J	mg/kg	OU2-SED03	10/35	1.80E-03 - 3.90E-02	5.30E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
7421-93-4	ENDRIN ALDEHYDE (19)	5.00E-04	J	1.50E-01	J	mg/kg	FS-EMC01-SED-O*	7/35	1.80E-03 - 3.90E-02	1.50E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
53494-70-5	ENDRIN KETONE (19)	5.70E-04	J	1.60E+00		mg/kg	FS-EMC01-SED-O*	10/36	1.80E-03 - 3.90E-02	1.60E+00	NA	1.90E+00	NC	NA	NA	NO	BSL
58-89-9	GAMMA BHC (LINDANE)	5.80E-04	J	3.00E-01	J	mg/kg	OU2-SED03	9/35	1.90E-03 - 3.10E-01	3.00E-01	NA	5.70E-01	C	NA	NA	NO	BSL
76-44-8	HEPTACHLOR	3.00E-03	J	5.50E-01	J	mg/kg	OU2-SED03	3/35	1.80E-03 - 3.10E-01	5.50E-01	NA	1.30E-01	C	NA	NA	YES	ASL
1024-57-3	HEPTACHLOR EPOXIDE	5.60E-04	J	4.30E-01	J	mg/kg	OU2-SED03	4/35	1.80E-03 - 3.10E-01	4.30E-01	NA	7.00E-02	C	NA	NA	YES	ASL
72-43-5	METHOXYCHLOR	1.60E-03	J	1.60E+00	J	mg/kg	FS-EMC01-SED-O*	19/35	2.00E-03 - 2.00E-01	1.60E+00	NA	3.20E+01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	2.80E-03	J	8.50E-02	J	mg/kg	OU2-SED03	14/35	2.00E-03 - 6.10E-01	8.50E-02	NA	2.30E+00	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	1.20E-03	J	1.20E-01		mg/kg	18MC-L07-S05-Z1	28/35	2.10E-03 - 6.10E-01	1.20E-01	NA	2.00E+00	C	NA	NA	NO	BSL
50-29-3	P,P'-DDT	1.30E-03	J	1.30E+00		mg/kg	OU2-SED03	31/35	3.60E-03 - 3.90E-02	1.30E+00	NA	1.90E+00	C	NA	NA	NO	BSL
DDT	DDT, Total	3.40E-03		1.39E+00		mg/kg	OU2-SED03	33/35	3.60E-03 - 3.90E-02	1.39E+00	NA	1.90E+00	C	NA	NA	NO	BSL
SVOCs																	
95-48-7	2-METHYLPHENOL (O-CRESOL)	1.60E-01	J	1.60E-01	J	mg/kg	OU2-SED02	1/42	1.90E-01 - 8.20E+01	1.60E-01	NA	3.20E+02	NC	NA	NA	NO	IFD, BSL
88-74-4	2-NITROANILINE	1.80E-01	J	1.80E-01	J	mg/kg	FS-SS04-S-ORI	1/42	3.60E-01 - 2.00E+02	1.80E-01	NA	6.30E+01	NC	NA	NA	NO	IFD, BSL
MEPH3MEPH4	3- AND 4- METHYLPHENOL (TOTAL)	7.60E-01	J	3.70E+00		mg/kg	OU2-SED01	3/3	No NDs	3.70E+00	NA	NA	NA	NA	NA	NO	NSL
100-01-6	4-NITROANILINE	6.30E-02	J	6.30E-02	J	mg/kg	FS-SS10-S-O	1/42	3.60E-01 - 2.00E+02	6.30E-02	NA	2.50E+01	NC	NA	NA	NO	IFD, BSL
98-86-2	ACETOPHENONE	1.10E-02	J	1.10E-02	J	mg/kg	18MC-L18-S07-Z1	1/42	1.90E-01 - 1.20E+02	1.10E-02	NA	7.80E+02	NC	NA	NA	NO	IFD, BSL
100-52-7	BENZALDEHYDE	3.50E-02	J	3.50E-02	J	mg/kg	18MC-L13-S04-Z1	1/42	1.90E-01 - 1.20E+02	3.50E-02	NA	7.80E+02	NC	NA	NA	NO	IFD, BSL
85-68-7	BENZYL BUTYL PHTHALATE	7.30E-02	J	3.60E+01		mg/kg	FS-SS06-S-O	6/42	1.90E-01 - 8.20E+01	3.60E+01	NA	2.90E+02	C	NA	NA	NO	BSL
92-52-4	BIPHENYL (DIPHENYL)	3.10E-02	J	3.90E-01	J	mg/kg	18MC-L09-S04-Z1	2/42	1.90E-01 - 1.20E+02	3.90E-01	NA	4.70E+00	NC	NA	NA	NO	IFD, BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	2.60E-02	J	5.00E+01		mg/kg	FS-SS06-S-O	16/42	1.90E-01 - 8.20E+01	5.00E+01	NA	3.90E+01	C	NA	NA	YES	ASL
86-74-8	CARBAZOLE	9.00E-03	J	1.60E+02		mg/kg	FS-EMC01-SED-O*	28/42	2.10E-01 - 8.20E+01	1.60E+02	NA	NA	NA	NA	NA	NO	NSL
132-64-9	DIBENZOFURAN	1.00E-02	J	1.40E+02		mg/kg	FS-EMC01-SED-O*	19/42	1.90E-01 - 8.20E+01	1.40E+02	NA	7.30E+00	NC	NA	NA	YES	ASL
84-66-2	DIETHYL PHTHALATE	2.30E+01		2.30E+01		mg/kg	FS-SS05-S-O	1/42	1.90E-01 - 8.20E+01	2.30E+01	NA	5.10E+03	NC	NA	NA	NO	IFD, BSL
84-74-2	DI-N-BUTYL PHTHALATE	6.70E-02	J	1.50E+00	J	mg/kg	FS-SS06-S-O	9/42	1.90E-01 - 8.20E+01	1.50E+00	NA	6.30E+02	NC	NA	NA	NO	BSL
117-84-0	DI-N-OCTYLPHTHALATE	9.00E-03	J	1.50E+01		mg/kg	FS-SS05-S-O	9/42	1.90E-01 - 8.20E+01	1.50E+01	NA	6.30E+01	NC	NA	NA	NO	BSL
108-95-2	PHENOL	2.70E-01	J	5.50E-01		mg/kg	OU2-SED02	2/42	1.90E-01 - 8.20E+01	5.50E-01	NA	1.90E+03	NC	NA	NA	NO	IFD, BSL
75-09-2	METHYLENE CHLORIDE	1.30E-02		1.30E-02		mg/kg	FS-SP12-D02-S-O	1/5	6.50E-03 - 1.80E-02	1.30E-02	NA	3.50E+01	NC	NA	NA	NO	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Eighteenmile Creek Corridor
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

* FS-EMC01-SED-O was identified as an outlier in risk calculations. The results are included here but eliminated from the exposure point concentrations calculation.

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated, J+ - estimated high.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential soil were used as Screening Levels and were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Antimony evaluated as metallic Antimony.

(6) Arsenic assumed to be inorganic Arsenic.

(7) Beryllium based on Beryllium and Compounds.

(8) Cadmium based on diet.

(9) Evaluated based on toxicity for Chromium +6 in the absence of speciated data.

(10) Lead evaluated based on the Residential Soil level of 400 ppm based on the IEUBK model.

(11) Manganese based on non-diet screening level.

(12) Mercury evaluated based on elemental mercury toxicity value.

(13) Nickel Soluble Salts used as surrogate for Nickel.

(14) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(15) Vanadium and compounds used as surrogate for vanadium.

(16) Zinc and compounds used as surrogate for Zinc.

(17) The PCB screening level for the cancer screening level was based on total PCBs (high risk) cancer slope factor.

(18) Endosulfan used as surrogate for Endosulfan Sulfate.

(19) Endrin used as a surrogate for Endrin Aldehyde and Endrin Ketone .

TABLE 2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Tissue (fillets)
Exposure Point: Eighteenmile Creek Corridor

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
7429-90-5	ALUMINUM	8.30E-01	J	2.90E+00	J	mg/kg wet weight	OU2-RED-01	9/9		2.90E+00	NA	8.3E+01	NC	NA	NA	NO	BSL
7440-38-2	ARSENIC	2.70E-02	J	2.10E-01		mg/kg wet weight	OU2-SMB-02	9/9	No NDs	2.10E-01	NA	3.8E-03	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	9.20E-02	J	2.30E-01	J	mg/kg wet weight	OU2-SMB-02	9/9	No NDs	2.30E-01	NA	1.7E+01	NC	NA	NA	NO	BSL
7440-70-2	CALCIUM	8.30E+02		8.90E+03		mg/kg wet weight	OU2-SMB-02	9/9	No NDs	8.90E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7440-47-3	CHROMIUM (5)	1.60E-01	J	1.10E+00		mg/kg wet weight	OU2-RED-03	9/9	No NDs	1.10E+00	NA	2.14E-03	C	NA	NA	YES	ASL, KHC
7440-48-4	COBALT	5.40E-03	J	2.10E-02	J	mg/kg wet weight	OU2-RED-03	9/9	No NDs	2.10E-02	NA	2.50E-02	NC	NA	NA	NO	BSL
7440-50-8	COPPER	3.70E-01		6.80E+00		mg/kg wet weight	OU2-RED-03	9/9	No NDs	6.80E+00	NA	3.30E+00	NC	NA	NA	YES	ASL
7439-89-6	IRON	6.40E+00		3.00E+01		mg/kg wet weight	OU2-RED-03	7/9	4.80E+00 - 5.30E+00	3.00E+01	NA	5.83E+01	NC	NA	NA	NO	BSL, EN
7439-92-1	LEAD	1.80E-02	J	3.30E-01		mg/kg wet weight	OU2-SMB-04	9/9	No NDs	3.30E-01	NA	NA	NA	NA	NA	NO	NSL
7439-95-4	MAGNESIUM	1.90E+02		5.00E+02		mg/kg wet weight	OU2-SMB-02	9/9	No NDs	5.00E+02	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE	3.50E-01	J	1.20E+00		mg/kg wet weight	OU2-RED-02	9/9	No NDs	1.20E+00	NA	NA	NA	NA	NA	NO	NSL
7439-97-6	MERCURY (6)	6.40E-02	J	5.00E-01		mg/kg wet weight	OU2-SMB-04	9/9	No NDs	5.00E-01	NA	8.30E-03	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (7)	3.10E-02	J	5.80E-01		mg/kg wet weight	OU2-RED-03	9/9	No NDs	5.80E-01	NA	1.67E+00	NC	NA	NA	NO	BSL
7440-09-7	POTASSIUM	1.70E+03		4.10E+03		mg/kg wet weight	OU2-SMB-02	9/9	No NDs	4.10E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	2.00E-01	J	5.60E-01		mg/kg wet weight	OU2-SMB-02	9/9	No NDs	5.60E-01	NA	4.17E-01	NC	NA	NA	YES	ASL
7440-23-5	SODIUM	4.00E+02		1.10E+03		mg/kg wet weight	OU2-RED-01	9/9	No NDs	1.10E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7440-62-2	VANADIUM (8)	2.00E-01		4.40E-01		mg/kg wet weight	OU2-RED-03	9/9	No NDs	4.40E-01	NA	4.20E-01	NC	NA	NA	YES	ASL
7440-66-6	ZINC (9)	5.70E+00		1.30E+01		mg/kg wet weight	OU2-SMB-02	9/9	No NDs	1.30E+01	NA	2.50E+01	NC	NA	NA	NO	BSL
PAHs																	
83-32-9	ACENAPHTHENE	1.90E-02	J	2.20E-02	J	mg/kg wet weight	OU2-WAL-01	2/8	5.30E-02 - 5.40E-02	2.20E-02	NA	5.00E+00	NC	NA	NA	NO	BSL
91-20-3	NAPHTHALENE	4.70E-02	J	5.80E-02		mg/kg wet weight	OU2-WAL-01	3/8	5.30E-02 - 5.40E-02	5.80E-02	NA	3.67E+00	NC	NA	NA	NO	BSL
PCBs																	
11097-69-1	AROCLOR 1254 (10)	4.40E-03	J	4.60E-01	J	mg/kg wet weight	OU2-SMB-03	10/10	No NDs	4.60E-01	NA	1.69E-03	C	NA	NA	YES	ASL
11096-82-5	AROCLOR 1260 (10)	2.30E-03		1.50E-01		mg/kg wet weight	OU2-SMB-03	10/10	No NDs	1.50E-01	NA	1.69E-03	C	NA	NA	YES	ASL
PCB	PCB, Total (10)	6.70E-03		6.10E-01		mg/kg wet weight	OU2-SMB-03	10/10	No NDs	6.10E-01	NA	1.69E-03	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	2.40E-05	J	3.90E-04	J	mg/kg wet weight	OU2-SMB-01	9/10	4.20E-04 - 4.20E-04	3.90E-04	NA	1.99E-04	C	NA	NA	YES	ASL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	2.80E-05	J	6.20E-05	J	mg/kg wet weight	OU2-RED-02	3/10	8.20E-05 - 4.20E-04	6.20E-05	NA	5.37E-04	C	NA	NA	NO	BSL
959-98-8	ALPHA ENDOSULFAN (11)	1.80E-05	J	3.30E-03		mg/kg wet weight	OU2-SMB-03	10/10	No NDs	3.30E-03	NA	5.00E-01	NC	NA	NA	NO	BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	4.70E-05	J	5.40E-04	J	mg/kg wet weight	OU2-RED-01	6/10	8.10E-05 - 4.20E-04	5.40E-04	NA	1.88E-03	C	NA	NA	NO	BSL
33213-65-9	BETA ENDOSULFAN (11)	2.50E-05	J	2.00E-03	J	mg/kg wet weight	OU2-SMB-03	10/10	No NDs	2.00E-03	NA	5.00E-01	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	2.20E-05	J	1.30E-03		mg/kg wet weight	OU2-SMB-03	8/10	8.20E-05 - 4.20E-04	1.30E-03	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	1.20E-04	J	7.40E-03	J	mg/kg wet weight	OU2-SMB-03	10/10	No NDs	7.40E-03	NA	2.11E-04	C	NA	NA	YES	ASL
1031-07-8	ENDOSULFAN SULFATE (11)	1.50E-04	J	9.00E-03		mg/kg wet weight	OU2-SMB-03	10/10	No NDs	9.00E-03	NA	5.00E-01	NC	NA	NA	NO	BSL
72-20-8	ENDRIN (12)	1.20E-03		6.60E-02		mg/kg wet weight	OU2-SMB-03	10/10	No NDs	6.60E-02	NA	2.50E-02	NC	NA	NA	YES	ASL
7421-93-4	ENDRIN ALDEHYDE (12)	6.60E-05	J	8.70E-03		mg/kg wet weight	OU2-SMB-03	10/10	No NDs	8.70E-03	NA	2.50E-02	NC	NA	NA	NO	BSL
53494-70-5	ENDRIN KETONE (12)	2.60E-04	J	1.10E-02	J	mg/kg wet weight	OU2-SMB-03	10/10	No NDs	1.10E-02	NA	2.50E-02	NC	NA	NA	NO	BSL
58-89-9	GAMMA BHC (LINDANE)	7.40E-05	J	8.40E-04		mg/kg wet weight	OU2-SMB-01	10/10	No NDs	8.40E-04	NA	3.07E-03	C	NA	NA	NO	BSL
76-44-8	HEPTACHLOR	2.80E-04	J	1.60E-03	J	mg/kg wet weight	OU2-SMB-03	4/10	8.10E-05 - 4.20E-04	1.60E-03	NA	7.51E-04	C	NA	NA	YES	ASL
1024-57-3	HEPTACHLOR EPOXIDE	2.60E-04	J	1.60E-02	J	mg/kg wet weight	OU2-SMB-03	10/10	No NDs	1.60E-02	NA	3.71E-04	C	NA	NA	YES	ASL
72-43-5	METHOXYCHLOR	7.00E-04	J	1.90E-02	J	mg/kg wet weight	OU2-SMB-03	9/10	1.60E-04 - 1.60E-04	1.90E-02	NA	4.17E-01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	1.30E-04	J	2.70E-03	J	mg/kg wet weight	OU2-WAL-03	8/10	4.20E-04 - 4.20E-04	2.70E-03	NA	1.41E-02	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	6.90E-04	J	1.80E-02		mg/kg wet weight	OU2-WAL-03	10/10	No NDs	1.80E-02	NA	9.95E-03	C	NA	NA	YES	ASL
50-29-3	P,P'-DDT	1.40E-03	J	1.20E-01		mg/kg wet weight	OU2-SMB-03	10/10	No NDs	1.20E-01	NA	9.95E-03	C	NA	NA	YES	ASL
DDT	DDT, Total	4.13E-03	J	1.30E-01	J	mg/kg wet weight	OU2-SMB-03	10/10	No NDs	1.30E-01	NA	8.33E+00	NC	NA	NA	NO	BSL

TABLE 2.2
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Tissue (fillets)
Exposure Point: Eighteenmile Creek Corridor

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
SVOCS																	
95-48-7	2-METHYLPHENOL (O-CRESOL)	2.80E-02	J	3.30E-02	J	mg/kg wet weight	OU2-WAL-03	2/8	2.60E-01 - 2.60E-01	3.30E-02	NA	4.17E+00	NC	NA	NA	NO	BSL
MEPH3MEPH4	3- AND 4- METHYLPHENOL (TOTAL)	2.70E-02	J	8.00E-02	J	mg/kg wet weight	OU2-WAL-03	4/8	2.60E-01 - 2.60E-01	8.00E-02	NA	NA	NA	NA	NA	NO	NSL
87-86-5	PENTACHLOROPHENOL	5.00E-02	J	5.00E-02	J	mg/kg wet weight	OU2-WAL-01	1/8	2.60E-01 - 2.60E-01	5.00E-02	NA	8.45E-03	C	NA	NA	YES	ASL
108-95-2	PHENOL	1.00E-01		1.50E-01		mg/kg wet weight	OU2-SMB-04	4/8	5.30E-02 - 5.40E-02	1.50E-01	NA	2.50E+01	NC	NA	NA	NO	BSL

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening Levels were calculated based on residential fish consumption calculated using the Regional Screening Level (RSL) Calculator. The selected value is the lower of the concentrations associated with either a cancer risk of 1 x 10-6 or a non-cancer HI = 0.1. Exposure assumptions included an Ingestion Rate of 54 grams/day for an adult and 18 grams/day for a young child (< 6 years). The assumed exposure duration is 26 years with 6 years as a young child and 20 years as an adult. The assumed bodyweight for the young child was 15 kilograms and 80 Kilograms for the adult. consistent with the 2014 Updated Standard Default Exposure Assumptions. The Toxicity Values used in the RSL calculations are based on the 2003 OSWER Toxicity Hierarchy (OSWER Directive OSWER Directive 9285.7-53). C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Chromium +6 used as surrogate in the absence of speciated data .

(6) Methyl Mercury was used as surrogate for Mercury.

(7) Nickel Soluble Salts used as surrogate for Nickel.

(8) Vanadium and compounds used as surrogate for vanadium.

(9) Zinc and compounds used as surrogate for Zinc.

(10) The PCB screening level was based on total PCBs (high risk).

(11) Endosulfan used as surrogate for Endosulfan Sulfate.

(12) Endrin used as a surrogate for Endrin Aldehyde and Endrin Ketone .

TABLE 2.3
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water
Exposure Point: Eighteenmile Creek Corridor

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (1)	Background Value	Screening Toxicity Value (N/C) (2)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (3)
Metals																	
7429-90-5	ALUMINUM	1.10E+02		2.45E+02		ug/l	FS-EMC01-SW-O	4/4		2.45E+02	NA	2.00E+03	NC	NA	NA	NO	BSL
7440-38-2	ARSENIC (5)	3.60E-01	J	3.60E-01	J	ug/l	OU2-SW03	1/4	1.00E+00 - 3.30E+00	3.60E-01	NA	5.20E-02	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	2.70E+01		3.40E+01		ug/l	OU2-SW02	4/4	No NDs	3.40E+01	NA	3.80E+02	NC	NA	NA	NO	BSL
7440-70-2	CALCIUM	4.50E+04		7.30E+04		ug/l	OU2-SW02	4/4	No NDs	7.30E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7440-47-3	CHROMIUM, TOTAL (6)	1.00E+00	J	1.50E+00	J	ug/l	OU2-SW03	3/4	9.00E-01 - 9.00E-01	1.50E+00	NA	2.20E+03	NC	NA	NA	NO	BSL
7440-48-4	COBALT	3.00E-01	J	9.10E-01		ug/l	FS-EMC01-SW-O	4/4	No NDs	9.10E-01	NA	6.00E-01	NC	NA	NA	YES	ASL
7440-50-8	COPPER	1.90E+00		2.50E+00		ug/l	OU2-SW02	4/4	No NDs	2.50E+00	NA	8.00E+01	NC	NA	NA	NO	BSL
7439-89-6	IRON	2.87E+02		3.40E+02		ug/l	OU2-SW02	4/4	No NDs	3.40E+02	NA	1.40E+03	NC	NA	NA	NO	BSL, EN
7439-92-1	LEAD	1.50E+00		3.50E+00		ug/l	FS-EMC01-SW-O	4/4	No NDs	3.50E+00	NA	1.50E+01	NC	NA	NA	NO	BSL
7439-95-4	MAGNESIUM	1.00E+04		1.20E+04		ug/l	OU2-SW02	4/4	No NDs	1.20E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (7)	1.90E+01		5.00E+01		ug/l	OU2-SW02	4/4	No NDs	5.00E+01	NA	4.30E+01	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (8)	1.40E+00		2.50E+00		ug/l	FS-EMC01-SW-O	4/4	No NDs	2.50E+00	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-09-7	POTASSIUM	1.99E+03		2.40E+03		ug/l	OU2-SW02	4/4	No NDs	2.40E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7440-23-5	SODIUM	1.66E+04		3.50E+04		ug/l	OU2-SW02	4/4	No NDs	3.50E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (9)	9.10E-02	J	2.20E-01	J	ug/l	OU2-SW01	2/4	1.00E+00 - 3.80E+00	2.20E-01	NA	2.00E-02	NC	NA	NA	YES	ASL
7440-62-2	VANADIUM (10)	4.10E-01	J	1.30E+00		ug/l	OU2-SW02	3/4	1.00E+00 - 1.00E+00	1.30E+00	NA	8.60E+00	NC	NA	NA	NO	BSL
7440-66-6	ZINC (11)	3.90E+00		8.00E+00		ug/l	OU2-SW03	4/4	No NDs	8.00E+00	NA	6.00E+02	NC	NA	NA	NO	BSL
Pesticides																	
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	9.90E-04	J	1.20E-03		ug/l	OU2-SW02	2/4	1.20E-03 - 5.20E-02	1.20E-03	NA	7.20E-03	C	NA	NA	NO	BSL
33213-65-9	BETA ENDOSULFAN (12)	1.20E-03	J	1.70E-03	J	ug/l	OU2-SW01	3/4	1.00E-01 - 1.00E-01	1.70E-03	NA	10	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	3.60E-04	J	3.60E-04	J	ug/l	OU2-SW02	1/4	1.20E-03 - 5.20E-02	3.60E-04	NA	NA	NA	NA	NA	NO	NSL
SVOCs																	
85-68-7	BENZYL BUTYL PHTHALATE	1.40E-01	J	5.20E-01	J	ug/l	OU2-SW02	2/4	9.40E-01 - 1.00E+01	5.20E-01	NA	1.60E+01	C	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	1.40E+00	J	1.20E+02		ug/l	OU2-SW02	3/4	1.00E+01 - 1.00E+01	1.20E+02	NA	5.60E+00	C	NA	NA	YES	ASL

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential tap water were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Toxicity value for Arsenic (inorganic) used in the calculation of the Regional Screening Level.

(6) Chromium +6 Valence state used in screening in absence of data speciation.

(7) Screening Levels based on Manganese (non-diet).

(8) Screening Level based on Nickel Soluble Salts.

(9) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(10) Vanadium and compounds used as surrogate for vanadium.

(11) Zinc and compounds used as surrogate for Zinc.

(12) Endosulfan used as a surrogate for Beta Endosulfan.

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Flintkote
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
57-12-5	CYANIDE	1.10E+00		3.60E+00		mg/kg	FS-SP12-D02-S-O	7/12	1.10E+00 - 1.80E+00	3.60E+00	NA	2.70E-01	NC	NA	NA	YES	ASL
7429-90-5	ALUMINUM	1.48E+03		1.46E+04	J	mg/kg	18MC-L18-S05-Z1	29/29	No NDs	1.46E+04	NA	7.70E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	7.80E-01	J	1.49E+02		mg/kg	FS-SS02-S-O	20/29	6.00E-01 - 8.90E-01	1.49E+02	NA	3.10E+00	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	2.10E+00		5.96E+01		mg/kg	FS-SS03-S-O	67/67	No NDs	5.96E+01	NA	6.80E-01	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	4.47E+01		2.44E+03		mg/kg	FS-SS05-S-O	28/29	7.00E-02 - 7.00E-02	2.44E+03	NA	1.50E+03	NC	NA	NA	YES	ASL
7440-41-7	BERYLLIUM (7)	1.80E-01		1.20E+00		mg/kg	FS-SS09-S-O	29/29	No NDs	1.20E+00	NA	1.60E+01	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (8)	5.00E-02	J	3.79E+01		mg/kg	FS-SS02-S-O	24/29	3.00E-02 - 6.00E-02	3.79E+01	NA	7.10E+00	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	2.98E+03		8.24E+04		mg/kg	FS-SS07-S-O	29/29	No NDs	8.24E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7440-47-3	CHROMIUM, TOTAL	2.80E+00		2.64E+02	J	mg/kg	18MC-L18-S06-Z1	67/67	No NDs	2.64E+02	NA	1.20E+04	NC	NA	NA	NO	BSL
7440-48-4	COBALT	4.70E+00	J	3.49E+01		mg/kg	FS-SS02-S-O	29/29	No NDs	3.49E+01	NA	2.30E+00	NC	NA	NA	YES	ASL
7440-50-8	COPPER	1.54E+01		5.10E+04		mg/kg	FS-SS02-S-O	67/67	No NDs	5.10E+04	NA	3.10E+02	NC	NA	NA	YES	ASL
7439-89-6	IRON	9.36E+03	J	2.31E+05		mg/kg	FS-SS02-S-O	29/29	No NDs	2.31E+05	NA	5.50E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD (9)	1.57E+01		8.60E+03		mg/kg	FS-SP12-D02-S-O	67/67	No NDs	8.60E+03	NA	4.00E+02	IEUBK	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	2.14E+03		3.31E+04		mg/kg	FS-SS07-S-O	29/29	No NDs	3.31E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (10)	1.57E+02	J	2.36E+03	J	mg/kg	18MC-L17-S04-Z2	29/29	No NDs	2.36E+03	NA	1.80E+02	NC	NA	NA	YES	ASL
7487-94-7	MERCURY (11)	4.80E-02		1.08E+01		mg/kg	FS-SS06-S-O	29/29	No NDs	1.08E+01	NA	1.10E+00	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (12)	1.17E+01	J	9.09E+02	J	mg/kg	18MC-L18-S06-Z1	29/29	No NDs	9.09E+02	NA	1.50E+02	NC	NA	NA	YES	ASL
7440-09-7	POTASSIUM	3.59E+02		1.98E+03	J	mg/kg	18MC-L17-S05-Z1	29/29	No NDs	1.98E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	7.20E-01		1.07E+01		mg/kg	FS-SS02-S-O	15/29	6.60E-01 - 1.30E+00	1.07E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-22-4	SILVER	1.30E-01		1.92E+01		mg/kg	FS-SS01-S-O	20/29	1.70E-01 - 2.50E-01	1.92E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-23-5	SODIUM	5.26E+01	J	8.36E+02		mg/kg	FS-SS02-S-O	26/29	3.69E+01 - 4.20E+01	8.36E+02	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (13)	1.80E-01	J	3.27E+01		mg/kg	FS-SS02-S-O	14/29	7.20E-01 - 1.50E+00	3.27E+01	NA	7.80E-02	NC	NA	NA	YES	ASL
7440-62-2	VANADIUM (14)	1.10E+01	J	1.03E+02		mg/kg	FS-SS01-S-O	29/29	No NDs	1.03E+02	NA	3.90E+01	NC	NA	NA	YES	ASL
7440-66-6	ZINC (15)	3.71E+01		2.36E+04		mg/kg	SED-29B	67/67	No NDs	2.36E+04	NA	2.30E+03	NC	NA	NA	YES	ASL
PAHS																	
91-57-6	2-METHYLNAPHTHALENE	1.90E-02	J	3.20E+01	J	mg/kg	FS-EMC01-SED-O*	8/18	3.10E-01 - 1.50E+01	3.20E+01	NA	2.40E+01	NC	NA	NA	YES	ASL
83-32-9	ACENAPHTHENE	3.10E-02	J	1.40E+02		mg/kg	FS-EMC01-SED-O*	11/18	1.90E+00 - 1.50E+01	1.40E+02	NA	3.60E+02	NC	NA	NA	NO	BSL
208-96-8	ACENAPHTHYLENE	3.80E-02	J	7.70E+00		mg/kg	FS-SS08-S-O	14/18	3.90E+00 - 1.50E+01	7.70E+00	NA	NA	NA	NA	NA	NO	NSL
120-12-7	ANTHRACENE	5.80E-02	J	1.90E+02		mg/kg	FS-EMC01-SED-O*	16/18	3.90E+00 - 8.50E+00	1.90E+02	NA	1.80E+03	NC	NA	NA	NO	BSL
56-55-3	BENZO(A)ANTHRACENE	2.20E-01	J	4.80E+02		mg/kg	FS-EMC01-SED-O*	18/18	No NDs	4.80E+02	NA	1.60E-01	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	1.20E-01	J	9.80E+01		mg/kg	FS-EMC01-SED-O*	17/18	8.50E+00 - 8.50E+00	9.80E+01	NA	1.60E-02	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	3.20E-01	J	3.90E+02		mg/kg	FS-EMC01-SED-O*	18/18	No NDs	3.90E+02	NA	1.60E-01	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	1.80E-01	J	4.60E+00	J	mg/kg	FS-EMC01-SED-O*	8/18	1.90E+00 - 3.60E+01	4.60E+00	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	1.00E-01	J	2.60E+02		mg/kg	FS-EMC01-SED-O*	15/18	2.20E-01 - 8.50E+00	2.60E+02	NA	1.60E+00	C	NA	NA	YES	ASL
218-01-9	CHRYSENE	2.60E-01	J	4.50E+02		mg/kg	FS-EMC01-SED-O*	18/18	No NDs	4.50E+02	NA	1.60E+01	C	NA	NA	YES	ASL
53-70-3	DIBENZ(A,H)ANTHRACENE	5.00E-02	J	1.00E+02		mg/kg	FS-EMC01-SED-O*	14/18	1.90E+00 - 8.50E+00	1.00E+02	NA	1.60E-02	C	NA	NA	YES	ASL
206-44-0	FLUORANTHENE	5.50E-01	J	1.50E+03		mg/kg	FS-EMC01-SED-O*	18/18	No NDs	1.50E+03	NA	2.40E+02	NC	NA	NA	YES	ASL
86-73-7	FLUORENE	3.20E-02	J	1.60E+02		mg/kg	FS-EMC01-SED-O*	11/18	1.90E+00 - 1.50E+01	1.60E+02	NA	2.40E+02	NC	NA	NA	NO	BSL
193-39-5	INDENO(1,2,3-C,D)PYRENE	7.00E-02	J	1.00E+02		mg/kg	FS-EMC01-SED-O*	15/18	1.90E+00 - 8.50E+00	1.00E+02	NA	1.60E-01	C	NA	NA	YES	ASL
91-20-3	NAPHTHALENE	2.00E-02	J	1.20E+02		mg/kg	FS-EMC01-SED-O*	8/18	3.10E-01 - 1.50E+01	1.20E+02	NA	3.80E+00	C	NA	NA	YES	ASL
85-01-8	PHENANTHRENE	2.20E-01	J	1.00E+03		mg/kg	FS-EMC01-SED-O*	18/18	No NDs	1.00E+03	NA	NA	NA	NA	NA	NO	NSL
129-00-0	PYRENE	3.90E-01	J	4.30E+02		mg/kg	FS-EMC01-SED-O*	18/18	No NDs	4.30E+02	NA	1.80E+02	NC	NA	NA	YES	ASL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Flintkote
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
PCBs																	
53469-21-9	PCB-1242 (AROCLOR 1242)	5.10E-01		4.60E+01		mg/kg	18MC-L13-S03-Z1	5/67	1.80E-02 - 3.70E+02	4.60E+01	NA	2.30E-01	C	NA	NA	YES	ASL
12672-29-6	PCB-1248 (AROCLOR 1248)	1.30E-02	J	2.80E+02	J	mg/kg	SED-34B	32/67	1.80E-02 - 6.10E+00	2.80E+02	NA	2.30E-01	C	NA	NA	YES	ASL
11097-69-1	PCB-1254 (AROCLOR 1254)	3.10E-02		1.10E+02	J	mg/kg	SED-34B	36/67	1.80E-02 - 8.20E+00	1.10E+02	NA	1.20E-01	NC	NA	NA	YES	ASL
11096-82-5	PCB-1260 (AROCLOR 1260)	2.90E-02	J	1.50E+00	J	mg/kg	OU2-SED01	6/67	1.80E-02 - 3.70E+02	1.50E+00	NA	2.40E-01	C	NA	NA	YES	ASL
37324-23-5	PCB-1262 (AROCLOR 1262) (16)	1.00E-01		1.30E-01		mg/kg	18MC-L16W-S04-Z1	2/31	1.80E-02 - 3.40E+00	1.30E-01	NA	2.30E-01	C	NA	NA	NO	BSL
PCB	PCB, Total (16)	4.40E-02		3.90E+02		mg/kg	SED-34B	41/67	1.80E-02 - 1.20E+01	3.90E+02	NA	2.30E-01	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	1.80E-03	J	1.80E-03	J	mg/kg	18MC-L16W-S04-Z1	1/17	4.80E-04 - 3.10E-01	1.80E-03	NA	3.90E-02	C	NA	NA	NO	BSL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	2.70E-04	J+	2.70E-04	J+	mg/kg	OU2-SED01	1/17	1.90E-03 - 3.10E-01	2.70E-04	NA	8.60E-02	C	NA	NA	NO	BSL
959-98-8	ALPHA ENDOSULFAN (17)	1.30E-03	J	5.90E-03	J	mg/kg	FS-SS09-S-O	5/17	2.00E-03 - 3.10E-01	5.90E-03	NA	4.70E+01	NC	NA	NA	NO	BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	1.60E-02	J	6.80E-02	J+	mg/kg	OU2-SED01	3/17	1.90E-03 - 3.10E-01	6.80E-02	NA	3.00E-01	C	NA	NA	NO	BSL
33213-65-9	BETA ENDOSULFAN (17)	1.50E-03	J	2.20E-03	J+	mg/kg	OU2-SED01	2/17	2.10E-03 - 6.10E-01	2.20E-03	NA	4.70E+01	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	1.30E-03	J	2.10E-02	J+	mg/kg	OU2-SED01	4/17	1.90E-03 - 3.10E-01	2.10E-02	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	3.60E-03	J+	4.50E-01		mg/kg	18MC-L16W-S04-Z1	5/16	2.10E-03 - 4.40E-02	4.50E-01	NA	3.40E-02	C	NA	NA	YES	ASL
1031-07-8	ENDOSULFAN SULFATE (17)	4.20E-03	J+	2.50E-02		mg/kg	FS-SS09-S-O	3/17	2.00E-03 - 6.10E-01	2.50E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
72-20-8	ENDRIN	4.80E-03		4.40E-01	J	mg/kg	FS-EMC01-SED-O*	5/17	2.10E-03 - 4.40E-02	4.40E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
7421-93-4	ENDRIN ALDEHYDE (18)	2.20E-03	J+	1.50E-01	J	mg/kg	FS-EMC01-SED-O*	6/17	2.00E-03 - 4.40E-02	1.50E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
53494-70-5	ENDRIN KETONE (18)	4.20E-03	J	1.60E+00		mg/kg	FS-EMC01-SED-O*	8/18	2.10E-03 - 4.40E-02	1.60E+00	NA	1.90E+00	NC	NA	NA	NO	BSL
58-89-9	GAMMA BHC (LINDANE)	2.00E-03	J	1.70E-02	J+	mg/kg	OU2-SED01	2/17	1.90E-03 - 3.10E-01	1.70E-02	NA	5.70E-01	C	NA	NA	NO	BSL
76-44-8	HEPTACHLOR	1.40E-02	J+	1.40E-02	J+	mg/kg	OU2-SED01	1/17	1.90E-03 - 3.10E-01	1.40E-02	NA	1.30E-01	C	NA	NA	NO	BSL
1024-57-3	HEPTACHLOR EPOXIDE	2.30E-02	J+	2.30E-02	J+	mg/kg	OU2-SED01	1/17	1.90E-03 - 3.10E-01	2.30E-02	NA	7.00E-02	C	NA	NA	NO	BSL
72-43-5	METHOXYCHLOR	2.10E-02	J	1.60E+00	J	mg/kg	FS-EMC01-SED-O*	6/17	2.00E-03 - 2.20E-01	1.60E+00	NA	3.20E+01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	2.80E-03	J	4.20E-03	J+	mg/kg	OU2-SED01	3/17	3.60E-03 - 6.10E-01	4.20E-03	NA	2.30E+00	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	1.20E-03	J	1.30E-02	J	mg/kg	18MC-L13-S04-Z1	8/17	2.10E-03 - 6.10E-01	1.30E-02	NA	2.00E+00	C	NA	NA	NO	BSL
50-29-3	P,P'-DDT	1.30E-03	J	2.00E-01	J	mg/kg	FS-EMC01-SED-O*	13/17	3.60E-03 - 4.40E-02	2.00E-01	NA	1.90E+00	C	NA	NA	NO	BSL
DDT	DDT, Total	3.40E-03		2.00E-01		mg/kg	FS-EMC01-SED-O*	13/17	3.60E-03 - 4.40E-02	2.00E-01	NA	NA	NA	NA	NA	NO	NSL
SVOCs																	
88-74-4	2-NITROANILINE	1.80E-01	J	1.80E-01	J	mg/kg	FS-SS04-S-ORI	1/18	4.20E-01 - 1.50E+02	1.80E-01	NA	6.30E+01	NC	NA	NA	NO	BSL
MEPH3MEPH4	3- AND 4- METHYLPHENOL (TOTAL)	3.70E+00		3.70E+00		mg/kg	OU2-SED01	1/1	No NDs	3.70E+00	NA	NA	NA	NA	NA	NO	NSL
100-01-6	4-NITROANILINE	6.30E-02	J	6.30E-02	J	mg/kg	FS-SS10-S-O	1/18	4.20E-01 - 1.50E+02	6.30E-02	NA	2.50E+01	NC	NA	NA	NO	BSL
98-86-2	ACETOPHENONE	1.10E-02	J	1.10E-02	J	mg/kg	18MC-L18-S07-Z1	1/18	2.20E-01 - 1.20E+02	1.10E-02	NA	7.80E+02	NC	NA	NA	NO	BSL
100-52-7	BENZALDEHYDE	3.50E-02	J	3.50E-02	J	mg/kg	18MC-L13-S04-Z1	1/18	2.20E-01 - 1.20E+02	3.50E-02	NA	7.80E+02	NC	NA	NA	NO	BSL
85-68-7	BENZYL BUTYL PHTHALATE	7.30E-02	J	3.60E+01		mg/kg	FS-SS06-S-O	5/18	2.20E-01 - 6.10E+01	3.60E+01	NA	2.90E+02	C	NA	NA	NO	BSL
92-52-4	BIPHENYL (DIPHENYL)	3.10E-02	J	3.10E-02	J	mg/kg	18MC-L18-S07-Z1	1/18	2.20E-01 - 1.20E+02	3.10E-02	NA	4.70E+00	NC	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	8.40E-02	J	5.00E+01		mg/kg	FS-SS06-S-O	12/18	3.70E-01 - 6.10E+01	5.00E+01	NA	3.90E+01	C	NA	NA	YES	ASL
86-74-8	CARBAZOLE	5.40E-02	J	1.60E+02		mg/kg	FS-EMC01-SED-O*	13/18	1.90E+00 - 1.50E+01	1.60E+02	NA	NA	NA	NA	NA	NO	NSL
132-64-9	DIBENZOFURAN	1.80E-02	J	1.40E+02		mg/kg	FS-EMC01-SED-O*	10/18	1.50E+00 - 1.50E+01	1.40E+02	NA	7.30E+00	NC	NA	NA	YES	ASL
84-66-2	DIETHYL PHTHALATE	2.30E+01		2.30E+01		mg/kg	FS-SS05-S-O	1/18	2.20E-01 - 6.10E+01	2.30E+01	NA	5.10E+03	NC	NA	NA	NO	BSL
84-74-2	DI-N-BUTYL PHTHALATE	6.70E-02	J	2.20E+00	J	mg/kg	FS-SS01-S-O	10/18	2.20E-01 - 6.10E+01	2.20E+00	NA	6.30E+02	NC	NA	NA	NO	BSL
117-84-0	DI-N-OCTYLPHTHALATE	8.60E-02	J	1.50E+01		mg/kg	FS-SS05-S-O	6/18	2.20E-01 - 6.10E+01	1.50E+01	NA	6.30E+01	NC	NA	NA	NO	BSL
108-95-2	PHENOL	2.70E-01	J	4.00E-01	J	mg/kg	FS-SS07-S-O	2/18	2.20E-01 - 6.10E+01	4.00E-01	NA	1.90E+03	NC	NA	NA	NO	BSL
VOCs																	
75-09-2	METHYLENE CHLORIDE	1.30E-02		1.30E-02		mg/kg	FS-SP12-D02-S-O	1/3	9.50E-03 - 1.40E-02	1.30E-02	NA	3.50E+01	NC	NA	NA	NO	BSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Flintkote
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

* FS-EMC01-SED-O was identified as an outlier in risk calculations. The results are included here but eliminated from the exposure point concentrations calculation.

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential soil were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Metallic antimony used as basis for screening level.

(6) Toxicity value for Arsenic (inorganic) used in the calculation of the Regional Screening Level.

(7) Beryllium and compounds used for Beryllium.

(8) Cadmium values based on toxicity information for diet.

(9) Lead screening levels based on residential screening level of 400 ppm.

(10) Screening Levels based on Manganese (non-diet).

(11) Mercury evaluated based on elemental mercury toxicity value.

(12) Screening Level based on Nickel Soluble Salts.

(13) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(14) Vanadium and compounds used as surrogate for vanadium.

(15) Zinc and compounds used as surrogate for Zinc.

(16) Screening level based on PCBs (high risk).

(17) Endosulfan used as a surrogate for Beta Endosulfan.

(18) Endrin used as a surrogate for Endrin aldehyde and endrin ketone.

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Flintkote
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
57-12-5	CYANIDE	1.10E+00		9.30E+00		mg/kg	FS-SP11-D410-S-O	11/27	1.00E+00 - 1.80E+00	9.30E+00	NA	2.70E-01	NC	NA	NA	YES	ASL
7429-90-5	ALUMINUM	1.48E+03		1.46E+04	J	mg/kg	18MC-L18-S05-Z1	69/69	No NDs	1.46E+04	NA	7.70E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	9.50E-02	J	3.00E+03		mg/kg	OU2-TP06-01	48/69	4.70E-01 - 6.60E+00	3.00E+03	NA	3.10E+00	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	1.00E+00		1.50E+02		mg/kg	OU2-TP06-01	115/115	No NDs	1.50E+02	NA	6.80E-01	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	2.28E+01		2.44E+03		mg/kg	FS-SS05-S-O	68/69	7.00E-02 - 7.00E-02	2.44E+03	NA	1.50E+03	NC	NA	NA	YES	ASL
7440-41-7	BERYLLIUM (7)	1.80E-01		1.60E+00		mg/kg	FS-SP19-D48-S-O	65/69	4.80E-01 - 6.70E+00	1.60E+00	NA	1.60E+01	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (8)	5.00E-02	J	5.90E+01		mg/kg	OU2-TP06-01	52/69	3.00E-02 - 6.00E-02	5.90E+01	NA	7.10E+00	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	8.69E+02		9.69E+04		mg/kg	FS-MW04RK-D68-S-O	69/69	No NDs	9.69E+04	NA	NA	NA	NA	NA	NO	NSL, EN
18540-29-9	CHROMIUM, HEXAVALENT (9)	5.20E-01		5.20E-01		mg/kg	OU2-SB02-Z1	1/1	No NDs	5.20E-01	NA	3.00E-01	C	NA	NA	YES	ASL, KHC
7440-47-3	CHROMIUM, TOTAL	2.80E+00		4.66E+02		mg/kg	18MC-L14W-S03-Z2	115/115	No NDs	4.66E+02	NA	1.20E+04	NC	NA	NA	NO	BSL
7440-48-4	COBALT	3.80E+00		5.90E+01		mg/kg	OU2-TP05-01	69/69	No NDs	5.90E+01	NA	2.30E+00	NC	NA	NA	YES	ASL
7440-50-8	COPPER	3.60E+00		1.70E+05		mg/kg	OU2-TP05-01	115/115	No NDs	1.70E+05	NA	3.10E+02	NC	NA	NA	YES	ASL
7439-89-6	IRON	7.56E+03		3.30E+05		mg/kg	OU2-TP05-01	69/69	No NDs	3.30E+05	NA	5.50E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD (10)	1.00E+00		4.60E+04		mg/kg	OU2-TP06-01	115/115	No NDs	4.60E+04	NA	4.00E+02	IEUBK	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	3.80E+02		4.91E+04		mg/kg	OU2-SB01-Z1	69/69	No NDs	4.91E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (11)	9.03E+01	J	2.36E+03	J	mg/kg	18MC-L17-S04-Z2	69/69	No NDs	2.36E+03	NA	1.80E+02	NC	NA	NA	YES	ASL
7487-94-7	MERCURY (12)	1.10E-02	J	2.30E+01		mg/kg	OU2-TP06-01	63/69	6.00E-03 - 1.00E-01	2.30E+01	NA	1.10E+00	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (13)	6.10E+00		3.90E+03		mg/kg	OU2-TP05-01	69/69	No NDs	3.90E+03	NA	1.50E+02	NC	NA	NA	YES	ASL
7440-09-7	POTASSIUM	3.59E+02		2.13E+03		mg/kg	OU2-SB02-Z3	66/69	5.42E+02 - 3.40E+03	2.13E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	3.20E-01	J	1.07E+01		mg/kg	FS-SS02-S-O	38/69	3.90E-01 - 3.40E+01	1.07E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-22-4	SILVER	2.00E-02	J	2.10E+02		mg/kg	OU2-TP06-01	48/69	8.00E-02 - 1.10E+00	2.10E+02	NA	3.90E+01	NC	NA	NA	YES	ASL
7440-23-5	SODIUM	3.90E+01	J	8.36E+02		mg/kg	FS-SS02-S-O	53/69	2.85E+01 - 3.40E+03	8.36E+02	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (14)	7.30E-02	J	3.29E+01		mg/kg	FS-SP11-D410-S-O	41/69	7.20E-01 - 6.70E+00	3.29E+01	NA	7.80E-02	NC	NA	NA	YES	ASL
7440-62-2	VANADIUM (15)	9.30E+00		1.03E+02		mg/kg	FS-SS01-S-O	69/69	No NDs	1.03E+02	NA	3.90E+01	NC	NA	NA	YES	ASL
7440-66-6	ZINC (16)	1.67E+01		6.00E+04		mg/kg	OU2-TP05-01	115/115	No NDs	6.00E+04	NA	2.30E+03	NC	NA	NA	YES	ASL
PAHs																	
HPAH	PAH, HMW Total	2.80E-02		3.81E+03	J	mg/kg	FS-EMC01-SED-O*	49/54	7.60E-03 - 4.40E-01	3.81E+03	NA	NA	NA	NA	NA	NO	NSL
LPAH	PAH, LMW Total	1.50E-02		1.65E+03	J	mg/kg	FS-EMC01-SED-O*	47/54	7.60E-03 - 4.40E-01	1.65E+03	NA	NA	NA	NA	NA	NO	NSL
PAH	PAH, Mixture	2.80E-02		5.46E+03	J	mg/kg	FS-EMC01-SED-O*	49/54	7.60E-03 - 4.40E-01	5.46E+03	NA	NA	NA	NA	NA	NO	NSL
91-57-6	2-METHYLNAPHTHALENE	1.90E-02	J	3.20E+01	J	mg/kg	FS-EMC01-SED-O*	29/54	7.60E-03 - 1.50E+01	3.20E+01	NA	2.40E+01	NC	NA	NA	YES	ASL
83-32-9	ACENAPHTHENE	2.30E-02	J	1.40E+02		mg/kg	FS-EMC01-SED-O*	27/54	7.60E-03 - 1.50E+01	1.40E+02	NA	3.60E+02	NC	NA	NA	NO	BSL
208-96-8	ACENAPHTHYLENE	1.20E-02	J	7.70E+00		mg/kg	FS-SS08-S-O	32/54	7.60E-03 - 1.50E+01	7.70E+00	NA	NA	NA	NA	NA	NO	NSL
120-12-7	ANTHRACENE	3.20E-02	J	1.90E+02		mg/kg	FS-EMC01-SED-O*	36/54	7.60E-03 - 8.50E+00	1.90E+02	NA	1.80E+03	NC	NA	NA	NO	BSL
56-55-3	BENZO(A)ANTHRACENE	2.20E-02	J	4.80E+02		mg/kg	FS-EMC01-SED-O*	47/54	7.60E-03 - 4.40E-01	4.80E+02	NA	1.60E-01	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	1.90E-02	J	9.80E+01		mg/kg	FS-EMC01-SED-O*	46/54	7.60E-03 - 8.50E+00	9.80E+01	NA	1.60E-02	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	1.40E-02	J	3.90E+02		mg/kg	FS-EMC01-SED-O*	47/54	7.60E-03 - 4.40E-01	3.90E+02	NA	1.60E-01	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	1.10E-02	J	1.40E+01		mg/kg	OU2-TP09-Z2	32/54	7.60E-03 - 3.60E+01	1.40E+01	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	1.60E-02	J	2.60E+02		mg/kg	FS-EMC01-SED-O*	40/54	7.60E-03 - 8.50E+00	2.60E+02	NA	1.60E+00	C	NA	NA	YES	ASL
218-01-9	CHRYSENE	2.00E-02	J	4.50E+02		mg/kg	FS-EMC01-SED-O*	47/54	7.60E-03 - 4.40E-01	4.50E+02	NA	1.60E+01	C	NA	NA	YES	ASL
53-70-3	DIBENZ(A,H)ANTHRACENE	2.70E-02	J	1.00E+02		mg/kg	FS-EMC01-SED-O*	34/54	7.60E-03 - 8.50E+00	1.00E+02	NA	1.60E-02	C	NA	NA	YES	ASL
206-44-0	FLUORANTHENE	1.50E-02	J	1.50E+03		mg/kg	FS-EMC01-SED-O*	49/54	7.60E-03 - 4.40E-01	1.50E+03	NA	2.40E+02	NC	NA	NA	YES	ASL
86-73-7	FLUORENE	2.10E-02	J	1.60E+02		mg/kg	FS-EMC01-SED-O*	25/54	7.60E-03 - 1.50E+01	1.60E+02	NA	2.40E+02	NC	NA	NA	NO	BSL
193-39-5	INDENO(1,2,3-C,D)PYRENE	1.30E-02	J	1.00E+02		mg/kg	FS-EMC01-SED-O*	40/54	7.60E-03 - 8.50E+00	1.00E+02	NA	1.60E-01	C	NA	NA	YES	ASL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Flintkote
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
91-20-3	NAPHTHALENE	1.80E-02	J	1.20E+02		mg/kg	FS-EMC01-SED-O*	31/54	7.60E-03 - 1.50E+01	1.20E+02	NA	3.80E+00	C	NA	NA	YES	ASL
85-01-8	PHENANTHRENE	1.50E-02	J	1.00E+03		mg/kg	FS-EMC01-SED-O*	46/54	7.60E-03 - 4.40E-01	1.00E+03	NA	NA	NA	NA	NA	NO	NSL
129-00-0	PYRENE	1.30E-02	J	4.30E+02		mg/kg	FS-EMC01-SED-O*	49/54	7.60E-03 - 4.40E-01	4.30E+02	NA	1.80E+02	NC	NA	NA	YES	ASL
PCBs																	
53469-21-9	PCB-1242 (AROCLOR 1242)	2.10E-01	J	4.60E+01		mg/kg	18MC-L13-S03-Z1	10/115	9.40E-04 - 3.70E+02	4.60E+01	NA	2.30E-01	C	NA	NA	YES	ASL
12672-29-6	PCB-1248 (AROCLOR 1248)	1.30E-02	J	2.80E+02	J	mg/kg	SED-34B	41/115	9.40E-04 - 6.10E+00	2.80E+02	NA	2.30E-01	C	NA	NA	YES	ASL
11097-69-1	PCB-1254 (AROCLOR 1254)	2.60E-03		1.10E+02	J	mg/kg	SED-34B	50/115	9.40E-04 - 8.20E+00	1.10E+02	NA	1.20E-01	NC	NA	NA	YES	ASL
11096-82-5	PCB-1260 (AROCLOR 1260)	1.30E-03		2.60E+00	J	mg/kg	FS-SP11-D410-S-O	19/115	9.40E-04 - 3.70E+02	2.60E+00	NA	2.40E-01	C	NA	NA	YES	ASL
37324-23-5	PCB-1262 (AROCLOR 1262) (17)	1.60E-02	J	5.30E-01		mg/kg	18MC-L18-S06-Z2	4/62	9.40E-04 - 3.40E+00	5.30E-01	NA	2.30E-01	C	NA	NA	YES	ASL
11100-14-4	PCB-1268 (AROCLOR 1268) (17)	4.40E-03	J	1.60E-01	J	mg/kg	OU2-TP07-Z1	10/62	9.40E-04 - 3.40E+00	1.60E-01	NA	2.30E-01	C	NA	NA	NO	BSL
PCB	PCB, Total (17)	3.90E-03		3.90E+02		mg/kg	SED-34B	62/116	9.40E-04 - 1.20E+01	3.90E+02	NA	2.30E-01	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	1.70E-04	J	2.50E-03	J	mg/kg	OU2-TP09-Z1	6/53	9.40E-05 - 3.10E-01	2.50E-03	NA	3.90E-02	C	NA	NA	NO	BSL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	2.00E-04	J	2.70E-04	J+	mg/kg	OU2-SED01	2/53	9.40E-05 - 3.10E-01	2.70E-04	NA	8.60E-02	C	NA	NA	NO	IFD, BSL
959-98-8	ALPHA ENDOSULFAN (18)	5.30E-05	J	1.10E-02	J+	mg/kg	OU2-SB02-Z2	9/53	9.40E-05 - 3.10E-01	1.10E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	8.30E-04	J	1.30E-01		mg/kg	OU2-TP07-Z1	11/53	9.40E-05 - 3.10E-01	1.30E-01	NA	3.00E-01	C	NA	NA	NO	BSL
33213-65-9	BETA ENDOSULFAN (18)	2.30E-04	J	5.10E-03	J	mg/kg	OU2-TP05-01	6/53	9.40E-05 - 6.10E-01	5.10E-03	NA	4.70E+01	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	3.80E-05	J	6.70E-02	J	mg/kg	OU2-TP07-Z1	14/53	9.60E-04 - 3.10E-01	6.70E-02	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	7.40E-04	J	4.50E-01		mg/kg	18MC-L16W-S04-Z1	15/52	9.40E-05 - 4.80E-02	4.50E-01	NA	3.40E-02	C	NA	NA	YES	ASL
1031-07-8	ENDOSULFAN SULFATE (18)	1.00E-04	J	2.50E-02		mg/kg	FS-SS09-S-O	8/51	9.40E-05 - 6.10E-01	2.50E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
72-20-8	ENDRIN	1.40E-04		4.40E-01	J	mg/kg	FS-EMC01-SED-O*	12/53	9.60E-04 - 4.50E-02	4.40E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
7421-93-4	ENDRIN ALDEHYDE (19)	3.00E-04	J	1.50E-01	J	mg/kg	FS-EMC01-SED-O*	14/53	9.40E-05 - 4.40E-02	1.50E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
53494-70-5	ENDRIN KETONE (19)_	1.50E-05	J	1.60E+00		mg/kg	FS-EMC01-SED-O*	25/54	9.60E-04 - 4.40E-02	1.60E+00	NA	1.90E+00	NC	NA	NA	NO	BSL
58-89-9	GAMMA BHC (LINDANE)	4.90E-04	J	1.70E-02	J+	mg/kg	OU2-SED01	6/53	9.40E-05 - 3.10E-01	1.70E-02	NA	5.70E-01	C	NA	NA	NO	BSL
76-44-8	HEPTACHLOR	2.80E-04	J	3.50E-02	J	mg/kg	OU2-TP07-Z1	9/53	9.40E-05 - 3.10E-01	3.50E-02	NA	1.30E-01	C	NA	NA	NO	BSL
1024-57-3	HEPTACHLOR EPOXIDE	1.10E-03	J	8.60E-02		mg/kg	OU2-TP07-Z1	7/53	9.40E-05 - 3.10E-01	8.60E-02	NA	7.00E-02	C	NA	NA	YES	ASL
72-43-5	METHOXYCHLOR	2.10E-05	J	1.60E+00	J	mg/kg	FS-EMC01-SED-O*	19/53	1.90E-03 - 2.20E-01	1.60E+00	NA	3.20E+01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	1.70E-03	J	8.50E-02	J+	mg/kg	OU2-SB02-Z2	15/52	9.40E-05 - 6.10E-01	8.50E-02	NA	2.30E+00	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	5.30E-05	J	1.60E-02	J	mg/kg	OU2-TP07-Z1	16/53	9.40E-05 - 6.10E-01	1.60E-02	NA	2.00E+00	C	NA	NA	NO	BSL
50-29-3	P,P'-DDT	3.40E-04	J	2.00E-01	J	mg/kg	FS-EMC01-SED-O*	32/53	9.40E-05 - 4.40E-02	2.00E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
DDT	DDT, Total	2.50E-04	J	2.00E-01		mg/kg	FS-EMC01-SED-O*	38/53	9.40E-05 - 4.40E-02	2.00E-01	NA	NA	NA	NA	NA	NO	NSL
SVOCs																	
95-48-7	2-METHYLPHENOL (O-CRESOL)	5.20E-02	J	5.20E-02	J	mg/kg	OU2-TP09-Z2	1/54	3.70E-02 - 6.10E+01	5.20E-02	NA	3.20E+02	NC	NA	NA	NO	IFD, BSL
88-74-4	2-NITROANILINE	1.80E-01	J	1.80E-01	J	mg/kg	FS-SS04-S-ORI	1/54	1.90E-01 - 1.50E+02	1.80E-01	NA	6.30E+01	NC	NA	NA	NO	IFD, BSL
MEPH3MEPH4	3- AND 4- METHYLPHENOL (TOTAL)	4.40E-02	J	3.70E+00		mg/kg	OU2-SED01	7/13	3.70E-02 - 4.50E-01	3.70E+00	NA	NA	NA	NA	NA	NO	NSL
106-47-8	4-CHLOROANILINE	1.40E-02	J	1.40E-02	J	mg/kg	OU2-TP03-02	1/54	3.70E-02 - 6.10E+01	1.40E-02	NA	2.70E+00	C	NA	NA	NO	IFD, BSL
106-44-5	4-METHYLPHENOL (P-CRESOL)	1.10E-02	J	1.10E-02	J	mg/kg	FS-SP19-D48-S-O	1/41	3.60E-01 - 6.10E+01	1.10E-02	NA	6.30E+02	NC	NA	NA	NO	IFD, BSL
100-01-6	4-NITROANILINE	6.30E-02	J	6.30E-02	J	mg/kg	FS-SS10-S-O	1/54	1.90E-01 - 1.50E+02	6.30E-02	NA	2.50E+01	NC	NA	NA	NO	IFD, BSL
98-86-2	ACETOPHENONE	1.10E-02	J	3.90E-01		mg/kg	OU2-TP02-01	4/54	3.70E-02 - 1.20E+02	3.90E-01	NA	7.80E+02	NC	NA	NA	NO	BSL
100-52-7	BENZALDEHYDE	3.50E-02	J	1.60E-01	J	mg/kg	OU2-TP07-Z1	4/54	3.70E-02 - 1.20E+02	1.60E-01	NA	7.80E+02	NC	NA	NA	NO	BSL
85-68-7	BENZYL BUTYL PHTHALATE	1.00E-02	J	3.60E+01		mg/kg	FS-SS06-S-O	7/54	1.10E-01 - 6.10E+01	3.60E+01	NA	2.90E+02	C	NA	NA	NO	BSL
92-52-4	BIPHENYL (DIPHENYL)	2.70E-02	J	4.90E-01	J	mg/kg	OU2-TP09-Z2	5/54	3.70E-02 - 1.20E+02	4.90E-01	NA	4.70E+00	NC	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	4.00E-02	J	5.00E+01		mg/kg	FS-SS06-S-O	30/54	7.50E-02 - 6.10E+01	5.00E+01	NA	3.90E+01	C	NA	NA	YES	ASL
86-74-8	CARBAZOLE	1.00E-02	J	1.60E+02		mg/kg	FS-EMC01-SED-O*	24/54	7.60E-03 - 1.50E+01	1.60E+02	NA	NA	NA	NA	NA	NO	NSL
132-64-9	DIBENZOFURAN	1.80E-02	J	1.40E+02		mg/kg	FS-EMC01-SED-O*	26/54	3.70E-02 - 1.50E+01	1.40E+02	NA	7.30E+00	N	NA	NA	YES	ASL

TABLE 2.5
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Flintkote
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
84-66-2	DIETHYL PHTHALATE	2.30E+01		2.30E+01		mg/kg	FS-SS05-S-O	1/54	3.70E-02 - 6.10E+01	2.30E+01	NA	5.10E+03	NC	NA	NA	NO	IFD, BSL
84-74-2	DI-N-BUTYL PHTHALATE	1.00E-02	J	2.20E+00	J	mg/kg	FS-SS01-S-O	18/54	2.50E-02 - 6.10E+01	2.20E+00	NA	6.30E+02	NC	NA	NA	NO	BSL
117-84-0	DI-N-OCTYLPHTHALATE	1.20E-02	J	1.50E+01		mg/kg	FS-SS05-S-O	13/54	1.70E-02 - 6.10E+01	1.50E+01	NA	6.30E+01	NC	NA	NA	NO	BSL
108-95-2	PHENOL	3.30E-02	J	4.00E-01	J	mg/kg	FS-SS07-S-O	7/54	7.60E-03 - 6.10E+01	4.00E-01	NA	1.90E+03	NC	NA	NA	NO	BSL
VOCs																	
67-64-1	ACETONE	7.70E-03	J	7.10E-02	J+	mg/kg	OU2-SB02-Z2	8/35	1.00E-02 - 6.60E-02	7.10E-02	NA	6.10E+03	NC	NA	NA	NO	BSL
71-43-2	BENZENE	3.00E-02	J+	3.00E-02	J+	mg/kg	OU2-SB02-Z2	1/36	4.10E-03 - 1.80E-02	3.00E-02	NA	1.20E+00	C	NA	NA	NO	IFD, BSL
75-15-0	CARBON DISULFIDE	7.70E-04	J	5.60E-02	J+	mg/kg	OU2-SB02-Z2	7/39	6.50E-03 - 1.80E-02	5.60E-02	NA	7.70E+01	NC	NA	NA	NO	BSL
67-66-3	CHLOROFORM	5.20E-04	J	5.20E-04	J	mg/kg	OU2-TP05-01	1/39	5.20E-03 - 1.80E-02	5.20E-04	NA	3.20E-01	C	NA	NA	NO	IFD, BSL
110-82-7	CYCLOHEXANE	1.50E-03	J	9.60E-02	J+	mg/kg	OU2-SB02-Z2	6/39	4.10E-03 - 1.80E-02	9.60E-02	NA	6.50E+02	NC	NA	NA	NO	BSL
100-41-4	ETHYLBENZENE	5.90E-03	J	5.90E-03	J	mg/kg	OU2-SB02-Z2	1/36	4.10E-03 - 1.80E-02	5.90E-03	NA	5.80E+00	C	NA	NA	NO	IFD, BSL
98-82-8	ISOPROPYLBENZENE (CUMENE)	1.70E-03	J	1.70E-03	J	mg/kg	OU2-SB02-Z2	1/36	4.10E-03 - 1.80E-02	1.70E-03	NA	1.90E+02	NC	NA	NA	NO	IFD, BSL
179601-23-1	m,p-Xylene (based on xylenes)	5.90E-04	J	3.70E-02	J+	mg/kg	OU2-SB02-Z2	5/21	8.20E-03 - 3.30E-02	3.70E-02	NA	5.80E+02	NC	NA	NA	NO	BSL
78-93-3	METHYL ETHYL KETONE (2-BUTANONE)	2.70E-02		4.70E-02	J+	mg/kg	OU2-SB02-Z2	2/39	4.10E-03 - 3.70E-02	4.70E-02	NA	2.70E+03	NC	NA	NA	NO	BSL
108-87-2	METHYLCYCLOHEXANE (as cyclohexane)	3.00E-03	J	1.70E-01	J+	mg/kg	OU2-SB02-Z2	6/39	4.10E-03 - 1.80E-02	1.70E-01	NA	6.50E+02	NC	NA	NA	NO	BSL
75-09-2	METHYLENE CHLORIDE	1.10E-03	J	2.00E-02		mg/kg	FS-SP03-D04-S-O	16/39	4.10E-03 - 1.80E-02	2.00E-02	NA	3.50E+01	NC	NA	NA	NO	BSL
95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	4.90E-04	J	2.90E-02	J+	mg/kg	OU2-SB02-Z2	5/21	4.10E-03 - 1.70E-02	2.90E-02	NA	6.50E+01	NC	NA	NA	NO	BSL
108-88-3	TOLUENE	6.20E-04	J	7.40E-02	J+	mg/kg	OU2-SB02-Z2	6/39	4.10E-03 - 1.80E-02	7.40E-02	NA	4.90E+02	NC	NA	NA	NO	BSL
75-69-4	TRICHLOROFLUOROMETHANE	1.20E-03	J	1.20E-03	J	mg/kg	OU2-SB02-Z1	1/38	4.10E-03 - 1.80E-02	1.20E-03	NA	2.30E+03	NC	NA	NA	NO	IFD, BSL

* FS-EMC01-SED-O was identified as an outlier in risk calculations. The results are included here but eliminated from the exposure point concentrations calculation.

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated, J+ - estimated high.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential soil were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Metallic antimony used as basis for screening level.

(6) Toxicity value for Arsenic (inorganic) used in the calculation of the Regional Screening Level.

(7) Beryllium and compounds used for Beryllium.

(8) Cadmium values based on toxicity information for diet.

(9) Chromium +6 toxicity value used based on valence data.

(10) Lead screening levels based on residential screening level of 400 ppm.

(11) Screening Levels based on Manganese (non-diet).

(12) Mercury evaluated based on elemental mercury toxicity value.

(13) Screening Level based on Nickel Soluble Salts.

(14) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(15) Vanadium and compounds used as surrogate for vanadium.

(16) Zinc and compounds used as surrogate for Zinc.

(17) Screening level based on PCBs (high risk).

(18) Endosulfan used as a surrogate for Beta Endosulfan.

(19) Endrin used as a surrogate for Endrin aldehyde and endrin ketone.

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Upson Park
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier ((1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
7429-90-5	ALUMINUM	1.16E+03	J	1.59E+04		mg/kg	OU2-SS10-Z1	41/41	No NDs	1.59E+04	NA	7.70E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	9.20E-01	J	1.66E+02	J	mg/kg	UPSON-1	14/41	6.00E-01 - 7.00E+00	1.66E+02	NA	3.10E+00	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	3.30E+00		8.12E+01		mg/kg	UPSON-2B	55/55	No NDs	8.12E+01	NA	6.80E-01	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	1.06E+01	J	3.90E+03		mg/kg	UPSON-2B	41/41	No NDs	3.90E+03	NA	1.50E+03	NC	NA	NA	YES	ASL
7440-41-7	BERYLLIUM (7))	1.90E-01	J	9.30E-01		mg/kg	OU2-SS07-Z2	34/41	1.90E-01 - 5.30E-01	9.30E-01	NA	1.60E+01	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (8)	8.00E-02	J	2.74E+01		mg/kg	UPSON-1	37/41	4.00E-01 - 5.30E-01	2.74E+01	NA	7.10E+00	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	2.78E+03		2.11E+05		mg/kg	18MC-L02W-S05-Z1	41/41	No NDs	2.11E+05	NA	NA	NA	NA	NA	NO	NSL, EN
18540-29-9	CHROMIUM, HEXAVALENT	1.90E-01	J	1.90E-01	J	mg/kg	OU2-SS10-Z1	1/3	5.40E-01 - 5.40E-01	1.90E-01	NA	3.00E-01	C	NA	NA	NO	BSL, KHC
7440-47-3	CHROMIUM, TOTAL	5.70E+00	J	5.05E+02		mg/kg	UPSON-2B	55/55	No NDs	5.05E+02	NA	1.20E+04	NC	NA	NA	NO	BSL
7440-48-4	COBALT	2.60E+00	J	4.39E+01	J	mg/kg	UPSON-1	37/41	4.00E+00 - 5.30E+00	4.39E+01	NA	2.30E+00	NC	NA	NA	YES	ASL
7440-50-8	COPPER	1.06E+01		5.51E+03		mg/kg	OU2-SS08-Z2	55/55	No NDs	5.51E+03	NA	3.10E+02	NC	NA	NA	YES	ASL
7439-89-6	IRON	8.42E+03	J	1.60E+05		mg/kg	UPSON-2	41/41	No NDs	1.60E+05	NA	5.50E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD (9)	1.88E+01		3.48E+03	J	mg/kg	18MC-L03W-S05-Z1	55/55	No NDs	3.48E+03	NA	4.00E+02	IEUBK Model	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	5.39E+02		5.05E+04		mg/kg	OU2-SS06-Z1	41/41	No NDs	5.05E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (10)	4.43E+01		2.63E+03		mg/kg	UPSON-2B	41/41	No NDs	2.63E+03	NA	1.80E+02	NC	NA	NA	YES	ASL
7487-94-7	MERCURY (11)	6.00E-03	J	1.08E+01		mg/kg	UPSON-2	41/41	No NDs	1.08E+01	NA	1.10E+00	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (12)	8.30E+00	J	1.50E+02		mg/kg	UPSON-2	41/41	No NDs	1.50E+02	NA	1.50E+02	NC	NA	NA	NO	BSL
7440-09-7	POTASSIUM	2.80E+02		2.61E+03		mg/kg	18MC-L05W-S04-Z1	40/41	4.01E+02 - 4.01E+02	2.61E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	6.20E-01	J	7.70E+00		mg/kg	UPSON-2	21/41	6.60E-01 - 4.10E+00	7.70E+00	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-22-4	SILVER	1.80E-01	J	8.06E+01		mg/kg	UPSON-1	16/41	1.70E-01 - 1.20E+00	8.06E+01	NA	3.90E+01	N	NA	NA	YES	ASL
7440-23-5	SODIUM	7.88E+01	J	1.01E+03		mg/kg	18MC-SS14-Z1	19/41	3.70E+01 - 5.81E+02	1.01E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7440-62-2	VANADIUM (14)	6.60E+00		6.21E+01		mg/kg	OU2-SS07-Z1	41/41	No NDs	6.21E+01	NA	3.90E+01	NC	NA	NA	YES	ASL
7440-66-6	ZINC (15)	2.24E+01	J	7.87E+03		mg/kg	UPSON-2B	55/55	No NDs	7.87E+03	NA	2.30E+03	NC	NA	NA	YES	ASL
PAHS																	
HPAH	PAH, HMW Total	5.22E-01	J	1.51E+02	J	mg/kg	OU2-SS02-Z2	30/32	8.20E+00 - 8.20E+01	1.51E+02	NA	NA	NA	NA	NA	NO	NSL
LPAH	PAH, LMW Total	3.50E-02		3.83E+01	J	mg/kg	OU2-SS02-Z2	29/32	8.20E+00 - 8.20E+01	3.83E+01	NA	NA	NA	NA	NA	NO	NSL
PAH	PAH, Mixture	5.70E-01		1.89E+02	J	mg/kg	OU2-SS02-Z2	30/32	8.20E+00 - 8.20E+01	1.89E+02	NA	NA	NA	NA	NA	NO	NSL
91-57-6	2-METHYLNAPHTHALENE	9.00E-03	J	8.60E-01	J	mg/kg	OU2-SS02-Z2	19/32	1.90E-01 - 8.20E+01	8.60E-01	NA	2.40E+01	NC	NA	NA	NO	BSL
83-32-9	ACENAPHTHENE	9.00E-03	J	1.20E+00	J	mg/kg	OU2-SS02-Z2	9/32	1.90E-01 - 8.20E+01	1.20E+00	NA	3.60E+02	NC	NA	NA	NO	BSL
208-96-8	ACENAPHTHYLENE	1.10E-02	J	1.70E+00	J	mg/kg	OU2-SS02-Z2	24/32	1.90E-01 - 8.20E+01	1.70E+00	NA	NA	NA	NA	NA	NO	NSL
120-12-7	ANTHRACENE	1.20E-02	J	7.10E+00		mg/kg	OU2-SS02-Z2	27/32	1.90E-01 - 8.20E+01	7.10E+00	NA	1.80E+03	NC	NA	NA	NO	BSL
56-55-3	BENZO(A)ANTHRACENE	4.80E-02	J	1.70E+01		mg/kg	OU2-SS02-Z2	29/32	8.20E+00 - 8.20E+01	1.70E+01	NA	1.60E-01	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	4.90E-02	J	1.50E+01		mg/kg	OU2-SS02-Z2	30/32	8.20E+00 - 8.20E+01	1.50E+01	NA	1.60E-02	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	7.40E-02	J	1.80E+01		mg/kg	OU2-SS02-Z2	30/32	8.20E+00 - 8.20E+01	1.80E+01	NA	1.60E-01	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	2.00E-02	J	5.30E+00	J	mg/kg	OU2-SS02-Z2	30/32	8.20E+00 - 8.20E+01	5.30E+00	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	2.30E-02	J	7.30E+00		mg/kg	OU2-SS02-Z2	26/32	1.90E-01 - 8.20E+01	7.30E+00	NA	1.60E+00	C	NA	NA	YES	ASL
218-01-9	CHRYSENE	5.00E-02	J	1.60E+01		mg/kg	OU2-SS02-Z2	30/32	8.20E+00 - 8.20E+01	1.60E+01	NA	1.60E+01	C	NA	NA	YES	ASL
53-70-3	DIBENZ(A,H)ANTHRACENE	1.10E-02	J	1.70E+00	J	mg/kg	OU2-SS02-Z2	23/32	1.90E-01 - 8.20E+01	1.70E+00	NA	1.60E-02	C	NA	NA	YES	ASL
206-44-0	FLUORANTHENE	7.80E-02	J	3.50E+01		mg/kg	OU2-SS02-Z2	30/32	8.20E+00 - 8.20E+01	3.50E+01	NA	2.40E+02	NC	NA	NA	NO	BSL
86-73-7	FLUORENE	1.70E-02	J	2.40E+00		mg/kg	OU2-SS02-Z2	13/32	1.90E-01 - 8.20E+01	2.40E+00	NA	2.40E+02	NC	NA	NA	NO	BSL
193-39-5	INDENO(1,2,3-C,D)PYRENE	2.80E-02	J	7.20E+00		mg/kg	OU2-SS02-Z2	30/32	8.20E+00 - 8.20E+01	7.20E+00	NA	1.60E-01	C	NA	NA	YES	ASL
91-20-3	NAPHTHALENE	8.00E-03	J	9.90E-01	J	mg/kg	OU2-SS02-Z2	20/32	1.90E-01 - 8.20E+01	9.90E-01	NA	3.80E+00	C	NA	NA	NO	BSL
85-01-8	PHENANTHRENE	3.50E-02	J	2.40E+01		mg/kg	OU2-SS02-Z2	29/32	8.20E+00 - 8.20E+01	2.40E+01	NA	NA	NA	NA	NA	NO	NSL
129-00-0	PYRENE	7.40E-02	J	2.80E+01		mg/kg	OU2-SS02-Z2	30/32	8.20E+00 - 8.20E+01	2.80E+01	NA	1.80E+02	NC	NA	NA	NO	BSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Upson Park
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier ((1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
PCBs																	
12674-11-2	PCB-1016 (AROCLOR 1016)	2.60E-01		2.60E-01		mg/kg	OU2-SS07-Z2	1/60	9.80E-04 - 2.00E+01	2.60E-01	NA	4.10E-01	NC	NA	NA	NO	IFD, BSL
12672-29-6	PCB-1248 (AROCLOR 1248)	6.30E-03	J	2.50E+02	J	mg/kg	OU2-SS09-Z2	18/60	9.90E-04 - 2.00E+01	2.50E+02	NA	2.30E-01	C	NA	NA	YES	ASL
11097-69-1	PCB-1254 (AROCLOR 1254)	1.60E-02	J	1.40E+02		mg/kg	OU2-SS09-Z2	26/60	1.80E-02 - 1.00E+00	1.40E+02	NA	1.20E-01	NC	NA	NA	YES	ASL
11096-82-5	PCB-1260 (AROCLOR 1260)	1.20E-02	J	1.60E+00		mg/kg	UPSON-1	16/60	1.80E-02 - 2.00E+01	1.60E+00	NA	2.40E-01	C	NA	NA	YES	ASL
11100-14-4	PCB-1268 (AROCLOR 1268) (16)	3.20E-02	J	1.10E-01		mg/kg	18MC-L02W-S05-Z2	7/49	1.80E-02 - 3.90E+00	1.10E-01	NA	2.30E-01	C	NA	NA	NO	BSL
PCB	PCB, Total (16)	6.30E-03		3.90E+02		mg/kg	OU2-SS09-Z2	32/60	1.80E-02 - 4.50E-02	3.90E+02	NA	2.30E-01	C	NA	NA	YES	ASL
PCB-TEQs	Dioxin-like PCBs as 2,3,7,8-TCDD TEQs	4.10E-08		8.33E-06		mg/kg	OU2-SS13-Z1	4/4	No NDs	8.33E-06	NA	4.80E-06	C	NA	NA	YES	ASL
PCDD/PCDF-TE	Dioxins and Furans as 2,3,7,8-TCDD TEQs	1.06E-05		1.09E-04		mg/kg	OU2-SS12-Z1	4/4	No NDs	1.09E-04	NA	4.80E-06	C	NA	NA	YES	ASL
PCDD/PCDF/PC	Dioxins, Furans, DL-PCBs as 2,3,7,8-TCDD TEQs	8.33E-06		1.13E-04		mg/kg	OU2-SS02-Z1	5/5	No NDs	1.13E-04	NA	4.80E-06	C	NA	NA	YES	ASL
1746-01-6	2,3,7,8-TETRACHLORODIBENZO-P-DIOXIN	3.30E-06	EMPCJ	7.83E-06		mg/kg	OU2-SS02-Z1	4/4	No NDs	7.83E-06	NA	4.80E-06	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	3.40E-03	J	5.10E-03	J	mg/kg	18MC-L02W-S04-Z1	2/29	1.80E-03 - 2.30E-02	5.10E-03	NA	3.90E-02	C	NA	NA	NO	BSL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	3.50E-03	J	8.20E-03	J	mg/kg	18MC-L03W-S04-Z1	3/29	1.80E-03 - 2.20E-02	8.20E-03	NA	8.60E-02	C	NA	NA	NO	BSL
959-98-8	ALPHA ENDOSULFAN (17)	6.50E-03	NJ	6.50E-03	NJ	mg/kg	OU2-SS04-Z2	1/28	1.80E-03 - 2.30E-02	6.50E-03	NA	4.70E+01	NC	NA	NA	NO	IFD, BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	1.80E-04	J	1.30E-03	J	mg/kg	OU2-SS03-Z2	7/29	1.80E-03 - 2.30E-02	1.30E-03	NA	3.00E-01	C	NA	NA	NO	BSL
33213-65-9	BETA ENDOSULFAN (17)	2.00E-03		1.10E-02	J	mg/kg	18MC-L04W-S04-Z1	3/27	3.70E-03 - 2.30E-02	1.10E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	4.80E-04	J	5.30E-03	J	mg/kg	18MC-SS16-Z1	2/29	1.90E-03 - 2.30E-02	5.30E-03	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	1.00E-02	J	2.60E-02	NJ	mg/kg	OU2-SS10-Z2	4/29	1.80E-03 - 3.90E-02	2.60E-02	NA	3.40E-02	C	NA	NA	NO	BSL
1031-07-8	ENDOSULFAN SULFATE (17)	8.20E-04	J	1.10E-02	J	mg/kg	OU2-SS02-Z2	5/29	1.80E-03 - 3.90E-02	1.10E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
72-20-8	ENDRIN	3.80E-03	J	2.00E-01	J	mg/kg	OU2-SS09-Z2	3/27	1.80E-03 - 2.30E-02	2.00E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
7421-93-4	ENDRIN ALDEHYDE (18)	1.40E-02	NJ	1.40E-02	NJ	mg/kg	OU2-SS02-Z2	1/27	1.80E-03 - 2.30E-02	1.40E-02	NA	1.90E+00	NC	NA	NA	NO	IFD, BSL
53494-70-5	ENDRIN KETONE (18)	3.10E-03	J	2.20E-02	NJ	mg/kg	OU2-SS04-Z2	7/28	1.80E-03 - 2.30E-02	2.20E-02	NA	1.90E+00	NC	NA	NA	NO	BSL
58-89-9	GAMMA BHC (LINDANE)	5.80E-04	J	3.20E-03	J	mg/kg	18MC-SS15-Z1	2/28	1.90E-03 - 2.30E-02	3.20E-03	NA	5.70E-01	C	NA	NA	NO	BSL
76-44-8	HEPTACHLOR	1.80E-03	J	8.50E-01	J	mg/kg	OU2-SS09-Z2	4/29	1.80E-03 - 2.30E-02	8.50E-01	NA	1.30E-01	C	NA	NA	YES	ASL
1024-57-3	HEPTACHLOR EPOXIDE	1.10E-03	J	6.30E-03	J	mg/kg	OU2-SS04-Z2	6/29	1.80E-03 - 2.30E-02	6.30E-03	NA	7.00E-02	C	NA	NA	NO	BSL
72-43-5	METHOXYCHLOR	1.90E-02	J	1.40E-01	J	mg/kg	18MC-L04W-S04-Z1	2/27	1.00E-02 - 2.00E-01	1.40E-01	NA	3.20E+01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	3.40E-03	J	2.40E-02	J	mg/kg	OU2-SS03-Z2	7/19	3.70E-03 - 3.90E-02	2.40E-02	NA	2.30E+00	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	2.70E-03	J	2.90E+00	J	mg/kg	OU2-SS09-Z2	20/29	3.70E-03 - 4.50E-03	2.90E+00	NA	2.00E+00	C	NA	NA	YES	ASL
50-29-3	P,P'-DDT	4.20E-03	J	3.80E+00	J	mg/kg	OU2-SS09-Z2	22/28	3.70E-03 - 2.10E-02	3.80E+00	NA	1.90E+00	C	NA	NA	YES	ASL
DDT	DDT, Total	7.00E-03		1.39E-01	J	mg/kg	OU2-SS07-Z2	18/22	3.70E-03 - 4.00E-03	1.39E-01	NA	NA	NA	NA	NA	NO	NSL
SVOCs																	
98-86-2	ACETOPHENONE	3.30E-02	J	1.70E-01	J	mg/kg	OU2-SS02-Z1	2/32	1.90E-01 - 8.20E+01	1.70E-01	NA	7.80E+02	NC	NA	NA	NO	BSL
100-52-7	BENZALDEHYDE	4.20E-02	J	4.20E-01		mg/kg	OU2-SS08-Z2	2/32	1.90E-01 - 8.20E+01	4.20E-01	NA	7.80E+02	NC	NA	NA	NO	BSL
85-68-7	BENZYL BUTYL PHTHALATE	3.30E-02	J	5.90E-02	J	mg/kg	OU2-SS10-Z2	2/32	1.90E-01 - 8.20E+01	5.90E-02	NA	2.90E+02	C	NA	NA	NO	BSL
92-52-4	BIPHENYL (DIPHENYL)	4.60E-02	J	1.70E-01	J	mg/kg	OU2-SS02-Z2	2/32	1.90E-01 - 8.20E+01	1.70E-01	NA	4.70E+00	NC	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	1.60E-02	J	8.50E-01	J	mg/kg	UPSON-2	19/32	1.90E-01 - 8.20E+01	8.50E-01	NA	3.90E+01	C	NA	NA	NO	BSL
86-74-8	CARBAZOLE	9.00E-03	J	2.00E+00	J	mg/kg	OU2-SS02-Z2	22/32	1.90E-01 - 8.20E+01	2.00E+00	NA	NA	NA	NA	NA	NO	NSL
132-64-9	DIBENZOFURAN	2.10E-02	J	1.50E+00	J	mg/kg	OU2-SS02-Z2	16/32	1.90E-01 - 8.20E+01	1.50E+00	NA	7.30E+00	NC	NA	NA	NO	BSL
84-74-2	DI-N-BUTYL PHTHALATE	3.40E-02	J	7.80E-01	J	mg/kg	UPSON-2	7/32	1.90E-01 - 8.20E+01	7.80E-01	NA	6.30E+02	NC	NA	NA	NO	BSL
117-84-0	DI-N-OCTYLPHTHALATE	1.20E-02	J	3.00E+00	J	mg/kg	UPSON-2	2/32	1.90E-01 - 8.20E+01	3.00E+00	NA	6.30E+01	NC	NA	NA	NO	BSL
VOCs																	
67-64-1	ACETONE	4.20E-03	J	1.70E-02	J	mg/kg	OU2-SS08-Z2	4/20	9.50E-03 - 3.10E-02	1.70E-02	NA	6.10E+03	NC	NA	NA	NO	BSL
75-15-0	CARBON DISULFIDE	7.00E-04	J	1.50E-03	J	mg/kg	OU2-SS08-Z2	2/20	4.80E-03 - 1.50E-02	1.50E-03	NA	7.70E+01	NC	NA	NA	NO	BSL
110-82-7	CYCLOHEXANE	1.10E-03	J	4.00E-03	J	mg/kg	OU2-SS01-Z2	3/20	4.80E-03 - 1.50E-02	4.00E-03	NA	6.50E+02	NC	NA	NA	NO	BSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Upson Park
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier ((1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
179601-23-1	m,p-Xylene	4.10E-04	J	1.00E-03	J	mg/kg	OU2-SS01-Z2	2/19	4.80E-03 - 1.50E-02	1.00E-03	NA	5.50E+01	NC	NA	NA	NO	NSL
108-87-2	METHYLCYCLOHEXANE	2.50E-03	J	6.30E-03	J	mg/kg	OU2-SS01-Z2	3/20	4.80E-03 - 1.50E-02	6.30E-03	NA	NA	NA	NA	NA	NO	NSL
95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	3.00E-04	J	1.10E-03	J	mg/kg	OU2-SS01-Z2	2/19	4.80E-03 - 1.50E-02	1.10E-03	NA	6.50E+01	NC	NA	NA	NO	BSL
127-18-4	Tetrachloroethylene (PCE)	2.80E-04	J	7.60E-04	J	mg/kg	OU2-SS02-Z1	5/19	4.80E-03 - 1.50E-02	7.60E-04	NA	8.10E+00	NC	NA	NA	NO	BSL
108-88-3	TOLUENE	2.90E-04	J	1.20E-03	J	mg/kg	OU2-SS09-Z1	4/20	4.80E-03 - 1.50E-02	1.20E-03	NA	4.90E+02	NC	NA	NA	NO	BSL
79-01-6	TRICHLOROETHYLENE (TCE)	2.60E-04	J	2.60E-04	J	mg/kg	OU2-SS02-Z2	1/18	4.80E-03 - 1.50E-02	2.60E-04	NA	4.10E-01	NC	NA	NA	NO	BSL

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated, NJ - tentatively identified and estimated, EMPCJ - estimated maximum possible concentration.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential soil were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Metallic antimony used as basis for screening level.

(6) Toxicity value for Arsenic (inorganic) used in the calculation of the Regional Screening Level.

(7) Beryllium and compounds used for Beryllium.

(6) Chromium +6 Valence state used in screening in absence of data speciation.

(7) Screening Levels based on Manganese (non-diet).

(8) Cadmium values based on toxicity information for diet.

(9) Chromium evaluated based on Chromium "6 in absence of speciated data.

(8) Screening Level based on Nickel Soluble Salts.

(9) Lead screening levels based on residential screening level of 400 ppm.

(9) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(10) Manganese based on non-diet.

(11) Mercury evaluated based on elemental mercury toxicity value.

(12) Nickel based on soluble salts.

(13) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(14) Vanadium and compounds used as surrogate for vanadium.

(15) Zinc and compounds used as surrogate for Zinc.

(16) Screening level based on PCBs (high risk).

(17) Endosulfan used as a surrogate for Beta Endosulfan.

(18) Endrin used as a surrogate for Endrin aldehyde and endrin ketone.

TABLE 2.7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Upson Park
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (2)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
7429-90-5	ALUMINUM	1.16E+03	J	1.59E+04		mg/kg	OU2-SS10-Z1	64/64	No NDs	1.59E+04	NA	7.70E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	6.50E-01	J	1.66E+02	J	mg/kg	UPSON-1	25/64	5.70E-01 - 7.00E+00	1.66E+02	NA	3.10E+00	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	3.00E+00		8.12E+01		mg/kg	UPSON-2B	87/87	No NDs	8.12E+01	NA	6.80E-01	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	8.70E+00	J	3.90E+03		mg/kg	UPSON-2B	64/64	No NDs	3.90E+03	NA	1.50E+03	NC	NA	NA	YES	ASL
7440-41-7	BERYLLIUM (7)	1.60E-01	J	1.10E+00		mg/kg	18MC-SB14-Z1	57/64	1.90E-01 - 5.30E-01	1.10E+00	NA	1.60E+01	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (8)	8.00E-02	J	2.74E+01		mg/kg	UPSON-1	60/64	4.00E-01 - 5.30E-01	2.74E+01	NA	7.10E+00	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	2.78E+03		2.11E+05		mg/kg	18MC-L02W-S05-Z1	64/64	No NDs	2.11E+05	NA	NA	NA	NA	NA	NO	NSL, EN
18540-29-9	CHROMIUM, HEXAVALENT (9)	1.90E-01	J	1.90E-01	J	mg/kg	OU2-SS10-Z1	1/3	5.40E-01 - 5.40E-01	1.90E-01	NA	3.00E-01	C	NA	NA	NO	ASL, KHC
7440-47-3	CHROMIUM, TOTAL	4.60E+00	J	9.18E+02	J	mg/kg	18MC-L02W-S04-Z3	87/87	No NDs	9.18E+02	NA	1.20E+04	NC	NA	NA	NO	BSL
7440-48-4	COBALT	1.30E+00		4.39E+01	J	mg/kg	UPSON-1	60/64	4.00E+00 - 5.30E+00	4.39E+01	NA	2.30E+00	NC	NA	NA	YES	ASL
7440-50-8	COPPER	6.60E+00		5.51E+03		mg/kg	OU2-SS08-Z2	87/87	No NDs	5.51E+03	NA	3.10E+02	NC	NA	NA	YES	ASL
7439-89-6	IRON	6.45E+03		2.46E+05	J	mg/kg	18MC-L02W-S04-Z3	64/64	No NDs	2.46E+05	NA	5.50E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD (10)	7.90E+00	J	3.48E+03	J	mg/kg	18MC-L03W-S05-Z1	87/87	No NDs	3.48E+03	NA	4.00E+02	NC	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	5.39E+02		6.31E+04	J	mg/kg	18MC-L04W-S04-Z2	64/64	No NDs	6.31E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (11)	4.43E+01		3.35E+03	J	mg/kg	18MC-L04W-S04-Z2	64/64	No NDs	3.35E+03	NA	1.80E+02	NC	NA	NA	YES	ASL
7487-94-7	MERCURY (12)	6.00E-03	J	2.15E+01		mg/kg	UPSON-1B	63/64	6.00E-03 - 6.00E-03	2.15E+01	NA	1.10E+00	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (13)	4.90E+00		1.50E+02		mg/kg	UPSON-2	64/64	No NDs	1.50E+02	NA	1.50E+02	NC	NA	NA	NO	BSL
7440-09-7	POTASSIUM	2.65E+02		2.81E+03		mg/kg	18MC-L04W-S05-Z2	63/64	4.01E+02 - 4.01E+02	2.81E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	6.20E-01	J	7.70E+00		mg/kg	UPSON-2	27/64	6.30E-01 - 4.10E+00	7.70E+00	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-22-4	SILVER	1.80E-01	J	8.06E+01		mg/kg	UPSON-1	27/64	1.70E-01 - 1.20E+00	8.06E+01	NA	3.90E+01	NC	NA	NA	YES	ASL
7440-23-5	SODIUM	7.88E+01	J	1.01E+03		mg/kg	18MC-SS14-Z1	41/64	3.70E+01 - 5.81E+02	1.01E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (14)	1.00E+00	J	1.60E+00	J	mg/kg	18MC-L02W-S04-Z3	2/64	6.40E-01 - 4.30E+00	1.60E+00	NA	7.80E-02	NC	NA	NA	YES	IFD, ASL
7440-62-2	VANADIUM (15)	4.40E+00		6.21E+01		mg/kg	OU2-SS07-Z1	64/64	No NDs	6.21E+01	NA	3.90E+01	NC	NA	NA	YES	ASL
7440-66-6	ZINC (16)	1.27E+01	J	7.87E+03		mg/kg	UPSON-2B	87/87	No NDs	7.87E+03	NA	2.30E+03	NC	NA	NA	YES	ASL
PAHs																	
HPAH	PAH, HMW Total	8.80E-02		1.51E+02	J	mg/kg	OU2-SS02-Z2	32/34	8.20E+00 - 8.20E+01	1.51E+02	NA	NA	NA	NA	NA	NO	NSL
LPAH	PAH, LMW Total	3.50E-02		3.83E+01	J	mg/kg	OU2-SS02-Z2	29/34	9.50E-01 - 8.20E+01	3.83E+01	NA	NA	NA	NA	NA	NO	NSL
PAH	PAH, Mixture	8.80E-02		1.89E+02	J	mg/kg	OU2-SS02-Z2	32/34	8.20E+00 - 8.20E+01	1.89E+02	NA	NA	NA	NA	NA	NO	NSL
91-57-6	2-METHYLNAPHTHALENE	9.00E-03	J	8.60E-01	J	mg/kg	OU2-SS02-Z2	19/34	1.90E-01 - 8.20E+01	8.60E-01	NA	2.40E+01	NC	NA	NA	NO	BSL
83-32-9	ACENAPHTHENE	9.00E-03	J	1.20E+00	J	mg/kg	OU2-SS02-Z2	9/34	1.90E-01 - 8.20E+01	1.20E+00	NA	3.60E+02	NC	NA	NA	NO	BSL
208-96-8	ACENAPHTHYLENE	1.10E-02	J	1.70E+00	J	mg/kg	OU2-SS02-Z2	24/34	1.90E-01 - 8.20E+01	1.70E+00	NA	NA	NA	NA	NA	NO	NSL
120-12-7	ANTHRACENE	1.20E-02	J	7.10E+00		mg/kg	OU2-SS02-Z2	27/34	1.90E-01 - 8.20E+01	7.10E+00	NA	1.80E+03	NC	NA	NA	NO	BSL
56-55-3	BENZO(A)ANTHRACENE	4.80E-02	J	1.70E+01		mg/kg	OU2-SS02-Z2	29/34	9.50E-01 - 8.20E+01	1.70E+01	NA	1.60E-01	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	4.90E-02	J	1.50E+01		mg/kg	OU2-SS02-Z2	30/34	9.50E-01 - 8.20E+01	1.50E+01	NA	1.60E-02	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	7.40E-02	J	1.80E+01		mg/kg	OU2-SS02-Z2	30/34	9.50E-01 - 8.20E+01	1.80E+01	NA	1.60E-01	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	2.00E-02	J	5.30E+00	J	mg/kg	OU2-SS02-Z2	30/34	9.50E-01 - 8.20E+01	5.30E+00	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	2.30E-02	J	7.30E+00		mg/kg	OU2-SS02-Z2	26/34	1.90E-01 - 8.20E+01	7.30E+00	NA	1.60E+00	C	NA	NA	YES	ASL
218-01-9	CHRYSENE	5.00E-02	J	1.60E+01		mg/kg	OU2-SS02-Z2	30/34	9.50E-01 - 8.20E+01	1.60E+01	NA	1.60E+01	C	NA	NA	YES	ASL
53-70-3	DIBENZ(A,H)ANTHRACENE	1.10E-02	J	1.70E+00	J	mg/kg	OU2-SS02-Z2	23/34	1.90E-01 - 8.20E+01	1.70E+00	NA	1.60E-02	C	NA	NA	YES	ASL
206-44-0	FLUORANTHENE	5.00E-02	J	3.50E+01		mg/kg	OU2-SS02-Z2	32/34	8.20E+00 - 8.20E+01	3.50E+01	NA	2.40E+02	NC	NA	NA	NO	BSL
86-73-7	FLUORENE	1.70E-02	J	2.40E+00		mg/kg	OU2-SS02-Z2	13/34	1.90E-01 - 8.20E+01	2.40E+00	NA	2.40E+02	NC	NA	NA	NO	BSL
193-39-5	INDENO(1,2,3-C,D)PYRENE	2.80E-02	J	7.20E+00		mg/kg	OU2-SS02-Z2	30/34	9.50E-01 - 8.20E+01	7.20E+00	NA	1.60E-01	C	NA	NA	YES	ASL

TABLE 2.7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Upson Park
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (2)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
91-20-3	NAPHTHALENE	8.00E-03	J	9.90E-01	J	mg/kg	OU2-SS02-Z2	20/34	1.90E-01 - 8.20E+01	9.90E-01	NA	3.80E+00	NC	NA	NA	NO	BSL
85-01-8	PHENANTHRENE	3.50E-02	J	2.40E+01		mg/kg	OU2-SS02-Z2	29/34	9.50E-01 - 8.20E+01	2.40E+01	NA	NA	NA	NA	NA	NO	NSL
129-00-0	PYRENE	3.80E-02	J	2.80E+01		mg/kg	OU2-SS02-Z2	32/34	8.20E+00 - 8.20E+01	2.80E+01	NA	1.80E+02	NC	NA	NA	NO	BSL
PCBs																	
12674-11-2	PCB-1016 (AROCLOR 1016)	2.60E-01		2.60E-01		mg/kg	OU2-SS07-Z2	1/99	9.00E-04 - 2.00E+01	2.60E-01	NA	4.10E-01	NC	NA	NA	NO	IFD, BSL
12672-29-6	PCB-1248 (AROCLOR 1248)	6.30E-03	J	2.50E+02	J	mg/kg	OU2-SS09-Z2	24/99	9.00E-04 - 2.00E+01	2.50E+02	NA	2.30E-01	C	NA	NA	YES	ASL
11097-69-1	PCB-1254 (AROCLOR 1254)	1.20E-02	J	1.40E+02		mg/kg	OU2-SS09-Z2	43/99	1.70E-02 - 4.80E+00	1.40E+02	NA	1.20E-01	NC	NA	NA	YES	ASL
11096-82-5	PCB-1260 (AROCLOR 1260)	6.70E-03	J	1.80E+02		mg/kg	OU2-SS12-Z3	29/99	1.70E-02 - 2.00E+01	1.80E+02	NA	2.40E-01	C	NA	NA	YES	ASL
11100-14-4	PCB-1268 (AROCLOR 1268) (20)	9.30E-03	J	2.60E+01	J	mg/kg	OU2-SS14-Z2	17/87	1.70E-02 - 3.90E+00	2.60E+01	NA	2.30E-01	C	NA	NA	YES	ASL
PCB	PCB, Total (20)	6.30E-03		3.90E+02		mg/kg	OU2-SS09-Z2	56/99	1.70E-02 - 4.50E-02	3.90E+02	NA	2.30E-01	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	3.40E-03	J	5.10E-03	J	mg/kg	18MC-L02W-S04-Z1	2/29	1.80E-03 - 2.30E-02	5.10E-03	NA	3.90E-02	C	NA	NA	NO	BSL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	3.50E-03	J	8.20E-03	J	mg/kg	18MC-L03W-S04-Z1	3/29	1.80E-03 - 2.20E-02	8.20E-03	NA	8.60E-02	C	NA	NA	NO	BSL
959-98-8	ALPHA ENDOSULFAN (21)	6.50E-03	NJ	6.50E-03	NJ	mg/kg	OU2-SS04-Z2	1/28	1.80E-03 - 2.30E-02	6.50E-03	NA	4.70E+01	NC	NA	NA	NO	IFD, BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	1.80E-04	J	1.30E-03	J	mg/kg	OU2-SS03-Z2	7/29	1.80E-03 - 2.30E-02	1.30E-03	NA	3.00E-01	C	NA	NA	NO	BSL
33213-65-9	BETA ENDOSULFAN (21)	2.00E-03		1.10E-02	J	mg/kg	18MC-L04W-S04-Z1	3/27	3.70E-03 - 2.30E-02	1.10E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	4.80E-04	J	5.30E-03	J	mg/kg	18MC-SS16-Z1	2/29	1.90E-03 - 2.30E-02	5.30E-03	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	1.00E-02	J	2.60E-02	NJ	mg/kg	OU2-SS10-Z2	4/29	1.80E-03 - 3.90E-02	2.60E-02	NA	3.40E-02	C	NA	NA	NO	BSL
1031-07-8	ENDOSULFAN SULFATE (21)	8.20E-04	J	1.10E-02	J	mg/kg	OU2-SS02-Z2	5/29	1.80E-03 - 3.90E-02	1.10E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
72-20-8	ENDRIN	3.80E-03	J	2.00E-01	J	mg/kg	OU2-SS09-Z2	3/27	1.80E-03 - 2.30E-02	2.00E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
7421-93-4	ENDRIN ALDEHYDE (22)	1.40E-02	NJ	1.40E-02	NJ	mg/kg	OU2-SS02-Z2	1/27	1.80E-03 - 2.30E-02	1.40E-02	NA	1.90E+00	NC	NA	NA	NO	BSL
53494-70-5	ENDRIN KETONE (22)	3.10E-03	J	2.20E-02	NJ	mg/kg	OU2-SS04-Z2	7/28	1.80E-03 - 2.30E-02	2.20E-02	NA	1.90E+00	NC	NA	NA	NO	BSL
58-89-9	GAMMA BHC (LINDANE)	5.80E-04	J	3.20E-03	J	mg/kg	18MC-SS15-Z1	2/28	1.90E-03 - 2.30E-02	3.20E-03	NA	5.70E-01	C	NA	NA	NO	BSL
76-44-8	HEPTACHLOR	1.80E-03	J	8.50E-01	J	mg/kg	OU2-SS09-Z2	4/29	1.80E-03 - 2.30E-02	8.50E-01	NA	1.30E-01	C	NA	NA	YES	ASL
1024-57-3	HEPTACHLOR EPOXIDE	1.10E-03	J	6.30E-03	J	mg/kg	OU2-SS04-Z2	6/29	1.80E-03 - 2.30E-02	6.30E-03	NA	7.00E-02	C	NA	NA	NO	BSL
72-43-5	METHOXYCHLOR	1.90E-02	J	1.40E-01	J	mg/kg	18MC-L04W-S04-Z1	2/27	1.00E-02 - 2.00E-01	1.40E-01	NA	3.20E+01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	3.40E-03	J	2.40E-02	J	mg/kg	OU2-SS03-Z2	7/19	3.70E-03 - 3.90E-02	2.40E-02	NA	2.30E+00	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	2.70E-03	J	2.90E+00	J	mg/kg	OU2-SS09-Z2	20/29	3.70E-03 - 4.50E-03	2.90E+00	NA	2.00E+00	C	NA	NA	YES	ASL
50-29-3	P,P'-DDT	4.20E-03	J	3.80E+00	J	mg/kg	OU2-SS09-Z2	22/28	3.70E-03 - 2.10E-02	3.80E+00	NA	1.90E+00	C	NA	NA	YES	ASL
DDT	DDT, Total	7.00E-03		1.39E-01	J	mg/kg	OU2-SS07-Z2	18/22	3.70E-03 - 4.00E-03	1.39E-01	NA	NA	NA	NA	NA	NO	NSL
SVOCs																	
98-86-2	ACETOPHENONE	3.30E-02	J	1.70E-01	J	mg/kg	OU2-SS02-Z1	2/34	1.90E-01 - 8.20E+01	1.70E-01	NA	7.80E+02	NC	NA	NA	NO	BSL
100-52-7	BENZALDEHYDE	4.20E-02	J	4.20E-01		mg/kg	OU2-SS08-Z2	2/34	1.90E-01 - 8.20E+01	4.20E-01	NA	7.80E+02	NC	NA	NA	NO	BSL
85-68-7	BENZYL BUTYL PHTHALATE	3.30E-02	J	5.90E-02	J	mg/kg	OU2-SS10-Z2	2/34	1.90E-01 - 8.20E+01	5.90E-02	NA	2.90E+02	C	NA	NA	NO	BSL
92-52-4	BIPHENYL (DIPHENYL)	4.60E-02	J	1.70E-01	J	mg/kg	OU2-SS02-Z2	2/34	1.90E-01 - 8.20E+01	1.70E-01	NA	4.70E+00	NC	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	1.60E-02	J	5.10E+00	J	mg/kg	UPSON-1B	20/34	1.90E-01 - 8.20E+01	5.10E+00	NA	3.90E+01	C	NA	NA	NO	BSL
86-74-8	CARBAZOLE	9.00E-03	J	2.00E+00	J	mg/kg	OU2-SS02-Z2	22/34	1.90E-01 - 8.20E+01	2.00E+00	NA	NA	NA	NA	NA	NO	NSL
132-64-9	DIBENZOFURAN	2.10E-02	J	1.50E+00	J	mg/kg	OU2-SS02-Z2	16/34	1.90E-01 - 8.20E+01	1.50E+00	NA	7.30E+00	NC	NA	NA	NO	BSL
84-74-2	DI-N-BUTYL PHTHALATE	3.40E-02	J	7.80E-01	J	mg/kg	UPSON-2	7/34	1.90E-01 - 8.20E+01	7.80E-01	NA	6.30E+02	NC	NA	NA	NO	BSL
117-84-0	DI-N-OCTYLPHTHALATE	1.20E-02	J	3.00E+00	J	mg/kg	UPSON-2	2/34	1.90E-01 - 8.20E+01	3.00E+00	NA	6.30E+01	NC	NA	NA	NO	BSL
67-64-1	ACETONE	4.20E-03	J	1.70E-02	J	mg/kg	OU2-SS08-Z2	4/20	9.50E-03 - 3.10E-02	1.70E-02	NA	6.10E+03	NC	NA	NA	NO	BSL
75-15-0	CARBON DISULFIDE	7.00E-04	J	1.50E-03	J	mg/kg	OU2-SS08-Z2	2/20	4.80E-03 - 1.50E-02	1.50E-03	NA	7.70E+01	NC	NA	NA	NO	BSL
110-82-7	CYCLOHEXANE	1.10E-03	J	4.00E-03	J	mg/kg	OU2-SS01-Z2	3/20	4.80E-03 - 1.50E-02	4.00E-03	NA	6.50E+02	NC	NA	NA	NO	BSL
179601-23-1	m,p-Xylene	4.10E-04	J	1.00E-03	J	mg/kg	OU2-SS01-Z2	2/19	4.80E-03 - 1.50E-02	1.00E-03	NA	5.50E+01	NC	NA	NA	NO	BSL

TABLE 2.7
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: Upson Park
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (2)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
108-87-2	METHYLCYCLOHEXANE	2.50E-03	J	6.30E-03	J	mg/kg	OU2-SS01-Z2	3/20	4.80E-03 - 1.50E-02	6.30E-03	NA	NA	NA	NA	NA	NO	NSL
95-47-6	O-XYLENE (1,2-DIMETHYLBENZENE)	3.00E-04	J	1.10E-03	J	mg/kg	OU2-SS01-Z2	2/19	4.80E-03 - 1.50E-02	1.10E-03	NA	6.50E+01	NC	NA	NA	NO	BSL
127-18-4	Tetrachloroethylene (PCE)	2.80E-04	J	7.60E-04	J	mg/kg	OU2-SS02-Z1	5/19	4.80E-03 - 1.50E-02	7.60E-04	NA	8.10E+00	NC	NA	NA	NO	BSL
108-88-3	TOLUENE	2.90E-04	J	1.20E-03	J	mg/kg	OU2-SS09-Z1	4/20	4.80E-03 - 1.50E-02	1.20E-03	NA	4.90E+02	NC	NA	NA	NO	BSL
79-01-6	TRICHLOROETHYLENE (TCE)	2.60E-04	J	2.60E-04	J	mg/kg	OU2-SS02-Z2	1/18	4.80E-03 - 1.50E-02	2.60E-04	NA	4.10E-01	NC	NA	NA	NO	BSL

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated, NJ - tentatively identified and estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential soil were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Metallic antimony used as basis for screening level.

(6) Toxicity value for Arsenic (inorganic) used in the calculation of the Regional Screening Level.

(7) Beryllium and compounds used for Beryllium.

(8) Cadmium values based on toxicity information for diet.

(9) Chromium +6 toxicity value used based on valence data.

(10) Lead screening levels based on residential screening level of 400 ppm.

(11) Screening Levels based on Manganese (non-diet).

(12) Mercury evaluated based on elemental mercury toxicity value.

(13) Screening Level based on Nickel Soluble Salts.

(14) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(15) Vanadium and compounds used as surrogate for vanadium.

(16) Zinc and compounds used as surrogate for Zinc.

(17) Screening level based on PCBs (high risk).

(18) Endosulfan used as a surrogate for Beta Endosulfan.

(19) Endrin used as a surrogate for Endrin aldehyde and endrin ketone.

(20) Toxicity value based on PCB (high risk).

(21) Toxicity value based on endosulfan as a surrogate.

(22) Toxicity values based on endrin as a surrogate

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: White Transportation
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
7429-90-5	ALUMINUM	1.39E+03		1.23E+04	J	mg/kg	18MC-L03E-S05-Z2	17/17	No NDs	1.23E+04	NA	7.70E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	7.50E-01	J	5.50E+00	J	mg/kg	18MC-SS10-Z1	10/17	3.60E-01 - 7.30E-01	5.50E+00	NA	3.10E+00	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	1.20E+00	J	3.03E+01		mg/kg	WHITE-1	23/23	No NDs	3.03E+01	NA	6.80E-01	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	1.57E+01	J	2.25E+02	J	mg/kg	18MC-L02E-S05-Z1	17/17	No NDs	2.25E+02	NA	1.50E+03	NC	NA	NA	NO	BSL
7440-41-7	BERYLLIUM (7)	2.60E-01		2.50E+00	J	mg/kg	18MC-L03E-S05-Z1	17/17	No NDs	2.50E+00	NA	1.60E+01	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (8)	5.00E-02	J	8.30E+00		mg/kg	18MC-SS13-Z1	16/17	5.00E-02 - 5.00E-02	8.30E+00	NA	7.10E+00	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	1.35E+03		1.57E+05		mg/kg	18MC-L03E-S04-Z2	17/17	No NDs	1.57E+05	NA	NA	NA	NA	NA	NO	NSL, EN
7440-47-3	CHROMIUM, TOTAL (9)	3.70E+00		4.11E+02	J	mg/kg	18MC-L02E-S05-Z1	23/23	No NDs	4.11E+02	NA	1.20E+04	NC	NA	NA	NO	BSL
7440-48-4	COBALT	1.90E+00		9.40E+00		mg/kg	18MC-L02E-S05-Z1	17/17	No NDs	9.40E+00	NA	2.30E+00	NC	NA	NA	YES	ASL
7440-50-8	COPPER	9.20E+00	J	2.22E+02		mg/kg	18MC-L02E-S05-Z1	23/23	No NDs	2.22E+02	NA	3.10E+02	NC	NA	NA	NO	BSL
7439-89-6	IRON	8.71E+03	J	7.46E+04		mg/kg	WHITE-2	17/17	No NDs	7.46E+04	NA	5.50E+03	IEUBK Model	NA	NA	YES	ASL, EN
7439-92-1	LEAD (10)	4.80E+00		3.75E+03	J	mg/kg	18MC-L02E-S05-Z1	23/23	No NDs	3.75E+03	NA	4.00E+02	NC	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	1.22E+02		3.78E+04	J	mg/kg	18MC-L03E-S04-Z1	17/17	No NDs	3.78E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (11)	1.65E+01		1.59E+03	J	mg/kg	18MC-AS-S01-Z1	17/17	No NDs	1.59E+03	NA	1.80E+02	NC	NA	NA	YES	ASL
7487-94-7	MERCURY (12)	1.00E-02	J	3.43E-01		mg/kg	18MC-SS10-Z1	14/17	6.00E-03 - 3.10E-02	3.43E-01	NA	1.10E+00	NC	NA	NA	NO	BSL
7440-02-0	NICKEL (13)	5.80E+00		1.33E+02		mg/kg	WHITE-1	17/17	No NDs	1.33E+02	NA	1.50E+02	NC	NA	NA	NO	BSL
7440-09-7	POTASSIUM	1.03E+02		2.07E+03	J	mg/kg	18MC-L03E-S04-Z2	17/17	No NDs	2.07E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	6.40E-01		3.20E+00		mg/kg	WHITE-2	7/17	6.60E-01 - 8.00E-01	3.20E+00	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-22-4	SILVER	1.60E-01		6.70E-01	J	mg/kg	18MC-SS10-Z1	8/17	6.00E-02 - 2.00E-01	6.70E-01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-23-5	SODIUM	4.98E+01		1.99E+02	J	mg/kg	18MC-SS10-Z1	17/17	No NDs	1.99E+02	NA	NA	NA	NA	NA	NO	NSL, EN
7440-62-2	VANADIUM (15)	6.40E+00	J	2.22E+01	J	mg/kg	18MC-L03E-S05-Z1	17/17	No NDs	2.22E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-66-6	ZINC (16)	1.80E+01	J	7.13E+02		mg/kg	WHITE-2	23/23	No NDs	7.13E+02	NA	2.30E+03	NC	NA	NA	NO	BSL
HPAH	PAH, HMW Total	1.46E-01		1.12E+01	J	mg/kg	18MC-SS10-Z1	13/13	No NDs	1.12E+01	NA	NA	NA	NA	NA	NO	NSL
LPAH	PAH, LMW Total	1.31E-01		1.69E+00		mg/kg	18MC-SS12-Z1	13/13	No NDs	1.69E+00	NA	NA	NA	NA	NA	NO	NSL
PAHs	PAH, Mixture	4.64E-01		1.26E+01		mg/kg	18MC-SS10-Z1	13/13	No NDs	1.26E+01	NA	NA	NA	NA	NA	NO	NSL
91-57-6	2-METHYLNAPHTHALENE	2.30E-02	J	7.90E-01		mg/kg	18MC-SS12-Z1	9/13	2.10E-01 - 4.40E+00	7.90E-01	NA	2.40E+01	NC	NA	NA	NO	BSL
83-32-9	ACENAPHTHENE	8.00E-03	J	1.80E-02	J	mg/kg	18MC-L01E-S03-Z1	4/13	1.90E-01 - 4.40E+00	1.80E-02	NA	3.60E+02	NC	NA	NA	NO	BSL
208-96-8	ACENAPHTHYLENE	1.00E-02	J	2.30E-01	J	mg/kg	18MC-L03E-S05-Z1	6/13	2.00E-01 - 4.40E+00	2.30E-01	NA	NA	NA	NA	NA	NO	NSL
120-12-7	ANTHRACENE	8.00E-03	J	2.50E-01	J	mg/kg	18MC-SS10-Z1	8/13	3.60E-01 - 4.40E+00	2.50E-01	NA	1.80E+03	NC	NA	NA	NO	BSL
56-55-3	BENZO(A)ANTHRACENE	2.60E-02	J	1.20E+00	J	mg/kg	18MC-SS10-Z1	12/13	3.90E+00 - 3.90E+00	1.20E+00	NA	1.60E-01	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	1.70E-02	J	1.10E+00	J	mg/kg	18MC-SS10-Z1	12/13	2.00E+00 - 2.00E+00	1.10E+00	NA	1.60E-02	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	5.90E-02	J	2.00E+00	J	mg/kg	18MC-SS10-Z1	10/13	3.60E-01 - 3.90E+00	2.00E+00	NA	1.60E-01	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	1.20E-02	J	6.00E-01	J	mg/kg	18MC-SS10-Z1	11/13	2.00E+00 - 3.90E+00	6.00E-01	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	2.50E-02	J	6.50E-01	J	mg/kg	18MC-SS10-Z1	5/13	2.00E-01 - 4.40E+00	6.50E-01	NA	1.60E+00	C	NA	NA	NO	BSL
218-01-9	CHRYSENE	3.70E-02	J	1.20E+00	J	mg/kg	18MC-SS10-Z1	12/13	2.00E+00 - 2.00E+00	1.20E+00	NA	1.60E+01	C	NA	NA	NO	BSL
53-70-3	DIBENZ(A,H)ANTHRACENE	8.00E-03	J	1.80E-01	J	mg/kg	18MC-SS10-Z1	7/13	2.30E-01 - 4.40E+00	1.80E-01	NA	1.60E-02	C	NA	NA	YES	ASL
206-44-0	FLUORANTHENE	2.30E-02	J	2.30E+00	J	mg/kg	18MC-SS10-Z1	13/13	No NDs	2.30E+00	NA	2.40E+02	NC	NA	NA	NO	BSL
86-73-7	FLUORENE	1.60E-02	J	3.10E-02	J	mg/kg	18MC-L01E-S03-Z1	5/13	1.90E-01 - 4.40E+00	3.10E-02	NA	2.40E+02	NC	NA	NA	NO	BSL
193-39-5	INDENO(1,2,3-C,D)PYRENE	2.00E-02	J	5.10E-01	J	mg/kg	18MC-SS10-Z1	10/13	3.60E-01 - 3.90E+00	5.10E-01	NA	1.60E-01	NC	NA	NA	YES	ASL
91-20-3	NAPHTHALENE	1.40E-02	J	3.50E-01	J	mg/kg	WHITE-1B	9/13	2.00E+00 - 4.40E+00	3.50E-01	NA	3.80E+00	NC	NA	NA	NO	BSL
85-01-8	PHENANTHRENE	6.30E-02	J	8.30E-01	J	mg/kg	18MC-SS10-Z1	13/13	No NDs	8.30E-01	NA	NA	NA	NA	NA	NO	NSL
129-00-0	PYRENE	3.10E-02	J	1.50E+00	J	mg/kg	18MC-SS10-Z1	12/13	2.00E+00 - 2.00E+00	1.50E+00	NA	1.80E+02	C	NA	NA	NO	BSL

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: White Transportation
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
PCBs																	
12672-29-6	PCB-1248 (AROCLOR 1248)	7.80E-03	J	5.30E-02		mg/kg	18MC-L01E-S03-Z2	5/23	1.80E-02 - 1.00E-01	5.30E-02	NA	2.30E-01	C	NA	NA	NO	BSL
11097-69-1	PCB-1254 (AROCLOR 1254)	1.00E-02	J	1.30E-01		mg/kg	18MC-L01E-S03-Z2	9/23	1.80E-02 - 1.00E-01	1.30E-01	NA	1.20E-01	NC	NA	NA	YES	ASL
11096-82-5	PCB-1260 (AROCLOR 1260)	6.60E-03	J	6.70E-01		mg/kg	18MC-SS13-Z1	12/23	1.80E-02 - 9.50E-02	6.70E-01	NA	2.40E-01	C	NA	NA	YES	ASL
PCB	PCB, Total (17)	7.80E-03		6.70E-01		mg/kg	18MC-SS13-Z1	18/23	1.80E-02 - 9.50E-02	6.70E-01	NA	2.30E-01	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	9.40E-04	J	9.40E-04	J	mg/kg	18MC-AS-S01-Z1	1/9	2.20E-03 - 2.40E-02	9.40E-04	NA	3.90E-02	C	NA	NA	NO	BSL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	3.30E-03	J	7.20E-03	J	mg/kg	18MC-L01E-S03-Z1	3/9	2.00E-03 - 2.40E-02	7.20E-03	NA	8.60E-02	C	NA	NA	NO	BSL
959-98-8	ALPHA ENDOSULFAN (18)	7.10E-04	J	1.40E-03	J	mg/kg	18MC-L03E-S05-Z1	2/9	9.20E-03 - 2.40E-02	1.40E-03	NA	4.70E+01	NC	NA	NA	NO	BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	7.80E-04	J	7.80E-04	J	mg/kg	18MC-L03E-S05-Z1	1/9	2.00E-03 - 2.40E-02	7.80E-04	NA	3.00E-01	C	NA	NA	NO	BSL
33213-65-9	BETA ENDOSULFAN (18)	1.20E-03	J	1.30E-02	J	mg/kg	18MC-SS12-Z1	2/9	2.00E-03 - 2.40E-02	1.30E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	8.20E-04	J	1.30E-03	J	mg/kg	18MC-AS-S01-Z1	2/9	9.20E-03 - 2.40E-02	1.30E-03	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	4.00E-03	J	1.40E-02	J	mg/kg	18MC-L02E-S04-Z1	3/9	2.00E-03 - 2.40E-02	1.40E-02	NA	3.40E-02	C	NA	NA	NO	BSL
1031-07-8	ENDOSULFAN SULFATE (20)	2.10E-03	J	2.10E-03	J	mg/kg	18MC-L03E-S05-Z1	1/9	2.00E-03 - 2.40E-02	2.10E-03	NA	4.70E+01	NC	NA	NA	NO	BSL
58-89-9	GAMMA BHC (LINDANE)	3.30E-03	J	3.30E-03	J	mg/kg	18MC-SS12-Z1	1/9	2.00E-03 - 2.40E-02	3.30E-03	NA	5.70E-01	C	NA	NA	NO	BSL
72-43-5	METHOXYCHLOR	1.60E-03	J	4.40E-02	J	mg/kg	18MC-L02E-S04-Z1	4/9	2.20E-03 - 2.40E-02	4.40E-02	NA	3.20E+01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	4.00E-03	J	6.20E-02		mg/kg	18MC-L01E-S03-Z1	5/9	2.00E-03 - 2.10E-02	6.20E-02	NA	2.30E+00	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	3.10E-03		1.10E-01		mg/kg	18MC-L02E-S04-Z1	6/9	2.20E-03 - 2.10E-02	1.10E-01	NA	2.00E+00	C	NA	NA	NO	BSL
50-29-3	P,P'-DDT	2.20E-03		1.40E-01		mg/kg	18MC-L02E-S04-Z1	8/9	2.10E-02 - 2.10E-02	1.40E-01	NA	1.90E+00	C	NA	NA	NO	BSL
DDT	DDT, Total	5.30E-03		2.78E-01	J	mg/kg	18MC-L02E-S04-Z1	8/9	2.10E-02 - 2.10E-02	2.78E-01	NA	NA	NA	NA	NA	NO	NSL
SVOCS																	
98-86-2	ACETOPHENONE	2.20E-02	J	2.20E-02	J	mg/kg	18MC-SS12-Z1	1/13	1.90E-01 - 4.40E+00	2.20E-02	NA	7.80E+02	NC	NA	NA	NO	BSL
85-68-7	BENZYL BUTYL PHTHALATE	6.40E-02	J	7.30E-02	J	mg/kg	18MC-L01E-S03-Z1	2/13	1.90E-01 - 4.40E+00	7.30E-02	NA	2.90E+02	C	NA	NA	NO	BSL
92-52-4	BIPHENYL (DIPHENYL)	1.40E-02	J	1.00E-01	J	mg/kg	18MC-SS12-Z1	2/13	1.90E-01 - 4.40E+00	1.00E-01	NA	4.70E+00	NC	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	2.60E-02	J	2.60E-02	J	mg/kg	WHITE-2B	1/13	1.90E-01 - 4.40E+00	2.60E-02	NA	3.90E+01	C	NA	NA	NO	BSL
86-74-8	CARBAZOLE	9.00E-03	J	1.50E-01	J	mg/kg	18MC-SS10-Z1	7/13	2.30E-01 - 4.40E+00	1.50E-01	NA	NA	NA	NA	NA	NO	NSL
132-64-9	DIBENZOFURAN	1.00E-02	J	1.90E-01	J	mg/kg	18MC-SS12-Z1	7/13	2.30E-01 - 4.40E+00	1.90E-01	NA	7.30E+00	NC	NA	NA	NO	BSL
117-84-0	DI-N-OCTYLPHTHALATE	8.00E-03	J	1.60E-02	J	mg/kg	18MC-SS12-Z1	4/13	1.90E-01 - 4.40E+00	1.60E-02	NA	6.30E+01	NC	NA	NA	NO	BSL

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential soil were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Metallic antimony used as basis for screening level.

(6) Toxicity value for Arsenic (inorganic) used in the calculation of the Regional Screening Level.

(7) Beryllium and compounds used for Beryllium.

(8) Cadmium values based on toxicity information for diet.

(9) Chromium +6 toxicity value used based on valence data.

(10) Lead screening levels based on residential screening level of 400 ppm.

(11) Screening Levels based on Manganese (non-diet).

(12) Mercury evaluated based on elemental mercury toxicity value.

(13) Screening Level based on Nickel Soluble Salts.

(14) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(15) Vanadium and compounds used as surrogate for vanadium.

(16) Zinc and compounds used as surrogate for Zinc.

(17) Screening level based on PCBs (high risk).

TABLE 2.8
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: White Transportation
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

(18) Endosulfan used as a surrogate for Beta Endosulfan.

(19) Endrin used as a surrogate for Endrin aldehyde and endrin ketone.

(20) Toxicity value based on endosulfan as a surrogate.

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: White Transportation
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Minimum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
7429-90-5	ALUMINUM	1.39E+03		1.23E+04	J	mg/kg	18MC-L03E-S05-Z2	28/28	No NDs	1.23E+04	NA	7.70E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	7.50E-01	J	5.50E+00	J	mg/kg	18MC-SS10-Z1	14/28	3.60E-01 - 7.30E-01	5.50E+00	NA	3.10E+00	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	1.20E+00	J	3.03E+01		mg/kg	WHITE-1	36/36	No NDs	3.03E+01	NA	6.80E-01	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	1.57E+01	J	4.15E+02	J	mg/kg	18MC-L02E-S05-Z2	28/28	No NDs	4.15E+02	NA	1.50E+03	NC	NA	NA	NO	BSL
7440-41-7	BERYLLIUM (7)	2.60E-01		2.50E+00	J	mg/kg	18MC-L03E-S05-Z1	28/28	No NDs	2.50E+00	NA	1.60E+01	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (8)	5.00E-02	J	8.30E+00		mg/kg	18MC-SS13-Z1	27/28	5.00E-02 - 5.00E-02	8.30E+00	NA	7.10E+00	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	1.35E+03		1.57E+05		mg/kg	18MC-L03E-S04-Z2	28/28	No NDs	1.57E+05	NA	NA	NA	NA	NA	NO	NSL, EN
7440-47-3	CHROMIUM, TOTAL (9)	3.70E+00		4.11E+02	J	mg/kg	18MC-L02E-S05-Z1	36/36	No NDs	4.11E+02	NA	1.20E+04	NC	NA	NA	NO	BSL
7440-48-4	COBALT	1.90E+00		9.90E+00	J	mg/kg	18MC-SB08-Z2	28/28	No NDs	9.90E+00	NA	2.30E+00	NC	NA	NA	YES	ASL
7440-50-8	COPPER	9.20E+00	J	3.61E+02		mg/kg	18MC-L02E-S01-Z1	36/36	No NDs	3.61E+02	NA	3.10E+02	NC	NA	NA	YES	ASL
7439-89-6	IRON	8.71E+03	J	7.46E+04		mg/kg	WHITE-2	28/28	No NDs	7.46E+04	NA	5.50E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD (10)	3.10E+00	J	3.75E+03	J	mg/kg	18MC-L02E-S05-Z1	36/36	No NDs	3.75E+03	NA	4.00E+02	NC	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	1.22E+02		3.78E+04	J	mg/kg	18MC-L03E-S04-Z1	28/28	No NDs	3.78E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (11)	1.65E+01		2.49E+03	J	mg/kg	18MC-AS-S01-Z2	28/28	No NDs	2.49E+03	NA	1.80E+02	NC	NA	NA	YES	ASL
7487-94-7	MERCURY (12)	8.00E-03	J	3.43E-01		mg/kg	18MC-SS10-Z1	24/28	4.70E-03 - 3.10E-02	3.43E-01	NA	1.10E+00	NC	NA	NA	NO	BSL
7440-02-0	NICKEL (13)	5.80E+00		1.33E+02		mg/kg	WHITE-1	28/28	No NDs	1.33E+02	NA	1.50E+02	NC	NA	NA	NO	BSL
7440-09-7	POTASSIUM	1.03E+02		2.07E+03	J	mg/kg	18MC-L03E-S04-Z2	28/28	No NDs	2.07E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	6.40E-01		3.20E+00		mg/kg	WHITE-2	8/28	5.90E-01 - 8.00E-01	3.20E+00	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-22-4	SILVER	1.60E-01		6.70E-01	J	mg/kg	18MC-SS10-Z1	13/28	6.00E-02 - 2.00E-01	6.70E-01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-23-5	SODIUM	4.98E+01		2.82E+02		mg/kg	18MC-SB06-Z1	27/28	3.53E+01 - 3.53E+01	2.82E+02	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (14)	8.80E-01	J	8.80E-01	J	mg/kg	18MC-SB08-Z2	1/28	6.10E-01 - 9.70E-01	8.80E-01	NA	7.80E-02	NC	NA	NA	YES	IFD, ASL
7440-62-2	VANADIUM (15)	6.40E+00	J	2.22E+01	J	mg/kg	18MC-L03E-S05-Z1	28/28	No NDs	2.22E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-66-6	ZINC (16)	5.20E+00	J	7.22E+02	J	mg/kg	18MC-L02E-S05-Z2	36/36	No NDs	7.22E+02	NA	2.30E+03	NC	NA	NA	NO	BSL
PAHs																	
HPAH	PAH, HMW Total	5.80E-02		1.12E+01	J	mg/kg	18MC-SS10-Z1	16/16	No NDs	1.12E+01	NA	NA	NA	NA	NA	NO	NSL
LPAH	PAH, LMW Total	1.15E-01		1.69E+00		mg/kg	18MC-SS12-Z1	16/16	No NDs	1.69E+00	NA	NA	NA	NA	NA	NO	NSL
PAH	PAH, Mixture	1.73E-01		1.26E+01		mg/kg	18MC-SS10-Z1	16/16	No NDs	1.26E+01	NA	NA	NA	NA	NA	NO	NSL
91-57-6	2-METHYLNAPHTHALENE	2.30E-02	J	7.90E-01		mg/kg	18MC-SS12-Z1	11/16	2.10E-01 - 4.40E+00	7.90E-01	NA	2.40E+01	NC	NA	NA	NO	BSL
83-32-9	ACENAPHTHENE	8.00E-03	J	1.80E-02	J	mg/kg	18MC-L01E-S03-Z1	5/16	1.90E-01 - 4.40E+00	1.80E-02	NA	3.60E+02	NC	NA	NA	NO	BSL
208-96-8	ACENAPHTHYLENE	1.00E-02	J	2.30E-01	J	mg/kg	18MC-L03E-S05-Z1	7/16	2.00E-01 - 4.40E+00	2.30E-01	NA	NA	NA	NA	NA	NO	NSL
120-12-7	ANTHRACENE	8.00E-03	J	2.50E-01	J	mg/kg	18MC-SS10-Z1	10/16	2.30E-01 - 4.40E+00	2.50E-01	NA	1.80E+03	N	NA	NA	NO	BSL
56-55-3	BENZO(A)ANTHRACENE	1.40E-02	J	1.20E+00	J	mg/kg	18MC-SS10-Z1	15/16	3.90E+00 - 3.90E+00	1.20E+00	NA	1.60E-01	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	1.70E-02	J	1.10E+00	J	mg/kg	18MC-SS10-Z1	14/16	2.30E-01 - 2.00E+00	1.10E+00	NA	1.60E-02	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	4.40E-02	J	2.00E+00	J	mg/kg	18MC-SS10-Z1	12/16	2.30E-01 - 3.90E+00	2.00E+00	NA	1.60E-01	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	1.20E-02	J	6.00E-01	J	mg/kg	18MC-SS10-Z1	13/16	2.30E-01 - 3.90E+00	6.00E-01	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	2.30E-02	J	6.50E-01	J	mg/kg	18MC-SS10-Z1	7/16	2.00E-01 - 4.40E+00	6.50E-01	NA	1.60E+00	C	NA	NA	NO	BSL
218-01-9	CHRYSENE	3.70E-02	J	1.20E+00	J	mg/kg	18MC-SS10-Z1	14/16	2.30E-01 - 2.00E+00	1.20E+00	NA	1.60E+01	C	NA	NA	NO	BSL
53-70-3	DIBENZ(A,H)ANTHRACENE	8.00E-03	J	1.80E-01	J	mg/kg	18MC-SS10-Z1	9/16	2.30E-01 - 4.40E+00	1.80E-01	NA	1.60E-02	C	NA	NA	YES	ASL
206-44-0	FLUORANTHENE	2.20E-02	J	2.30E+00	J	mg/kg	18MC-SS10-Z1	16/16	No NDs	2.30E+00	NA	2.40E+02	NC	NA	NA	NO	BSL
86-73-7	FLUORENE	1.00E-02	J	3.10E-02	J	mg/kg	18MC-L01E-S03-Z1	7/16	1.90E-01 - 4.40E+00	3.10E-02	NA	2.40E+02	NC	NA	NA	NO	BSL
193-39-5	INDENO(1,2,3-C,D)PYRENE	1.80E-02	J	5.10E-01	J	mg/kg	18MC-SS10-Z1	12/16	2.30E-01 - 3.90E+00	5.10E-01	NA	1.60E-01	C	NA	NA	YES	ASL
91-20-3	NAPHTHALENE	1.40E-02	J	3.50E-01	J	mg/kg	WHITE-1B	11/16	2.20E-01 - 4.40E+00	3.50E-01	NA	3.80E+00	C	NA	NA	NO	BSL
85-01-8	PHENANTHRENE	5.40E-02	J	8.30E-01	J	mg/kg	18MC-SS10-Z1	16/16	No NDs	8.30E-01	NA	NA	NA	NA	NA	NO	NSL
129-00-0	PYRENE	2.20E-02	J	1.50E+00	J	mg/kg	18MC-SS10-Z1	15/16	2.00E+00 - 2.00E+00	1.50E+00	NA	1.80E+02	NC	NA	NA	NO	BSL

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: White Transportation
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Minimum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
PCBs																	
12672-29-6	PCB-1248 (AROCLOR 1248)	7.80E-03	J	1.50E+00		mg/kg	18MC-L02E-S01-Z1	7/36	1.80E-02 - 1.00E-01	1.50E+00	NA	2.30E-01	C	NA	NA	YES	ASL
11097-69-1	PCB-1254 (AROCLOR 1254)	1.00E-02	J	2.30E+00		mg/kg	18MC-L02E-S01-Z1	11/36	1.80E-02 - 1.00E-01	2.30E+00	NA	1.20E-01	NC	NA	NA	YES	ASL
11096-82-5	PCB-1260 (AROCLOR 1260)	6.60E-03	J	6.70E-01		mg/kg	18MC-SS13-Z1	14/36	1.80E-02 - 1.10E-01	6.70E-01	NA	2.40E-01	C	NA	NA	YES	ASL
PCB	PCB, Total (17)	7.80E-03		3.80E+00		mg/kg	18MC-L02E-S01-Z1	22/36	1.80E-02 - 9.50E-02	3.80E+00	NA	2.30E-01	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	9.40E-04	J	9.40E-04	J	mg/kg	18MC-AS-S01-Z1	1/10	2.20E-03 - 2.40E-02	9.40E-04	NA	3.90E-02	C	NA	NA	NO	BSL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	3.30E-03	J	7.20E-03	J	mg/kg	18MC-L01E-S03-Z1	3/10	2.00E-03 - 2.40E-02	7.20E-03	NA	8.60E-02	C	NA	NA	NO	BSL
959-98-8	ALPHA ENDOSULFAN (18)	7.10E-04	J	1.40E-03	J	mg/kg	18MC-L03E-S05-Z1	3/10	9.20E-03 - 2.40E-02	1.40E-03	NA	4.70E+01	NC	NA	NA	NO	BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	7.80E-04	J	7.80E-04	J	mg/kg	18MC-L03E-S05-Z1	1/10	2.00E-03 - 2.40E-02	7.80E-04	NA	3.00E-01	C	NA	NA	NO	BSL
33213-65-9	BETA ENDOSULFAN (18)	1.20E-03	J	1.30E-02	J	mg/kg	18MC-SS12-Z1	2/10	2.00E-03 - 2.40E-02	1.30E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	8.20E-04	J	1.30E-03	J	mg/kg	18MC-AS-S01-Z2	3/10	9.20E-03 - 2.40E-02	1.30E-03	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	4.00E-03	J	1.40E-02	J	mg/kg	18MC-L02E-S04-Z1	3/10	2.00E-03 - 2.40E-02	1.40E-02	NA	3.40E-02	C	NA	NA	NO	BSL
1031-07-8	ENDOSULFAN SULFATE (18)	2.10E-03	J	2.10E-03	J	mg/kg	18MC-L03E-S05-Z1	1/10	2.00E-03 - 2.40E-02	2.10E-03	NA	4.70E+01	NC	NA	NA	NO	BSL
7421-93-4	ENDRIN ALDEHYDE (19)	1.80E-03	J	1.80E-03	J	mg/kg	18MC-AS-S01-Z2	1/10	2.00E-03 - 2.40E-02	1.80E-03	NA	NA	NA	NA	NA	NO	NSL
58-89-9	GAMMA BHC (LINDANE)	3.30E-03	J	3.30E-03	J	mg/kg	18MC-SS12-Z1	1/10	2.00E-03 - 2.40E-02	3.30E-03	NA	5.70E-01	C	NA	NA	NO	BSL
72-43-5	METHOXYCHLOR	1.60E-03	J	4.40E-02	J	mg/kg	18MC-L02E-S04-Z1	4/10	2.20E-03 - 2.40E-02	4.40E-02	NA	3.20E+01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	4.00E-03	J	6.20E-02		mg/kg	18MC-L01E-S03-Z1	5/10	2.00E-03 - 2.10E-02	6.20E-02	NA	2.30E+00	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	3.10E-03		1.10E-01		mg/kg	18MC-L02E-S04-Z1	6/10	2.20E-03 - 2.10E-02	1.10E-01	NA	2.00E+00	C	NA	NA	NO	BSL
50-29-3	P,P'-DDT	2.20E-03		1.40E-01		mg/kg	18MC-L02E-S04-Z1	8/10	2.20E-03 - 2.10E-02	1.40E-01	NA	1.90E+00	C	NA	NA	NO	BSL
DDT	DDT, Total	5.30E-03		2.78E-01	J	mg/kg	18MC-L02E-S04-Z1	8/10	2.20E-03 - 2.10E-02	2.78E-01	NA	NA	NA	NA	NA	NO	NSL
SVOCs																	
120-83-2	2,4-DICHLOROPHENOL	8.10E-02	J	1.10E-01	J	mg/kg	18MC-MW13-Z1	2/16	1.90E-01 - 4.40E+00	1.10E-01	NA	1.90E+01	NC	NA	NA	NO	BSL
95-57-8	2-CHLOROPHENOL	1.90E-02	J	2.50E-02	J	mg/kg	18MC-MW13-Z1	2/16	1.90E-01 - 4.40E+00	2.50E-02	NA	3.90E+01	NC	NA	NA	NO	BSL
95-48-7	2-METHYLPHENOL (O-CRESOL)	4.70E-02	J	1.30E-01	J	mg/kg	18MC-MW11-Z1	2/16	1.90E-01 - 4.40E+00	1.30E-01	NA	3.20E+02	NC	NA	NA	NO	BSL
106-44-5	4-METHYLPHENOL (P-CRESOL)	5.60E-01		1.00E+00		mg/kg	18MC-MW11-Z1	2/16	3.60E-01 - 4.80E+00	1.00E+00	NA	6.30E+02	NC	NA	NA	NO	BSL
98-86-2	ACETOPHENONE	2.20E-02	J	1.90E-01	J	mg/kg	18MC-L02E-S04-Z1	3/16	1.90E-01 - 4.40E+00	1.90E-01	NA	7.80E+02	NC	NA	NA	NO	BSL
100-52-7	BENZALDEHYDE	7.20E-02	J	2.20E-01	J	mg/kg	18MC-AS-S01-Z2	2/16	1.90E-01 - 4.40E+00	2.20E-01	NA	7.80E+02 n	NC	NA	NA	NO	BSL
85-68-7	BENZYL BUTYL PHTHALATE	6.40E-02	J	7.30E-02	J	mg/kg	18MC-L01E-S03-Z1	2/16	1.90E-01 - 4.40E+00	7.30E-02	NA	2.90E+02	C	NA	NA	NO	BSL
92-52-4	BIPHENYL (DIPHENYL)	1.40E-02	J	1.00E-01	J	mg/kg	18MC-SS12-Z1	3/16	1.90E-01 - 4.40E+00	1.00E-01	NA	4.70E+00	NC	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	2.60E-02	J	3.80E+00		mg/kg	18MC-MW11-Z1	3/16	1.90E-01 - 4.40E+00	3.80E+00	NA	3.90E+01	C	NA	NA	NO	BSL
86-74-8	CARBAZOLE	9.00E-03	J	1.50E-01	J	mg/kg	18MC-SS10-Z1	8/16	2.10E-01 - 4.40E+00	1.50E-01	NA	NA	NA	NA	NA	NO	NSL
132-64-9	DIBENZOFURAN	1.00E-02	J	1.90E-01	J	mg/kg	18MC-SS12-Z1	7/16	2.10E-01 - 4.40E+00	1.90E-01	NA	7.30E+00	NC	NA	NA	NO	BSL
84-66-2	DIETHYL PHTHALATE	1.30E-02	J	1.30E-02	J	mg/kg	18MC-MW13-Z1	1/16	1.90E-01 - 4.40E+00	1.30E-02	NA	5.10E+03	NC	NA	NA	NO	BSL
117-84-0	DI-N-OCTYLPHTHALATE	8.00E-03	J	1.60E-02	J	mg/kg	18MC-SS12-Z1	4/16	1.90E-01 - 4.40E+00	1.60E-02	NA	6.30E+01	NC	NA	NA	NO	BSL
78-59-1	ISOPHORONE	8.50E-02	J	8.60E-02	J	mg/kg	18MC-MW13-Z1	2/16	1.90E-01 - 4.40E+00	8.60E-02	NA	5.70E+02	C	NA	NA	NO	BSL
108-95-2	PHENOL	9.40E+00		1.00E+01		mg/kg	18MC-MW11-Z1	2/16	1.90E-01 - 4.40E+00	1.00E+01	NA	1.90E+03	NC	NA	NA	NO	BSL
123-91-1	1,4-DIOXANE (P-DIOXANE)	2.20E+00		2.80E+00		mg/kg	18MC-MW11-Z1	2/12	3.60E-01 - 4.80E+00	2.80E+00	NA	5.30E+00	C	NA	NA	NO	BSL

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential soil were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Metallic antimony used as basis for screening level.

(6) Toxicity value for Arsenic (inorganic) used in the calculation of the Regional Screening Level.

(7) Beryllium and compounds used for Beryllium.

TABLE 2.9
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: White Transportation
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Minimum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (N/C) (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

(8) Cadmium values based on toxicity information for diet.
(9) Chromium +6 toxicity value used based on valence data.
(10) Lead screening levels based on residential screening level of 400 ppm.
(11) Screening Levels based on Manganese (non-diet).
(12) Mercury evaluated based on elemental mercury toxicity value.
(13) Screening Level based on Nickel Soluble Salts.
(14) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.
(15) Vanadium and compounds used as surrogate for vanadium.
(16) Zinc and compounds used as surrogate for Zinc.
(17) Screening level based on PCBs (high risk).
(18) Endosulfan used as a surrogate for Beta Endosulfan.
(19) Endrin used as a surrogate for Endrin aldehyde and endrin ketone.
(20) Toxicity value based on endosulfan as a surrogate.

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: United Paperboard
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
7429-90-5	ALUMINUM	1.86E+03		8.20E+03	J	mg/kg	OU2-SED03	27/27	No NDs	8.20E+03	NA	7.70E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	6.90E-01		1.76E+01	J	mg/kg	18MC-L11-S05-Z1	19/27	5.50E-01 - 8.40E-01	1.76E+01	NA	3.10E+00	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	2.40E+00		6.60E+01		mg/kg	18MC-SS01-Z1	54/54	No NDs	6.60E+01	NA	6.80E-01	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	2.80E+01		3.18E+02		mg/kg	18MC-L11-S04-Z1	27/27	No NDs	3.18E+02	NA	1.50E+03	NC	NA	NA	NO	BSL
7440-41-7	BERYLLIUM (7)	1.60E-01	J	1.10E+00		mg/kg	18MC-L11-S04-Z1	27/27	No NDs	1.10E+00	NA	1.60E+01	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (8)	7.00E-02	J	1.27E+01		mg/kg	18MC-SS08-Z1	26/27	5.00E-02 - 5.00E-02	1.27E+01	NA	7.10E+00	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	9.32E+02		2.17E+05		mg/kg	18MC-SS09-Z1	27/27	No NDs	2.17E+05	NA	NA	NA	NA	NA	NO	NSL, EN
18540-29-9	CHROMIUM, HEXAVALENT	5.30E-01	J	5.30E-01	J	mg/kg	OU2-SED02	1/1	No NDs	5.30E-01	NA	3.00E-01	C	NA	NA	YES	ASL, KHC
7440-47-3	CHROMIUM, TOTAL (9)	5.40E+00		1.15E+02		mg/kg	18MC-L09-S01-Z1	54/54	No NDs	1.15E+02	NA	1.20E+04	NC	NA	NA	NO	BSL
7440-48-4	COBALT	1.90E+00	J	8.80E+00		mg/kg	18MC-L08-S04-Z1	27/27	No NDs	8.80E+00	NA	2.30E+00	NC	NA	NA	YES	ASL
7440-50-8	COPPER	2.09E+01		1.41E+03	J	mg/kg	TP-3	54/54	No NDs	1.41E+03	NA	3.10E+02	NC	NA	NA	YES	ASL
7439-89-6	IRON	8.65E+03		8.05E+04		mg/kg	18MC-L09-S05-Z1	27/27	No NDs	8.05E+04	NA	5.50E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD (10)	4.50E+00		2.54E+04		mg/kg	SED-7	61/61	No NDs	2.54E+04	NA	4.00E+02	IEUK Model	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	1.50E+02		1.14E+05		mg/kg	18MC-SS09-Z1	27/27	No NDs	1.14E+05	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (11)	4.45E+01		1.81E+03		mg/kg	18MC-L11-S05-Z1	27/27	No NDs	1.81E+03	NA	1.80E+02	NC	NA	NA	YES	ASL
7487-94-7	MERCURY (12)	1.10E-02	J	1.10E+00	J	mg/kg	OU2-SED03	27/27	No NDs	1.10E+00	NA	1.10E+00	NC	NA	NA	NO	BSL
7440-02-0	NICKEL (13)	4.80E+00	J	4.37E+01	J	mg/kg	18MC-L08-S04-Z1	27/27	No NDs	4.37E+01	NA	1.50E+02	NC	NA	NA	NO	BSL
7440-09-7	POTASSIUM	2.58E+02		2.68E+03		mg/kg	18MC-L06-S04-Z1	27/27	No NDs	2.68E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	3.70E-01		1.15E+01		mg/kg	18MC-SS01-Z1	12/27	6.60E-01 - 9.20E-01	1.15E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-22-4	SILVER	1.10E-01		2.40E+00	J	mg/kg	OU2-SED03	17/27	1.70E-01 - 2.30E-01	2.40E+00	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-23-5	SODIUM	6.92E+01	J	5.43E+02		mg/kg	18MC-SS09-Z1	27/27	No NDs	5.43E+02	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (14)	2.00E-01	J	1.20E+00	J	mg/kg	18MC-L09-S05-Z1	2/27	7.40E-02 - 1.00E+00	1.20E+00	NA	7.80E-02	NC	NA	NA	YES	ASL
7440-62-2	VANADIUM (15)	5.90E+00		3.81E+01		mg/kg	18MC-L11-S04-Z1	27/27	No NDs	3.81E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-66-6	ZINC (16)	1.03E+01	J	3.18E+03		mg/kg	SED-25B	54/54	No NDs	3.18E+03	NA	2.30E+03	NC	NA	NA	YES	ASL
PAHs																	
91-57-6	2-METHYLNAPHTHALENE	1.20E-02	J	1.40E+00	J	mg/kg	18MC-L09-S04-Z1	10/18	2.20E-01 - 2.60E+01	1.40E+00	NA	2.40E+01	NC	NA	NA	NO	BSL
83-32-9	ACENAPHTHENE	2.10E-02	J	3.50E+00	J	mg/kg	18MC-L09-S04-Z1	9/18	2.20E-01 - 2.60E+01	3.50E+00	NA	3.60E+02	NC	NA	NA	NO	BSL
208-96-8	ACENAPHTHYLENE	1.10E-02	J	2.30E+00	J	mg/kg	18MC-L09-S04-Z1	10/18	2.20E-01 - 2.60E+01	2.30E+00	NA	NA	NA	NA	NA	NO	NSL
120-12-7	ANTHRACENE	2.30E-02	J	9.00E+00		mg/kg	18MC-L09-S04-Z1	14/18	2.20E-01 - 2.20E+01	9.00E+00	NA	1.80E+03	NC	NA	NA	NO	BSL
56-55-3	BENZO(A)ANTHRACENE	2.20E-02	J	2.60E+01		mg/kg	18MC-L09-S04-Z1	17/18	2.20E+01 - 2.20E+01	2.60E+01	NA	1.60E-01	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	1.80E-02	J	2.00E+01		mg/kg	18MC-L09-S04-Z1	16/18	3.90E+00 - 2.20E+01	2.00E+01	NA	1.60E-02	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	2.30E-02	J	2.60E+01		mg/kg	18MC-L09-S04-Z1	16/18	3.90E+00 - 2.20E+01	2.60E+01	NA	1.60E-01	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	1.80E-02	J	1.20E+01		mg/kg	18MC-L09-S04-Z1	17/18	2.20E+01 - 2.20E+01	1.20E+01	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	5.00E-02	J	7.30E+00		mg/kg	18MC-L09-S04-Z1	14/18	2.20E-01 - 2.20E+01	7.30E+00	NA	1.60E+00	C	NA	NA	YES	ASL
218-01-9	CHRYSENE	1.60E-02	J	2.30E+01		mg/kg	18MC-L09-S04-Z1	16/18	3.90E+00 - 2.20E+01	2.30E+01	NA	1.60E+01	C	NA	NA	YES	ASL
53-70-3	DIBENZ(A,H)ANTHRACENE	1.50E-02	J	3.80E+00	J	mg/kg	18MC-L09-S04-Z1	13/18	2.20E-01 - 2.20E+01	3.80E+00	NA	1.60E-02	C	NA	NA	YES	ASL
206-44-0	FLUORANTHENE	4.00E-02	J	5.20E+01		mg/kg	18MC-L09-S04-Z1	17/18	2.20E+01 - 2.20E+01	5.20E+01	NA	2.40E+02	NC	NA	NA	NO	BSL
86-73-7	FLUORENE	1.00E-02	J	4.10E+00	J	mg/kg	18MC-L09-S04-Z1	10/18	2.20E-01 - 2.60E+01	4.10E+00	NA	2.40E+02	NC	NA	NA	NO	BSL
193-39-5	INDENO(1,2,3-C,D)PYRENE	1.00E-02	J	1.10E+01		mg/kg	18MC-L09-S04-Z1	16/18	3.90E+00 - 2.20E+01	1.10E+01	NA	1.60E-01	C	NA	NA	YES	ASL
91-20-3	NAPHTHALENE	9.00E-03	J	2.80E+00	J	mg/kg	18MC-L09-S04-Z1	9/18	2.20E-01 - 2.60E+01	2.80E+00	NA	3.80E+00	C	NA	NA	NO	BSL
85-01-8	PHENANTHRENE	1.80E-02	J	4.40E+01		mg/kg	18MC-L09-S04-Z1	17/18	2.20E+01 - 2.20E+01	4.40E+01	NA	NA	NA	NA	NA	NO	NSL
129-00-0	PYRENE	2.80E-02	J	4.00E+01		mg/kg	18MC-L09-S04-Z1	17/18	2.20E+01 - 2.20E+01	4.00E+01	NA	1.80E+02	NC	NA	NA	NO	BSL

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: United Paperboard
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
PCBs																	
53469-21-9	PCB-1242 (AROCLOR 1242)	6.00E-01		3.30E+01		mg/kg	18MC-L09-S01-Z1	4/62	3.00E-03 - 5.10E+01	3.30E+01	NA	2.30E-01	C	NA	NA	YES	ASL
12672-29-6	PCB-1248 (AROCLOR 1248)	8.70E-03	J	7.10E+01		mg/kg	SED-22	34/62	1.90E-02 - 2.70E+00	7.10E+01	NA	2.30E-01	C	NA	NA	YES	ASL
11097-69-1	PCB-1254 (AROCLOR 1254)	1.40E-02	J	1.30E+02		mg/kg	SED-22	39/62	3.00E-03 - 2.10E+00	1.30E+02	NA	1.20E-01	NC	NA	NA	YES	ASL
11096-82-5	PCB-1260 (AROCLOR 1260)	1.50E-02	J	3.70E+00	J	mg/kg	OU2-SED03	16/62	1.90E-02 - 5.10E+01	3.70E+00	NA	2.40E-01	C	NA	NA	YES	ASL
PCB	PCB, Total (17)	1.40E-02		2.01E+02		mg/kg	SED-22	47/62	1.90E-02 - 8.70E-01	2.01E+02	NA	2.30E-01	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	1.20E-04	J	9.60E-03	J	mg/kg	18MC-L09-S04-Z1	6/17	1.00E-02 - 2.80E-02	9.60E-03	NA	3.90E-02	C	NA	NA	NO	BSL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	1.30E-03	J	9.30E-03	J	mg/kg	18MC-SS05-Z1	5/17	3.00E-04 - 2.80E-02	9.30E-03	NA	8.60E-02	C	NA	NA	NO	BSL
959-98-8	ALPHA ENDOSULFAN (18)	1.40E-03		1.50E-01		mg/kg	OU2-SED03	5/17	4.50E-03 - 2.60E-02	1.50E-01	NA	4.70E+01	NC	NA	NA	NO	BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	4.90E-04	J	2.00E+00	J	mg/kg	OU2-SED03	3/17	2.20E-03 - 2.60E-02	2.00E+00	NA	3.00E-01	C	NA	NA	YES	ASL
33213-65-9	BETA ENDOSULFAN (18)	7.40E-04	J	3.60E-02	J	mg/kg	18MC-L09-S04-Z1	5/17	4.50E-03 - 2.60E-02	3.60E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	9.10E-04	J	6.40E-01	J	mg/kg	OU2-SED03	6/17	1.00E-02 - 2.60E-02	6.40E-01	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	1.30E-03	J	2.20E-01	J	mg/kg	18MC-L07-S05-Z1	7/17	2.20E-03 - 2.60E-02	2.20E-01	NA	3.40E-02	C	NA	NA	YES	ASL
1031-07-8	ENDOSULFAN SULFATE (18)	9.10E-04	J	8.30E-02	J	mg/kg	OU2-SED03	2/17	2.20E-03 - 2.60E-02	8.30E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
72-20-8	ENDRIN (19)	1.80E-03	J	5.30E-01	J	mg/kg	OU2-SED03	4/17	4.50E-03 - 2.60E-02	5.30E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
7421-93-4	ENDRIN ALDEHYDE (19)	5.00E-04	J	9.70E-02	J	mg/kg	18MC-SS08-Z1	4/17	2.20E-03 - 2.60E-02	9.70E-02	NA	1.90E+00	NC	NA	NA	NO	BSL
53494-70-5	ENDRIN KETONE (19)	5.70E-04	J	6.50E-02	J	mg/kg	OU2-SED03	3/17	2.20E-03 - 2.60E-02	6.50E-02	NA	1.90E+00	NC	NA	NA	NO	BSL
58-89-9	GAMMA BHC (LINDANE)	1.20E-03	J	3.00E-01	J	mg/kg	OU2-SED03	6/17	1.00E-02 - 2.60E-02	3.00E-01	NA	5.70E-01	C	NA	NA	NO	BSL
76-44-8	HEPTACHLOR	3.00E-03	J	5.50E-01	J	mg/kg	OU2-SED03	2/17	2.20E-03 - 2.60E-02	5.50E-01	NA	1.30E-01	C	NA	NA	YES	ASL
1024-57-3	HEPTACHLOR EPOXIDE	5.60E-04	J	4.30E-01	J	mg/kg	OU2-SED03	3/17	4.50E-03 - 2.60E-02	4.30E-01	NA	7.00E-02	C	NA	NA	YES	ASL
72-43-5	METHOXYCHLOR	4.00E-03	J	5.20E-01	J	mg/kg	OU2-SED03	11/17	1.00E-02 - 2.20E-02	5.20E-01	NA	3.20E+01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	3.30E-03	J	8.50E-02	J	mg/kg	OU2-SED03	5/17	4.50E-03 - 2.60E-02	8.50E-02	NA	2.30E+00	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	3.20E-03	J	1.20E-01		mg/kg	18MC-L07-S05-Z1	16/17	2.80E-02 - 2.80E-02	1.20E-01	NA	2.00E+00	C	NA	NA	NO	BSL
50-29-3	P,P'-DDT	8.90E-03		1.30E+00		mg/kg	OU2-SED03	16/17	2.00E-02 - 2.00E-02	1.30E+00	NA	1.90E+00	C	NA	NA	NO	BSL
DDT	DDT, Total	1.53E-02		1.39E+00		mg/kg	OU2-SED03	17/17	No NDs	1.39E+00	NA	NA	NA	NA	NA	NO	NSL
SVOCs																	
95-48-7	2-METHYLPHENOL (O-CRESOL)	1.60E-01	J	1.60E-01	J	mg/kg	OU2-SED02	1/18	2.00E-01 - 2.60E+01	1.60E-01	NA	3.20E+02	NC	NA	NA	NO	BSL
MEPH3MEPH4	3- AND 4- METHYLPHENOL (TOTAL)	7.60E-01	J	1.20E+00		mg/kg	OU2-SED02	2/2	No NDs	1.20E+00	NA	NA	NA	NA	NA	NO	NSL
98-86-2	ACETOPHENONE	1.80E-02	J	1.80E-02	J	mg/kg	18MC-SS05-Z1	1/18	2.00E-01 - 2.60E+01	1.80E-02	NA	7.80E+02	NC	NA	NA	NO	BSL
92-52-4	BIPHENYL (DIPHENYL)	3.90E-01	J	3.90E-01	J	mg/kg	18MC-L09-S04-Z1	1/18	2.00E-01 - 2.60E+01	3.90E-01	NA	4.70E+00	NC	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	7.30E-02	J	1.90E+00	J	mg/kg	OU2-SED03	4/18	2.00E-01 - 2.60E+01	1.90E+00	NA	3.90E+01	C	NA	NA	NO	BSL
86-74-8	CARBAZOLE	1.60E-02	J	4.80E+00	J	mg/kg	18MC-L09-S04-Z1	12/18	2.20E-01 - 2.60E+01	4.80E+00	NA	NA	NA	NA	NA	NO	NSL
132-64-9	DIBENZOFURAN	1.20E-02	J	2.80E+00	J	mg/kg	18MC-L09-S04-Z1	9/18	2.20E-01 - 2.60E+01	2.80E+00	NA	7.30E+00	NC	NA	NA	NO	BSL
117-84-0	DI-N-OCTYLPHTHALATE	1.00E-02	J	3.50E-02	J	mg/kg	18MC-SS05-Z1	4/18	2.20E-01 - 2.60E+01	3.50E-02	NA	6.30E+01	NC	NA	NA	NO	BSL
108-95-2	PHENOL	5.50E-01		5.50E-01		mg/kg	OU2-SED02	1/18	2.00E-01 - 2.60E+01	5.50E-01	NA	1.90E+03	NC	NA	NA	NO	BSL

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential soil were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Metallic antimony used as basis for screening level.

(6) Toxicity value for Arsenic (inorganic) used in the calculation of the Regional Screening Level.

(7) Beryllium and compounds used for Beryllium.

(8) Cadmium values based on toxicity information for diet.

(9) Chromium +6 toxicity value used based on valence data.

TABLE 2.10
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: United Paperboard
Depth Interval: 0-2 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

(10) Lead screening levels based on residential screening level of 400 ppm.
(11) Screening Levels based on Manganese (non-diet).
(12) Mercury evaluated based on elemental mercury toxicity value.
(13) Screening Level based on Nickel Soluble Salts.
(14) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.
(15) Vanadium and compounds used as surrogate for vanadium.
(16) Zinc and compounds used as surrogate for Zinc.
(17) Screening level based on PCBs (high risk).
(18) Endosulfan used as a surrogate for Beta Endosulfan.
(19) Endrin used as a surrogate for Endrin aldehyde and endrin ketone.

TABLE 2.11
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: United Paperboard
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Minimum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
7429-90-5	ALUMINUM	1.42E+03		1.26E+04		mg/kg	18MC-L10-S05-Z2	52/52	No NDs	1.26E+04	NA	7.70E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	6.90E-01		9.80E+02	J	mg/kg	18MC-L09-S04-Z2	36/52	5.40E-01 - 8.40E-01	9.80E+02	NA	3.10E+00	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	1.50E+00		1.23E+02	J	mg/kg	18MC-SB02-Z1	88/88	No NDs	1.23E+02	NA	6.80E-01	C	NA	NA	YES	ASL, KHC
7440-39-3	BARIUM	2.80E+01		3.18E+02		mg/kg	18MC-L11-S04-Z1	52/52	No NDs	3.18E+02	NA	1.50E+03	NC	NA	NA	NO	BSL
7440-41-7	BERYLLIUM (7)	9.00E-02	J	2.00E+00		mg/kg	18MC-L08-S04-Z2	52/52	No NDs	2.00E+00	NA	1.60E+01	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (8)	7.00E-02	J	1.27E+01		mg/kg	18MC-SS08-Z1	43/52	4.00E-02 - 5.00E-02	1.27E+01	NA	7.10E+00	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	9.32E+02		2.17E+05		mg/kg	18MC-SS09-Z1	52/52	No NDs	2.17E+05	NA	NA	NA	NA	NA	NO	NSL, EN
18540-29-9	CHROMIUM, HEXAVALENT (9)	5.30E-01	J	5.30E-01	J	mg/kg	OU2-SED02	1/1	No NDs	5.30E-01	NA	3.00E-01	NC	NA	NA	YES	ASL, KHC
7440-47-3	CHROMIUM, TOTAL	2.60E+00	J	1.15E+02		mg/kg	18MC-L09-S01-Z1	88/88	No NDs	1.15E+02	NA	1.20E+04	NC	NA	NA	NO	BSL
7440-48-4	COBALT	1.30E+00		1.67E+01		mg/kg	18MC-SB15-Z1	52/52	No NDs	1.67E+01	NA	2.30E+00	NC	NA	NA	YES	ASL
7440-50-8	COPPER	6.50E+00		5.49E+04		mg/kg	18MC-L09-S03-Z1	88/88	No NDs	5.49E+04	NA	3.10E+02	NC	NA	NA	YES	ASL
7439-89-6	IRON	2.84E+03		2.34E+05		mg/kg	18MC-SB15-Z1	52/52	No NDs	2.34E+05	NA	5.50E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD (10)	4.50E+00		2.54E+04		mg/kg	SED-7	95/95	No NDs	2.54E+04	NA	4.00E+02	IEUBK Model	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	1.50E+02		1.44E+05		mg/kg	18MC-MW01-Z1	52/52	No NDs	1.44E+05	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (10)	4.45E+01		2.08E+03	J	mg/kg	18MC-MW09-Z1	52/52	No NDs	2.08E+03	NA	1.80E+02	NC	NA	NA	YES	ASL
7487-94-7	MERCURY (11)	1.10E-02	J	2.90E+00	J	mg/kg	18MC-SB15-Z1	50/52	6.00E-03 - 6.00E-03	2.90E+00	NA	1.10E+00	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (12)	3.80E+00		1.07E+02		mg/kg	18MC-SB15-Z1	52/52	No NDs	1.07E+02	NA	1.50E+02	NC	NA	NA	NO	BSL
7440-09-7	POTASSIUM	2.26E+02		2.75E+03		mg/kg	18MC-MW05-Z1	52/52	No NDs	2.75E+03	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	3.70E-01		1.15E+01		mg/kg	18MC-SS01-Z1	21/52	5.90E-01 - 9.30E-01	1.15E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-22-4	SILVER	1.10E-01		3.50E+00		mg/kg	18MC-L09-S05-Z2	33/52	7.00E-02 - 2.30E-01	3.50E+00	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-23-5	SODIUM	5.73E+01	J	5.78E+02		mg/kg	18MC-MW01-Z1	52/52	No NDs	5.78E+02	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (12)	2.00E-01	J	1.20E+00	J	mg/kg	18MC-L09-S05-Z1	3/52	7.40E-02 - 2.90E+00	1.20E+00	NA	7.80E-02	NC	NA	NA	YES	ASL
7440-62-2	VANADIUM (13)	3.50E+00		5.99E+01	J	mg/kg	18MC-SB02-Z1	52/52	No NDs	5.99E+01	NA	3.90E+01	NC	NA	NA	YES	ASL
7440-66-6	ZINC	2.90E+00		2.14E+04		mg/kg	18MC-L09-S03-Z1	88/88	No NDs	2.14E+04	NA	2.30E+03	NC	NA	NA	YES	ASL
PAHs																	
91-57-6	2-METHYLNAPHTHALENE	1.20E-02	J	1.40E+00	J	mg/kg	18MC-L09-S04-Z1	13/26	2.00E-01 - 2.60E+01	1.40E+00	NA	2.40E+01	NC	NA	NA	NO	BSL
83-32-9	ACENAPHTHENE	2.10E-02	J	3.50E+00	J	mg/kg	18MC-L09-S04-Z1	12/26	2.00E-01 - 2.60E+01	3.50E+00	NA	3.60E+02	NC	NA	NA	NO	BSL
208-96-8	ACENAPHTHYLENE	1.10E-02	J	2.30E+00	J	mg/kg	18MC-L09-S04-Z1	13/26	2.10E-01 - 2.60E+01	2.30E+00	NA	NA	NA	NA	NA	NO	NSL
120-12-7	ANTHRACENE	1.10E-02	J	9.00E+00		mg/kg	18MC-L09-S04-Z1	19/26	2.10E-01 - 2.20E+01	9.00E+00	NA	1.80E+03	NC	NA	NA	NO	BSL
56-55-3	BENZO(A)ANTHRACENE	2.00E-02	J	2.60E+01		mg/kg	18MC-L09-S04-Z1	23/26	2.10E-01 - 2.20E+01	2.60E+01	NA	1.60E-01	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	1.30E-02	J	2.00E+01		mg/kg	18MC-L09-S04-Z1	22/26	2.10E-01 - 2.20E+01	2.00E+01	NA	1.60E-02	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	1.10E-02	J	2.60E+01		mg/kg	18MC-L09-S04-Z1	23/26	2.30E-01 - 2.20E+01	2.60E+01	NA	1.60E-01	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	1.80E-02	J	1.20E+01		mg/kg	18MC-L09-S04-Z1	22/26	2.10E-01 - 2.20E+01	1.20E+01	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	5.00E-02	J	7.30E+00		mg/kg	18MC-L09-S04-Z1	19/26	2.10E-01 - 2.20E+01	7.30E+00	NA	1.60E+00	C	NA	NA	YES	ASL
218-01-9	CHRYSENE	1.10E-02	J	2.30E+01		mg/kg	18MC-L09-S04-Z1	22/26	2.10E-01 - 2.20E+01	2.30E+01	NA	1.60E+01	C	NA	NA	YES	ASL
53-70-3	DIBENZ(A,H)ANTHRACENE	1.50E-02	J	3.80E+00	J	mg/kg	18MC-L09-S04-Z1	18/26	2.10E-01 - 2.20E+01	3.80E+00	NA	1.60E-02	C	NA	NA	YES	ASL
206-44-0	FLUORANTHENE	1.30E-02	J	5.20E+01		mg/kg	18MC-L09-S04-Z1	24/26	2.30E-01 - 2.20E+01	5.20E+01	NA	2.40E+02	NC	NA	NA	NO	BSL
86-73-7	FLUORENE	9.00E-03	J	4.10E+00	J	mg/kg	18MC-L09-S04-Z1	14/26	2.10E-01 - 2.60E+01	4.10E+00	NA	2.40E+02	NC	NA	NA	NO	BSL
193-39-5	INDENO(1,2,3-C,D)PYRENE	1.00E-02	J	1.10E+01		mg/kg	18MC-L09-S04-Z1	22/26	2.10E-01 - 2.20E+01	1.10E+01	NA	1.60E-01	C	NA	NA	YES	ASL
91-20-3	NAPHTHALENE	9.00E-03	J	2.80E+00	J	mg/kg	18MC-L09-S04-Z1	13/26	2.00E-01 - 2.60E+01	2.80E+00	NA	3.80E+00	C	NA	NA	NO	BSL
85-01-8	PHENANTHRENE	1.00E-02	J	4.40E+01		mg/kg	18MC-L09-S04-Z1	24/26	2.30E-01 - 2.20E+01	4.40E+01	NA	NA	NA	NA	NA	NO	NSL
129-00-0	PYRENE	2.10E-02	J	4.00E+01		mg/kg	18MC-L09-S04-Z1	23/26	2.10E-01 - 2.20E+01	4.00E+01	NA	1.80E+02	NC	NA	NA	NO	BSL

TABLE 2.11
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: United Paperboard
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Minimum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
PCBs																	
53469-21-9	PCB-1242 (AROCLOR 1242)	6.00E-01		3.30E+01		mg/kg	18MC-L09-S01-Z1	4/96	3.00E-03 - 9.30E+01	3.30E+01	NA	2.30E-01	C	NA	NA	YES	IFD, ASL
12672-29-6	PCB-1248 (AROCLOR 1248)	3.60E-03	J	5.50E+02		mg/kg	18MC-SB15-Z1	47/96	1.80E-02 - 2.70E+00	5.50E+02	NA	2.30E-01	C	NA	NA	YES	ASL
11097-69-1	PCB-1254 (AROCLOR 1254)	3.40E-03	J	1.30E+02		mg/kg	SED-22	51/96	3.00E-03 - 9.30E+01	1.30E+02	NA	1.20E-01	NC	NA	NA	YES	ASL
11096-82-5	PCB-1260 (AROCLOR 1260)	1.50E-02	J	7.60E+01	J	mg/kg	18MC-SB15-Z1	18/96	1.80E-02 - 5.10E+01	7.60E+01	NA	2.40E-01	C	NA	NA	YES	ASL
PCB	PCB, Total (17)	4.70E-03		6.26E+02		mg/kg	18MC-SB15-Z1	63/96	1.80E-02 - 8.70E-01	6.26E+02	NA	2.30E-01	C	NA	NA	YES	ASL
Pesticides																	
309-00-2	ALDRIN	1.20E-04	J	9.60E-03	J	mg/kg	18MC-L09-S04-Z1	6/17	1.00E-02 - 2.80E-02	9.60E-03	NA	3.90E-02	C	NA	NA	NO	BSL
319-84-6	ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	1.30E-03	J	9.30E-03	J	mg/kg	18MC-SS05-Z1	5/17	3.00E-04 - 2.80E-02	9.30E-03	NA	8.60E-02	C	NA	NA	NO	BSL
959-98-8	ALPHA ENDOSULFAN (18)	1.40E-03		1.50E-01		mg/kg	OU2-SED03	5/17	4.50E-03 - 2.60E-02	1.50E-01	NA	4.70E+01	NC	NA	NA	NO	BSL
319-85-7	BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	4.90E-04	J	2.00E+00	J	mg/kg	OU2-SED03	3/17	2.20E-03 - 2.60E-02	2.00E+00	NA	3.00E-01	C	NA	NA	YES	ASL
33213-65-9	BETA ENDOSULFAN (18)	7.40E-04	J	3.60E-02	J	mg/kg	18MC-L09-S04-Z1	5/17	4.50E-03 - 2.60E-02	3.60E-02	NA	4.70E+00	NC	NA	NA	NO	BSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	9.10E-04	J	6.40E-01	J	mg/kg	OU2-SED03	6/17	1.00E-02 - 2.60E-02	6.40E-01	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	1.30E-03	J	2.20E-01	J	mg/kg	18MC-L07-S05-Z1	7/17	2.20E-03 - 2.60E-02	2.20E-01	NA	3.40E-02	C	NA	NA	YES	ASL
1031-07-8	ENDOSULFAN SULFATE (18)	9.10E-04	J	8.30E-02	J	mg/kg	OU2-SED03	2/17	2.20E-03 - 2.60E-02	8.30E-02	NA	4.70E+01	NC	NA	NA	NO	BSL
72-20-8	ENDRIN	1.80E-03	J	5.30E-01	J	mg/kg	OU2-SED03	4/17	4.50E-03 - 2.60E-02	5.30E-01	NA	1.90E+00	NC	NA	NA	NO	BSL
7421-93-4	ENDRIN ALDEHYDE (19	5.00E-04	J	9.70E-02	J	mg/kg	18MC-SS08-Z1	4/17	2.20E-03 - 2.60E-02	9.70E-02	NA	1.90E+00	NC	NA	NA	NO	BSL
53494-70-5	ENDRIN KETONE (19)	5.70E-04	J	6.50E-02	J	mg/kg	OU2-SED03	3/17	2.20E-03 - 2.60E-02	6.50E-02	NA	1.90E+00	NC	NA	NA	NO	BSL
58-89-9	GAMMA BHC (LINDANE)	1.20E-03	J	3.00E-01	J	mg/kg	OU2-SED03	6/17	1.00E-02 - 2.60E-02	3.00E-01	NA	5.70E-01	C	NA	NA	NO	BSL
76-44-8	HEPTACHLOR	3.00E-03	J	5.50E-01	J	mg/kg	OU2-SED03	2/17	2.20E-03 - 2.60E-02	5.50E-01	NA	1.30E-01	C	NA	NA	YES	ASL
1024-57-3	HEPTACHLOR EPOXIDE	5.60E-04	J	4.30E-01	J	mg/kg	OU2-SED03	3/17	4.50E-03 - 2.60E-02	4.30E-01	NA	7.00E-02	C	NA	NA	YES	ASL
72-43-5	METHOXYCHLOR	4.00E-03	J	5.20E-01	J	mg/kg	OU2-SED03	11/17	1.00E-02 - 2.20E-02	5.20E-01	NA	3.20E+01	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	3.30E-03	J	8.50E-02	J	mg/kg	OU2-SED03	5/17	4.50E-03 - 2.60E-02	8.50E-02	NA	2.30E+00	C	NA	NA	NO	BSL
72-55-9	P,P'-DDE	3.20E-03	J	1.20E-01		mg/kg	18MC-L07-S05-Z1	16/17	2.80E-02 - 2.80E-02	1.20E-01	NA	2.00E+00	C	NA	NA	NO	BSL
50-29-3	P,P'-DDT	8.90E-03		1.30E+00		mg/kg	OU2-SED03	16/17	2.00E-02 - 2.00E-02	1.30E+00	NA	1.90E+00	C	NA	NA	NO	BSL
DDT	DDT, Total	1.53E-02		1.39E+00		mg/kg	OU2-SED03	17/17	No NDs	1.39E+00	NA	NA	NA	NA	NA	NO	NSL
SVOCs																	
95-48-7	2-METHYLPHENOL (O-CRESOL)	1.60E-01	J	1.60E-01	J	mg/kg	OU2-SED02	1/26	2.00E-01 - 2.60E+01	1.60E-01	NA	3.20E+02	NC	NA	NA	NO	IFD, BSL
MEPH3MEPH4	3- AND 4- METHYLPHENOL (TOTAL)	7.60E-01	J	1.20E+00		mg/kg	OU2-SED02	2/2	No NDs	1.20E+00	NA	NA	NA	NA	NA	NO	NSL
98-86-2	ACETOPHENONE	1.80E-02	J	1.80E-02	J	mg/kg	18MC-SS05-Z1	1/26	2.00E-01 - 2.60E+01	1.80E-02	NA	7.80E+02	NC	NA	NA	NO	IFD, BSL
100-52-7	BENZALDEHYDE	3.40E-02	J	3.40E-02	J	mg/kg	18MC-MW05-Z1	1/26	2.00E-01 - 2.60E+01	3.40E-02	NA	7.80E+02	NC	NA	NA	NO	IFD, BSL
92-52-4	BIPHENYL (DIPHENYL)	1.50E-02	J	3.90E-01	J	mg/kg	18MC-L09-S04-Z1	2/26	2.00E-01 - 2.60E+01	3.90E-01	NA	4.70E+00	NC	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	4.40E-02	J	1.90E+00	J	mg/kg	OU2-SED03	7/26	2.00E-01 - 2.60E+01	1.90E+00	NA	3.90E+01	C	NA	NA	NO	BSL
86-74-8	CARBAZOLE	1.60E-02	J	4.80E+00	J	mg/kg	18MC-L09-S04-Z1	15/26	2.10E-01 - 2.60E+01	4.80E+00	NA	NA	NA	NA	NA	NO	NSL
132-64-9	DIBENZOFURAN	1.20E-02	J	2.80E+00	J	mg/kg	18MC-L09-S04-Z1	12/26	2.00E-01 - 2.60E+01	2.80E+00	NA	7.30E+00	NC	NA	NA	NO	BSL
117-84-0	DI-N-OCTYLPHTHALATE	1.00E-02	J	3.50E-02	J	mg/kg	18MC-SS05-Z1	4/26	2.00E-01 - 2.60E+01	3.50E-02	NA	6.30E+01	NC	NA	NA	NO	BSL
108-95-2	PHENOL	5.50E-01		5.50E-01		mg/kg	OU2-SED02	1/26	2.00E-01 - 2.60E+01	5.50E-01	NA	1.90E+03	NC	NA	NA	NO	IFD, BSL

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential soil were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Metallic antimony used as basis for screening level.

(6) Toxicity value for Arsenic (inorganic) used in the calculation of the Regional Screening Level.

(7) Beryllium and compounds used for Beryllium.

(8) Cadmium values based on toxicity information for diet.

TABLE 2.11
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Soil & Sediment
Exposure Point: United Paperboard
Depth Interval: 0-10 feet bgs

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Minimum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

(9) Chromium +6 toxicity value used based on valence data.

(10) Lead screening levels based on residential screening level of 400 ppm.

(11) Screening Levels based on Manganese (non-diet).

(12) Mercury evaluated based on elemental mercury toxicity value.

(13) Screening Level based on Nickel Soluble Salts.

(14) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(15) Vanadium and compounds used as surrogate for vanadium.

(16) Zinc and compounds used as surrogate for Zinc.

(17) Screening level based on PCBs (high risk).

(18) Endosulfan used as a surrogate for Beta Endosulfan.

(19) Endrin used as a surrogate for Endrin aldehyde and endrin ketone.

TABLE 2.12
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tapwater
Exposure Point: Main Plume
Time Frame: 2014-2015

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
7429-90-5	ALUMINUM	3.00E+00	J	1.07E+03		ug/l	OU2-MW05	9/10	2.00E+01 - 2.00E+01	1.07E+03	NA	2.00E+03	NC	NA	NA	NO	BSL
7440-36-0	ANTIMONY (5)	2.40E+00		5.20E+00		ug/l	OU2-MW18	2/10	2.00E+00 - 2.00E+00	5.20E+00	NA	7.80E-01	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	5.10E-01	J	5.60E+00		ug/l	OU2-MW18	5/10	1.00E+00 - 1.00E+00	5.60E+00	NA	5.20E-02	C	NA	NA	YES	ASL
7440-39-3	BARIUM	2.00E+01		1.30E+02		ug/l	OU2-MW05	10/10	No NDs	1.30E+02	NA	3.80E+02	NC	NA	NA	NO	BSL
7440-43-9	CADMIUM (7)	1.80E-01	J	1.80E-01	J	ug/l	OU2-MW14	1/10	1.00E+00 - 1.00E+00	1.80E-01	NA	9.20E-01	NC	NA	NA	NO	BSL
7440-70-2	CALCIUM	1.20E+05		3.90E+05		ug/l	OU2-MW18	10/10	No NDs	3.90E+05	NA	NA	NA	NA	NA	NO	NSL, EN
7440-47-3	CHROMIUM, TOTAL	5.90E-01	J	5.60E+00		ug/l	OU2-MW18	3/10	2.00E+00 - 2.00E+00	5.60E+00	NA	2.20E+03	NC	NA	NA	NO	BSL
7440-48-4	COBALT	2.10E-01	J	3.70E+00		ug/l	OU2-MW05	6/10	1.00E+00 - 1.00E+00	3.70E+00	NA	6.00E-01	NC	NA	NA	YES	ASL
7440-50-8	COPPER	8.80E-01	J	7.80E+00		ug/l	OU2-MW18	9/10	2.00E+00 - 2.00E+00	7.80E+00	NA	8.00E+01	NC	NA	NA	NO	BSL
7439-89-6	IRON	1.80E+01	J	5.47E+03		ug/l	OU2-MW05	9/10	5.00E+01 - 5.00E+01	5.47E+03	NA	1.40E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD	1.90E-02	J	1.21E+01		ug/l	OU2-MW05	6/10	1.00E+00 - 1.00E+00	1.21E+01	NA	1.50E+01	NC	NA	NA	NO	BSL
7439-95-4	MAGNESIUM	1.69E+04		1.55E+05		ug/l	OU2-MW05	10/10	No NDs	1.55E+05	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (8)	6.10E-01	J	8.86E+02		ug/l	OU2-MW05	10/10	No NDs	8.86E+02	NA	4.30E+01	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (9)	2.80E-01	J	1.17E+01		ug/l	OU2-MW05	9/10	1.00E+00 - 1.00E+00	1.17E+01	NA	3.90E+01	NC	NA	NA	NO	BSL
7440-09-7	POTASSIUM	4.50E+03		4.20E+04		ug/l	OU2-MW18	10/10	No NDs	4.20E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	9.20E-01	J	1.68E+01		ug/l	OU2-MW18	6/10	5.00E+00 - 5.00E+00	1.68E+01	NA	1.00E+01	NC	NA	NA	YES	ASL
7440-22-4	SILVER	4.50E-02	J	4.50E-02	J	ug/l	OU2-MW15	1/10	1.00E+00 - 1.00E+00	4.50E-02	NA	9.40E+00	NC	NA	NA	NO	BSL
7440-23-5	SODIUM	7.44E+04		7.90E+05		ug/l	OU2-MW18	10/10	No NDs	7.90E+05	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (10)	1.00E+00	J	1.00E+00	J	ug/l	OU2-MW16	1/10	1.00E+00 - 1.00E+00	1.00E+00	NA	2.00E-02	NC	NA	NA	YES	ASL
7440-62-2	VANADIUM (11)	3.10E-01	J	3.80E+00	J	ug/l	OU2-MW05	2/10	1.00E+00 - 5.00E+00	3.80E+00	NA	8.60E+00	NC	NA	NA	NO	BSL
7440-66-6	ZINC (12)	2.30E+00		5.80E+01		ug/l	OU2-MW18	9/10	5.00E+00 - 5.00E+00	5.80E+01	NA	6.00E+02	NC	NA	NA	NO	BSL
PAHs																	
56-55-3	BENZO(A)ANTHRACENE	2.00E-01		2.00E-01		ug/l	OU2-MW16	1/10	1.90E-01 - 5.00E+00	2.00E-01	NA	3.30E-02	C	NA	NA	YES	ASL
50-32-8	BENZO(A)PYRENE	1.50E-01	J	1.50E-01	J	ug/l	OU2-MW16	1/10	1.90E-01 - 5.00E+00	1.50E-01	NA	3.40E-03	C	NA	NA	YES	ASL
205-99-2	BENZO(B)FLUORANTHENE	2.70E-01		2.70E-01		ug/l	OU2-MW16	1/10	1.90E-01 - 5.00E+00	2.70E-01	NA	3.40E-02	C	NA	NA	YES	ASL
191-24-2	BENZO(G,H,I)PERYLENE	2.60E-01		2.60E-01		ug/l	OU2-MW16	1/10	1.90E-01 - 5.00E+00	2.60E-01	NA	NA	NA	NA	NA	NO	NSL
207-08-9	BENZO(K)FLUORANTHENE	3.00E-01		3.00E-01		ug/l	OU2-MW16	1/10	1.90E-01 - 5.00E+00	3.00E-01	NA	3.40E-01	C	NA	NA	NO	BSL
218-01-9	CHRYSENE	2.70E-01		2.70E-01		ug/l	OU2-MW16	1/10	1.90E-01 - 5.00E+00	2.70E-01	NA	3.40E+00	C	NA	NA	NO	BSL
53-70-3	DIBENZ(A,H)ANTHRACENE	3.10E-01		3.10E-01		ug/l	OU2-MW16	1/10	1.90E-01 - 5.00E+00	3.10E-01	NA	3.40E-03	C	NA	NA	YES	ASL
193-39-5	INDENO(1,2,3-C,D)PYRENE	2.70E-01		2.70E-01		ug/l	OU2-MW16	1/10	1.90E-01 - 5.00E+00	2.70E-01	NA	3.40E-02	C	NA	NA	YES	ASL
Pesticides																	
959-98-8	ALPHA ENDOSULFAN	9.30E-03	J	9.30E-03	J	ug/l	OU2-MW18	1/10	1.20E-03 - 5.00E-02	9.30E-03	NA	NA	NA	NA	NA	NO	NSL
319-86-8	DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	6.10E-04	J	6.10E-04	J	ug/l	OU2-MW18	1/10	1.20E-03 - 5.00E-02	6.10E-04	NA	NA	NA	NA	NA	NO	NSL
60-57-1	DIELDRIN	4.50E-03	J	9.20E-03	J	ug/l	OU2-MW05	2/10	1.20E-03 - 1.00E-01	9.20E-03	NA	1.70E-03	C	NA	NA	YES	ASL
58-89-9	GAMMA BHC (LINDANE)	1.30E-03	J	1.30E-03	J	ug/l	OU2-MW18	1/10	1.20E-03 - 5.00E-02	1.30E-03	NA	4.10E-02	C	NA	NA	NO	BSL
72-43-5	METHOXYCHLOR	9.20E-04	J	9.20E-04	J	ug/l	OU2-MW05	1/10	2.40E-03 - 5.00E-01	9.20E-04	NA	3.70E+00	NC	NA	NA	NO	BSL
72-54-8	P,P'-DDD	2.70E-03	J	2.70E-03	J	ug/l	OU2-MW18	1/10	1.20E-03 - 1.00E-01	2.70E-03	NA	3.10E-02	C	NA	NA	NO	BSL
DDT	DDT, Total	2.70E-03		2.70E-03		ug/l	OU2-MW18	1/10	1.20E-03 - 1.00E-01	2.70E-03	NA	NA	NA	NA	NA	NO	NSL
SVOCs																	
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	4.10E-01	J	6.80E-01	J	ug/l	OU2-MW05	3/10	1.90E+00 - 5.00E+00	6.80E-01	NA	5.60E+00	C	NA	NA	NO	BSL
105-60-2	CAPROLACTAM	7.20E-01	J	1.60E+00	J	ug/l	OU2-MW18	3/10	4.70E+00 - 5.00E+00	1.60E+00	NA	9.90E+02	NC	NA	NA	NO	BSL

TABLE 2.12
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tapwater
Exposure Point: Main Plume
Time Frame: 2014-2015

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
84-66-2	DIETHYL PHTHALATE	3.30E-01	J	3.30E-01	J	ug/l	OU2-MW18	1/10	9.40E-01 - 5.00E+00	3.30E-01	NA	1.50E+03	NC	NA	NA	NO	BSL
84-74-2	DI-N-BUTYL PHTHALATE	4.30E-01	J	4.90E-01	J	ug/l	OU2-MW14	2/10	9.40E-01 - 5.00E+00	4.90E-01	NA	9.00E+01	NC	NA	NA	NO	BSL
VOCs																	
67-66-3	CHLOROFORM	3.30E+00	J	3.30E+00	J	ug/l	OU2-MW18	1/13	5.00E+00 - 5.00E+00	3.30E+00	NA	2.20E-01	C	NA	NA	YES	ASL
156-59-2	CIS-1,2-DICHLOROETHYLENE	2.30E-01	J	1.70E+01		ug/l	OU2-MW14	5/13	5.00E+00 - 5.00E+00	1.70E+01	NA	3.60E+00	NC	NA	NA	YES	ASL
127-18-4	TETRACHLOROETHYLENE (PCE)	1.50E+00	J	2.80E+00	J	ug/l	OU2-MW14	2/13	5.00E+00 - 5.00E+00	2.80E+00	NA	4.10E+00	NC	NA	NA	NO	BSL
79-01-6	TRICHLOROETHYLENE (TCE)	5.10E-01	J	1.40E+01		ug/l	OU2-MW14	3/13	5.00E+00 - 5.00E+00	1.40E+01	NA	2.80E-01	NC	NA	NA	YES	ASL

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential tap water were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Antimony evaluated as metallic Antimony.

(6) Arsenic assumed to be inorganic Arsenic.

(7) Cadmium based on diet.

(8) Manganese based on non-diet screening level.

(9) Nickel Soluble Salts used as surrogate for Nickel.

(10) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(11) Vanadium and compounds used as surrogate for vanadium.

(12) Zinc and compounds used as surrogate for Zinc.

TABLE 2.13
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tapwater
Exposure Point: Flintkote
Time Frame: 2003

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Metals																	
57-12-5	CYANIDE	1.50E+01		1.50E+01		ug/l	FS-198-F-MICRO-GW-O	1/13	1.00E+01 - 1.00E+01	1.50E+01	NA	1.50E-01	NC	NA	NA	YES	ASL
7429-90-5	ALUMINUM	1.55E+02		2.26E+05		ug/l	FS-MW02OB-GW-O	13/13	No NDs	2.26E+05	NA	2.00E+03	NC	NA	NA	YES	ASL
7440-36-0	ANTIMONY (5)	6.10E+00		6.53E+01		ug/l	FS-198-F-MICRO-GW-O	7/13	4.10E+00 - 4.10E+00	6.53E+01	NA	7.80E-01	NC	NA	NA	YES	ASL
7440-38-2	ARSENIC (6)	6.00E+00		6.73E+01		ug/l	FS-MW02OB-GW-O	12/13	3.30E+00 - 3.30E+00	6.73E+01	NA	5.20E-02	C	NA	NA	YES	ASL
7440-39-3	BARIUM	5.02E+01		2.57E+03		ug/l	FS-198-F-MICRO-GW-O	13/13	No NDs	2.57E+03	NA	3.80E+02	NC	NA	NA	YES	ASL
7440-41-7	BERYLLIUM (7)	2.50E-01		1.29E+01		ug/l	FS-MW02OB-GW-O	13/13	No NDs	1.29E+01	NA	2.50E+00	NC	NA	NA	YES	ASL
7440-43-9	CADMIUM (8)	8.40E-01		2.25E+01		ug/l	FS-198-F-MICRO-GW-O	6/13	3.00E-01 - 3.00E-01	2.25E+01	NA	9.20E-01	NC	NA	NA	YES	ASL
7440-70-2	CALCIUM	5.37E+04		5.07E+05		ug/l	FS-MW04RK-GW-O	13/13	No NDs	5.07E+05	NA	NA	NA	NA	NA	NO	NSL, EN
7440-47-3	CHROMIUM, TOTAL	3.70E+00		3.37E+02		ug/l	FS-MW02OB-GW-O	11/13	9.00E-01 - 9.00E-01	3.37E+02	NA	2.20E+03	NC	NA	NA	NO	BSL
7440-48-4	COBALT	1.70E+00		1.78E+02		ug/l	FS-MW02OB-GW-O	13/13	No NDs	1.78E+02	NA	6.00E-01	NC	NA	NA	YES	ASL
7440-50-8	COPPER	6.30E+00		6.93E+03		ug/l	FS-198-F-MICRO-GW-O	12/13	1.70E+00 - 1.70E+00	6.93E+03	NA	8.00E+01	NC	NA	NA	YES	ASL
7439-89-6	IRON	4.82E+02		2.51E+05		ug/l	FS-MW02OB-GW-O	13/13	No NDs	2.51E+05	NA	1.40E+03	NC	NA	NA	YES	ASL, EN
7439-92-1	LEAD	3.40E+00	J	5.61E+03		ug/l	FS-198-F-MICRO-GW-O	13/13	No NDs	5.61E+03	NA	1.50E+01	NC	NA	NA	YES	ASL
7439-95-4	MAGNESIUM	2.29E+04		8.97E+04		ug/l	FS-198-F-MICRO-GW-O	13/13	No NDs	8.97E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7439-96-5	MANGANESE (9)	1.01E+02		1.68E+04		ug/l	FS-MW02OB-GW-O	13/13	No NDs	1.68E+04	NA	4.30E+01	NC	NA	NA	YES	ASL
7439-97-6	MERCURY (10)	7.30E-02		9.80E+00		ug/l	FS-198-F-MICRO-GW-O	10/13	5.50E-02 - 5.50E-02	9.80E+00	NA	6.30E-02	NC	NA	NA	YES	ASL
7440-02-0	NICKEL (11)	2.20E+00		4.16E+02		ug/l	FS-MW02OB-GW-O	13/13	No NDs	4.16E+02	NA	3.90E+01	NC	NA	NA	YES	ASL
7440-09-7	POTASSIUM	6.69E+03		5.95E+04		ug/l	FS-MW02OB-GW-O	13/13	No NDs	5.95E+04	NA	NA	NA	NA	NA	NO	NSL, EN
7782-49-2	SELENIUM	4.40E+00		1.82E+01		ug/l	FS-198-F-MICRO-GW-O	9/13	2.80E+00 - 2.80E+00	1.82E+01	NA	1.00E+01	NC	NA	NA	YES	ASL
7440-22-4	SILVER	1.30E+00		2.62E+01		ug/l	FS-198-F-MICRO-GW-O	6/13	7.00E-01 - 7.00E-01	2.62E+01	NA	9.40E+00	NC	NA	NA	YES	ASL
7440-23-5	SODIUM	2.10E+04		7.74E+05		ug/l	FS-MW02OB-GW-O	13/13	No NDs	7.74E+05	NA	NA	NA	NA	NA	NO	NSL, EN
7440-28-0	THALLIUM (12)	4.60E+00		2.37E+01		ug/l	FS-198-F-MICRO-GW-O	9/13	3.80E+00 - 3.80E+00	2.37E+01	NA	2.00E-02	NC	NA	NA	YES	ASL
7440-62-2	VANADIUM (13)	9.30E-01		2.04E+02		ug/l	FS-MW02OB-GW-O	12/13	8.00E-01 - 8.00E-01	2.04E+02	NA	8.60E+00	NC	NA	NA	YES	ASL
7440-66-6	ZINC (14)	6.40E+00		1.68E+04		ug/l	FS-198-F-MICRO-GW-O	13/13	No NDs	1.68E+04	NA	6.00E+02	NC	NA	NA	YES	ASL
PAHs																	
91-20-3	NAPHTHALENE	4.00E-01	J	4.00E-01	J	ug/l	FS-MW01OB-GW-O	1/13	9.00E+00 - 1.40E+01	4.00E-01	NA	1.70E-01	C	NA	NA	YES	ASL
85-01-8	PHENANTHRENE	8.00E-01	J	8.00E-01	J	ug/l	FS-MW01OB-GW-O	1/13	9.00E+00 - 1.40E+01	8.00E-01	NA	NA	NA	NA	NA	NO	NSL
PCBs																	
11097-69-1	PCB-1254 (AROCLOR 1254)	8.10E+00		8.10E+00		ug/l	FS-198-F-MICRO-GW-O	1/13	9.40E-01 - 1.00E+00	8.10E+00	NA	7.80E-03	C	NA	NA	YES	ASL
PCB	PCB, Total (15)	8.10E+00		8.10E+00		ug/l	FS-198-F-MICRO-GW-O	1/13	1.90E+00 - 2.00E+00	8.10E+00	NA	7.80E-03	C	NA	NA	YES	ASL
Pesticides																	
53494-70-5	ENDRIN KETONE (16)	2.10E-02	J	2.10E-02	J	ug/l	FS-MW02OB-GW-O	1/13	9.40E-02 - 1.00E-01	2.10E-02	NA	NA	NA	NA	NA	NO	NSL
72-43-5	METHOXYCHLOR	1.30E-01	J	1.30E-01	J	ug/l	FS-MW02OB-GW-O	1/13	4.70E-01 - 5.00E-01	1.30E-01	NA	3.70E+00	NC	NA	NA	NO	BSL
SVOCs																	
88-06-2	2,4,6-TRICHLOROPHENOL	5.00E-01	J	5.00E-01	J	ug/l	FS-MW01OB-GW-O	1/13	9.00E+00 - 1.40E+01	5.00E-01	NA	1.20E+00	NC	NA	NA	NO	BSL
106-44-5	4-METHYLPHENOL (P-CRESOL)	4.00E-01	J	4.00E-01	J	ug/l	FS-MW01OB-GW-O	1/13	9.00E+00 - 1.40E+01	4.00E-01	NA	1.90E+02	NC	NA	NA	NO	BSL
117-81-7	BIS(2-ETHYLHEXYL) PHTHALATE	3.00E-01	J	3.00E+00	J	ug/l	FS-MW01OB-GW-O	10/13	9.00E+00 - 1.20E+01	3.00E+00	NA	5.60E+00	C	NA	NA	NO	BSL
84-66-2	DIETHYL PHTHALATE	8.00E-01	J	8.00E-01	J	ug/l	FS-MW03RK-GW-O	1/13	9.00E+00 - 1.40E+01	8.00E-01	NA	1.50E+03	NC	NA	NA	NO	BSL
84-74-2	DI-N-BUTYL PHTHALATE	6.00E-01	J	1.00E+00	J	ug/l	FS-MW01RK-GW-O	6/13	9.00E+00 - 1.00E+01	1.00E+01	NA	9.00E+01	NC	NA	NA	NO	BSL
87-86-5	PENTACHLOROPHENOL	2.00E+02		2.00E+02		ug/l	FS-MW01RK-GW-O	1/13	2.40E+01 - 3.10E+01	2.00E+02	NA	4.00E-02	C	NA	NA	YES	ASL
VOCs																	
67-66-3	CHLOROFORM	2.00E+00	J	2.00E+00	J	ug/l	FS-MW01RK-GW-O	1/13	1.00E+01 - 1.00E+01	2.00E+00	NA	2.20E-01	C	NA	NA	YES	ASL

TABLE 2.13
OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Tapwater
Exposure Point: Flintkote
Time Frame: 2003

CAS Number	Chemicals of Potential Concern	Minimum Concentration	Minimum Qualifier (1)	Maximum Concentration	Maximum Qualifier (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value	Screening Toxicity Value (3)	Basis for Toxicity Value C/NC (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

(1) Minimum and Maximum Qualifiers used in the Table include: J - estimated.

(2) The maximum detected concentration was used for screening.

(3) Screening levels represent concentrations associated with residential exposure set at the lower of the risk associated with a cancer risk of 1 x 10-6 or a Hazard Quotient (HQ) HQ = 0.1. The Regional Screening Level Tables for residential tap water were used as Screening Levels. The Screening Levels were updated in November 2015. C = Carcinogenic; NC = Noncarcinogenic.

(4) The Rationale for Selecting or not Selecting Chemicals of Potential Concern included: ASL - Above Screening Levels; BSL - Below Screening Levels; KHC - Known Human Carcinogen; NSL - No Screening Level; EN - Essential Nutrient; and IFD - Infrequent Detection.

(5) Antimony evaluated as metallic Antimony.

(6) Arsenic assumed to be inorganic Arsenic.

(7) Beryllium based on Beryllium and Compounds.

(8) Cadmium based on diet.

(9) Manganese based on non-diet screening level.

(10) Elemental Mercury was used as surrogate for Mercury.

(11) Nickel Soluble Salts used as surrogate for Nickel.

(12) Thallium evaluated based on Thallium Soluble Salts. This screening level is based on a PPRTV Appendix A value which is used for screening only.

(13) Vanadium and compounds used as surrogate for vanadium.

(14) Zinc and compounds used as surrogate for Zinc.

(15) The PCB screening level for the cancer screening level was based on total PCBs (high risk) cancer slope factor.

(16) Endrin used as a surrogate for Endrin Aldehyde and Endrin Ketone .

TABLE 3.1-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface Soil & Sediment
Depth Inverval: 0-2 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
EIGHTEENMILE CREEK CHANNEL	CYANIDE	mg/kg	1.82	3.6	Normal	2.167	95% KM (t) UCL	95% UCL
	ALUMINUM	mg/kg	6,028	14,600	Normal	6,522	95% Student's-t UCL	95% UCL
	ANTIMONY	mg/kg	14.67	166	Lognormal	21.75	95% KM (Chebyshev) UCL	95% UCL
	ARSENIC	mg/kg	11.28	81.2	Gamma	15.62	95% Chebyshev (Mean, Sd) UCL	95% UCL
	BARIUM	mg/kg	337.9	3,900	Not Discernable	673.8	95% KM (Chebyshev) UCL	95% UCL
	CADMIUM	mg/kg	2.899	27.4	Not Discernable	5.626	95% KM (Chebyshev) UCL	95% UCL
	CHROMIUM, HEXAVALENT	mg/kg	0.53	0.53	Single Value	NA	NA	Max Detect
	COBALT	mg/kg	7.758	43.9	Lognormal	8.868	95% CLT UCL	95% UCL
	COPPER	mg/kg	557.8	17,600	Not Discernable	1,159	95% Chebyshev (Mean, Sd) UCL	95% UCL
	IRON	mg/kg	29,989	160,000	Not Discernable	48328	95% Chebyshev (Mean, Sd) UCL	95% UCL
	LEAD	mg/kg	826.6	25,400	Lognormal	1592	95% Chebyshev (Mean, Sd) UCL	Mean[4]
	MANGANESE	mg/kg	703.7	2,630	Gamma	829.1	95% Approximate Gamma UCL	95% UCL
	MERCURY	mg/kg	1.082	10.8	Lognormal	2.741	97.5% KM (Chebyshev) UCL	95% UCL
	NICKEL	mg/kg	42.47	909	Not Discernable	97.79	95% Chebyshev (Mean, Sd) UCL	95% UCL
	SILVER	mg/kg	5.242	80.6	Not Discernable	13.44	97.5% KM (Chebyshev) UCL	95% UCL
	THALLIUM	mg/kg	5.572	21.6	Normal	1.728	95% KM (t) UCL	95% UCL
	ZINC	mg/kg	1,018	23,600	Lognormal	1879	95% Chebyshev (Mean, Sd) UCL	95% UCL
	2-METHYLNAPHTHALENE	mg/kg	0.625	9.2	Lognormal	1.41	95% KM (Chebyshev) UCL	95% UCL
	BENZO(A)ANTHRACENE	mg/kg	4.73	110	Lognormal	21.5	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(A)PYRENE	mg/kg	2.049	20	Lognormal	6.397	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(B)FLUORANTHENE	mg/kg	16.6	160	Lognormal	30.45	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(K)FLUORANTHENE	mg/kg	8.724	200	Lognormal	36.28	99% KM (Chebyshev) UCL	95% UCL

TABLE 3.1-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface Soil & Sediment
Depth Inverval: 0-2 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
EIGHTEENMILE CREEK CHANNEL	CHRYSENE	mg/kg	4.162	92	Lognormal	18.22	97.5% KM (Chebyshev) UCL	95% UCL
	DIBENZ(A,H)ANTHRACENE	mg/kg	0.953	16	Lognormal	3.299	97.5% KM (Chebyshev) UCL	95% UCL
	FLUORANTHENE	mg/kg	10.06	240	Lognormal	46.71	97.5% KM (Chebyshev) UCL	95% UCL
	INDENO(1,2,3-C,D)PYRENE	mg/kg	1.275	12	Lognormal	3.712	97.5% KM (Chebyshev) UCL	95% UCL
	NAPHTHALENE	mg/kg	2.034	36	Lognormal	10.15	99% KM (Chebyshev) UCL	95% UCL
	PYRENE	mg/kg	4.734	74	Lognormal	17.63	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1242	mg/kg	13.65	46	Gamma	1.042	95% GROS Approximate Gamma UCL	95% UCL
	PCB-1248	mg/kg	8.045	280	Lognormal	15.35	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1254	mg/kg	5.343	130	Not Discernable	10.5	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1260	mg/kg	0.275	3.7	Lognormal	0.135	95% KM (BCA) UCL	95% UCL
	BETA BHC	mg/kg	0.357	2	Gamma	0.122	95% GROS Adjusted Gamma UCL	95% UCL
	DIELDRIN	mg/kg	0.0791	0.45	Lognormal	0.122	97.5% KM (Chebyshev) UCL	95% UCL
	HEPTACHLOR	mg/kg	0.189	0.55	Normal	0.0502	95% KM (t) UCL	95% UCL
	HEPTACHLOR EPOXIDE	mg/kg	0.114	0.43	Normal	0.0374	95% KM (t) UCL	95% UCL
	BIS(2-ETHYLHEXYL) PHTHALATE	mg/kg	3.959	50	Lognormal	7.27	95% KM (Chebyshev) UCL	95% UCL
	DIBENZOFURAN	mg/kg	9.037	140	Not Discernable	38.26	99% KM (Chebyshev) UCL	95% UCL

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

NA: Not Applicable or Not Available

TABLE 3.2-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Tissue (filets)

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
EIGHTEENMILE CREEK CHANNEL	ARSENIC	mg/kg	0.119	0.21	Normal	0.165	95% Student's-t UCL	95% UCL
	CHROMIUM	mg/kg	0.343	1.1	Not Discernable	0.787	95% Chebyshev (Mean, Sd) UCL	95% UCL
	COPPER	mg/kg	1.739	6.8	Not Discernable	37.88	95% Hall's Bootstrap UCL	Max Detect
	MERCURY	mg/kg	0.275	0.5	Normal	0.372	95% Student's-t UCL	95% UCL
	SELENIUM	mg/kg	0.402	0.56	Normal	0.484	95% Student's-t UCL	95% UCL
	VANADIUM	mg/kg	0.359	0.44	Normal	0.403	95% Student's-t UCL	95% UCL
	PCB-1254	mg/kg	0.105	0.46	Gamma	0.242	95% Adjusted Gamma UCL	95% UCL
	PCB-1260	mg/kg	0.046	0.15	Normal	0.0697	95% Student's-t UCL	95% UCL
	ALDRIN	mg/kg	0.000167	0.00039	Normal	0.000249	95% KM (t) UCL	95% UCL
	DIELDRIN	mg/kg	0.00138	0.0074	Gamma	0.00344	95% Adjusted Gamma UCL	Max Detect
	ENDRIN	mg/kg	0.0108	0.066	Lognormal	0.0377	95% Chebyshev (Mean, Sd) UCL	95% UCL
	HEPTACHLOR	mg/kg	0.00064	0.0016	Normal	0.000637	95% KM (t) UCL	95% UCL
	HEPTACHLOR EPOXIDE	mg/kg	0.00289	0.016	Gamma	0.00755	95% Adjusted Gamma UCL	95% UCL
	P,P'-DDE	mg/kg	0.0069	0.018	Normal	0.0102	95% Student's-t UCL	95% UCL
	P,P'-DDT	mg/kg	0.0186	0.12	Lognormal	0.0682	95% Chebyshev (Mean, Sd) UCL	95% UCL
	PENTACHLOROPHENOL	mg/kg	0.05	0.05	Single Sample	NA	NA	Max Detect

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

NA: Not Applicable or Not Available

TABLE 3.3-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
EIGHTEENMILE CREEK CHANNEL	ARSENIC	µg/l	0.36	0.36	Single Value	NA	NA	Max Detect
	COBALT	µg/l	0.483	0.91	Normal	0.82	95% Student's-t UCL	95% UCL
	MANGANESE	µg/l	40.25	50	Normal	57.18	95% Student's-t UCL	Max Detect
	THALLIUM	µg/l	0.156	0.22	Not Discernable	0.307	95% KM (t) UCL	Max Detect
	BIS(2-ETHYLHEXYL) PHTHALATE	µg/l	41.3	120	Normal	105.1	95% KM (t) UCL	95% UCL

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

NA: Not Applicable or Not Available

TABLE 3.4-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface Soil & Sediment
Depth Interval: 0-2 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
FLINTKOTE	CYANIDE	mg/kg	1.843	3.6	Normal	1.94	95% KM (t) UCL	95% UCL
	ALUMINUM	mg/kg	7,062	14,600	Normal	7,876	95% Student's-t UCL	95% UCL
	ANTIMONY	mg/kg	21.41	149	Lognormal	85.32	99% KM (Chebyshev) UCL	95% UCL
	ARSENIC	mg/kg	12.17	59.6	Not Discernable	18.61	95% Chebyshev (Mean, Sd) UCL	95% UCL
	BARIUM	mg/kg	352.7	2,440	Not Discernable	946	97.5% KM (Chebyshev) UCL	95% UCL
	CADMIUM	mg/kg	4.408	37.9	Not Discernable	18.82	99% KM (Chebyshev) UCL	95% UCL
	COBALT	mg/kg	10.42	34.9	Lognormal	12.53	95% Student's-t UCL	95% UCL
	COPPER	mg/kg	1,998	51,000	Not Discernable	5,639	95% Chebyshev (Mean, Sd) UCL	95% UCL
	IRON	mg/kg	43,599	231,000	Not Discernable	91,240	95% Chebyshev (Mean, Sd) UCL	95% UCL
	LEAD	mg/kg	1004	8600	Lognormal	1994	95% Chebyshev (Mean, Sd) UCL	Mean[4]
	MANGANESE	mg/kg	852.3	2,360	Gamma	1,041	95% Adjusted Gamma UCL	95% UCL
	MERCURY	mg/kg	1.804	10.8	Gamma	3	95% Adjusted Gamma UCL	95% UCL
	NICKEL	mg/kg	92.03	909	Lognormal	246.5	95% Chebyshev (Mean, Sd) UCL	95% UCL
	THALLIUM	mg/kg	9.426	32.7	Gamma	10.49	95% GROS Adjusted Gamma UCL	95% UCL
	VANADIUM	mg/kg	20.98	103	Not Discernable	26.31	95% Student's-t UCL	95% UCL
	ZINC	mg/kg	1,990	23,600	Lognormal	4,441	95% Chebyshev (Mean, Sd) UCL	95% UCL
	2-METHYLNAPHTHALENE	mg/kg	1.457	9	Lognormal	4	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(A)ANTHRACENE	mg/kg	38.11	110	Lognormal	77.05	99% Chebyshev (Mean, Sd) UCL	95% UCL
	BENZO(A)PYRENE	mg/kg	3.048	20	Gamma	5.92	95% GROS Adjusted Gamma UCL	95% UCL
	BENZO(B)FLUORANTHENE	mg/kg	14.72	160	Lognormal	107.4	99% Chebyshev (Mean, Sd) UCL	95% UCL
	BENZO(K)FLUORANTHENE	mg/kg	19.6	200	Lognormal	133	99% KM (Chebyshev) UCL	95% UCL
	CHRYSENE	mg/kg	10.94	92	Lognormal	65.3	99% Chebyshev (Mean, Sd) UCL	95% UCL

TABLE 3.4-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface Soil & Sediment
Depth Interval: 0-2 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
FLINTKOTE	DIBENZ(A,H)ANTHRACENE	mg/kg	2.102	16	Gamma	4.19	95% GROS Adjusted Gamma UCL	95% UCL
	FLUORANTHENE	mg/kg	24.66	240	Lognormal	167.8	99% Chebyshev (Mean, Sd) UCL	95% UCL
	INDENO(1,2,3-C,D)PYRENE	mg/kg	1.73	12	Gamma	2.96	95% GROS Adjusted Gamma UCL	95% UCL
	NAPHTHALENE	mg/kg	5.287	36	Lognormal	24.26	99% KM (Chebyshev) UCL	95% UCL
	PYRENE	mg/kg	8.419	74	Gamma	18.02	95% Adjusted Gamma UCL	95% UCL
	PCB-1242	mg/kg	17.02	46	Normal	2.871	95% KM (t) UCL	95% UCL
	PCB-1248	mg/kg	14.02	280	Lognormal	33.23	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1254	mg/kg	6.681	110	Gamma	9.839	95% Approximate Gamma KM-UCL	95% UCL
	PCB-1260	mg/kg	0.339	1.5	Gamma	0.14	95% Approximate Gamma KM-UCL	95% UCL
	DIELDRIN	mg/kg	0.0985	0.45	Lognormal	0.222	97.5% KM (Chebyshev) UCL	95% UCL
	BIS(2-ETHYLHEXYL) PHTHALATE	mg/kg	10.28	50	Lognormal	45.03	99% KM (Chebyshev) UCL	95% UCL
	DIBENZOFURAN	mg/kg	16.81	140	Lognormal	89.07	99% KM (Chebyshev) UCL	95% UCL

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

TABLE 3.5-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface and Subsurface Soil & Sediment
Depth Interval: 0-10 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
FLINTKOTE	CYANIDE	mg/kg	3.355	9.3	Normal	2.634	95% KM (t) UCL	95% UCL
	ALUMINUM	mg/kg	6,723	14,600	Normal	7,255	95% Student's-t UCL	95% UCL
	ANTIMONY	mg/kg	80.66	3,000	Not Discernable	328.9	97.5% KM (Chebyshev) UCL	95% UCL
	ARSENIC	mg/kg	15.75	150	Lognormal	19.17	95% CLT UCL	95% UCL
	BARIUM	mg/kg	292.6	2,440	Not Discernable	540.8	95% KM (Chebyshev) UCL	95% UCL
	CADMIUM	mg/kg	5.223	59	Lognormal	11.99	97.5% KM (Chebyshev) UCL	95% UCL
	CHROMIUM, HEXAVALENT	mg/kg	0.52	0.52	NA	NA	Single Detected Value	Max Det
	COBALT	mg/kg	10.61	59	Not Discernable	14.96	95% Chebyshev (Mean, Sd) UCL	95% UCL
	COPPER	mg/kg	3,612	170,000	Not Discernable	10,756	95% Chebyshev (Mean, Sd) UCL	95% UCL
	IRON	mg/kg	43,746	330,000	Not Discernable	77,847	95% Chebyshev (Mean, Sd) UCL	95% UCL
	LEAD	mg/kg	1,355	46,000	Lognormal	2,063	95% CLT UCL	Mean[4]
	MANGANESE	mg/kg	710.9	2,360	Gamma	829.3	95% Approximate Gamma UCL	95% UCL
	MERCURY	mg/kg	2.63	23	Lognormal	5.936	97.5% KM (Chebyshev) UCL	95% UCL
	NICKEL	mg/kg	118.8	3,900	Not Discernable	371.3	95% Chebyshev (Mean, Sd) UCL	95% UCL
	SILVER	mg/kg	7.296	210	Lognormal	24.41	97.5% KM (Chebyshev) UCL	95% UCL
	THALLIUM	mg/kg	5.729	32.9	Gamma	5.265	95% GROS Approximate Gamma UCL	95% UCL
	VANADIUM	mg/kg	19.61	103	Not Discernable	21.98	95% Student's-t UCL	95% UCL
	ZINC	mg/kg	2,444	60,000	Lognormal	5,500	95% Chebyshev (Mean, Sd) UCL	95% UCL
	2-METHYLNAPHTHALENE	mg/kg	1.015	9.2	Lognormal	1.966	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(A)ANTHRACENE	mg/kg	5.97	110	Lognormal	19.16	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(A)PYRENE	mg/kg	2.19	24	Gamma	2.771	95% GROS Approximate Gamma UCL	95% UCL
	BENZO(B)FLUORANTHENE	mg/kg	6.682	160	Lognormal	25.04	97.5% KM (Chebyshev) UCL	95% UCL

TABLE 3.5-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface and Subsurface Soil & Sediment
Depth Interval: 0-10 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
FLINTKOTE	BENZO(K)FLUORANTHENE	mg/kg	8.068	200	Not Discernable	29.85	97.5% KM (Chebyshev) UCL	95% UCL
	CHRYSENE	mg/kg	5.553	92	Lognormal	16.74	97.5% KM (Chebyshev) UCL	95% UCL
	DIBENZ(A,H)ANTHRACENE	mg/kg	1.129	16	Not Discernable	2.192	95% KM (Chebyshev) UCL	95% UCL
	FLUORANTHENE	mg/kg	12.04	240	Lognormal	59.92	99% KM (Chebyshev) UCL	95% UCL
	INDENO(1,2,3-C,D)PYRENE	mg/kg	1.266	12	Lognormal	2.379	95% KM (Chebyshev) UCL	95% UCL
	NAPHTHALENE	mg/kg	1.948	36	Lognormal	5.55	97.5% KM (Chebyshev) UCL	95% UCL
	PYRENE	mg/kg	5.176	74	Lognormal	15.46	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1242	mg/kg	8.841	46	Lognormal	3.041	95% KM (Chebyshev) UCL	95% UCL
	PCB-1248	mg/kg	14.34	280	Lognormal	21.55	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1254	mg/kg	6.385	110	Lognormal	9.833	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1260	mg/kg	0.313	2.6	Gamma	0.158	95% Approximate Gamma KM-UCL	95% UCL
	PCB-1262	mg/kg	0.194	0.53	Normal	0.0347	95% KM (t) UCL	95% UCL
	DIELDRIN	mg/kg	0.0438	0.45	Lognormal	0.0534	95% KM (Chebyshev) UCL	95% UCL
	HEPTACHLOR EPOXIDE	mg/kg	0.0223	0.086	Normal	0.00664	95% KM (t) UCL	95% UCL
	BIS(2-ETHYLHEXYL) PHTHALATE	mg/kg	4.823	50	Lognormal	15.55	99% KM (Chebyshev) UCL	95% UCL
	DIBENZOFURAN	mg/kg	6.9	140	Lognormal	29.77	99% KM (Chebyshev) UCL	95% UCL

TABLE 3.5-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface and Subsurface Soil & Sediment
Depth Interval: 0-10 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

NA: Not Applicable or Not Available

TABLE 3.6-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface Soil & Sediment
Depth Interval: 0-2 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
UPSON PARK	ALUMINUM	mg/kg	6,160	15,900	Gamma	7,087	95% Adjusted Gamma UCL	95% UCL
	ANTIMONY	mg/kg	32.45	166	Gamma	24.51	95% GROS Adjusted Gamma UCL	95% UCL
	ARSENIC	mg/kg	13.65	81.2	Not Discernable	22.05	95% Chebyshev (Mean, Sd) UCL	95% UCL
	BARIUM	mg/kg	377.5	3,900	Not Discernable	916.5	95% Chebyshev (Mean, Sd) UCL	95% UCL
	CADMIUM	mg/kg	3.641	27.4	Lognormal	7.94	95% KM (Chebyshev) UCL	95% UCL
	COBALT	mg/kg	8.516	43.9	Lognormal	12.78	95% KM (Chebyshev) UCL	95% UCL
	COPPER	mg/kg	301.4	5510	Not Discernable	773.9	95% Chebyshev (Mean, Sd) UCL	95% UCL
	IRON	mg/kg	28,792	160,000	Not Discernable	53,321	95% Chebyshev (Mean, Sd) UCL	95% UCL
	LEAD	mg/kg	459.8	3,480	Lognormal	915.9	95% Chebyshev (Mean, Sd) UCL	Mean[4]
	MANGANESE	mg/kg	625.6	2,630	Not Discernable	987.4	95% Chebyshev (Mean, Sd) UCL	95% UCL
	MERCURY	mg/kg	0.892	10.8	Lognormal	2.36	95% Chebyshev (Mean, Sd) UCL	95% UCL
	SILVER	mg/kg	13.79	80.6	Lognormal	33.13	99% KM (Chebyshev) UCL	95% UCL
	VANADIUM	mg/kg	16.69	62.1	Lognormal	19.63	95% Student's-t UCL	95% UCL
	ZINC	mg/kg	791.1	7,870	Lognormal	1,147	95% CLT UCL	95% UCL
	BENZO(A)ANTHRACENE	mg/kg	1.427	17	Lognormal	5.054	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(A)PYRENE	mg/kg	1.295	15	Lognormal	4.559	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(B)FLUORANTHENE	mg/kg	1.781	18	Lognormal	5.78	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(K)FLUORANTHENE	mg/kg	0.709	7.3	Lognormal	2.356	97.5% KM (Chebyshev) UCL	95% UCL
	CHRYSENE	mg/kg	1.432	16	Lognormal	4.902	97.5% KM (Chebyshev) UCL	95% UCL
	DIBENZ(A,H)ANTHRACENE	mg/kg	0.196	1.7	Lognormal	0.605	97.5% KM (Chebyshev) UCL	95% UCL
	INDENO(1,2,3-C,D)PYRENE	mg/kg	0.649	7.2	Lognormal	2.282	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1248	mg/kg	14.16	250	Not Discernable	30.8	97.5% KM (Chebyshev) UCL	95% UCL

TABLE 3.6-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface Soil & Sediment
Depth Interval: 0-2 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
UPSON PARK	PCB-1254	mg/kg	9.44	140	Not Discernable	21.06	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1260	mg/kg	0.17	1.6	Lognormal	0.117	95% KM (BCA) UCL	95% UCL
	HEPTACHLOR	mg/kg	0.214	0.85	Normal	0.0876	95% KM (t) UCL	95% UCL
	P,P'-DDE	mg/kg	0.157	2.9	Not Discernable	0.737	97.5% KM (Chebyshev) UCL	95% UCL
	P,P'-DDT	mg/kg	0.189	3.8	Not Discernable	0.999	97.5% KM (Chebyshev) UCL	95% UCL

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

TABLE 3.7-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment
Depth Interval: 0-10 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
UPSON PARK	ALUMINUM	mg/kg	5,842	15,900	Normal	6,436	95% Student's-t UCL	95% UCL
	ANTIMONY	mg/kg	24.53	166	Gamma	19.19	95% Approximate Gamma KM-UCL	95% UCL
	ARSENIC	mg/kg	12.24	81.2	Not Discernable	18.32	95% Chebyshev (Mean, Sd) UCL	95% UCL
	BARIUM	mg/kg	416.8	3900	Not Discernable	879	95% Chebyshev (Mean, Sd) UCL	95% UCL
	CADMIUM	mg/kg	3.446	27.4	Lognormal	8.407	97.5% KM (Chebyshev) UCL	95% UCL
	COBALT	mg/kg	8.008	43.9	Lognormal	11.33	95% KM (Chebyshev) UCL	95% UCL
	COPPER	mg/kg	311.4	5510	Not Discernable	680.8	95% Chebyshev (Mean, Sd) UCL	95% UCL
	IRON	mg/kg	32,329	246,000	Not Discernable	57,356	95% Chebyshev (Mean, Sd) UCL	95% UCL
	LEAD	mg/kg	419.1	3,480	Lognormal	542.7	95% CLT UCL	Mean[4]
	MANGANESE	mg/kg	716.8	3,350	Not Discernable	1,117	95% Chebyshev (Mean, Sd) UCL	95% UCL
	MERCURY	mg/kg	0.998	21.5	Not Discernable	3.436	97.5% KM (Chebyshev) UCL	95% UCL
	SILVER	mg/kg	15.61	80.6	Lognormal	21.79	97.5% KM (Chebyshev) UCL	95% UCL
	THALLIUM	mg/kg	1.3	1.6	Insufficient Data	NA	NA	Max Detect
	VANADIUM	mg/kg	15.15	62.1	Lognormal	17.23	95% Student's-t UCL	95% UCL
	ZINC	mg/kg	741.3	7,870	Lognormal	1003	95% CLT UCL	95% UCL
	BENZO(A)ANTHRACENE	mg/kg	1.427	17	Lognormal	4.913	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(A)PYRENE	mg/kg	1.295	15	Lognormal	4.436	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(B)FLUORANTHENE	mg/kg	1.781	18	Lognormal	5.623	97.5% KM (Chebyshev) UCL	95% UCL
	BENZO(K)FLUORANTHENE	mg/kg	0.709	7.3	Lognormal	2.288	97.5% KM (Chebyshev) UCL	95% UCL
	CHRYSENE	mg/kg	1.432	16	Lognormal	4.768	97.5% KM (Chebyshev) UCL	95% UCL
	DIBENZ(A,H)ANTHRACENE	mg/kg	0.196	1.7	Lognormal	0.592	97.5% KM (Chebyshev) UCL	95% UCL
	INDENO(1,2,3-C,D)PYRENE	mg/kg	0.649	7.2	Lognormal	2.219	97.5% KM (Chebyshev) UCL	95% UCL

TABLE 3.7-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment
Depth Interval: 0-10 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
UPSON PARK	PCB-1248	mg/kg	10.87	250	Not Discernable	18.67	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1254	mg/kg	6.044	140	Not Discernable	12.91	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1260	mg/kg	6.739	180	Lognormal	13.49	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1268	mg/kg	2.071	26	Lognormal	2.383	97.5% KM (Chebyshev) UCL	95% UCL
	HEPTACHLOR	mg/kg	0.214	0.85	Normal	0.0876	95% KM (t) UCL	95% UCL
	P,P'-DDE	mg/kg	0.157	2.9	Not Discernable	0.737	97.5% KM (Chebyshev) UCL	95% UCL
	P,P'-DDT	mg/kg	0.189	3.8	Not Discernable	0.999	97.5% KM (Chebyshev) UCL	95% UCL

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

NA: Not Applicable or Not Available

TABLE 3.8-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface Soil & Sediment
Depth Interval: 0-2 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
WHITE TRANSPORTATION	ALUMINUM	mg/kg	4,086	12,300	Gamma	5,586	95% Adjusted Gamma UCL	95% UCL
	ANTIMONY	mg/kg	1.873	5.5	Normal	1.827	95% KM (t) UCL	95% UCL
	ARSENIC	mg/kg	9.643	30.3	Normal	12.02	95% Student's-t UCL	95% UCL
	CADMIUM	mg/kg	1.862	8.3	Gamma	3.66	95% GROS Adjusted Gamma UCL	95% UCL
	COBALT	mg/kg	5.776	9.4	Normal	6.622	95% Student's-t UCL	95% UCL
	IRON	mg/kg	24,913	74,600	Gamma	35,148	95% Adjusted Gamma UCL	95% UCL
	LEAD	mg/kg	297.1	3,750	Lognormal	994.9	95% Chebyshev (Mean, Sd) UCL	Mean[4]
	MANGANESE	mg/kg	386.5	1,590	Gamma	623.1	95% Adjusted Gamma UCL	95% UCL
	BENZO(A)ANTHRACENE	mg/kg	0.284	1.2	Gamma	0.524	95% GROS Adjusted Gamma UCL	95% UCL
	BENZO(A)PYRENE	mg/kg	0.274	1.1	Normal	0.426	95% KM (t) UCL	95% UCL
	BENZO(B)FLUORANTHENE	mg/kg	0.521	2	Gamma	0.867	95% GROS Adjusted Gamma UCL	95% UCL
	DIBENZ(A,H)ANTHRACENE	mg/kg	0.063	0.18	Normal	0.101	95% KM (t) UCL	95% UCL
	INDENO(1,2,3-C,D)PYRENE	mg/kg	0.176	0.51	Normal	0.249	95% KM (t) UCL	95% UCL
	PCB-1254	mg/kg	0.0466	0.13	Normal	0.0396	95% KM (t) UCL	95% UCL
	PCB-1260	mg/kg	0.154	0.67	Gamma	0.158	95% GROS Adjusted Gamma UCL	95% UCL

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

TABLE 3.9-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment
Depth Interval: 0-10 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
WHITE TRANSPORTATION	ALUMINUM	mg/kg	4,650	12,300	Normal	5,508	95% Student's-t UCL	95% UCL
	ANTIMONY	mg/kg	1.884	5.5	Gamma	1.892	95% GROS Adjusted Gamma UCL	95% UCL
	ARSENIC	mg/kg	9.031	30.3	Normal	10.6	95% Student's-t UCL	95% UCL
	CADMIUM	mg/kg	1.46	8.3	Lognormal	4.093	97.5% KM (Chebyshev) UCL	95% UCL
	COBALT	mg/kg	5.861	9.9	Normal	6.539	95% Student's-t UCL	95% UCL
	COPPER	mg/kg	68.24	361	Gamma	91.88	95% Adjusted Gamma UCL	95% UCL
	IRON	mg/kg	21,286	74,600	Gamma	26,382	95% Adjusted Gamma UCL	95% UCL
	LEAD	mg/kg	333.1	3750	Lognormal	871.6	95% Chebyshev (Mean, Sd) UCL	Mean[4]
	MANGANESE	mg/kg	548.9	2490	Gamma	812.2	95% Adjusted Gamma UCL	95% UCL
	THALLIUM	mg/kg	0.88	0.88	Insufficient Data	NA	Single Detected Value	Max Detect
	BENZO(A)ANTHRACENE	mg/kg	0.242	1.2	Gamma	0.423	95% GROS Adjusted Gamma UCL	95% UCL
	BENZO(A)PYRENE	mg/kg	0.249	1.1	Normal	0.362	95% KM (t) UCL	95% UCL
	BENZO(B)FLUORANTHENE	mg/kg	0.456	2	Gamma	0.676	95% GROS Adjusted Gamma UCL	95% UCL
	DIBENZ(A,H)ANTHRACENE	mg/kg	0.0528	0.18	Normal	0.0838	95% KM (t) UCL	95% UCL
	INDENO(1,2,3-C,D)PYRENE	mg/kg	0.155	0.51	Normal	0.213	95% KM (t) UCL	95% UCL
	PCB-1248	mg/kg	0.239	1.5	Lognormal	0.33	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1254	mg/kg	0.253	2.3	Lognormal	0.496	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1260	mg/kg	0.167	0.67	Gamma	0.113	95% GROS Adjusted Gamma UCL	95% UCL

TABLE 3.9-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment
Depth Interval: 0-10 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

NA: Not Applicable or Not Available

TABLE 3.10-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface Soil & Sediment
Depth Interval: 0-2 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
UNITED PAPERBOARD	ALUMINUM	mg/kg	5,244	8,200	Normal	5,884	95% Student's-t UCL	95% UCL
	ANTIMONY	mg/kg	4.906	17.6	Gamma	6.805	95% GROS Adjusted Gamma UCL	95% UCL
	ARSENIC	mg/kg	10.26	66	Not Discernable	16.77	95% Chebyshev (Mean, Sd) UCL	95% UCL
	CADMIUM	mg/kg	1.352	12.7	Lognormal	3.289	95% KM (Chebyshev) UCL	95% UCL
	CHROMIUM, HEXAVALENT	mg/kg	0.53	0.53	Single Value	NA	NA	Max Detect
	COBALT	mg/kg	5.53	8.8	Normal	6.208	95% Student's-t UCL	95% UCL
	COPPER	mg/kg	199.1	1,410	Lognormal	258.8	95% CLT UCL	95% UCL
	IRON	mg/kg	20,086	80,500	Not Discernable	33,135	95% Chebyshev (Mean, Sd) UCL	95% UCL
	LEAD	mg/kg	933.7	25,400	Lognormal	1,622	95% CLT UCL	Mean[4]
	MANGANESE	mg/kg	583.1	1810	Normal	707.4	95% Student's-t UCL	95% UCL
	THALLIUM	mg/kg	0.7	1.2	Not Discernable, too few values	NA	NA	Max Detect
	ZINC	mg/kg	515.3	3,180	Lognormal	671.4	95% CLT UCL	95% UCL
	BENZO(A)ANTHRACENE	mg/kg	3.127	26	Gamma	6.532	95% GROS Adjusted Gamma UCL	95% UCL
	BENZO(A)PYRENE	mg/kg	2.952	20	Gamma	5.741	95% GROS Adjusted Gamma UCL	95% UCL
	BENZO(B)FLUORANTHENE	mg/kg	4.083	26	Gamma	7.875	95% GROS Adjusted Gamma UCL	95% UCL
	BENZO(K)FLUORANTHENE	mg/kg	1.597	7.3	Gamma	2.683	95% GROS Adjusted Gamma UCL	95% UCL
	CHRYSENE	mg/kg	3.194	23	Gamma	6.316	95% GROS Adjusted Gamma UCL	95% UCL
	DIBENZ(A,H)ANTHRACENE	mg/kg	0.597	3.8	Gamma	0.959	95% GROS Adjusted Gamma UCL	95% UCL
	INDENO(1,2,3-C,D)PYRENE	mg/kg	1.632	11	Gamma	3.151	95% GROS Adjusted Gamma UCL	95% UCL
	PCB-1242	mg/kg	9.425	33	Normal	1.663	95% KM (t) UCL	95% UCL
	PCB-1248	mg/kg	6.179	71	Lognormal	13.09	97.5% KM (Chebyshev) UCL	95% UCL

TABLE 3.10-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface Soil & Sediment
Depth Interval: 0-2 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
UNITED PAPERBOARD	PCB-1254	mg/kg	4.674	130	Lognormal	16.28	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1260	mg/kg	0.364	3.7	Lognormal	0.264	95% KM (BCA) UCL	95% UCL
	BETA BHC	mg/kg	0.685	2	Normal	0.365	95% KM (t) UCL	95% UCL
	DIELDRIN	mg/kg	0.0551	0.22	Gamma	0.0538	95% GROS Adjusted Gamma UCL	95% UCL
	HEPTACHLOR	mg/kg	0.277	0.55	Not Discernable, too few values	0.474	99% KM (Chebyshev) UCL	95% UCL
	HEPTACHLOR EPOXIDE	mg/kg	0.144	0.43	Normal	0.079	95% KM (t) UCL	95% UCL

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

NA: Not Applicable or Not Available

TABLE 3.11-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment
Depth Interval: 0-10 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
UNITED PAPERBOARD	ALUMINUM	mg/kg	5,851	12,600	Normal	6,415	95% Student's-t UCL	95% UCL
	ANTIMONY	mg/kg	40.09	980	Not Discernable	146.7	97.5% KM (Chebyshev) UCL	95% UCL
	ARSENIC	mg/kg	13.37	123	Lognormal	16.33	95% CLT UCL	95% UCL
	CADMIUM	mg/kg	1.587	12.7	Lognormal	2.714	95% KM (Chebyshev) UCL	95% UCL
	CHROMIUM, HEXAVALENT	mg/kg	0.53	0.53	Single Value	NA	NA	Max Detect
	COBALT	mg/kg	6.517	16.7	Normal	7.282	95% Student's-t UCL	95% UCL
	COPPER	mg/kg	831.1	54,900	Not Discernable	3,543	95% Chebyshev (Mean, Sd) UCL	95% UCL
	IRON	mg/kg	26,163	234,000	Lognormal	33,721	95% CLT UCL	95% UCL
	LEAD	mg/kg	1015	25400	Lognormal	1542	95% CLT UCL	Mean[4]
	MANGANESE	mg/kg	597.2	2,080	Normal	698.1	95% Student's-t UCL	95% UCL
	MERCURY	mg/kg	0.323	2.9	Gamma	0.416	95% GROS Approximate Gamma UCL	95% UCL
	THALLIUM	mg/kg	0.793	1.2	Not Discernable, too few samples	NA	NA	Max Detect
	VANADIUM	mg/kg	16.71	59.9	Not Discernable	18.76	95% Student's-t UCL	95% UCL
	ZINC	mg/kg	688.9	21400	Lognormal	1095	95% CLT UCL	95% UCL
	BENZO(A)ANTHRACENE	mg/kg	3.076	26	Gamma	5.382	95% GROS Adjusted Gamma UCL	95% UCL
	BENZO(A)PYRENE	mg/kg	2.835	20	Gamma	4.807	95% GROS Adjusted Gamma UCL	95% UCL
	BENZO(B)FLUORANTHENE	mg/kg	3.699	26	Gamma	6.439	95% GROS Adjusted Gamma UCL	95% UCL
	BENZO(K)FLUORANTHENE	mg/kg	1.485	7.3	Gamma	2.071	95% GROS Adjusted Gamma UCL	95% UCL
	CHRYSENE	mg/kg	3.07	23	Gamma	5.247	95% GROS Adjusted Gamma UCL	95% UCL
	DIBENZ(A,H)ANTHRACENE	mg/kg	0.639	3.8	Gamma	0.852	95% GROS Adjusted Gamma UCL	95% UCL
	INDENO(1,2,3-C,D)PYRENE	mg/kg	1.605	11	Gamma	2.641	95% GROS Adjusted Gamma UCL	95% UCL
	PCB-1242	mg/kg	9.425	33	Normal	1.078	95% KM (t) UCL	95% UCL

TABLE 3.11-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil & Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment
Depth Interval: 0-10 feet bgs

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
UNITED	PCB-1248	mg/kg	17.43	550	Lognormal	44.98	97.5% KM (Chebyshev) UCL	95% UCL
PAPERBOARD	PCB-1254	mg/kg	4.047	130	Lognormal	10.88	97.5% KM (Chebyshev) UCL	95% UCL
	PCB-1260	mg/kg	4.558	76	Not Discernable	4.406	95% KM (Chebyshev) UCL	95% UCL
	BETA BHC	mg/kg	0.685	2	Normal	0.365	95% KM (t) UCL	95% UCL
	DIELDRIN	mg/kg	0.0551	0.22	Gamma	0.0538	95% GROS Adjusted Gamma UCL	95% UCL
	HEPTACHLOR	mg/kg	0.277	0.55	Not Discernable, too few samples	0.474	99% KM (Chebyshev) UCL	95% UCL
	HEPTACHLOR EPOXIDE	mg/kg	0.144	0.43	Not Discernable, too few samples	0.079	95% KM (t) UCL	Max Detect

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

NA: Not Applicable or Not Available

TABLE 3.12-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Tapwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
OU2 Sitewide 2014-2015	ANTIMONY	ug/L	3.80	5.2	Insufficient Data	NA	Maximum Detected Value	Max Detect
	ARSENIC	ug/L	3.52	5.6	Normal	3.33	95% KM (t) UCL	ProUCL v5.0
	COBALT	ug/L	1.00	3.7	Gamma	1.44	95% KM (BCA) UCL	ProUCL v5.0
	IRON	ug/L	1476	5470	Gamma	3753	95% KM (Chebyshev) UCL	ProUCL v5.0
	MANGANESE	ug/L	181	886	Gamma	829.4	95% Adjusted Gamma UCL	ProUCL v5.0
	SELENIUM	ug/L	6.71	16.8	Normal	8.54	95% KM (t) UCL	ProUCL v5.0
	THALLIUM	ug/L	1.00	1.0	Insufficient Data	NA	Single Detected Value	Max Detect
	BENZO(A)ANTHRACENE	ug/L	0.200	0.20	Insufficient Data	NA	Single Detected Value	Max Detect
	BENZO(A)PYRENE	ug/L	0.150	0.15	Insufficient Data	NA	Single Detected Value	Max Detect
	BENZO(B)FLUORANTHENE	ug/L	0.270	0.27	Insufficient Data	NA	Single Detected Value	Max Detect
	DIBENZ(A,H)ANTHRACENE	ug/L	0.310	0.31	Insufficient Data	NA	Single Detected Value	Max Detect
	INDENO(1,2,3-C,D)PYRENE	ug/L	0.270	0.27	Insufficient Data	NA	Single Detected Value	Max Detect
	DIELDRIN	ug/L	0.0069	0.01	Insufficient Data	NA	Maximum Detected Value	Max Detect
	CHLOROFORM	ug/L	3.30	3.3	Insufficient Data	NA	Single Detected Value	Max Detect
	CIS-1,2-DICHLOROETHYLENE	ug/L	9.89	17	Normal	7.34	95% KM (t) UCL	ProUCL v5.0
	TRICHLOROETHYLENE (TCE)	ug/L	7.97	14	Normal	4.74	95% KM (t) UCL	ProUCL v5.0

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

NA: Not Applicable or Not Available

TABLE 3.13-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Tapwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)
FLINTKOTE	ALUMINUM	ug/L	35672	226000	Gamma	93863	95% Adjusted Gamma UCL	ProUCL v5.0
	ANTIMONY	ug/L	23.6	65.3	Normal	23.5	95% KM (t) UCL	ProUCL v5.0
	ARSENIC	ug/L	30.4	67.3	Normal	40.2	95% KM (t) UCL	ProUCL v5.0
	BARIUM	ug/L	705	2570	Gamma	1348	95% Adjusted Gamma UCL	ProUCL v5.0
	BERYLLIUM	ug/L	2.30	12.9	Gamma	4.49	95% Adjusted Gamma UCL	ProUCL v5.0
	CADMIUM	ug/L	6.99	22.5	Gamma	11.0	95% Adjusted Gamma KM-UCL	ProUCL v5.0
	COBALT	ug/L	35.5	178	Gamma	76.4	95% Adjusted Gamma UCL	ProUCL v5.0
	COPPER	ug/L	1165	6930	Gamma	3437	95% Adjusted Gamma KM-UCL	ProUCL v5.0
	CYANIDE	ug/L	15.0	15.0	Not Discernable	NA	Single Detected Value	Max Detect
	IRON	ug/L	69325	251000	Normal	107041	95% Student's-t UCL	ProUCL v5.0
	LEAD	ug/L	1071	5610	Gamma	3811	Mean	IEUBK
	MANGANESE	ug/L	5081	16800	Normal	7462	95% Student's-t UCL	ProUCL v5.0
	MERCURY	ug/L	3.00	9.80	Normal	3.99	95% KM (t) UCL	ProUCL v5.0
	NICKEL	ug/L	95.4	416	Gamma	210	95% Adjusted Gamma UCL	ProUCL v5.0
	SELENIUM	ug/L	8.88	18.2	Normal	9.43	95% KM (t) UCL	ProUCL v5.0
	SILVER	ug/L	6.37	26.2	Lognormal	7.04	95% KM (BCA) UCL	ProUCL v5.0
	THALLIUM	ug/L	11.2	23.7	Normal	12.5	95% KM (t) UCL	ProUCL v5.0
	VANADIUM	ug/L	50.9	204	Normal	75.3	95% KM (t) UCL	ProUCL v5.0
	ZINC	ug/L	2528	16800	Gamma	8238	95% Adjusted Gamma UCL	ProUCL v5.0
	NAPHTHALENE	ug/L	0.40	0.40	Not Discernable	NA	Single Detected Value	Max Detect
	AROCLOR 1254	ug/L	8.10	8.10	Not Discernable	NA	Single Detected Value	Max Detect
	PENTACHLOROPHENOL	ug/L	200	200	Not Discernable	NA	Single Detected Value	Max Detect
	CHLOROFORM	ug/L	2.00	2.00	Not Discernable	NA	Single Detected Value	Max Detect

TABLE 3.13-RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Tapwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean of Detected Values	Maximum Detected Concentration	Statistical Distribution (1)	Exposure Point Concentration		
						95% UCL	Statistic (2)	Rationale (3)

Notes:

(1) Order of preference for calculation of 95% UCL statistic: Normal > Gamma > Nonparametric ("Not Discernable") > Lognormal per ProUCL Output and Technical Guide.

(2) Statistical method recommended by ProUCL for calculation of 95% UCL statistic.

(3) The lesser of the 95% UCL or the maximum detected concentration is used as the Exposure Point Concentration value.

(4) The mean value is required for use as the EPC for lead in the IEUBK and Adult Lead models.

NA: Not Applicable or Not Available

TABLE 4.1-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Eighteenmile Creek Channel	Recreational User Angler	Young Child (birth-<6 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	13	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	6	years	EPA 2014	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Adolescent (7-18 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	50	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	39	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	12	years	Based on period from 7 to 18 years.	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-3	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	13	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	20	years	EPA 2014	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	

TABLE 4.1-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Eighteenmile Creek Channel	Recreational User Angler	Young Child (birth-<6 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	2,373	cm2	EPA 2002 (Exhibit 1-2)	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	13	days/yr	(1)	
				ED	Exposure Duration	6	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Adolescent (7-18 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	5,100	cm2	EPA 2011 Table 7-2	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	39	days/yr	(1)	
				ED	Exposure Duration	12	years	Represents 12 years from 7 to 18 years.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-3	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	6,032	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	13	days/yr	(1)	
				ED	Exposure Duration	20	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	

TABLE 4.1-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Eighteenmile Creek Channel	Recreational User Angler	Young Child (birth-<6 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	CDI (ug/m3) =
				EF	Exposure Frequency	13	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	6	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.167	(4hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Adolescent (7-18 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	CDI (ug/m3) =
				EF	Exposure Frequency	39	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	12	years	Represents 12 year period.	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.167	(4hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	

TABLE 4.1-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Eighteenmile Creek Channel	Recreational User Angler	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	CDI (ug/m3) =
				EF	Exposure Frequency	13	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	20	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.167	(4hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	

Notes:

(1) Professional Judgment - Adolescents: 3 days per week for 13 weeks of summer and Adults and Children: 1 day per week during the 13 weeks of summer.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.1-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Eighteenmile Creek Channel	Recreational User Angler	Young Child (birth-<6 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) = Csoil x IR-soil x EF x ED x RBA x FS x CF x 1/BW x 1/AT
				IR-soil	Ingestion Rate of Soil	50	mg/day	EPA 2014	
				EF	Exposure Frequency	7	days/yr	(1)	
				ED	Exposure Duration	4	years	Apportioned based on Average Residence	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Adolescent (7-18 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) = Csoil x IR-soil x EF x ED x RBA x FS x CF x 1/BW x 1/AT
				IR-soil	Ingestion Rate of Soil	25	mg/day	EPA 2014	
				EF	Exposure Frequency	20	days/yr	(1)	
				ED	Exposure Duration	4	years	Apportioned based on Average Residence Time.	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-3	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) = Csoil x IR-soil x EF x ED x RBA x FS x CF x 1/BW x 1/AT
				IR-soil	Ingestion Rate of Soil	50	mg/day	EPA 2014	
				EF	Exposure Frequency	7	days/yr	(1)	
				ED	Exposure Duration	4	years	Apportioned based on Average Residence time.	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	

TABLE 4.1-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.1-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Eighteenmile Creek Channel	Recreational User Angler	Young Child (birth-<6 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) = Csoil x SA x SSAF x DABS x EF x ED x FS x CF x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	2,373	cm2	EPA 2002 (Exhibit 1-2)	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	7	days/yr	(1)	
				ED	Exposure Duration	4	years	Apportioned based on Average Residence Time.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Adolescent (7-18 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) = Csoil x SA x SSAF x DABS x EF x ED x FS x CF x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	5,100	cm2	EPA 2011 Table 7-2	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	20	days/yr	(1)	
				ED	Exposure Duration	4	years	Apportioned based on Average Residence Time.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-3	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.1-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Eighteenmile Creek Channel	Recreational User Angler	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	6,032	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	7	days/yr	(1)	
				ED	Exposure Duration	4	years	Apportioned based on Average Residence Time.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Young Child (birth-<6 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	CDI (ug/m3) =
				EF	Exposure Frequency	7	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	4	years	Apportioned based on Average Residence Time.	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.17	(4hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Eighteenmile Creek Channel	Recreational User Angler	Adolescent (7-18 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	CDI (ug/m3) =
				EF	Exposure Frequency	20	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	4	years	Apportioned based on Average Residence Time.	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.08	(4hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.1-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name

TABLE 4.1-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Eighteenmile Creek Channel	Recreational User Angler	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.1-RME	mg/kg	Table 3.1-RME	CDI (ug/m3) = Csoil x EF x ED x ET x FS x (1/VF + 1/PEF) x 1/AT
				EF	Exposure Frequency	7	days/yr	(1)	
				ED	Exposure Duration	4	years	Apportioned based on Average Residence Time.	
				ET	Exposure Time	0.08	(4hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

Notes:

(1) Professional Judgment - Adolescents: 1.5 days per week for 13 weeks of summer and Adults and Children: 0.5 day per week during the 13 weeks of summer.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.2-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Fillets

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Creek Channel	Anglers	Young Child (birth-<6 years)	Ingestion	CFish	Chemical Conc. In Fish	Table 3.2-RME	mg/kg	Table 3.2-RME	Chronic Daily Intake (CDI) =
				IR-Fish	Ingestion Rate of Fish Tissue	10.6	g/day	1/3rd of Adult Fish Ingestion Rate	CFish x IR-Fish x (1-Loss) x EF x ED x
				Loss	Fraction of CFish loss through Prep and Cooking	0	g/g	For the RME scenarios, a cooking loss of 0% is used for all chemicals to account for the potential that individuals may consume cooking juices and pan drippings	FS x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	365	days/yr	IR-Fish is annual avg	
				ED	Exposure Duration	6	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF2	Conversion Factor	0.001	kg/g	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Creek Channel	Anglers	Adolescent (7-18 years)	Ingestion	CFish	Chemical Conc. In Fish	Table 3.2-RME	mg/kg	Table 3.2-RME	Chronic Daily Intake (CDI) =
				IR-Fish	Ingestion Rate of Fish Tissue	21.3	g/day	2/3rds of Adult fish Ingestion Rate	CFish x IR-Fish x (1-Loss) x EF x ED x
				Loss	Fraction of CFish loss through Prep and Cooking	0	g/g	For the RME scenarios, a cooking loss of 0% is used for all chemicals to account for the potential that individuals may consume cooking juices and pan drippings	FS x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	365	days/yr	IR-Fish is annual avg	
				ED	Exposure Duration	12	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF2	Conversion Factor	0.001	kg/g	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-3	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	

TABLE 4.2-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Fillets

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Creek Channel	Anglers	Adult	Ingestion	CFish	Chemical Conc. In Soil	Table 3.2-RME	mg/kg	Table 3.2-RME	Chronic Daily Intake (CDI) =
				IR-Fish	Ingestion Rate of Fish Tissue	31.9	g/day	Connelly et al., 1992 (1991 NYS Angler Survey based on adjustment for specific waterbody and fish species.	CFish x IR-Fish x (1-Loss) x EF x ED x
				Loss	Fraction of CFish loss through Cooking	0	g/g	For the RME scenarios, a cooking loss of 0% is used for all chemicals to account for the potential that individuals may consume cooking juices and pan drippings	FS x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	365	days/yr	IR-Fish is annual avg	
				ED	Exposure Duration	8	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF2	Conversion Factor	0.001	kg/g	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,920	days	EPA 2014	

Notes:

(2) FS = 1 for EPA Region 2.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

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TABLE 4.2-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Fillets

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Creek Channel	Anglers	Young Child	Ingestion	CFish	Chemical Conc. In Fish	Table 3.2-RME	mg/kg	Table 3.2-RME	Chronic Daily Intake (CDI) =
		(birth-<6 years)		IR-Fish	Ingestion Rate of Fish Tissue	1.3	g/day	Connelly, 1992 50th percentile 1/3rd of Adult	CFish x IR-Fish x (1-Loss) x EF x ED x
				Loss	Fraction of CFish loss through Prep and Cooking	Chemical specific cooking loss based on specific chemical provided below.	g/g	Cooking loss values for specific chemicals are listed below.	FS x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	365	days/yr	IR-Fish is annual avg	
				ED	Exposure Duration	4	years	Mean ED (EFH 2011) is a total of 12 years. Time distributed based on age range.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF2	Conversion Factor	0.001	kg/g	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Creek Channel	Anglers	Adolescent	Ingestion	CFish	Chemical Conc. In Soil	Table 3.2-RME	mg/kg	Table 3.2-RME	Chronic Daily Intake (CDI) =
		(7-18 years)		IR-Fish	Ingestion Rate of Fish Tissue	2.7	g/day	Connelly, 1992 50th percentile 2/3rds of Adult	CFish x IR-Fish x (1-Loss) x EF x ED x
				Loss	Fraction of CFish loss through Prep and Cooking	Chemical specific cooking loss based on specific chemical provided below.	g/g	Applies to HMW Organics only; Assumes no loss	FS x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	365	days/yr	IR-Fish is annual avg	
				ED	Exposure Duration	4	years	Mean residence time is 12 years (EFH 2011). Time distributed based on age range.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF2	Conversion Factor	0.001	kg/g	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-24, Average of overall bodyweight based on age.	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.2-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Fish Tissue
Exposure Medium: Fish Fillets

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Creek Channel	Anglers	Adult	Ingestion	CFish	Chemical Conc. In Soil	Table 3.2-RME	mg/kg	Table 3.2-RME	Chronic Daily Intake (CDI) =
				IR-Fish	Ingestion Rate of Fish Tissue	4	g/day	Connelly, 1992 50th percentile	CFish x IR-Fish x (1-Loss) x EF x ED x
				Loss	Fraction of CFish loss through Cooking	0.2	g/g	Applies to HMW Organics only; Assumes no loss	FS x CF2 x 1/BW x 1/AT
				EF	Exposure Frequency	365	days/yr	IR-Fish is annual avg	
				ED	Exposure Duration	4	years	Based on mean residence time apportioned based on distribution of age.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF2	Conversion Factor	0.001	kg/g	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

Notes:

(2) FS = 1 for EPA Region 2.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

Connelly, Nancy A., Barbara A. Knuth, and Carole A. Bisogni. 1992. Effects of the Health
Advisory and Advisory Changes on Fishing Habits and Fish Consumption in New York Sport
Fisheries. Report for New York Sea Grant Institute Project No. R/FHD-2=PD. September.

TABLE 4.3-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Flintkote,	Visitor/Trespasser	Young Child	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
United		(birth-<6 years)		IR-soil	Ingestion Rate of Soil	200	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
Paperboard,				EF	Exposure Frequency	28	days/yr	(1)	x CF x 1/BW x 1/AT
White				ED	Exposure Duration	6	years	EPA 2014	
Transportation				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Flintkote,	Visitor/Trespasser	Adolescent	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
United		(7-18 years)		IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
Paperboard,				EF	Exposure Frequency	56	days/yr	(1)	x CF x 1/BW x 1/AT
White				ED	Exposure Duration	12	years	EPA 2014	
Transportation				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-3	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	
Flintkote,	Visitor/Trespasser	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
United				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
Paperboard,				EF	Exposure Frequency	28	days/yr	(1)	x CF x 1/BW x 1/AT
White				ED	Exposure Duration	20	years	EPA 2014	

TABLE 4.3-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Transportation				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Young Child (birth-<6 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x SA x SSAF x DABS x EF x ED x FS x CF x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	2,373	cm2	EPA 2002 (Exhibit 1-2)	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	28	days/yr	(1)	
				ED	Exposure Duration	6	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Adolescent (7-18 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x SA x SSAF x DABS x EF x ED x FS x CF x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	5,100	cm2	EPA 2011 Table 7-2	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	56	days/yr	(1)	
				ED	Exposure Duration	12	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-3	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	

TABLE 4.3-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	6,032	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	28	days/yr	(1)	
				ED	Exposure Duration	20	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Young Child (birth-<6 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
				EF	Exposure Frequency	28	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	6	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.17	(4hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	

TABLE 4.3-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Flintkote,	Visitor/Trespasser	Adolescent	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
United		(7-18 years)		EF	Exposure Frequency	56	days/yr	(1)	Csoil x EF x ED x ET x FS x
Paperboard,				ED	Exposure Duration	12	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
White				ET	Exposure Time	0.17	(4hrs/day)/24	EPA 2009	
Transportation				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	
Flintkote,	Visitor/Trespasser	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
United				EF	Exposure Frequency	28	days/yr	(1)	Csoil x EF x ED x ET x FS x
Paperboard,				ED	Exposure Duration	20	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
White				ET	Exposure Time	0.17	(4hrs/day)/24	EPA 2009	
Transportation		`		FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	

Notes:

(1) Professional Judgment - Adult and young child 1 day per week and Adolescent 2 days per week during the warmer 6 months of the year.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.3-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Young Child (birth-<6 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x IR-soil x EF x ED x RBA x FS x CF x 1/BW x 1/AT
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	
				EF	Exposure Frequency	14	days/yr	(1)	
				ED	Exposure Duration	4	years	1/3RD OF Mean Residence Time to reflect child exposure EPA 2011	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Adolescent (7-18 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x IR-soil x EF x ED x RBA x FS x CF x 1/BW x 1/AT
				IR-soil	Ingestion Rate of Soil	50	mg/day	EPA 2014	
				EF	Exposure Frequency	28	days/yr	(1)	
				ED	Exposure Duration	4	years	1/3RD OF Mean Residence Time to reflect child exposure EPA 2011	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-3	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.3-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	50	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	14	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	4	years	1/3RD OF Mean Residence Time to reflect child exposure EPA 2011	
				RBA	Relative Bioavailability Factor (3)	Chem specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Young Child (birth-<6 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	2,373	cm2	EPA 2002 (Exhibit 1-2)	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	14	days/yr	(1)	
				ED	Exposure Duration	4	years	1/3RD OF Mean Residence Time to reflect child exposure EPA 2011	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.3-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Adolescent (7-18 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	5,100	cm2	EPA 2011 Table 7-2	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	28	days/yr	(1)	
				ED	Exposure Duration	4	years	1/3RD OF Mean Residence Time to reflect child exposure EPA 2011	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-3	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	6,032	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	14	days/yr	(1)	
				ED	Exposure Duration	4	years	1/3RD OF Mean Residence Time to reflect child exposure EPA 2011	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.3-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Young Child (birth-<6 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) = Csoil x EF x ED x ET x FS x (1/VF + 1/PEF) x 1/AT
				EF	Exposure Frequency	14	days/yr	(1)	
				ED	Exposure Duration	4	years	1/3RD OF Mean Residence Time to reflect child exposure EPA 2011	
				ET	Exposure Time	0.08	(4hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Flintkote, United Paperboard, White Transportation	Visitor/Trespasser	Adolescent (7-18 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) = Csoil x EF x ED x ET x FS x (1/VF + 1/PEF) x 1/AT
				EF	Exposure Frequency	28	days/yr	(1)	
				ED	Exposure Duration	4	years	1/3RD OF Mean Residence Time to reflect child exposure EPA 2011	
				ET	Exposure Time	0.08	(4hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.3-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Flintkote,	Visitor/Trespasser	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
United				EF	Exposure Frequency	14	days/yr	(1)	Csoil x EF x ED x ET x FS x
Paperboard,				ED	Exposure Duration	4	years	1/3RD OF Mean Residence Time to reflect child exposure EPA 2011	(1/VF + 1/PEF) x 1/AT
White				ET	Exposure Time	0.17	(4hrs/day)/24	EPA 2009	
Transportation		`		FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

Notes:

(1) Professional Judgment - Adult and young child 0.5 days per week and Adolescent 1 days per week during the warmer 6 months of the year.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.4-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park, Flintkote, United Paperboard, White Transportation	Outdoor Worker	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	225	days/yr	EPA 2014	x CF x 1/BW x 1/AT
				ED	Exposure Duration	25	years	EPA 2002	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	9,125	days	EPA 2014	
Upson Park, Flintkote, United Paperboard, White Transportation	Outdoor Worker	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	3,527	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.12	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	225	days/yr	EPA 2002	
				ED	Exposure Duration	25	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitles	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	9,125	days	EPA 2014	

TABLE 4.4-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park,	Outdoor Worker	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
Flintkote,				EF	Exposure Frequency	225	days/yr	EPA 2002	Csoil x EF x ED x ET x FS x
United				ED	Exposure Duration	25	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
Paperboard,				ET	Exposure Time	0.3	(8hrs/day)/24	EPA 2009	
White				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
Transportation				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	9,125	days	EPA 2014	

Notes:

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 1997: Exposure Factors Handbook, 1997 Edition, NCEA, ORD, August.

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.4-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park,	Outdoor Worker	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
Flintkote,				IR-soil	Ingestion Rate of Soil	50	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
United				EF	Exposure Frequency	113	days/yr	(1)	x CF x 1/BW x 1/AT
Paperboard,				ED	Exposure Duration	8	years	EPA 2014 Ch 16	
White				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
Transportation				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,920	days	EPA 2014	
Upson Park,	Outdoor Worker	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
Flintkote,				SA	Skin Surface Area Available for Contact	3,527	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
United				SSAF	Soil to Skin Adherence Factor	0.12	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
Paperboard,				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
White				EF	Exposure Frequency	113	days/yr	(1)	
Transportation				ED	Exposure Duration	8	years	EPA 2014 Ch 16	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,920	days	EPA 2014	

TABLE 4.4-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park,	Outdoor Worker	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.4-RME, Table 3.6-RME, Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
Flintkote,				EF	Exposure Frequency	113	days/yr	(1)	Csoil x EF x ED x ET x FS x
United				ED	Exposure Duration	8	years	EPA 2014 Ch 16	(1/VF + 1/PEF) x 1/AT
Paperboard,				ET	Exposure Time	0.1	(8hrs/day)/24	EPA 2009	
White				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
Transportation				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,920	days	EPA 2014	

Notes:

(1) Professional Judgment - One half of the RME value of 225 days.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.5-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park, Flintkote, United Paperboard, White Transportation	Construction Workers	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	mg/kg	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	330	mg/day	EPA 2002	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	250	days/yr	EPA 2002	x CF x 1/BW x 1/AT
				ED	Exposure Duration	1	years	EPA 2014	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	365	days	EPA 2014	
Upson Park, Flintkote, United Paperboard, White Transportation	Construction Workers	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	mg/kg	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	3,527	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.12	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	250	days/yr	EPA 1991	
				ED	Exposure Duration	1	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	365	days	EPA 2014	

TABLE 4.5-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park,	Construction	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	mg/kg	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	CDI (ug/m3) =
Flintkote,	Workers			EF	Exposure Frequency	250	days/yr	EPA 1991	Csoil x EF x ED x ET x FS x
United				ED	Exposure Duration	1	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
Paperboard,				ET	Exposure Time	0.33	(8hrs/day)/24	EPA 2009	
White				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
Transportation				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	365	days	EPA 2014	

Notes:

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 1991: Human health evaluation manual, supplemental guidance: "Standard default exposure factors". OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook, 1997 Edition, NCEA, ORD, August.

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.5-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park,	Construction	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	mg/kg	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	Chronic Daily Intake (CDI) =
Flintkote,	Workers			IR-soil	Ingestion Rate of Soil	330	mg/day	EPA 2002	Csoil x IR-soil x EF x ED x RBA x FS
United				EF	Exposure Frequency	60	days/yr	(1)	x CF x 1/BW x 1/AT
Paperboard,				ED	Exposure Duration	1	years	EPA 2014	
White				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
Transportation				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	365	days	EPA 2014	
Upson Park,	Construction	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	mg/kg	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	Chronic Daily Intake (CDI) =
Flintkote,	Workers			SA	Skin Surface Area Available for Contact	3,527	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
United				SSAF	Soil to Skin Adherence Factor	0.12	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
Paperboard,				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
White				EF	Exposure Frequency	60	days/yr	(1)	
Transportation				ED	Exposure Duration	1	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	365	days	EPA 2014	

TABLE 4.5-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park,	Construction	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	mg/kg	Table 3.5-RME, Table 3.7-RME, Table 3.9-RME, Table 3.11-RME	CDI (ug/m3) =
Flintkote,	Workers			EF	Exposure Frequency	60	days/yr	(1)	Csoil x EF x ED x ET x FS x
United				ED	Exposure Duration	1	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
Paperboard,				ET	Exposure Time	0.33	(8hrs/day)/24	EPA 2009	
White				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
Transportation				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	365	days	EPA 2014	

Notes:

(1) Professional Judgment - EPA Region 2 standard 60 days.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 1991: Human health evaluation manual, supplemental guidance: "Standard default exposure factors". OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook, 1997 Edition, NCEA, ORD, August.

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.6-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park	Recreational User	Young Child (birth-<6 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	200	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	56	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	6	years	EPA 2014	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Upson Park	Recreational User	Adolescent (7-18 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	84	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	12	years	Based on portion of 12 year period from 7 to 18 years.	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-24 (mean of male and female bodyweight from ages 7 - 18)	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	
Upson Park	Recreational User	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	56	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	20	years	Based on standard default ED for adult (USEPA 2014).	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	

TABLE 4.6-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park	Recreational User	Young Child (birth-<6 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	2,373	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	56	days/yr	(1)	
				ED	Exposure Duration	6	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Upson Park	Recreational User	Adolescent (7-18 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	5,100	cm2	EPA 2011 Table 7-2	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	84	days/yr	(1)	
				ED	Exposure Duration	12	years	Reflects time frame from 7 to 18 years.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-24 (mean bodyweight ages 7 - 18)	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	

TABLE 4.6-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park	Recreational User	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	6,032	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	56	days/yr	(1)	
				ED	Exposure Duration	20	years	USEPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	
Upson Park	Recreational User	Young Child (birth-<6 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	CDI (ug/m3) =
				EF	Exposure Frequency	56	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	6	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.17	(hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Upson Park	Recreational User	Adolescent (7-18 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	CDI (ug/m3) =
				EF	Exposure Frequency	84	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	12	years	Based on age range 7 to 18 years.	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.17	(hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	4,380	days	EPA 2014	

TABLE 4.6-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park	Recreational User	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	CDI (ug/m3) =
				EF	Exposure Frequency	56	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	20	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.17	(hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	

Notes:

(1) Professional Judgment - Adult and young child 2 dayS per week and Adolescent 3 days per week during the warmer 6 months of the year.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.6-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park	Recreational User	Young Child (birth-<6 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	200	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	28	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	4	years	EPA 2011 - Average Residence Time 12 years. Apportioned for adult, adolescents, and child.	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Upson Park	Recreational User	Adolescent (7-18 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	42	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	4	years	EPA 2011 - Average Residence Time 12 years. Apportioned for adult, adolescents, and child.	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-24 (mean of male and female bodyweight from ages 7 - 18)	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.6-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park	Recreational User	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	28	days/yr	(1)	x CF x 1/BW x 1/AT
				ED	Exposure Duration	4	years	EPA 2011 - Average Residence Time 12 years. Apportioned for adult, adolescents, and child.	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Upson Park	Recreational User	Young Child (birth-<6 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	2,373	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	28	days/yr	(1)	
				ED	Exposure Duration	4	years	EPA 2011 - Average Residence Time 12 years. Apportioned for adult, adolescents, and child.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.6-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park	Recreational User	Adolescent (7-18 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	5,100	cm2	EPA 2011 Table 7-2	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	42	days/yr	(1)	
				ED	Exposure Duration	4	years	EPA 2011 - Average Residence Time 12 years. Apportioned for adult, adolescents, and child.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	47.6	kg	EPA 2011 Table 8-24 (mean bodyweight ages 7 - 18)	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Upson Park	Recreational User	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	6,032	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	28	days/yr	(1)	
				ED	Exposure Duration	4	years	EPA 2011 - Average Residence Time 12 years. Apportioned for adult, adolescents, and child.	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.6-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park	Recreational User	Young Child (birth-<6 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	CDI (ug/m3) =
				EF	Exposure Frequency	28	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	4	years	EPA 2011 - Average Residence Time 12 years. Apportioned for adult, adolescents, and child.	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.17	(hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Upson Park	Recreational User	Adolescent (7-18 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	CDI (ug/m3) =
				EF	Exposure Frequency	42	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	4	years	EPA 2011 - Average Residence Time 12 years. Apportioned for adult, adolescents, and child.	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.17	(hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.6-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Upson Park	Recreational User	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.6-RME	mg/kg	Table 3.6-RME	CDI (ug/m3) =
				EF	Exposure Frequency	28	days/yr	(1)	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	4	years	EPA 2011 - Average Residence Time 12 years. Apportioned for adult, adolescents, and child.	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.17	(hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

Notes:

(1) Professional Judgment - Adult and young child 1 day per week and Adolescent 1.5 days per week during the warmer 6 months of the year.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.7-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
United Paperboard White Transportation	Indoor Workers	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				IR-soil	Ingestion Rate of Soil	50	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
				EF	Exposure Frequency	250	days/yr	EPA 1991	x CF x 1/BW x 1/AT
				ED	Exposure Duration	25	years	EPA 2014	
				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	9,125	days	EPA 2014	
United Paperboard White Transportation	Indoor Workers	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	3,527	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.12	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	250	days/yr	EPA 1991	
				ED	Exposure Duration	25	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	9,125	days	EPA 2014	

TABLE 4.7-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
United Paperboard White Transportation	Indoor Workers	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
				EF	Exposure Frequency	250	days/yr	EPA 1991	Csoil x EF x ED x ET x FS x
				ED	Exposure Duration	25	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	0.33	(8hrs/day)/24	EPA 2009	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(3)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	9,125	days	EPA 2014	

Notes:

(1) Professional Judgment - EPA Region 2 standard 60 days.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 1991: Human health evaluation manual, supplemental guidance: "Standard default exposure factors". OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook, 1997 Edition, NCEA, ORD, August.

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EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.7-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Indoor Workers	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
United				IR-soil	Ingestion Rate of Soil	25	mg/day	EPA 2014	Csoil x IR-soil x EF x ED x RBA x FS
Paperboard				EF	Exposure Frequency	125	days/yr	(1)	x CF x 1/BW x 1/AT
White				ED	Exposure Duration	9	years	EPA 2014	
Transportation				RBA	Relative Bioavailability Factor (3)	Chemical specific	unitless	EPA 2012	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	3,285	days	EPA 2014	
	Indoor Workers	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
United				SA	Skin Surface Area Available for Contact	3,527	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
Paperboard				SSAF	Soil to Skin Adherence Factor	0.12	mg/cm2	EPA 2014	FS x CF x 1/BW x 1/AT
White				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
Transportation				EF	Exposure Frequency	125	days/yr	(1)	
				ED	Exposure Duration	9	years	EPA 2014	
				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	3,285	days	EPA 2014	

TABLE 4.7-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface Soil and Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
	Indoor Workers	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
United				EF	Exposure Frequency	125	days/yr	(1)	Csoil x EF x ED x ET x FS x
Paperboard				ED	Exposure Duration	9	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
White				ET	Exposure Time	0.33	(8hrs/day)/24	EPA 2009	
Transportation				FS	Fraction of Daily Exposure from the Site	1	unitless	(2)	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	3,285	days	EPA 2014	

Notes:

(1) Professional Judgment - One half of the RME value of 250 days.

(2) FS = 1 for EPA Region 2.

(3) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(4) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 1991: Human health evaluation manual, supplemental guidance: "Standard default exposure factors". OSWER Directive 9285.6-03.

EPA 1997: Exposure Factors Handbook, 1997 Edition, NCEA, ORD, August.

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.8-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Tapwater

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Sitewide	Resident	Young Child (birth-<6 years)	Ingestion	CGW	Chemical Conc. In Groundwater	Table 3.12-RME, Table 3.13-RME	mg/L	Table 3.12-RME, Table 3.13-RME	Chronic Daily Intake (CDI) = CGW x IRW x EF x ED x CF x 1/BW x 1/AT
				IRW	Drinking Water Ingestion Rate	0.78	L/day	EPA 2014	
				EF	Exposure Frequency	350	days/yr	EPA 2014	
				ED	Exposure Duration	6	years	EPA 2014	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
Sitewide	Resident	Adult (> 18 years)	Ingestion	CGW	Chemical Conc. In Groundwater	Table 3.12-RME, Table 3.13-RME	mg/L	Table 3.12-RME, Table 3.13-RME	Chronic Daily Intake (CDI) = CGW x IRW x EF x ED x CF x 1/BW x 1/AT
				IRW	Drinking Water Ingestion Rate	2.5	L/day	EPA 2014	
				EF	Exposure Frequency	350	days/yr	EPA 2014	
				ED	Exposure Duration	20	years	EPA 2014	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	
Sitewide	Resident	Young Child (birth-<6 years)	Inhalation	CGW	Chemical Conc. In Groundwater	Table 3.12-RME, Table 3.13-RME	µg/L	Table 3.12-RME, Table 3.13-RME	CDI (ug/m^3) = (CA x ET x EF x ED)/AT
				CA	Chemical Conc. In Bathroom Air	Calculated	$\mu g/m^3$	Schaum 1994 Equation 3	
				CA_{max}	Maximum concentration in bathroom air	Calculated	$\mu g/m^3$	Schaum 1994 Equation 4	
				t1	Time in Shower	0.24	hrs/event	Schaum 1994	CA Calculated based on CGW using Andelman model as modified by Schaum et al.
				t2	Time in Bathroom after Shower	0.3	hrs/event	Schaum 1994	
				f	Fraction of CGW volatilized	0.9	unitless	Schaum 1994	
				Fw	Shower Water Flow Rate	750	L/hr	Schaum 1994	$CA = ((CA_{max}/2) \times t1 + CA_{max} \times t2) \times 1/(t1 + t2)$
				Va	Bathroom Volume	16	m^3	Schaum 1994	
				ET	Exposure Time	0.54	hrs/day	EPA 2011	$CA_{max} = CGW \times f \times Fw \times t1 \times 1/Va$
				EF	Exposure Frequency	350	days/yr	EPA 2014	
				ED	Exposure Duration	6	years	EPA 2011 Table 16-5	
				AT-C	Averaging Time (Cancer)	613,200	hours	EPA 2014	
				AT-N	Averaging Time (Noncancer)	52,560	hours	EPA 2014	

TABLE 4.8-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Tapwater

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Sitewide	Resident	Adult (> 18 years)	Inhalation	CGW	Chemical Conc. In Groundwater	Table 3.12-RME, Table 3.13-RME	mg/L	Table 3.12-RME, Table 3.13-RME	CDI (ug/m^3) =
				CA	Chemical Conc. In Bathroom Air	Calculated	mg/m^3	Table 4.8a.CTE	(CA x ET x EF x ED)/AT
				CA_{max}	Maximum concentration in bathroom air	Calculated	$\mu g/m^3$	Schaum 1994 Equation 4	
				t1	Time in Shower	0.305	hrs/event	Schaum 1994	CA Calculated based on CGW
				t2	Time in Bathroom after Shower	0.405	hrs/event	Schaum 1994	using Andelman model as modified by Schaum et al.
				f	Fraction of CGW volatilized	0.9	unitless	Schaum 1994	
				Fw	Shower Water Flow Rate	750	L/hr	Schaum 1994	$CA = ((CA_{max}/2) \times t1 + CA_{max} \times t2) \times 1/(t1 + t2)$
				Va	Bathroom Volume	16	m^3	Schaum 1994	
				ET	Exposure Time	0.71	hrs/day	EPA 2014	$CA_{max} = CGW \times f \times Fw \times t1 \times 1/Va$
				EF	Exposure Frequency	350	days/yr	EPA 2014	
				ED	Exposure Duration	20	years	EPA 2011 Table 16-5	
				AT-C	Averaging Time (Cancer)	613,200	hours	EPA 2014	
				AT-N	Averaging Time (Noncancer)	175,200	hours	EPA 2014	

Notes:

(1) A conversion factor of 0.001 (mg/ug) was applied to the non-cancer risk calculations for the inhalation exposure route.

(2) Inhalation of tapwater was not assessed for risk from metals, PAHs and pesticides that are considered non-volatile or lack a Henry's law constant.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

Schaum, et al, 1994, Estimating Dermal and Inhalation Exposure to Volatile Chemicals in Domestic Water, in Water Contamination and Health, Ed.: Wang, R.G.M., Marcel Dekker, Inc. New York.

TABLE 4.8-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Tapwater

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Sitewide	Resident	Young Child	Ingestion	CGW	Chemical Conc. In Groundwater	Table 3.12-RME, Table 3.13-RME	mg/L	Table 3.12-RME, Table 3.13-RME	Chronic Daily Intake (CDI) =
		(birth-<6 years)		IRW	Drinking Water Ingestion Rate	0.365	L/day	EPA 2011 (1) Table 3-1	CGW x IRW x EF x ED x CF
				EF	Exposure Frequency	350	days/yr	EPA 2014	x 1/BW x 1/AT
				ED	Exposure Duration	4	years	EPA 2011 Table 16-5	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	
Sitewide	Resident	Adult	Ingestion	CGW	Chemical Conc. In Groundwater	Table 3.12-RME, Table 3.13-RME	mg/L	Table 3.12-RME, Table 3.13-RME	Chronic Daily Intake (CDI) =
		(> 18 years)		IRW	Drinking Water Ingestion Rate	1.227	L/day	EPA 2011 Table 3-1	CGW x IRW x EF x ED x CF
				EF	Exposure Frequency	350	days/yr	EPA 2014	x 1/BW x 1/AT
				ED	Exposure Duration	8	years	EPA 2011 Table 16-5	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,920	days	EPA 2014	
Sitewide	Resident	Young Child	Inhalation	CGW	Chemical Conc. In Groundwater	Table 3.12-RME, Table 3.13-RME	mg/L	Table 3.12-RME, Table 3.13-RME	CDI (ug/m^3) =
		(birth-<6 years)		CA	Chemical Conc. In Bathroom Air	Calculated	mg/m^3	Table 4.8a.CTE	(CA x ET x EF x ED)/AT
				CA_{max}	Maximum concentration in bathroom air	Calculated	$\mu g/m^3$	Schaum 1994 Equation 4	
				t1	Time in Shower	0.24	hrs/event	Schaum 1994	CA Calculated based on CGW
				t2	Time in Bathroom after Shower	0.3	hrs/event	Schaum 1994	using Andelman model as modified by Schaum et al.
				f	Fraction of CGW volatilized	0.9	unitless	Schaum 1994	
				Fw	Shower Water Flow Rate	750	L/hr	Schaum 1994	$CA = ((CA_{max}/2) \times t1 + CA_{max} \times t2)$
				Va	Bathroom Volume	16	m^3	Schaum 1994	x 1/(t1 + t2)
				ET	Exposure Time	0.54	hrs/day	EPA 2011	$CA_{max} = CGW \times f \times Fw \times t1 \times 1/Va$
				EF	Exposure Frequency	350	days/yr	EPA 2014	
				ED	Exposure Duration	4	years	EPA 2011 Table 16-5	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,460	days	EPA 2014	

TABLE 4.8-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Medium: Groundwater
Exposure Medium: Tapwater

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Sitewide	Resident	Adult (> 18 years)	Inhalation	CGW	Chemical Conc. In Groundwater	Table 3.12-RME, Table 3.13-RME	mg/L	Table 3.12-RME, Table 3.13-RME	CDI (ug/m^3) = (CA x ET x EF x ED)/AT
				CA	Chemical Conc. In Bathroom Air	Calculated	mg/m^3	Table 4.8a.CTE	
				CA_{max}	Maximum concentration in bathroom air	Calculated	$\mu g/m^3$	Schaum 1994 Equation 4	CA Calculated based on CGW using Andelman model as modified by Schaum et al.
				t1	Time in Shower	0.28	hrs/event	EPA 2011 Table 16-1	
				t2	Time in Bathroom after Shower	0.4	hrs/event	Schaum 1994	
				f	Fraction of CGW volatilized	0.9	unitless	Schaum 1994	
				Fw	Shower Water Flow Rate	750	L/hr	Schaum 1994	CA = $((CA_{max}/2) \times t1 + CA_{max} \times t2) \times 1/(t1 + t2)$
				Va	Bathroom Volume	16	m^3	Schaum 1994	
				ET	Exposure Time	0.68	hrs/day	EPA 2011	CA_{max} = CGW x f x Fw x t1 x 1/Va
				EF	Exposure Frequency	350	days/yr	EPA 2014	
				ED	Exposure Duration	8	years	EPA 2011 Table 16-5	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,920	days	EPA 2014	

Notes:

(1) Professional Judgment - One half of the RME value of 0.78 days.

(2) FS = 1 for EPA Region 2.

(3) A conversion factor of 0.001 (mg/ug) was applied to the non-cancer risk calculations for the inhalation exposure route.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2011: Exposure Factors Handbook, 2011 Edition, EPA/600/R-090/052F, September.

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

Schaum, et al, 1994, Estimating Dermal and Inhalation Exposure to Volatile Chemicals in Domestic Water, in Water Contamination and Health, Ed.: Wang, R.G.M., Marcel Dekker, Inc. New York.

TABLE 4.9-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Operable Unit 2 - Eighteenmile Creek Corridor Site, Lockport, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
United Paperboard, White Transportation	Resident	Young Child (birth-<6 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x IR-soil x EF x ED x RBA x CF x 1/BW x 1/AT
				IR-soil	Ingestion Rate of Soil	200	mg/day	EPA 2014	
				EF	Exposure Frequency	350	days/yr	EPA 2014	
				ED	Exposure Duration	6	years	EPA 2014	
				RBA	Relative Bioavailability Factor (1)	Chemical specific	unitless	EPA 2012	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
United Paperboard, White Transportation	Resident	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x IR-soil x EF x ED x RBA x CF x 1/BW x 1/AT
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 2014	
				EF	Exposure Frequency	350	days/yr	EPA 2014	
				ED	Exposure Duration	20	years	EPA 2014	
				RBA	Relative Bioavailability Factor (1)	Chemical specific	unitless	EPA 2012	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	
United Paperboard, White Transportation	Resident	Young Child (birth-<6 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x SA x SSAF x DABS x EF x ED x CF x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	2,373	cm2	EPA 2014	
				SSAF	Soil to Skin Adherence Factor	0.2	mg/cm2	EPA 2014	
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	350	days/yr	EPA 2004	
				ED	Exposure Duration	6	years	EPA 2014	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	

TABLE 4.9-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Operable Unit 2 - Eighteenmile Creek Corridor Site, Lockport, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
United Paperboard, White Transportation	Resident	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	6,032	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.07	mg/cm2	EPA 2014	CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	350	days/yr	EPA 2014	
				ED	Exposure Duration	20	years	EPA 2014	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	
United Paperboard, White Transportation	Resident	Young Child (birth-<6 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
				EF	Exposure Frequency	350	days/yr	EPA 2014	Csoil x EF x ED x ET x
				ED	Exposure Duration	6	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	1	(hrs/day)/24	EPA 2009	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
United Paperboard, White Transportation	Resident	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
				EF	Exposure Frequency	350	days/yr	EPA 2014	Csoil x EF x ED x ET x
				ED	Exposure Duration	20	years	EPA 2014	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	1	(hrs/day)/24	EPA 2009	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	7,300	days	EPA 2014	

TABLE 4.9-RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Operable Unit 2 - Eighteenmile Creek Corridor Site, Lockport, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name

Notes:

(1) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(2) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 2002: Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 4.9-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Operable Unit 2 - Eighteenmile Creek Corridor Site, Lockport, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
United Paperboard, White Transportation	Resident	Young Child (birth-<6 years)	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x IR-soil x EF x ED x RBA x CF x 1/BW x 1/AT
				IR-soil	Ingestion Rate of Soil	100	mg/day	EPA 1997	
				EF	Exposure Frequency	175	days/yr	(2)	
				ED	Exposure Duration	3	years	EPA 2002	
				RBA	Relative Bioavailability Factor (1)	Chemical specific	unitless	EPA 2012	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,095	days	EPA 2014	
United Paperboard, White Transportation	Resident	Adult	Ingestion	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x IR-soil x EF x ED x RBA x CF x 1/BW x 1/AT
				IR-soil	Ingestion Rate of Soil	50	mg/day	EPA 1997	
				EF	Exposure Frequency	175	days/yr	(2)	
				ED	Exposure Duration	6	years	EPA 1997	
				RBA	Relative Bioavailability Factor (1)	Chemical specific	unitless	EPA 2012	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
United Paperboard, White Transportation	Resident	Young Child (birth-<6 years)	Dermal	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) = Csoil x SA x SSAF x DABS x EF x ED x CF x 1/BW x 1/AT
				SA	Skin Surface Area Available for Contact	2,373	cm2	EPA 2014	
				SSAF	Soil to Skin Adherence Factor	0.04	mg/cm2	EPA 2004	
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	175	days/yr	(2)	
				ED	Exposure Duration	3	years	EPA 2002	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	15	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,095	days	EPA 2014	

TABLE 4.9-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Operable Unit 2 - Eighteenmile Creek Corridor Site, Lockport, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
United Paperboard, White Transportation	Resident	Adult	Dermal	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	Chronic Daily Intake (CDI) =
				SA	Skin Surface Area Available for Contact	6,032	cm2	EPA 2014	Csoil x SA x SSAF x DABS x EF x ED x
				SSAF	Soil to Skin Adherence Factor	0.01	mg/cm2	EPA 2004	CF x 1/BW x 1/AT
				DABS	Dermal Absorption Factor Solids	Chemical specific	--	EPA 2004	
				EF	Exposure Frequency	175	days/yr	(2)	
				ED	Exposure Duration	6	years	EPA 1997	
				CF	Conversion Factor	0.000001	kg/mg	--	
				BW	Body Weight	80	kg	EPA 2014	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	
United Paperboard, White Transportation	Resident	Young Child (birth-<6 years)	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
				EF	Exposure Frequency	175	days/yr	(2)	Csoil x EF x ED x ET x
				ED	Exposure Duration	3	years	EPA 2002	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	1	(hrs/day)/24	EPA 2009	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	1,095	days	EPA 2014	
United Paperboard, White Transportation	Resident	Adult	Inhalation	Csoil	Chemical Conc. In Soil	Table 3.8-RME, Table 3.10-RME	mg/kg	Table 3.8-RME, Table 3.10-RME	CDI (ug/m3) =
				EF	Exposure Frequency	175	days/yr	(2)	Csoil x EF x ED x ET x
				ED	Exposure Duration	6	years	EPA 1997	(1/VF + 1/PEF) x 1/AT
				ET	Exposure Time	1	(hrs/day)/24	EPA 2009	
				VF	Volatilization Factor	Chemical specific	m3/kg	EPA 2002	
				PEF	Particulate Emission Factor	Chemical specific	m3/kg	EPA 2002	
				AT-C	Averaging Time (Cancer)	25,550	days	EPA 2014	
				AT-N	Averaging Time (Noncancer)	2,190	days	EPA 2014	

TABLE 4.9-CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY EXPOSURE
Operable Unit 2 - Eighteenmile Creek Corridor Site, Lockport, New York

Scenario Timeframe: Current/Future
Medium: Soil and Sediment
Exposure Medium: Surface & Subsurface Soil & Sediment

Exposure Point	Receptor Population	Receptor Age	Exposure Route	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name

Notes:

(1) Relative Bioavailability Factor is available for arsenic only. The value of 60% was obtained from Recommendations for Default Value for Relative Bioavailability of Arsenic in Soil (USEPA, 2012 - OSWER Directive - OSWER 9200.1-113).

(2) Professional Judgment - One half of the RME value of 350 days.

(3) A conversion factor of 1000 (ug/mg) was applied to the cancer risk calculations for the inhalation exposure route.

References:

EPA 1997 Exposure Factors Handbook.U.S. Environmental Protection Agency (USEPA). Volume I-III. Office of Research and Development, USEPA/600/P-95/002Fa, August.

EPA 2002: SUPPLEMENTAL GUIDANCE FOR DEVELOPING SOIL SCREENING LEVELS FOR SUPERFUND SITES, OSWER 9355.4-24, December 2002

EPA 2004: RAGS Part E, Dermal Assessment Manual

EPA 2009: RAGS Part F, Supplemental Guidance for Inhalation Risk Assessment, EPA-540-R-070-002

EPA 2012: OSWER Directive - OSWER 9200.1-113

EPA 2014: OSWER Directive 9200.1-120, Update of Standard Default Exposure Factors, February 6, 2014.

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal†	Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s)
Acenaphthene	Chronic	6.00E-02	mg/kg-day	1	6.00E-02	mg/kg-day	Liver / Hepatotoxicity	3000 / 1	IRIS	9/2015
	Subchronic	2.00E-01	mg/kg-day	1	2.00E-01	mg/kg-day	Liver / Increased relative liver weight in female mice	1000 / NA	PPRTV	2011
Acenaphthylene	Chronic	NA								
	Subchronic	NA								
Aldrin	Chronic	3.00E-05	mg/kg-day	1	3.00E-05	mg/kg-day	Liver / Liver toxicity	1000 / 1	IRIS	9/2015
	Subchronic	4.00E-05	mg/kg-day	1	4.00E-05	mg/kg-day	LOAEL - Renal lesion	1000 / NA	PPRTV	2005
Aluminum	Chronic	1.00E+00	mg/kg-day	1	1.00E+00	mg/kg-day	Neurological - LOAEL / Minimal neurotoxicity in the offspring of mice for chronic toxicity value	100 / NA	PPRTV	2006
	Subchronic	1.00E+00	mg/kg-day	1	1.00E+00	mg/kg-day	Neurological - NOAEL / Latency to fall off wire in wire suspension test	100 / 0.3	ATSDR [1]	2008
Anthracene	Chronic	3.00E-01	mg/kg-day	1	3.00E-01	mg/kg-day	No Observed Effect Level	3000 / 1	IRIS	9/2015
	Subchronic	1.00E+00	mg/kg-day	1	1.00E+00	mg/kg-day	No Observed Effect Level	1000 / NA	PPRTV	2009
Antimony (metallic)	Chronic	4.00E-04	mg/kg-day	0.15 [2]	6.00E-05	mg/kg-day	Longevity, blood glucose, and cholesterol	1000 / 1	IRIS	9/2015
	Subchronic	4.00E-04	mg/kg-day	0.15 [2]	6.00E-05	mg/kg-day	Reduced life span and serum chemistry changes in male and female rats exposed to potassium antimony tartrate in drinking water for 2 years. This value was adopted as the subchronic p-RfD for soluble antimony compounds.	1000 / NA	PPRTV	2008
Aroclor 1016	Chronic	7.00E-05	mg/kg-day	1	7.00E-05	mg/kg-day	Immune System / Reduced birth weights	100 / 1	IRIS	9/2015
	Subchronic	NA								
Aroclor 1242 [9]	Chronic	2.00E-05	mg/kg-day	1	2.00E-05	mg/kg-day	Immune System	300 / 1	IRIS	9/2015
	Subchronic	NA								
Aroclor 1248 [9]	Chronic	2.00E-05	mg/kg-day	1	2.00E-05	mg/kg-day	Immune System	300 / 1	IRIS	9/2015
	Subchronic	NA								
Aroclor 1254	Chronic	2.00E-05	mg/kg-day	1	2.00E-05	mg/kg-day	Immune / Ocular exudate, inflamed and prominent Meibomian glands, distorted growth of finger and toe nails; decreased antibody (IgG and IgM) response to sheep erythrocytes	300 / 1	IRIS	9/2015
	Subchronic	NA								
Aroclor 1260 [9]	Chronic	2.00E-05	mg/kg-day	1	2.00E-05	mg/kg-day	Immune System	300 / 1	IRIS	9/2015
	Subchronic	NA								
Aroclor 1268 [9]	Chronic	2.00E-05	mg/kg-day	1	2.00E-05	mg/kg-day	Immune System	300 / 1	IRIS	9/2015
	Subchronic	NA								
Arsenic, Inorganic	Chronic	3.00E-04	mg/kg-day	1	3.00E-04	mg/kg-day	Skin and blood / Hyperpigmentation, keratosis and possible vascular complications	3 / 1	IRIS	9/2015
	Subchronic	NA								
Barium	Chronic	2.00E-01	mg/kg-day	0.07 [2]	1.40E-02	mg/kg-day	Kidney / Nephropathy	300 / 1	IRIS	9/2015
	Subchronic	2.00E-01	mg/kg-day	0.07 [2]	1.40E-02	mg/kg-day	NOAEL of 65 mg barium/kg/day for increased absolute and relative kidney weight based on Intermediate Dose	100 / 3	ATSDR [1]	2007
Benz[a]anthracene	Chronic	NA								
	Subchronic	NA								
Benzo[a]pyrene	Chronic	NA								
	Subchronic	NA								
Benzo[b]fluoranthene	Chronic	NA								
	Subchronic	NA								
Benzo[g,h,i]perylene	Chronic	NA								
	Subchronic	NA								

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal†	Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s)
Benzo[k]fluoranthene	Chronic	NA								
	Subchronic	NA								
Beryllium and compounds	Chronic	2.00E-03	mg/kg-day	0.007 [2]	1.40E-05	mg/kg-day	Gastrointestinal/ Small Intestine lesions	300 / 1	IRIS	9/2015
	Subchronic	5.00E-03	mg/kg-day	0.007 [2]	3.50E-05	mg/kg-day	None observed	100 / NA	HEAST	1997
Biphenyl, 1,1'-	Chronic	5.00E-01	mg/kg-day	1	5.00E-01	mg/kg-day	Kidney / Renal papillary mineralization in male F344 rats	30 / 10	IRIS	9/2015
	Subchronic	1.00E-01	mg/kg-day	1	1.00E-01	mg/kg-day	Developmental / Increased incidence of fetal skeletal anomalies	100 / NA	PPRTV	2011
Bis(2-ethylhexyl)phthalate	Chronic	2.00E-02	mg/kg-day	1	2.00E-02	mg/kg-day	Liver / Increased relative liver weight	1000 / 1	IRIS	9/2015
	Subchronic	1.00E-01	mg/kg-day	1	1.00E-01	mg/kg-day	Reproductive / Decreased male fertility	100 / NA	ATSDR [1]	2002
Cadmium (Diet)	Chronic	1.00E-03	mg/kg-day	0.025 [2]	2.50E-05	mg/kg-day	Urinary / Significant proteinuria	10 / 1	IRIS	9/2015
	Subchronic	5.00E-04	mg/kg-day	0.025 [2]	1.25E-05	mg/kg-day	Bone / Bone mineral density	NA / NA	ATSDR [1]	2012
Chloroform	Chronic	1.00E-02	mg/kg-day	1	1.00E-02	mg/kg-day	Liver / Moderate/marked fatty cyst formation in the liver and elevated SGPT	100 / 1	IRIS	9/2015
	Subchronic	1.00E-01	mg/kg-day	1	1.00E-01	mg/kg-day	Hepatic / Significantly increased SGPT activity	100 / NA	ATSDR [1]	1997
Chromium(III), Insoluble Salts	Chronic[3]	1.50E+00	mg/kg-day	0.013 [2]	1.95E-02	mg/kg-day	No effects observed	100 / 10	IRIS	9/2015
	Subchronic	1.50E+00	mg/kg-day	0.013 [2]	1.95E-02	mg/kg-day	No effects observed	1000 / NA	HEAST	1997
Chromium(VI)	Chronic	3.00E-03	mg/kg-day	0.025 [2]	7.50E-05	mg/kg-day	No effects observed	300 / 3	IRIS	9/2015
	Subchronic	5.00E-03	mg/kg-day	0.025 [2]	1.25E-04	mg/kg-day	Hematological / Microcytic, hypochromic anemia	100 / NA	ATSDR [1]	2012
Chromium, Total	Chronic	NA								
	Subchronic	NA								
Chrysene	Chronic	NA								
	Subchronic	NA								
Cobalt	Chronic	3.00E-04	mg/kg-day	1	3.00E-04	mg/kg-day	Thyroid / Decreased iodine uptake	3000 / NA	PPRTV	2008
	Subchronic	3.00E-03	mg/kg-day	1	3.00E-03	mg/kg-day	Thyroid / Decreased iodine uptake	300 / NA	PPRTV	2008
Copper	Chronic[4]	4.00E-02	mg/kg-day	1	4.00E-02	mg/kg-day	Gastrointestinal system / Irritation	NA / NA	HEAST [5]	1987
	Subchronic	1.00E-02	mg/kg-day	1	1.00E-02	mg/kg-day	Gastrointestinal system / Gastrointestinal symptoms	3 / NA	ATSDR [1]	2004
Cyanide (CN-)	Chronic	6.00E-04	mg/kg-day	1	6.00E-04	mg/kg-day	Testes / Decreased cauda epididymis weight in male F344/N rats	3000 / 1	IRIS	9/2015
	Subchronic	2.00E-02	mg/kg-day	1	2.00E-02	mg/kg-day	Whole body, Thyroid, Nerve / Decreased weight, effects, myelin degeneration	500 / NA	HEAST	1997
DDD	Chronic	NA								
	Subchronic	NA								
DDE, p,p'-	Chronic	NA								
	Subchronic	NA								
DDT	Chronic	5.00E-04	mg/kg-day	1	5.00E-04	mg/kg-day	Liver / Liver lesions	100 / 1	IRIS	9/2015
	Subchronic	5.00E-04	mg/kg-day	1	5.00E-04	mg/kg-day	Hepatic / Cellular hypertrophy, cytoplasmic eosinophilia	100 / NA	ATSDR [1]	2002
DDT/DDE/DDD (total)	Chronic	NA								
	Subchronic	NA								
Dibenz[a,h]anthracene	Chronic	NA								
	Subchronic	NA								

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal†	Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s)
Dibenzofuran	Chronic	NA								
	Subchronic	4.00E-03	mg/kg-day	1	4.00E-03	mg/kg-day	Whole Body / Reduced length and organ weight and excess abdominal fat	3000 / NA	PPRTV	2007
Dichloroethane, 1,1-	Chronic	2.00E-01	mg/kg-day	1	2.00E-01	mg/kg-day	Kidney / Renal injury	3000 / NA	PPRTV	2006
	Subchronic	2.00E+00	mg/kg-day	1	2.00E+00	mg/kg-day	Kidney / Renal injury	300 / NA	PPRTV	2006
Dichloroethylene, 1,2-cis-	Chronic	2.00E-03	mg/kg-day	1	2.00E-03	mg/kg-day	Kidney / Increased relative kidney weight in male rats	3000 / 1	IRIS	9/2015
	Subchronic	2.00E-02	mg/kg-day	1	2.00E-02	mg/kg-day	Kidney / Increased relative weight in males	300 / NA	PPRTV	2011
Dieldrin	Chronic	5.00E-05	mg/kg-day	1	5.00E-05	mg/kg-day	Liver / Liver lesions	100 / 1	IRIS	9/2015
	Subchronic	NA								
Endosulfan I	Chronic	6.00E-03	mg/kg-day	1	6.00E-03	mg/kg-day	No Observed Effects Level / Decreased weight gain in males	100 / NA	IRIS	9/2015
	Subchronic	NA								
Endrin	Chronic	3.00E-04	mg/kg-day	1	3.00E-04	mg/kg-day	Nervous System and Hepatic	100 / 1	IRIS	9/2015
	Subchronic	2.00E-03	mg/kg-day	1	2.00E-03	mg/kg-day	Neurological / Convulsions, tremors, diffuse degenerative brain lesions	100 / NA	ATSDR [1]	1996
Fluoranthene	Chronic	4.00E-02	mg/kg-day	1	4.00E-02	mg/kg-day	Kidney / Nephropathy, increased liver weights, hematological alterations, and clinical effects	3000 / 1	IRIS	9/2015
	Subchronic	1.00E-01	mg/kg-day	1	1.00E-01	mg/kg-day	Kidney / Nephropathy	1000 / NA	PPRTV	2012
Fluorene	Chronic	4.00E-02	mg/kg-day	1	4.00E-02	mg/kg-day	Blood / Decreased RBC, packed cell volume and hemoglobin	3000 / 1	IRIS	9/2015
	Subchronic	NA								
Heptachlor	Chronic	5.00E-04	mg/kg-day	1	5.00E-04	mg/kg-day	Liver / Liver weight increases in males	300 / 1	IRIS	9/2015
	Subchronic	1.00E-04	mg/kg-day	1	1.00E-04	mg/kg-day	Immunological and Neurotoxic / Developmental immunological and neurological effects	300 / NA	ATSDR [1]	2007
Heptachlor Epoxide	Chronic	1.30E-05	mg/kg-day	1	1.30E-05	mg/kg-day	Liver / Increased liver-to-body weight ratio in both males and females	1000 / 1	IRIS	9/2015
	Subchronic	1.00E-04	mg/kg-day	1	1.00E-04	mg/kg-day	Immunological and Neurotoxic / Developmental immunological and neurological effects	300 / NA	ATSDR [1]	2007
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) [5,6,7]	Chronic	2.10E-14	mg/kg-day	1	2.10E-14	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates.	30 / NA	IRIS	9/2015
	Subchronic	6.00E-13	mg/kg-day	1	6.00E-13	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) [5,6,7]	Chronic	2.10E-14	mg/kg-day	1	2.10E-14	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates.	30 / NA	IRIS	9/2015
	Subchronic	6.00E-13	mg/kg-day	1	6.00E-13	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) [5,6,7]	Chronic	2.10E-14	mg/kg-day	1	2.10E-14	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates.	30 / NA	IRIS	9/2015
	Subchronic	6.00E-13	mg/kg-day	1	6.00E-13	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) [5,6,7]	Chronic	2.10E-11	mg/kg-day	1	2.10E-11	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates	30 / NA	IRIS	9/2015
	Subchronic	6.00E-10	mg/kg-day	1	6.00E-10	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Hexachlorocyclohexane, Alpha-	Chronic	8.00E-03	mg/kg-day	1	8.00E-03	mg/kg-day	Hepatic / Slight microscopic liver damage	100 / NA	ATSDR	2005
	Subchronic	NA								
Hexachlorocyclohexane, Beta-	Chronic	NA								
	Subchronic	6.00E-04	mg/kg-day	1	6.00E-04	mg/kg-day	Hepatic / Hyalinization of centrilobular cells	300 / NA	ATSDR [1]	2005

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal†	Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s)
Hexachlorocyclohexane, Gamma- (Lindane)	Chronic	3.00E-04	mg/kg-day	1	3.00E-04	mg/kg-day	Liver and kidney toxicity / Increased serum alkaline phosphatase and enlarged dark friable livers	1000 / 1	IRIS	9/2015
	Subchronic	1.00E-05	mg/kg-day	1	1.00E-05	mg/kg-day	Immunological / Changes in cell- and humoral-mediated immune system	1000 / NA	ATSDR [1]	2005
Hexachlorodibenzofuran, 1,2,3,4,7,8- [5,6,7]	Chronic	7.00E-11	mg/kg-day	1	7.00E-11	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates.	30 / NA	IRIS	9/2015
	Subchronic	2.00E-09	mg/kg-day	1	2.00E-09	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
HxCDF, 1,2,3,6,7,8- [5,6,7]	Chronic	7.00E-11	mg/kg-day	1	7.00E-11	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates.	30 / NA	IRIS	9/2015
	Subchronic	2.00E-09	mg/kg-day	1	2.00E-09	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Indeno[1,2,3-cd]pyrene	Chronic	NA								
	Subchronic	NA								
Iron	Chronic	7.00E-01	mg/kg-day	1	7.00E-01	mg/kg-day	GI Tract / Adverse gastrointestinal effects	1.5 / NA	PPRTV	2006
	Subchronic	7.00E-01	mg/kg-day	1	7.00E-01	mg/kg-day	GI Tract / Adverse gastrointestinal effects	1.5 / NA	PPRTV	2006
Lead and Compounds	Chronic	NA								
	Subchronic	NA								
Magnesium	Chronic	NA								
	Subchronic	NA								
Manganese (Non-diet)	Chronic	2.40E-02	mg/kg-day	0.04 [2]	9.60E-04	mg/kg-day	Neurological / CNS effects (other effect: Impairment of neurobehavioral function). The IRIS RfD includes manganese from all sources, including diet. The explanatory text in IRIS recommends using a modifying factor of 3 when calculating risks associated with non-food sources, and the SL table follows this recommendation. IRIS also recommends subtracting dietary exposure (default assumption in this case is 5 mg). Thus, the IRIS RfD has been lowered by a factor of 2 x 3, or 6. The table now reflects manganese for "non-food" sources.	1 / 1	IRIS	9/2015
	Subchronic	NA								
Mercuric Chloride	Chronic	3.00E-04	mg/kg-day	0.07 [2]	2.10E-05	mg/kg-day	Immunological, Urinary / Autoimmune effects (autoimmune glomerulonephritis)	1000 / 1	IRIS	9/2015
	Subchronic	2.00E-03	mg/kg-day	0.07 [2]	1.40E-04	mg/kg-day	Renal / Increased kidney weight	100 / NA	ATSDR [1]	1999
Mercury (elemental) [8]	Chronic	1.00E-04	mg/kg-day	1	1.00E-04	mg/kg-day	CNS / NA	10 / 1	IRIS	9/2015
	Subchronic	NA								
Methylnaphthalene, 2-	Chronic	4.00E-03	mg/kg-day	1	4.00E-03	mg/kg-day	Lungs / Pulmonary alveolar proteinosis	1000 / 1	IRIS	9/2015
	Subchronic	NA								
Naphthalene	Chronic	2.00E-02	mg/kg-day	1	2.00E-02	mg/kg-day	Body weight / Decreased mean terminal body weight in males	3000 / 1	IRIS	9/2015
	Subchronic	6.00E-01	mg/kg-day	1	6.00E-01	mg/kg-day	Neurological / Transient clinical signs in pregnant rats	90 / NA	ATSDR [1]	2005
Nickel Soluble Salts	Chronic	2.00E-02	mg/kg-day	0.04 [2]	8.00E-04	mg/kg-day	Decreased body and organ weight.	300 / 1	IRIS	9/2015
	Subchronic	2.00E-02	mg/kg-day	0.04 [2]	8.00E-04	mg/kg-day	Decreased body and organ weight.	300 / NA	HEAST	1997
Nitroaniline, 2-	Chronic	NA								
	Subchronic	NA								
Nitroaniline, 4-	Chronic	4.00E-03	mg/kg-day	1	4.00E-03	mg/kg-day	Spleen / Increases in methemoglobin and hemosiderosis	100 / NA	PPRTV	2009
	Subchronic	1.00E-02	mg/kg-day	1	1.00E-02	mg/kg-day	Spleen / Increased methemoglobin levels and histological changes	100 / NA	PPRTV	2009

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal†	Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s)
Octyl Phthalate, di-N-	Chronic	1.00E-02	mg/kg-day	1	1.00E-02	mg/kg-day	Liver / Mild-to-moderate cytoplasmic vacuolation	3000 / NA	PPRTV	2012
	Subchronic	1.00E-01	mg/kg-day	1	1.00E-01	mg/kg-day	Liver / Mild-to-moderate cytoplasmic vacuolation	300 / NA	PPRTV	2012
PeCDF, 2,3,4,7,8- [5,6,7]	Chronic	2.10E-10	mg/kg-day	1	2.10E-10	mg/kg-day	NA / NA	NA / NA	IRIS	9/2015
	Subchronic	6.00E-09	mg/kg-day	1	6.00E-09	mg/kg-day	Hepatic / Increased serum bilirubin, decreased serum triglycerides	3000 / NA	ATSDR [1]	1994
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) [5,6,7]	Chronic	2.10E-14	mg/kg-day	1	2.10E-14	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates	30 / NA	IRIS	9/2015
	Subchronic	6.00E-13	mg/kg-day	1	6.00E-13	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) [5,6,7]	Chronic	2.10E-14	mg/kg-day	1	2.10E-14	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates	30 / NA	IRIS	9/2015
	Subchronic	6.00E-13	mg/kg-day	1	6.00E-13	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) [5,6,7]	Chronic	2.10E-14	mg/kg-day	1	2.10E-14	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates	30 / NA	IRIS	9/2015
	Subchronic	6.00E-13	mg/kg-day	1	6.00E-13	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) [5,6,7]	Chronic	7.00E-11	mg/kg-day	1	7.00E-11	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates	30 / NA	IRIS	9/2015
	Subchronic	2.00E-09	mg/kg-day	1	2.00E-09	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8- [5,6,7]	Chronic	7.00E-10	mg/kg-day	1	7.00E-10	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates	30 / NA	IRIS	9/2015
	Subchronic	2.00E-08	mg/kg-day	1	2.00E-08	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Pentachlorophenol	Chronic	5.00E-03	mg/kg-day	1	5.00E-03	mg/kg-day	Decrease in the proportion of mated females accepting a second mating	300 / 1	IRIS	9/2015
	Subchronic	1.00E-03	mg/kg-day	1	1.00E-03	mg/kg-day	Increased severity of cystic uteri glands	1000 / NA	ATSDR [1]	2001
Phenanthrene	Chronic	NA								
	Subchronic	NA								
Pyrene	Chronic	3.00E-02	mg/kg-day	1	3.00E-02	mg/kg-day	Kidney / Kidney effects (renal tubular pathology, decreased kidney weights)	3000 / 1	IRIS	9/2015
	Subchronic	3.00E-01	mg/kg-day	1	3.00E-01	mg/kg-day	Kidney / Nephropathy and decreased kidney weights	300 / NA	PPRTV	2007
Selenium	Chronic	5.00E-03	mg/kg-day	1	5.00E-03	mg/kg-day	Whole body / Clinical selenosis	3 / 1	IRIS	9/2015
	Subchronic	5.00E-03	mg/kg-day	1	5.00E-03	mg/kg-day	Whole body / Clinical selenosis	3 / NA	HEAST	1997
Silver	Chronic	5.00E-03	mg/kg-day	0.04 [2]	2.00E-04	mg/kg-day	Skin / Argyria	3 / 1	IRIS	9/2015
	Subchronic	5.00E-03	mg/kg-day	0.04 [2]	2.00E-04	mg/kg-day	Skin / Argyria	3 / NA	HEAST	1997
TCDD, 2,3,7,8- [5,6,7]	Chronic	7.00E-10	mg/kg-day	1	7.00E-10	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates	30 / 1	IRIS	9/2015
	Subchronic	2.00E-08	mg/kg-day	1	2.00E-08	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) [5,6,7]	Chronic	7.00E-06	mg/kg-day	1	7.00E-06	mg/kg-day	Reproductive / Decreased sperm count and motility in men exposed to TCDD as boys / Increased TSH in neonates	NA / NA	IRIS	9/2015
	Subchronic	2.00E-12	mg/kg-day	1	2.00E-12	mg/kg-day	Thymic atrophy, depletion of body fat, and liver enlargement	30 / NA	ATSDR [1]	1998
Tetrachloroethylene	Chronic	6.00E-03	mg/kg-day	1	6.00E-03	mg/kg-day	Nervous System / Neurotoxicity (color vision, reaction time, cognitive effects)	1000 / 1	IRIS	9/2015
	Subchronic	1.00E-01	mg/kg-day	1	1.00E-01	mg/kg-day	Liver / Hepatotoxicity	100 / NA	HEAST	1997
Thallium (Soluble Salts)	Chronic	1.00E-05	mg/kg-day	1	1.00E-05	mg/kg-day	Skin / Histopathology	3000 / NA	IRIS	9/2015
	Subchronic	4.00E-05	mg/kg-day	1	4.00E-05	mg/kg-day	Skin / Histopathology	1000 / NA	IRIS	9/2015

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal†	Absorbed RfD for Dermal		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s)
Trichloroethylene	Chronic	5.00E-04	mg/kg-day	1	5.00E-04	mg/kg-day	Multiple / Multiple	Multiple / 1	IRIS	9/2015
	Subchronic	NA								
Trichlorophenol, 2,4,6-	Chronic	1.00E-03	mg/kg-day	1	1.00E-03	mg/kg-day	Reproductive / Decreased litter size	3000 / NA	PPRTV	2007
	Subchronic	NA								
Vanadium and Compounds	Chronic	5.04E-03	mg/kg-day	0.026 [2]	1.31E-04	mg/kg-day	Reduced hair cystine. The oral RfD toxicity value for vanadium is derived from the IRIS oral RfD for vanadium pentoxide by factoring out the molecular weight (MW) of the oxide ion. Vanadium pentoxide has a MW of 181.88. The two atoms of vanadium contribute 56% of the MW. Vanadium pentoxide's oral RfD of 9E-03 mg/kg-day multiplied by 56% give a vanadium oral RfD of 5.04E-03 mg/kg-day.	100 / 1	IRIS	9/2015
	Subchronic	1.00E-02	mg/kg-day	0.026 [2]	2.60E-04	mg/kg-day	Hematological / No effects	10 / NA	ATSDR [1]	2012
Vinyl Chloride	Chronic	3.00E-03	mg/kg-day	1	3.00E-03	mg/kg-day	Liver / Liver cell polymorphism	30 / 1	IRIS	9/2015
	Subchronic	NA								
Zinc and Compounds	Chronic	3.00E-01	mg/kg-day	1	3.00E-01	mg/kg-day	Blood / Decreases in erythrocyte copper and zinc-superoxide dismutase (ESOD) activity in healthy adult male and female volunteers	3 / NA	IRIS	9/2015
	Subchronic	3.00E-01	mg/kg-day	1	3.00E-01	mg/kg-day	Hematological / Reduced erythrocyte superoxide dismutase activity, hematocrit, and serum ferritin	3 / NA	ATSDR [1]	2005

NA = Not available

mg/kg-day = milligram per kilogram per day

LOAEL = Lowest-observed-adverse-effect level

NOAEL = No-observed-adverse-effect level

RfD = Reference dose

SGPT = serum glutamic-pyruvic transaminase

Sources:

Cal EPA = California EPA. Source date indicates the date Cal EPA was searched.

HEAST = Health Effects Assessment Summary Tables for Superfund. Source date indicates the date of the HEAST document.

IRIS = Integrated Risk Information System. Source date indicates the date IRIS was searched.

PPRTV = Provisional Peer Reviewed Toxicity Values for Superfund. Source date indicates the date of the PPRTV document.

1. The subchronic value is based on the ATSDR/MRL intermediate value.
2. The source of the oral absorption efficiency to dermal factor is from RAGS Part E Table 4-1 (EPA 2004).
3. For Chromium III the subchronic RfD was assumed to be the same as the chronic RfD.
4. HEAST indicates that inadequate information was available to derive a chronic oral RfD; therefore, the drinking water standard was used.
5. The source of toxic equivalency factors (TEFs) for dioxin-like PCBs and dioxin/furans is EPA 2010.
6. The source of the chronic RfD for 2,3,7,8-TCDD is 7.00E-10 from IRIS; each RfD for dioxin-like PCBs and dioxin/furans was adjusted based on the TEFs.
7. The source of the subchronic RfD for 2,3,7,8-TCDD is 2.00E-8 from ATSDR; each RfD for dioxin-like PCBs and dioxin/furans were adjusted based on the TEFs.
8. The source of the chronic RfD for Mercury (elemental) is the RfC for Methyl-mercury from IRIS.
9. The source of the chronic RfD for Aroclor 1242, 1248, 1260, 1268 is the RfC for Aroclor 1254 from IRIS.

† = Source: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment (Final). Section 4.2 and Exhibit 4-1. USEPA recommends that the oral RfD should not be adjusted to estimate the absorbed dose for compounds when the absorption efficiency is greater than 0.5. Constituents with oral absorption efficiencies greater than 0.5, or without reported oral absorption efficiencies, are shown with an oral absorption efficiency of 1. Adjusted Dermal RfD = RfD (oral) x Oral to Dermal Adjustment Factor.

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfC : Target Organ(s)	
		Value	Units			Source(s)	Date(s)
Acenaphthene	Chronic	NA					
	Subchronic	NA					
Acenaphthylene	Chronic	NA					
	Subchronic	NA					
Aldrin	Chronic	NA					
	Subchronic	NA					
Aluminum	Chronic	5.00E-03	mg/m^3	Neurological / Psychomotor and cognitive impairment	300 / NA	PPRTV	2006
	Subchronic	NA					
Anthracene	Chronic	NA					
	Subchronic	NA					
Antimony (metallic)	Chronic	NA					
	Subchronic	NA					
Aroclor 1016	Chronic	NA					
	Subchronic	NA					
Aroclor 1242	Chronic	NA					
	Subchronic	NA					
Aroclor 1248	Chronic	NA					
	Subchronic	NA					
Aroclor 1254	Chronic	NA					
	Subchronic	NA					
Aroclor 1260	Chronic	NA					
	Subchronic	NA					
Aroclor 1268	Chronic	NA					
	Subchronic	NA					
Arsenic, Inorganic	Chronic	1.50E-05	mg/m^3	Reproductive / Development, cardiovascular system, nervous system, lung, skin	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Barium	Chronic	5.00E-04	mg/m^3	Fetus / Fetotoxicity	1000 / NA	HEAST	1997
	Subchronic	5.00E-03	mg/m^3	Fetus / Fetotoxicity	100 / NA	HEAST	1997
Benz[a]anthracene	Chronic	NA					
	Subchronic	NA					
Benzo[a]pyrene	Chronic	NA					
	Subchronic	NA					
Benzo[b]fluoranthene	Chronic	NA					
	Subchronic	NA					
Benzo[g,h,i]perylene	Chronic	NA					
	Subchronic	NA					
Benzo[k]fluoranthene	Chronic	NA					
	Subchronic	NA					

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfC : Target Organ(s)	
		Value	Units			Source(s)	Date(s)
Beryllium and compounds	Chronic	2.00E-05	mg/m^3	Immune / Sensitization and progression to Chronic Beryllium Disease	10 / 1	IRIS	9/2015
	Subchronic	NA					
Biphenyl, 1,1'-	Chronic	NA					
	Subchronic	NA					
Bis(2-ethylhexyl)phthalate	Chronic	NA					
	Subchronic	NA					
Cadmium (Diet)	Chronic	1.00E-05	mg/m^3	Renal / No effects; increase in the prevalence of β2-microglobulin protenuria	3 / 3	ATSDR	2012
	Subchronic	NA					
Chloroform	Chronic [1]	9.77E-02	mg/m^3	Toxic hepatitis	100 / NA	ATSDR	1997
	Subchronic [1]	2.44E-01	mg/m^3	Hepatic / Significantly increased SGPT activity	100 / 3	ATSDR [6]	1997
Chromium(III), Insoluble Salts	Chronic	NA					
	Subchronic	5.00E-03	mg/m^3	Inhalation / Trace-to-mild septal cell hyperplasia and chronic interstitial inflammation of the lung	90	ATSDR [6]	2012
Chromium(VI)	Chronic [2]	1.00E-04	mg/m^3	Lungs / Lactate dehydrogenase in bronchioalveolar lavage fluid	300 / 1	IRIS	9/2015
	Subchronic	3.00E-04	mg/m^3	Hematological / Microcytic, hypochromic anemia	30 / NA	ATSDR [6]	2012
Chromium, Total	Chronic	NA					
	Subchronic	NA					
Chrysene	Chronic	NA					
	Subchronic	NA					
Cobalt	Chronic	6.00E-06	mg/m^3	Respiratory Tract, Lung / Irritation, decreased function	300 / NA	PPRTV	2008
	Subchronic	2.00E-05	mg/m^3	Respiratory tract, Lung / Irritation, decreased function	100 / NA	PPRTV	2008
Copper	Chronic	NA					
	Subchronic	NA					
Cyanide (CN-)	Chronic	8.00E-04	mg/m^3	Thyroid enlargemnet and altered iodide uptake	3000	IRIS	9/2015
	Subchronic	NA					
DDD	Chronic	NA					
	Subchronic	NA					
DDE, p,p'-	Chronic	NA					
	Subchronic	NA					
DDT	Chronic	NA					
	Subchronic	NA					
DDT/DDE/DDD (total)	Chronic	NA					
	Subchronic	NA					
Dibenz[a,h]anthracene	Chronic	NA					
	Subchronic	NA					

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfC : Target Organ(s)	
		Value	Units			Source(s)	Date(s)
Dibenzofuran	Chronic	NA					
	Subchronic	NA					
Dichloroethane, 1,1-	Chronic	NA					
	Subchronic	NA					
Dichloroethylene, 1,2-cis-	Chronic	NA					
	Subchronic	NA					
Dieldrin	Chronic	NA					
	Subchronic	NA					
Endosulfan I	Chronic	NA					
	Subchronic	NA					
Endrin	Chronic	NA					
	Subchronic	NA					
Fluoranthene	Chronic	NA					
	Subchronic	NA					
Fluorene	Chronic	NA					
	Subchronic	NA					
Heptachlor	Chronic	NA					
	Subchronic	NA					
Heptachlor Epoxide	Chronic	NA					
	Subchronic	NA					
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156) [3,4]	Chronic	1.20E-12	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157) [3,4]	Chronic	1.20E-12	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167) [3,4]	Chronic	1.20E-12	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169) [3,4]	Chronic	1.20E-09	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Hexachlorocyclohexane, Alpha-	Chronic	NA					
	Subchronic	NA					
Hexachlorocyclohexane, Beta-	Chronic	NA					
	Subchronic	NA					
Hexachlorocyclohexane, Gamma- (Lindane)	Chronic	NA					
	Subchronic	NA					
Hexachlorodibenzofuran, 1,2,3,4,7,8- [3,4]	Chronic	4.00E-09	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfC : Target Organ(s)	
		Value	Units			Source(s)	Date(s)
HxCDF, 1,2,3,6,7,8- [3,4]	Chronic	4.00E-09	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Indeno[1,2,3-cd]pyrene	Chronic	NA					
	Subchronic	NA					
Iron	Chronic	NA					
	Subchronic	NA					
Lead and Compounds	Chronic	NA					
	Subchronic	NA					
Magnesium	Chronic	NA					
	Subchronic	NA					
Manganese (Non-diet)	Chronic	5.00E-05	mg/m^3	Neurological / Impairment of neurobehavioral function	1000 / 1	IRIS	9/2015
	Subchronic	NA					
Mercuric Chloride	Chronic [5]	3.00E-04	mg/m^3	Neurological / Hand tremor; increases in memory disturbances; slight subjective and objective evidence of autonomic dysfunction	30 / 1	IRIS	9/2015
	Subchronic	NA					
Mercury (elemental)	Chronic	3.00E-04	mg/m^3	Neurological / Hand tremor; increases in memory disturbances; slight subjective and objective evidence of autonomic dysfunction	30 / 1	IRIS	9/2015
	Subchronic	3.00E-04	mg/m^3	Nervous system / Neurotoxicity	30 / NA	HEAST	1997
Methylnaphthalene, 2-	Chronic	NA					
	Subchronic	NA					
Naphthalene	Chronic	3.00E-03	mg/m^3	Nasal / Nasal effects: hyperplasia and metaplasia in respiratory and olfactory epithelium, respectively	3000 / 1	IRIS	9/2015
	Subchronic	NA					
Nickel Soluble Salts	Chronic	9.00E-05	mg/m^3	Respiratory / Atrophy of olfactory epithelium	30 / NA	ATSDR	2005
	Subchronic	2.00E-04	mg/m^3	Chronic lung inflammation, hyperplasia of lymph nodes, and mild dehydration.	30 / NA	ATSDR [6]	2005
Nitroaniline, 2-	Chronic	NA					
	Subchronic	4.00E-04	mg/m^3	Nasal; Eyes / Irritation; Irritation	1000 / NA	PPRTV	2009
Nitroaniline, 4-	Chronic	6.00E-03	mg/m^3	Blood / Methemoglobinemia	300 / NA	PPRTV	2009
	Subchronic	2.00E-02	mg/m^3	Blood / Methemoglobinemia	100 / NA	PPRTV	2009
Octyl Phthalate, di-N-	Chronic	NA					
	Subchronic	NA					
PeCDF, 2,3,4,7,8- [3,4]	Chronic	1.20E-08	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105) [3,4]	Chronic	1.20E-12	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfC : Target Organ(s)	
		Value	Units			Source(s)	Date(s)
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114) [3,4]	Chronic	1.20E-12	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118) [3,4]	Chronic	1.20E-12	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126) [3,4]	Chronic	4.00E-09	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8- [3,4]	Chronic	4.00E-08	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Pentachlorophenol	Chronic	NA					
	Subchronic	NA					
Phenanthrene	Chronic	NA					
	Subchronic	NA					
Pyrene	Chronic	NA					
	Subchronic	NA					
Selenium	Chronic	2.00E-02	mg/m^3	Alimentary system (liver), Cardiovascular system, Nervous system	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Silver	Chronic	NA					
	Subchronic	NA					
TCDD, 2,3,7,8- [3,4]	Chronic	4.00E-08	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77) [3,4]	Chronic	4.00E-12	mg/m^3	Lung / Respiratory effects	NA / NA	Cal EPA	2/2016
	Subchronic	NA					
Tetrachloroethylene	Chronic	4.00E-02	mg/m^3	Nervous System / Neurotoxicity (color vision, reaction time, cognitive effects)	1000 / 1	IRIS	9/2015
	Subchronic	NA					
Thallium (Soluble Salts)	Chronic	NA					
	Subchronic	NA					
Trichloroethylene	Chronic	2.00E-03	mg/m^3	Multiple / Decreased thymus weight and heart malformations	Multiple / 1	IRIS	9/2015
	Subchronic	NA					
Trichlorophenol, 2,4,6-	Chronic	NA					
	Subchronic	NA					
Vanadium and Compounds	Chronic	1.00E-04	mg/m^3	Respiratory / Hyperplasia of alveolar and bronchiolar epithelium, degeneration and hyperplasia of epiglottis epithelium, and goblet cell hyperplasia in nasal respiratory epithelium	30 / NA	ATSDR	2012
	Subchronic	NA					

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Primary Target Organ(s)	Combined Uncertainty/ Modifying Factors	RfC : Target Organ(s)	
		Value	Units			Source(s)	Date(s)
Vinyl Chloride	Chronic	1.00E-01	mg/m^3	Liver / Liver cell polymorphism	30 / 1	IRIS	9/2015
	Subchronic [1]	7.67E-02	mg/m^3	Absolute and relative mean liver weights were significantly increased	30 / 1	ATSDR [6]	2006
Zinc and Compounds	Chronic	NA					
	Subchronic	NA					

NA = Not available

mg/m^3 = milligram per cubic meter

RfC = Reference concentration

Sources:

Cal EPA = California EPA. Source date indicates the date Cal EPA was searched.

HEAST = Health Effects Assessment Summary Tables for Superfund. Source date indicates the date of the HEAST document.

IRIS = Integrated Risk Information System. Source date indicates the date IRIS was searched.

PPRTV = Provisional Peer Reviewed Toxicity Values for Superfund. Source date indicates the date of the PPRTV document.

1. The reference concentration was converted from ppm to mg/m^3.
2. The reference value for Cr VI particulates was selected because it represents the most viable inhalation pathway for the scenario, and the overall confidence in the RfC assessment is medium.
3. The source of toxic equivalency factors (TEFs) for dioxin-like PCBs and dioxin/furans is EPA 2010.
4. The source of the chronic RfC for 2,3,7,8-TCDD is 4.00E-8 from CalEPA, and each RfC for dioxin-like PCBs and dioxin/furans was adjusted based on the TEFs.
5. The IRIS RfC for "Mercury (elemental)" is used as a surrogate for "Mercuric chloride (and other mercury salts)". Note, that the VF for "Mercury (elemental)" is not used as a surrogate for "Mercuric chloride (and other mercury salts)." The use of the surrogate RfC would appear to be a violation of the Regional Screening Level (RSL) toxicity hierarchy because Cal EPA offers a RfC for Mercuric Chloride. However, the actual form of mercury evaluted for the Cal EPA RfC was elemental mercury. Since IRIS already had a RfC for "Mercury (elemental)," it was decided to use the tier 1 source over a tier 3 source.
6. The subchronic value is based on the ATSDR/MRL intermediate value.

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal(†)	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description	Oral Cancer Slope Factor	
	Value	Units		Value	Units		Source(s)	Date(s)
Acenaphthene	NA							
Acenaphthylene	NA							
Aldrin	1.70E+01	mg/kg-day	1	1.70E+01	mg/kg-day	B2	IRIS	9/2015
Aluminum	NA							
Anthracene	NA							
Antimony (metallic)	NA							
Aroclor 1016	2.00E+00	mg/kg-day	1	2.00E+00	mg/kg-day	B2	IRIS	9/2015
Aroclor 1242 [5]	2.00E+00	mg/kg-day	1	2.00E+00	mg/kg-day	B2	IRIS	9/2015
Aroclor 1248 [5]	2.00E+00	mg/kg-day	1	2.00E+00	mg/kg-day	B2	IRIS	9/2015
Aroclor 1254	2.00E+00	mg/kg-day	1	2.00E+00	mg/kg-day	B2	IRIS	9/2015
Aroclor 1260 [5]	2.00E+00	mg/kg-day	1	2.00E+00	mg/kg-day	B2	IRIS	9/2015
Aroclor 1268 [5]	2.00E+00	mg/kg-day	1	2.00E+00	mg/kg-day	B2	IRIS	9/2015
Total PCB Aroclors	2.00E+00	mg/kg-day	1	2.00E+00	mg/kg-day	B2	IRIS	9/2015
Arsenic, Inorganic	1.50E+00	mg/kg-day	1	1.50E+00	mg/kg-day	A	IRIS	9/2015
Barium	NA							
Benz[a]anthracene	7.30E-01	mg/kg-day	1	7.30E-01	mg/kg-day	B2	IRIS	9/2015
Benzo[a]pyrene	7.30E+00	mg/kg-day	1	7.30E+00	mg/kg-day	B2	IRIS	9/2015
Benzo[b]fluoranthene	7.30E-01	mg/kg-day	1	7.30E-01	mg/kg-day	B2	IRIS	9/2015
Benzo[g,h,i]perylene	NA							
Benzo[k]fluoranthene	7.30E-02	mg/kg-day	1	7.30E-02	mg/kg-day	B2	IRIS	9/2015
Beryllium and compounds	NA							
Biphenyl, 1,1'-	8.00E-03	mg/kg-day	1	8.00E-03	mg/kg-day	Suggestive evidence of carcinogenic potential.	IRIS	9/2015
Bis(2-ethylhexyl)phthalate	1.40E-02	mg/kg-day	1	1.40E-02	mg/kg-day	B2	IRIS	9/2015
Cadmium (Diet)	NA							
Chloroform	3.10E-02	mg/kg-day	1	3.10E-02	mg/kg-day	Proposed Guidelines for Carcinogen Risk Assessment (EPA 1996, EPA 1999), indicate chloroform is likely to be carcinogenic to humans by all routes of exposure under high-exposure conditions that lead to cytotoxicity and regenerative hyperplasia in susceptible tissues (EPA 1998a,b). A dose of 0.01 mg/kg/day (equal to the RfD) can be considered protective against cancer risk.	IRIS	9/2015
Chromium(III), Insoluble Salts	NA							
Chromium(VI)	5.00E-01	mg/kg-day	0.025	2.00E+01	mg/kg-day	Carcinogenic potential by the oral route of exposure cannot be determined (based on the 1996 Cander Guidelines).	IRIS	9/2015
Chromium, Total	NA							
Chrysene	7.30E-03	mg/kg-day	1	7.30E-03	mg/kg-day	B2	IRIS	9/2015
Cobalt	NA							
Copper	NA							
Cyanide (CN-)	NA							
DDD	2.40E-01	mg/kg-day	1	2.40E-01	mg/kg-day	B2	IRIS	9/2015
DDE, p,p'-	3.40E-01	mg/kg-day	1	3.40E-01	mg/kg-day	B2	IRIS	9/2015
DDT	3.40E-01	mg/kg-day	1	3.40E-01	mg/kg-day	B2	IRIS	9/2015

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal(†)	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description	Oral Cancer Slope Factor	
	Value	Units		Value	Units		Source(s)	Date(s)
DDT/DDE/DDD (total)	NA							
Dibenz[a,h]anthracene	7.30E+00	mg/kg-day	1	7.30E+00	mg/kg-day	B2	IRIS	9/2015
Dibenzofuran	NA							
Dichloroethane, 1,1-	5.70E-03	mg/kg-day	1	5.70E-03	mg/kg-day	NA	Cal EPA	2/2016
Dichloroethylene, 1,2-cis-	NA							
Dieldrin	1.60E+01	mg/kg-day	1	1.60E+01	mg/kg-day	B2	IRIS	9/2015
Endosulfan I	NA							
Endrin	NA							
Fluoranthene	NA							
Fluorene	NA							
Heptachlor	4.50E+00	mg/kg-day	1	4.50E+00	mg/kg-day	B2	IRIS	9/2015
Heptachlor Epoxide	9.10E+00	mg/kg-day	1	9.10E+00	mg/kg-day	B2	IRIS	9/2015
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)[1,2]	4.50E+00	mg/kg-day	1	4.50E+00	mg/kg-day	B2[4]	HEAST	1997
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)[1,2]	4.50E+00	mg/kg-day	1	4.50E+00	mg/kg-day	B2[4]	HEAST	1997
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)[1,2]	4.50E+00	mg/kg-day	1	4.50E+00	mg/kg-day	B2[4]	HEAST	1997
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)[1,2]	4.50E+03	mg/kg-day	1	4.50E+03	mg/kg-day	B2[4]	Cal EPA	2/2016
Hexachlorocyclohexane, Alpha-	6.30E+00	mg/kg-day	1	6.30E+00	mg/kg-day	B2	IRIS	9/2015
Hexachlorocyclohexane, Beta-	1.80E+00	mg/kg-day	1	1.80E+00	mg/kg-day	C	IRIS	9/2015
Hexachlorocyclohexane, Gamma- (Lindane)	1.10E+00	mg/kg-day	1	1.10E+00	mg/kg-day	NA	Cal EPA	2/2016
Hexachlorodibenzofuran, 1,2,3,4,7,8-[1,3]	1.50E+04	mg/kg-day	1	1.50E+04	mg/kg-day	B2[4]	HEAST	1997
HxCDF, 1,2,3,6,7,8-[1,3]	1.50E+04	mg/kg-day	1	1.50E+04	mg/kg-day	B2[4]	HEAST	1997
Indeno[1,2,3-cd]pyrene	7.30E-01	mg/kg-day	1	7.30E-01	mg/kg-day	B2	IRIS	9/2015
Iron	NA							
Lead and Compounds	NA							
Magnesium	NA							
Manganese (Non-diet)	NA							
Mercuric Chloride	NA							
Mercury (elemental)	NA							
Methylnaphthalene, 2-	NA							
Naphthalene	NA							
Nickel Soluble Salts	NA							
Nitroaniline, 2-	NA							
Nitroaniline, 4-	2.00E-02	mg/kg-day	1	2.00E-02	mg/kg-day	C	PPRTV	2009
Octyl Phthalate, di-N-	NA							
PeCDF, 2,3,4,7,8-[1,3]	4.50E+04	mg/kg-day	1	4.50E+04	mg/kg-day	B2[4]	HEAST	1997
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)[1,3]	4.50E+00	mg/kg-day	1	4.50E+00	mg/kg-day	B2[4]	HEAST	1997
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)[1,3]	4.50E+00	mg/kg-day	1	4.50E+00	mg/kg-day	B2[4]	HEAST	1997
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)[1,3]	4.50E+00	mg/kg-day	1	4.50E+00	mg/kg-day	B2[4]	HEAST	1997
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)[1,3]	1.50E+04	mg/kg-day	1	1.50E+04	mg/kg-day	B2[4]	HEAST	1997
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-[1,3]	1.50E+05	mg/kg-day	1	1.50E+05	mg/kg-day	B2[4]	HEAST	1997
Pentachlorophenol	4.00E-01	mg/kg-day	1	4.00E-01	mg/kg-day	Likely to be carcinogenic to humans.	IRIS	9/2015

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal(†)	Absorbed Cancer Slope Factor for Dermal		Weight of Evidence/ Cancer Guideline Description	Oral Cancer Slope Factor	
	Value	Units		Value	Units		Source(s)	Date(s)
Phenanthrene	NA							
Pyrene	NA							
Selenium	NA							
Silver	NA							
TCDD, 2,3,7,8- [1,3]	1.50E+05	mg/kg-day	1	1.50E+05	mg/kg-day	B2[4]	HEAST	1997
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)[1,3]	1.50E+01	mg/kg-day	1	1.50E+01	mg/kg-day	B2[4]	HEAST	1997
Total dioxin/furans and dioxin-like PCBs[1,2]	1.50E+05	mg/kg-day	1	1.50E+05	mg/kg-day	B2[4]	HEAST	1997
Tetrachloroethylene	2.10E-03	mg/kg-day	1	2.10E-03	mg/kg-day	Likely to be carcinogenic to humans.	IRIS	9/2015
Thallium (Soluble Salts)	NA							
Trichloroethylene	4.60E-02	mg/kg-day	1	4.60E-02	mg/kg-day	Carcinogenic to humans.	IRIS	9/2015
Trichlorophenol, 2,4,6-	1.10E-02	mg/kg-day	1	1.10E-02	mg/kg-day	B2	IRIS	9/2015
Vanadium and Compounds	NA							
Vinyl Chloride	7.20E-01	mg/kg-day	1	7.20E-01	mg/kg-day	A	IRIS	9/2015
Zinc and Compounds	NA							

NA = Not available

mg/kg-day = milligram per kilogram per day

RfC = Reference concentration

Weight of Evidence:

A = Carcinogenic to Humans.

B1 = Likely to Be Carcinogenic to Humans - Based on limited evidence of carcinogenicity in humans.

B2 = Likely to Be Carcinogenic to Humans - Based on sufficient evidence in animals and inadequate or no evidence in humans.

C = Suggestive Evidence of Carcinogenic Potential.

Sources:

Cal EPA = California EPA. Source date indicates the date Cal EPA was searched.

HEAST = Health Effects Assessment Summary Tables for Superfund. Source date indicates the date of the HEAST document.

IRIS = Integrated Risk Information System. Source date indicates the date IRIS was searched.

PPRTV = Provisional Peer Reviewed Toxicity Values for Superfund. Source date indicates the date of the PPRTV document.

1. The source of toxic equivalency factors (TEFs) for dioxin-like PCBs and dioxin/furans is EPA 2010.
2. The source of the oral cancer slope factor (CSF) of 1.5E+05 mg/kg-day for 2,3,7,8-TCDD is HEAST 1997, EPA 1997, and 1996 Reassessment for PCB Carcinogenicity; the CSF for the dioxin-like PCBs and dioxin/furans were adjusted based on the TEFs.
3. The source of the oral cancer slope factor (CSF) of 1.5E+05 mg/kg-day for 2,3,7,8-TCDD is HEAST 1997 and EPA 1997; the CSF for the dioxin-like PCBs and dioxin/furans were adjusted based on the TEFs.
4. The source for the weight of evidence for dioxin-like PCBs and dioxin/furans is HEAST 1997.
5. The source of the chronic RfD for Aroclor 1242, 1248, 1260, 1268 is the RfC for Aroclor 1254 from IRIS.

† = Source: Risk Assessment Guidance for Superfund. Volume 1: Human Health Evaluation Manual, Part E, Supplemental Guidance for Dermal Risk Assessment (Final). Section 4.2 and Exhibit 4-1. USEPA recommends that the oral RfD should not be adjusted to estimate the absorbed dose for compounds when the absorption efficiency is greater than 0.5. Constituents with oral absorption efficiencies greater than 0.5, or without reported oral absorption efficiencies, are shown with an oral absorption efficiency of 1. Adjusted Dermal RfD = RfD (oral) / Oral to Dermal Adjustment Factor.

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation Cancer Slope Factor	
	Value	Units		Source(s)	Date(s)
Acenaphthene	NA				
Acenaphthylene	NA				
Aldrin	4.90E-03	µg/m^3	B2	IRIS	9/2015
Aluminum	NA				
Anthracene	NA				
Antimony (metallic)	NA				
Aroclor 1016	5.71E-04	µg/m^3	B2	IRIS	9/2015
Aroclor 1242 [5]	5.71E-04	µg/m^3	B2	IRIS	9/2015
Aroclor 1248 [5]	5.71E-04	µg/m^3	B2	IRIS	9/2015
Aroclor 1254	5.71E-04	µg/m^3	B2	IRIS	9/2015
Aroclor 1260 [5]	5.71E-04	µg/m^3	B2	IRIS	9/2015
Aroclor 1268 [5]	5.71E-04	µg/m^3	B2	IRIS	9/2015
Total PCB Aroclors	5.71E-04	µg/m^3	B2	IRIS	9/2015
Arsenic, Inorganic	4.30E-03	µg/m^3	A	IRIS	9/2015
Barium	NA				
Benz[a]anthracene[4]	1.10E-04	µg/m^3	B2[3]	Cal EPA	2/2016
Benzo[a]pyrene[4]	1.10E-03	µg/m^3	B2[3]	Cal EPA	2/2016
Benzo[b]fluoranthene[4]	1.10E-04	µg/m^3	B2[3]	Cal EPA	2/2016
Benzo[g,h,i]perylene	NA				
Benzo[k]fluoranthene[4]	1.10E-04	µg/m^3	B2[3]	Cal EPA	2/2016
Beryllium and compounds	2.40E-03	µg/m^3	B1	IRIS	9/2015
Biphenyl, 1,1'-	NA				
Bis(2-ethylhexyl)phthalate	2.40E-06	µg/m^3	B2[3]	Cal EPA	2/2016
Cadmium (Diet)	1.80E-03	µg/m^3	B1	IRIS	9/2015
Chloroform	2.30E-05	µg/m^3	B2	IRIS	9/2015
Chromium(III), Insoluble Salts	NA				
Chromium(VI)	8.40E-02	µg/m^3	A (inhalation route)	IRIS	9/2015
Chromium, Total	NA				
Chrysene[4]	1.10E-05	µg/m^3	B2[3]	Cal EPA	2/2016
Cobalt	9.00E-03	µg/m^3	Cobalt sulfate (soluble) is likely to be carcinogenic to humans by the inhalation route.	PPRTV	2008
Copper	NA				

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation Cancer Slope Factor	
	Value	Units		Source(s)	Date(s)
Cyanide (CN-)	NA				
DDD	6.90E-05	µg/m^3	B2[3]	Cal EPA	2/2016
DDE, p,p'-	9.70E-05	µg/m^3	B2[3]	Cal EPA	2/2016
DDT	9.70E-05	µg/m^3	B2	IRIS	9/2015
DDT/DDE/DDD (total)	NA				
Dibenz[a,h]anthracene[4]	1.20E-03	µg/m^3	B2[3]	Cal EPA	2/2016
Dibenzofuran	NA				
Dichloroethane, 1,1-	1.60E-06	µg/m^3	C	Cal EPA	2/2016
Dichloroethylene, 1,2-cis-	NA				
Dieldrin	4.60E-03	µg/m^3	B2	IRIS	9/2015
Endosulfan I	NA				
Endrin	NA				
Fluoranthene	NA				
Fluorene	NA				
Heptachlor	1.30E-03	µg/m^3	B2	IRIS	9/2015
Heptachlor Epoxide	2.60E-03	µg/m^3	B2	IRIS	9/2015
Hexachlorobiphenyl, 2,3,3',4,4',5- (PCB 156)[1]	1.14E-03	µg/m^3	B2[2]	Cal EPA	2/2016
Hexachlorobiphenyl, 2,3,3',4,4',5'- (PCB 157)[1]	1.14E-03	µg/m^3	B2[2]	Cal EPA	2/2016
Hexachlorobiphenyl, 2,3',4,4',5,5'- (PCB 167)[1]	1.14E-03	µg/m^3	B2[2]	Cal EPA	2/2016
Hexachlorobiphenyl, 3,3',4,4',5,5'- (PCB 169)[1]	1.14E+00	µg/m^3	B2[2]	Cal EPA	2/2016
Hexachlorocyclohexane, Alpha-	1.80E-03	µg/m^3	B2	IRIS	9/2015
Hexachlorocyclohexane, Beta-	5.30E-04	µg/m^3	C	IRIS	9/2015
Hexachlorocyclohexane, Gamma- (Lindane)	3.10E-04	µg/m^3	Suggestive evidence of carcinogenicity, but not sufficient to assess human carcinogenic potential, based on the Cancer Assessment Review Committee Health Effects Division Office of Pesticide Programs, November 29, 2001.	Cal EPA	2/2016
Hexachlorodibenzofuran, 1,2,3,4,7,8-[1]	3.80E+00	µg/m^3	B2[2]	Cal EPA	2/2016
HxCDF, 1,2,3,6,7,8-[1]	3.80E+00	µg/m^3	B2[2]	Cal EPA	2/2016
Indeno[1,2,3-cd]pyrene[4]	1.10E-04	µg/m^3	B2[3]	Cal EPA	2/2016
Iron	NA				
Lead and Compounds	1.20E-05	µg/m^3	B2	Cal EPA	2/2016
Magnesium	NA				

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation Cancer Slope Factor	
	Value	Units		Source(s)	Date(s)
Manganese (Non-diet)	NA				
Mercuric Chloride	NA				
Mercury (elemental)	NA				
Methylnaphthalene, 2-	NA				
Naphthalene[4]	3.40E-05	µg/m^3	B2[3]	Cal EPA	2/2016
Nickel Soluble Salts	2.60E-04	µg/m^3	Chemical has not been evaluated as to carcinogenicity.[3]	Cal EPA	2/2016
Nitroaniline, 2-	NA				
Nitroaniline, 4-	NA				
Octyl Phthalate, di-N-	NA				
PeCDF, 2,3,4,7,8-[1]	1.14E+01	µg/m^3	B2[2]	Cal EPA	2/2016
Pentachlorobiphenyl, 2,3,3',4,4'- (PCB 105)[1]	1.14E-03	µg/m^3	B2[2]	Cal EPA	2/2016
Pentachlorobiphenyl, 2,3,4,4',5- (PCB 114)[1]	1.14E-03	µg/m^3	B2[2]	Cal EPA	2/2016
Pentachlorobiphenyl, 2,3',4,4',5- (PCB 118)[1]	1.14E-03	µg/m^3	B2[2]	Cal EPA	2/2016
Pentachlorobiphenyl, 3,3',4,4',5- (PCB 126)[1]	3.80E+00	µg/m^3	B2[2]	Cal EPA	2/2016
Pentachlorodibenzo-p-dioxin, 1,2,3,7,8-[1]	3.80E+01	µg/m^3	B2[2]	Cal EPA	2/2016
Pentachlorophenol	5.10E-06	µg/m^3	NA	Cal EPA	2/2016
Phenanthrene	NA				
Pyrene	NA				
Selenium	NA				
Silver	NA				
TCDD, 2,3,7,8-[1]	3.80E+01	µg/m^3	B2[2]	Cal EPA	2/2016
Tetrachlorobiphenyl, 3,3',4,4'- (PCB 77)[1]	3.80E-03	µg/m^3	B2[2]	Cal EPA	2/2016
Total dioxin/furans and dioxin-like PCBs[1]	3.80E+01	µg/m^3	B2[2]	Cal EPA	2/2016
Tetrachloroethylene	2.60E-07	µg/m^3	Likely to be carcinogenic to humans.	IRIS	9/2015
Thallium (Soluble Salts)	NA				
Trichloroethylene	4.10E-06	µg/m^3	Carcinogenic to humans.	IRIS	9/2015
Trichlorophenol, 2,4,6-	3.10E-06	µg/m^3	B2	IRIS	9/2015

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Chemical of Potential Concern	Unit Risk		Weight of Evidence/ Cancer Guideline Description	Unit Risk: Inhalation Cancer Slope Factor	
	Value	Units		Source(s)	Date(s)
Vanadium and Compounds	NA				
Vinyl Chloride	4.40E-06	$\mu g/m^3$	A	IRIS	9/2015
Zinc and Compounds	NA				

NA = Not available

$\mu g/m^3$ = microgram per cubic meter

RfC = Reference concentration

Weight of Evidence:

A = Carcinogenic to Humans.

B1 = Likely to Be Carcinogenic to Humans - Based on limited evidence of carcinogenicity in humans.

B2 = Likely to Be Carcinogenic to Humans - Based on sufficient evidence in animals and inadequate or no evidence in humans.

C = Suggestive Evidence of Carcinogenic Potential.

Sources:

Cal EPA = California EPA. Source date indicates the date Cal EPA was searched.

HEAST = Health Effects Assessment Summary Tables for Superfund. Source date indicates the date of the HEAST document.

IRIS = Integrated Risk Information System. Source date indicates the date IRIS was searched.

PPRTV = Provisional Peer Reviewed Toxicity Values for Superfund. Source date indicates the date of the PPRTV document.

1. The source of toxic equivalency factors (TEFs) for dioxin-like PCBs and dioxin/furans is EPA 2010. The unit risk for 2,3,7,8-TCDD of 3.8E+01 was adjusted based on the TEFs.
2. The source for the weight of evidence for dioxin-like PCBs and dioxin/furans is HEAST 1997.
3. The source for the weight of evidence is IRIS.
4. The source for the relative potency factors for PAHs is EPA 1993.
5. The source of the chronic RfD for Aroclor 1242, 1248, 1260, 1268 is the RfC for Aroclor 1254 from IRIS.

TABLE 7.1a-RME Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	4.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.1E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	8.6E-04
				ALUMINUM	6.5E+03	mg/kg	1.3E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.5E-03
				ANTIMONY	2.2E+01	mg/kg	4.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.3E-02
				ARSENIC	1.6E+01	mg/kg	1.9E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-07	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	7.4E-03
				BARIUM	6.7E+02	mg/kg	1.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	8.0E-04
				CADMIUM	5.6E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.3E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.1E-08	mg/kg-day	2.7E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-08	1.3E-07	mg/kg-day	3.0E-03	mg/kg-day	None	4.2E-05
				COBALT	8.9E+00	mg/kg	1.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	7.0E-03
				COPPER	1.2E+03	mg/kg	2.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	6.9E-03
				IRON	4.8E+04	mg/kg	9.8E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.6E-02
				MANGANESE	8.3E+02	mg/kg	1.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	8.2E-03
				MERCURY	2.7E+00	mg/kg	5.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.5E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	6.5E-03
				NICKEL	9.8E+01	mg/kg	2.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.2E-03
				SILVER	1.3E+01	mg/kg	2.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-06	mg/kg-day	5.0E-03	mg/kg-day	Skin	6.4E-04
				ZINC	1.9E+03	mg/kg	3.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.5E-03
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	2.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	8.4E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	4.4E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-06	5.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.3E-07	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	5.1E-06	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	6.2E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-06	7.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	7.4E-07	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	2.9E-07	8.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	3.7E-07	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	1.4E-08	4.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	6.7E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	2.6E-06	7.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	9.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	2.8E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	7.6E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-07	8.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	2.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.2E-04
				PYRENE	1.8E+01	mg/kg	3.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.4E-04
				PCB-1242	1.0E+00	mg/kg	2.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-08	2.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-02
				PCB-1248	1.5E+01	mg/kg	3.1E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.2E-07	3.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.8E-01
				PCB-1254	1.1E+01	mg/kg	2.1E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-07	2.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-01
				PCB-1260	1.4E-01	mg/kg	2.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.5E-09	3.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-03
				BETA BHC	1.2E-01	mg/kg	2.5E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-09	2.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.5E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	4.0E-08	2.9E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	5.8E-04
				HEPTACHLOR	5.0E-02	mg/kg	1.0E-09	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-09	1.2E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.4E-05
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	7.6E-10	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	6.9E-09	8.9E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	6.8E-04
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.5E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.1E-09	1.7E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	8.6E-05
				DIBENZOFURAN	3.8E+01	mg/kg	7.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.4E-05						4.0E-01

TABLE 7.1a-RME Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	4.5E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	6.8E-08	5.3E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.8E-03
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	5.4E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.5E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	1.1E+02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	1.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	5.2E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	2.7E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06	3.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	8.0E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	3.1E-06	9.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	3.8E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-06	4.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	4.6E-07	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-07	5.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	2.3E-07	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	8.9E-09	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	4.1E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	1.6E-06	4.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	5.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.8E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.7E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	4.7E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-07	5.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	1.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	7.4E-05
				PYRENE	1.8E+01	mg/kg	2.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	8.6E-05
				PCB-1242	1.0E+00	mg/kg	1.4E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.2E-03
				PCB-1248	1.5E+01	mg/kg	2.1E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-07	2.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-01
				PCB-1254	1.1E+01	mg/kg	1.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.3E-02
				PCB-1260	1.4E-01	mg/kg	1.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-09	2.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-03
				BETA BHC	1.2E-01	mg/kg	1.2E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-09	1.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	1.2E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.9E-08	1.4E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.7E-04
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	7.0E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	9.8E-10	8.2E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.1E-05
				DIBENZOFURAN	3.8E+01	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								8.5E-06						2.2E-01

TABLE 7.1a-RME Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

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Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	3.2E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.7E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	4.6E-03
				ALUMINUM	6.5E+03	mg/kg	2.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.8E-08	mg/m^3	5.0E-03	mg/m^3	CNS	5.7E-06
				ANTIMONY	2.2E+01	mg/kg	8.1E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	5.8E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	2.5E-11	6.8E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	4.5E-06
				BARIUM	6.7E+02	mg/kg	2.5E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.9E-09	mg/m^3	5.0E-04	mg/m^3	Development	5.9E-06
				CADMIUM	5.6E+00	mg/kg	2.1E-09	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	3.8E-12	2.5E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	2.5E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	2.0E-10	µg/m^3	4.5E-01	(µg/m^3)$^{-1}$	8.9E-11	2.3E-12	mg/m^3	1.0E-04	mg/m^3	Lung	2.3E-08
				COBALT	8.9E+00	mg/kg	3.3E-09	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	3.0E-11	3.9E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	6.5E-06
				COPPER	1.2E+03	mg/kg	4.3E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	1.8E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	3.1E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.6E-09	mg/m^3	5.0E-05	mg/m^3	CNS	7.2E-05
				MERCURY	2.7E+00	mg/kg	4.0E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.7E-07	mg/m^3	3.0E-04	mg/m^3	CNS	1.6E-03
				NICKEL	9.8E+01	mg/kg	3.7E-08	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	9.5E-12	4.3E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	4.7E-06
				SILVER	1.3E+01	mg/kg	5.0E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	7.0E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	1.2E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	2.5E-06	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	1.5E-09	2.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	2.4E-09	µg/m^3	5.9E-03	(µg/m^3)$^{-1}$	1.4E-11	2.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	1.1E-08	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	6.7E-12	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	1.4E-08	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	8.0E-12	1.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	6.8E-09	µg/m^3	5.9E-05	(µg/m^3)$^{-1}$	4.0E-13	8.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	1.2E-09	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	7.9E-12	1.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	1.7E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	1.4E-09	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	8.1E-13	1.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	1.1E-04	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.8E-09	1.3E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	4.3E-04
				PYRENE	1.8E+01	mg/kg	3.8E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	9.0E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	5.1E-10	1.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	1.3E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	7.1E-09	1.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	6.3E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.6E-09	7.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	5.2E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.0E-11	6.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	4.6E-11	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	2.4E-14	5.3E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	4.6E-11	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	2.1E-13	5.3E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	5.3E-08	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	6.9E-11	6.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	2.3E-08	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	5.9E-11	2.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	2.7E-09	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	6.5E-15	3.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	9.9E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.7E-08						6.7E-03
		Exposure Point Total									2.2E-05						6.2E-01
	Exposure Medium Total										2.2E-05						6.2E-01
Medium Total for Young Child											2.2E-05						6.2E-01
										Total of Receptor Risks Across All Media	2.2E-05					Total of Receptor Hazards Across All Media	6.2E-01

TABLE 7.1a-RME Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.3.E-02
Total Body Weight HI Across All Media =	1.4.E-03
Total CNS HI Across All Media =	1.8.E-02
Total Development HI Across All Media =	5.9.E-06
Total GI Tract HI Across All Media =	2.3.E-02
Total Immune HI Across All Media =	5.3.E-01
Total Kidney HI Across All Media =	2.6.E-03
Total Liver HI Across All Media =	1.7.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	4.2.E-05
Total Reproductive HI Across All Media =	8.6.E-04
Total Respiratory HI Across All Media =	5.7.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	9.2.E-03
Total Thyroid HI Across All Media =	1.2.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.5.E-04

TABLE 7.1a-CTE Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	7.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	2.3E-04
				ALUMINUM	6.5E+03	mg/kg	2.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	4.2E-04
				ANTIMONY	2.2E+01	mg/kg	7.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.5E-03
				ARSENIC	1.6E+01	mg/kg	3.4E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.1E-08	6.0E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.0E-03
				BARIUM	6.7E+02	mg/kg	2.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	2.2E-04
				CADMIUM	5.6E+00	mg/kg	2.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.6E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.9E-09	mg/kg-day	2.7E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-09	3.4E-08	mg/kg-day	3.0E-03	mg/kg-day	None	1.1E-05
				COBALT	8.9E+00	mg/kg	3.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.9E-03
				COPPER	1.2E+03	mg/kg	4.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.4E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.9E-03
				IRON	4.8E+04	mg/kg	1.8E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	4.4E-03
				MANGANESE	8.3E+02	mg/kg	3.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.2E-03
				MERCURY	2.7E+00	mg/kg	1.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.8E-03
				NICKEL	9.8E+01	mg/kg	3.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.1E-04
				SILVER	1.3E+01	mg/kg	4.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.6E-07	mg/kg-day	5.0E-03	mg/kg-day	Skin	1.7E-04
				ZINC	1.9E+03	mg/kg	6.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	4.0E-04
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	5.2E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.0E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.3E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	7.9E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-07	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	2.3E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	9.1E-07	4.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	1.1E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-07	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	1.3E-07	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	5.2E-08	2.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	6.7E-08	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	2.6E-09	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	1.2E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	4.7E-07	2.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	7.5E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	1.4E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-08	2.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	3.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.5E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.2E-05
				PYRENE	1.8E+01	mg/kg	6.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	3.8E-05
				PCB-1242	1.0E+00	mg/kg	3.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-09	6.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.3E-03
				PCB-1248	1.5E+01	mg/kg	5.6E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07	9.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.9E-02
				PCB-1254	1.1E+01	mg/kg	3.8E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.7E-08	6.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.4E-02
				PCB-1260	1.4E-01	mg/kg	4.9E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.9E-10	8.6E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.3E-04
				BETA BHC	1.2E-01	mg/kg	4.5E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	8.0E-10	7.8E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	4.5E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	7.1E-09	7.8E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.6E-04
				HEPTACHLOR	5.0E-02	mg/kg	1.8E-10	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	8.3E-10	3.2E-09	mg/kg-day	5.0E-04	mg/kg-day	Liver	6.4E-06
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	1.4E-10	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-09	2.4E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	1.8E-04
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	2.7E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	3.7E-10	4.6E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	2.3E-05
				DIBENZOFURAN	3.8E+01	mg/kg	1.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								2.5E-06						1.1E-01

TABLE 7.1a-CTE Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	1.6E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-08	2.8E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	9.5E-04
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	2.0E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.4E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	1.1E+02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	6.4E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.8E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	9.7E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-07	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	2.9E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-06	5.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	1.4E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-07	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	1.6E-07	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	6.4E-08	2.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	8.2E-08	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	3.2E-09	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	1.5E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	5.8E-07	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	2.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.7E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	9.2E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	1.7E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-08	2.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	4.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.0E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	4.0E-05
				PYRENE	1.8E+01	mg/kg	7.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	4.6E-05
				PCB-1242	1.0E+00	mg/kg	5.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-08	8.9E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.4E-03
				PCB-1248	1.5E+01	mg/kg	7.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-07	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.5E-02
				PCB-1254	1.1E+01	mg/kg	5.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-07	8.9E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.5E-02
				PCB-1260	1.4E-01	mg/kg	6.6E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-09	1.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.7E-04
				BETA BHC	1.2E-01	mg/kg	4.2E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-10	7.4E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	4.2E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	6.8E-09	7.4E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.5E-04
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	2.5E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	3.5E-10	4.4E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	2.2E-05
				DIBENZOFURAN	3.8E+01	mg/kg	4.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											3.0E-06						1.2E-01

TABLE 7.1a-CTE Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	1.1E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	2.5E-03
				ALUMINUM	6.5E+03	mg/kg	8.8E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.5E-08	mg/m^3	5.0E-03	mg/m^3	CNS	3.1E-06
				ANTIMONY	2.2E+01	mg/kg	2.9E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	2.1E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	9.0E-12	3.7E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.4E-06
				BARIUM	6.7E+02	mg/kg	9.0E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-09	mg/m^3	5.0E-04	mg/m^3	Development	3.2E-06
				CADMIUM	5.6E+00	mg/kg	7.6E-10	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	1.4E-12	1.3E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	1.3E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	7.1E-11	µg/m^3	4.5E-01	(µg/m^3)$^{-1}$	3.2E-11	1.2E-12	mg/m^3	1.0E-04	mg/m^3	Lung	1.2E-08
				COBALT	8.9E+00	mg/kg	1.2E-09	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.1E-11	2.1E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	3.5E-06
				COPPER	1.2E+03	mg/kg	1.6E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	6.5E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	1.1E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.9E-09	mg/m^3	5.0E-05	mg/m^3	CNS	3.9E-05
				MERCURY	2.7E+00	mg/kg	1.4E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.5E-07	mg/m^3	3.0E-04	mg/m^3	CNS	8.4E-04
				NICKEL	9.8E+01	mg/kg	1.3E-08	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	3.4E-12	2.3E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	2.6E-06
				SILVER	1.3E+01	mg/kg	1.8E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	2.5E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	4.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	8.9E-07	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	5.2E-10	1.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	8.6E-10	µg/m^3	5.9E-03	(µg/m^3)$^{-1}$	5.0E-12	1.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	4.1E-09	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	2.4E-12	7.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	4.9E-09	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	2.9E-12	8.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	2.4E-09	µg/m^3	5.9E-05	(µg/m^3)$^{-1}$	1.4E-13	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	4.4E-10	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	2.8E-12	7.8E-12	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	6.3E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	5.0E-10	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	2.9E-13	8.7E-12	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	4.0E-05	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.4E-09	7.0E-07	mg/m^3	3.0E-03	mg/m^3	Respiratory	2.3E-04
				PYRENE	1.8E+01	mg/kg	1.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	3.2E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.8E-10	5.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	4.5E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.6E-09	7.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	2.3E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.3E-09	4.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	1.9E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.1E-11	3.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	1.6E-11	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	8.7E-15	2.9E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	1.6E-11	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	7.5E-14	2.9E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	1.9E-08	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	2.5E-11	3.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	8.1E-09	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	2.1E-11	1.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	9.8E-10	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	2.3E-15	1.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	3.6E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	6.2E-07	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								6.1E-09						3.6E-03
		Exposure Point Total									5.5E-06						2.3E-01
	Exposure Medium Total										5.5E-06						2.3E-01
Medium Total for Young Child											5.5E-06						2.3E-01
										Total of Receptor Risks Across All Media	5.5E-06				Total of Receptor Hazards Across All Media		2.3E-01

TABLE 7.1a-CTE Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	3.5.E-03
Total Body Weight HI Across All Media =	3.9.E-04
Total CNS HI Across All Media =	5.3.E-03
Total Development HI Across All Media =	3.2.E-06
Total GI Tract HI Across All Media =	6.3.E-03
Total Immune HI Across All Media =	2.0.E-01
Total Kidney HI Across All Media =	8.0.E-04
Total Liver HI Across All Media =	5.4.E-04
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	1.1.E-05
Total Reproductive HI Across All Media =	2.3.E-04
Total Respiratory HI Across All Media =	2.8.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.9.E-03
Total Thyroid HI Across All Media =	4.4.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	1.7.E-04

TABLE 7.1b-RME Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: Creek Channel

Receptor Population: Recreational User

Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Suface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	4.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	4.1E-04
				ALUMINUM	6.5E+03	mg/kg	1.3E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	7.3E-04
				ANTIMONY	2.2E+01	mg/kg	4.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	6.1E-03
				ARSENIC	1.6E+01	mg/kg	1.8E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-07	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.5E-03
				BARIUM	6.7E+02	mg/kg	1.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.6E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	3.8E-04
				CADMIUM	5.6E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	6.3E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.0E-08	mg/kg-day	1.3E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08	5.9E-08	mg/kg-day	3.0E-03	mg/kg-day	None	2.0E-05
				COBALT	8.9E+00	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.3E-03
				COPPER	1.2E+03	mg/kg	2.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	3.3E-03
				IRON	4.8E+04	mg/kg	9.3E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	7.7E-03
				MANGANESE	8.3E+02	mg/kg	1.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.3E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.9E-03
				MERCURY	2.7E+00	mg/kg	5.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	3.1E-03
				NICKEL	9.8E+01	mg/kg	1.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	5.5E-04
				SILVER	1.3E+01	mg/kg	2.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-06	mg/kg-day	5.0E-03	mg/kg-day	Skin	3.0E-04
				ZINC	1.9E+03	mg/kg	3.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	7.0E-04
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	2.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	4.0E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	4.1E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	8.1E-07	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.2E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	2.4E-06	7.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	5.9E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06	3.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	7.0E-07	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-07	4.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	3.5E-07	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	6.8E-09	2.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	6.3E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	1.2E-06	3.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	9.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.3E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	7.1E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-07	4.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	2.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	5.7E-05
				PYRENE	1.8E+01	mg/kg	3.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	6.6E-05
				PCB-1242	1.0E+00	mg/kg	2.0E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.0E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.8E-03
				PCB-1248	1.5E+01	mg/kg	3.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.6E-02
				PCB-1254	1.1E+01	mg/kg	2.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.0E-07	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.9E-02
				PCB-1260	1.4E-01	mg/kg	2.6E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-09	1.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.6E-04
				BETA BHC	1.2E-01	mg/kg	2.3E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-09	1.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.3E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	3.8E-08	1.4E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.7E-04
				HEPTACHLOR	5.0E-02	mg/kg	9.7E-10	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-09	5.6E-09	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.1E-05
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	7.2E-10	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-09	4.2E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	3.2E-04
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.4E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.0E-09	8.2E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.1E-05
				DIBENZOFURAN	3.8E+01	mg/kg	7.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								7.2E-06						1.9E-01

TABLE 7.1b-RME Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Suface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	1.8E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-07	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.6E-03
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	2.2E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.2E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	5.3E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	7.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	1.0E-04
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.1E-06	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-06	6.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	3.3E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	6.4E-06	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	1.6E-06	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-06	9.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	1.9E-06	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	3.6E-07	1.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	9.3E-07	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-08	5.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	1.7E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	3.3E-06	9.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	2.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	3.5E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	1.9E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-07	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	5.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.5E-04
				PYRENE	1.8E+01	mg/kg	9.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.7E-04
				PCB-1242	1.0E+00	mg/kg	5.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07	3.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-02
				PCB-1248	1.5E+01	mg/kg	8.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-06	4.9E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.5E-01
				PCB-1254	1.1E+01	mg/kg	5.8E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-06	3.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-01
				PCB-1260	1.4E-01	mg/kg	7.4E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-08	4.3E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E-03
				BETA BHC	1.2E-01	mg/kg	4.8E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-09	2.8E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	4.8E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	7.7E-08	2.8E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	5.6E-04
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	2.9E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	4.0E-09	1.7E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	8.3E-05
				DIBENZOFURAN	3.8E+01	mg/kg	4.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.9E-05						4.4E-01

TABLE 7.1b-RME Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
Suface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	1.9E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-05	mg/m^3	8.0E-04	mg/m^3	Thyroid	1.4E-02
				ALUMINUM	6.5E+03	mg/kg	1.5E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.5E-08	mg/m^3	5.0E-03	mg/m^3	CNS	1.7E-05
				ANTIMONY	2.2E+01	mg/kg	4.9E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	3.5E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.5E-10	2.0E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.4E-05
				BARIUM	6.7E+02	mg/kg	1.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.8E-09	mg/m^3	5.0E-04	mg/m^3	Development	1.8E-05
				CADMIUM	5.6E+00	mg/kg	1.3E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	2.3E-11	7.4E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	7.4E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.2E-09	$\mu g/m^3$	2.2E-01	$(\mu g/m^3)^{-1}$	2.7E-10	6.9E-12	mg/m^3	1.0E-04	mg/m^3	Lung	6.9E-08
				COBALT	8.9E+00	mg/kg	2.0E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.8E-10	1.2E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.9E-05
				COPPER	1.2E+03	mg/kg	2.6E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	1.1E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	1.9E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-08	mg/m^3	5.0E-05	mg/m^3	CNS	2.2E-04
				MERCURY	2.7E+00	mg/kg	2.4E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.4E-06	mg/m^3	3.0E-04	mg/m^3	CNS	4.7E-03
				NICKEL	9.8E+01	mg/kg	2.2E-07	$\mu g/m^3$	2.6E-04	$(\mu g/m^3)^{-1}$	5.7E-11	1.3E-09	mg/m^3	9.0E-05	mg/m^3	Respiratory	1.4E-05
				SILVER	1.3E+01	mg/kg	3.0E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	4.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	7.4E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.5E-05	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	4.4E-09	8.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.4E-08	$\mu g/m^3$	2.9E-03	$(\mu g/m^3)^{-1}$	4.2E-11	8.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	6.8E-08	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	2.0E-11	4.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	8.1E-08	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	2.4E-11	4.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	4.1E-08	$\mu g/m^3$	2.9E-05	$(\mu g/m^3)^{-1}$	1.2E-12	2.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	7.4E-09	$\mu g/m^3$	3.2E-03	$(\mu g/m^3)^{-1}$	2.4E-11	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	1.0E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	8.3E-09	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	2.4E-12	4.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	6.7E-04	$\mu g/m^3$	3.4E-05	$(\mu g/m^3)^{-1}$	2.3E-08	3.9E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	1.3E-03
				PYRENE	1.8E+01	mg/kg	2.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	5.4E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.1E-09	3.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	7.5E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.3E-08	4.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	3.8E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.2E-08	2.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	3.1E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.8E-10	1.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	2.7E-10	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	1.5E-13	1.6E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.7E-10	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	1.3E-12	1.6E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	3.2E-07	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	4.2E-10	1.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	1.4E-07	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	3.5E-10	7.9E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.6E-08	$\mu g/m^3$	2.4E-06	$(\mu g/m^3)^{-1}$	3.9E-14	9.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	6.0E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.5E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								9.7E-08						2.0E-02
		Exposure Point Total									2.6E-05						6.5E-01
	Exposure Medium Total										2.6E-05						6.5E-01
Medium Total for Adolescent											2.6E-05						6.5E-01
										Total of Receptor Risks Across All Media	2.6E-05					Total of Receptor Hazards Across All Media	6.5E-01

TABLE 7.1b-RME Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	6.1.E-03
Total Body Weight HI Across All Media =	7.6.E-04
Total CNS HI Across All Media =	1.3.E-02
Total Development HI Across All Media =	1.8.E-05
Total GI Tract HI Across All Media =	1.1.E-02
Total Immune HI Across All Media =	5.8.E-01
Total Kidney HI Across All Media =	1.8.E-03
Total Liver HI Across All Media =	1.3.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	2.0.E-05
Total Reproductive HI Across All Media =	4.2.E-04
Total Respiratory HI Across All Media =	1.4.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	7.1.E-03
Total Thyroid HI Across All Media =	1.7.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.8.E-04

TABLE 7.1b-CTE Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	3.6E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-08	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	1.0E-04
				ALUMINUM	6.5E+03	mg/kg	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.9E-04
				ANTIMONY	2.2E+01	mg/kg	3.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.6E-03
				ARSENIC	1.6E+01	mg/kg	1.5E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08	2.7E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	9.0E-04
				BARIUM	6.7E+02	mg/kg	1.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	9.7E-05
				CADMIUM	5.6E+00	mg/kg	9.3E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.6E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	8.7E-10	mg/kg-day	1.3E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-09	1.5E-08	mg/kg-day	3.0E-03	mg/kg-day	None	5.1E-06
				COBALT	8.9E+00	mg/kg	1.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	8.5E-04
				COPPER	1.2E+03	mg/kg	1.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	8.3E-04
				IRON	4.8E+04	mg/kg	7.9E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	2.0E-03
				MANGANESE	8.3E+02	mg/kg	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	9.9E-04
				MERCURY	2.7E+00	mg/kg	4.5E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.9E-08	mg/kg-day	1.0E-04	mg/kg-day	CNS	7.9E-04
				NICKEL	9.8E+01	mg/kg	1.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.4E-04
				SILVER	1.3E+01	mg/kg	2.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-07	mg/kg-day	5.0E-03	mg/kg-day	Skin	7.7E-05
				ZINC	1.9E+03	mg/kg	3.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-05	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.8E-04
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	2.3E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.1E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	1.0E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	3.5E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	6.9E-08	6.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.1E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	2.0E-07	1.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	5.0E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	9.7E-08	8.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	6.0E-08	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-08	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	3.0E-08	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	5.8E-10	5.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	5.4E-09	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-07	9.5E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	7.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	3.4E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	6.1E-09	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-08	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	1.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.5E-05
				PYRENE	1.8E+01	mg/kg	2.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.1E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.7E-05
				PCB-1242	1.0E+00	mg/kg	1.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-09	3.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-03
				PCB-1248	1.5E+01	mg/kg	2.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.0E-08	4.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E-02
				PCB-1254	1.1E+01	mg/kg	1.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-08	3.0E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-02
				PCB-1260	1.4E-01	mg/kg	2.2E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-10	3.9E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-04
				BETA BHC	1.2E-01	mg/kg	2.0E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	3.6E-10	3.5E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.0E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	3.2E-09	3.5E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	7.0E-05
				HEPTACHLOR	5.0E-02	mg/kg	8.3E-11	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-10	1.4E-09	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.9E-06
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	6.2E-11	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	5.6E-10	1.1E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	8.3E-05
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.2E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.7E-10	2.1E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	1.0E-05
				DIBENZOFURAN	3.8E+01	mg/kg	6.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								6.2E-07						4.8E-02

TABLE 7.1b-CTE Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	3.1E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.7E-08	5.5E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.8E-03
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	3.8E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.6E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.6E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	5.3E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	1.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	5.4E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.9E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-07	3.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	5.6E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-06	9.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	2.7E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-07	4.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	3.2E-07	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-08	5.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	1.6E-07	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	3.1E-09	2.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	2.9E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	5.6E-07	5.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	4.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.1E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.8E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	3.2E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	6.3E-08	5.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	8.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	7.7E-05
				PYRENE	1.8E+01	mg/kg	1.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	9.0E-05
				PCB-1242	1.0E+00	mg/kg	9.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-08	1.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.6E-03
				PCB-1248	1.5E+01	mg/kg	1.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-07	2.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-01
				PCB-1254	1.1E+01	mg/kg	9.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.6E-02
				PCB-1260	1.4E-01	mg/kg	1.3E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-09	2.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-03
				BETA BHC	1.2E-01	mg/kg	8.2E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-09	1.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	8.2E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.3E-08	1.4E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.9E-04
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	4.9E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	6.8E-10	8.5E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.3E-05
				DIBENZOFURAN	3.8E+01	mg/kg	7.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											3.2E-06						2.2E-01

TABLE 7.1b-CTE Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	1.6E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.8E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	3.5E-03
				ALUMINUM	6.5E+03	mg/kg	1.3E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.2E-08	mg/m^3	5.0E-03	mg/m^3	CNS	4.4E-06
				ANTIMONY	2.2E+01	mg/kg	4.2E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	3.0E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	1.3E-11	5.2E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	3.5E-06
				BARIUM	6.7E+02	mg/kg	1.3E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.3E-09	mg/m^3	5.0E-04	mg/m^3	Development	4.5E-06
				CADMIUM	5.6E+00	mg/kg	1.1E-09	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	1.9E-12	1.9E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	1.9E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.0E-10	µg/m^3	2.2E-01	(µg/m^3)$^{-1}$	2.3E-11	1.8E-12	mg/m^3	1.0E-04	mg/m^3	Lung	1.8E-08
				COBALT	8.9E+00	mg/kg	1.7E-09	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.5E-11	3.0E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	5.0E-06
				COPPER	1.2E+03	mg/kg	2.2E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	9.3E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	1.6E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.8E-09	mg/m^3	5.0E-05	mg/m^3	CNS	5.6E-05
				MERCURY	2.7E+00	mg/kg	2.1E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.6E-07	mg/m^3	3.0E-04	mg/m^3	CNS	1.2E-03
				NICKEL	9.8E+01	mg/kg	1.9E-08	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	4.9E-12	3.3E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	3.6E-06
				SILVER	1.3E+01	mg/kg	2.6E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	3.6E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	6.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	6.3E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.3E-06	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	3.7E-10	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.2E-09	µg/m^3	2.9E-03	(µg/m^3)$^{-1}$	3.6E-12	2.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	5.8E-09	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	1.7E-12	1.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	7.0E-09	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.0E-12	1.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	3.5E-09	µg/m^3	2.9E-05	(µg/m^3)$^{-1}$	1.0E-13	6.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	6.3E-10	µg/m^3	3.2E-03	(µg/m^3)$^{-1}$	2.0E-12	1.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	9.0E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	7.1E-10	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.1E-13	1.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	5.7E-05	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.9E-09	1.0E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	3.3E-04
				PYRENE	1.8E+01	mg/kg	1.9E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	4.6E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.6E-10	8.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	6.4E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.7E-09	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	3.3E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.9E-09	5.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	2.7E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.5E-11	4.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	2.3E-11	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	1.2E-14	4.1E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.3E-11	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	1.1E-13	4.1E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	2.7E-08	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	3.6E-11	4.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	1.2E-08	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	3.0E-11	2.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.4E-09	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	3.3E-15	2.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	5.1E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.9E-07	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								8.2E-09						5.2E-03
		Exposure Point Total									3.9E-06						2.8E-01
	Exposure Medium Total										3.9E-06						2.8E-01
Medium Total for Adolescent											3.9E-06						2.8E-01
										Total of Receptor Risks Across All Media	3.9E-06					Total of Receptor Hazards Across All Media	2.8E-01

TABLE 7.1b-CTE Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.6.E-03
Total Body Weight HI Across All Media =	2.3.E-04
Total CNS HI Across All Media =	3.2.E-03
Total Development HI Across All Media =	4.5.E-06
Total GI Tract HI Across All Media =	2.8.E-03
Total Immune HI Across All Media =	2.6.E-01
Total Kidney HI Across All Media =	6.3.E-04
Total Liver HI Across All Media =	5.0.E-04
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	5.1.E-06
Total Reproductive HI Across All Media =	1.1.E-04
Total Respiratory HI Across All Media =	4.0.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.7.E-03
Total Thyroid HI Across All Media =	4.4.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	2.1.E-04

TABLE 7.1c-RME Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	2.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.6E-08	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	1.6E-04
				ALUMINUM	6.5E+03	mg/kg	8.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	2.9E-04
				ANTIMONY	2.2E+01	mg/kg	2.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.7E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	2.4E-03
				ARSENIC	1.6E+01	mg/kg	1.2E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-07	4.2E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.4E-03
				BARIUM	6.7E+02	mg/kg	8.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	1.5E-04
				CADMIUM	5.6E+00	mg/kg	7.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	2.5E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	6.7E-09	mg/kg-day	5.0E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-09	2.4E-08	mg/kg-day	3.0E-03	mg/kg-day	None	7.9E-06
				COBALT	8.9E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.3E-03
				COPPER	1.2E+03	mg/kg	1.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.3E-03
				IRON	4.8E+04	mg/kg	6.1E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	3.1E-03
				MANGANESE	8.3E+02	mg/kg	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.7E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.5E-03
				MERCURY	2.7E+00	mg/kg	3.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.2E-03
				NICKEL	9.8E+01	mg/kg	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.4E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	2.2E-04
				SILVER	1.3E+01	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.0E-07	mg/kg-day	5.0E-03	mg/kg-day	Skin	1.2E-04
				ZINC	1.9E+03	mg/kg	2.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.4E-05	mg/kg-day	3.0E-01	mg/kg-day	Blood	2.8E-04
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	1.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	1.6E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	2.7E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-07	9.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	8.1E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-07	2.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	3.9E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.8E-07	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	4.6E-07	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	3.4E-08	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	2.3E-07	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	1.7E-09	8.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	4.2E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-07	1.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	5.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	5.2E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	4.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.4E-08	1.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	1.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	2.3E-05
				PYRENE	1.8E+01	mg/kg	2.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.8E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	2.6E-05
				PCB-1242	1.0E+00	mg/kg	1.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-08	4.6E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.3E-03
				PCB-1248	1.5E+01	mg/kg	2.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-07	6.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.4E-02
				PCB-1254	1.1E+01	mg/kg	1.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-07	4.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.3E-02
				PCB-1260	1.4E-01	mg/kg	1.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-09	6.0E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.0E-04
				BETA BHC	1.2E-01	mg/kg	1.6E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-09	5.4E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	1.6E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	2.5E-08	5.4E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.1E-04
				HEPTACHLOR	5.0E-02	mg/kg	6.4E-10	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-09	2.2E-09	mg/kg-day	5.0E-04	mg/kg-day	Liver	4.5E-06
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	4.8E-10	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-09	1.7E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	1.3E-04
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	9.2E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.3E-09	3.2E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	1.6E-05
				DIBENZOFURAN	3.8E+01	mg/kg	4.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								2.4E-06						7.4E-02

TABLE 7.1c-RME Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	2.5E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-08	8.8E-08	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.9E-04
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	3.0E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	4.2E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	9.8E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	8.6E-06
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.5E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-07	5.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	4.5E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-07	1.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	2.1E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.6E-07	7.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	2.5E-07	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-08	8.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	1.3E-07	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	9.3E-10	4.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	2.3E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07	8.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	3.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	2.9E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	2.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-08	9.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	7.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.2E-05
				PYRENE	1.8E+01	mg/kg	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.4E-05
				PCB-1242	1.0E+00	mg/kg	7.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-08	2.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-03
				PCB-1248	1.5E+01	mg/kg	1.2E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-07	4.0E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-02
				PCB-1254	1.1E+01	mg/kg	7.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-07	2.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-02
				PCB-1260	1.4E-01	mg/kg	1.0E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-09	3.6E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.8E-04
				BETA BHC	1.2E-01	mg/kg	6.6E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-09	2.3E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	6.6E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.0E-08	2.3E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	4.6E-05
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	3.9E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	5.5E-10	1.4E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	6.8E-06
				DIBENZOFURAN	3.8E+01	mg/kg	6.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.3E-06						3.6E-02

TABLE 7.1c-RME Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	1.1E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.7E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	4.6E-03
				ALUMINUM	6.5E+03	mg/kg	8.1E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.8E-08	mg/m^3	5.0E-03	mg/m^3	CNS	5.7E-06
				ANTIMONY	2.2E+01	mg/kg	2.7E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	1.9E-08	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	8.4E-11	6.8E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	4.5E-06
				BARIUM	6.7E+02	mg/kg	8.4E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.9E-09	mg/m^3	5.0E-04	mg/m^3	Development	5.9E-06
				CADMIUM	5.6E+00	mg/kg	7.0E-09	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	1.3E-11	2.5E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	2.5E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	6.6E-10	µg/m^3	8.4E-02	(µg/m^3)$^{-1}$	5.6E-11	2.3E-12	mg/m^3	1.0E-04	mg/m^3	Lung	2.3E-08
				COBALT	8.9E+00	mg/kg	1.1E-08	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.0E-10	3.9E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	6.5E-06
				COPPER	1.2E+03	mg/kg	1.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	6.0E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	1.0E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.6E-09	mg/m^3	5.0E-05	mg/m^3	CNS	7.2E-05
				MERCURY	2.7E+00	mg/kg	1.3E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.7E-07	mg/m^3	3.0E-04	mg/m^3	CNS	1.6E-03
				NICKEL	9.8E+01	mg/kg	1.2E-07	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	3.2E-11	4.3E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	4.7E-06
				SILVER	1.3E+01	mg/kg	1.7E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	2.3E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	4.1E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	8.3E-06	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	9.1E-10	2.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	8.0E-09	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	8.8E-12	2.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	3.8E-08	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	4.2E-12	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	4.5E-08	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	5.0E-12	1.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	2.3E-08	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	2.5E-13	8.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	4.1E-09	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	4.9E-12	1.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	5.8E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	4.6E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	5.1E-13	1.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	3.7E-04	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.3E-08	1.3E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	4.3E-04
				PYRENE	1.8E+01	mg/kg	1.3E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	3.0E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.7E-09	1.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	4.2E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.4E-08	1.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	2.1E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.2E-08	7.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	1.7E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.0E-10	6.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	1.5E-10	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	8.1E-14	5.3E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	1.5E-10	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	7.0E-13	5.3E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	1.8E-07	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	2.3E-10	6.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	7.5E-08	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	2.0E-10	2.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	9.1E-09	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	2.2E-14	3.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	3.3E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								5.2E-08						6.7E-03
		Exposure Point Total									3.7E-06						1.2E-01
	Exposure Medium Total										3.7E-06						1.2E-01
Medium Total for Adult											3.7E-06						1.2E-01
										Total of Receptor Risks Across All Media	3.7E-06				Total of Receptor Hazards Across All Media		1.2E-01

TABLE 7.1c-RME Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	2.4.E-03
Total Body Weight HI Across All Media =	2.5.E-04
Total CNS HI Across All Media =	4.7.E-03
Total Development HI Across All Media =	5.9.E-06
Total GI Tract HI Across All Media =	4.4.E-03
Total Immune HI Across All Media =	9.6.E-02
Total Kidney HI Across All Media =	4.9.E-04
Total Liver HI Across All Media =	3.1.E-04
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	7.9.E-06
Total Reproductive HI Across All Media =	1.7.E-04
Total Respiratory HI Across All Media =	4.6.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.7.E-03
Total Thyroid HI Across All Media =	5.9.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	8.1.E-05

TABLE 7.1c-CTE Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	1.5E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-08	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	4.3E-05
				ALUMINUM	6.5E+03	mg/kg	4.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.8E-05	mg/kg-day	1.0E+00	mg/kg-day	CNS	7.8E-05
				ANTIMONY	2.2E+01	mg/kg	1.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	6.5E-04
				ARSENIC	1.6E+01	mg/kg	6.4E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-09	1.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.7E-04
				BARIUM	6.7E+02	mg/kg	4.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.1E-06	mg/kg-day	2.0E-01	mg/kg-day	Kidney	4.0E-05
				CADMIUM	5.6E+00	mg/kg	3.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.7E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	6.7E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	3.6E-10	mg/kg-day	5.0E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-10	6.4E-09	mg/kg-day	3.0E-03	mg/kg-day	None	2.1E-06
				COBALT	8.9E+00	mg/kg	6.1E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.5E-04
				COPPER	1.2E+03	mg/kg	7.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	3.5E-04
				IRON	4.8E+04	mg/kg	3.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.8E-04	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	8.3E-04
				MANGANESE	8.3E+02	mg/kg	5.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.9E-06	mg/kg-day	2.4E-02	mg/kg-day	CNS	4.1E-04
				MERCURY	2.7E+00	mg/kg	1.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-08	mg/kg-day	1.0E-04	mg/kg-day	CNS	3.3E-04
				NICKEL	9.8E+01	mg/kg	6.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	5.9E-05
				SILVER	1.3E+01	mg/kg	9.2E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-07	mg/kg-day	5.0E-03	mg/kg-day	Skin	3.2E-05
				ZINC	1.9E+03	mg/kg	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-05	mg/kg-day	3.0E-01	mg/kg-day	Blood	7.5E-05
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	9.7E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	4.2E-06
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.5E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-08	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	4.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-08	7.7E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	2.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-08	3.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	2.5E-08	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-09	4.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	1.2E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	9.1E-11	2.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	2.3E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-08	4.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	3.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.6E-07	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.4E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	2.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-09	4.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	7.0E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	6.1E-06
				PYRENE	1.8E+01	mg/kg	1.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	7.0E-06
				PCB-1242	1.0E+00	mg/kg	7.1E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-09	1.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.2E-04
				PCB-1248	1.5E+01	mg/kg	1.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-08	1.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.2E-03
				PCB-1254	1.1E+01	mg/kg	7.2E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08	1.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.3E-03
				PCB-1260	1.4E-01	mg/kg	9.2E-11	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-10	1.6E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.1E-05
				BETA BHC	1.2E-01	mg/kg	8.4E-11	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-10	1.5E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	8.4E-11	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.3E-09	1.5E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.9E-05
				HEPTACHLOR	5.0E-02	mg/kg	3.4E-11	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-10	6.0E-10	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.2E-06
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	2.6E-11	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-10	4.5E-10	mg/kg-day	1.3E-05	mg/kg-day	Liver	3.4E-05
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	5.0E-09	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	7.0E-11	8.7E-08	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.4E-06
				DIBENZOFURAN	3.8E+01	mg/kg	2.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.3E-07						2.0E-02

TABLE 7.1c-CTE Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	2.7E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.1E-09	4.7E-08	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.6E-04
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	3.3E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-10	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.3E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	1.1E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	4.6E-06
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-08	2.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	4.8E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-08	8.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	2.3E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-08	4.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	2.7E-08	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	2.0E-09	4.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	1.4E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	1.0E-10	2.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	2.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-08	4.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	3.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.1E-07	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.5E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	2.8E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-09	4.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	7.6E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	6.7E-06
				PYRENE	1.8E+01	mg/kg	1.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	7.7E-06
				PCB-1242	1.0E+00	mg/kg	8.4E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-09	1.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.4E-04
				PCB-1248	1.5E+01	mg/kg	1.2E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-08	2.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-02
				PCB-1254	1.1E+01	mg/kg	8.5E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-08	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.4E-03
				PCB-1260	1.4E-01	mg/kg	1.1E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-10	1.9E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.6E-05
				BETA BHC	1.2E-01	mg/kg	7.1E-11	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-10	1.2E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	7.1E-11	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-09	1.2E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.5E-05
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	4.2E-09	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	5.9E-11	7.4E-08	mg/kg-day	2.0E-02	mg/kg-day	Liver	3.7E-06
				DIBENZOFURAN	3.8E+01	mg/kg	6.6E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.4E-07						1.9E-02

TABLE 7.1c-CTE Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	5.7E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.9E-07	mg/m^3	8.0E-04	mg/m^3	Thyroid	1.2E-03
				ALUMINUM	6.5E+03	mg/kg	4.4E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.7E-09	mg/m^3	5.0E-03	mg/m^3	CNS	1.5E-06
				ANTIMONY	2.2E+01	mg/kg	1.5E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	1.0E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	4.5E-12	1.8E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.2E-06
				BARIUM	6.7E+02	mg/kg	4.5E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.9E-10	mg/m^3	5.0E-04	mg/m^3	Development	1.6E-06
				CADMIUM	5.6E+00	mg/kg	3.8E-10	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	6.8E-13	6.6E-12	mg/m^3	1.0E-05	mg/m^3	Kidney	6.6E-07
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	3.6E-11	µg/m^3	8.4E-02	(µg/m^3)$^{-1}$	3.0E-12	6.2E-13	mg/m^3	1.0E-04	mg/m^3	Lung	6.2E-09
				COBALT	8.9E+00	mg/kg	6.0E-10	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	5.4E-12	1.0E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.7E-06
				COPPER	1.2E+03	mg/kg	7.8E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	3.2E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	5.6E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.7E-10	mg/m^3	5.0E-05	mg/m^3	CNS	1.9E-05
				MERCURY	2.7E+00	mg/kg	7.2E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.3E-07	mg/m^3	3.0E-04	mg/m^3	CNS	4.2E-04
				NICKEL	9.8E+01	mg/kg	6.6E-09	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	1.7E-12	1.1E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	1.3E-06
				SILVER	1.3E+01	mg/kg	9.0E-10	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	1.3E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	2.2E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	4.5E-07	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	4.9E-11	7.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	4.3E-10	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	4.7E-13	7.5E-12	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	2.0E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.2E-13	3.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	2.4E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.7E-13	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	1.2E-09	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	1.3E-14	2.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	2.2E-10	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	2.7E-13	3.9E-12	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	3.1E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	2.5E-10	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.7E-14	4.4E-12	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	2.0E-05	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	6.8E-10	3.5E-07	mg/m^3	3.0E-03	mg/m^3	Respiratory	1.2E-04
				PYRENE	1.8E+01	mg/kg	6.8E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	1.6E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	9.2E-11	2.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	2.2E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.3E-09	3.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	1.1E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	6.5E-10	2.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	9.4E-09	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	5.4E-12	1.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	8.2E-12	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	4.3E-15	1.4E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	8.2E-12	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	3.8E-14	1.4E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	9.6E-09	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	1.2E-11	1.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	4.1E-09	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	1.1E-11	7.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	4.9E-10	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	1.2E-15	8.5E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	1.8E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.1E-07	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.8E-09						1.8E-03
		Exposure Point Total									2.6E-07						4.1E-02
	Exposure Medium Total										2.6E-07						4.1E-02
Medium Total for Adult											2.6E-07						4.1E-02
										Total of Receptor Risks Across All Media	2.6E-07					Total of Receptor Hazards Across All Media	4.1E-02

TABLE 7.1c-CTE Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	6.5.E-04
Total Body Weight HI Across All Media =	7.1.E-05
Total CNS HI Across All Media =	1.3.E-03
Total Development HI Across All Media =	1.6.E-06
Total GI Tract HI Across All Media =	1.2.E-03
Total Immune HI Across All Media =	3.5.E-02
Total Kidney HI Across All Media =	1.5.E-04
Total Liver HI Across All Media =	9.8.E-05
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	2.1.E-06
Total Reproductive HI Across All Media =	4.5.E-05
Total Respiratory HI Across All Media =	1.3.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	5.3.E-04
Total Thyroid HI Across All Media =	1.6.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	2.9.E-05

TABLE 7.2a-RME Angler (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	4.4E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.1E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	8.6E-04
				ALUMINUM	6.5E+03	mg/kg	1.3E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.5E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.5E-03
				ANTIMONY	2.2E+01	mg/kg	4.4E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.2E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.3E-02
				ARSENIC	1.6E+01	mg/kg	1.9E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.9E-07	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	7.4E-03
				BARIUM	6.7E+02	mg/kg	1.4E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.6E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	8.0E-04
				CADMIUM	5.6E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.3E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.3E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.1E-08	mg/kg-day	2.7E+00	$(mg/kg-day)^{-1}$	2.9E-08	1.3E-07	mg/kg-day	3.0E-03	mg/kg-day	None	4.2E-05
				COBALT	8.9E+00	mg/kg	1.8E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	7.0E-03
				COPPER	1.2E+03	mg/kg	2.4E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.8E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	6.9E-03
				IRON	4.8E+04	mg/kg	9.8E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.6E-02
				MANGANESE	8.3E+02	mg/kg	1.7E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.0E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	8.2E-03
				MERCURY	2.7E+00	mg/kg	5.6E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.5E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	6.5E-03
				NICKEL	9.8E+01	mg/kg	2.0E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.3E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.2E-03
				SILVER	1.3E+01	mg/kg	2.7E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.2E-06	mg/kg-day	5.0E-03	mg/kg-day	Skin	6.4E-04
				ZINC	1.9E+03	mg/kg	3.8E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.5E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.5E-03
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	2.9E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.3E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	8.4E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	4.4E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	1.7E-06	5.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.3E-07	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	5.1E-06	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	6.2E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	2.4E-06	7.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	7.4E-07	mg/kg-day	3.9E-01	$(mg/kg-day)^{-1}$	2.9E-07	8.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	3.7E-07	mg/kg-day	3.9E-02	$(mg/kg-day)^{-1}$	1.4E-08	4.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	6.7E-08	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	2.6E-06	7.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	9.5E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	2.8E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	7.6E-08	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	2.9E-07	8.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	2.1E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.4E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.2E-04
				PYRENE	1.8E+01	mg/kg	3.6E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.2E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.4E-04
				PCB-1242	1.0E+00	mg/kg	2.1E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.2E-08	2.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-02
				PCB-1248	1.5E+01	mg/kg	3.1E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	6.2E-07	3.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.8E-01
				PCB-1254	1.1E+01	mg/kg	2.1E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.3E-07	2.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-01
				PCB-1260	1.4E-01	mg/kg	2.7E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.5E-09	3.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-03
				BETA BHC	1.2E-01	mg/kg	2.5E-09	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	4.5E-09	2.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.5E-09	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	4.0E-08	2.9E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	5.8E-04
				HEPTACHLOR	5.0E-02	mg/kg	1.0E-09	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	4.6E-09	1.2E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.4E-05
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	7.6E-10	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	6.9E-09	8.9E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	6.8E-04
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.5E-07	mg/kg-day	1.4E-02	$(mg/kg-day)^{-1}$	2.1E-09	1.7E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	8.6E-05
				DIBENZOFURAN	3.8E+01	mg/kg	7.8E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	9.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.4E-05						4.0E-01

TABLE 7.2a-RME Angler (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	4.5E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	6.8E-08	5.3E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.8E-03
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	5.4E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.5E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	1.1E+02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	1.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	5.2E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	2.7E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06	3.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	8.0E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	3.1E-06	9.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	3.8E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-06	4.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	4.6E-07	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-07	5.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	2.3E-07	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	8.9E-09	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	4.1E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	1.6E-06	4.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	5.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.8E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.7E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	4.7E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-07	5.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	1.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	7.4E-05
				PYRENE	1.8E+01	mg/kg	2.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	8.6E-05
				PCB-1242	1.0E+00	mg/kg	1.4E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.2E-03
				PCB-1248	1.5E+01	mg/kg	2.1E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-07	2.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-01
				PCB-1254	1.1E+01	mg/kg	1.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.3E-02
				PCB-1260	1.4E-01	mg/kg	1.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-09	2.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-03
				BETA BHC	1.2E-01	mg/kg	1.2E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-09	1.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	1.2E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.9E-08	1.4E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.7E-04
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	7.0E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	9.8E-10	8.2E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.1E-05
				DIBENZOFURAN	3.8E+01	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								8.5E-06						2.2E-01

TABLE 7.2a-RME Angler (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	3.2E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.7E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	4.6E-03
				ALUMINUM	6.5E+03	mg/kg	2.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.8E-08	mg/m^3	5.0E-03	mg/m^3	CNS	5.7E-06
				ANTIMONY	2.2E+01	mg/kg	8.1E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	5.8E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	2.5E-11	6.8E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	4.5E-06
				BARIUM	6.7E+02	mg/kg	2.5E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.9E-09	mg/m^3	5.0E-04	mg/m^3	Development	5.9E-06
				CADMIUM	5.6E+00	mg/kg	2.1E-09	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	3.8E-12	2.5E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	2.5E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	2.0E-10	µg/m^3	4.5E-01	(µg/m^3)$^{-1}$	8.9E-11	2.3E-12	mg/m^3	1.0E-04	mg/m^3	Lung	2.3E-08
				COBALT	8.9E+00	mg/kg	3.3E-09	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	3.0E-11	3.9E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	6.5E-06
				COPPER	1.2E+03	mg/kg	4.3E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	1.8E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	3.1E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.6E-09	mg/m^3	5.0E-05	mg/m^3	CNS	7.2E-05
				MERCURY	2.7E+00	mg/kg	4.0E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.7E-07	mg/m^3	3.0E-04	mg/m^3	CNS	1.6E-03
				NICKEL	9.8E+01	mg/kg	3.7E-08	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	9.5E-12	4.3E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	4.7E-06
				SILVER	1.3E+01	mg/kg	5.0E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	7.0E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	1.2E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	2.5E-06	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	1.5E-09	2.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	2.4E-09	µg/m^3	5.9E-03	(µg/m^3)$^{-1}$	1.4E-11	2.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	1.1E-08	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	6.7E-12	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	1.4E-08	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	8.0E-12	1.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	6.8E-09	µg/m^3	5.9E-05	(µg/m^3)$^{-1}$	4.0E-13	8.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	1.2E-09	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	7.9E-12	1.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	1.7E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	1.4E-09	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	8.1E-13	1.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	1.1E-04	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.8E-09	1.3E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	4.3E-04
				PYRENE	1.8E+01	mg/kg	3.8E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	9.0E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	5.1E-10	1.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	1.3E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	7.1E-09	1.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	6.3E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.6E-09	7.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	5.2E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.0E-11	6.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	4.6E-11	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	2.4E-14	5.3E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	4.6E-11	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	2.1E-13	5.3E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	5.3E-08	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	6.9E-11	6.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	2.3E-08	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	5.9E-11	2.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	2.7E-09	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	6.5E-15	3.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	9.9E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure. Route Total								1.7E-08						6.7E-03
		Exposure Point Total									2.2E-05						6.2E-01
	Exposure Medium Total										2.2E-05						6.2E-01
Medium Total for Young Child											2.2E-05						6.2E-01

TABLE 7.2a-RME Angler (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Fish Tissue	Fish Fillets	Fish Fillets	Ingestion	ARSENIC	1.7E-01	mg/kg	1.0E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-05	1.2E-04	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.9E-01
				CHROMIUM, TOTAL	7.9E-01	mg/kg	4.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.6E-04	mg/kg-day	NA	mg/kg-day	NA	NA
				COPPER	6.8E+00	mg/kg	4.1E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.8E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.2E-01
				MERCURY	3.7E-01	mg/kg	2.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-04	mg/kg-day	1.0E-04	mg/kg-day	CNS	2.6E+00
				SELENIUM	4.8E-01	mg/kg	2.9E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	6.8E-02
				VANADIUM	4.0E-01	mg/kg	2.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-04	mg/kg-day	5.0E-03	mg/kg-day	NA	5.7E-02
				PCB-1254	2.4E-01	mg/kg	1.5E-05	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-05	1.7E-04	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.6E+00
				PCB-1260	7.0E-02	mg/kg	4.2E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.4E-06	4.9E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.5E+00
				ALDRIN	2.5E-04	mg/kg	1.5E-08	mg/kg-day	1.7E+01	$(mg/kg\text{-}day)^{-1}$	2.6E-07	1.8E-07	mg/kg-day	3.0E-05	mg/kg-day	Liver	5.9E-03
				DIELDRIN	3.4E-03	mg/kg	2.1E-07	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	3.3E-06	2.4E-06	mg/kg-day	5.0E-05	mg/kg-day	Liver	4.9E-02
				ENDRIN	3.8E-02	mg/kg	2.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-05	mg/kg-day	3.0E-04	mg/kg-day	CNS	8.9E-02
				HEPTACHLOR	6.4E-04	mg/kg	3.9E-08	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07	4.5E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	9.0E-04
				HEPTACHLOR EPOXIDE	7.6E-03	mg/kg	4.6E-07	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-06	5.3E-06	mg/kg-day	1.3E-05	mg/kg-day	Liver	4.1E-01
				P,P'-DDE	1.0E-02	mg/kg	6.2E-07	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	2.1E-07	7.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	6.8E-02	mg/kg	4.1E-06	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-06	4.8E-05	mg/kg-day	5.0E-04	mg/kg-day	Liver	9.6E-02
				PENTACHLOROPHENOL	5.0E-02	mg/kg	3.0E-06	mg/kg-day	4.0E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-06	3.5E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	7.1E-03
			Exposure Route Total								6.4E-05						1.5E+01
		Exposure Point Total									6.4E-05						1.5E+01
	Exposure Medium Total										6.4E-05						1.5E+01
Medium Total for Young Child											6.4E-05						1.5E+01
Total of Receptor Risks Across All Media											8.6E-05	Total of Receptor Hazards Across All Media					1.6E+01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.4E-02
Total Body Weight HI Across All Media =	1.4E-03
Total CNS HI Across All Media =	2.7E+00
Total Development HI Across All Media =	5.9E-06
Total GI Tract HI Across All Media =	1.4E-01
Total Immune HI Across All Media =	1.2E+01
Total Kidney HI Across All Media =	2.6E-03
Total Liver HI Across All Media =	5.6E-01
Total Lung HI Across All Media =	0.0E+00
Total Lung & Respiratory HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	4.2E-05
Total Reproductive HI Across All Media =	8.6E-04
Total Respiratory HI Across All Media =	5.7E-04
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	4.0E-01
Total Thyroid HI Across All Media =	1.2E-02
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	6.9E-02

TABLE 7.2a-CTE Angler (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	7.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	2.3E-04
				ALUMINUM	6.5E+03	mg/kg	2.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	4.2E-04
				ANTIMONY	2.2E+01	mg/kg	7.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.5E-03
				ARSENIC	1.6E+01	mg/kg	3.4E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.1E-08	6.0E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.0E-03
				BARIUM	6.7E+02	mg/kg	2.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	2.2E-04
				CADMIUM	5.6E+00	mg/kg	2.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.6E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.9E-09	mg/kg-day	2.7E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-09	3.4E-08	mg/kg-day	3.0E-03	mg/kg-day	None	1.1E-05
				COBALT	8.9E+00	mg/kg	3.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.9E-03
				COPPER	1.2E+03	mg/kg	4.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.4E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.9E-03
				IRON	4.8E+04	mg/kg	1.8E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	4.4E-03
				MANGANESE	8.3E+02	mg/kg	3.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.2E-03
				MERCURY	2.7E+00	mg/kg	1.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.8E-03
				NICKEL	9.8E+01	mg/kg	3.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.1E-04
				SILVER	1.3E+01	mg/kg	4.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.6E-07	mg/kg-day	5.0E-03	mg/kg-day	Skin	1.7E-04
				ZINC	1.9E+03	mg/kg	6.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	4.0E-04
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	5.2E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.0E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.3E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	7.9E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-07	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	2.3E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	9.1E-07	4.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	1.1E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-07	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	1.3E-07	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	5.2E-08	2.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	6.7E-08	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	2.6E-09	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	1.2E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	4.7E-07	2.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	7.5E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	1.4E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-08	2.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	3.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.5E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.2E-05
				PYRENE	1.8E+01	mg/kg	6.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	3.8E-05
				PCB-1242	1.0E+00	mg/kg	3.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-09	6.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.3E-03
				PCB-1248	1.5E+01	mg/kg	5.6E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07	9.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.9E-02
				PCB-1254	1.1E+01	mg/kg	3.8E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.7E-08	6.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.4E-02
				PCB-1260	1.4E-01	mg/kg	4.9E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.9E-10	8.6E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.3E-04
				BETA BHC	1.2E-01	mg/kg	4.5E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	8.0E-10	7.8E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	4.5E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	7.1E-09	7.8E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.6E-04
				HEPTACHLOR	5.0E-02	mg/kg	1.8E-10	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	8.3E-10	3.2E-09	mg/kg-day	5.0E-04	mg/kg-day	Liver	6.4E-06
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	1.4E-10	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-09	2.4E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	1.8E-04
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	2.7E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	3.7E-10	4.6E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	2.3E-05
				DIBENZOFURAN	3.8E+01	mg/kg	1.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								2.5E-06						1.1E-01

TABLE 7.2a-CTE Angler (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	1.6E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-08	2.8E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	9.5E-04
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	2.0E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.4E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	1.1E+02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	6.4E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.8E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	9.7E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-07	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	2.9E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-06	5.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	1.4E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-07	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	1.6E-07	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	6.4E-08	2.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	8.2E-08	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	3.2E-09	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	1.5E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	5.8E-07	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	2.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.7E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	9.2E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	1.7E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-08	2.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	4.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.0E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	4.0E-05
				PYRENE	1.8E+01	mg/kg	7.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	4.6E-05
				PCB-1242	1.0E+00	mg/kg	5.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-08	8.9E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.4E-03
				PCB-1248	1.5E+01	mg/kg	7.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-07	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.5E-02
				PCB-1254	1.1E+01	mg/kg	5.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-07	8.9E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.5E-02
				PCB-1260	1.4E-01	mg/kg	6.6E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-09	1.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.7E-04
				BETA BHC	1.2E-01	mg/kg	4.2E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-10	7.4E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	4.2E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	6.8E-09	7.4E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.5E-04
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	2.5E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	3.5E-10	4.4E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	2.2E-05
				DIBENZOFURAN	3.8E+01	mg/kg	4.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											3.0E-06						1.2E-01

TABLE 7.2a-CTE Angler (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	1.1E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	2.5E-03
				ALUMINUM	6.5E+03	mg/kg	8.8E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.5E-08	mg/m^3	5.0E-03	mg/m^3	CNS	3.1E-06
				ANTIMONY	2.2E+01	mg/kg	2.9E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	2.1E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	9.0E-12	3.7E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.4E-06
				BARIUM	6.7E+02	mg/kg	9.0E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-09	mg/m^3	5.0E-04	mg/m^3	Development	3.2E-06
				CADMIUM	5.6E+00	mg/kg	7.6E-10	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	1.4E-12	1.3E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	1.3E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	7.1E-11	µg/m^3	4.5E-01	(µg/m^3)$^{-1}$	3.2E-11	1.2E-12	mg/m^3	1.0E-04	mg/m^3	Lung	1.2E-08
				COBALT	8.9E+00	mg/kg	1.2E-09	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.1E-11	2.1E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	3.5E-06
				COPPER	1.2E+03	mg/kg	1.6E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	6.5E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	1.1E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.9E-09	mg/m^3	5.0E-05	mg/m^3	CNS	3.9E-05
				MERCURY	2.7E+00	mg/kg	1.4E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.5E-07	mg/m^3	3.0E-04	mg/m^3	CNS	8.4E-04
				NICKEL	9.8E+01	mg/kg	1.3E-08	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	3.4E-12	2.3E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	2.6E-06
				SILVER	1.3E+01	mg/kg	1.8E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	2.5E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	4.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	8.9E-07	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	5.2E-10	1.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	8.6E-10	µg/m^3	5.9E-03	(µg/m^3)$^{-1}$	5.0E-12	1.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	4.1E-09	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	2.4E-12	7.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	4.9E-09	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	2.9E-12	8.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	2.4E-09	µg/m^3	5.9E-05	(µg/m^3)$^{-1}$	1.4E-13	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	4.4E-10	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	2.8E-12	7.8E-12	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	6.3E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	5.0E-10	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	2.9E-13	8.7E-12	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	4.0E-05	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.4E-09	7.0E-07	mg/m^3	3.0E-03	mg/m^3	Respiratory	2.3E-04
				PYRENE	1.8E+01	mg/kg	1.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	3.2E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.8E-10	5.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	4.5E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.6E-09	7.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	2.3E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.3E-09	4.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	1.9E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.1E-11	3.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	1.6E-11	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	8.7E-15	2.9E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	1.6E-11	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	7.5E-14	2.9E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	1.9E-08	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	2.5E-11	3.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	8.1E-09	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	2.1E-11	1.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	9.8E-10	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	2.3E-15	1.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	3.6E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	6.2E-07	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								6.1E-09						3.6E-03
		Exposure Point Total									5.5E-06						2.3E-01
	Exposure Medium Total										5.5E-06						2.3E-01
Medium Total for Young Child											5.5E-06						2.3E-01

TABLE 7.2a-CTE Angler (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Fish Tissue	Fish Fillets	Fish Fillets	Ingestion	ARSENIC	1.7E-01	mg/kg	8.2E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-06	1.4E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.8E-02
				CHROMIUM, TOTAL	7.9E-01	mg/kg	3.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.8E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				COPPER	6.8E+00	mg/kg	3.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.9E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.5E-02
				MERCURY	3.7E-01	mg/kg	1.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-05	mg/kg-day	1.0E-04	mg/kg-day	CNS	3.2E-01
				SELENIUM	4.8E-01	mg/kg	2.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-05	mg/kg-day	5.0E-03	mg/kg-day	Whole body	8.4E-03
				VANADIUM	4.0E-01	mg/kg	2.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	6.9E-03
				PCB-1254	2.4E-01	mg/kg	8.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-06	1.5E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.3E-01
				PCB-1260	7.0E-02	mg/kg	2.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.8E-07	4.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.1E-01
				ALDRIN	2.5E-04	mg/kg	1.2E-09	mg/kg-day	1.7E+01	$(mg/kg\text{-}day)^{-1}$	2.1E-08	2.2E-08	mg/kg-day	3.0E-05	mg/kg-day	Liver	7.2E-04
				DIELDRIN	3.4E-03	mg/kg	1.7E-08	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	2.7E-07	3.0E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	6.0E-03
				ENDRIN	3.8E-02	mg/kg	1.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-06	mg/kg-day	3.0E-04	mg/kg-day	CNS	1.1E-02
				HEPTACHLOR	6.4E-04	mg/kg	3.2E-09	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08	5.5E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.1E-04
				HEPTACHLOR EPOXIDE	7.6E-03	mg/kg	3.7E-08	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-07	6.5E-07	mg/kg-day	1.3E-05	mg/kg-day	Liver	5.0E-02
				P,P'-DDE	1.0E-02	mg/kg	5.1E-08	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-08	8.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	6.8E-02	mg/kg	3.4E-07	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-07	5.9E-06	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.2E-02
				PENTACHLOROPHENOL	5.0E-02	mg/kg	2.5E-07	mg/kg-day	4.0E-01	$(mg/kg\text{-}day)^{-1}$	9.9E-08	4.3E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	8.7E-04
			Exposure Route Total								4.3E-06						1.4E+00
		Exposure Point Total									4.3E-06						1.4E+00
	Exposure Medium Total										4.3E-06						1.4E+00
Medium Total for Young Child											4.3E-06						1.4E+00
Total of Receptor Risks Across All Media											9.8E-06	Total of Receptor Hazards Across All Media					1.7E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	3.9E-03
Total Body Weight HI Across All Media =	3.9E-04
Total CNS HI Across All Media =	3.4E-01
Total Development HI Across All Media =	3.2E-06
Total GI Tract HI Across All Media =	2.1E-02
Total Immune HI Across All Media =	1.1E+00
Total Kidney HI Across All Media =	8.0E-04
Total Liver HI Across All Media =	6.9E-02
Total Lung HI Across All Media =	0.0E+00
Total Lung & Respiratory HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	1.1E-05
Total Reproductive HI Across All Media =	2.3E-04
Total Respiratory HI Across All Media =	2.8E-04
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	5.1E-02
Total Thyroid HI Across All Media =	4.4E-03
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	8.6E-03

TABLE 7.2b-RME Angler (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC			Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	Critical Effect	
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	4.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	4.1E-04
				ALUMINUM	6.5E+03	mg/kg	1.3E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	7.3E-04
				ANTIMONY	2.2E+01	mg/kg	4.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	6.1E-03
				ARSENIC	1.6E+01	mg/kg	1.8E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-07	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.5E-03
				BARIUM	6.7E+02	mg/kg	1.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.6E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	3.8E-04
				CADMIUM	5.6E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	6.3E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.0E-08	mg/kg-day	1.3E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08	5.9E-08	mg/kg-day	3.0E-03	mg/kg-day	None	2.0E-05
				COBALT	8.9E+00	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.3E-03
				COPPER	1.2E+03	mg/kg	2.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	3.3E-03
				IRON	4.8E+04	mg/kg	9.3E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	7.7E-03
				MANGANESE	8.3E+02	mg/kg	1.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.3E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.9E-03
				MERCURY	2.7E+00	mg/kg	5.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	3.1E-03
				NICKEL	9.8E+01	mg/kg	1.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	5.5E-04
				SILVER	1.3E+01	mg/kg	2.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-06	mg/kg-day	5.0E-03	mg/kg-day	Skin	3.0E-04
				ZINC	1.9E+03	mg/kg	3.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	7.0E-04
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	2.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	4.0E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	4.1E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	8.1E-07	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.2E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	2.4E-06	7.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	5.9E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06	3.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	7.0E-07	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-07	4.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	3.5E-07	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	6.8E-09	2.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	6.3E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	1.2E-06	3.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	9.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.3E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	7.1E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-07	4.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	2.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	5.7E-05
				PYRENE	1.8E+01	mg/kg	3.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	6.6E-05
				PCB-1242	1.0E+00	mg/kg	2.0E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.0E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.8E-03
				PCB-1248	1.5E+01	mg/kg	3.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.6E-02
				PCB-1254	1.1E+01	mg/kg	2.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.0E-07	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.9E-02
				PCB-1260	1.4E-01	mg/kg	2.6E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-09	1.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.6E-04
				BETA BHC	1.2E-01	mg/kg	2.3E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-09	1.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.3E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	3.8E-08	1.4E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.7E-04
				HEPTACHLOR	5.0E-02	mg/kg	9.7E-10	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-09	5.6E-09	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.1E-05
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	7.2E-10	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-09	4.2E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	3.2E-04
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.4E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.0E-09	8.2E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.1E-05
				DIBENZOFURAN	3.8E+01	mg/kg	7.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								7.2E-06						1.9E-01

TABLE 7.2b-RME Angler (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC			Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	Critical Effect	
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	1.8E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-07	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.6E-03
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	2.2E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.2E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	5.3E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	7.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	1.0E-04
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.1E-06	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-06	6.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	3.3E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	6.4E-06	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	1.6E-06	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-06	9.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	1.9E-06	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	3.6E-07	1.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	9.3E-07	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-08	5.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	1.7E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	3.3E-06	9.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	2.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	3.5E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	1.9E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-07	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	5.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.5E-04
				PYRENE	1.8E+01	mg/kg	9.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.7E-04
				PCB-1242	1.0E+00	mg/kg	5.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07	3.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-02
				PCB-1248	1.5E+01	mg/kg	8.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-06	4.9E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.5E-01
				PCB-1254	1.1E+01	mg/kg	5.8E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-06	3.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-01
				PCB-1260	1.4E-01	mg/kg	7.4E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-08	4.3E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E-03
				BETA BHC	1.2E-01	mg/kg	4.8E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-09	2.8E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	4.8E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	7.7E-08	2.8E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	5.6E-04
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	2.9E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	4.0E-09	1.7E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	8.3E-05
				DIBENZOFURAN	3.8E+01	mg/kg	4.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											1.9E-05						4.4E-01

TABLE 7.2b-RME Angler (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC			Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	Critical Effect	
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	1.9E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-05	mg/m^3	8.0E-04	mg/m^3	Thyroid	1.4E-02
				ALUMINUM	6.5E+03	mg/kg	1.5E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.5E-08	mg/m^3	5.0E-03	mg/m^3	CNS	1.7E-05
				ANTIMONY	2.2E+01	mg/kg	4.9E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	3.5E-08	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	1.5E-10	2.0E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.4E-05
				BARIUM	6.7E+02	mg/kg	1.5E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.8E-09	mg/m^3	5.0E-04	mg/m^3	Development	1.8E-05
				CADMIUM	5.6E+00	mg/kg	1.3E-08	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	2.3E-11	7.4E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	7.4E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.2E-09	µg/m^3	2.2E-01	(µg/m^3)$^{-1}$	2.7E-10	6.9E-12	mg/m^3	1.0E-04	mg/m^3	Lung	6.9E-08
				COBALT	8.9E+00	mg/kg	2.0E-08	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.8E-10	1.2E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.9E-05
				COPPER	1.2E+03	mg/kg	2.6E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	1.1E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	6.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	1.9E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-08	mg/m^3	5.0E-05	mg/m^3	CNS	2.2E-04
				MERCURY	2.7E+00	mg/kg	2.4E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-06	mg/m^3	3.0E-04	mg/m^3	CNS	4.7E-03
				NICKEL	9.8E+01	mg/kg	2.2E-07	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	5.7E-11	1.3E-09	mg/m^3	9.0E-05	mg/m^3	Respiratory	1.4E-05
				SILVER	1.3E+01	mg/kg	3.0E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	4.2E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	7.4E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.5E-05	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	4.4E-09	8.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.4E-08	µg/m^3	2.9E-03	(µg/m^3)$^{-1}$	4.2E-11	8.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	6.8E-08	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.0E-11	4.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	8.1E-08	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.4E-11	4.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	4.1E-08	µg/m^3	2.9E-05	(µg/m^3)$^{-1}$	1.2E-12	2.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	7.4E-09	µg/m^3	3.2E-03	(µg/m^3)$^{-1}$	2.4E-11	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	1.0E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	6.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	8.3E-09	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.4E-12	4.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	6.7E-04	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	2.3E-08	3.9E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	1.3E-03
				PYRENE	1.8E+01	mg/kg	2.3E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	5.4E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.1E-09	3.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	7.5E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	4.3E-08	4.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	3.8E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.2E-08	2.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	3.1E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.8E-10	1.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	2.7E-10	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	1.5E-13	1.6E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.7E-10	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	1.3E-12	1.6E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	3.2E-07	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	4.2E-10	1.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	1.4E-07	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	3.5E-10	7.9E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.6E-08	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	3.9E-14	9.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	6.0E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.5E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								9.7E-08						2.0E-02
		Exposure Point Total									2.6E-05						6.5E-01
	Exposure Medium Total										2.6E-05						6.5E-01
Medium Total for Adolescent											2.6E-05						6.5E-01

TABLE 7.2b-RME Angler (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC			Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	Critical Effect	
Fish Tissue	Fish Fillets	Fish Fillets	Ingestion	ARSENIC	1.7E-01	mg/kg	1.3E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-05	7.4E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.5E-01
				CHROMIUM, TOTAL	7.9E-01	mg/kg	6.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-04	mg/kg-day	NA	mg/kg-day	NA	NA
				COPPER	6.8E+00	mg/kg	5.2E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	7.6E-02
				MERCURY	3.7E-01	mg/kg	2.9E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-04	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.7E+00
				SELENIUM	4.8E-01	mg/kg	3.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	4.3E-02
				VANADIUM	4.0E-01	mg/kg	3.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-04	mg/kg-day	5.0E-03	mg/kg-day	NA	3.6E-02
				PCB-1254	2.4E-01	mg/kg	1.9E-05	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-05	1.1E-04	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.4E+00
				PCB-1260	7.0E-02	mg/kg	5.3E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-05	3.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E+00
				ALDRIN	2.5E-04	mg/kg	1.9E-08	mg/kg-day	1.7E+01	$(mg/kg\text{-}day)^{-1}$	3.2E-07	1.1E-07	mg/kg-day	3.0E-05	mg/kg-day	Liver	3.7E-03
				DIELDRIN	3.4E-03	mg/kg	2.6E-07	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	4.2E-06	1.5E-06	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.1E-02
				ENDRIN	3.8E-02	mg/kg	2.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-05	mg/kg-day	3.0E-04	mg/kg-day	CNS	5.6E-02
				HEPTACHLOR	6.4E-04	mg/kg	4.9E-08	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-07	2.9E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	5.7E-04
				HEPTACHLOR EPOXIDE	7.6E-03	mg/kg	5.8E-07	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-06	3.4E-06	mg/kg-day	1.3E-05	mg/kg-day	Liver	2.6E-01
				P,P'-DDE	1.0E-02	mg/kg	7.8E-07	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	2.7E-07	4.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	6.8E-02	mg/kg	5.2E-06	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-06	3.1E-05	mg/kg-day	5.0E-04	mg/kg-day	Liver	6.1E-02
				PENTACHLOROPHENOL	5.0E-02	mg/kg	3.8E-06	mg/kg-day	4.0E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-06	2.2E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	4.5E-03
			Exposure Route Total								8.0E-05						9.5E+00
		Exposure Point Total									8.0E-05						9.5E+00
	Exposure Medium Total										8.0E-05						9.5E+00
Medium Total for Adolescent											8.0E-05						9.5E+00
Total of Receptor Risks Across All Media											1.1E-04	Total of Receptor Hazards Across All Media					1.0E+01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	6.8E-03
Total Body Weight HI Across All Media =	7.6E-04
Total CNS HI Across All Media =	1.7E+00
Total Development HI Across All Media =	1.8E-05
Total GI Tract HI Across All Media =	8.7E-02
Total Immune HI Across All Media =	7.6E+00
Total Kidney HI Across All Media =	1.8E-03
Total Liver HI Across All Media =	3.6E-01
Total Lung HI Across All Media =	0.0E+00
Total Lung & Respiratory HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	2.0E-05
Total Reproductive HI Across All Media =	4.2E-04
Total Respiratory HI Across All Media =	1.4E-03
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	2.5E-01
Total Thyroid HI Across All Media =	1.7E-02
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	4.4E-02

TABLE 7.2b-CTE Angler (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	3.6E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-08	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	1.0E-04
				ALUMINUM	6.5E+03	mg/kg	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.9E-04
				ANTIMONY	2.2E+01	mg/kg	3.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.6E-03
				ARSENIC	1.6E+01	mg/kg	1.5E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08	2.7E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	9.0E-04
				BARIUM	6.7E+02	mg/kg	1.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	9.7E-05
				CADMIUM	5.6E+00	mg/kg	9.3E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.6E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	8.7E-10	mg/kg-day	1.3E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-09	1.5E-08	mg/kg-day	3.0E-03	mg/kg-day	None	5.1E-06
				COBALT	8.9E+00	mg/kg	1.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	8.5E-04
				COPPER	1.2E+03	mg/kg	1.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	8.3E-04
				IRON	4.8E+04	mg/kg	7.9E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	2.0E-03
				MANGANESE	8.3E+02	mg/kg	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	9.9E-04
				MERCURY	2.7E+00	mg/kg	4.5E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.9E-08	mg/kg-day	1.0E-04	mg/kg-day	CNS	7.9E-04
				NICKEL	9.8E+01	mg/kg	1.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.4E-04
				SILVER	1.3E+01	mg/kg	2.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-07	mg/kg-day	5.0E-03	mg/kg-day	Skin	7.7E-05
				ZINC	1.9E+03	mg/kg	3.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-05	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.8E-04
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	2.3E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.1E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	1.0E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	3.5E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	6.9E-08	6.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.1E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	2.0E-07	1.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	5.0E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	9.7E-08	8.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	6.0E-08	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-08	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	3.0E-08	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	5.8E-10	5.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	5.4E-09	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-07	9.5E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	7.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	3.4E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	6.1E-09	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-08	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	1.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.5E-05
				PYRENE	1.8E+01	mg/kg	2.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.1E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.7E-05
				PCB-1242	1.0E+00	mg/kg	1.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-09	3.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-03
				PCB-1248	1.5E+01	mg/kg	2.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.0E-08	4.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E-02
				PCB-1254	1.1E+01	mg/kg	1.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-08	3.0E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-02
				PCB-1260	1.4E-01	mg/kg	2.2E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-10	3.9E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-04
				BETA BHC	1.2E-01	mg/kg	2.0E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	3.6E-10	3.5E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.0E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	3.2E-09	3.5E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	7.0E-05
				HEPTACHLOR	5.0E-02	mg/kg	8.3E-11	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-10	1.4E-09	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.9E-06
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	6.2E-11	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	5.6E-10	1.1E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	8.3E-05
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.2E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.7E-10	2.1E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	1.0E-05
				DIBENZOFURAN	3.8E+01	mg/kg	6.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								6.2E-07						4.8E-02

TABLE 7.2b-CTE Angler (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	3.1E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.7E-08	5.5E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.8E-03
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	3.8E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.6E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.6E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	5.3E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	1.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	5.4E-05
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.9E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-07	3.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	5.6E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-06	9.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	2.7E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-07	4.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	3.2E-07	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	6.2E-08	5.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	1.6E-07	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	3.1E-09	2.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	2.9E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	5.6E-07	5.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	4.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.1E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.8E-04
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	3.2E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	6.3E-08	5.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	8.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	7.7E-05
				PYRENE	1.8E+01	mg/kg	1.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	9.0E-05
				PCB-1242	1.0E+00	mg/kg	9.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-08	1.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.6E-03
				PCB-1248	1.5E+01	mg/kg	1.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-07	2.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-01
				PCB-1254	1.1E+01	mg/kg	9.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.6E-02
				PCB-1260	1.4E-01	mg/kg	1.3E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-09	2.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-03
				BETA BHC	1.2E-01	mg/kg	8.2E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-09	1.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	8.2E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.3E-08	1.4E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.9E-04
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	4.9E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	6.8E-10	8.5E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.3E-05
				DIBENZOFURAN	3.8E+01	mg/kg	7.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											3.2E-06						2.2E-01

TABLE 7.2b-CTE Angler (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	1.6E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.8E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	3.5E-03
				ALUMINUM	6.5E+03	mg/kg	1.3E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.2E-08	mg/m^3	5.0E-03	mg/m^3	CNS	4.4E-06
				ANTIMONY	2.2E+01	mg/kg	4.2E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	3.0E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	1.3E-11	5.2E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	3.5E-06
				BARIUM	6.7E+02	mg/kg	1.3E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.3E-09	mg/m^3	5.0E-04	mg/m^3	Development	4.5E-06
				CADMIUM	5.6E+00	mg/kg	1.1E-09	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	1.9E-12	1.9E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	1.9E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.0E-10	µg/m^3	2.2E-01	(µg/m^3)$^{-1}$	2.3E-11	1.8E-12	mg/m^3	1.0E-04	mg/m^3	Lung	1.8E-08
				COBALT	8.9E+00	mg/kg	1.7E-09	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.5E-11	3.0E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	5.0E-06
				COPPER	1.2E+03	mg/kg	2.2E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	9.3E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	1.6E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.8E-09	mg/m^3	5.0E-05	mg/m^3	CNS	5.6E-05
				MERCURY	2.7E+00	mg/kg	2.1E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.6E-07	mg/m^3	3.0E-04	mg/m^3	CNS	1.2E-03
				NICKEL	9.8E+01	mg/kg	1.9E-08	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	4.9E-12	3.3E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	3.6E-06
				SILVER	1.3E+01	mg/kg	2.6E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	3.6E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	6.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	6.3E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.3E-06	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	3.7E-10	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	1.2E-09	µg/m^3	2.9E-03	(µg/m^3)$^{-1}$	3.6E-12	2.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	5.8E-09	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	1.7E-12	1.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	7.0E-09	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.0E-12	1.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	3.5E-09	µg/m^3	2.9E-05	(µg/m^3)$^{-1}$	1.0E-13	6.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	6.3E-10	µg/m^3	3.2E-03	(µg/m^3)$^{-1}$	2.0E-12	1.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	9.0E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	7.1E-10	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.1E-13	1.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	5.7E-05	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.9E-09	1.0E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	3.3E-04
				PYRENE	1.8E+01	mg/kg	1.9E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	4.6E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.6E-10	8.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	6.4E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.7E-09	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	3.3E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.9E-09	5.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	2.7E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.5E-11	4.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	2.3E-11	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	1.2E-14	4.1E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	2.3E-11	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	1.1E-13	4.1E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	2.7E-08	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	3.6E-11	4.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	1.2E-08	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	3.0E-11	2.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	1.4E-09	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	3.3E-15	2.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	5.1E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.9E-07	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								8.2E-09						5.2E-03
		Exposure Point Total									3.9E-06						2.8E-01
	Exposure Medium Total										3.9E-06						2.8E-01
Medium Total for Adolescent											3.9E-06						2.8E-01

TABLE 7.2b-CTE Angler (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Fish Tissue	Fish Fillets	Fish Fillets	Ingestion	ARSENIC	1.7E-01	mg/kg	5.3E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	8.0E-07	9.4E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.1E-02
				CHROMIUM, TOTAL	7.9E-01	mg/kg	2.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				COPPER	6.8E+00	mg/kg	2.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	9.6E-03
				MERCURY	3.7E-01	mg/kg	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-05	mg/kg-day	1.0E-04	mg/kg-day	CNS	2.1E-01
				SELENIUM	4.8E-01	mg/kg	1.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-05	mg/kg-day	5.0E-03	mg/kg-day	Whole body	5.5E-03
				VANADIUM	4.0E-01	mg/kg	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	4.5E-03
				PCB-1254	2.4E-01	mg/kg	5.5E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06	9.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.8E-01
				PCB-1260	7.0E-02	mg/kg	1.6E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-07	2.8E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-01
				ALDRIN	2.5E-04	mg/kg	8.1E-10	mg/kg-day	1.7E+01	$(mg/kg\text{-}day)^{-1}$	1.4E-08	1.4E-08	mg/kg-day	3.0E-05	mg/kg-day	Liver	4.7E-04
				DIELDRIN	3.4E-03	mg/kg	1.1E-08	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.8E-07	2.0E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.9E-03
				ENDRIN	3.8E-02	mg/kg	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	CNS	7.1E-03
				HEPTACHLOR	6.4E-04	mg/kg	2.1E-09	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	9.3E-09	3.6E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	7.2E-05
				HEPTACHLOR EPOXIDE	7.6E-03	mg/kg	2.4E-08	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-07	4.3E-07	mg/kg-day	1.3E-05	mg/kg-day	Liver	3.3E-02
				P,P'-DDE	1.0E-02	mg/kg	3.3E-08	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-08	5.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	6.8E-02	mg/kg	2.2E-07	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	7.5E-08	3.9E-06	mg/kg-day	5.0E-04	mg/kg-day	Liver	7.7E-03
				PENTACHLOROPHENOL	5.0E-02	mg/kg	1.6E-07	mg/kg-day	4.0E-01	$(mg/kg\text{-}day)^{-1}$	6.5E-08	2.8E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	5.7E-04
			Exposure Route Total								2.8E-06						9.3E-01
		Exposure Point Total									2.8E-06						9.3E-01
	Exposure Medium Total										2.8E-06						9.3E-01
Medium Total for Adolescent											2.8E-06						9.3E-01
Total of Receptor Risks Across All Media											6.6E-06	Total of Receptor Hazards Across All Media					1.2E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.7E-03
Total Body Weight HI Across All Media =	2.3E-04
Total CNS HI Across All Media =	2.2E-01
Total Development HI Across All Media =	4.5E-06
Total GI Tract HI Across All Media =	1.2E-02
Total Immune HI Across All Media =	8.8E-01
Total Kidney HI Across All Media =	6.3E-04
Total Liver HI Across All Media =	4.6E-02
Total Lung HI Across All Media =	0.0E+00
Total Lung & Respiratory HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	5.1E-06
Total Reproductive HI Across All Media =	1.1E-04
Total Respiratory HI Across All Media =	4.0E-04
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	3.4E-02
Total Thyroid HI Across All Media =	4.4E-03
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	5.7E-03

TABLE 7.2c-RME Angler (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2.E+00	mg/kg	2.8.E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.6.E-08	mg/kg-day	6.0.E-04	mg/kg-day	Reproductive	1.6.E-04
				ALUMINUM	6.5.E+03	mg/kg	8.3.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9.E-04	mg/kg-day	1.0.E+00	mg/kg-day	CNS	2.9.E-04
				ANTIMONY	2.2.E+01	mg/kg	2.8.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.7.E-07	mg/kg-day	4.0.E-04	mg/kg-day	Blood	2.4.E-03
				ARSENIC	1.6.E+01	mg/kg	1.2.E-07	mg/kg-day	1.5.E+00	$(mg/kg\text{-}day)^{-1}$	1.8.E-07	4.2.E-07	mg/kg-day	3.0.E-04	mg/kg-day	Skin, Vascular	1.4.E-03
				BARIUM	6.7.E+02	mg/kg	8.6.E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0.E-05	mg/kg-day	2.0.E-01	mg/kg-day	Kidney	1.5.E-04
				CADMIUM	5.6.E+00	mg/kg	7.2.E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5.E-07	mg/kg-day	1.0.E-03	mg/kg-day	Kidney	2.5.E-04
				CHROMIUM, HEXAVALENT	5.3.E-01	mg/kg	6.7.E-09	mg/kg-day	5.0.E-01	$(mg/kg\text{-}day)^{-1}$	3.4.E-09	2.4.E-08	mg/kg-day	3.0.E-03	mg/kg-day	None	7.9.E-06
				COBALT	8.9.E+00	mg/kg	1.1.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9.E-07	mg/kg-day	3.0.E-04	mg/kg-day	Thyroid	1.3.E-03
				COPPER	1.2.E+03	mg/kg	1.5.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2.E-05	mg/kg-day	4.0.E-02	mg/kg-day	GI Tract	1.3.E-03
				IRON	4.8.E+04	mg/kg	6.1.E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2.E-03	mg/kg-day	7.0.E-01	mg/kg-day	GI Tract	3.1.E-03
				MANGANESE	8.3.E+02	mg/kg	1.1.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.7.E-05	mg/kg-day	2.4.E-02	mg/kg-day	CNS	1.5.E-03
				MERCURY	2.7.E+00	mg/kg	3.5.E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2.E-07	mg/kg-day	1.0.E-04	mg/kg-day	CNS	1.2.E-03
				NICKEL	9.8.E+01	mg/kg	1.2.E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.4.E-06	mg/kg-day	2.0.E-02	mg/kg-day	Body weight	2.2.E-04
				SILVER	1.3.E+01	mg/kg	1.7.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.0.E-07	mg/kg-day	5.0.E-03	mg/kg-day	Skin	1.2.E-04
				ZINC	1.9.E+03	mg/kg	2.4.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.4.E-05	mg/kg-day	3.0.E-01	mg/kg-day	Blood	2.8.E-04
				2-METHYLNAPHTHALENE	1.4.E+00	mg/kg	1.8.E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3.E-08	mg/kg-day	4.0.E-03	mg/kg-day	Respiratory	1.6.E-05
				BENZO(A)ANTHRACENE	2.2.E+01	mg/kg	2.7.E-07	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	2.0.E-07	9.6.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4.E+00	mg/kg	8.1.E-08	mg/kg-day	7.3.E+00	$(mg/kg\text{-}day)^{-1}$	5.9.E-07	2.8.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0.E+01	mg/kg	3.9.E-07	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	2.8.E-07	1.4.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6.E+01	mg/kg	4.6.E-07	mg/kg-day	7.3.E-02	$(mg/kg\text{-}day)^{-1}$	3.4.E-08	1.6.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8.E+01	mg/kg	2.3.E-07	mg/kg-day	7.3.E-03	$(mg/kg\text{-}day)^{-1}$	1.7.E-09	8.1.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3.E+00	mg/kg	4.2.E-08	mg/kg-day	7.3.E+00	$(mg/kg\text{-}day)^{-1}$	3.1.E-07	1.5.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7.E+01	mg/kg	5.9.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1.E-06	mg/kg-day	4.0.E-02	mg/kg-day	Whole body	5.2.E-05
				INDENO(1,2,3-C,D)PYRENE	3.7.E+00	mg/kg	4.7.E-08	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	3.4.E-08	1.7.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0.E+01	mg/kg	1.3.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5.E-07	mg/kg-day	2.0.E-02	mg/kg-day	Body weight	2.3.E-05
				PYRENE	1.8.E+01	mg/kg	2.2.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.8.E-07	mg/kg-day	3.0.E-02	mg/kg-day	Kidney	2.6.E-05
				PCB-1242	1.0.E+00	mg/kg	1.3.E-08	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	2.7.E-08	4.6.E-08	mg/kg-day	2.0.E-05	mg/kg-day	Immune	2.3.E-03
				PCB-1248	1.5.E+01	mg/kg	2.0.E-07	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	3.9.E-07	6.8.E-07	mg/kg-day	2.0.E-05	mg/kg-day	Immune	3.4.E-02
				PCB-1254	1.1.E+01	mg/kg	1.3.E-07	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	2.7.E-07	4.7.E-07	mg/kg-day	2.0.E-05	mg/kg-day	Immune	2.3.E-02
				PCB-1260	1.4.E-01	mg/kg	1.7.E-09	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	3.4.E-09	6.0.E-09	mg/kg-day	2.0.E-05	mg/kg-day	Immune	3.0.E-04
				BETA BHC	1.2.E-01	mg/kg	1.6.E-09	mg/kg-day	1.8.E+00	$(mg/kg\text{-}day)^{-1}$	2.8.E-09	5.4.E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2.E-01	mg/kg	1.6.E-09	mg/kg-day	1.6.E+01	$(mg/kg\text{-}day)^{-1}$	2.5.E-08	5.4.E-09	mg/kg-day	5.0.E-05	mg/kg-day	Liver	1.1.E-04
				HEPTACHLOR	5.0.E-02	mg/kg	6.4.E-10	mg/kg-day	4.5.E+00	$(mg/kg\text{-}day)^{-1}$	2.9.E-09	2.2.E-09	mg/kg-day	5.0.E-04	mg/kg-day	Liver	4.5.E-06
				HEPTACHLOR EPOXIDE	3.7.E-02	mg/kg	4.8.E-10	mg/kg-day	9.1.E+00	$(mg/kg\text{-}day)^{-1}$	4.3.E-09	1.7.E-09	mg/kg-day	1.3.E-05	mg/kg-day	Liver	1.3.E-04
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3.E+00	mg/kg	9.2.E-08	mg/kg-day	1.4.E-02	$(mg/kg\text{-}day)^{-1}$	1.3.E-09	3.2.E-07	mg/kg-day	2.0.E-02	mg/kg-day	Liver	1.6.E-05
				DIBENZOFURAN	3.8.E+01	mg/kg	4.9.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								2.4.E-06						7.4.E-02

TABLE 7.2c-RME Angler (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2.E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0.E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5.E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0.E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2.E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0.E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6.E+01	mg/kg	2.5.E-08	mg/kg-day	1.5.E+00	$(mg/kg\text{-}day)^{-1}$	3.8.E-08	8.8.E-08	mg/kg-day	3.0.E-04	mg/kg-day	Skin, Vascular	2.9.E-04
				BARIUM	6.7.E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4.E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6.E+00	mg/kg	3.0.E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1.E-09	mg/kg-day	2.5.E-05	mg/kg-day	Kidney	4.2.E-05
				CHROMIUM, HEXAVALENT	5.3.E-01	mg/kg	NA	mg/kg-day	2.0.E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5.E-05	mg/kg-day	None	NA
				COBALT	8.9.E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0.E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2.E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0.E-02	mg/kg-day	GI Tract	NA
				IRON	4.8.E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0.E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3.E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6.E-04	mg/kg-day	CNS	NA
				MERCURY	2.7.E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0.E-04	mg/kg-day	CNS	NA
				NICKEL	9.8.E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0.E-04	mg/kg-day	Body weight	NA
				SILVER	1.3.E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0.E-04	mg/kg-day	Skin	NA
				ZINC	1.9.E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0.E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4.E+00	mg/kg	9.8.E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4.E-08	mg/kg-day	4.0.E-03	mg/kg-day	Respiratory	8.6.E-06
				BENZO(A)ANTHRACENE	2.2.E+01	mg/kg	1.5.E-07	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	1.1.E-07	5.3.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4.E+00	mg/kg	4.5.E-08	mg/kg-day	7.3.E+00	$(mg/kg\text{-}day)^{-1}$	3.3.E-07	1.6.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0.E+01	mg/kg	2.1.E-07	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	1.6.E-07	7.4.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6.E+01	mg/kg	2.5.E-07	mg/kg-day	7.3.E-02	$(mg/kg\text{-}day)^{-1}$	1.8.E-08	8.9.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8.E+01	mg/kg	1.3.E-07	mg/kg-day	7.3.E-03	$(mg/kg\text{-}day)^{-1}$	9.3.E-10	4.5.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3.E+00	mg/kg	2.3.E-08	mg/kg-day	7.3.E+00	$(mg/kg\text{-}day)^{-1}$	1.7.E-07	8.1.E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7.E+01	mg/kg	3.3.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1.E-06	mg/kg-day	4.0.E-02	mg/kg-day	Whole body	2.9.E-05
				INDENO(1,2,3-C,D)PYRENE	3.7.E+00	mg/kg	2.6.E-08	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	1.9.E-08	9.1.E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0.E+01	mg/kg	7.1.E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5.E-07	mg/kg-day	2.0.E-02	mg/kg-day	Body weight	1.2.E-05
				PYRENE	1.8.E+01	mg/kg	1.2.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3.E-07	mg/kg-day	3.0.E-02	mg/kg-day	Kidney	1.4.E-05
				PCB-1242	1.0.E+00	mg/kg	7.8.E-09	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	1.6.E-08	2.7.E-08	mg/kg-day	2.0.E-05	mg/kg-day	Immune	1.4.E-03
				PCB-1248	1.5.E+01	mg/kg	1.2.E-07	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	2.3.E-07	4.0.E-07	mg/kg-day	2.0.E-05	mg/kg-day	Immune	2.0.E-02
				PCB-1254	1.1.E+01	mg/kg	7.9.E-08	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	1.6.E-07	2.8.E-07	mg/kg-day	2.0.E-05	mg/kg-day	Immune	1.4.E-02
				PCB-1260	1.4.E-01	mg/kg	1.0.E-09	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	2.0.E-09	3.6.E-09	mg/kg-day	2.0.E-05	mg/kg-day	Immune	1.8.E-04
				BETA BHC	1.2.E-01	mg/kg	6.6.E-10	mg/kg-day	1.8.E+00	$(mg/kg\text{-}day)^{-1}$	1.2.E-09	2.3.E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2.E-01	mg/kg	6.6.E-10	mg/kg-day	1.6.E+01	$(mg/kg\text{-}day)^{-1}$	1.0.E-08	2.3.E-09	mg/kg-day	5.0.E-05	mg/kg-day	Liver	4.6.E-05
				HEPTACHLOR	5.0.E-02	mg/kg	NA	mg/kg-day	4.5.E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0.E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7.E-02	mg/kg	NA	mg/kg-day	9.1.E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3.E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3.E+00	mg/kg	3.9.E-08	mg/kg-day	1.4.E-02	$(mg/kg\text{-}day)^{-1}$	5.5.E-10	1.4.E-07	mg/kg-day	2.0.E-02	mg/kg-day	Liver	6.8.E-06
				DIBENZOFURAN	3.8.E+01	mg/kg	6.2.E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.3.E-06						3.6.E-02

TABLE 7.2c-RME Angler (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2.E+00	mg/kg	1.1.E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.7.E-06	mg/m^3	8.0.E-04	mg/m^3	Thyroid	4.6.E-03
				ALUMINUM	6.5.E+03	mg/kg	8.1.E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.8.E-08	mg/m^3	5.0.E-03	mg/m^3	CNS	5.7.E-06
				ANTIMONY	2.2.E+01	mg/kg	2.7.E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.5.E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6.E+01	mg/kg	1.9.E-08	$\mu g/m^3$	4.3.E-03	$(\mu g/m^3)^{-1}$	8.4.E-11	6.8.E-11	mg/m^3	1.5.E-05	mg/m^3	Reproductive	4.5.E-06
				BARIUM	6.7.E+02	mg/kg	8.4.E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.9.E-09	mg/m^3	5.0.E-04	mg/m^3	Development	5.9.E-06
				CADMIUM	5.6.E+00	mg/kg	7.0.E-09	$\mu g/m^3$	1.8.E-03	$(\mu g/m^3)^{-1}$	1.3.E-11	2.5.E-11	mg/m^3	1.0.E-05	mg/m^3	Kidney	2.5.E-06
				CHROMIUM, HEXAVALENT	5.3.E-01	mg/kg	6.6.E-10	$\mu g/m^3$	8.4.E-02	$(\mu g/m^3)^{-1}$	5.6.E-11	2.3.E-12	mg/m^3	1.0.E-04	mg/m^3	Lung	2.3.E-08
				COBALT	8.9.E+00	mg/kg	1.1.E-08	$\mu g/m^3$	9.0.E-03	$(\mu g/m^3)^{-1}$	1.0.E-10	3.9.E-11	mg/m^3	6.0.E-06	mg/m^3	Lung, Respiratory	6.5.E-06
				COPPER	1.2.E+03	mg/kg	1.4.E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.1.E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8.E+04	mg/kg	6.0.E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.1.E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3.E+02	mg/kg	1.0.E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.6.E-09	mg/m^3	5.0.E-05	mg/m^3	CNS	7.2.E-05
				MERCURY	2.7.E+00	mg/kg	1.3.E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.7.E-07	mg/m^3	3.0.E-04	mg/m^3	CNS	1.6.E-03
				NICKEL	9.8.E+01	mg/kg	1.2.E-07	$\mu g/m^3$	2.6.E-04	$(\mu g/m^3)^{-1}$	3.2.E-11	4.3.E-10	mg/m^3	9.0.E-05	mg/m^3	Respiratory	4.7.E-06
				SILVER	1.3.E+01	mg/kg	1.7.E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.9.E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9.E+03	mg/kg	2.3.E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.2.E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4.E+00	mg/kg	4.1.E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.4.E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2.E+01	mg/kg	8.3.E-06	$\mu g/m^3$	1.1.E-04	$(\mu g/m^3)^{-1}$	9.1.E-10	2.9.E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4.E+00	mg/kg	8.0.E-09	$\mu g/m^3$	1.1.E-03	$(\mu g/m^3)^{-1}$	8.8.E-12	2.8.E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0.E+01	mg/kg	3.8.E-08	$\mu g/m^3$	1.1.E-04	$(\mu g/m^3)^{-1}$	4.2.E-12	1.3.E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6.E+01	mg/kg	4.5.E-08	$\mu g/m^3$	1.1.E-04	$(\mu g/m^3)^{-1}$	5.0.E-12	1.6.E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8.E+01	mg/kg	2.3.E-08	$\mu g/m^3$	1.1.E-05	$(\mu g/m^3)^{-1}$	2.5.E-13	8.0.E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3.E+00	mg/kg	4.1.E-09	$\mu g/m^3$	1.2.E-03	$(\mu g/m^3)^{-1}$	4.9.E-12	1.4.E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7.E+01	mg/kg	5.8.E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.0.E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7.E+00	mg/kg	4.6.E-09	$\mu g/m^3$	1.1.E-04	$(\mu g/m^3)^{-1}$	5.1.E-13	1.6.E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0.E+01	mg/kg	3.7.E-04	$\mu g/m^3$	3.4.E-05	$(\mu g/m^3)^{-1}$	1.3.E-08	1.3.E-06	mg/m^3	3.0.E-03	mg/m^3	Respiratory	4.3.E-04
				PYRENE	1.8.E+01	mg/kg	1.3.E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.4.E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0.E+00	mg/kg	3.0.E-06	$\mu g/m^3$	5.7.E-04	$(\mu g/m^3)^{-1}$	1.7.E-09	1.0.E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5.E+01	mg/kg	4.2.E-05	$\mu g/m^3$	5.7.E-04	$(\mu g/m^3)^{-1}$	2.4.E-08	1.5.E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1.E+01	mg/kg	2.1.E-05	$\mu g/m^3$	5.7.E-04	$(\mu g/m^3)^{-1}$	1.2.E-08	7.4.E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4.E-01	mg/kg	1.7.E-07	$\mu g/m^3$	5.7.E-04	$(\mu g/m^3)^{-1}$	1.0.E-10	6.1.E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2.E-01	mg/kg	1.5.E-10	$\mu g/m^3$	5.3.E-04	$(\mu g/m^3)^{-1}$	8.1.E-14	5.3.E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2.E-01	mg/kg	1.5.E-10	$\mu g/m^3$	4.6.E-03	$(\mu g/m^3)^{-1}$	7.0.E-13	5.3.E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0.E-02	mg/kg	1.8.E-07	$\mu g/m^3$	1.3.E-03	$(\mu g/m^3)^{-1}$	2.3.E-10	6.2.E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7.E-02	mg/kg	7.5.E-08	$\mu g/m^3$	2.6.E-03	$(\mu g/m^3)^{-1}$	2.0.E-10	2.6.E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3.E+00	mg/kg	9.1.E-09	$\mu g/m^3$	2.4.E-06	$(\mu g/m^3)^{-1}$	2.2.E-14	3.2.E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8.E+01	mg/kg	3.3.E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2.E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								5.2.E-08						6.7.E-03
		Exposure Point Total									3.7.E-06						1.2.E-01
	Exposure Medium Total										3.7.E-06						1.2.E-01
Medium Total for Adult											3.7.E-06						1.2.E-01

TABLE 7.2c-RME Angler (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Fish Tissue	Fish Fillets	Fish Fillets	Ingestion	ARSENIC	1.7.E-01	mg/kg	1.9.E-05	mg/kg-day	1.5.E+00	$(mg/kg\text{-}day)^{-1}$	2.8.E-05	6.6.E-05	mg/kg-day	3.0.E-04	mg/kg-day	Skin, Vascular	2.2.E-01
				CHROMIUM, TOTAL	7.9.E-01	mg/kg	9.0.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1.E-04	mg/kg-day	NA	mg/kg-day	NA	NA
				COPPER	6.8.E+00	mg/kg	7.7.E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7.E-03	mg/kg-day	4.0.E-02	mg/kg-day	GI Tract	6.8.E-02
				MERCURY	3.7.E-01	mg/kg	4.2.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5.E-04	mg/kg-day	1.0.E-04	mg/kg-day	CNS	1.5.E+00
				SELENIUM	4.8.E-01	mg/kg	5.5.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9.E-04	mg/kg-day	5.0.E-03	mg/kg-day	Whole body	3.9.E-02
				VANADIUM	4.0.E-01	mg/kg	4.6.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6.E-04	mg/kg-day	5.0.E-03	mg/kg-day	NA	3.2.E-02
				PCB-1254	2.4.E-01	mg/kg	2.8.E-05	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	5.5.E-05	9.6.E-05	mg/kg-day	2.0.E-05	mg/kg-day	Immune	4.8.E+00
				PCB-1260	7.0.E-02	mg/kg	7.9.E-06	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	1.6.E-05	2.8.E-05	mg/kg-day	2.0.E-05	mg/kg-day	Immune	1.4.E+00
				ALDRIN	2.5.E-04	mg/kg	2.8.E-08	mg/kg-day	1.7.E+01	$(mg/kg\text{-}day)^{-1}$	4.8.E-07	9.9.E-08	mg/kg-day	3.0.E-05	mg/kg-day	Liver	3.3.E-03
				DIELDRIN	3.4.E-03	mg/kg	3.9.E-07	mg/kg-day	1.6.E+01	$(mg/kg\text{-}day)^{-1}$	6.3.E-06	1.4.E-06	mg/kg-day	5.0.E-05	mg/kg-day	Liver	2.7.E-02
				ENDRIN	3.8.E-02	mg/kg	4.3.E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5.E-05	mg/kg-day	3.0.E-04	mg/kg-day	CNS	5.0.E-02
				HEPTACHLOR	6.4.E-04	mg/kg	7.3.E-08	mg/kg-day	4.5.E+00	$(mg/kg\text{-}day)^{-1}$	3.3.E-07	2.5.E-07	mg/kg-day	5.0.E-04	mg/kg-day	Liver	5.1.E-04
				HEPTACHLOR EPOXIDE	7.6.E-03	mg/kg	8.6.E-07	mg/kg-day	9.1.E+00	$(mg/kg\text{-}day)^{-1}$	7.8.E-06	3.0.E-06	mg/kg-day	1.3.E-05	mg/kg-day	Liver	2.3.E-01
				P,P'-DDE	1.0.E-02	mg/kg	1.2.E-06	mg/kg-day	3.4.E-01	$(mg/kg\text{-}day)^{-1}$	4.0.E-07	4.1.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	6.8.E-02	mg/kg	7.8.E-06	mg/kg-day	3.4.E-01	$(mg/kg\text{-}day)^{-1}$	2.6.E-06	2.7.E-05	mg/kg-day	5.0.E-04	mg/kg-day	Liver	5.4.E-02
				PENTACHLOROPHENOL	5.0.E-02	mg/kg	5.7.E-06	mg/kg-day	4.0.E-01	$(mg/kg\text{-}day)^{-1}$	2.3.E-06	2.0.E-05	mg/kg-day	5.0.E-03	mg/kg-day	NA	4.0.E-03
			Exposure Route Total								1.2.E-04						8.4.E+00
		Exposure Point Total									1.2.E-04						8.4.E+00
	Exposure Medium Total										1.2.E-04						8.4.E+00
Medium Total for Adult											1.2.E-04						8.4.E+00
Total of Receptor Risks Across All Media											1.2.E-04	Total of Receptor Hazards Across All Media					8.5E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	2.7E-03
Total Body Weight HI Across All Media =	2.5E-04
Total CNS HI Across All Media =	1.5E+00
Total Development HI Across All Media =	5.9E-06
Total GI Tract HI Across All Media =	7.2E-02
Total Immune HI Across All Media =	6.3E+00
Total Kidney HI Across All Media =	4.9E-04
Total Liver HI Across All Media =	3.2E-01
Total Lung HI Across All Media =	0.0E+00
Total Lung & Respiratory HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	7.9E-06
Total Reproductive HI Across All Media =	1.7E-04
Total Respiratory HI Across All Media =	4.6E-04
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	2.2E-01
Total Thyroid HI Across All Media =	5.9E-03
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	3.9E-02

TABLE 7.2c-CTE Angler (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Ingestion	CYANIDE	2.2E+00	mg/kg	1.5E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-08	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	4.3E-05
				ALUMINUM	6.5E+03	mg/kg	4.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.8E-05	mg/kg-day	1.0E+00	mg/kg-day	CNS	7.8E-05
				ANTIMONY	2.2E+01	mg/kg	1.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	6.5E-04
				ARSENIC	1.6E+01	mg/kg	6.4E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-09	1.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.7E-04
				BARIUM	6.7E+02	mg/kg	4.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.1E-06	mg/kg-day	2.0E-01	mg/kg-day	Kidney	4.0E-05
				CADMIUM	5.6E+00	mg/kg	3.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.7E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	6.7E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	3.6E-10	mg/kg-day	5.0E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-10	6.4E-09	mg/kg-day	3.0E-03	mg/kg-day	None	2.1E-06
				COBALT	8.9E+00	mg/kg	6.1E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.5E-04
				COPPER	1.2E+03	mg/kg	7.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	3.5E-04
				IRON	4.8E+04	mg/kg	3.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.8E-04	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	8.3E-04
				MANGANESE	8.3E+02	mg/kg	5.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.9E-06	mg/kg-day	2.4E-02	mg/kg-day	CNS	4.1E-04
				MERCURY	2.7E+00	mg/kg	1.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.3E-08	mg/kg-day	1.0E-04	mg/kg-day	CNS	3.3E-04
				NICKEL	9.8E+01	mg/kg	6.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	5.9E-05
				SILVER	1.3E+01	mg/kg	9.2E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-07	mg/kg-day	5.0E-03	mg/kg-day	Skin	3.2E-05
				ZINC	1.9E+03	mg/kg	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-05	mg/kg-day	3.0E-01	mg/kg-day	Blood	7.5E-05
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	9.7E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	4.2E-06
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.5E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-08	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	4.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-08	7.7E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	2.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-08	3.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	2.5E-08	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	1.8E-09	4.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	1.2E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	9.1E-11	2.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	2.3E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-08	4.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	3.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.6E-07	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.4E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	2.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-09	4.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	7.0E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	6.1E-06
				PYRENE	1.8E+01	mg/kg	1.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	7.0E-06
				PCB-1242	1.0E+00	mg/kg	7.1E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-09	1.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.2E-04
				PCB-1248	1.5E+01	mg/kg	1.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-08	1.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.2E-03
				PCB-1254	1.1E+01	mg/kg	7.2E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08	1.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.3E-03
				PCB-1260	1.4E-01	mg/kg	9.2E-11	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-10	1.6E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.1E-05
				BETA BHC	1.2E-01	mg/kg	8.4E-11	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-10	1.5E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	8.4E-11	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.3E-09	1.5E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.9E-05
				HEPTACHLOR	5.0E-02	mg/kg	3.4E-11	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-10	6.0E-10	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.2E-06
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	2.6E-11	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-10	4.5E-10	mg/kg-day	1.3E-05	mg/kg-day	Liver	3.4E-05
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	5.0E-09	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	7.0E-11	8.7E-08	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.4E-06
				DIBENZOFURAN	3.8E+01	mg/kg	2.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.3E-07						2.0E-02

TABLE 7.2c-CTE Angler (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Dermal	CYANIDE	2.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	6.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	2.7E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.1E-09	4.7E-08	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.6E-04
				BARIUM	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	5.6E+00	mg/kg	3.3E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-10	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.3E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	8.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.2E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	4.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	2.7E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	9.8E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				ZINC	1.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	1.1E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-08	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	4.6E-06
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	1.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-08	2.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	4.8E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-08	8.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	2.3E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-08	4.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	2.7E-08	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	2.0E-09	4.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.8E+01	mg/kg	1.4E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	1.0E-10	2.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	2.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-08	4.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	3.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.1E-07	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.5E-05
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	2.8E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-09	4.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	7.6E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	6.7E-06
				PYRENE	1.8E+01	mg/kg	1.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	7.7E-06
				PCB-1242	1.0E+00	mg/kg	8.4E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-09	1.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.4E-04
				PCB-1248	1.5E+01	mg/kg	1.2E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-08	2.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-02
				PCB-1254	1.1E+01	mg/kg	8.5E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-08	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.4E-03
				PCB-1260	1.4E-01	mg/kg	1.1E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-10	1.9E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.6E-05
				BETA BHC	1.2E-01	mg/kg	7.1E-11	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-10	1.2E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	1.2E-01	mg/kg	7.1E-11	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-09	1.2E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.5E-05
				HEPTACHLOR	5.0E-02	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	4.2E-09	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	5.9E-11	7.4E-08	mg/kg-day	2.0E-02	mg/kg-day	Liver	3.7E-06
				DIBENZOFURAN	3.8E+01	mg/kg	6.6E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.4E-07						1.9E-02

TABLE 7.2c-CTE Angler (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	Inhalation	CYANIDE	2.2E+00	mg/kg	5.7E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.9E-07	mg/m^3	8.0E-04	mg/m^3	Thyroid	1.2E-03
				ALUMINUM	6.5E+03	mg/kg	4.4E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.7E-09	mg/m^3	5.0E-03	mg/m^3	CNS	1.5E-06
				ANTIMONY	2.2E+01	mg/kg	1.5E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	1.0E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	4.5E-12	1.8E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.2E-06
				BARIUM	6.7E+02	mg/kg	4.5E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.9E-10	mg/m^3	5.0E-04	mg/m^3	Development	1.6E-06
				CADMIUM	5.6E+00	mg/kg	3.8E-10	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	6.8E-13	6.6E-12	mg/m^3	1.0E-05	mg/m^3	Kidney	6.6E-07
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	3.6E-11	µg/m^3	8.4E-02	(µg/m^3)$^{-1}$	3.0E-12	6.2E-13	mg/m^3	1.0E-04	mg/m^3	Lung	6.2E-09
				COBALT	8.9E+00	mg/kg	6.0E-10	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	5.4E-12	1.0E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.7E-06
				COPPER	1.2E+03	mg/kg	7.8E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	4.8E+04	mg/kg	3.2E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	5.6E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.7E-10	mg/m^3	5.0E-05	mg/m^3	CNS	1.9E-05
				MERCURY	2.7E+00	mg/kg	7.2E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.3E-07	mg/m^3	3.0E-04	mg/m^3	CNS	4.2E-04
				NICKEL	9.8E+01	mg/kg	6.6E-09	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	1.7E-12	1.1E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	1.3E-06
				SILVER	1.3E+01	mg/kg	9.0E-10	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				ZINC	1.9E+03	mg/kg	1.3E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	1.4E+00	mg/kg	2.2E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	2.2E+01	mg/kg	4.5E-07	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	4.9E-11	7.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	6.4E+00	mg/kg	4.3E-10	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	4.7E-13	7.5E-12	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	3.0E+01	mg/kg	2.0E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.2E-13	3.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.6E+01	mg/kg	2.4E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.7E-13	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.8E+01	mg/kg	1.2E-09	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	1.3E-14	2.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.3E+00	mg/kg	2.2E-10	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	2.7E-13	3.9E-12	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	4.7E+01	mg/kg	3.1E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.7E+00	mg/kg	2.5E-10	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.7E-14	4.4E-12	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	1.0E+01	mg/kg	2.0E-05	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	6.8E-10	3.5E-07	mg/m^3	3.0E-03	mg/m^3	Respiratory	1.2E-04
				PYRENE	1.8E+01	mg/kg	6.8E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.0E+00	mg/kg	1.6E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	9.2E-11	2.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.5E+01	mg/kg	2.2E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.3E-09	3.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	1.1E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	6.5E-10	2.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	9.4E-09	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	5.4E-12	1.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	1.2E-01	mg/kg	8.2E-12	µg/m^3	5.3E-04	(µg/m^3)$^{-1}$	4.3E-15	1.4E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	1.2E-01	mg/kg	8.2E-12	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	3.8E-14	1.4E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	5.0E-02	mg/kg	9.6E-09	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	1.2E-11	1.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	3.7E-02	mg/kg	4.1E-09	µg/m^3	2.6E-03	(µg/m^3)$^{-1}$	1.1E-11	7.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL) PHTHALATE	7.3E+00	mg/kg	4.9E-10	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	1.2E-15	8.5E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.8E+01	mg/kg	1.8E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.1E-07	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.8E-09						1.8E-03
		Exposure Point Total									2.6E-07						4.1E-02
	Exposure Medium Total										2.6E-07						4.1E-02
Medium Total for Adult											2.6E-07						4.1E-02

TABLE 7.2c-CTE Angler (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Fish Tissue	Fish Fillets	Fish Fillets	Ingestion	ARSENIC	1.7E-01	mg/kg	4.7E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	7.1E-07	8.3E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.8E-02
				CHROMIUM, TOTAL	7.9E-01	mg/kg	2.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				COPPER	6.8E+00	mg/kg	1.9E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	8.5E-03
				MERCURY	3.7E-01	mg/kg	1.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-05	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.9E-01
				SELENIUM	4.8E-01	mg/kg	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-05	mg/kg-day	5.0E-03	mg/kg-day	Whole body	4.8E-03
				VANADIUM	4.0E-01	mg/kg	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	4.0E-03
				PCB-1254	2.4E-01	mg/kg	4.8E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.7E-07	8.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.2E-01
				PCB-1260	7.0E-02	mg/kg	1.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-07	2.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-01
				ALDRIN	2.5E-04	mg/kg	7.1E-10	mg/kg-day	1.7E+01	$(mg/kg\text{-}day)^{-1}$	1.2E-08	1.2E-08	mg/kg-day	3.0E-05	mg/kg-day	Liver	4.2E-04
				DIELDRIN	3.4E-03	mg/kg	9.8E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.6E-07	1.7E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.4E-03
				ENDRIN	3.8E-02	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	CNS	6.3E-03
				HEPTACHLOR	6.4E-04	mg/kg	1.8E-09	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	8.2E-09	3.2E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	6.4E-05
				HEPTACHLOR EPOXIDE	7.6E-03	mg/kg	2.2E-08	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07	3.8E-07	mg/kg-day	1.3E-05	mg/kg-day	Liver	2.9E-02
				P,P'-DDE	1.0E-02	mg/kg	2.9E-08	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	9.9E-09	5.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	6.8E-02	mg/kg	1.9E-07	mg/kg-day	3.4E-01	$(mg/kg\text{-}day)^{-1}$	6.6E-08	3.4E-06	mg/kg-day	5.0E-04	mg/kg-day	Liver	6.8E-03
				PENTACHLOROPHENOL	5.0E-02	mg/kg	1.4E-07	mg/kg-day	4.0E-01	$(mg/kg\text{-}day)^{-1}$	5.7E-08	2.5E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	5.0E-04
			Exposure Route Total								2.5E-06						8.2E-01
		Exposure Point Total									2.5E-06						8.2E-01
	Exposure Medium Total										2.5E-06						8.2E-01
Medium Total for Adult											2.5E-06						8.2E-01
Total of Receptor Risks Across All Media											2.7.E-06	Total of Receptor Hazards Across All Media					8.6E-01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	7.3E-04
Total Body Weight HI Across All Media =	7.1E-05
Total CNS HI Across All Media =	1.9E-01
Total Development HI Across All Media =	1.6E-06
Total GI Tract HI Across All Media =	9.7E-03
Total Immune HI Across All Media =	5.8E-01
Total Kidney HI Across All Media =	1.5E-04
Total Liver HI Across All Media =	4.0E-02
Total Lung HI Across All Media =	0.0E+00
Total Lung & Respiratory HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	2.1E-06
Total Reproductive HI Across All Media =	4.5E-05
Total Respiratory HI Across All Media =	1.3E-04
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	2.8E-02
Total Thyroid HI Across All Media =	1.6E-03
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	4.9E-03

TABLE 7.3a-RME Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Ingestion	CYANIDE	1.9E+00	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-06	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	3.3E-03
				ALUMINUM	7.9E+03	mg/kg	6.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.1E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	8.1E-03
				ANTIMONY	8.5E+01	mg/kg	7.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.7E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	2.2E-01
				ARSENIC	1.9E+01	mg/kg	9.8E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-06	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.8E-02
				BARIUM	9.5E+02	mg/kg	8.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.7E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	4.8E-03
				CADMIUM	1.9E+01	mg/kg	1.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-05	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.9E-02
				COBALT	1.3E+01	mg/kg	1.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	4.3E-02
				COPPER	5.6E+03	mg/kg	4.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.8E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.4E-01
				IRON	9.1E+04	mg/kg	8.0E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.3E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.3E-01
				MANGANESE	1.0E+03	mg/kg	9.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	4.4E-02
				MERCURY	3.0E+00	mg/kg	2.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	3.1E-02
				NICKEL	2.5E+02	mg/kg	2.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-04	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.3E-02
				VANADIUM	2.6E+01	mg/kg	2.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	5.3E-03
				ZINC	4.4E+03	mg/kg	3.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.5E-02
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	3.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-06	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	1.1E-03
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	6.8E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-05	7.9E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	5.2E-07	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	2.0E-05	6.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	9.4E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-05	1.1E-04	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	1.2E-05	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	4.5E-06	1.4E-04	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	5.7E-06	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-07	6.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	3.7E-07	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	1.4E-05	4.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	1.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-04	mg/kg-day	4.0E-02	mg/kg-day	Whole body	4.3E-03
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	2.6E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-06	3.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	2.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.2E-03
				PYRENE	1.8E+01	mg/kg	1.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-05	mg/kg-day	3.0E-02	mg/kg-day	Kidney	6.1E-04
				PCB-1242	2.9E+00	mg/kg	2.5E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.0E-07	2.9E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-01
				PCB-1248	3.3E+01	mg/kg	2.9E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.8E-06	3.4E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E+00
				PCB-1254	9.8E+00	mg/kg	8.6E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-06	1.0E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.0E-01
				PCB-1260	1.4E-01	mg/kg	1.2E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-08	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.2E-03
				DIELDRIN	2.2E-01	mg/kg	1.9E-08	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	3.1E-07	2.3E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	4.5E-03
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	3.9E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	5.5E-08	4.6E-05	mg/kg-day	2.0E-02	mg/kg-day	Liver	2.3E-03
				DIBENZOFURAN	8.9E+01	mg/kg	7.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.1E-04						3.1E+00

TABLE 7.3a-RME Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Dermal	CYANIDE	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	8.5E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9E+01	mg/kg	1.2E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07	1.4E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.5E-03
				BARIUM	9.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.9E+01	mg/kg	3.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.6E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.8E-03
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	5.6E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	9.1E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.0E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	3.0E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	2.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				VANADIUM	2.6E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	4.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-06	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	3.5E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	2.1E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	8.1E-06	2.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	1.6E-07	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	6.2E-06	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	2.9E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-05	3.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	3.6E-06	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-06	4.2E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	1.8E-06	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	6.9E-08	2.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	1.1E-07	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	4.4E-06	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	4.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.3E-03
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	8.0E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-07	9.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	6.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.7E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.8E-04
				PYRENE	1.8E+01	mg/kg	4.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.9E-04
				PCB-1242	2.9E+00	mg/kg	8.4E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07	9.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.9E-02
				PCB-1248	3.3E+01	mg/kg	9.7E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-06	1.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.6E-01
				PCB-1254	9.8E+00	mg/kg	2.9E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.7E-07	3.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-01
				PCB-1260	1.4E-01	mg/kg	4.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.2E-09	4.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.4E-03
				DIELDRIN	2.2E-01	mg/kg	4.6E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	7.4E-08	5.4E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.1E-03
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	9.4E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.3E-08	1.1E-05	mg/kg-day	2.0E-02	mg/kg-day	Liver	5.5E-04
				DIBENZOFURAN	8.9E+01	mg/kg	5.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											3.5E-05						7.9E-01

TABLE 7.3a-RME Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Inhalation	CYANIDE	1.9E+00	mg/kg	6.1E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.1E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	8.9E-03
				ALUMINUM	7.9E+03	mg/kg	6.3E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.4E-08	mg/m^3	5.0E-03	mg/m^3	CNS	1.5E-05
				ANTIMONY	8.5E+01	mg/kg	6.9E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9E+01	mg/kg	1.5E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	6.4E-11	1.7E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.2E-05
				BARIUM	9.5E+02	mg/kg	7.6E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.9E-09	mg/m^3	5.0E-04	mg/m^3	Development	1.8E-05
				CADMIUM	1.9E+01	mg/kg	1.5E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	2.7E-11	1.8E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	1.8E-05
				COBALT	1.3E+01	mg/kg	1.0E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	9.1E-11	1.2E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	2.0E-05
				COPPER	5.6E+03	mg/kg	4.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	9.1E+04	mg/kg	7.4E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.0E+03	mg/kg	8.4E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.8E-09	mg/m^3	5.0E-05	mg/m^3	CNS	2.0E-04
				MERCURY	3.0E+00	mg/kg	9.5E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-06	mg/m^3	3.0E-04	mg/m^3	CNS	3.7E-03
				NICKEL	2.5E+02	mg/kg	2.0E-07	$\mu g/m^3$	2.6E-04	$(\mu g/m^3)^{-1}$	5.2E-11	2.3E-09	mg/m^3	9.0E-05	mg/m^3	Respiratory	2.6E-05
				VANADIUM	2.6E+01	mg/kg	2.1E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.5E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	2.5E-06
				ZINC	4.4E+03	mg/kg	3.6E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	8.4E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.8E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	1.9E-05	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.1E-08	2.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	4.8E-09	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	2.8E-11	5.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	8.7E-08	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	5.1E-11	1.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	1.1E-07	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	6.3E-11	1.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.5E+01	mg/kg	5.3E-08	$\mu g/m^3$	5.9E-05	$(\mu g/m^3)^{-1}$	3.1E-12	6.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	3.4E-09	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	2.2E-11	3.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	1.4E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	2.4E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.4E-12	2.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	5.7E-04	$\mu g/m^3$	3.4E-05	$(\mu g/m^3)^{-1}$	2.0E-08	6.7E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	2.2E-03
				PYRENE	1.8E+01	mg/kg	8.3E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	2.9E+00	mg/kg	5.3E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.0E-09	6.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E+01	mg/kg	5.8E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.3E-08	6.8E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8E+00	mg/kg	1.3E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	7.3E-09	1.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	1.2E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	6.7E-11	1.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	2.2E-01	mg/kg	1.8E-10	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	8.2E-13	2.1E-12	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	3.6E-08	$\mu g/m^3$	2.4E-06	$(\mu g/m^3)^{-1}$	8.7E-14	4.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	8.9E+01	mg/kg	5.0E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.8E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								7.5E-08						1.5E-02
		Exposure Point Total									1.5E-04						3.9E+00
	Exposure Medium Total										1.5E-04						3.9E+00
Medium Total for Young Child											1.5E-04						3.9E+00
										Total of Receptor Risks Across All Media	1.5E-04					Total of Receptor Hazards Across All Media	3.9E+00

TABLE 7.3a-RME Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	2.3.E-01
Total Body Weight HI Across All Media =	1.4.E-02
Total CNS HI Across All Media =	8.7.E-02
Total Development HI Across All Media =	1.8.E-05
Total GI Tract HI Across All Media =	2.8.E-01
Total Immune HI Across All Media =	3.1.E+00
Total Kidney HI Across All Media =	2.7.E-02
Total Liver HI Across All Media =	8.5.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	2.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	3.3.E-03
Total Respiratory HI Across All Media =	3.7.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	4.3.E-02
Total Thyroid HI Across All Media =	5.2.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	5.6.E-03

TABLE 7.3a-CTE Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Ingestion	CYANIDE	1.9E+00	mg/kg	2.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.0E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	8.3E-04
				ALUMINUM	7.9E+03	mg/kg	1.2E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	2.0E-03
				ANTIMONY	8.5E+01	mg/kg	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	5.5E-02
				ARSENIC	1.9E+01	mg/kg	1.6E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-07	2.9E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	9.5E-03
				BARIUM	9.5E+02	mg/kg	1.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	1.2E-03
				CADMIUM	1.9E+01	mg/kg	2.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.8E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	4.8E-03
				COBALT	1.3E+01	mg/kg	1.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.1E-02
				COPPER	5.6E+03	mg/kg	8.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	3.6E-02
				IRON	9.1E+04	mg/kg	1.3E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	3.3E-02
				MANGANESE	1.0E+03	mg/kg	1.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.1E-02
				MERCURY	3.0E+00	mg/kg	4.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.7E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	7.7E-03
				NICKEL	2.5E+02	mg/kg	3.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.2E-03
				VANADIUM	2.6E+01	mg/kg	3.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.7E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	1.3E-03
				ZINC	4.4E+03	mg/kg	6.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	3.8E-03
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	6.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-06	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.8E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	1.1E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-06	2.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	8.7E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	3.4E-06	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	1.6E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	6.1E-06	2.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	1.9E-06	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	7.6E-07	3.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	9.5E-07	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	3.7E-08	1.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	6.1E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	2.4E-06	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	2.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.1E-03
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	4.3E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07	7.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	3.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.1E-04
				PYRENE	1.8E+01	mg/kg	2.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.6E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.5E-04
				PCB-1242	2.9E+00	mg/kg	4.2E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.4E-08	7.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.7E-02
				PCB-1248	3.3E+01	mg/kg	4.9E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.7E-07	8.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.2E-01
				PCB-1254	9.8E+00	mg/kg	1.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-07	2.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-01
				PCB-1260	1.4E-01	mg/kg	2.0E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.1E-09	3.6E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.8E-03
				DIELDRIN	2.2E-01	mg/kg	3.2E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	5.2E-08	5.7E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.1E-03
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	6.6E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	9.2E-09	1.2E-05	mg/kg-day	2.0E-02	mg/kg-day	Liver	5.8E-04
				DIBENZOFURAN	8.9E+01	mg/kg	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.9E-05						7.7E-01

TABLE 7.3a-CTE Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Dermal	CYANIDE	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	8.5E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9E+01	mg/kg	3.9E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.8E-08	6.8E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.3E-03
				BARIUM	9.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.9E+01	mg/kg	1.3E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	9.1E-04
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	5.6E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	9.1E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.0E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	3.0E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	2.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				VANADIUM	2.6E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	4.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	4.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.0E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	1.7E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	6.9E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-06	1.2E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	5.3E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	2.1E-06	9.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	9.7E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-06	1.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	1.2E-06	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	4.7E-07	2.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	5.9E-07	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	2.3E-08	1.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	3.8E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	1.5E-06	6.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	1.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	6.6E-04
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	2.7E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-07	4.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	2.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.9E-04
				PYRENE	1.8E+01	mg/kg	1.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	9.5E-05
				PCB-1242	2.9E+00	mg/kg	2.8E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.6E-08	4.9E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.4E-02
				PCB-1248	3.3E+01	mg/kg	3.2E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-07	5.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.8E-01
				PCB-1254	9.8E+00	mg/kg	9.6E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.4E-02
				PCB-1260	1.4E-01	mg/kg	1.4E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-09	2.4E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-03
				DIELDRIN	2.2E-01	mg/kg	1.5E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	2.5E-08	2.7E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	5.4E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	3.1E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	4.4E-09	5.5E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	2.7E-04
				DIBENZOFURAN	8.9E+01	mg/kg	1.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											1.2E-05						4.0E-01

TABLE 7.3a-CTE Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Inhalation	CYANIDE	1.9E+00	mg/kg	1.0E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.8E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	2.2E-03
				ALUMINUM	7.9E+03	mg/kg	1.1E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.9E-08	mg/m^3	5.0E-03	mg/m^3	CNS	3.7E-06
				ANTIMONY	8.5E+01	mg/kg	1.1E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9E+01	mg/kg	2.5E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	1.1E-11	4.4E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.9E-06
				BARIUM	9.5E+02	mg/kg	1.3E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.2E-09	mg/m^3	5.0E-04	mg/m^3	Development	4.4E-06
				CADMIUM	1.9E+01	mg/kg	2.5E-09	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	4.5E-12	4.4E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	4.4E-06
				COBALT	1.3E+01	mg/kg	1.7E-09	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	1.5E-11	2.9E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.9E-06
				COPPER	5.6E+03	mg/kg	7.6E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	9.1E+04	mg/kg	1.2E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.0E+03	mg/kg	1.4E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.4E-09	mg/m^3	5.0E-05	mg/m^3	CNS	4.9E-05
				MERCURY	3.0E+00	mg/kg	1.6E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.8E-07	mg/m^3	3.0E-04	mg/m^3	CNS	9.2E-04
				NICKEL	2.5E+02	mg/kg	3.3E-08	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	8.6E-12	5.8E-10	mg/m^3	9.0E-05	mg/m^3	Respiratory	6.4E-06
				VANADIUM	2.6E+01	mg/kg	3.5E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	6.2E-11	mg/m^3	1.0E-04	mg/m^3	Respiratory	6.2E-07
				ZINC	4.4E+03	mg/kg	6.0E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	1.4E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	3.2E-06	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	1.9E-09	5.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	8.0E-10	µg/m^3	5.9E-03	(µg/m^3)$^{-1}$	4.7E-12	1.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	1.4E-08	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	8.5E-12	2.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	1.8E-08	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	1.0E-11	3.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.5E+01	mg/kg	8.8E-09	µg/m^3	5.9E-05	(µg/m^3)$^{-1}$	5.1E-13	1.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	5.6E-10	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	3.6E-12	9.8E-12	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	2.3E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.9E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	4.0E-10	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	2.3E-13	7.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	9.6E-05	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	3.3E-09	1.7E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	5.6E-04
				PYRENE	1.8E+01	mg/kg	1.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	2.9E+00	mg/kg	8.9E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	5.1E-10	1.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E+01	mg/kg	9.7E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	5.5E-09	1.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8E+00	mg/kg	2.1E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.2E-09	3.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	2.0E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.1E-11	3.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	2.2E-01	mg/kg	3.0E-11	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	1.4E-13	5.2E-13	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	6.0E-09	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	1.5E-14	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	8.9E+01	mg/kg	8.3E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.5E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.2E-08						3.8E-03
		Exposure Point Total									3.0E-05						1.2E+00
	Exposure Medium Total										3.0E-05						1.2E+00
Medium Total for Young Child											3.0E-05						1.2E+00
										Total of Receptor Risks Across All Media	3.0E-05					Total of Receptor Hazards Across All Media	1.2E+00

TABLE 7.3a-CTE Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	5.8.E-02
Total Body Weight HI Across All Media =	3.7.E-03
Total CNS HI Across All Media =	2.2.E-02
Total Development HI Across All Media =	4.4.E-06
Total GI Tract HI Across All Media =	6.9.E-02
Total Immune HI Across All Media =	9.8.E-01
Total Kidney HI Across All Media =	7.2.E-03
Total Liver HI Across All Media =	2.5.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	4.9.E-06
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	8.3.E-04
Total Respiratory HI Across All Media =	1.0.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.2.E-02
Total Thyroid HI Across All Media =	1.3.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	1.7.E-03

TABLE 7.3b-RME Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Tresspassor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Ingestion	CYANIDE	1.9E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	1.0E-03
				ALUMINUM	7.9E+03	mg/kg	4.4E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	2.5E-03
				ANTIMONY	8.5E+01	mg/kg	4.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	6.9E-02
				ARSENIC	1.9E+01	mg/kg	6.2E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.3E-07	3.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.2E-02
				BARIUM	9.5E+02	mg/kg	5.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	1.5E-03
				CADMIUM	1.9E+01	mg/kg	1.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.1E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	6.1E-03
				COBALT	1.3E+01	mg/kg	6.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.0E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.3E-02
				COPPER	5.6E+03	mg/kg	3.1E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	4.5E-02
				IRON	9.1E+04	mg/kg	5.0E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	4.2E-02
				MANGANESE	1.0E+03	mg/kg	5.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.4E-02
				MERCURY	3.0E+00	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.7E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	9.7E-03
				NICKEL	2.5E+02	mg/kg	1.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.9E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	4.0E-03
				VANADIUM	2.6E+01	mg/kg	1.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.5E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	1.7E-03
				ZINC	4.4E+03	mg/kg	2.5E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	4.8E-03
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	2.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-06	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	3.6E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	4.3E-06	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	8.3E-06	2.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	3.3E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	6.4E-06	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	5.9E-06	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-05	3.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	7.3E-06	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-06	4.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	3.6E-06	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	7.0E-08	2.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	2.3E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	4.5E-06	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	9.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.4E-03
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	1.6E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-07	9.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.8E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.9E-04
				PYRENE	1.8E+01	mg/kg	1.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.8E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.9E-04
				PCB-1242	2.9E+00	mg/kg	1.6E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-07	9.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.6E-02
				PCB-1248	3.3E+01	mg/kg	1.8E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-06	1.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.4E-01
				PCB-1254	9.8E+00	mg/kg	5.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06	3.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-01
				PCB-1260	1.4E-01	mg/kg	7.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-08	4.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.3E-03
				DIELDRIN	2.2E-01	mg/kg	1.2E-08	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	2.0E-07	7.2E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.4E-03
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	2.5E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	3.5E-08	1.5E-05	mg/kg-day	2.0E-02	mg/kg-day	Liver	7.3E-04
				DIBENZOFURAN	8.9E+01	mg/kg	4.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9E-05	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								3.9E-05						9.7E-01

TABLE 7.3b-RME Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Tresspassor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Dermal	CYANIDE	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	8.5E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9E+01	mg/kg	3.1E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.7E-07	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.1E-03
				BARIUM	9.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.9E+01	mg/kg	1.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.5E-03
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	5.6E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	9.1E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.0E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	3.0E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	2.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				VANADIUM	2.6E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	4.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	3.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-06	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	4.7E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	5.6E-06	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-05	3.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	4.3E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	8.4E-06	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	7.9E-06	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-05	4.6E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	9.7E-06	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-06	5.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	4.8E-06	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	9.3E-08	2.8E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	3.1E-07	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	6.0E-06	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	1.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.2E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.8E-03
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	2.2E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-07	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	1.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	5.2E-04
				PYRENE	1.8E+01	mg/kg	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.7E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	2.6E-04
				PCB-1242	2.9E+00	mg/kg	2.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-07	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.6E-02
				PCB-1248	3.3E+01	mg/kg	2.6E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-06	1.5E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.6E-01
				PCB-1254	9.8E+00	mg/kg	7.8E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-06	4.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.3E-01
				PCB-1260	1.4E-01	mg/kg	1.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-08	6.4E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.2E-03
				DIELDRIN	2.2E-01	mg/kg	1.3E-08	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	2.0E-07	7.3E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.5E-03
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	2.5E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	3.6E-08	1.5E-05	mg/kg-day	2.0E-02	mg/kg-day	Liver	7.4E-04
				DIBENZOFURAN	8.9E+01	mg/kg	1.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											5.1E-05						1.1E+00

TABLE 7.3b-RME Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Tresspassor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Inhalation	CYANIDE	1.9E+00	mg/kg	2.4E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-05	mg/m^3	8.0E-04	mg/m^3	Thyroid	1.8E-02
				ALUMINUM	7.9E+03	mg/kg	2.5E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.5E-07	mg/m^3	5.0E-03	mg/m^3	CNS	3.0E-05
				ANTIMONY	8.5E+01	mg/kg	2.8E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9E+01	mg/kg	6.0E-08	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	2.6E-10	3.5E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.3E-05
				BARIUM	9.5E+02	mg/kg	3.0E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.8E-08	mg/m^3	5.0E-04	mg/m^3	Development	3.6E-05
				CADMIUM	1.9E+01	mg/kg	6.1E-08	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	1.1E-10	3.5E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	3.5E-05
				COBALT	1.3E+01	mg/kg	4.0E-08	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	3.6E-10	2.4E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	3.9E-05
				COPPER	5.6E+03	mg/kg	1.8E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				IRON	9.1E+04	mg/kg	2.9E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.7E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.0E+03	mg/kg	3.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-08	mg/m^3	5.0E-05	mg/m^3	CNS	3.9E-04
				MERCURY	3.0E+00	mg/kg	3.8E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.2E-06	mg/m^3	3.0E-04	mg/m^3	CNS	7.4E-03
				NICKEL	2.5E+02	mg/kg	7.9E-07	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	2.1E-10	4.6E-09	mg/m^3	9.0E-05	mg/m^3	Respiratory	5.1E-05
				VANADIUM	2.6E+01	mg/kg	8.5E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.9E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	4.9E-06
				ZINC	4.4E+03	mg/kg	1.4E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	3.3E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	7.7E-05	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.3E-08	4.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	1.9E-08	µg/m^3	2.9E-03	(µg/m^3)$^{-1}$	5.6E-11	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	3.5E-07	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	1.0E-10	2.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	4.3E-07	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	1.3E-10	2.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.5E+01	mg/kg	2.1E-07	µg/m^3	2.9E-05	(µg/m^3)$^{-1}$	6.2E-12	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	1.4E-08	µg/m^3	3.2E-03	(µg/m^3)$^{-1}$	4.3E-11	7.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	5.4E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	9.5E-09	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.8E-12	5.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	2.3E-03	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	7.8E-08	1.3E-05	mg/m^3	3.0E-03	mg/m^3	Respiratory	4.5E-03
				PYRENE	1.8E+01	mg/kg	3.3E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.9E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	2.9E+00	mg/kg	2.1E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.2E-08	1.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E+01	mg/kg	2.3E-04	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.3E-07	1.4E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8E+00	mg/kg	5.1E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.9E-08	3.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	4.7E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.7E-10	2.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	2.2E-01	mg/kg	7.2E-10	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	3.3E-12	4.2E-12	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	1.5E-07	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	3.5E-13	8.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	8.9E+01	mg/kg	2.0E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-05	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.8E-07						3.0E-02
		Exposure Point Total									9.0E-05						2.1E+00
	Exposure Medium Total										9.0E-05						2.1E+00
Medium Total for Adolescent											9.0E-05						2.1E+00
										Total of Receptor Risks Across All Media	9.0E-05					Total of Receptor Hazards Across All Media	2.1E+00

TABLE 7.3b-RME Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Tresspassor
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	7.4.E-02
Total Body Weight HI Across All Media =	4.9.E-03
Total CNS HI Across All Media =	3.4.E-02
Total Development HI Across All Media =	3.6.E-05
Total GI Tract HI Across All Media =	8.7.E-02
Total Immune HI Across All Media =	1.8.E+00
Total Kidney HI Across All Media =	1.1.E-02
Total Liver HI Across All Media =	4.4.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	3.9.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.1.E-03
Total Respiratory HI Across All Media =	5.3.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.8.E-02
Total Thyroid HI Across All Media =	3.1.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	3.1.E-03

TABLE 7.3b-CTE Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Ingestion	CYANIDE	1.9E+00	mg/kg	8.9E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	2.6E-04
				ALUMINUM	7.9E+03	mg/kg	3.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	6.3E-04
				ANTIMONY	8.5E+01	mg/kg	3.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.9E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.7E-02
				ARSENIC	1.9E+01	mg/kg	5.1E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	7.7E-08	9.0E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.0E-03
				BARIUM	9.5E+02	mg/kg	4.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.6E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	3.8E-04
				CADMIUM	1.9E+01	mg/kg	8.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.5E-03
				COBALT	1.3E+01	mg/kg	5.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.4E-03
				COPPER	5.6E+03	mg/kg	2.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.1E-02
				IRON	9.1E+04	mg/kg	4.2E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.4E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.1E-02
				MANGANESE	1.0E+03	mg/kg	4.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.4E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.5E-03
				MERCURY	3.0E+00	mg/kg	1.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	2.4E-03
				NICKEL	2.5E+02	mg/kg	1.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	9.9E-04
				VANADIUM	2.6E+01	mg/kg	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	4.2E-04
				ZINC	4.4E+03	mg/kg	2.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.2E-03
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	2.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	8.9E-05
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	3.5E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	6.9E-07	6.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	2.7E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	5.3E-07	4.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	4.9E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-07	8.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	6.1E-07	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-07	1.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	3.0E-07	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	5.9E-09	5.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	1.9E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	3.8E-07	3.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	7.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	3.4E-04
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	1.4E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-08	2.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	9.8E-05
				PYRENE	1.8E+01	mg/kg	8.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	4.8E-05
				PCB-1242	2.9E+00	mg/kg	1.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-08	2.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-02
				PCB-1248	3.3E+01	mg/kg	1.5E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-07	2.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-01
				PCB-1254	9.8E+00	mg/kg	4.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-08	7.9E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.0E-02
				PCB-1260	1.4E-01	mg/kg	6.4E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-09	1.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.6E-04
				DIELDRIN	2.2E-01	mg/kg	1.0E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.6E-08	1.8E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.6E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	2.1E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.9E-09	3.6E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	1.8E-04
				DIBENZOFURAN	8.9E+01	mg/kg	4.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								3.2E-06						2.4E-01

TABLE 7.3b-CTE Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Dermal	CYANIDE	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	8.5E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9E+01	mg/kg	5.2E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	7.9E-08	9.2E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.1E-03
				BARIUM	9.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.9E+01	mg/kg	1.8E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.2E-03
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	5.6E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	9.1E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.0E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	3.0E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	2.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				VANADIUM	2.6E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	4.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	5.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.5E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.4E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	9.4E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-06	1.6E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	7.2E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	1.4E-06	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	1.3E-06	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-06	2.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	1.6E-06	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	3.2E-07	2.8E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	8.0E-07	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	1.6E-08	1.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	5.1E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	1.0E-06	9.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	2.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	9.0E-04
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	3.6E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	7.0E-08	6.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	3.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	2.6E-04
				PYRENE	1.8E+01	mg/kg	2.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.9E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.3E-04
				PCB-1242	2.9E+00	mg/kg	3.8E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-08	6.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.3E-02
				PCB-1248	3.3E+01	mg/kg	4.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.7E-07	7.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.8E-01
				PCB-1254	9.8E+00	mg/kg	1.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-07	2.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-01
				PCB-1260	1.4E-01	mg/kg	1.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-09	3.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-03
				DIELDRIN	2.2E-01	mg/kg	2.1E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	3.3E-08	3.6E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	7.3E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	4.2E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	5.9E-09	7.4E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	3.7E-04
				DIBENZOFURAN	8.9E+01	mg/kg	2.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								8.5E-06						5.4E-01

TABLE 7.3b-CTE Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Inhalation	CYANIDE	1.9E+00	mg/kg	2.0E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.6E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	4.4E-03
				ALUMINUM	7.9E+03	mg/kg	2.1E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.7E-08	mg/m^3	5.0E-03	mg/m^3	CNS	7.4E-06
				ANTIMONY	8.5E+01	mg/kg	2.3E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9E+01	mg/kg	5.0E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	2.1E-11	8.7E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	5.8E-06
				BARIUM	9.5E+02	mg/kg	2.5E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.4E-09	mg/m^3	5.0E-04	mg/m^3	Development	8.9E-06
				CADMIUM	1.9E+01	mg/kg	5.1E-09	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	9.1E-12	8.8E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	8.8E-06
				COBALT	1.3E+01	mg/kg	3.4E-09	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	3.0E-11	5.9E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	9.8E-06
				COPPER	5.6E+03	mg/kg	1.5E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	9.1E+04	mg/kg	2.5E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.0E+03	mg/kg	2.8E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.9E-09	mg/m^3	5.0E-05	mg/m^3	CNS	9.8E-05
				MERCURY	3.0E+00	mg/kg	3.2E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.5E-07	mg/m^3	3.0E-04	mg/m^3	CNS	1.8E-03
				NICKEL	2.5E+02	mg/kg	6.6E-08	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	1.7E-11	1.2E-09	mg/m^3	9.0E-05	mg/m^3	Respiratory	1.3E-05
				VANADIUM	2.6E+01	mg/kg	7.1E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	1.2E-06
				ZINC	4.4E+03	mg/kg	1.2E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	2.8E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.9E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	6.4E-06	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	1.9E-09	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	1.6E-09	µg/m^3	2.9E-03	(µg/m^3)$^{-1}$	4.7E-12	2.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	2.9E-08	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	8.5E-12	5.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	3.6E-08	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	1.0E-11	6.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.5E+01	mg/kg	1.8E-08	µg/m^3	2.9E-05	(µg/m^3)$^{-1}$	5.1E-13	3.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	1.1E-09	µg/m^3	3.2E-03	(µg/m^3)$^{-1}$	3.6E-12	2.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	4.5E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.9E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	8.0E-10	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.3E-13	1.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	1.9E-04	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	6.5E-09	3.3E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	1.1E-03
				PYRENE	1.8E+01	mg/kg	2.8E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	2.9E+00	mg/kg	1.8E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.0E-09	3.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E+01	mg/kg	1.9E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.1E-08	3.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8E+00	mg/kg	4.3E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.4E-09	7.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	3.9E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.2E-11	6.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	2.2E-01	mg/kg	6.0E-11	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	2.7E-13	1.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	1.2E-08	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	2.9E-14	2.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	8.9E+01	mg/kg	1.7E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.9E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.3E-08						7.6E-03
		Exposure Point Total									1.2E-05						7.9E-01
	Exposure Medium Total										1.2E-05						7.9E-01
Medium Total for Adolescent											1.2E-05						7.9E-01
										Total of Receptor Risks Across All Media	1.2E-05					Total of Receptor Hazards Across All Media	7.9E-01

TABLE 7.3b-CTE Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.8.E-02
Total Body Weight HI Across All Media =	1.4.E-03
Total CNS HI Across All Media =	8.5.E-03
Total Development HI Across All Media =	8.9.E-06
Total GI Tract HI Across All Media =	2.2.E-02
Total Immune HI Across All Media =	7.2.E-01
Total Kidney HI Across All Media =	3.3.E-03
Total Liver HI Across All Media =	1.6.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	9.8.E-06
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.7.E-04
Total Respiratory HI Across All Media =	1.4.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	6.1.E-03
Total Thyroid HI Across All Media =	7.8.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	1.2.E-03

TABLE 7.3c-RME Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Ingestion	CYANIDE	1.9.E+00	mg/kg	5.3.E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9.E-07	mg/kg-day	6.0.E-04	mg/kg-day	Reproductive	3.1.E-04
				ALUMINUM	7.9.E+03	mg/kg	2.2.E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.6.E-04	mg/kg-day	1.0.E+00	mg/kg-day	CNS	7.6.E-04
				ANTIMONY	8.5.E+01	mg/kg	2.3.E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.2.E-06	mg/kg-day	4.0.E-04	mg/kg-day	Blood	2.0.E-02
				ARSENIC	1.9.E+01	mg/kg	3.1.E-07	mg/kg-day	1.5.E+00	$(mg/kg\text{-}day)^{-1}$	4.6.E-07	1.1.E-06	mg/kg-day	3.0.E-04	mg/kg-day	Skin, Vascular	3.6.E-03
				BARIUM	9.5.E+02	mg/kg	2.6.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.1.E-05	mg/kg-day	2.0.E-01	mg/kg-day	Kidney	4.5.E-04
				CADMIUM	1.9.E+01	mg/kg	5.2.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8.E-06	mg/kg-day	1.0.E-03	mg/kg-day	Kidney	1.8.E-03
				COBALT	1.3.E+01	mg/kg	3.4.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2.E-06	mg/kg-day	3.0.E-04	mg/kg-day	Thyroid	4.0.E-03
				COPPER	5.6.E+03	mg/kg	1.5.E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4.E-04	mg/kg-day	4.0.E-02	mg/kg-day	GI Tract	1.4.E-02
				IRON	9.1.E+04	mg/kg	2.5.E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.7.E-03	mg/kg-day	7.0.E-01	mg/kg-day	GI Tract	1.2.E-02
				MANGANESE	1.0.E+03	mg/kg	2.9.E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0.E-04	mg/kg-day	2.4.E-02	mg/kg-day	CNS	4.2.E-03
				MERCURY	3.0.E+00	mg/kg	8.2.E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.9.E-07	mg/kg-day	1.0.E-04	mg/kg-day	CNS	2.9.E-03
				NICKEL	2.5.E+02	mg/kg	6.8.E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4.E-05	mg/kg-day	2.0.E-02	mg/kg-day	Body weight	1.2.E-03
				VANADIUM	2.6.E+01	mg/kg	7.2.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5.E-06	mg/kg-day	5.0.E-03	mg/kg-day	NA	5.0.E-04
				ZINC	4.4.E+03	mg/kg	1.2.E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3.E-04	mg/kg-day	3.0.E-01	mg/kg-day	Blood	1.4.E-03
				2-METHYLNAPHTHALENE	4.4.E+00	mg/kg	1.2.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2.E-07	mg/kg-day	4.0.E-03	mg/kg-day	Respiratory	1.1.E-04
				BENZO(A)ANTHRACENE	7.7.E+01	mg/kg	2.1.E-06	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	1.5.E-06	7.4.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9.E+00	mg/kg	1.6.E-07	mg/kg-day	7.3.E+00	$(mg/kg\text{-}day)^{-1}$	1.2.E-06	5.7.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1.E+02	mg/kg	2.9.E-06	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	2.1.E-06	1.0.E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3.E+02	mg/kg	3.6.E-06	mg/kg-day	7.3.E-02	$(mg/kg\text{-}day)^{-1}$	2.7.E-07	1.3.E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5.E+01	mg/kg	1.8.E-06	mg/kg-day	7.3.E-03	$(mg/kg\text{-}day)^{-1}$	1.3.E-08	6.3.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2.E+00	mg/kg	1.1.E-07	mg/kg-day	7.3.E+00	$(mg/kg\text{-}day)^{-1}$	8.4.E-07	4.0.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7.E+02	mg/kg	4.6.E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6.E-05	mg/kg-day	4.0.E-02	mg/kg-day	Whole body	4.0.E-04
				INDENO(1,2,3-C,D)PYRENE	3.0.E+00	mg/kg	8.1.E-08	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	5.9.E-08	2.8.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4.E+01	mg/kg	6.6.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3.E-06	mg/kg-day	2.0.E-02	mg/kg-day	Body weight	1.2.E-04
				PYRENE	1.8.E+01	mg/kg	4.9.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7.E-06	mg/kg-day	3.0.E-02	mg/kg-day	Kidney	5.8.E-05
				PCB-1242	2.9.E+00	mg/kg	7.9.E-08	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	1.6.E-07	2.8.E-07	mg/kg-day	2.0.E-05	mg/kg-day	Immune	1.4.E-02
				PCB-1248	3.3.E+01	mg/kg	9.1.E-07	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	1.8.E-06	3.2.E-06	mg/kg-day	2.0.E-05	mg/kg-day	Immune	1.6.E-01
				PCB-1254	9.8.E+00	mg/kg	2.7.E-07	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	5.4.E-07	9.4.E-07	mg/kg-day	2.0.E-05	mg/kg-day	Immune	4.7.E-02
				PCB-1260	1.4.E-01	mg/kg	3.8.E-09	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	7.7.E-09	1.3.E-08	mg/kg-day	2.0.E-05	mg/kg-day	Immune	6.7.E-04
				DIELDRIN	2.2.E-01	mg/kg	6.1.E-09	mg/kg-day	1.6.E+01	$(mg/kg\text{-}day)^{-1}$	9.7.E-08	2.1.E-08	mg/kg-day	5.0.E-05	mg/kg-day	Liver	4.3.E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5.E+01	mg/kg	1.2.E-06	mg/kg-day	1.4.E-02	$(mg/kg\text{-}day)^{-1}$	1.7.E-08	4.3.E-06	mg/kg-day	2.0.E-02	mg/kg-day	Liver	2.2.E-04
				DIBENZOFURAN	8.9.E+01	mg/kg	2.4.E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.5.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								9.1.E-06						2.9.E-01

TABLE 7.3c-RME Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Dermal	CYANIDE	1.9.E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0.E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.9.E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0.E+00	mg/kg-day	CNS	NA
				ANTIMONY	8.5.E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0.E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9.E+01	mg/kg	6.5.E-08	mg/kg-day	1.5.E+00	$(mg/kg\text{-}day)^{-1}$	9.7.E-08	2.3.E-07	mg/kg-day	3.0.E-04	mg/kg-day	Skin, Vascular	7.5.E-04
				BARIUM	9.5.E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4.E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.9.E+01	mg/kg	2.2.E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.6.E-09	mg/kg-day	2.5.E-05	mg/kg-day	Kidney	3.0.E-04
				COBALT	1.3.E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0.E-04	mg/kg-day	Thyroid	NA
				COPPER	5.6.E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0.E-02	mg/kg-day	GI Tract	NA
				IRON	9.1.E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0.E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.0.E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6.E-04	mg/kg-day	CNS	NA
				MERCURY	3.0.E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0.E-04	mg/kg-day	CNS	NA
				NICKEL	2.5.E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0.E-04	mg/kg-day	Body weight	NA
				VANADIUM	2.6.E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3.E-04	mg/kg-day	NA	NA
				ZINC	4.4.E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0.E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	4.4.E+00	mg/kg	6.7.E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3.E-07	mg/kg-day	4.0.E-03	mg/kg-day	Respiratory	5.8.E-05
				BENZO(A)ANTHRACENE	7.7.E+01	mg/kg	1.2.E-06	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	8.5.E-07	4.1.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9.E+00	mg/kg	8.9.E-08	mg/kg-day	7.3.E+00	$(mg/kg\text{-}day)^{-1}$	6.5.E-07	3.1.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1.E+02	mg/kg	1.6.E-06	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	1.2.E-06	5.7.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3.E+02	mg/kg	2.0.E-06	mg/kg-day	7.3.E-02	$(mg/kg\text{-}day)^{-1}$	1.5.E-07	7.0.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5.E+01	mg/kg	9.8.E-07	mg/kg-day	7.3.E-03	$(mg/kg\text{-}day)^{-1}$	7.2.E-09	3.4.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2.E+00	mg/kg	6.3.E-08	mg/kg-day	7.3.E+00	$(mg/kg\text{-}day)^{-1}$	4.6.E-07	2.2.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7.E+02	mg/kg	2.5.E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.8.E-06	mg/kg-day	4.0.E-02	mg/kg-day	Whole body	2.2.E-04
				INDENO(1,2,3-C,D)PYRENE	3.0.E+00	mg/kg	4.5.E-08	mg/kg-day	7.3.E-01	$(mg/kg\text{-}day)^{-1}$	3.2.E-08	1.6.E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4.E+01	mg/kg	3.6.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3.E-06	mg/kg-day	2.0.E-02	mg/kg-day	Body weight	6.4.E-05
				PYRENE	1.8.E+01	mg/kg	2.7.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.5.E-07	mg/kg-day	3.0.E-02	mg/kg-day	Kidney	3.2.E-05
				PCB-1242	2.9.E+00	mg/kg	4.6.E-08	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	9.3.E-08	1.6.E-07	mg/kg-day	2.0.E-05	mg/kg-day	Immune	8.1.E-03
				PCB-1248	3.3.E+01	mg/kg	5.4.E-07	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	1.1.E-06	1.9.E-06	mg/kg-day	2.0.E-05	mg/kg-day	Immune	9.4.E-02
				PCB-1254	9.8.E+00	mg/kg	1.6.E-07	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	3.2.E-07	5.6.E-07	mg/kg-day	2.0.E-05	mg/kg-day	Immune	2.8.E-02
				PCB-1260	1.4.E-01	mg/kg	2.3.E-09	mg/kg-day	2.0.E+00	$(mg/kg\text{-}day)^{-1}$	4.5.E-09	7.9.E-09	mg/kg-day	2.0.E-05	mg/kg-day	Immune	4.0.E-04
				DIELDRIN	2.2.E-01	mg/kg	2.6.E-09	mg/kg-day	1.6.E+01	$(mg/kg\text{-}day)^{-1}$	4.1.E-08	9.0.E-09	mg/kg-day	5.0.E-05	mg/kg-day	Liver	1.8.E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5.E+01	mg/kg	5.2.E-07	mg/kg-day	1.4.E-02	$(mg/kg\text{-}day)^{-1}$	7.3.E-09	1.8.E-06	mg/kg-day	2.0.E-02	mg/kg-day	Liver	9.1.E-05
				DIBENZOFURAN	8.9.E+01	mg/kg	3.1.E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1.E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											5.0.E-06						1.3.E-01

TABLE 7.3c-RME Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Inhalation	CYANIDE	1.9.E+00	mg/kg	2.0.E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.1.E-06	mg/m^3	8.0.E-04	mg/m^3	Thyroid	8.9.E-03
				ALUMINUM	7.9.E+03	mg/kg	2.1.E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.4.E-08	mg/m^3	5.0.E-03	mg/m^3	CNS	1.5.E-05
				ANTIMONY	8.5.E+01	mg/kg	2.3.E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.0.E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9.E+01	mg/kg	5.0.E-08	µg/m^3	4.3.E-03	(µg/m^3)$^{-1}$	2.1.E-10	1.7.E-10	mg/m^3	1.5.E-05	mg/m^3	Reproductive	1.2.E-05
				BARIUM	9.5.E+02	mg/kg	2.5.E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.9.E-09	mg/m^3	5.0.E-04	mg/m^3	Development	1.8.E-05
				CADMIUM	1.9.E+01	mg/kg	5.1.E-08	µg/m^3	1.8.E-03	(µg/m^3)$^{-1}$	9.1.E-11	1.8.E-10	mg/m^3	1.0.E-05	mg/m^3	Kidney	1.8.E-05
				COBALT	1.3.E+01	mg/kg	3.4.E-08	µg/m^3	9.0.E-03	(µg/m^3)$^{-1}$	3.0.E-10	1.2.E-10	mg/m^3	6.0.E-06	mg/m^3	Lung, Respiratory	2.0.E-05
				COPPER	5.6.E+03	mg/kg	1.5.E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.3.E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	9.1.E+04	mg/kg	2.5.E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.6.E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.0.E+03	mg/kg	2.8.E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.8.E-09	mg/m^3	5.0.E-05	mg/m^3	CNS	2.0.E-04
				MERCURY	3.0.E+00	mg/kg	3.2.E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1.E-06	mg/m^3	3.0.E-04	mg/m^3	CNS	3.7.E-03
				NICKEL	2.5.E+02	mg/kg	6.6.E-07	µg/m^3	2.6.E-04	(µg/m^3)$^{-1}$	1.7.E-10	2.3.E-09	mg/m^3	9.0.E-05	mg/m^3	Respiratory	2.6.E-05
				VANADIUM	2.6.E+01	mg/kg	7.1.E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.5.E-10	mg/m^3	1.0.E-04	mg/m^3	Respiratory	2.5.E-06
				ZINC	4.4.E+03	mg/kg	1.2.E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.2.E-08	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	4.4.E+00	mg/kg	2.8.E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.8.E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	7.7.E+01	mg/kg	6.4.E-05	µg/m^3	1.1.E-04	(µg/m^3)$^{-1}$	7.0.E-09	2.2.E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.9.E+00	mg/kg	1.6.E-08	µg/m^3	1.1.E-03	(µg/m^3)$^{-1}$	1.7.E-11	5.6.E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	1.1.E+02	mg/kg	2.9.E-07	µg/m^3	1.1.E-04	(µg/m^3)$^{-1}$	3.2.E-11	1.0.E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	1.3.E+02	mg/kg	3.6.E-07	µg/m^3	1.1.E-04	(µg/m^3)$^{-1}$	3.9.E-11	1.3.E-09	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.5.E+01	mg/kg	1.8.E-07	µg/m^3	1.1.E-05	(µg/m^3)$^{-1}$	1.9.E-12	6.1.E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2.E+00	mg/kg	1.1.E-08	µg/m^3	1.2.E-03	(µg/m^3)$^{-1}$	1.4.E-11	3.9.E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	1.7.E+02	mg/kg	4.5.E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6.E-09	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.0.E+00	mg/kg	8.0.E-09	µg/m^3	1.1.E-04	(µg/m^3)$^{-1}$	8.7.E-13	2.8.E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	2.4.E+01	mg/kg	1.9.E-03	µg/m^3	3.4.E-05	(µg/m^3)$^{-1}$	6.5.E-08	6.7.E-06	mg/m^3	3.0.E-03	mg/m^3	Respiratory	2.2.E-03
				PYRENE	1.8.E+01	mg/kg	2.8.E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.7.E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	2.9.E+00	mg/kg	1.8.E-05	µg/m^3	5.7.E-04	(µg/m^3)$^{-1}$	1.0.E-08	6.2.E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3.E+01	mg/kg	1.9.E-04	µg/m^3	5.7.E-04	(µg/m^3)$^{-1}$	1.1.E-07	6.8.E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8.E+00	mg/kg	4.3.E-05	µg/m^3	5.7.E-04	(µg/m^3)$^{-1}$	2.4.E-08	1.5.E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4.E-01	mg/kg	3.9.E-07	µg/m^3	5.7.E-04	(µg/m^3)$^{-1}$	2.2.E-10	1.4.E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	2.2.E-01	mg/kg	6.0.E-10	µg/m^3	4.6.E-03	(µg/m^3)$^{-1}$	2.7.E-12	2.1.E-12	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5.E+01	mg/kg	1.2.E-07	µg/m^3	2.4.E-06	(µg/m^3)$^{-1}$	2.9.E-13	4.2.E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	8.9.E+01	mg/kg	1.7.E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.8.E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.2.E-07						1.5.E-02
		Exposure Point Total									1.4.E-05						4.4.E-01
	Exposure Medium Total										1.4.E-05						4.4.E-01
Medium Total for Adult											1.4.E-05						4.4.E-01
										Total of Receptor Risks Across All Media	1.4E-05					Total of Receptor Hazards Across All Media	4.4E-01

TABLE 7.3c-RME Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	2.2.E-02
Total Body Weight HI Across All Media =	1.4.E-03
Total CNS HI Across All Media =	1.2.E-02
Total Development HI Across All Media =	1.8.E-05
Total GI Tract HI Across All Media =	2.6.E-02
Total Immune HI Across All Media =	3.5.E-01
Total Kidney HI Across All Media =	2.7.E-03
Total Liver HI Across All Media =	9.1.E-04
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	2.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	3.2.E-04
Total Respiratory HI Across All Media =	2.4.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	4.3.E-03
Total Thyroid HI Across All Media =	1.3.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	6.2.E-04

TABLE 7.3c-CTE Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Ingestion	CYANIDE	1.9E+00	mg/kg	2.7E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.7E-08	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	7.8E-05
				ALUMINUM	7.9E+03	mg/kg	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.9E-04
				ANTIMONY	8.5E+01	mg/kg	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	5.1E-03
				ARSENIC	1.9E+01	mg/kg	1.5E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-08	2.7E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	8.9E-04
				BARIUM	9.5E+02	mg/kg	1.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	1.1E-04
				CADMIUM	1.9E+01	mg/kg	2.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	4.5E-04
				COBALT	1.3E+01	mg/kg	1.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.0E-03
				COPPER	5.6E+03	mg/kg	7.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	3.4E-03
				IRON	9.1E+04	mg/kg	1.2E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	3.1E-03
				MANGANESE	1.0E+03	mg/kg	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.0E-03
				MERCURY	3.0E+00	mg/kg	4.1E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.2E-08	mg/kg-day	1.0E-04	mg/kg-day	CNS	7.2E-04
				NICKEL	2.5E+02	mg/kg	3.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.9E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.0E-04
				VANADIUM	2.6E+01	mg/kg	3.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-07	mg/kg-day	5.0E-03	mg/kg-day	NA	1.3E-04
				ZINC	4.4E+03	mg/kg	6.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	3.5E-04
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	6.1E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.7E-05
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	1.1E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.7E-08	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	8.1E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-08	1.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	1.5E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-07	2.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	1.8E-07	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	1.3E-08	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	8.9E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	6.5E-10	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	5.7E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-08	1.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	2.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.0E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.0E-04
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	4.1E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.0E-09	7.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	3.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.8E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	2.9E-05
				PYRENE	1.8E+01	mg/kg	2.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.4E-05
				PCB-1242	2.9E+00	mg/kg	3.9E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.9E-09	6.9E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.4E-03
				PCB-1248	3.3E+01	mg/kg	4.6E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-08	8.0E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.0E-02
				PCB-1254	9.8E+00	mg/kg	1.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-08	2.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-02
				PCB-1260	1.4E-01	mg/kg	1.9E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-10	3.4E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-04
				DIELDRIN	2.2E-01	mg/kg	3.0E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	4.9E-09	5.3E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.1E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	6.2E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	8.6E-10	1.1E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	5.4E-05
				DIBENZOFURAN	8.9E+01	mg/kg	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								4.6E-07						7.2E-02

TABLE 7.3c-CTE Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Dermal	CYANIDE	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	8.5E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9E+01	mg/kg	6.5E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.7E-09	1.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.8E-04
				BARIUM	9.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.9E+01	mg/kg	2.2E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.5E-04
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	5.6E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	9.1E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.0E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	3.0E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	2.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				VANADIUM	2.6E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	4.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	6.7E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.9E-05
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	1.2E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.5E-08	2.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	8.9E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-08	1.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	1.6E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-07	2.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	2.0E-07	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	1.5E-08	3.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	9.8E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	7.2E-10	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	6.3E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-08	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	2.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.4E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.1E-04
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	4.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.2E-09	7.8E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	3.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.4E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.2E-05
				PYRENE	1.8E+01	mg/kg	2.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.7E-07	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.6E-05
				PCB-1242	2.9E+00	mg/kg	4.6E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.3E-09	8.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.1E-03
				PCB-1248	3.3E+01	mg/kg	5.4E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07	9.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.7E-02
				PCB-1254	9.8E+00	mg/kg	1.6E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-08	2.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-02
				PCB-1260	1.4E-01	mg/kg	2.3E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-10	4.0E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-04
				DIELDRIN	2.2E-01	mg/kg	2.6E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	4.1E-09	4.5E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	9.0E-05
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	5.2E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	7.3E-10	9.1E-07	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.6E-05
				DIBENZOFURAN	8.9E+01	mg/kg	3.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											5.0E-07						6.6E-02

TABLE 7.3c-CTE Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Inhalation	CYANIDE	1.9E+00	mg/kg	2.0E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.6E-06	mg/m^3	8.0E-04	mg/m^3	Thyroid	4.4E-03
				ALUMINUM	7.9E+03	mg/kg	2.1E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.7E-08	mg/m^3	5.0E-03	mg/m^3	CNS	7.4E-06
				ANTIMONY	8.5E+01	mg/kg	2.3E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9E+01	mg/kg	5.0E-09	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	2.1E-11	8.7E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	5.8E-06
				BARIUM	9.5E+02	mg/kg	2.5E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.4E-09	mg/m^3	5.0E-04	mg/m^3	Development	8.9E-06
				CADMIUM	1.9E+01	mg/kg	5.1E-09	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	9.1E-12	8.8E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	8.8E-06
				COBALT	1.3E+01	mg/kg	3.4E-09	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	3.0E-11	5.9E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	9.8E-06
				COPPER	5.6E+03	mg/kg	1.5E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	9.1E+04	mg/kg	2.5E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.0E+03	mg/kg	2.8E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.9E-09	mg/m^3	5.0E-05	mg/m^3	CNS	9.8E-05
				MERCURY	3.0E+00	mg/kg	3.2E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.5E-07	mg/m^3	3.0E-04	mg/m^3	CNS	1.8E-03
				NICKEL	2.5E+02	mg/kg	6.6E-08	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	1.7E-11	1.2E-09	mg/m^3	9.0E-05	mg/m^3	Respiratory	1.3E-05
				VANADIUM	2.6E+01	mg/kg	7.1E-09	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	1.2E-06
				ZINC	4.4E+03	mg/kg	1.2E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	2.8E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.9E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	6.4E-06	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	7.0E-10	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	1.6E-09	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	1.7E-12	2.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	2.9E-08	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	3.2E-12	5.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	3.6E-08	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	3.9E-12	6.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.5E+01	mg/kg	1.8E-08	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	1.9E-13	3.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	1.1E-09	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	1.4E-12	2.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	4.5E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	7.9E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	8.0E-10	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	8.7E-14	1.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	1.9E-04	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	6.5E-09	3.3E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	1.1E-03
				PYRENE	1.8E+01	mg/kg	2.8E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	2.9E+00	mg/kg	1.8E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.0E-09	3.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E+01	mg/kg	1.9E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.1E-08	3.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8E+00	mg/kg	4.3E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.4E-09	7.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	3.9E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.2E-11	6.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	2.2E-01	mg/kg	6.0E-11	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	2.7E-13	1.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	1.2E-08	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	2.9E-14	2.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	8.9E+01	mg/kg	1.7E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.9E-06	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.2E-08						7.6E-03
		Exposure Point Total									9.8E-07						1.5E-01
	Exposure Medium Total										9.8E-07						1.5E-01
Medium Total for Adult											9.8E-07						1.5E-01
										Total of Receptor Risks Across All Media	9.8E-07					Total of Receptor Hazards Across All Media	1.5E-01

TABLE 7.3c-CTE Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	5.5.E-03
Total Body Weight HI Across All Media =	3.6.E-04
Total CNS HI Across All Media =	3.9.E-03
Total Development HI Across All Media =	8.9.E-06
Total GI Tract HI Across All Media =	6.5.E-03
Total Immune HI Across All Media =	1.2.E-01
Total Kidney HI Across All Media =	7.6.E-04
Total Liver HI Across All Media =	3.0.E-04
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	9.8.E-06
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	8.3.E-05
Total Respiratory HI Across All Media =	1.2.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.3.E-03
Total Thyroid HI Across All Media =	5.4.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	2.1.E-04

TABLE 7.4a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Ingestion	CYANIDE	1.9E+00	mg/kg	5.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-06	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	2.5E-03
				ALUMINUM	7.9E+03	mg/kg	2.2E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.1E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	6.1E-03
				ANTIMONY	8.5E+01	mg/kg	2.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.6E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.6E-01
				ARSENIC	1.9E+01	mg/kg	3.1E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-06	8.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.9E-02
				BARIUM	9.5E+02	mg/kg	2.6E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	3.6E-03
				CADMIUM	1.9E+01	mg/kg	5.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-05	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.5E-02
				COBALT	1.3E+01	mg/kg	3.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.7E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.2E-02
				COPPER	5.6E+03	mg/kg	1.6E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.1E-01
				IRON	9.1E+04	mg/kg	2.5E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.0E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.0E-01
				MANGANESE	1.0E+03	mg/kg	2.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.0E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.3E-02
				MERCURY	3.0E+00	mg/kg	8.3E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	2.3E-02
				NICKEL	2.5E+02	mg/kg	6.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-04	mg/kg-day	2.0E-02	mg/kg-day	Body weight	9.5E-03
				VANADIUM	2.6E+01	mg/kg	7.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	4.0E-03
				ZINC	4.4E+03	mg/kg	1.2E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.1E-02
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-06	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	8.5E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	2.1E-05	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-05	5.9E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	1.6E-06	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-05	4.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	3.0E-05	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.2E-05	8.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	3.7E-05	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	2.7E-06	1.0E-04	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	1.8E-05	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	1.3E-07	5.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	1.2E-06	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	8.4E-06	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	4.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-04	mg/kg-day	4.0E-02	mg/kg-day	Whole body	3.2E-03
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	8.1E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.9E-07	2.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	6.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	9.3E-04
				PYRENE	1.8E+01	mg/kg	5.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-05	mg/kg-day	3.0E-02	mg/kg-day	Kidney	4.6E-04
				PCB-1242	2.9E+00	mg/kg	7.9E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-06	2.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-01
				PCB-1248	3.3E+01	mg/kg	9.1E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-05	2.6E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E+00
				PCB-1254	9.8E+00	mg/kg	2.7E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.4E-06	7.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.8E-01
				PCB-1260	1.4E-01	mg/kg	3.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.7E-08	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.4E-03
				DIELDRIN	2.2E-01	mg/kg	6.1E-08	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	9.8E-07	1.7E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.4E-03
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	1.2E-05	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.7E-07	3.5E-05	mg/kg-day	2.0E-02	mg/kg-day	Liver	1.7E-03
				DIBENZOFURAN	8.9E+01	mg/kg	2.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.9E-05	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								9.2E-05						2.3E+00

TABLE 7.4a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Dermal	CYANIDE	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	8.5E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9E+01	mg/kg	6.5E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.8E-07	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.1E-03
				BARIUM	9.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.9E+01	mg/kg	2.2E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.1E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.5E-03
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	5.6E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	9.1E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.0E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	3.0E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	2.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				VANADIUM	2.6E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	4.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	6.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-06	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	4.7E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	1.2E-05	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.5E-06	3.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	9.0E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-06	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	1.6E-05	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-05	4.6E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	2.0E-05	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	1.5E-06	5.6E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	9.9E-06	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	7.2E-08	2.8E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	6.3E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-06	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	2.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.1E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.8E-03
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	4.5E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.3E-07	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	3.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	5.1E-04
				PYRENE	1.8E+01	mg/kg	2.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.6E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	2.5E-04
				PCB-1242	2.9E+00	mg/kg	4.7E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.4E-07	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.6E-02
				PCB-1248	3.3E+01	mg/kg	5.4E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-05	1.5E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.6E-01
				PCB-1254	9.8E+00	mg/kg	1.6E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-06	4.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E-01
				PCB-1260	1.4E-01	mg/kg	2.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-08	6.4E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.2E-03
				DIELDRIN	2.2E-01	mg/kg	2.6E-08	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	4.1E-07	7.2E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.4E-03
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	5.2E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	7.3E-08	1.5E-05	mg/kg-day	2.0E-02	mg/kg-day	Liver	7.3E-04
				DIBENZOFURAN	8.9E+01	mg/kg	3.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											5.0E-05						1.1E+00

TABLE 7.4a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Inhalation	CYANIDE	1.9E+00	mg/kg	4.1E-02	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-04	mg/m^3	8.0E-04	mg/m^3	Thyroid	1.4E-01
				ALUMINUM	7.9E+03	mg/kg	4.2E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-06	mg/m^3	5.0E-03	mg/m^3	CNS	2.4E-04
				ANTIMONY	8.5E+01	mg/kg	4.6E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9E+01	mg/kg	1.0E-06	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	4.3E-09	2.8E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.9E-04
				BARIUM	9.5E+02	mg/kg	5.1E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-07	mg/m^3	5.0E-04	mg/m^3	Development	2.9E-04
				CADMIUM	1.9E+01	mg/kg	1.0E-06	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	1.8E-09	2.8E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	2.8E-04
				COBALT	1.3E+01	mg/kg	6.8E-07	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	6.1E-09	1.9E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	3.2E-04
				COPPER	5.6E+03	mg/kg	3.0E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				IRON	9.1E+04	mg/kg	4.9E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-05	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.0E+03	mg/kg	5.6E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-07	mg/m^3	5.0E-05	mg/m^3	CNS	3.1E-03
				MERCURY	3.0E+00	mg/kg	6.3E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.8E-05	mg/m^3	3.0E-04	mg/m^3	CNS	5.9E-02
				NICKEL	2.5E+02	mg/kg	1.3E-05	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	3.5E-09	3.7E-08	mg/m^3	9.0E-05	mg/m^3	Respiratory	4.1E-04
				VANADIUM	2.6E+01	mg/kg	1.4E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	4.0E-09	mg/m^3	1.0E-04	mg/m^3	Respiratory	4.0E-05
				ZINC	4.4E+03	mg/kg	2.4E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	6.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	5.6E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	1.3E-03	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	1.4E-07	3.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	3.2E-07	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	3.5E-10	8.9E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	5.8E-06	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	6.4E-10	1.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	7.2E-06	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	7.9E-10	2.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.5E+01	mg/kg	3.5E-06	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	3.9E-11	9.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	2.3E-07	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	2.7E-10	6.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	9.1E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	1.6E-07	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	1.8E-11	4.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	3.8E-02	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	1.3E-06	1.1E-04	mg/m^3	3.0E-03	mg/m^3	Respiratory	3.6E-02
				PYRENE	1.8E+01	mg/kg	5.6E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	2.9E+00	mg/kg	3.6E-04	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.0E-07	1.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E+01	mg/kg	3.9E-03	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.2E-06	1.1E-05	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8E+00	mg/kg	8.6E-04	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	4.9E-07	2.4E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	7.9E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	4.5E-09	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	2.2E-01	mg/kg	1.2E-08	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	5.5E-11	3.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	2.4E-06	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	5.8E-12	6.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	8.9E+01	mg/kg	3.3E-02	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	9.3E-05	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								4.4E-06						2.4E-01
		Exposure Point Total									1.5E-04						3.6E+00
	Exposure Medium Total										1.5E-04						3.6E+00
Medium Total for Adult											1.5E-04						3.6E+00
										Total of Receptor Risks Across All Media	1.5E-04				Total of Receptor Hazards Across All Media		3.6E+00

TABLE 7.4a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.8.E-01
Total Body Weight HI Across All Media =	1.1.E-02
Total CNS HI Across All Media =	1.3.E-01
Total Development HI Across All Media =	2.9.E-04
Total GI Tract HI Across All Media =	2.1.E-01
Total Immune HI Across All Media =	2.8.E+00
Total Kidney HI Across All Media =	2.2.E-02
Total Liver HI Across All Media =	7.3.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	3.2.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.7.E-03
Total Respiratory HI Across All Media =	3.7.E-02
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.5.E-02
Total Thyroid HI Across All Media =	1.7.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	5.0.E-03

TABLE 7.4a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Ingestion	CYANIDE	1.9E+00	mg/kg	4.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-07	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	6.3E-04
				ALUMINUM	7.9E+03	mg/kg	1.7E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.5E-03
				ANTIMONY	8.5E+01	mg/kg	1.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.1E-02
				ARSENIC	1.9E+01	mg/kg	2.5E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-07	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	7.2E-03
				BARIUM	9.5E+02	mg/kg	2.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	9.2E-04
				CADMIUM	1.9E+01	mg/kg	4.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.6E-03
				COBALT	1.3E+01	mg/kg	2.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	8.1E-03
				COPPER	5.6E+03	mg/kg	1.2E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	2.7E-02
				IRON	9.1E+04	mg/kg	2.0E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	2.5E-02
				MANGANESE	1.0E+03	mg/kg	2.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	8.4E-03
				MERCURY	3.0E+00	mg/kg	6.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.8E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	5.8E-03
				NICKEL	2.5E+02	mg/kg	5.5E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.8E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	2.4E-03
				VANADIUM	2.6E+01	mg/kg	5.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.1E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	1.0E-03
				ZINC	4.4E+03	mg/kg	9.8E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.6E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	2.9E-03
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	9.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.6E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.1E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	1.7E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-06	1.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	1.3E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-07	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	2.4E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-06	2.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	2.9E-06	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	2.1E-07	2.6E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	1.4E-06	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	1.1E-08	1.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	9.3E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.8E-07	8.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	3.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	8.1E-04
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	6.5E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.8E-08	5.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	5.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.7E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	2.3E-04
				PYRENE	1.8E+01	mg/kg	4.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.2E-04
				PCB-1242	2.9E+00	mg/kg	6.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-07	5.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.8E-02
				PCB-1248	3.3E+01	mg/kg	7.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-06	6.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.2E-01
				PCB-1254	9.8E+00	mg/kg	2.2E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-07	1.9E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.5E-02
				PCB-1260	1.4E-01	mg/kg	3.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.2E-09	2.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-03
				DIELDRIN	2.2E-01	mg/kg	4.9E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	7.9E-08	4.3E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	8.6E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	1.0E-06	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.4E-08	8.7E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	4.4E-04
				DIBENZOFURAN	8.9E+01	mg/kg	2.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								7.4E-06						5.8E-01

TABLE 7.4a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Dermal	CYANIDE	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	8.5E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9E+01	mg/kg	1.0E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-07	9.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.0E-03
				BARIUM	9.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.9E+01	mg/kg	3.5E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.1E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.2E-03
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	5.6E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	9.1E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.0E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	3.0E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	2.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				VANADIUM	2.6E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	4.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.4E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.4E-04
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	1.9E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-06	1.6E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	1.4E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	2.6E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-06	2.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	3.2E-06	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	2.4E-07	2.8E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.5E+01	mg/kg	1.6E-06	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	1.2E-08	1.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	1.0E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	7.4E-07	8.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	4.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	8.9E-04
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	7.2E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.3E-08	6.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	5.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.2E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	2.6E-04
				PYRENE	1.8E+01	mg/kg	4.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.3E-04
				PCB-1242	2.9E+00	mg/kg	7.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-07	6.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.3E-02
				PCB-1248	3.3E+01	mg/kg	8.7E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-06	7.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.8E-01
				PCB-1254	9.8E+00	mg/kg	2.6E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-07	2.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-01
				PCB-1260	1.4E-01	mg/kg	3.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.3E-09	3.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-03
				DIELDRIN	2.2E-01	mg/kg	4.2E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	6.6E-08	3.6E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	7.3E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	8.4E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.2E-08	7.4E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	3.7E-04
				DIBENZOFURAN	8.9E+01	mg/kg	5.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											8.0E-06						5.4E-01

TABLE 7.4a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	Inhalation	CYANIDE	1.9E+00	mg/kg	1.6E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-05	mg/m^3	8.0E-04	mg/m^3	Thyroid	1.8E-02
				ALUMINUM	7.9E+03	mg/kg	1.7E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.5E-07	mg/m^3	5.0E-03	mg/m^3	CNS	3.0E-05
				ANTIMONY	8.5E+01	mg/kg	1.8E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9E+01	mg/kg	4.0E-08	µg/m^3	4.3E-03	(µg/m^3)$^{-1}$	1.7E-10	3.5E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.4E-05
				BARIUM	9.5E+02	mg/kg	2.1E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.8E-08	mg/m^3	5.0E-04	mg/m^3	Development	3.6E-05
				CADMIUM	1.9E+01	mg/kg	4.1E-08	µg/m^3	1.8E-03	(µg/m^3)$^{-1}$	7.3E-11	3.6E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	3.6E-05
				COBALT	1.3E+01	mg/kg	2.7E-08	µg/m^3	9.0E-03	(µg/m^3)$^{-1}$	2.4E-10	2.4E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.0E-05
				COPPER	5.6E+03	mg/kg	1.2E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				IRON	9.1E+04	mg/kg	2.0E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.7E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.0E+03	mg/kg	2.3E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-08	mg/m^3	5.0E-05	mg/m^3	CNS	3.9E-04
				MERCURY	3.0E+00	mg/kg	2.5E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.2E-06	mg/m^3	3.0E-04	mg/m^3	CNS	7.4E-03
				NICKEL	2.5E+02	mg/kg	5.3E-07	µg/m^3	2.6E-04	(µg/m^3)$^{-1}$	1.4E-10	4.7E-09	mg/m^3	9.0E-05	mg/m^3	Respiratory	5.2E-05
				VANADIUM	2.6E+01	mg/kg	5.7E-08	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.0E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	5.0E-06
				ZINC	4.4E+03	mg/kg	9.6E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	8.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	4.4E+00	mg/kg	2.3E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	7.7E+01	mg/kg	5.2E-05	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	5.7E-09	4.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.9E+00	mg/kg	1.3E-08	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	1.4E-11	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	1.1E+02	mg/kg	2.3E-07	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.6E-11	2.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	1.3E+02	mg/kg	2.9E-07	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	3.2E-11	2.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.5E+01	mg/kg	1.4E-07	µg/m^3	1.1E-05	(µg/m^3)$^{-1}$	1.6E-12	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	4.2E+00	mg/kg	9.1E-09	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	1.1E-11	7.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	1.7E+02	mg/kg	3.6E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.0E+00	mg/kg	6.4E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	7.1E-13	5.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	2.4E+01	mg/kg	1.5E-03	µg/m^3	3.4E-05	(µg/m^3)$^{-1}$	5.3E-08	1.4E-05	mg/m^3	3.0E-03	mg/m^3	Respiratory	4.5E-03
				PYRENE	1.8E+01	mg/kg	2.2E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	2.9E+00	mg/kg	1.4E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	8.2E-09	1.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E+01	mg/kg	1.6E-04	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	9.0E-08	1.4E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8E+00	mg/kg	3.4E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.0E-08	3.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.4E-01	mg/kg	3.2E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.8E-10	2.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	2.2E-01	mg/kg	4.8E-10	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	2.2E-12	4.2E-12	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	4.5E+01	mg/kg	9.8E-08	µg/m^3	2.4E-06	(µg/m^3)$^{-1}$	2.3E-13	8.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	8.9E+01	mg/kg	1.3E-03	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-05	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.8E-07						3.0E-02
		Exposure Point Total									1.6E-05						1.2E+00
	Exposure Medium Total										1.6E-05						1.2E+00
Medium Total for Adult											1.6E-05						1.2E+00
										Total of Receptor Risks Across All Media	1.6E-05					Total of Receptor Hazards Across All Media	1.2E+00

TABLE 7.4a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	4.4.E-02
Total Body Weight HI Across All Media =	2.9.E-03
Total CNS HI Across All Media =	2.4.E-02
Total Development HI Across All Media =	3.6.E-05
Total GI Tract HI Across All Media =	5.2.E-02
Total Immune HI Across All Media =	9.7.E-01
Total Kidney HI Across All Media =	6.1.E-03
Total Liver HI Across All Media =	2.4.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	4.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	6.5.E-04
Total Respiratory HI Across All Media =	5.0.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.0.E-02
Total Thyroid HI Across All Media =	2.6.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	1.7.E-03

TABLE 7.5a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	Ingestion	CYANIDE	2.6E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.4E-06	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	1.2E-02
				ALUMINUM	7.3E+03	mg/kg	2.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-02	mg/kg-day	1.0E+00	mg/kg-day	CNS	2.0E-02
				ANTIMONY	3.3E+02	mg/kg	1.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.3E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	2.3E+00
				ARSENIC	1.9E+01	mg/kg	4.6E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	7.0E-07	3.2E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.1E-01
				BARIUM	5.4E+02	mg/kg	2.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-03	mg/kg-day	2.0E-01	mg/kg-day	Kidney	7.6E-03
				CADMIUM	1.2E+01	mg/kg	4.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.4E-05	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.4E-02
				CHROMIUM, HEXAVALENT	5.2E-01	mg/kg	2.1E-08	mg/kg-day	5.0E-01	$(mg/kg\text{-}day)^{-1}$	1.0E-08	1.5E-06	mg/kg-day	3.0E-03	mg/kg-day	None	4.9E-04
				COBALT	1.5E+01	mg/kg	6.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.2E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.4E-01
				COPPER	1.1E+04	mg/kg	4.3E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.0E-02	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	7.6E-01
				IRON	7.8E+04	mg/kg	3.1E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	3.1E-01
				MANGANESE	8.3E+02	mg/kg	3.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	9.8E-02
				MERCURY	5.9E+00	mg/kg	2.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-05	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.7E-01
				NICKEL	3.7E+02	mg/kg	1.5E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-03	mg/kg-day	2.0E-02	mg/kg-day	Body weight	5.2E-02
				SILVER	2.4E+01	mg/kg	9.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.9E-05	mg/kg-day	5.0E-03	mg/kg-day	Skin	1.4E-02
				VANADIUM	2.2E+01	mg/kg	8.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	1.2E-02
				ZINC	5.5E+03	mg/kg	2.2E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-02	mg/kg-day	3.0E-01	mg/kg-day	Blood	5.2E-02
				2-METHYLNAPHTHALENE	2.0E+00	mg/kg	7.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.6E-06	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	1.4E-03
				BENZO(A)ANTHRACENE	1.9E+01	mg/kg	7.7E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.6E-07	5.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	2.8E+00	mg/kg	1.1E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	8.2E-07	7.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.5E+01	mg/kg	1.0E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.4E-07	7.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.0E+01	mg/kg	1.2E-06	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	8.8E-08	8.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.7E+01	mg/kg	6.8E-07	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	4.9E-09	4.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	2.2E+00	mg/kg	8.8E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-07	6.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	6.0E+01	mg/kg	2.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-04	mg/kg-day	4.0E-02	mg/kg-day	Whole body	4.2E-03
				INDENO(1,2,3-C,D)PYRENE	2.4E+00	mg/kg	9.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.0E-08	6.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	5.6E+00	mg/kg	2.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-05	mg/kg-day	2.0E-02	mg/kg-day	Body weight	7.8E-04
				PYRENE	1.5E+01	mg/kg	6.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.4E-05	mg/kg-day	3.0E-02	mg/kg-day	Kidney	1.5E-03
				PCB-1242	3.0E+00	mg/kg	1.2E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-07	8.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.3E-01
				PCB-1248	2.2E+01	mg/kg	8.7E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-06	6.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.0E+00
				PCB-1254	9.8E+00	mg/kg	4.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.9E-07	2.8E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E+00
				PCB-1260	1.6E-01	mg/kg	6.4E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.3E-08	4.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E-02
				PCB-1262	3.5E-02	mg/kg	1.4E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-09	9.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.9E-03
				DIELDRIN	5.3E-02	mg/kg	2.2E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	3.4E-08	1.5E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.0E-03
				HEPTACHLOR EPOXIDE	6.6E-03	mg/kg	2.7E-10	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-09	1.9E-08	mg/kg-day	1.3E-05	mg/kg-day	Liver	1.4E-03
				BIS(2-ETHYLHEXYL)PHTHALATE	1.6E+01	mg/kg	6.3E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	8.8E-09	4.4E-05	mg/kg-day	2.0E-02	mg/kg-day	Liver	2.2E-03
				DIBENZOFURAN	3.0E+01	mg/kg	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								6.5E-06						9.0E+00

TABLE 7.5a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	Dermal	CYANIDE	2.6E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.3E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	3.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9E+01	mg/kg	3.0E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-08	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.9E-03
				BARIUM	5.4E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.2E+01	mg/kg	6.2E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.7E-03
				CHROMIUM, HEXAVALENT	5.2E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	1.5E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.1E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	7.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	5.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	3.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	2.4E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				VANADIUM	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	5.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	2.0E+00	mg/kg	1.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.3E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	2.3E-04
				BENZO(A)ANTHRACENE	1.9E+01	mg/kg	1.3E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	9.4E-08	9.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	2.8E+00	mg/kg	1.9E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-07	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.5E+01	mg/kg	1.7E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-07	1.2E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.0E+01	mg/kg	2.0E-07	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	1.5E-08	1.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.7E+01	mg/kg	1.1E-07	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	8.2E-10	7.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	2.2E+00	mg/kg	1.5E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	6.0E+01	mg/kg	4.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	7.1E-04
				INDENO(1,2,3-C,D)PYRENE	2.4E+00	mg/kg	1.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-08	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	5.6E+00	mg/kg	3.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.3E-04
				PYRENE	1.5E+01	mg/kg	1.0E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	2.4E-04
				PCB-1242	3.0E+00	mg/kg	2.2E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-08	1.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.7E-02
				PCB-1248	2.2E+01	mg/kg	1.6E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-07	1.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.5E-01
				PCB-1254	9.8E+00	mg/kg	7.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-07	5.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.5E-01
				PCB-1260	1.6E-01	mg/kg	1.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-09	8.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.0E-03
				PCB-1262	3.5E-02	mg/kg	2.5E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.0E-10	1.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.8E-04
				DIELDRIN	5.3E-02	mg/kg	2.8E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	4.4E-09	1.9E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.9E-04
				HEPTACHLOR EPOXIDE	6.6E-03	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	1.6E+01	mg/kg	8.0E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	1.1E-09	5.6E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	2.8E-04
				DIBENZOFURAN	3.0E+01	mg/kg	4.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											1.0E-06						8.9E-01

TABLE 7.5a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	Inhalation	CYANIDE	2.6E+00	mg/kg	2.5E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-04	mg/m^3	8.0E-04	mg/m^3	Thyroid	2.2E-01
				ALUMINUM	7.3E+03	mg/kg	1.7E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-06	mg/m^3	5.0E-03	mg/m^3	CNS	2.4E-04
				ANTIMONY	3.3E+02	mg/kg	7.9E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9E+01	mg/kg	4.6E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.0E-10	3.2E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.1E-04
				BARIUM	5.4E+02	mg/kg	1.3E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.1E-08	mg/m^3	5.0E-04	mg/m^3	Development	1.8E-04
				CADMIUM	1.2E+01	mg/kg	2.9E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	5.2E-11	2.0E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	2.0E-04
				CHROMIUM, HEXAVALENT	5.2E-01	mg/kg	1.2E-09	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	1.0E-10	8.7E-11	mg/m^3	1.0E-04	mg/m^3	Lung	8.7E-07
				COBALT	1.5E+01	mg/kg	3.6E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.2E-10	2.5E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.2E-04
				COPPER	1.1E+04	mg/kg	2.6E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.8E-06	mg/m^3	NA	mg/m^3	NA	NA
				IRON	7.8E+04	mg/kg	1.9E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-05	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	2.0E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.4E-07	mg/m^3	5.0E-05	mg/m^3	CNS	2.8E-03
				MERCURY	5.9E+00	mg/kg	5.6E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.9E-05	mg/m^3	3.0E-04	mg/m^3	CNS	1.3E-01
				NICKEL	3.7E+02	mg/kg	8.9E-07	$\mu g/m^3$	2.6E-04	$(\mu g/m^3)^{-1}$	2.3E-10	6.2E-08	mg/m^3	9.0E-05	mg/m^3	Respiratory	6.9E-04
				SILVER	2.4E+01	mg/kg	5.9E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.2E+01	mg/kg	5.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.7E-09	mg/m^3	1.0E-04	mg/m^3	Respiratory	3.7E-05
				ZINC	5.5E+03	mg/kg	1.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	2.0E+00	mg/kg	1.1E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.7E-06	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	1.9E+01	mg/kg	1.4E-05	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.6E-09	1.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	2.8E+00	mg/kg	6.6E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	7.3E-12	4.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.5E+01	mg/kg	6.0E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	6.6E-12	4.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.0E+01	mg/kg	7.2E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	7.9E-12	5.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.7E+01	mg/kg	4.0E-08	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	4.4E-13	2.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	2.2E+00	mg/kg	5.3E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	6.3E-12	3.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	6.0E+01	mg/kg	1.4E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.4E+00	mg/kg	5.7E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	6.3E-13	4.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	5.6E+00	mg/kg	3.9E-04	$\mu g/m^3$	3.4E-05	$(\mu g/m^3)^{-1}$	1.3E-08	2.7E-05	mg/m^3	3.0E-03	mg/m^3	Respiratory	9.1E-03
				PYRENE	1.5E+01	mg/kg	2.1E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	3.0E+00	mg/kg	1.7E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	9.6E-09	1.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	2.2E+01	mg/kg	1.1E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	6.4E-08	7.9E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8E+00	mg/kg	3.8E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.2E-08	2.7E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	3.9E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.2E-10	2.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1262	3.5E-02	mg/kg	8.3E-11	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.8E-14	5.8E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.3E-02	mg/kg	1.3E-10	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	5.9E-13	9.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	6.6E-03	mg/kg	2.6E-08	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	6.7E-11	1.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	1.6E+01	mg/kg	3.7E-08	$\mu g/m^3$	2.4E-06	$(\mu g/m^3)^{-1}$	9.0E-14	2.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.0E+01	mg/kg	5.0E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.5E-05	mg/m^3	NA	mg/m^3	NA	NA
Exposure Route Total											1.1E-07						3.6E-01

TABLE 7.5a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
		Exposure Point Total									7.6E-06						1.0E+01
	Exposure Medium Total										7.6E-06						1.0E+01
Medium Total for Adult											7.6E-06						1.0E+01
Total of Receptor Risks Across All Media											7.6E-06	Total of Receptor Hazards Across All Media					1.0E+01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	2.4.E+00
Total Body Weight HI Across All Media =	5.3.E-02
Total CNS HI Across All Media =	4.2.E-01
Total Development HI Across All Media =	1.8.E-04
Total GI Tract HI Across All Media =	1.1.E+00
Total Immune HI Across All Media =	5.8.E+00
Total Kidney HI Across All Media =	4.5.E-02
Total Liver HI Across All Media =	7.3.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	4.2.E-04
Total No Critical Effect Risk HI Across All Media =	4.9.E-04
Total Reproductive HI Across All Media =	1.3.E-02
Total Respiratory HI Across All Media =	1.1.E-02
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.2.E-01
Total Thyroid HI Across All Media =	3.6.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.9.E-03

TABLE 7.5a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	Ingestion	CYANIDE	2.6E+00	mg/kg	2.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-06	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	3.0E-03
				ALUMINUM	7.3E+03	mg/kg	7.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.9E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	4.9E-03
				ANTIMONY	3.3E+02	mg/kg	3.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	5.6E-01
				ARSENIC	1.9E+01	mg/kg	1.1E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07	7.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.6E-02
				BARIUM	5.4E+02	mg/kg	5.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.7E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	1.8E-03
				CADMIUM	1.2E+01	mg/kg	1.2E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.1E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	8.1E-03
				CHROMIUM, HEXAVALENT	5.2E-01	mg/kg	5.0E-09	mg/kg-day	5.0E-01	$(mg/kg\text{-}day)^{-1}$	2.5E-09	3.5E-07	mg/kg-day	3.0E-03	mg/kg-day	None	1.2E-04
				COBALT	1.5E+01	mg/kg	1.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.4E-02
				COPPER	1.1E+04	mg/kg	1.0E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.3E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.8E-01
				IRON	7.8E+04	mg/kg	7.5E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	7.5E-02
				MANGANESE	8.3E+02	mg/kg	8.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.6E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.3E-02
				MERCURY	5.9E+00	mg/kg	5.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.0E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	4.0E-02
				NICKEL	3.7E+02	mg/kg	3.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.5E-04	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.3E-02
				SILVER	2.4E+01	mg/kg	2.4E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-05	mg/kg-day	5.0E-03	mg/kg-day	Skin	3.3E-03
				VANADIUM	2.2E+01	mg/kg	2.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	3.0E-03
				ZINC	5.5E+03	mg/kg	5.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.7E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.2E-02
				2-METHYLNAPHTHALENE	2.0E+00	mg/kg	1.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	3.3E-04
				BENZO(A)ANTHRACENE	1.9E+01	mg/kg	1.9E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-07	1.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	2.8E+00	mg/kg	2.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-07	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.5E+01	mg/kg	2.4E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.8E-07	1.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.0E+01	mg/kg	2.9E-07	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	2.1E-08	2.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.7E+01	mg/kg	1.6E-07	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	1.2E-09	1.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	2.2E+00	mg/kg	2.1E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-07	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	6.0E+01	mg/kg	5.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.1E-05	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.0E-03
				INDENO(1,2,3-C,D)PYRENE	2.4E+00	mg/kg	2.3E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.7E-08	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	5.6E+00	mg/kg	5.4E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.8E-06	mg/kg-day	2.0E-02	mg/kg-day	Body weight	1.9E-04
				PYRENE	1.5E+01	mg/kg	1.5E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-05	mg/kg-day	3.0E-02	mg/kg-day	Kidney	3.5E-04
				PCB-1242	3.0E+00	mg/kg	2.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-08	2.1E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.0E-01
				PCB-1248	2.2E+01	mg/kg	2.1E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-07	1.5E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.3E-01
				PCB-1254	9.8E+00	mg/kg	9.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-07	6.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.3E-01
				PCB-1260	1.6E-01	mg/kg	1.5E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-09	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.4E-03
				PCB-1262	3.5E-02	mg/kg	3.4E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.7E-10	2.4E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-03
				DIELDRIN	5.3E-02	mg/kg	5.2E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	8.3E-09	3.6E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	7.2E-04
				HEPTACHLOR EPOXIDE	6.6E-03	mg/kg	6.4E-11	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-10	4.5E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	3.5E-04
				BIS(2-ETHYLHEXYL)PHTHALATE	1.6E+01	mg/kg	1.5E-07	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.1E-09	1.1E-05	mg/kg-day	2.0E-02	mg/kg-day	Liver	5.3E-04
				DIBENZOFURAN	3.0E+01	mg/kg	2.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
			Exposure Route Total								1.6E-06						2.2E+00

TABLE 7.5a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	Dermal	CYANIDE	2.6E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-04	mg/kg-day	Reproductive	NA
				ALUMINUM	7.3E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	3.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.9E+01	mg/kg	7.1E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-08	5.0E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.7E-03
				BARIUM	5.4E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.4E-02	mg/kg-day	Kidney	NA
				CADMIUM	1.2E+01	mg/kg	1.5E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.0E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	4.2E-04
				CHROMIUM, HEXAVALENT	5.2E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	1.5E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	1.1E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	7.8E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.3E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	5.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				NICKEL	3.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	8.0E-04	mg/kg-day	Body weight	NA
				SILVER	2.4E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	2.0E-04	mg/kg-day	Skin	NA
				VANADIUM	2.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	5.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				2-METHYLNAPHTHALENE	2.0E+00	mg/kg	3.2E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-07	mg/kg-day	4.0E-03	mg/kg-day	Respiratory	5.6E-05
				BENZO(A)ANTHRACENE	1.9E+01	mg/kg	3.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.3E-08	2.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	2.8E+00	mg/kg	4.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-08	3.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.5E+01	mg/kg	4.0E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.0E-08	2.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	3.0E+01	mg/kg	4.8E-08	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	3.5E-09	3.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	1.7E+01	mg/kg	2.7E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	2.0E-10	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	2.2E+00	mg/kg	3.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-08	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				FLUORANTHENE	6.0E+01	mg/kg	9.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.8E-06	mg/kg-day	4.0E-02	mg/kg-day	Whole body	1.7E-04
				INDENO(1,2,3-C,D)PYRENE	2.4E+00	mg/kg	3.8E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.8E-09	2.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				NAPHTHALENE	5.6E+00	mg/kg	9.0E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.3E-07	mg/kg-day	2.0E-02	mg/kg-day	Body weight	3.1E-05
				PYRENE	1.5E+01	mg/kg	2.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-06	mg/kg-day	3.0E-02	mg/kg-day	Kidney	5.8E-05
				PCB-1242	3.0E+00	mg/kg	5.3E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-08	3.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-02
				PCB-1248	2.2E+01	mg/kg	3.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.5E-08	2.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-01
				PCB-1254	9.8E+00	mg/kg	1.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-08	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.0E-02
				PCB-1260	1.6E-01	mg/kg	2.7E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.5E-10	1.9E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.6E-04
				PCB-1262	3.5E-02	mg/kg	6.0E-11	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-10	4.2E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.1E-04
				DIELDRIN	5.3E-02	mg/kg	6.6E-11	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-09	4.6E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	9.3E-05
				HEPTACHLOR EPOXIDE	6.6E-03	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	1.6E+01	mg/kg	1.9E-08	mg/kg-day	1.4E-02	$(mg/kg\text{-}day)^{-1}$	2.7E-10	1.4E-06	mg/kg-day	2.0E-02	mg/kg-day	Liver	6.8E-05
				DIBENZOFURAN	3.0E+01	mg/kg	1.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
Exposure Route Total											2.5E-07						2.1E-01

TABLE 7.5a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	Inhalation	CYANIDE	2.6E+00	mg/kg	5.9E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.1E-05	mg/m^3	8.0E-04	mg/m^3	Thyroid	5.2E-02
				ALUMINUM	7.3E+03	mg/kg	4.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.9E-07	mg/m^3	5.0E-03	mg/m^3	CNS	5.8E-05
				ANTIMONY	3.3E+02	mg/kg	1.9E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.9E+01	mg/kg	1.1E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	4.7E-11	7.7E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	5.1E-05
				BARIUM	5.4E+02	mg/kg	3.1E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.2E-08	mg/m^3	5.0E-04	mg/m^3	Development	4.4E-05
				CADMIUM	1.2E+01	mg/kg	6.9E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.2E-11	4.8E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	4.8E-05
				CHROMIUM, HEXAVALENT	5.2E-01	mg/kg	3.0E-10	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	2.5E-11	2.1E-11	mg/m^3	1.0E-04	mg/m^3	Lung	2.1E-07
				COBALT	1.5E+01	mg/kg	8.6E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	7.7E-11	6.0E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.0E-04
				COPPER	1.1E+04	mg/kg	6.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				IRON	7.8E+04	mg/kg	4.5E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.1E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	8.3E+02	mg/kg	4.8E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.3E-08	mg/m^3	5.0E-05	mg/m^3	CNS	6.7E-04
				MERCURY	5.9E+00	mg/kg	1.3E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.4E-06	mg/m^3	3.0E-04	mg/m^3	CNS	3.1E-02
				NICKEL	3.7E+02	mg/kg	2.1E-07	$\mu g/m^3$	2.6E-04	$(\mu g/m^3)^{-1}$	5.6E-11	1.5E-08	mg/m^3	9.0E-05	mg/m^3	Respiratory	1.7E-04
				SILVER	2.4E+01	mg/kg	1.4E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.2E+01	mg/kg	1.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.9E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	8.9E-06
				ZINC	5.5E+03	mg/kg	3.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				2-METHYLNAPHTHALENE	2.0E+00	mg/kg	2.7E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-06	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	1.9E+01	mg/kg	3.4E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.8E-10	2.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	2.8E+00	mg/kg	1.6E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.8E-12	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.5E+01	mg/kg	1.4E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.6E-12	1.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	3.0E+01	mg/kg	1.7E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.9E-12	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	1.7E+01	mg/kg	9.6E-09	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	1.1E-13	6.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	2.2E+00	mg/kg	1.3E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	1.5E-12	8.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				FLUORANTHENE	6.0E+01	mg/kg	3.4E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.4E+00	mg/kg	1.4E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.5E-13	9.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				NAPHTHALENE	5.6E+00	mg/kg	9.4E-05	$\mu g/m^3$	3.4E-05	$(\mu g/m^3)^{-1}$	3.2E-09	6.6E-06	mg/m^3	3.0E-03	mg/m^3	Respiratory	2.2E-03
				PYRENE	1.5E+01	mg/kg	5.1E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	3.0E+00	mg/kg	4.0E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.3E-09	2.8E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	2.2E+01	mg/kg	2.7E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.5E-08	1.9E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	9.8E+00	mg/kg	9.1E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.2E-09	6.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	9.5E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.4E-11	6.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1262	3.5E-02	mg/kg	2.0E-11	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.1E-14	1.4E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.3E-02	mg/kg	3.1E-11	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	1.4E-13	2.2E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	6.6E-03	mg/kg	6.2E-09	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	1.6E-11	4.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BIS(2-ETHYLHEXYL)PHTHALATE	1.6E+01	mg/kg	9.0E-09	$\mu g/m^3$	2.4E-06	$(\mu g/m^3)^{-1}$	2.1E-14	6.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZOFURAN	3.0E+01	mg/kg	1.2E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.3E-06	mg/m^3	NA	mg/m^3	NA	NA
Exposure Route Total											2.7E-08						8.6E-02

TABLE 7.5a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
		Exposure Point Total									1.8E-06						2.5E+00
	Exposure Medium Total										1.8E-06						2.5E+00
Medium Total for Adult											1.8E-06						2.5E+00
Total of Receptor Risks Across All Media											1.8E-06	Total of Receptor Hazards Across All Media					2.5E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	5.7.E-01
Total Body Weight HI Across All Media =	1.3.E-02
Total CNS HI Across All Media =	1.0.E-01
Total Development HI Across All Media =	4.4.E-05
Total GI Tract HI Across All Media =	2.6.E-01
Total Immune HI Across All Media =	1.4.E+00
Total Kidney HI Across All Media =	1.1.E-02
Total Liver HI Across All Media =	1.8.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	1.0.E-04
Total No Critical Effect Risk HI Across All Media =	1.2.E-04
Total Reproductive HI Across All Media =	3.0.E-03
Total Respiratory HI Across All Media =	2.6.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.8.E-02
Total Thyroid HI Across All Media =	8.6.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	1.2.E-03

TABLE 7.6a-RME Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Ingestion	ALUMINUM	7.1E+03	mg/kg	1.2E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.4E-02	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.4E-02
				ANTIMONY	2.5E+01	mg/kg	4.3E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.0E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.3E-01
				ARSENIC	2.2E+01	mg/kg	2.3E-06	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	3.5E-06	2.7E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	9.0E-02
				BARIUM	9.2E+02	mg/kg	1.6E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-03	mg/kg-day	2.0E-01	mg/kg-day	Kidney	9.4E-03
				CADMIUM	7.9E+00	mg/kg	1.4E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.6E-05	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.6E-02
				COBALT	1.3E+01	mg/kg	2.2E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.6E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	8.7E-02
				COPPER	7.7E+02	mg/kg	1.4E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.6E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	4.0E-02
				IRON	5.3E+04	mg/kg	9.3E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.1E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.6E-01
				MANGANESE	9.9E+02	mg/kg	1.7E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.0E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	8.4E-02
				MERCURY	2.4E+00	mg/kg	4.1E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.8E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	4.8E-02
				SILVER	3.3E+01	mg/kg	5.8E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.8E-05	mg/kg-day	5.0E-03	mg/kg-day	Skin	1.4E-02
				VANADIUM	2.0E+01	mg/kg	3.4E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.0E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	8.0E-03
				ZINC	1.1E+03	mg/kg	2.0E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.3E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	7.8E-03
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	8.9E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	3.5E-06	1.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	8.0E-07	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	3.1E-05	9.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	1.0E-06	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	3.9E-06	1.2E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	4.1E-07	mg/kg-day	3.9E-01	$mg/kg\text{-}day^{-1}$	1.6E-07	4.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	8.6E-07	mg/kg-day	3.9E-02	$mg/kg\text{-}day^{-1}$	3.3E-08	1.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	1.1E-07	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	4.1E-06	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	4.0E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.6E-06	4.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	5.4E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.1E-05	6.3E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.2E+00
				PCB-1254	2.1E+01	mg/kg	3.7E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	7.4E-06	4.3E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E+00
				PCB-1260	1.2E-01	mg/kg	2.1E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.1E-08	2.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-02
				HEPTACHLOR	8.8E-02	mg/kg	1.5E-08	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	6.9E-08	1.8E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	3.6E-04
				P,P'-DDE	7.4E-01	mg/kg	1.3E-07	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	4.4E-08	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	1.8E-07	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	6.0E-08	2.0E-06	mg/kg-day	5.0E-04	mg/kg-day	Liver	4.1E-03
			Exposure Route Total								6.6E-05						6.0E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Dermal	ALUMINUM	7.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.5E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	2.2E+01	mg/kg	2.8E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	4.1E-07	3.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.1E-02
				BARIUM	9.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	7.9E+00	mg/kg	3.3E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.9E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.9E-05
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	7.7E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.3E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	9.9E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA
				MERCURY	2.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	3.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA

TABLE 7.6a-RME Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				VANADIUM	2.0E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	2.7E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.1E-06	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.5E-07	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	9.6E-06	2.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	3.1E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.2E-06	3.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.3E-07	mg/kg-day	3.9E-01	$mg/kg\text{-}day^{-1}$	5.0E-08	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	2.7E-07	mg/kg-day	3.9E-02	$mg/kg\text{-}day^{-1}$	1.0E-08	3.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	3.3E-08	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	1.3E-06	3.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.2E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	4.8E-07	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	1.8E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.6E-06	2.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.0E+00
				PCB-1254	2.1E+01	mg/kg	1.2E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.5E-06	1.4E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.2E-01
				PCB-1260	1.2E-01	mg/kg	6.8E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.4E-08	8.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.0E-03
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	1.2E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	4.2E-09	1.5E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.9E-04
			Exposure Route Total								2.0E-05						1.8E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Inhalation	ALUMINUM	7.1E+03	mg/kg	1.1E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-07	mg/m^3	5.0E-03	mg/m^3	CNS	2.7E-05
				ANTIMONY	2.5E+01	mg/kg	4.0E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	2.2E+01	mg/kg	3.6E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.5E-10	4.1E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.8E-05
				BARIUM	9.2E+02	mg/kg	1.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-08	mg/m^3	5.0E-04	mg/m^3	Development	3.4E-05
				CADMIUM	7.9E+00	mg/kg	1.3E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	2.3E-11	1.5E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	1.5E-05
				COBALT	1.3E+01	mg/kg	2.1E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.9E-10	2.4E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.0E-05
				COPPER	7.7E+02	mg/kg	1.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.3E+04	mg/kg	8.6E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	9.9E+02	mg/kg	1.6E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-08	mg/m^3	5.0E-05	mg/m^3	CNS	3.7E-04
				MERCURY	2.4E+00	mg/kg	1.5E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-06	mg/m^3	3.0E-04	mg/m^3	CNS	5.8E-03
				SILVER	3.3E+01	mg/kg	5.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.0E+01	mg/kg	3.2E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.7E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	3.7E-06
				ZINC	1.1E+03	mg/kg	1.8E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	2.5E-06	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.5E-09	2.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	7.3E-09	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	4.3E-11	8.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	9.3E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	5.5E-12	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	3.8E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	2.2E-12	4.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.9E+00	mg/kg	7.9E-09	$\mu g/m^3$	5.9E-05	$(\mu g/m^3)^{-1}$	4.6E-13	9.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	9.8E-10	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	6.2E-12	1.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	3.7E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	2.2E-12	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.1E+01	mg/kg	1.1E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	6.2E-08	1.3E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	2.1E+01	mg/kg	5.5E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.1E-08	6.4E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.6a-RME Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				PCB-1260	1.2E-01	mg/kg	2.0E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.1E-10	2.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	4.0E-07	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	5.2E-10	4.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	7.7E-07	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	7.5E-11	9.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	1.6E-09	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	1.6E-13	1.9E-11	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								9.6E-08						6.3E-03
		Exposure Point Total									8.7E-05						7.8E+00
	Exposure Medium Total										8.7E-05						7.8E+00
Medium Total for Young Child											8.7E-05						7.8E+00
Total of Receptor Risks Across All Media											8.7E-05	Total of Receptor Hazards Across All Media					7.8E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.3.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.5.E-01
Total Development HI Across All Media =	3.4.E-05
Total GI Tract HI Across All Media =	2.0.E-01
Total Immune HI Across All Media =	7.1.E+00
Total Kidney HI Across All Media =	2.6.E-02
Total Liver HI Across All Media =	4.7.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	4.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.8.E-05
Total Respiratory HI Across All Media =	3.7.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.0.E-01
Total Thyroid HI Across All Media =	8.7.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.6a-CTE Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Ingestion	ALUMINUM	7.1E+03	mg/kg	4.1E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.2E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	7.2E-03
				ANTIMONY	2.5E+01	mg/kg	1.4E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.5E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	6.3E-02
				ARSENIC	2.2E+01	mg/kg	7.7E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.2E-06	1.4E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.5E-02
				BARIUM	9.2E+02	mg/kg	5.4E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	9.4E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	4.7E-03
				CADMIUM	7.9E+00	mg/kg	4.6E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	8.1E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	8.1E-03
				COBALT	1.3E+01	mg/kg	7.5E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.3E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	4.4E-02
				COPPER	7.7E+02	mg/kg	4.5E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.9E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	2.0E-02
				IRON	5.3E+04	mg/kg	3.1E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.5E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	7.8E-02
				MANGANESE	9.9E+02	mg/kg	5.8E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.0E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	4.2E-02
				MERCURY	2.4E+00	mg/kg	1.4E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.4E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	2.4E-02
				SILVER	3.3E+01	mg/kg	1.9E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.4E-05	mg/kg-day	5.0E-03	mg/kg-day	Skin	6.8E-03
				VANADIUM	2.0E+01	mg/kg	1.1E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.0E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	4.0E-03
				ZINC	1.1E+03	mg/kg	6.7E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	3.9E-03
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	3.0E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.2E-06	5.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.7E-07	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	1.0E-05	4.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	3.4E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.3E-06	5.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.4E-07	mg/kg-day	3.9E-01	$mg/kg\text{-}day^{-1}$	5.4E-08	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	2.9E-07	mg/kg-day	3.9E-02	$mg/kg\text{-}day^{-1}$	1.1E-08	5.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	3.5E-08	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	1.4E-06	6.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.3E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	5.2E-07	2.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	1.8E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.6E-06	3.2E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E+00
				PCB-1254	2.1E+01	mg/kg	1.2E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.5E-06	2.2E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E+00
				PCB-1260	1.2E-01	mg/kg	6.8E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.4E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.0E-03
				HEPTACHLOR	8.8E-02	mg/kg	5.1E-09	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	2.3E-08	9.0E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.8E-04
				P,P'-DDE	7.4E-01	mg/kg	4.3E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.5E-08	7.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	5.8E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	2.0E-08	1.0E-06	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.0E-03
			Exposure Route Total								2.2E-05						3.0E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Dermal	ALUMINUM	7.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.5E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	2.2E+01	mg/kg	9.2E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.4E-07	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.4E-03
				BARIUM	9.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	7.9E+00	mg/kg	1.1E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.9E-05
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	7.7E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.3E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	9.9E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA
				MERCURY	2.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	3.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA

TABLE 7.6a-CTE Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				VANADIUM	2.0E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	9.1E-08	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	3.5E-07	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	8.2E-08	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	3.2E-06	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	1.0E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	4.1E-07	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	4.2E-08	mg/kg-day	3.9E-01	$mg/kg\text{-}day^{-1}$	1.7E-08	7.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	8.8E-08	mg/kg-day	3.9E-02	$mg/kg\text{-}day^{-1}$	3.4E-09	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	1.1E-08	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	4.2E-07	1.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	4.1E-08	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.6E-07	7.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	6.0E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.2E-06	1.0E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.2E-01
				PCB-1254	2.1E+01	mg/kg	4.1E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	8.2E-07	7.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.6E-01
				PCB-1260	1.2E-01	mg/kg	2.3E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.5E-09	4.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-03
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	4.2E-09	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.4E-09	7.3E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.5E-04
			Exposure Route Total								6.7E-06						8.9E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Inhalation	ALUMINUM	7.1E+03	mg/kg	3.8E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.7E-08	mg/m^3	5.0E-03	mg/m^3	CNS	1.3E-05
				ANTIMONY	2.5E+01	mg/kg	1.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	2.2E+01	mg/kg	1.2E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	5.1E-11	2.1E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.4E-05
				BARIUM	9.2E+02	mg/kg	4.9E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.6E-09	mg/m^3	5.0E-04	mg/m^3	Development	1.7E-05
				CADMIUM	7.9E+00	mg/kg	4.3E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	7.7E-12	7.5E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	7.5E-06
				COBALT	1.3E+01	mg/kg	6.9E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	6.2E-11	1.2E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	2.0E-05
				COPPER	7.7E+02	mg/kg	4.2E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.3E+04	mg/kg	2.9E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	9.9E+02	mg/kg	5.3E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.3E-09	mg/m^3	5.0E-05	mg/m^3	CNS	1.9E-04
				MERCURY	2.4E+00	mg/kg	5.0E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.7E-07	mg/m^3	3.0E-04	mg/m^3	CNS	2.9E-03
				SILVER	3.3E+01	mg/kg	1.8E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.0E+01	mg/kg	1.1E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.8E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	1.8E-06
				ZINC	1.1E+03	mg/kg	6.2E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	8.4E-07	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	4.9E-10	1.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.4E-09	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	1.4E-11	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	3.1E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.8E-12	5.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.3E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	7.4E-13	2.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.9E+00	mg/kg	2.6E-09	$\mu g/m^3$	5.9E-05	$(\mu g/m^3)^{-1}$	1.5E-13	4.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	3.3E-10	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	2.1E-12	5.7E-12	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.2E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	7.2E-13	2.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.1E+01	mg/kg	3.6E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.1E-08	6.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	2.1E+01	mg/kg	1.8E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.0E-08	3.2E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.6a-CTE Recreational User (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				PCB-1260	1.2E-01	mg/kg	6.5E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.7E-11	1.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	1.3E-07	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	1.7E-10	2.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	2.6E-07	µg/m^3	9.7E-05	(µg/m^3)$^{-1}$	2.5E-11	4.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	5.4E-10	µg/m^3	9.7E-05	(µg/m^3)$^{-1}$	5.2E-14	9.4E-12	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								3.2E-08						3.2E-03
		Exposure Point Total									2.9E-05						3.9E+00
	Exposure Medium Total										2.9E-05						3.9E+00
Medium Total for Young Child											2.9E-05						3.9E+00
Total of Receptor Risks Across All Media											2.9E-05	Total of Receptor Hazards Across All Media					3.9E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	6.3.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	7.7.E-02
Total Development HI Across All Media =	1.7.E-05
Total GI Tract HI Across All Media =	9.8.E-02
Total Immune HI Across All Media =	3.5.E+00
Total Kidney HI Across All Media =	1.3.E-02
Total Liver HI Across All Media =	2.4.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	2.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.4.E-05
Total Respiratory HI Across All Media =	1.8.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	5.0.E-02
Total Thyroid HI Across All Media =	4.4.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.6b-RME Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Ingestion	ALUMINUM	7.1E+03	mg/kg	5.9E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.4E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	3.4E-03
				ANTIMONY	2.5E+01	mg/kg	2.0E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.0E-02
				ARSENIC	2.2E+01	mg/kg	1.1E-06	mg/kg-day	2E+00	$mg/kg\text{-}day^{-1}$	1.6E-06	6.4E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.1E-02
				BARIUM	9.2E+02	mg/kg	7.6E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.4E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	2.2E-03
				CADMIUM	7.9E+00	mg/kg	6.6E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.8E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.8E-03
				COBALT	1.3E+01	mg/kg	1.1E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.1E-02
				COPPER	7.7E+02	mg/kg	6.4E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.7E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	9.4E-03
				IRON	5.3E+04	mg/kg	4.4E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.6E-02	mg/kg-day	7E-01	mg/kg-day	GI Tract	3.7E-02
				MANGANESE	9.9E+02	mg/kg	8.2E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.8E-04	mg/kg-day	2E-02	mg/kg-day	CNS	2.0E-02
				MERCURY	2.4E+00	mg/kg	2.0E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.1E-06	mg/kg-day	1E-04	mg/kg-day	CNS	1.1E-02
				SILVER	3.3E+01	mg/kg	2.7E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.6E-05	mg/kg-day	5E-03	mg/kg-day	Skin	3.2E-03
				VANADIUM	2.0E+01	mg/kg	1.6E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	9.5E-06	mg/kg-day	5E-03	mg/kg-day	NA	1.9E-03
				ZINC	1.1E+03	mg/kg	9.5E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.5E-04	mg/kg-day	3E-01	mg/kg-day	Blood	1.8E-03
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	4.2E-07	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	8.2E-07	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	3.8E-07	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	7.4E-06	2.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	4.8E-07	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	9.3E-07	2.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	2.0E-07	mg/kg-day	1.9E-01	$mg/kg\text{-}day^{-1}$	3.8E-08	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	4.1E-07	mg/kg-day	1.9E-02	$mg/kg\text{-}day^{-1}$	7.9E-09	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	5.0E-08	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	9.8E-07	2.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.9E-07	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	3.7E-07	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	2.6E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	5.1E-06	1.5E-05	mg/kg-day	2E-05	mg/kg-day	Immune	7.4E-01
				PCB-1254	2.1E+01	mg/kg	1.7E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.5E-06	1.0E-05	mg/kg-day	2E-05	mg/kg-day	Immune	5.1E-01
				PCB-1260	1.2E-01	mg/kg	9.7E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.9E-08	5.7E-08	mg/kg-day	2E-05	mg/kg-day	Immune	2.8E-03
				HEPTACHLOR	8.8E-02	mg/kg	7.3E-09	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	3.3E-08	4.2E-08	mg/kg-day	5E-04	mg/kg-day	Liver	8.5E-05
				P,P'-DDE	7.4E-01	mg/kg	6.1E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	2.1E-08	3.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	8.3E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	2.8E-08	4.8E-07	mg/kg-day	5E-04	mg/kg-day	Liver	9.7E-04
			Exposure Route Total								2.1E-05						1.4E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Dermal	ALUMINUM	7.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.5E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	2.2E+01	mg/kg	5.6E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	8.4E-07	3.3E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.1E-02
				BARIUM	9.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	7.9E+00	mg/kg	6.7E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.9E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.9E-05
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	7.7E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.3E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	9.9E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA
				MERCURY	2.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	3.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA

TABLE 7.6b-RME Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				VANADIUM	2.0E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	5.6E-07	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	1.1E-06	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	5.0E-07	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	9.8E-06	2.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	6.4E-07	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	1.2E-06	3.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	2.6E-07	mg/kg-day	1.9E-01	$mg/kg\text{-}day^{-1}$	5.0E-08	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	5.4E-07	mg/kg-day	1.9E-02	$mg/kg\text{-}day^{-1}$	1.0E-08	3.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	6.6E-08	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	1.3E-06	3.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	2.5E-07	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	4.9E-07	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	3.6E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	7.3E-06	2.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E+00
				PCB-1254	2.1E+01	mg/kg	2.5E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	5.0E-06	1.5E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.3E-01
				PCB-1260	1.2E-01	mg/kg	1.4E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.8E-08	8.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.0E-03
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	2.5E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	8.6E-09	1.5E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	3.0E-04
			Exposure Route Total								2.7E-05						1.8E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Inhalation	ALUMINUM	7.1E+03	mg/kg	3.4E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.0E-07	mg/m^3	5.0E-03	mg/m^3	CNS	4.0E-05
				ANTIMONY	2.5E+01	mg/kg	1.2E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.9E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	2.2E+01	mg/kg	1.1E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	4.6E-10	6.2E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	4.1E-05
				BARIUM	9.2E+02	mg/kg	4.4E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.6E-08	mg/m^3	5.0E-04	mg/m^3	Development	5.2E-05
				CADMIUM	7.9E+00	mg/kg	3.8E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	6.9E-11	2.2E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	2.2E-05
				COBALT	1.3E+01	mg/kg	6.2E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	5.6E-10	3.6E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	6.0E-05
				COPPER	7.7E+02	mg/kg	3.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.3E+04	mg/kg	2.6E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	9.9E+02	mg/kg	4.8E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.8E-08	mg/m^3	5.0E-05	mg/m^3	CNS	5.6E-04
				MERCURY	2.4E+00	mg/kg	4.5E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.6E-06	mg/m^3	3.0E-04	mg/m^3	CNS	8.7E-03
				SILVER	3.3E+01	mg/kg	1.6E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.0E+01	mg/kg	9.5E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.5E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	5.5E-06
				ZINC	1.1E+03	mg/kg	5.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	7.6E-06	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	2.2E-09	4.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.2E-08	$\mu g/m^3$	2.9E-03	$(\mu g/m^3)^{-1}$	6.5E-11	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	2.8E-08	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	8.2E-12	1.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.1E-08	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	3.3E-12	6.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.9E+00	mg/kg	2.4E-08	$\mu g/m^3$	2.9E-05	$(\mu g/m^3)^{-1}$	7.0E-13	1.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	2.9E-09	$\mu g/m^3$	3.2E-03	$(\mu g/m^3)^{-1}$	9.4E-12	1.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.1E-08	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	3.2E-12	6.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.1E+01	mg/kg	3.2E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.9E-07	1.9E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	2.1E+01	mg/kg	1.6E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	9.4E-08	9.6E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.6b-RME Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				PCB-1260	1.2E-01	mg/kg	5.9E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.4E-10	3.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	1.2E-06	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	1.6E-09	7.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	2.3E-06	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	2.2E-10	1.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	4.8E-09	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	4.7E-13	2.8E-11	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.8E-07						9.5E-03
		Exposure Point Total									4.8E-05						3.2E+00
	Exposure Medium Total										4.8E-05						3.2E+00
Medium Total for Adolescent											4.8E-05						3.2E+00
Total of Receptor Risks Across All Media											4.8E-05	Total of Receptor Hazards Across All Media					3.2E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	3.0.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	4.4.E-02
Total Development HI Across All Media =	5.2.E-05
Total GI Tract HI Across All Media =	4.6.E-02
Total Immune HI Across All Media =	3.1.E+00
Total Kidney HI Across All Media =	6.1.E-03
Total Liver HI Across All Media =	1.3.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	6.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	4.1.E-05
Total Respiratory HI Across All Media =	5.5.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.2.E-02
Total Thyroid HI Across All Media =	2.1.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.6b-CTE Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Ingestion	ALUMINUM	7.1E+03	mg/kg	9.8E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.7E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.7E-03
				ANTIMONY	2.5E+01	mg/kg	3.4E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.9E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.5E-02
				ARSENIC	2.2E+01	mg/kg	1.8E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	2.7E-07	3.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.1E-02
				BARIUM	9.2E+02	mg/kg	1.3E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.2E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	1.1E-03
				CADMIUM	7.9E+00	mg/kg	1.1E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.9E-03
				COBALT	1.3E+01	mg/kg	1.8E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.0E-02
				COPPER	7.7E+02	mg/kg	1.1E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	4.7E-03
				IRON	5.3E+04	mg/kg	7.4E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.3E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.8E-02
				MANGANESE	9.9E+02	mg/kg	1.4E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.4E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	9.9E-03
				MERCURY	2.4E+00	mg/kg	3.3E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.7E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	5.7E-03
				SILVER	3.3E+01	mg/kg	4.6E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	8.0E-06	mg/kg-day	5.0E-03	mg/kg-day	Skin	1.6E-03
				VANADIUM	2.0E+01	mg/kg	2.7E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.7E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	9.4E-04
				ZINC	1.1E+03	mg/kg	1.6E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.8E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	9.2E-04
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	7.0E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	1.4E-07	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	6.3E-08	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	1.2E-06	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	8.0E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	1.6E-07	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	3.3E-08	mg/kg-day	1.9E-01	$mg/kg\text{-}day^{-1}$	6.3E-09	5.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	6.8E-08	mg/kg-day	1.9E-02	$mg/kg\text{-}day^{-1}$	1.3E-09	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	8.4E-09	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	1.6E-07	1.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	3.2E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	6.1E-08	5.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	4.3E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	8.5E-07	7.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.7E-01
				PCB-1254	2.1E+01	mg/kg	2.9E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	5.8E-07	5.1E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.5E-01
				PCB-1260	1.2E-01	mg/kg	1.6E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.2E-09	2.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-03
				HEPTACHLOR	8.8E-02	mg/kg	1.2E-09	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	5.4E-09	2.1E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	4.2E-05
				P,P'-DDE	7.4E-01	mg/kg	1.0E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	3.5E-09	1.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	1.4E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	4.7E-09	2.4E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	4.8E-04
			Exposure Route Total								3.5E-06						7.1E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Dermal	ALUMINUM	7.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.5E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	2.2E+01	mg/kg	9.3E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.4E-07	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.4E-03
				BARIUM	9.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	7.9E+00	mg/kg	1.1E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.0E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	2.0E-05
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	7.7E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.3E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	9.9E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA
				MERCURY	2.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	3.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA

TABLE 7.6b-CTE Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				VANADIUM	2.0E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	9.3E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	1.8E-07	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	8.4E-08	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	1.6E-06	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	1.1E-07	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	2.1E-07	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	4.3E-08	mg/kg-day	1.9E-01	$mg/kg\text{-}day^{-1}$	8.4E-09	7.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	9.0E-08	mg/kg-day	1.9E-02	$mg/kg\text{-}day^{-1}$	1.7E-09	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	1.1E-08	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	2.2E-07	1.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	4.2E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	8.1E-08	7.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	6.1E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.2E-06	1.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.3E-01
				PCB-1254	2.1E+01	mg/kg	4.2E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	8.3E-07	7.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.6E-01
				PCB-1260	1.2E-01	mg/kg	2.3E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.6E-09	4.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-03
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	4.2E-09	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.4E-09	7.4E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.5E-04
			Exposure Route Total								4.5E-06						9.0E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Inhalation	ALUMINUM	7.1E+03	mg/kg	5.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-07	mg/m^3	5.0E-03	mg/m^3	CNS	2.0E-05
				ANTIMONY	2.5E+01	mg/kg	2.0E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	2.2E+01	mg/kg	1.8E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	7.6E-11	3.1E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.1E-05
				BARIUM	9.2E+02	mg/kg	7.4E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-08	mg/m^3	5.0E-04	mg/m^3	Development	2.6E-05
				CADMIUM	7.9E+00	mg/kg	6.4E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.2E-11	1.1E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	1.1E-05
				COBALT	1.3E+01	mg/kg	1.0E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	9.3E-11	1.8E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	3.0E-05
				COPPER	7.7E+02	mg/kg	6.2E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.3E+04	mg/kg	4.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	9.9E+02	mg/kg	8.0E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.4E-08	mg/m^3	5.0E-05	mg/m^3	CNS	2.8E-04
				MERCURY	2.4E+00	mg/kg	7.5E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-06	mg/m^3	3.0E-04	mg/m^3	CNS	4.3E-03
				SILVER	3.3E+01	mg/kg	2.7E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.0E+01	mg/kg	1.6E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.8E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	2.8E-06
				ZINC	1.1E+03	mg/kg	9.2E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	1.3E-06	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	3.7E-10	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	3.7E-09	$\mu g/m^3$	2.9E-03	$(\mu g/m^3)^{-1}$	1.1E-11	6.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	4.7E-09	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	1.4E-12	8.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.9E-09	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	5.6E-13	3.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.9E+00	mg/kg	4.0E-09	$\mu g/m^3$	2.9E-05	$(\mu g/m^3)^{-1}$	1.2E-13	6.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	4.9E-10	$\mu g/m^3$	3.2E-03	$(\mu g/m^3)^{-1}$	1.6E-12	8.5E-12	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.8E-09	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	5.4E-13	3.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.1E+01	mg/kg	5.4E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.1E-08	9.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	2.1E+01	mg/kg	2.7E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.6E-08	4.8E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.6b-CTE Recreational User (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				PCB-1260	1.2E-01	mg/kg	9.8E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.6E-11	1.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	2.0E-07	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	2.6E-10	3.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	3.9E-07	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	3.7E-11	6.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	8.0E-10	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	7.8E-14	1.4E-11	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								4.7E-08						4.7E-03
		Exposure Point Total									8.0E-06						1.6E+00
	Exposure Medium Total										8.0E-06						1.6E+00
Medium Total for Adolescent											8.0E-06						1.6E+00
Total of Receptor Risks Across All Media											8.0E-06	Total of Receptor Hazards Across All Media					1.6E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.5.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.2.E-02
Total Development HI Across All Media =	2.6.E-05
Total GI Tract HI Across All Media =	2.3.E-02
Total Immune HI Across All Media =	1.5.E+00
Total Kidney HI Across All Media =	3.1.E-03
Total Liver HI Across All Media =	6.7.E-04
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	3.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.1.E-05
Total Respiratory HI Across All Media =	2.8.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.6.E-02
Total Thyroid HI Across All Media =	1.0.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.6c-RME Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Ingestion	ALUMINUM	7.1E+03	mg/kg	3.9E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.4E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.4E-03
				ANTIMONY	2.5E+01	mg/kg	1.3E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.7E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.2E-02
				ARSENIC	2.2E+01	mg/kg	7.2E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.1E-06	2.5E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	8.5E-03
				BARIUM	9.2E+02	mg/kg	5.0E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.8E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	8.8E-04
				CADMIUM	7.9E+00	mg/kg	4.4E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.5E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.5E-03
				COBALT	1.3E+01	mg/kg	7.0E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.5E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	8.2E-03
				COPPER	7.7E+02	mg/kg	4.2E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.5E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	3.7E-03
				IRON	5.3E+04	mg/kg	2.9E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.0E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.5E-02
				MANGANESE	9.9E+02	mg/kg	5.4E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	7.9E-03
				MERCURY	2.4E+00	mg/kg	1.3E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.5E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	4.5E-03
				SILVER	3.3E+01	mg/kg	1.8E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.4E-06	mg/kg-day	5.0E-03	mg/kg-day	Skin	1.3E-03
				VANADIUM	2.0E+01	mg/kg	1.1E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.8E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	7.5E-04
				ZINC	1.1E+03	mg/kg	6.3E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.2E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	7.3E-04
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	2.8E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.0E-07	9.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.5E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.8E-06	8.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	3.2E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.3E-07	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.3E-07	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	9.4E-09	4.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	2.7E-07	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	2.0E-09	9.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	3.3E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	2.4E-07	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.3E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	9.1E-08	4.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	1.7E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.4E-06	5.9E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.0E-01
				PCB-1254	2.1E+01	mg/kg	1.2E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.3E-06	4.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-01
				PCB-1260	1.2E-01	mg/kg	6.4E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.3E-08	2.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-03
				HEPTACHLOR	8.8E-02	mg/kg	4.8E-09	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	2.2E-08	1.7E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	3.4E-05
				P,P'-DDE	7.4E-01	mg/kg	4.0E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.4E-08	1.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	5.5E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.9E-08	1.9E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	3.8E-04
			Exposure Route Total								9.4E-06						5.6E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Dermal	ALUMINUM	7.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.5E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	2.2E+01	mg/kg	1.5E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	2.3E-07	5.4E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.8E-03
				BARIUM	9.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	7.9E+00	mg/kg	1.8E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.4E-09	mg/kg-day	1.0E-03	mg/kg-day	Kidney	6.4E-06
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	7.7E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.3E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	9.9E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA
				MERCURY	2.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	3.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA

TABLE 7.6c-RME Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				VANADIUM	2.0E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	1.5E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.1E-07	5.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	1.4E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.0E-06	4.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	1.7E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.3E-07	6.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	7.1E-08	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	5.2E-09	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	1.5E-07	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	1.1E-09	5.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	1.8E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.3E-07	6.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	6.9E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.0E-08	2.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	1.0E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.0E-06	3.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-01
				PCB-1254	2.1E+01	mg/kg	6.8E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.4E-06	2.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-01
				PCB-1260	1.2E-01	mg/kg	3.8E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	7.6E-09	1.3E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.6E-04
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	6.9E-09	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	2.4E-09	2.4E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	4.9E-05
			Exposure Route Total								5.0E-06						3.0E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Inhalation	ALUMINUM	7.1E+03	mg/kg	3.8E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-07	mg/m^3	5.0E-03	mg/m^3	CNS	2.7E-05
				ANTIMONY	2.5E+01	mg/kg	1.3E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	2.2E+01	mg/kg	1.2E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	5.1E-10	4.1E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.8E-05
				BARIUM	9.2E+02	mg/kg	4.9E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-08	mg/m^3	5.0E-04	mg/m^3	Development	3.4E-05
				CADMIUM	7.9E+00	mg/kg	4.3E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	7.7E-11	1.5E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	1.5E-05
				COBALT	1.3E+01	mg/kg	6.9E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	6.2E-10	2.4E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.0E-05
				COPPER	7.7E+02	mg/kg	4.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.3E+04	mg/kg	2.9E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	9.9E+02	mg/kg	5.3E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-08	mg/m^3	5.0E-05	mg/m^3	CNS	3.7E-04
				MERCURY	2.4E+00	mg/kg	5.0E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-06	mg/m^3	3.0E-04	mg/m^3	CNS	5.8E-03
				SILVER	3.3E+01	mg/kg	1.8E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.0E+01	mg/kg	1.1E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.7E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	3.7E-06
				ZINC	1.1E+03	mg/kg	6.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	8.4E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	9.2E-10	2.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.4E-08	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	2.7E-11	8.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	3.1E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.4E-12	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.3E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.4E-12	4.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.9E+00	mg/kg	2.6E-08	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	2.9E-13	9.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	3.3E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	3.9E-12	1.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.2E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.3E-12	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.1E+01	mg/kg	3.6E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.1E-07	1.3E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	2.1E+01	mg/kg	1.8E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.0E-07	6.4E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.6c-RME Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				PCB-1260	1.2E-01	mg/kg	6.5E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.7E-10	2.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	1.3E-06	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	1.7E-09	4.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	2.6E-06	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	2.5E-10	9.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	5.4E-09	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	5.2E-13	1.9E-11	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								3.1E-07						6.3E-03
		Exposure Point Total									1.5E-05						8.7E-01
	Exposure Medium Total										1.5E-05						8.7E-01
Medium Total for Adult											1.5E-05						8.7E-01
Total of Receptor Risks Across All Media											1.5E-05	Total of Receptor Hazards Across All Media					8.7E-01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.2.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.0.E-02
Total Development HI Across All Media =	3.4.E-05
Total GI Tract HI Across All Media =	1.8.E-02
Total Immune HI Across All Media =	7.9.E-01
Total Kidney HI Across All Media =	2.4.E-03
Total Liver HI Across All Media =	4.7.E-04
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	4.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.8.E-05
Total Respiratory HI Across All Media =	3.7.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.0.E-02
Total Thyroid HI Across All Media =	8.2.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.6c-CTE Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Ingestion	ALUMINUM	7.1E+03	mg/kg	3.9E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.8E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	6.8E-04
				ANTIMONY	2.5E+01	mg/kg	1.3E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.4E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	5.9E-03
				ARSENIC	2.2E+01	mg/kg	7.2E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.1E-07	1.3E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.2E-03
				BARIUM	9.2E+02	mg/kg	5.0E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	8.8E-05	mg/kg-day	2.0E-01	mg/kg-day	Kidney	4.4E-04
				CADMIUM	7.9E+00	mg/kg	4.4E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.6E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	7.6E-04
				COBALT	1.3E+01	mg/kg	7.0E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	4.1E-03
				COPPER	7.7E+02	mg/kg	4.2E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.4E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.9E-03
				IRON	5.3E+04	mg/kg	2.9E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.1E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	7.3E-03
				MANGANESE	9.9E+02	mg/kg	5.4E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	9.5E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.9E-03
				MERCURY	2.4E+00	mg/kg	1.3E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.3E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	2.3E-03
				SILVER	3.3E+01	mg/kg	1.8E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.2E-06	mg/kg-day	5.0E-03	mg/kg-day	Skin	6.4E-04
				VANADIUM	2.0E+01	mg/kg	1.1E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	3.7E-04
				ZINC	1.1E+03	mg/kg	6.3E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.1E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	3.7E-04
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	2.8E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.0E-08	4.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.5E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.8E-07	4.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	3.2E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.3E-08	5.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.3E-08	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	9.4E-10	2.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	2.7E-08	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	2.0E-10	4.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	3.3E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	2.4E-08	5.8E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.3E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	9.1E-09	2.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	1.7E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.4E-07	3.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-01
				PCB-1254	2.1E+01	mg/kg	1.2E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.3E-07	2.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.0E-01
				PCB-1260	1.2E-01	mg/kg	6.4E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.3E-09	1.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.6E-04
				HEPTACHLOR	8.8E-02	mg/kg	4.8E-10	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	2.2E-09	8.4E-09	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.7E-05
				P,P'-DDE	7.4E-01	mg/kg	4.0E-09	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.4E-09	7.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	5.5E-09	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.9E-09	9.6E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.9E-04
			Exposure Route Total								9.4E-07						2.8E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Dermal	ALUMINUM	7.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.5E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	2.2E+01	mg/kg	1.5E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	2.3E-08	2.7E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	8.9E-04
				BARIUM	9.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	7.9E+00	mg/kg	1.8E-10	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.2E-09	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.2E-06
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	7.7E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.3E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	9.9E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA
				MERCURY	2.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	3.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA

TABLE 7.6c-CTE Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				VANADIUM	2.0E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	1.5E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.1E-08	2.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	1.4E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.0E-07	2.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	1.7E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.3E-08	3.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	7.1E-09	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	5.2E-10	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	1.5E-08	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	1.1E-10	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	1.8E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.3E-08	3.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	6.9E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.0E-09	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	1.0E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.0E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.7E-02
				PCB-1254	2.1E+01	mg/kg	6.8E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.4E-07	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.0E-02
				PCB-1260	1.2E-01	mg/kg	3.8E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	7.6E-10	6.6E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.3E-04
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	6.9E-10	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	2.4E-10	1.2E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.4E-05
			Exposure Route Total								5.0E-07						1.5E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Inhalation	ALUMINUM	7.1E+03	mg/kg	3.8E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.7E-08	mg/m^3	5.0E-03	mg/m^3	CNS	1.3E-05
				ANTIMONY	2.5E+01	mg/kg	1.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	2.2E+01	mg/kg	1.2E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	5.1E-11	2.1E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.4E-05
				BARIUM	9.2E+02	mg/kg	4.9E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.6E-09	mg/m^3	5.0E-04	mg/m^3	Development	1.7E-05
				CADMIUM	7.9E+00	mg/kg	4.3E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	7.7E-12	7.5E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	7.5E-06
				COBALT	1.3E+01	mg/kg	6.9E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	6.2E-11	1.2E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	2.0E-05
				COPPER	7.7E+02	mg/kg	4.2E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.3E+04	mg/kg	2.9E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	9.9E+02	mg/kg	5.3E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.3E-09	mg/m^3	5.0E-05	mg/m^3	CNS	1.9E-04
				MERCURY	2.4E+00	mg/kg	5.0E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.7E-07	mg/m^3	3.0E-04	mg/m^3	CNS	2.9E-03
				SILVER	3.3E+01	mg/kg	1.8E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.0E+01	mg/kg	1.1E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.8E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	1.8E-06
				ZINC	1.1E+03	mg/kg	6.2E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	8.4E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	9.2E-11	1.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.4E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	2.7E-12	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	3.1E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.4E-13	5.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.3E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.4E-13	2.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.9E+00	mg/kg	2.6E-09	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	2.9E-14	4.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	3.3E-10	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	3.9E-13	5.7E-12	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.2E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.3E-13	2.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.1E+01	mg/kg	3.6E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.1E-08	6.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	2.1E+01	mg/kg	1.8E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.0E-08	3.2E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.6c-CTE Recreational User (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				PCB-1260	1.2E-01	mg/kg	6.5E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.7E-11	1.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	1.3E-07	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	1.7E-10	2.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	2.6E-07	µg/m^3	9.7E-05	(µg/m^3)$^{-1}$	2.5E-11	4.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	5.4E-10	µg/m^3	9.7E-05	(µg/m^3)$^{-1}$	5.2E-14	9.4E-12	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								3.1E-08						3.2E-03
		Exposure Point Total									1.5E-06						4.3E-01
	Exposure Medium Total										1.5E-06						4.3E-01
Medium Total for Adult											1.5E-06						4.3E-01
Total of Receptor Risks Across All Media											1.5E-06	Total of Receptor Hazards Across All Media					4.3E-01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	5.9.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.0.E-02
Total Development HI Across All Media =	1.7.E-05
Total GI Tract HI Across All Media =	9.2.E-03
Total Immune HI Across All Media =	4.0.E-01
Total Kidney HI Across All Media =	1.2.E-03
Total Liver HI Across All Media =	2.3.E-04
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	2.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.4.E-05
Total Respiratory HI Across All Media =	1.8.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	5.1.E-03
Total Thyroid HI Across All Media =	4.1.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.7a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Ingestion	ALUMINUM	7.1E+03	mg/kg	2.0E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.5E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	5.5E-03
				ANTIMONY	2.5E+01	mg/kg	6.7E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.7E-02
				ARSENIC	2.2E+01	mg/kg	3.6E-06	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	5.5E-06	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.4E-02
				BARIUM	9.2E+02	mg/kg	2.5E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.1E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	3.5E-03
				CADMIUM	7.9E+00	mg/kg	2.2E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.1E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	6.1E-03
				COBALT	1.3E+01	mg/kg	3.5E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	9.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.3E-02
				COPPER	7.7E+02	mg/kg	2.1E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.0E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.5E-02
				IRON	5.3E+04	mg/kg	1.5E-02	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.1E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	5.9E-02
				MANGANESE	9.9E+02	mg/kg	2.7E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.6E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.2E-02
				MERCURY	2.4E+00	mg/kg	6.5E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.8E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.8E-02
				SILVER	3.3E+01	mg/kg	9.1E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.6E-05	mg/kg-day	5.0E-03	mg/kg-day	Skin	5.1E-03
				VANADIUM	2.0E+01	mg/kg	5.4E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.5E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	3.0E-03
				ZINC	1.1E+03	mg/kg	3.2E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	8.8E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	2.9E-03
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	1.4E-06	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.0E-06	3.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	1.3E-06	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	9.2E-06	3.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	1.6E-06	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.2E-06	4.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	6.5E-07	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	4.7E-08	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	1.3E-06	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	9.8E-09	3.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	1.7E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.2E-06	4.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	6.3E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	4.6E-07	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	8.5E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.7E-05	2.4E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E+00
				PCB-1254	2.1E+01	mg/kg	5.8E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.2E-05	1.6E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.1E-01
				PCB-1260	1.2E-01	mg/kg	3.2E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	6.4E-08	9.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.5E-03
				HEPTACHLOR	8.8E-02	mg/kg	2.4E-08	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	1.1E-07	6.8E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.4E-04
				P,P'-DDE	7.4E-01	mg/kg	2.0E-07	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	6.9E-08	5.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	2.7E-07	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	9.3E-08	7.7E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.5E-03
			Exposure Route Total								4.7E-05						2.3E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Dermal	ALUMINUM	7.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.5E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	2.2E+01	mg/kg	7.7E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.2E-06	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	7.2E-03
				BARIUM	9.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	7.9E+00	mg/kg	9.2E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.6E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	2.6E-05
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	7.7E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.3E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	9.9E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA
				MERCURY	2.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	3.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA

TABLE 7.7a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				VANADIUM	2.0E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	7.7E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.6E-07	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	6.9E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	5.0E-06	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	8.8E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	6.4E-07	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	3.6E-07	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	2.6E-08	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	7.4E-07	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	5.4E-09	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	9.2E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	6.7E-07	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	3.5E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.5E-07	9.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	5.0E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.0E-05	1.4E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.0E-01
				PCB-1254	2.1E+01	mg/kg	3.4E-06	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	6.9E-06	9.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.8E-01
				PCB-1260	1.2E-01	mg/kg	1.9E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.8E-08	5.3E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.7E-03
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	3.5E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.2E-08	9.8E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.0E-04
			Exposure Route Total								2.5E-05						1.2E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Inhalation	ALUMINUM	7.1E+03	mg/kg	3.8E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-06	mg/m^3	5.0E-03	mg/m^3	CNS	2.1E-04
				ANTIMONY	2.5E+01	mg/kg	1.3E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	2.2E+01	mg/kg	1.2E-06	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	5.1E-09	3.3E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.2E-04
				BARIUM	9.2E+02	mg/kg	4.9E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.4E-07	mg/m^3	5.0E-04	mg/m^3	Development	2.8E-04
				CADMIUM	7.9E+00	mg/kg	4.3E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	7.7E-10	1.2E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	1.2E-04
				COBALT	1.3E+01	mg/kg	6.9E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	6.2E-09	1.9E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	3.2E-04
				COPPER	7.7E+02	mg/kg	4.2E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.3E+04	mg/kg	2.9E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.1E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	9.9E+02	mg/kg	5.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-07	mg/m^3	5.0E-05	mg/m^3	CNS	3.0E-03
				MERCURY	2.4E+00	mg/kg	5.0E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.4E-05	mg/m^3	3.0E-04	mg/m^3	CNS	4.7E-02
				SILVER	3.3E+01	mg/kg	1.8E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.0E+01	mg/kg	1.1E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.0E-09	mg/m^3	1.0E-04	mg/m^3	Respiratory	3.0E-05
				ZINC	1.1E+03	mg/kg	6.2E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	8.4E-05	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	9.3E-09	2.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	2.5E-07	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	2.7E-10	6.9E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	3.1E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.4E-11	8.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	1.3E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.4E-11	3.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.9E+00	mg/kg	2.6E-07	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	2.9E-12	7.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	3.3E-08	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	3.9E-11	9.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	1.2E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.4E-11	3.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.1E+01	mg/kg	3.6E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.1E-06	1.0E-05	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	2.1E+01	mg/kg	1.8E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.0E-06	5.1E-06	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.7a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				PCB-1260	1.2E-01	mg/kg	6.6E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.7E-09	1.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	1.3E-05	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	1.7E-08	3.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	2.6E-05	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	2.5E-09	7.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	5.4E-08	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	5.2E-12	1.5E-10	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								3.2E-06						5.1E-02
		Exposure Point Total									7.6E-05						3.5E+00
	Exposure Medium Total										7.6E-05						3.5E+00
Medium Total for Adult											7.6E-05						3.5E+00
Total of Receptor Risks Across All Media											7.6E-05	Total of Receptor Hazards Across All Media					3.5E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	4.7.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.1.E-01
Total Development HI Across All Media =	2.8.E-04
Total GI Tract HI Across All Media =	7.4.E-02
Total Immune HI Across All Media =	3.2.E+00
Total Kidney HI Across All Media =	9.8.E-03
Total Liver HI Across All Media =	1.9.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	3.2.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.2.E-04
Total Respiratory HI Across All Media =	3.0.E-05
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	4.1.E-02
Total Thyroid HI Across All Media =	3.3.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.7a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Ingestion	ALUMINUM	7.1E+03	mg/kg	1.6E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.5E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	5.5E-03
				ANTIMONY	2.5E+01	mg/kg	5.4E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.7E-02
				ARSENIC	2.2E+01	mg/kg	2.9E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	4.4E-07	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.4E-02
				BARIUM	9.2E+02	mg/kg	2.0E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.1E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	3.5E-03
				CADMIUM	7.9E+00	mg/kg	1.8E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.1E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	6.1E-03
				COBALT	1.3E+01	mg/kg	2.8E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	9.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.3E-02
				COPPER	7.7E+02	mg/kg	1.7E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.0E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.5E-02
				IRON	5.3E+04	mg/kg	1.2E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.1E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	5.9E-02
				MANGANESE	9.9E+02	mg/kg	2.2E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.6E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.2E-02
				MERCURY	2.4E+00	mg/kg	5.2E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.8E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.8E-02
				SILVER	3.3E+01	mg/kg	7.3E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.6E-05	mg/kg-day	5.0E-03	mg/kg-day	Skin	5.1E-03
				VANADIUM	2.0E+01	mg/kg	4.3E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.5E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	3.0E-03
				ZINC	1.1E+03	mg/kg	2.5E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	8.8E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	2.9E-03
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	8.2E-08	3.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	1.0E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	7.4E-07	3.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	1.3E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	9.3E-08	4.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	5.2E-08	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	3.8E-09	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	7.9E-10	3.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	1.3E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	9.8E-08	4.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	5.0E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	3.7E-08	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	6.8E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.4E-06	2.4E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E+00
				PCB-1254	2.1E+01	mg/kg	4.7E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	9.3E-07	1.6E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.1E-01
				PCB-1260	1.2E-01	mg/kg	2.6E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	5.2E-09	9.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.5E-03
				HEPTACHLOR	8.8E-02	mg/kg	1.9E-09	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	8.7E-09	6.8E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.4E-04
				P,P'-DDE	7.4E-01	mg/kg	1.6E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	5.5E-09	5.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	2.2E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	7.5E-09	7.7E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.5E-03
			Exposure Route Total								3.8E-06						2.3E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Dermal	ALUMINUM	7.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	2.5E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	2.2E+01	mg/kg	1.2E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.9E-07	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.6E-03
				BARIUM	9.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	7.9E+00	mg/kg	1.5E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.3E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.3E-05
				COBALT	1.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	7.7E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.3E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	9.9E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA
				MERCURY	2.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	3.3E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA

TABLE 7.7a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				VANADIUM	2.0E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	9.0E-08	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	1.1E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	8.1E-07	9.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	1.4E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.0E-07	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	5.7E-08	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	4.2E-09	5.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.9E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	8.7E-10	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	1.5E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.1E-07	1.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	5.6E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	4.1E-08	4.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.1E+01	mg/kg	8.1E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.6E-06	7.1E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.5E-01
				PCB-1254	2.1E+01	mg/kg	5.5E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.1E-06	4.8E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.4E-01
				PCB-1260	1.2E-01	mg/kg	3.1E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	6.1E-09	2.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-03
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	5.6E-09	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.9E-09	4.9E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	9.8E-05
			Exposure Route Total								4.1E-06						6.0E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	Inhalation	ALUMINUM	7.1E+03	mg/kg	1.5E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-07	mg/m^3	5.0E-03	mg/m^3	CNS	2.7E-05
				ANTIMONY	2.5E+01	mg/kg	5.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	2.2E+01	mg/kg	4.8E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.1E-10	4.2E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.8E-05
				BARIUM	9.2E+02	mg/kg	2.0E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-08	mg/m^3	5.0E-04	mg/m^3	Development	3.5E-05
				CADMIUM	7.9E+00	mg/kg	1.7E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	3.1E-11	1.5E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	1.5E-05
				COBALT	1.3E+01	mg/kg	2.8E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	2.5E-10	2.4E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.0E-05
				COPPER	7.7E+02	mg/kg	1.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.3E+04	mg/kg	1.2E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	9.9E+02	mg/kg	2.1E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-08	mg/m^3	5.0E-05	mg/m^3	CNS	3.7E-04
				MERCURY	2.4E+00	mg/kg	2.0E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.8E-06	mg/m^3	3.0E-04	mg/m^3	CNS	5.8E-03
				SILVER	3.3E+01	mg/kg	7.2E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	2.0E+01	mg/kg	4.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.7E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	3.7E-06
				ZINC	1.1E+03	mg/kg	2.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.1E+00	mg/kg	3.4E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.7E-10	3.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.6E+00	mg/kg	9.9E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.1E-11	8.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.8E+00	mg/kg	1.3E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.4E-12	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.4E+00	mg/kg	5.1E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	5.6E-13	4.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.9E+00	mg/kg	1.1E-08	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	1.2E-13	9.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	6.1E-01	mg/kg	1.3E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	1.6E-12	1.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.3E+00	mg/kg	4.9E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	5.4E-13	4.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.1E+01	mg/kg	1.5E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	8.3E-08	1.3E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	2.1E+01	mg/kg	7.4E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.2E-08	6.4E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.7a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				PCB-1260	1.2E-01	mg/kg	2.6E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.5E-10	2.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	5.4E-07	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	7.0E-10	4.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	1.0E-06	µg/m^3	9.7E-05	(µg/m^3)$^{-1}$	1.0E-10	9.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	2.2E-09	µg/m^3	9.7E-05	(µg/m^3)$^{-1}$	2.1E-13	1.9E-11	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.3E-07						6.4E-03
		Exposure Point Total									8.0E-06						2.9E+00
	Exposure Medium Total										8.0E-06						2.9E+00
Medium Total for Adult											8.0E-06						2.9E+00
Total of Receptor Risks Across All Media											8.0E-06	Total of Receptor Hazards Across All Media					2.9E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	4.7.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	6.2.E-02
Total Development HI Across All Media =	3.5.E-05
Total GI Tract HI Across All Media =	7.4.E-02
Total Immune HI Across All Media =	2.6.E+00
Total Kidney HI Across All Media =	9.7.E-03
Total Liver HI Across All Media =	1.8.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	4.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.8.E-05
Total Respiratory HI Across All Media =	3.7.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.8.E-02
Total Thyroid HI Across All Media =	3.3.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.8a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Upson Park	Ingestion	ALUMINUM	6.4E+03	mg/kg	2.6E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.8E-02	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.8E-02
				ANTIMONY	1.9E+01	mg/kg	7.7E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.4E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.4E-01
				ARSENIC	1.8E+01	mg/kg	4.4E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	6.7E-07	3.1E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.0E-01
				BARIUM	8.8E+02	mg/kg	3.5E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.5E-03	mg/kg-day	2.0E-01	mg/kg-day	Kidney	1.2E-02
				CADMIUM	8.4E+00	mg/kg	3.4E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.4E-05	mg/kg-day	1.0E-03	mg/kg-day	Kidney	2.4E-02
				COBALT	1.1E+01	mg/kg	4.6E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.2E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.1E-01
				COPPER	6.8E+02	mg/kg	2.7E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	4.8E-02
				IRON	5.7E+04	mg/kg	2.3E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.6E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	2.3E-01
				MANGANESE	1.1E+03	mg/kg	4.5E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.2E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.3E-01
				MERCURY	3.4E+00	mg/kg	1.4E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	9.7E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	9.7E-02
				SILVER	2.2E+01	mg/kg	8.8E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.2E-05	mg/kg-day	5.0E-03	mg/kg-day	Skin	1.2E-02
				VANADIUM	1.7E+01	mg/kg	7.0E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.9E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	9.7E-03
				ZINC	1.0E+03	mg/kg	4.0E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.8E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	9.4E-03
				BENZO(A)ANTHRACENE	4.9E+00	mg/kg	2.0E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.4E-07	1.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.4E+00	mg/kg	1.8E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.3E-06	1.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.6E+00	mg/kg	2.3E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.7E-07	1.6E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.3E+00	mg/kg	9.2E-08	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	6.7E-09	6.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.8E+00	mg/kg	1.9E-07	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	1.4E-09	1.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	5.9E-01	mg/kg	2.4E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.7E-07	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.2E+00	mg/kg	9.0E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	6.5E-08	6.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	1.9E+01	mg/kg	7.5E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.5E-06	5.3E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.6E+00
				PCB-1254	1.3E+01	mg/kg	5.2E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.0E-06	3.6E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.8E+00
				PCB-1260	1.3E+01	mg/kg	5.4E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.1E-06	3.8E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E+00
				PCB-1268	2.4E+00	mg/kg	9.6E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.9E-07	6.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.4E-01
				HEPTACHLOR	8.8E-02	mg/kg	3.5E-09	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	1.6E-08	2.5E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	5.0E-04
				P,P'-DDE	7.4E-01	mg/kg	3.0E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.0E-08	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	4.0E-08	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.4E-08	2.8E-06	mg/kg-day	5.0E-04	mg/kg-day	Liver	5.6E-03
			Exposure Route Total								6.4E-06						7.6E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Upson Park	Dermal	ALUMINUM	6.4E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.9E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	1.8E+01	mg/kg	2.8E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	4.3E-08	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.6E-03
				BARIUM	8.8E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	8.4E+00	mg/kg	4.4E-10	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.0E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.0E-05
				COBALT	1.1E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	6.8E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.7E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA

TABLE 7.8a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				MERCURY	3.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	2.2E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA
				VANADIUM	1.7E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.0E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	4.9E+00	mg/kg	3.3E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.4E-08	2.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.4E+00	mg/kg	3.0E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	2.2E-07	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.6E+00	mg/kg	3.8E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.8E-08	2.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.3E+00	mg/kg	1.5E-08	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	1.1E-09	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.8E+00	mg/kg	3.2E-08	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	2.3E-10	2.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	5.9E-01	mg/kg	4.0E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	2.9E-08	2.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.2E+00	mg/kg	1.5E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.1E-08	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	1.9E+01	mg/kg	1.4E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.7E-07	9.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.7E-01
				PCB-1254	1.3E+01	mg/kg	9.4E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.9E-07	6.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.3E-01
				PCB-1260	1.3E+01	mg/kg	9.8E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.0E-07	6.8E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.4E-01
				PCB-1268	2.4E+00	mg/kg	1.7E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.5E-08	1.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.0E-02
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	1.6E-09	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	5.3E-10	1.1E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.2E-04
			Exposure Route Total								1.0E-06						1.2E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Upson Park	Inhalation	ALUMINUM	6.4E+03	mg/kg	1.5E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-06	mg/m^3	5.0E-03	mg/m^3	CNS	2.2E-04
				ANTIMONY	1.9E+01	mg/kg	4.6E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.8E+01	mg/kg	4.4E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.9E-10	3.1E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.1E-04
				BARIUM	8.8E+02	mg/kg	2.1E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-07	mg/m^3	5.0E-04	mg/m^3	Development	3.0E-04
				CADMIUM	8.4E+00	mg/kg	2.0E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	3.6E-11	1.4E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	1.4E-04
				COBALT	1.1E+01	mg/kg	2.7E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	2.4E-10	1.9E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	3.2E-04
				COPPER	6.8E+02	mg/kg	1.6E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.7E+04	mg/kg	1.4E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.1E+03	mg/kg	2.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-07	mg/m^3	5.0E-05	mg/m^3	CNS	3.8E-03
				MERCURY	3.4E+00	mg/kg	3.2E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.3E-05	mg/m^3	3.0E-04	mg/m^3	CNS	7.5E-02
				SILVER	2.2E+01	mg/kg	5.2E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	1.7E+01	mg/kg	4.1E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.9E-09	mg/m^3	1.0E-04	mg/m^3	Respiratory	2.9E-05
				ZINC	1.0E+03	mg/kg	2.4E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	4.9E+00	mg/kg	3.6E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	4.0E-10	2.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.4E+00	mg/kg	1.1E-08	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.2E-11	7.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.6E+00	mg/kg	1.3E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.5E-12	9.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.3E+00	mg/kg	5.5E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	6.0E-13	3.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.8E+00	mg/kg	1.1E-08	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	1.3E-13	8.0E-10	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.8a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				DIBENZ(A,H)ANTHRACENE	5.9E-01	mg/kg	1.4E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	1.7E-12	9.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.2E+00	mg/kg	5.3E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	5.9E-13	3.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.9E+01	mg/kg	9.7E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.6E-08	6.8E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.3E+01	mg/kg	5.0E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.9E-08	3.5E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.3E+01	mg/kg	3.4E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.9E-08	2.4E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1268	2.4E+00	mg/kg	5.7E-09	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	NA	4.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	6.0E-07	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	7.8E-10	4.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	1.1E-06	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	1.1E-10	8.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	2.4E-09	$\mu g/m^3$	9.7E-05	$(\mu g/m^3)^{-1}$	2.3E-13	1.7E-10	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.1E-07						8.0E-02
		Exposure Point Total									7.5E-06						8.9E+00
	Exposure Medium Total										7.5E-06						8.9E+00
Medium Total for Adult											7.5E-06						8.9E+00
Total of Receptor Risks Across All Media											7.5E-06	Total of Receptor Hazards Across All Media					8.9E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.4.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.3.E-01
Total Development HI Across All Media =	3.0.E-04
Total GI Tract HI Across All Media =	2.8.E-01
Total Immune HI Across All Media =	7.9.E+00
Total Kidney HI Across All Media =	3.6.E-02
Total Liver HI Across All Media =	6.4.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	3.2.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.1.E-04
Total Respiratory HI Across All Media =	2.9.E-05
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.1.E-01
Total Thyroid HI Across All Media =	1.1.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.8a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Upson Park	Ingestion	ALUMINUM	6.4E+03	mg/kg	6.2E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.4E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	4.4E-03
				ANTIMONY	1.9E+01	mg/kg	1.9E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.3E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.3E-02
				ARSENIC	1.8E+01	mg/kg	1.1E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.6E-07	7.5E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.5E-02
				BARIUM	8.8E+02	mg/kg	8.5E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.0E-04	mg/kg-day	2.0E-01	mg/kg-day	Kidney	3.0E-03
				CADMIUM	8.4E+00	mg/kg	8.1E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.7E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	5.7E-03
				COBALT	1.1E+01	mg/kg	1.1E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.7E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.6E-02
				COPPER	6.8E+02	mg/kg	6.6E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.6E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.2E-02
				IRON	5.7E+04	mg/kg	5.6E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.9E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	5.6E-02
				MANGANESE	1.1E+03	mg/kg	1.1E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.6E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.2E-02
				MERCURY	3.4E+00	mg/kg	3.3E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.3E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	2.3E-02
				SILVER	2.2E+01	mg/kg	2.1E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.5E-05	mg/kg-day	5.0E-03	mg/kg-day	Skin	3.0E-03
				VANADIUM	1.7E+01	mg/kg	1.7E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	2.3E-03
				ZINC	1.0E+03	mg/kg	9.7E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.8E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	2.3E-03
				BENZO(A)ANTHRACENE	4.9E+00	mg/kg	4.8E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	3.5E-08	3.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.4E+00	mg/kg	4.3E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	3.1E-07	3.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.6E+00	mg/kg	5.4E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	4.0E-08	3.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.3E+00	mg/kg	2.2E-08	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	1.6E-09	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.8E+00	mg/kg	4.6E-08	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	3.4E-10	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	5.9E-01	mg/kg	5.7E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	4.2E-08	4.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.2E+00	mg/kg	2.1E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.6E-08	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	1.9E+01	mg/kg	1.8E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.6E-07	1.3E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.3E-01
				PCB-1254	1.3E+01	mg/kg	1.3E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.5E-07	8.8E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.4E-01
				PCB-1260	1.3E+01	mg/kg	1.3E-07	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.6E-07	9.1E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.6E-01
				PCB-1268	2.4E+00	mg/kg	2.3E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.6E-08	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.1E-02
				HEPTACHLOR	8.8E-02	mg/kg	8.5E-10	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	3.8E-09	5.9E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.2E-04
				P,P'-DDE	7.4E-01	mg/kg	7.1E-09	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	2.4E-09	5.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	9.7E-09	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	3.3E-09	6.8E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.4E-03
			Exposure Route Total								1.5E-06						1.8E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Soils (0 to 10 Feet)	Dermal	ALUMINUM	6.4E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.9E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-04	mg/kg-day	Blood	NA
				ARSENIC	1.8E+01	mg/kg	6.8E-09	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.0E-08	4.8E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.6E-03
				BARIUM	8.8E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.0E-01	mg/kg-day	Kidney	NA
				CADMIUM	8.4E+00	mg/kg	1.0E-10	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.3E-09	mg/kg-day	1.0E-03	mg/kg-day	Kidney	7.3E-06
				COBALT	1.1E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	6.8E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	5.7E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	1.1E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	2.4E-02	mg/kg-day	CNS	NA

TABLE 7.8a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				MERCURY	3.4E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				SILVER	2.2E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	Skin	NA
				VANADIUM	1.7E+01	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-03	mg/kg-day	NA	NA
				ZINC	1.0E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	4.9E+00	mg/kg	7.9E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.8E-09	5.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.4E+00	mg/kg	7.2E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	5.2E-08	5.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	5.6E+00	mg/kg	9.1E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	6.6E-09	6.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.3E+00	mg/kg	3.7E-09	mg/kg-day	7.3E-02	$mg/kg\text{-}day^{-1}$	2.7E-10	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	4.8E+00	mg/kg	7.7E-09	mg/kg-day	7.3E-03	$mg/kg\text{-}day^{-1}$	5.6E-11	5.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	5.9E-01	mg/kg	9.6E-10	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	7.0E-09	6.7E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.2E+00	mg/kg	3.6E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.6E-09	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	1.9E+01	mg/kg	3.2E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	6.5E-08	2.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-01
				PCB-1254	1.3E+01	mg/kg	2.2E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.5E-08	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.9E-02
				PCB-1260	1.3E+01	mg/kg	2.3E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.7E-08	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.2E-02
				PCB-1268	2.4E+00	mg/kg	4.1E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	8.3E-09	2.9E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-02
				HEPTACHLOR	8.8E-02	mg/kg	NA	mg/kg-day	4.5E+00	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				P,P'-DDE	7.4E-01	mg/kg	NA	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	NA	mg/kg-day	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	3.7E-10	mg/kg-day	3.4E-01	$mg/kg\text{-}day^{-1}$	1.3E-10	2.6E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	5.2E-05
			Exposure Route Total								2.5E-07						2.9E-01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Soils (0 to 10 Feet)	Inhalation	ALUMINUM	6.4E+03	mg/kg	3.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.6E-07	mg/m^3	5.0E-03	mg/m^3	CNS	5.2E-05
				ANTIMONY	1.9E+01	mg/kg	1.1E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.8E+01	mg/kg	1.1E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	4.5E-11	7.4E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	4.9E-05
				BARIUM	8.8E+02	mg/kg	5.1E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.5E-08	mg/m^3	5.0E-04	mg/m^3	Development	7.1E-05
				CADMIUM	8.4E+00	mg/kg	4.8E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	8.7E-12	3.4E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	3.4E-05
				COBALT	1.1E+01	mg/kg	6.5E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	5.9E-11	4.6E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	7.6E-05
				COPPER	6.8E+02	mg/kg	3.9E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	5.7E+04	mg/kg	3.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.3E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	1.1E+03	mg/kg	6.4E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.5E-08	mg/m^3	5.0E-05	mg/m^3	CNS	9.0E-04
				MERCURY	3.4E+00	mg/kg	7.8E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.4E-06	mg/m^3	3.0E-04	mg/m^3	CNS	1.8E-02
				SILVER	2.2E+01	mg/kg	1.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				VANADIUM	1.7E+01	mg/kg	9.9E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.9E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	6.9E-06
				ZINC	1.0E+03	mg/kg	5.8E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	4.9E+00	mg/kg	8.7E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	9.6E-11	6.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.4E+00	mg/kg	2.6E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	2.8E-12	1.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	5.6E+00	mg/kg	3.2E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.6E-13	2.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.3E+00	mg/kg	1.3E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.4E-13	9.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	4.8E+00	mg/kg	2.7E-09	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	3.0E-14	1.9E-10	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.8a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				DIBENZ(A,H)ANTHRACENE	5.9E-01	mg/kg	3.4E-10	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	4.1E-13	2.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.2E+00	mg/kg	1.3E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	1.4E-13	8.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.9E+01	mg/kg	2.3E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.3E-08	1.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.3E+01	mg/kg	1.2E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	6.8E-09	8.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.3E+01	mg/kg	8.1E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	4.6E-09	5.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1268	2.4E+00	mg/kg	1.4E-09	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	7.8E-13	9.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	8.8E-02	mg/kg	1.4E-07	µg/m^3	1.3E-03	(µg/m^3)$^{-1}$	1.9E-10	1.0E-08	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDE	7.4E-01	mg/kg	2.8E-07	µg/m^3	9.7E-05	(µg/m^3)$^{-1}$	2.7E-11	1.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				P,P'-DDT	1.0E+00	mg/kg	5.7E-10	µg/m^3	9.7E-05	(µg/m^3)$^{-1}$	5.6E-14	4.0E-11	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.5E-08						1.9E-02
		Exposure Point Total									1.8E-06						2.1E+00
	Exposure Medium Total										1.8E-06						2.1E+00
Medium Total for Adult											1.8E-06						2.1E+00

Total of Receptor Risks Across All Media	1.8E-06	Total of Receptor Hazards Across All Media	2.1E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	3.3.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	7.8.E-02
Total Development HI Across All Media =	7.1.E-05
Total GI Tract HI Across All Media =	6.7.E-02
Total Immune HI Across All Media =	1.9.E+00
Total Kidney HI Across All Media =	8.7.E-03
Total Liver HI Across All Media =	1.5.E-03
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	7.6.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	4.9.E-05
Total Respiratory HI Across All Media =	6.9.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.6.E-02
Total Thyroid HI Across All Media =	2.6.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.9a-RME Visitor/Trespasser (Young Child)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	4.9E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.7E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	5.7E-03
				ANTIMONY	1.8E+00	mg/kg	1.6E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.7E-03
				ARSENIC	1.2E+01	mg/kg	6.3E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	9.5E-07	7.4E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.5E-02
				CADMIUM	3.7E+00	mg/kg	3.2E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.7E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.7E-03
				COBALT	6.6E+00	mg/kg	5.8E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.3E-02
				IRON	3.5E+04	mg/kg	3.1E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.6E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	5.1E-02
				MANGANESE	6.2E+02	mg/kg	5.5E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.4E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.7E-02
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	4.6E-08	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.8E-07	5.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	3.7E-08	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	1.5E-06	4.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	7.6E-08	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	3.0E-07	8.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	8.9E-09	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	3.4E-07	1.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	2.2E-08	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	8.5E-08	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	3.5E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	6.9E-09	4.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-03
				PCB-1260	1.6E-01	mg/kg	1.4E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.8E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.1E-03
			Exposure Route Total								3.3E-06						1.5E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	7.5E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.1E-07	8.8E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.9E-03
				CADMIUM	3.7E+00	mg/kg	7.6E-10	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	8.9E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	3.6E-04
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	1.4E-08	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	5.5E-08	1.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	1.2E-08	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	4.5E-07	1.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	2.3E-08	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	9.1E-08	2.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	2.7E-09	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	1.1E-07	3.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	6.7E-09	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	2.6E-08	7.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.2E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.3E-09	1.3E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.7E-04
				PCB-1260	1.6E-01	mg/kg	4.6E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	9.2E-09	5.4E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.7E-03
			Exposure Route Total								8.5E-07						6.6E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	4.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.3E-08	mg/m^3	5.0E-03	mg/m^3	CNS	1.1E-05
				ANTIMONY	1.8E+00	mg/kg	1.5E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	9.7E-09	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	4.2E-11	1.1E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	7.5E-06
				CADMIUM	3.7E+00	mg/kg	2.9E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	5.3E-12	3.4E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	3.4E-06
				COBALT	6.6E+00	mg/kg	5.3E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	4.8E-11	6.2E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.0E-05
				IRON	3.5E+04	mg/kg	2.8E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	5.0E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.9E-09	mg/m^3	5.0E-05	mg/m^3	CNS	1.2E-04
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	1.3E-07	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	7.7E-11	1.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	3.4E-10	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	2.0E-12	4.0E-12	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.9a-RME Visitor/Trespasser (Young Child)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	7.0E-10	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	4.1E-13	8.2E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	8.1E-11	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	5.2E-13	9.5E-13	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	2.0E-10	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	1.2E-13	2.3E-12	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	5.2E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.9E-11	6.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	1.3E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	7.6E-11	1.5E-09	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.8E-10						1.5E-04
		Exposure Point Total									4.2E-06						1.6E-01
	Exposure Medium Total										4.2E-06						1.6E-01
Medium Total for Young Child											4.2E-06						1.6E-01
										Total of Receptor Risks Across All Media	4.2E-06					Total of Receptor Hazards Across All Media	1.6E-01

Notes:
CNS = Central Nervous System
CSF = Cancer Slope Factor
EPC = Exposure Point Concentration
HI = Hazard Index
NA = Not Applicable or Not Available
RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).
MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.
RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.
RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	4.7.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.2.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.1.E-02
Total Immune HI Across All Media =	1.3.E-02
Total Kidney HI Across All Media =	4.1.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	1.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	7.5.E-06
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.8.E-02
Total Thyroid HI Across All Media =	2.3.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.9a-CTE Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	8.2E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.4E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.4E-03
				ANTIMONY	1.8E+00	mg/kg	2.7E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.7E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.2E-03
				ARSENIC	1.2E+01	mg/kg	1.1E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.6E-07	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.1E-03
				CADMIUM	3.7E+00	mg/kg	5.3E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	9.4E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	9.4E-04
				COBALT	6.6E+00	mg/kg	9.7E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.7E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	5.6E-03
				IRON	3.5E+04	mg/kg	5.1E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	9.0E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.3E-02
				MANGANESE	6.2E+02	mg/kg	9.1E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.6E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	6.6E-03
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	7.7E-09	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	3.0E-08	1.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	6.2E-09	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	2.4E-07	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.3E-08	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	4.9E-08	2.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.5E-09	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	5.7E-08	2.6E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	3.6E-09	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.4E-08	6.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	5.8E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.2E-09	1.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.1E-04
				PCB-1260	1.6E-01	mg/kg	2.3E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.6E-09	4.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-03
			Exposure Route Total								5.6E-07						3.7E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	2.5E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	3.8E-08	4.4E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.5E-03
				CADMIUM	3.7E+00	mg/kg	2.5E-10	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.4E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.8E-04
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	4.7E-09	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.8E-08	8.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	3.8E-09	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	1.5E-07	6.7E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	7.8E-09	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	3.0E-08	1.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	9.1E-10	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	3.5E-08	1.6E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	2.2E-09	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	8.7E-09	3.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	3.8E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	7.7E-10	6.7E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.4E-04
				PCB-1260	1.6E-01	mg/kg	1.5E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.1E-09	2.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-03
			Exposure Route Total								2.8E-07						3.3E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	7.5E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-08	mg/m^3	5.0E-03	mg/m^3	CNS	2.6E-06
				ANTIMONY	1.8E+00	mg/kg	2.5E-10	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.3E-12	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	1.6E-09	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	6.9E-12	2.8E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.9E-06
				CADMIUM	3.7E+00	mg/kg	4.9E-10	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	8.8E-13	8.6E-12	mg/m^3	1.0E-05	mg/m^3	Kidney	8.6E-07
				COBALT	6.6E+00	mg/kg	8.9E-10	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	8.0E-12	1.6E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	2.6E-06
				IRON	3.5E+04	mg/kg	4.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	8.4E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-09	mg/m^3	5.0E-05	mg/m^3	CNS	2.9E-05
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	2.2E-08	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.3E-11	3.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	5.7E-11	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	3.4E-13	1.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.2E-10	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	6.8E-14	2.0E-12	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.9a-CTE Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.4E-11	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	8.7E-14	2.4E-13	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	3.3E-11	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	2.0E-14	5.9E-13	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	8.6E-09	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.9E-12	1.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	2.2E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.3E-11	3.9E-10	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								4.7E-11						3.7E-05
		Exposure Point Total									8.4E-07						4.1E-02
	Exposure Medium Total										8.4E-07						4.1E-02
Medium Total for Young Child											8.4E-07						4.1E-02
										Total of Receptor Risks Across All Media	8.4E-07					Total of Receptor Hazards Across All Media	4.1E-02

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.2.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	8.1.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.3.E-02
Total Immune HI Across All Media =	4.2.E-03
Total Kidney HI Across All Media =	1.1.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	2.6.E-06
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.9.E-06
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	7.6.E-03
Total Thyroid HI Across All Media =	5.6.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.9b-RME Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	3.1E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.8E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.8E-03
				ANTIMONY	1.8E+00	mg/kg	1.0E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.9E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.5E-03
				ARSENIC	1.2E+01	mg/kg	4.0E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	6.0E-07	2.3E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	7.7E-03
				CADMIUM	3.7E+00	mg/kg	2.0E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.2E-03
				COBALT	6.6E+00	mg/kg	3.7E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	7.1E-03
				IRON	3.5E+04	mg/kg	1.9E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.1E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.6E-02
				MANGANESE	6.2E+02	mg/kg	3.4E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.0E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	8.4E-03
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	2.9E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	5.6E-08	1.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	2.4E-08	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	4.6E-07	1.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	4.8E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	9.3E-08	2.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	5.6E-09	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	1.1E-07	3.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	1.4E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	2.7E-08	8.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	2.2E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.4E-09	1.3E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.4E-04
				PCB-1260	1.6E-01	mg/kg	8.7E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.7E-08	5.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.5E-03
			Exposure Route Total								1.4E-06						4.7E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	2.0E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	3.0E-07	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.0E-03
				CADMIUM	3.7E+00	mg/kg	2.1E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	4.8E-04
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	3.8E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	7.5E-08	2.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	3.1E-08	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	6.1E-07	1.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	6.4E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	1.2E-07	3.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	7.4E-09	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	1.4E-07	4.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	1.8E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	3.6E-08	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	3.1E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	6.2E-09	1.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.1E-04
				PCB-1260	1.6E-01	mg/kg	1.2E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.5E-08	7.3E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.6E-03
			Exposure Route Total								1.3E-06						9.0E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	1.8E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-07	mg/m^3	5.0E-03	mg/m^3	CNS	2.1E-05
				ANTIMONY	1.8E+00	mg/kg	5.9E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	3.9E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.7E-10	2.3E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.5E-05
				CADMIUM	3.7E+00	mg/kg	1.2E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	2.1E-11	6.9E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	6.9E-06
				COBALT	6.6E+00	mg/kg	2.1E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.9E-10	1.2E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	2.1E-05
				IRON	3.5E+04	mg/kg	1.1E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	2.0E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-08	mg/m^3	5.0E-05	mg/m^3	CNS	2.3E-04
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	5.2E-07	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	1.5E-10	3.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	1.4E-09	$\mu g/m^3$	2.9E-03	$(\mu g/m^3)^{-1}$	4.0E-12	8.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	2.8E-09	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	8.2E-13	1.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	3.3E-10	$\mu g/m^3$	3.2E-03	$(\mu g/m^3)^{-1}$	1.0E-12	1.9E-12	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.9b-RME Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	8.0E-10	µg/m^3	2.9E-04	(µg/m^3)$^{-1}$	2.4E-13	4.7E-12	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	2.1E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.2E-10	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	5.3E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.0E-10	3.1E-09	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								9.6E-10						3.0E-04
		Exposure Point Total									2.7E-06						5.6E-02
	Exposure Medium Total										2.7E-06						5.6E-02
Medium Total for Adolescent											2.7E-06						5.6E-02
										Total of Receptor Risks Across All Media	2.7E-06					Total of Receptor Hazards Across All Media	5.6E-02

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.5.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.0.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.6.E-02
Total Immune HI Across All Media =	7.7.E-03
Total Kidney HI Across All Media =	1.7.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	2.1.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.5.E-05
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.2.E-02
Total Thyroid HI Across All Media =	7.1.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.9b-CTE Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	2.6E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.5E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	4.5E-04
				ANTIMONY	1.8E+00	mg/kg	8.4E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.5E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.7E-04
				ARSENIC	1.2E+01	mg/kg	3.3E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	5.0E-08	5.8E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.9E-03
				CADMIUM	3.7E+00	mg/kg	1.7E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.9E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	2.9E-04
				COBALT	6.6E+00	mg/kg	3.0E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.3E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.8E-03
				IRON	3.5E+04	mg/kg	1.6E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.8E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	4.0E-03
				MANGANESE	6.2E+02	mg/kg	2.9E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.0E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.1E-03
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	2.4E-09	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	4.7E-09	4.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	2.0E-09	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	3.8E-08	3.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	4.0E-09	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	7.8E-09	7.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	4.7E-10	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	9.1E-09	8.1E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	1.1E-09	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	2.2E-09	2.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.8E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	3.6E-10	3.2E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-04
				PCB-1260	1.6E-01	mg/kg	7.3E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.5E-09	1.3E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.4E-04
			Exposure Route Total								1.1E-07						1.2E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	3.4E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	5.1E-08	5.9E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.0E-03
				CADMIUM	3.7E+00	mg/kg	3.4E-10	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.0E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.4E-04
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	6.4E-09	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	1.2E-08	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	5.2E-09	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	1.0E-07	9.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.1E-08	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	2.1E-08	1.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.2E-09	mg/kg-day	1.9E+01	$mg/kg\text{-}day^{-1}$	2.4E-08	2.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	3.0E-09	mg/kg-day	1.9E+00	$mg/kg\text{-}day^{-1}$	5.9E-09	5.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	5.2E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.0E-09	9.1E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.6E-04
				PCB-1260	1.6E-01	mg/kg	2.1E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.2E-09	3.6E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.8E-03
			Exp. Route Total								2.2E-07						4.5E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	1.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.6E-08	mg/m^3	5.0E-03	mg/m^3	CNS	5.3E-06
				ANTIMONY	1.8E+00	mg/kg	4.9E-10	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.6E-12	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	3.2E-09	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.4E-11	5.7E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	3.8E-06
				CADMIUM	3.7E+00	mg/kg	9.8E-10	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.8E-12	1.7E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	1.7E-06
				COBALT	6.6E+00	mg/kg	1.8E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.6E-11	3.1E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	5.2E-06
				IRON	3.5E+04	mg/kg	9.4E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	1.7E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.9E-09	mg/m^3	5.0E-05	mg/m^3	CNS	5.9E-05
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	4.4E-08	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	1.3E-11	7.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	1.1E-10	$\mu g/m^3$	2.9E-03	$(\mu g/m^3)^{-1}$	3.4E-13	2.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	2.3E-10	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	6.8E-14	4.1E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	2.7E-11	$\mu g/m^3$	3.2E-03	$(\mu g/m^3)^{-1}$	8.7E-14	4.7E-13	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.9b-CTE Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	6.7E-11	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	2.0E-14	1.2E-12	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.7E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	9.8E-12	3.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	4.4E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.5E-11	7.7E-10	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								8.0E-11						7.5E-05
		Exposure Point Total									3.3E-07						1.6E-02
	Exposure Medium Total										3.3E-07						1.6E-02
Medium Total for Adolescent											3.3E-07						1.6E-02
										Total of Receptor Risks Across All Media	3.3E-07					Total of Receptor Hazards Across All Media	1.6E-02

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	3.7.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.6.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	4.0.E-03
Total Immune HI Across All Media =	3.1.E-03
Total Kidney HI Across All Media =	5.4.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	5.2.E-06
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	3.8.E-06
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.9.E-03
Total Thyroid HI Across All Media =	1.8.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.9c-RME Visitor/Trespasser (Adult)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	1.5E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.4E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	5.4E-04
				ANTIMONY	1.8E+00	mg/kg	5.0E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.8E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.4E-04
				ARSENIC	1.2E+01	mg/kg	2.0E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	3.0E-07	6.9E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.3E-03
				CADMIUM	3.7E+00	mg/kg	1.0E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.5E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.5E-04
				COBALT	6.6E+00	mg/kg	1.8E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.3E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.1E-03
				IRON	3.5E+04	mg/kg	9.6E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.4E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	4.8E-03
				MANGANESE	6.2E+02	mg/kg	1.7E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.0E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.5E-03
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	1.4E-08	mg/kg-day	7E-01	$mg/kg\text{-}day^{-1}$	1.0E-08	5.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	1.2E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	8.5E-08	4.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	2.4E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.7E-08	8.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	2.8E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	2.0E-08	9.7E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	6.8E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.0E-09	2.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.1E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.2E-09	3.8E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-04
				PCB-1260	1.6E-01	mg/kg	4.3E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	8.7E-09	1.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.6E-04
			Exposure Route Total								4.5E-07						1.4E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	4.2E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	6.3E-08	1.5E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.9E-04
				CADMIUM	3.7E+00	mg/kg	4.2E-10	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.5E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.9E-05
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	7.9E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.8E-09	2.8E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	6.4E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	4.7E-08	2.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.3E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	9.5E-09	4.6E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.5E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.1E-08	5.3E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	3.7E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.7E-09	1.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	6.4E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.3E-09	2.2E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-04
				PCB-1260	1.6E-01	mg/kg	2.6E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	5.1E-09	9.0E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.5E-04
			Exposure Route Total								1.4E-07						1.1E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	1.5E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.3E-08	mg/m^3	5.0E-03	mg/m^3	CNS	1.1E-05
				ANTIMONY	1.8E+00	mg/kg	4.9E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	3.2E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.4E-10	1.1E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	7.5E-06
				CADMIUM	3.7E+00	mg/kg	9.8E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.8E-11	3.4E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	3.4E-06
				COBALT	6.6E+00	mg/kg	1.8E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.6E-10	6.2E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.0E-05
				IRON	3.5E+04	mg/kg	9.4E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	1.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.9E-09	mg/m^3	5.0E-05	mg/m^3	CNS	1.2E-04
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	4.4E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	4.8E-11	1.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	1.1E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.3E-12	4.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	2.3E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	2.6E-13	8.2E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	2.7E-10	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	3.3E-13	9.5E-13	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.9c-RME Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	6.7E-10	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	7.4E-14	2.3E-12	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.7E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	9.8E-11	6.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	4.4E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.5E-10	1.5E-09	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								7.2E-10						1.5E-04
		Exposure Point Total									5.9E-07						1.5E-02
	Exposure Medium Total										5.9E-07						1.5E-02
Medium Total for Adult											5.9E-07						1.5E-02
										Total of Receptor Risks Across All Media	5.9E-07					Total of Receptor Hazards Across All Media	1.5E-02

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	4.4.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.2.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	4.8.E-03
Total Immune HI Across All Media =	1.5.E-03
Total Kidney HI Across All Media =	4.1.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	1.0.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	7.5.E-06
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.8.E-03
Total Thyroid HI Across All Media =	2.1.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.9c-CTE Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	7.7E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.3E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.3E-04
				ANTIMONY	1.8E+00	mg/kg	2.5E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.4E-08	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.1E-04
				ARSENIC	1.2E+01	mg/kg	9.9E-09	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.5E-08	1.7E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.8E-04
				CADMIUM	3.7E+00	mg/kg	5.0E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	8.8E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	8.8E-05
				COBALT	6.6E+00	mg/kg	9.1E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.6E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	5.3E-04
				IRON	3.5E+04	mg/kg	4.8E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	8.4E-04	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.2E-03
				MANGANESE	6.2E+02	mg/kg	8.5E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.5E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	6.2E-04
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	7.2E-10	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.2E-10	1.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	5.8E-10	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	4.3E-09	1.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.2E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	8.7E-10	2.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.4E-10	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.0E-09	2.4E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	3.4E-10	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.5E-10	6.0E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	5.4E-11	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.1E-10	9.5E-10	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.7E-05
				PCB-1260	1.6E-01	mg/kg	2.2E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.3E-10	3.8E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-04
			Exposure Route Total								2.2E-08						3.5E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	4.2E-09	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	6.3E-09	7.3E-08	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.4E-04
				CADMIUM	3.7E+00	mg/kg	4.2E-11	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.4E-10	mg/kg-day	2.5E-05	mg/kg-day	Kidney	3.0E-05
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	7.9E-10	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.8E-10	1.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	6.4E-10	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	4.7E-09	1.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.3E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	9.5E-10	2.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.5E-10	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.1E-09	2.7E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	3.7E-10	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.7E-10	6.6E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	6.4E-11	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.3E-10	1.1E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.6E-05
				PCB-1260	1.6E-01	mg/kg	2.6E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	5.1E-10	4.5E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E-04
			Exposure Route Total								1.4E-08						5.5E-04
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	1.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.6E-08	mg/m^3	5.0E-03	mg/m^3	CNS	5.3E-06
				ANTIMONY	1.8E+00	mg/kg	4.9E-10	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.6E-12	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	3.2E-09	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.4E-11	5.7E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	3.8E-06
				CADMIUM	3.7E+00	mg/kg	9.8E-10	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.8E-12	1.7E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	1.7E-06
				COBALT	6.6E+00	mg/kg	1.8E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.6E-11	3.1E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	5.2E-06
				IRON	3.5E+04	mg/kg	9.4E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	1.7E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.9E-09	mg/m^3	5.0E-05	mg/m^3	CNS	5.9E-05
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	4.4E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	4.8E-12	7.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	1.1E-10	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.3E-13	2.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	2.3E-10	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	2.6E-14	4.1E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	2.7E-11	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	3.3E-14	4.7E-13	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.9c-CTE Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	6.7E-11	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	7.4E-15	1.2E-12	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.7E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	9.8E-12	3.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	4.4E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.5E-11	7.7E-10	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								7.2E-11						7.5E-05
		Exposure Point Total									3.7E-08						4.1E-03
	Exposure Medium Total										3.7E-08						4.1E-03
Medium Total for Adult											3.7E-08						4.1E-03
										Total of Receptor Risks Across All Media	3.7E-08					Total of Receptor Hazards Across All Media	4.1E-03

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.1.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	8.2.E-04
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.2.E-03
Total Immune HI Across All Media =	5.2.E-04
Total Kidney HI Across All Media =	1.2.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	5.2.E-06
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	3.8.E-06
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	8.2.E-04
Total Thyroid HI Across All Media =	5.3.E-04
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.10a-RME Indoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	8.5E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.4E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	2.4E-03
				ANTIMONY	1.8E+00	mg/kg	2.8E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.8E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	2.0E-03
				ARSENIC	1.2E+01	mg/kg	1.1E-06	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.7E-06	3.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.0E-02
				CADMIUM	3.7E+00	mg/kg	5.6E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.6E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.6E-03
				COBALT	6.6E+00	mg/kg	1.0E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	9.4E-03
				IRON	3.5E+04	mg/kg	5.4E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.5E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	2.1E-02
				MANGANESE	6.2E+02	mg/kg	9.5E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.7E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.1E-02
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	8.0E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.8E-08	2.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	6.5E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	4.8E-07	1.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.3E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	9.7E-08	3.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.5E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.1E-07	4.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	3.8E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.8E-08	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	6.1E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.2E-08	1.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.5E-04
				PCB-1260	1.6E-01	mg/kg	2.4E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.8E-08	6.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.4E-03
			Exposure Route Total								2.5E-06						6.2E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	4.7E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	7.0E-07	1.3E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.4E-03
				CADMIUM	3.7E+00	mg/kg	4.7E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.3E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.3E-04
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	8.8E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	6.4E-08	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	7.2E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	5.2E-07	2.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.5E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.1E-07	4.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.7E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.2E-07	4.8E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	4.2E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	3.1E-08	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	7.2E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.4E-08	2.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.0E-03
				PCB-1260	1.6E-01	mg/kg	2.9E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	5.7E-08	8.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.0E-03
			Exposure Route Total								1.6E-06						9.9E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	3.3E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.4E-07	mg/m^3	5.0E-03	mg/m^3	CNS	1.9E-04
				ANTIMONY	1.8E+00	mg/kg	1.1E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	7.2E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	3.1E-09	2.0E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.3E-04
				CADMIUM	3.7E+00	mg/kg	2.2E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	3.9E-10	6.1E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	6.1E-05
				COBALT	6.6E+00	mg/kg	4.0E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.6E-09	1.1E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.9E-04
				IRON	3.5E+04	mg/kg	2.1E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.9E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	3.7E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-07	mg/m^3	5.0E-05	mg/m^3	CNS	2.1E-03
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	9.7E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.1E-09	2.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	2.6E-08	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	2.8E-11	7.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	5.2E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	5.7E-12	1.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	6.1E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	7.3E-12	1.7E-11	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.10a-RME Indoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	1.5E-08	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	1.6E-12	4.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	3.8E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.2E-09	1.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	9.8E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	5.6E-09	2.8E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.6E-08						2.7E-03
		Exposure Point Total									4.1E-06						7.5E-02
	Exposure Medium Total										4.1E-06						7.5E-02
Medium Total for Adult											4.1E-06						7.5E-02
										Total of Receptor Risks Across All Media	4.1E-06					Total of Receptor Hazards Across All Media	7.5E-02

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	2.0.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.6.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.1.E-02
Total Immune HI Across All Media =	9.2.E-03
Total Kidney HI Across All Media =	2.2.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	1.9.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.3.E-04
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.5.E-02
Total Thyroid HI Across All Media =	9.4.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.10a-CTE Indoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	7.7E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.0E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	6.0E-04
				ANTIMONY	1.8E+00	mg/kg	2.5E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.0E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.9E-04
				ARSENIC	1.2E+01	mg/kg	9.9E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.5E-07	7.7E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.6E-03
				CADMIUM	3.7E+00	mg/kg	5.0E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.9E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.9E-04
				COBALT	6.6E+00	mg/kg	9.1E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.4E-03
				IRON	3.5E+04	mg/kg	4.8E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.8E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	5.4E-03
				MANGANESE	6.2E+02	mg/kg	8.6E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.7E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.8E-03
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	7.2E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.3E-09	5.6E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	5.9E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	4.3E-08	4.6E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.2E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	8.7E-09	9.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.4E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.0E-08	1.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	3.4E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.5E-09	2.7E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	5.4E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.1E-09	4.2E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.1E-04
				PCB-1260	1.6E-01	mg/kg	2.2E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	4.3E-09	1.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.5E-04
			Exposure Route Total								2.2E-07						1.6E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	8.4E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.3E-07	6.5E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.2E-03
				CADMIUM	3.7E+00	mg/kg	8.5E-10	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.6E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.7E-04
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	1.6E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.2E-08	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	1.3E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	9.4E-08	1.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	2.6E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.9E-08	2.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	3.1E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	2.2E-08	2.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	7.5E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.5E-09	5.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.3E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.6E-09	1.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.0E-04
				PCB-1260	1.6E-01	mg/kg	5.2E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.0E-08	4.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-03
			Exposure Route Total								2.9E-07						4.9E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	6.0E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.7E-07	mg/m^3	5.0E-03	mg/m^3	CNS	9.4E-05
				ANTIMONY	1.8E+00	mg/kg	2.0E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	1.3E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	5.6E-10	1.0E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	6.7E-05
				CADMIUM	3.7E+00	mg/kg	3.9E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	7.1E-11	3.1E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	3.1E-05
				COBALT	6.6E+00	mg/kg	7.1E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	6.4E-10	5.6E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	9.3E-05
				IRON	3.5E+04	mg/kg	3.8E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	6.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.2E-08	mg/m^3	5.0E-05	mg/m^3	CNS	1.0E-03
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	1.7E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.9E-10	1.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	4.6E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	5.1E-12	3.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	9.4E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.0E-12	7.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.1E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	1.3E-12	8.5E-12	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.10a-CTE Indoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	2.7E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	3.0E-13	2.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	6.9E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.9E-10	5.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	1.8E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.0E-09	1.4E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.9E-09						1.3E-03
		Exposure Point Total									5.2E-07						2.2E-02
	Exposure Medium Total										5.2E-07						2.2E-02
Medium Total for Adult											5.2E-07						2.2E-02
										Total of Receptor Risks Across All Media	5.2E-07					Total of Receptor Hazards Across All Media	2.2E-02

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	4.9.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	4.5.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.4.E-03
Total Immune HI Across All Media =	3.6.E-03
Total Kidney HI Across All Media =	6.9.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	9.3.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	6.7.E-05
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	4.8.E-03
Total Thyroid HI Across All Media =	2.4.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.11a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	1.5E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.3E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	4.3E-03
				ANTIMONY	1.8E+00	mg/kg	5.0E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.4E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.5E-03
				ARSENIC	1.2E+01	mg/kg	2.0E-06	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	3.0E-06	5.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.9E-02
				CADMIUM	3.7E+00	mg/kg	1.0E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.8E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	2.8E-03
				COBALT	6.6E+00	mg/kg	1.8E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.7E-02
				IRON	3.5E+04	mg/kg	9.7E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.7E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	3.9E-02
				MANGANESE	6.2E+02	mg/kg	1.7E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.8E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.0E-02
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	1.4E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.1E-07	4.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	1.2E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	8.6E-07	3.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	2.4E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.7E-07	6.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	2.8E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	2.0E-07	7.8E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	6.9E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.0E-08	1.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.1E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.2E-08	3.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-03
				PCB-1260	1.6E-01	mg/kg	4.3E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	8.7E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.1E-03
			Exposure Route Total								4.5E-06						1.1E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	4.2E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	6.3E-07	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.9E-03
				CADMIUM	3.7E+00	mg/kg	4.3E-09	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	4.8E-04
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	7.9E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	5.8E-08	2.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	6.5E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	4.7E-07	1.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.3E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	9.6E-08	3.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	1.5E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.1E-07	4.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	3.8E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.8E-08	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	6.5E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.3E-08	1.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.0E-04
				PCB-1260	1.6E-01	mg/kg	2.6E-08	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	5.2E-08	7.2E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.6E-03
			Exposure Route Total								1.5E-06						8.9E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	3.0E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.4E-07	mg/m^3	5.0E-03	mg/m^3	CNS	1.7E-04
				ANTIMONY	1.8E+00	mg/kg	9.9E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	6.5E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.8E-09	1.8E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.2E-04
				CADMIUM	3.7E+00	mg/kg	2.0E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	3.6E-10	5.5E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	5.5E-05
				COBALT	6.6E+00	mg/kg	3.6E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.2E-09	1.0E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.7E-04
				IRON	3.5E+04	mg/kg	1.9E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.3E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	3.4E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.4E-08	mg/m^3	5.0E-05	mg/m^3	CNS	1.9E-03
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	8.7E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	9.6E-10	2.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	2.3E-08	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	2.5E-11	6.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	4.7E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	5.1E-12	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	5.4E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	6.5E-12	1.5E-11	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.11a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	1.3E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.5E-12	3.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	3.4E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.0E-09	9.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	8.9E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.1E-09	2.5E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.4E-08						2.4E-03
		Exposure Point Total									5.9E-06						1.2E-01
	Exposure Medium Total										5.9E-06						1.2E-01
Medium Total for Adult											5.9E-06						1.2E-01
										Total of Receptor Risks Across All Media	5.9E-06					Total of Receptor Hazards Across All Media	1.2E-01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	3.5.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.6.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	3.9.E-02
Total Immune HI Across All Media =	1.2.E-02
Total Kidney HI Across All Media =	3.4.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	1.7.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.2.E-04
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.2.E-02
Total Thyroid HI Across All Media =	1.7.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.11a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Ingestion	ALUMINUM	5.6E+03	mg/kg	1.2E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.1E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.1E-03
				ANTIMONY	1.8E+00	mg/kg	4.0E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.5E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	8.8E-04
				ARSENIC	1.2E+01	mg/kg	1.6E-07	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	2.4E-07	1.4E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.7E-03
				CADMIUM	3.7E+00	mg/kg	8.1E-08	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.1E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	7.1E-04
				COBALT	6.6E+00	mg/kg	1.5E-07	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.3E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	4.3E-03
				IRON	3.5E+04	mg/kg	7.8E-04	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.8E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	9.7E-03
				MANGANESE	6.2E+02	mg/kg	1.4E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	5.0E-03
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	1.2E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	8.5E-09	1.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	9.4E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	6.9E-08	8.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.9E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.4E-08	1.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	2.2E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.6E-08	2.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	5.5E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	4.0E-09	4.8E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	8.8E-10	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	1.8E-09	7.7E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.8E-04
				PCB-1260	1.6E-01	mg/kg	3.5E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	7.0E-09	3.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-03
			Exposure Route Total								3.6E-07						2.8E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Dermal	ALUMINUM	5.6E+03	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.8E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.2E+01	mg/kg	6.7E-08	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	1.0E-07	5.9E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.0E-03
				CADMIUM	3.7E+00	mg/kg	6.9E-10	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	6.0E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.4E-04
				COBALT	6.6E+00	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				IRON	3.5E+04	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	6.2E+02	mg/kg	NA	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	1.3E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	9.3E-09	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	1.0E-08	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	7.6E-08	9.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	2.1E-08	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.5E-08	1.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	2.5E-09	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.8E-08	2.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	6.1E-09	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	4.4E-09	5.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.0E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	2.1E-09	9.1E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.5E-04
				PCB-1260	1.6E-01	mg/kg	4.1E-09	mg/kg-day	2.0E+00	$mg/kg\text{-}day^{-1}$	8.3E-09	3.6E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.8E-03
			Exposure Route Total								2.3E-07						4.5E-03
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	Inhalation	ALUMINUM	5.6E+03	mg/kg	1.2E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-07	mg/m^3	5.0E-03	mg/m^3	CNS	2.1E-05
				ANTIMONY	1.8E+00	mg/kg	4.0E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.2E+01	mg/kg	2.6E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.1E-10	2.3E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.5E-05
				CADMIUM	3.7E+00	mg/kg	7.9E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.4E-11	6.9E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	6.9E-06
				COBALT	6.6E+00	mg/kg	1.4E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.3E-10	1.3E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	2.1E-05
				IRON	3.5E+04	mg/kg	7.6E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	6.2E+02	mg/kg	1.4E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-08	mg/m^3	5.0E-05	mg/m^3	CNS	2.4E-04
				BENZO(A)ANTHRACENE	5.2E-01	mg/kg	3.5E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.9E-11	3.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.3E-01	mg/kg	9.2E-10	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.0E-12	8.1E-12	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	8.7E-01	mg/kg	1.9E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	2.1E-13	1.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	1.0E-01	mg/kg	2.2E-10	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	2.6E-13	1.9E-12	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.11a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	2.5E-01	mg/kg	5.4E-10	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	5.9E-14	4.7E-12	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	4.0E-02	mg/kg	1.4E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	7.9E-11	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.6E-01	mg/kg	3.6E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.0E-10	3.1E-09	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								5.8E-10						3.0E-04
		Exposure Point Total									5.9E-07						3.3E-02
	Exposure Medium Total										5.9E-07						3.3E-02
Medium Total for Adult											5.9E-07						3.3E-02
										Total of Receptor Risks Across All Media	5.9E-07					Total of Receptor Hazards Across All Media	3.3E-02

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	8.8.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	6.4.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	9.7.E-03
Total Immune HI Across All Media =	4.2.E-03
Total Kidney HI Across All Media =	9.5.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	2.1.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.5.E-05
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	6.6.E-03
Total Thyroid HI Across All Media =	4.3.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.12a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Ingestion	ALUMINUM	5.5E+03	mg/kg	2.2E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-02	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.6E-02
				ANTIMONY	1.9E+00	mg/kg	7.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.3E-02
				ARSENIC	1.1E+01	mg/kg	2.6E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-07	1.8E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.0E-02
				CADMIUM	4.1E+00	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-05	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.2E-02
				COBALT	6.5E+00	mg/kg	2.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	6.2E-02
				COPPER	9.2E+01	mg/kg	3.7E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.6E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	6.5E-03
				IRON	2.6E+04	mg/kg	1.1E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.5E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.1E-01
				MANGANESE	8.1E+02	mg/kg	3.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-3}$	NA	2.3E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	9.6E-02
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	1.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-08	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	1.5E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	2.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-08	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	3.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-08	2.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	8.6E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.3E-09	6.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	1.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-08	9.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.7E-02
				PCB-1254	5.0E-01	mg/kg	2.0E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.0E-08	1.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.0E-02
				PCB-1260	1.1E-01	mg/kg	4.6E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-09	3.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-02
			Exposure Route Total								6.3E-07						5.0E-01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Dermal	ALUMINUM	5.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.1E+01	mg/kg	1.6E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-08	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.8E-03
				CADMIUM	4.1E+00	mg/kg	2.1E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.9E-04
				COBALT	6.5E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	9.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	2.6E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	2.8E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.1E-09	2.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	2.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-08	1.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	4.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.3E-09	3.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	5.6E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.1E-09	3.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	1.4E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.0E-09	1.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	2.4E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.8E-09	1.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.4E-03
				PCB-1254	5.0E-01	mg/kg	3.6E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.2E-09	2.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-02
				PCB-1260	1.1E-01	mg/kg	8.2E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-09	5.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.9E-03
			Exposure Route Total								6.7E-08						2.8E-02
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Inhalation	ALUMINUM	5.5E+03	mg/kg	1.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.2E-07	mg/m^3	5.0E-03	mg/m^3	CNS	1.8E-04
				ANTIMONY	1.9E+00	mg/kg	4.5E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.1E+01	mg/kg	2.5E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.1E-10	1.8E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.2E-04
				CADMIUM	4.1E+00	mg/kg	9.8E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.8E-11	6.9E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	6.9E-05
				COBALT	6.5E+00	mg/kg	1.6E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.4E-10	1.1E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.8E-04
				COPPER	9.2E+01	mg/kg	2.2E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	2.6E+04	mg/kg	6.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.4E-06	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.12a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				MANGANESE	8.1E+02	mg/kg	1.9E-06	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.4E-07	mg/m^3	5.0E-05	mg/m^3	CNS	2.7E-03
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	3.1E-07	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	3.5E-11	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	8.7E-10	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	9.5E-13	6.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	1.6E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	1.8E-13	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	2.0E-10	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	2.4E-13	1.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	5.1E-10	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	5.6E-14	3.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E-01	mg/kg	1.7E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	9.8E-10	1.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	5.0E-01	mg/kg	1.9E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.1E-09	1.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.1E-01	mg/kg	2.8E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.6E-10	2.0E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.5E-09						3.3E-03
		Exposure Point Total									7.0E-07						5.3E-01
	Exposure Medium Total										7.0E-07						5.3E-01
Medium Total for Adult											7.0E-07						5.3E-01
										Total of Receptor Risks Across All Media	7.0E-07					Total of Receptor Hazards Across All Media	5.3E-01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.3.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.1.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.1.E-01
Total Immune HI Across All Media =	1.6.E-01
Total Kidney HI Across All Media =	1.2.E-02
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	1.8.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.2.E-04
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	6.4.E-02
Total Thyroid HI Across All Media =	6.2.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.12a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations						
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Ingestion	ALUMINUM	5.5E+03	mg/kg	5.3E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.7E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	3.7E-03
				ANTIMONY	1.9E+00	mg/kg	1.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.2E-03
				ARSENIC	1.1E+01	mg/kg	6.2E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.2E-08	4.3E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.4E-02
				CADMIUM	4.1E+00	mg/kg	4.0E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	2.8E-03
				COBALT	6.5E+00	mg/kg	6.3E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.4E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.5E-02
				COPPER	9.2E+01	mg/kg	8.9E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.2E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.6E-03
				IRON	2.6E+04	mg/kg	2.6E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	2.6E-02
				MANGANESE	8.1E+02	mg/kg	7.9E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.5E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.3E-02
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	4.1E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.0E-09	2.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	3.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-08	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	6.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.8E-09	4.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	8.1E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-09	5.7E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	2.1E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-09	1.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	3.2E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.4E-09	2.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-02
				PCB-1254	5.0E-01	mg/kg	4.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-09	3.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-02
				PCB-1260	1.1E-01	mg/kg	1.1E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-09	7.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.8E-03
			Exposure Route Total								1.5E-07						1.2E-01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Dermal	ALUMINUM	5.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.1E+01	mg/kg	4.0E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-09	2.8E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	9.2E-04
				CADMIUM	4.1E+00	mg/kg	5.1E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.6E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.4E-04
				COBALT	6.5E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	9.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	2.6E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	6.8E-10	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.0E-10	4.8E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	5.8E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-09	4.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	1.1E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.0E-10	7.6E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	1.4E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	9.9E-10	9.5E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	3.4E-10	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.5E-10	2.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	5.7E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-09	4.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-03
				PCB-1254	5.0E-01	mg/kg	8.6E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-09	6.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.0E-03
				PCB-1260	1.1E-01	mg/kg	2.0E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-10	1.4E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.9E-04
			Exposure Route Total								1.6E-08						6.8E-03
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Inhalation	ALUMINUM	5.5E+03	mg/kg	3.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.2E-07	mg/m^3	5.0E-03	mg/m^3	CNS	4.4E-05
				ANTIMONY	1.9E+00	mg/kg	1.1E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.1E+01	mg/kg	6.1E-09	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.6E-11	4.3E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.8E-05
				CADMIUM	4.1E+00	mg/kg	2.4E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	4.2E-12	1.6E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	1.6E-05
				COBALT	6.5E+00	mg/kg	3.8E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.4E-11	2.6E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.4E-05
				COPPER	9.2E+01	mg/kg	5.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	2.6E+04	mg/kg	1.5E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-06	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.12a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				MANGANESE	8.1E+02	mg/kg	4.7E-07	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	3.3E-08	mg/m^3	5.0E-05	mg/m^3	CNS	6.5E-04
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	7.5E-08	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	8.3E-12	5.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	2.1E-10	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	2.3E-13	1.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	3.9E-10	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	4.3E-14	2.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	4.8E-11	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	5.8E-14	3.4E-12	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	1.2E-10	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	1.3E-14	8.6E-12	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E-01	mg/kg	4.1E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.4E-10	2.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	5.0E-01	mg/kg	4.6E-07	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.6E-10	3.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.1E-01	mg/kg	6.8E-08	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	3.9E-11	4.7E-09	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								6.1E-10						7.9E-04
		Exposure Point Total									1.7E-07						1.3E-01
	Exposure Medium Total										1.7E-07						1.3E-01
Medium Total for Adult											1.7E-07						1.3E-01
Total of Receptor Risks Across All Media											1.7E-07	Total of Receptor Hazards Across All Media					1.3E-01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	3.2.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.7.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.7.E-02
Total Immune HI Across All Media =	3.8.E-02
Total Kidney HI Across All Media =	2.9.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	4.4.E-05
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.8.E-05
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.5.E-02
Total Thyroid HI Across All Media =	1.5.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.13a-RME Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Ingestion	ALUMINUM	5.5E+03	mg/kg	6.0E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.0E-02	mg/kg-day	1.0E+00	mg/kg-day	CNS	7.0E-02
				ANTIMONY	1.9E+00	mg/kg	2.1E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.4E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	6.0E-02
				ARSENIC	1.1E+01	mg/kg	7.0E-06	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.0E-05	8.1E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.7E-01
				CADMIUM	4.1E+00	mg/kg	4.5E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.2E-05	mg/kg-day	1.0E-03	mg/kg-day	Kidney	5.2E-02
				COBALT	6.5E+00	mg/kg	7.2E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.4E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.8E-01
				COPPER	9.2E+01	mg/kg	1.0E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.2E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	2.9E-02
				IRON	2.6E+04	mg/kg	2.9E-02	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.4E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	4.8E-01
				MANGANESE	8.1E+02	mg/kg	8.9E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.0E-02	mg/kg-day	2.4E-02	mg/kg-day	CNS	4.3E-01
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	4.6E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	1.8E-06	5.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	4.0E-07	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	1.5E-05	4.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	7.4E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	2.9E-06	8.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	9.2E-08	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	3.6E-06	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	2.3E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	9.1E-07	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	3.6E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.2E-07	4.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.1E-01
				PCB-1254	5.0E-01	mg/kg	5.4E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.1E-06	6.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.2E-01
				PCB-1260	1.1E-01	mg/kg	1.2E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.5E-07	1.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.2E-02
			Exposure Route Total								3.7E-05						2.3E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Dermal	ALUMINUM	5.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.1E+01	mg/kg	8.3E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.2E-06	9.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.2E-02
				CADMIUM	4.1E+00	mg/kg	1.1E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.2E-07	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.0E-03
				COBALT	6.5E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	9.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	2.6E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	1.4E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	5.6E-07	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	1.2E-07	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	4.8E-06	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	2.3E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	8.9E-07	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	2.8E-08	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	1.1E-06	3.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	7.2E-08	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	2.8E-07	8.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	1.2E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.4E-07	1.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.0E-02
				PCB-1254	5.0E-01	mg/kg	1.8E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	3.6E-07	2.1E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-01
				PCB-1260	1.1E-01	mg/kg	4.1E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	8.2E-08	4.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.4E-02
			Exposure Route Total								9.5E-06						2.4E-01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Inhalation	ALUMINUM	5.5E+03	mg/kg	3.3E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.9E-06	mg/m^3	5.0E-03	mg/m^3	CNS	7.8E-04
				ANTIMONY	1.9E+00	mg/kg	1.1E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.1E+01	mg/kg	6.4E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.8E-09	7.5E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	5.0E-04
				CADMIUM	4.1E+00	mg/kg	2.5E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	4.5E-10	2.9E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	2.9E-04
				COBALT	6.5E+00	mg/kg	4.0E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.6E-09	4.6E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	7.7E-04
				COPPER	9.2E+01	mg/kg	5.6E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	2.6E+04	mg/kg	1.6E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-05	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.13a-RME Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				MANGANESE	8.1E+02	mg/kg	4.9E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.7E-07	mg/m^3	5.0E-05	mg/m^3	CNS	1.1E-02
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	7.9E-06	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	4.6E-09	9.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	2.2E-08	µg/m^3	5.9E-03	(µg/m^3)$^{-1}$	1.3E-10	2.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	4.1E-08	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	2.4E-11	4.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	5.1E-09	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	3.2E-11	5.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	1.3E-08	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	7.6E-12	1.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E-01	mg/kg	4.3E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.5E-08	5.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	5.0E-01	mg/kg	4.8E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.8E-08	5.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.1E-01	mg/kg	7.1E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	4.1E-09	8.3E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								6.8E-08						1.4E-02
		Exposure Point Total									4.7E-05						2.5E+00
	Exposure Medium Total										4.7E-05						2.5E+00
Medium Total for Child											4.7E-05						2.5E+00
Groundwater	Tapwater	White Transportation	Ingestion	ANTIMONY	5.2E+00	µg/L	2.2E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	2.6E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	6.5E-01
				ARSENIC	3.3E+00	µg/L	1.4E-05	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	2.1E-05	1.7E-04	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.5E-01
				COBALT	1.4E+00	µg/L	6.2E-06	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	7.2E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.4E-01
				IRON	3.8E+03	µg/L	1.6E-02	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	1.9E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	2.7E-01
				MANGANESE	8.3E+02	µg/L	3.5E-03	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	4.1E-02	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.7E+00
				SELENIUM	8.5E+00	µg/L	3.7E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	4.3E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	8.5E-02
				BENZO(A)ANTHRACENE	2.0E-01	µg/L	8.5E-07	mg/kg-day	3.9E+00	(mg/kg-day)$^{-1}$	3.3E-06	1.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	6.4E-07	mg/kg-day	3.9E+01	(mg/kg-day)$^{-1}$	2.5E-05	7.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	1.2E-06	mg/kg-day	3.9E+00	(mg/kg-day)$^{-1}$	4.5E-06	1.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	1.3E-06	mg/kg-day	3.9E+01	(mg/kg-day)$^{-1}$	5.2E-05	1.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	1.2E-06	mg/kg-day	3.9E+00	(mg/kg-day)$^{-1}$	4.5E-06	1.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	9.2E-03	µg/L	3.9E-08	mg/kg-day	1.6E+01	(mg/kg-day)$^{-1}$	6.3E-07	4.6E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	9.2E-03
				CHLOROFORM	3.3E+00	µg/L	1.4E-05	mg/kg-day	3.1E-02	(mg/kg-day)$^{-1}$	4.4E-07	1.6E-04	mg/kg-day	1.0E-02	mg/kg-day	Liver	1.6E-02
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	3.1E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	3.7E-04	mg/kg-day	2.0E-03	mg/kg-day	Kidney	1.8E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	2.0E-05	mg/kg-day	5.0E-02	(mg/kg-day)$^{-1}$	1.0E-06	2.4E-04	mg/kg-day	5.0E-04	mg/kg-day	Development, Immune, Vascular	4.7E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	2.0E-05	mg/kg-day	3.7E-02	(mg/kg-day)$^{-1}$	7.5E-07	--	mg/kg-day	--	mg/kg-day	--	NA
			Exposure Route Total								1.1E-04						4.2E+00
Groundwater	Tapwater	White Transportation	Inhalation	BENZO(A)ANTHRACENE	2.0E-01	µg/L	2.9E-03	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	1.7E-06	3.4E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	NA	µg/m^3	5.9E-03	(µg/m^3)$^{-1}$	NA	2.5E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	NA	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	NA	4.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	NA	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	NA	5.3E-05	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	NA	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	NA	4.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	9.2E-03	µg/L	NA	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	NA	1.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				CHLOROFORM	3.3E+00	µg/L	4.8E-02	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	1.1E-06	5.6E-04	mg/m^3	9.8E-02	mg/m^3	Liver	5.7E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	1.1E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-03	mg/m^3	NA	mg/m^3	NA	NA
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	6.9E-02	µg/m^3	5.3E-06	(µg/m^3)$^{-1}$	3.7E-07	8.0E-04	mg/m^3	2.0E-03	mg/m^3	Development, Immune, Vascular	4.0E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	6.9E-02	µg/m^3	3.1E-06	(µg/m^3)$^{-1}$	2.1E-07	--	mg/m^3	--	mg/m^3	--	NA

TABLE 7.13a-RME Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								3.4E-06						4.1E-01
		Exposure Point Total									1.2E-04						4.6E+00
	Exposure Medium Total										1.2E-04						4.6E+00
Medium Total for Child											1.2E-04						4.6E+00
											Total of Receptor Risks Across All Media 1.6E-04					Total of Receptor Hazards Across All Media	7.1E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

Trichloroethylene was evaluated for both mutagenic risk to the kidney and non-mutagenic risk to the liver. The total risk for trichloroethylene is summed in Table 9.13a-RME

Inhalation of tapwater was not assessed for risk from metals, PAHs and pesticides that are considered non-volatile or lack a Henry's law constant.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	7.1.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.2.E+00
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	8.7.E-01
Total GI Tract HI Across All Media =	7.8.E-01
Total Immune HI Across All Media =	8.0.E-01
Total Kidney HI Across All Media =	2.4.E-01
Total Liver HI Across All Media =	3.1.E-02
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	7.7.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	5.0.E-04
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	8.6.E-01
Total Thyroid HI Across All Media =	5.2.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	8.5.E-02

TABLE 7.13a-CTE Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Ingestion	ALUMINUM	5.5E+03	mg/kg	7.5E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.8E-02	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.8E-02
				ANTIMONY	1.9E+00	mg/kg	2.6E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.0E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.5E-02
				ARSENIC	1.1E+01	mg/kg	8.7E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.3E-06	2.0E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.8E-02
				CADMIUM	4.1E+00	mg/kg	5.6E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.3E-05	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.3E-02
				COBALT	6.5E+00	mg/kg	9.0E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.1E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	7.0E-02
				COPPER	9.2E+01	mg/kg	1.3E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.9E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	7.3E-03
				IRON	2.6E+04	mg/kg	3.6E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.4E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.2E-01
				MANGANESE	8.1E+02	mg/kg	1.1E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.6E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.1E-01
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	5.8E-08	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	2.3E-07	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	5.0E-08	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	1.9E-06	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	9.3E-08	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	3.6E-07	2.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	1.1E-08	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	4.5E-07	2.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	2.9E-08	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	1.1E-07	6.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	4.5E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	9.0E-08	1.1E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.3E-02
				PCB-1254	5.0E-01	mg/kg	6.8E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.4E-07	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.9E-02
				PCB-1260	1.1E-01	mg/kg	1.5E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	3.1E-08	3.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.8E-02
			Exposure Route Total								4.6E-06						5.7E-01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Dermal	ALUMINUM	5.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.1E+01	mg/kg	4.1E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	6.2E-08	9.6E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.2E-03
				CADMIUM	4.1E+00	mg/kg	5.3E-10	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.2E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.0E-04
				COBALT	6.5E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	9.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	2.6E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	7.2E-09	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	2.8E-08	1.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	6.1E-09	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	2.4E-07	1.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	1.1E-08	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	4.4E-08	2.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	1.4E-09	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	5.5E-08	3.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	3.6E-09	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	1.4E-08	8.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	6.0E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.2E-08	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.0E-03
				PCB-1254	5.0E-01	mg/kg	9.0E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.8E-08	2.1E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-02
				PCB-1260	1.1E-01	mg/kg	2.1E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.1E-09	4.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.4E-03
			Exposure Route Total								4.8E-07						2.4E-02
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Inhalation	ALUMINUM	5.5E+03	mg/kg	8.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-06	mg/m^3	5.0E-03	mg/m^3	CNS	3.9E-04
				ANTIMONY	1.9E+00	mg/kg	2.9E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.1E+01	mg/kg	1.6E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	6.9E-10	3.7E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.5E-04
				CADMIUM	4.1E+00	mg/kg	6.2E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.1E-10	1.4E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	1.4E-04
				COBALT	6.5E+00	mg/kg	9.9E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	8.9E-10	2.3E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	3.8E-04
				COPPER	9.2E+01	mg/kg	1.4E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	2.6E+04	mg/kg	4.0E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.3E-06	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.13a-CTE Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				MANGANESE	8.1E+02	mg/kg	1.2E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.9E-07	mg/m^3	5.0E-05	mg/m^3	CNS	5.7E-03
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	2.0E-06	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	1.2E-09	4.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	5.5E-09	µg/m^3	5.9E-03	(µg/m^3)$^{-1}$	3.2E-11	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	1.0E-08	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	6.0E-12	2.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	1.3E-09	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	8.1E-12	3.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	3.2E-09	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	1.9E-12	7.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E-01	mg/kg	1.1E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	6.2E-09	2.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	5.0E-01	mg/kg	1.2E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	6.9E-09	2.8E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.1E-01	mg/kg	1.8E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.0E-09	4.1E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.7E-08						6.9E-03
		Exposure Point Total									5.1E-06						6.0E-01
	Exposure Medium Total										5.1E-06						6.0E-01
Medium Total for Child											5.1E-06						6.0E-01
Groundwater	Tapwater	White Transportation	Ingestion	ANTIMONY	5.2E+00	µg/L	6.9E-06	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	1.2E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.0E-01
				ARSENIC	3.3E+00	µg/L	4.4E-06	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	6.7E-06	7.8E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.6E-01
				COBALT	1.4E+00	µg/L	1.9E-06	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	3.4E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.1E-01
				IRON	3.8E+03	µg/L	5.0E-03	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	8.8E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.3E-01
				MANGANESE	8.3E+02	µg/L	1.1E-03	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	1.9E-02	mg/kg-day	2.4E-02	mg/kg-day	CNS	8.1E-01
				SELENIUM	8.5E+00	µg/L	1.1E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	2.0E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	4.0E-02
				BENZO(A)ANTHRACENE	2.0E-01	µg/L	2.7E-07	mg/kg-day	3.9E+00	(mg/kg-day)$^{-1}$	1.0E-06	4.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	2.0E-07	mg/kg-day	3.9E+01	(mg/kg-day)$^{-1}$	7.8E-06	3.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	3.6E-07	mg/kg-day	3.9E+00	(mg/kg-day)$^{-1}$	1.4E-06	6.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	4.1E-07	mg/kg-day	3.9E+01	(mg/kg-day)$^{-1}$	1.6E-05	7.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	3.6E-07	mg/kg-day	3.9E+00	(mg/kg-day)$^{-1}$	1.4E-06	6.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	9.2E-03	µg/L	1.2E-08	mg/kg-day	1.6E+01	(mg/kg-day)$^{-1}$	2.0E-07	2.1E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	4.3E-03
				CHLOROFORM	3.3E+00	µg/L	4.4E-06	mg/kg-day	3.1E-02	(mg/kg-day)$^{-1}$	1.4E-07	7.7E-05	mg/kg-day	1.0E-02	mg/kg-day	Liver	7.7E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	9.8E-06	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	1.7E-04	mg/kg-day	2.0E-03	mg/kg-day	Kidney	8.6E-02
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	6.3E-06	mg/kg-day	5.0E-02	(mg/kg-day)$^{-1}$	3.1E-07	1.1E-04	mg/kg-day	5.0E-04	mg/kg-day	Development, Immune, Vascular	2.2E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	6.3E-06	mg/kg-day	3.7E-02	(mg/kg-day)$^{-1}$	2.3E-07	--	mg/kg-day	--	mg/kg-day	--	NA
			Exposure Route Total								3.5E-05						2.0E+00
Groundwater	Tapwater	White Transportation	Inhalation	BENZO(A)ANTHRACENE	2.0E-01	µg/L	1.9E-03	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	1.1E-06	3.4E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	NA	µg/m^3	5.9E-03	(µg/m^3)$^{-1}$	NA	2.5E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	NA	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	NA	4.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	NA	µg/m^3	6.4E-03	(µg/m^3)$^{-1}$	NA	5.3E-05	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	NA	µg/m^3	5.9E-04	(µg/m^3)$^{-1}$	NA	4.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	9.2E-03	µg/L	NA	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	NA	1.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				CHLOROFORM	3.3E+00	µg/L	3.2E-02	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	7.4E-07	5.6E-04	mg/m^3	9.8E-02	mg/m^3	Liver	5.7E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	7.1E-02	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.2E-03	mg/m^3	NA	mg/m^3	NA	NA
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	4.6E-02	µg/m^3	5.3E-06	(µg/m^3)$^{-1}$	2.5E-07	8.0E-04	mg/m^3	2.0E-03	mg/m^3	Development, Immune, Vascular	4.0E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	4.6E-02	µg/m^3	3.1E-06	(µg/m^3)$^{-1}$	1.4E-07	--	mg/m^3	--	mg/m^3		NA

TABLE 7.13a-CTE Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								2.3E-06						4.1E-01
		Exposure Point Total									3.8E-05						2.4E+00
	Exposure Medium Total										3.8E-05						2.4E+00
Medium Total for Child											3.8E-05						2.4E+00
											Total of Receptor Risks Across All Media 4.3E-05					Total of Receptor Hazards Across All Media	3.0E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

Trichloroethylene was evaluated for both mutagenic risk to the kidney and non-mutagenic risk to the liver. The total risk for trichloroethylene is summed in Table 9.13a-CTE

Inhalation of tapwater was not assessed for risk from metals, PAHs and pesticides that are considered non-volatile or lack a Henry's law constant.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	3.2.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	9.4.E-01
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	6.2.E-01
Total GI Tract HI Across All Media =	2.5.E-01
Total Immune HI Across All Media =	1.7.E-01
Total Kidney HI Across All Media =	9.9.E-02
Total Liver HI Across All Media =	1.8.E-02
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	3.8.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.5.E-04
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.3.E-01
Total Thyroid HI Across All Media =	1.8.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.0.E-02

TABLE 7.13b-RME Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Ingestion	ALUMINUM	5.5E+03	mg/kg	1.9E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.6E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	6.6E-03
				ANTIMONY	1.9E+00	mg/kg	6.5E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.3E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	5.7E-03
				ARSENIC	1.1E+01	mg/kg	2.2E-06	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	3.3E-06	7.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.5E-02
				CADMIUM	4.1E+00	mg/kg	1.4E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.9E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	4.9E-03
				COBALT	6.5E+00	mg/kg	2.2E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.6E-02
				COPPER	9.2E+01	mg/kg	3.1E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	2.8E-03
				IRON	2.6E+04	mg/kg	9.0E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.2E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	4.5E-02
				MANGANESE	8.1E+02	mg/kg	2.8E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	9.7E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	4.1E-02
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	1.4E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.1E-07	5.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	1.2E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	9.1E-07	4.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	2.3E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.7E-07	8.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	2.9E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	2.1E-07	1.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	7.3E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	5.3E-08	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	1.1E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.3E-07	4.0E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-02
				PCB-1254	5.0E-01	mg/kg	1.7E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	3.4E-07	5.9E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.0E-02
				PCB-1260	1.1E-01	mg/kg	3.9E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.7E-08	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.8E-03
			Exposure Route Total								5.4E-06						2.1E-01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Dermal	ALUMINUM	5.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.1E+01	mg/kg	4.6E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	6.9E-07	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.4E-03
				CADMIUM	4.1E+00	mg/kg	5.9E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.1E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	8.3E-04
				COBALT	6.5E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	9.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	2.6E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	8.0E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	5.8E-08	2.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	6.8E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	5.0E-07	2.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	1.3E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	9.3E-08	4.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	1.6E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.1E-07	5.5E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	4.0E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	2.9E-08	1.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	6.7E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.3E-07	2.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.2E-02
				PCB-1254	5.0E-01	mg/kg	1.0E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.0E-07	3.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.8E-02
				PCB-1260	1.1E-01	mg/kg	2.3E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.6E-08	8.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.0E-03
			Exposure Route Total								1.9E-06						3.9E-02
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Inhalation	ALUMINUM	5.5E+03	mg/kg	1.1E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.9E-06	mg/m^3	5.0E-03	mg/m^3	CNS	7.8E-04
				ANTIMONY	1.9E+00	mg/kg	3.8E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.1E+01	mg/kg	2.1E-06	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	9.2E-09	7.5E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	5.0E-04
				CADMIUM	4.1E+00	mg/kg	8.2E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.5E-09	2.9E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	2.9E-04
				COBALT	6.5E+00	mg/kg	1.3E-06	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.2E-08	4.6E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	7.7E-04
				COPPER	9.2E+01	mg/kg	1.9E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	2.6E+04	mg/kg	5.3E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-05	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.13b-RME Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				MANGANESE	8.1E+02	mg/kg	1.6E-04	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	5.7E-07	mg/m^3	5.0E-05	mg/m^3	CNS	1.1E-02
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	2.6E-05	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.9E-09	9.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	7.3E-08	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	8.0E-11	2.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	1.4E-07	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	1.5E-11	4.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	1.7E-08	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	2.0E-11	5.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	4.3E-08	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	4.7E-12	1.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E-01	mg/kg	1.4E-04	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	8.3E-08	5.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	5.0E-01	mg/kg	1.6E-04	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	9.2E-08	5.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.1E-01	mg/kg	2.4E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.4E-08	8.3E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.1E-07						1.4E-02
		Exposure Point Total									7.4E-06						2.7E-01
	Exposure Medium Total										7.4E-06						2.7E-01
Medium Total for Adult											7.4E-06						2.7E-01
Groundwater	Tapwater	White Transportation	Ingestion	ANTIMONY	5.2E+00	µg/L	4.5E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	1.6E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.9E-01
				ARSENIC	3.3E+00	µg/L	2.8E-05	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	4.3E-05	1.0E-04	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.3E-01
				COBALT	1.4E+00	µg/L	1.2E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	4.3E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.4E-01
				IRON	3.8E+03	µg/L	3.2E-02	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	1.1E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.6E-01
				MANGANESE	8.3E+02	µg/L	7.1E-03	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	2.5E-02	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.0E+00
				SELENIUM	8.5E+00	µg/L	7.3E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	2.6E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	5.1E-02
				BENZO(A)ANTHRACENE	2.0E-01	µg/L	1.7E-06	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.3E-06	6.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	1.3E-06	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	9.4E-06	4.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	2.3E-06	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.7E-06	8.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	2.7E-06	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.9E-05	9.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	2.3E-06	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	1.7E-06	8.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	9.2E-03	µg/L	7.9E-08	mg/kg-day	1.6E+01	(mg/kg-day)$^{-1}$	1.3E-06	2.8E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	5.5E-03
				CHLOROFORM	3.3E+00	µg/L	2.8E-05	mg/kg-day	3.1E-02	(mg/kg-day)$^{-1}$	8.8E-07	9.9E-05	mg/kg-day	1.0E-02	mg/kg-day	Liver	9.9E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	6.3E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	2.2E-04	mg/kg-day	2.0E-03	mg/kg-day	Kidney	1.1E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	4.1E-05	mg/kg-day	9.3E-03	(mg/kg-day)$^{-1}$	3.8E-07	1.4E-04	mg/kg-day	5.0E-04	mg/kg-day	Development, Immune, Vascular	2.8E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	4.1E-05	mg/kg-day	3.7E-02	(mg/kg-day)$^{-1}$	1.5E-06	--	mg/kg-day	--	mg/kg-day	--	NA
			Exposure Route Total								8.0E-05						2.5E+00
Groundwater	Tapwater	White Transportation	Inhalation	BENZO(A)ANTHRACENE	2.0E-01	µg/L	1.6E-02	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	1.8E-06	5.7E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	NA	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	NA	4.3E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	NA	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	NA	7.7E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	NA	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	NA	8.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	NA	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	NA	7.7E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	9.2E-03	µg/L	NA	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	NA	2.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				CHLOROFORM	3.3E+00	µg/L	2.7E-01	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	6.2E-06	9.5E-04	mg/m^3	9.8E-02	mg/m^3	Liver	9.7E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	6.0E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.1E-03	mg/m^3	NA	mg/m^3	NA	NA
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	3.9E-01	µg/m^3	1.0E-06	(µg/m^3)$^{-1}$	3.9E-07	1.4E-03	mg/m^3	2.0E-03	mg/m^3	Development, Immune, Vascular	6.8E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	3.9E-01	µg/m^3	3.1E-06	(µg/m^3)$^{-1}$	1.2E-06	--	mg/m^3	--	mg/m^3	--	NA

TABLE 7.13b-RME Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								9.6E-06						6.9E-01
		Exposure Point Total									9.0E-05						3.2E+00
	Exposure Medium Total										9.0E-05						3.2E+00
Medium Total for Adult											9.0E-05						3.2E+00
Total of Receptor Risks Across All Media											9.7E-05	Total of Receptor Hazards Across All Media					3.5E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

Trichloroethylene was evaluated for both mutagenic risk to the kidney and non-mutagenic risk to the liver. The total risk for trichloroethylene is summed in Table 9.13b-RME

Inhalation of tapwater was not assessed for risk from metals, PAHs and pesticides that are considered non-volatile or lack a Henry's law constant.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	4.0.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.1.E+00
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	9.6.E-01
Total GI Tract HI Across All Media =	2.1.E-01
Total Immune HI Across All Media =	9.0.E-02
Total Kidney HI Across All Media =	1.2.E-01
Total Liver HI Across All Media =	2.5.E-02
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	7.7.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	5.0.E-04
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.6.E-01
Total Thyroid HI Across All Media =	1.7.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	5.1.E-02

TABLE 7.13b-CTE Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Ingestion	ALUMINUM	5.5E+03	mg/kg	1.4E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.7E-03
				ANTIMONY	1.9E+00	mg/kg	4.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.4E-03
				ARSENIC	1.1E+01	mg/kg	1.6E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-07	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.4E-03
				CADMIUM	4.1E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.2E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.2E-03
				COBALT	6.5E+00	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	6.5E-03
				COPPER	9.2E+01	mg/kg	2.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	6.9E-04
				IRON	2.6E+04	mg/kg	6.8E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.9E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.1E-02
				MANGANESE	8.1E+02	mg/kg	2.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.0E-02
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	1.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.9E-09	1.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	9.3E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.8E-08	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	1.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.3E-08	2.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	2.2E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-08	2.5E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	5.5E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.0E-09	6.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	8.5E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-08	9.9E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.9E-03
				PCB-1254	5.0E-01	mg/kg	1.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-08	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.4E-03
				PCB-1260	1.1E-01	mg/kg	2.9E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.8E-09	3.4E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-03
			Exposure Route Total								4.0E-07						5.3E-02
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Dermal	ALUMINUM	5.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.9E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.1E+01	mg/kg	9.9E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-08	1.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.8E-04
				CADMIUM	4.1E+00	mg/kg	1.3E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.9E-05
				COBALT	6.5E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	9.2E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	2.6E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	8.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	1.7E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.2E-09	2.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	1.5E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-08	1.7E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	2.7E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	2.0E-09	3.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	3.4E-10	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-09	3.9E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	8.6E-10	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.3E-10	1.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1248	3.3E-01	mg/kg	1.4E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-09	1.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.4E-04
				PCB-1254	5.0E-01	mg/kg	2.2E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-09	2.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-03
				PCB-1260	1.1E-01	mg/kg	4.9E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.8E-10	5.7E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.9E-04
			Exposure Route Total								4.0E-08						2.8E-03
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	Inhalation	ALUMINUM	5.5E+03	mg/kg	1.7E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-06	mg/m^3	5.0E-03	mg/m^3	CNS	3.9E-04
				ANTIMONY	1.9E+00	mg/kg	5.7E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.1E+01	mg/kg	3.2E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.4E-09	3.7E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.5E-04
				CADMIUM	4.1E+00	mg/kg	1.2E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	2.2E-10	1.4E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	1.4E-04
				COBALT	6.5E+00	mg/kg	2.0E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.8E-09	2.3E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	3.8E-04
				COPPER	9.2E+01	mg/kg	2.8E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	2.6E+04	mg/kg	8.0E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.3E-06	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.13b-CTE Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				MANGANESE	8.1E+02	mg/kg	2.5E-05	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	2.9E-07	mg/m^3	5.0E-05	mg/m^3	CNS	5.7E-03
				BENZO(A)ANTHRACENE	4.2E-01	mg/kg	4.0E-06	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	4.4E-10	4.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	3.6E-01	mg/kg	1.1E-08	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	1.2E-11	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.8E-01	mg/kg	2.0E-08	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	2.2E-12	2.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.4E-02	mg/kg	2.5E-09	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	3.0E-12	3.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.1E-01	mg/kg	6.4E-09	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	7.1E-13	7.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	3.3E-01	mg/kg	2.2E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.2E-08	2.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	5.0E-01	mg/kg	2.4E-05	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	1.4E-08	2.8E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	1.1E-01	mg/kg	3.5E-06	µg/m^3	5.7E-04	(µg/m^3)$^{-1}$	2.0E-09	4.1E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								3.2E-08						6.9E-03
		Exposure Point Total									4.7E-07						6.3E-02
	Exposure Medium Total										4.7E-07						6.3E-02
Medium Total for Adult											4.7E-07						6.3E-02
Groundwater	Tapwater	White Transportation	Ingestion	ANTIMONY	5.2E+00	µg/L	8.7E-06	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	7.6E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.9E-01
				ARSENIC	3.3E+00	µg/L	5.6E-06	mg/kg-day	1.5E+00	(mg/kg-day)$^{-1}$	8.4E-06	4.9E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.6E-01
				COBALT	1.4E+00	µg/L	2.4E-06	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	2.1E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	7.1E-02
				IRON	3.8E+03	µg/L	6.3E-03	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	5.5E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	7.9E-02
				MANGANESE	8.3E+02	µg/L	1.4E-03	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	1.2E-02	mg/kg-day	2.4E-02	mg/kg-day	CNS	5.1E-01
				SELENIUM	8.5E+00	µg/L	1.4E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	1.3E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	2.5E-02
				BENZO(A)ANTHRACENE	2.0E-01	µg/L	3.4E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	2.5E-07	2.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	2.5E-07	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	1.8E-06	2.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	4.5E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	3.3E-07	4.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	5.2E-07	mg/kg-day	7.3E+00	(mg/kg-day)$^{-1}$	3.8E-06	4.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	4.5E-07	mg/kg-day	7.3E-01	(mg/kg-day)$^{-1}$	3.3E-07	4.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	9.2E-03	µg/L	1.5E-08	mg/kg-day	1.6E+01	(mg/kg-day)$^{-1}$	2.5E-07	1.4E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.7E-03
				CHLOROFORM	3.3E+00	µg/L	5.5E-06	mg/kg-day	3.1E-02	(mg/kg-day)$^{-1}$	1.7E-07	4.9E-05	mg/kg-day	1.0E-02	mg/kg-day	Liver	4.9E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	1.2E-05	mg/kg-day	NA	(mg/kg-day)$^{-1}$	NA	1.1E-04	mg/kg-day	2.0E-03	mg/kg-day	Kidney	5.4E-02
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	8.0E-06	mg/kg-day	9.3E-03	(mg/kg-day)$^{-1}$	7.4E-08	7.0E-05	mg/kg-day	5.0E-04	mg/kg-day	Development, Immune, Vascular	1.4E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	8.0E-06	mg/kg-day	3.7E-02	(mg/kg-day)$^{-1}$	2.9E-07	--	mg/kg-day	--	mg/kg-day	--	NA
			Exposure Route Total								1.6E-05						1.2E+00
Groundwater	Tapwater	White Transportation	Inhalation	BENZO(A)ANTHRACENE	2.0E-01	µg/L	5.8E-03	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	6.4E-07	5.1E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	NA	µg/m^3	1.1E-03	(µg/m^3)$^{-1}$	NA	3.8E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	NA	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	NA	6.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	NA	µg/m^3	1.2E-03	(µg/m^3)$^{-1}$	NA	7.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	NA	µg/m^3	1.1E-04	(µg/m^3)$^{-1}$	NA	6.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	9.2E-03	µg/L	NA	µg/m^3	4.6E-03	(µg/m^3)$^{-1}$	NA	2.3E-06	mg/m^3	NA	mg/m^3	NA	NA
				CHLOROFORM	3.3E+00	µg/L	9.6E-02	µg/m^3	2.3E-05	(µg/m^3)$^{-1}$	2.2E-06	8.4E-04	mg/m^3	9.8E-02	mg/m^3	Liver	8.6E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	2.1E-01	µg/m^3	NA	(µg/m^3)$^{-1}$	NA	1.9E-03	mg/m^3	NA	mg/m^3	NA	NA
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	1.4E-01	µg/m^3	1.0E-06	(µg/m^3)$^{-1}$	1.4E-07	1.2E-03	mg/m^3	2.0E-03	mg/m^3	Development, Immune, Vascular	6.0E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	1.4E-01	µg/m^3	3.1E-06	(µg/m^3)$^{-1}$	4.3E-07	--	mg/m^3	--	mg/m^3	--	NA

TABLE 7.13b-CTE Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								3.4E-06						6.1E-01
		Exposure Point Total									1.9E-05						1.9E+00
	Exposure Medium Total										1.9E-05						1.9E+00
Medium Total for Adult											1.9E-05						1.9E+00
Total of Receptor Risks Across All Media											2.0E-05	Total of Receptor Hazards Across All Media					1.9E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

Trichloroethylene was evaluated for both mutagenic risk to the kidney and non-mutagenic risk to the liver. The total risk for trichloroethylene is summed in Table 9.13b-CTE

Inhalation of tapwater was not assessed for risk from metals, PAHs and pesticides that are considered non-volatile or lack a Henry's law constant.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.9.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	5.3.E-01
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	7.4.E-01
Total GI Tract HI Across All Media =	9.1.E-02
Total Immune HI Across All Media =	1.6.E-02
Total Kidney HI Across All Media =	5.5.E-02
Total Liver HI Across All Media =	1.6.E-02
Total Lung HI Across All Media =	0.0.E+00
Total Lung & Respiratory HI Across All Media =	3.8.E-04
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	2.5.E-04
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.7.E-01
Total Thyroid HI Across All Media =	7.7.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	2.5.E-02

TABLE 7.14a-RME Visitor/Trespasser (Young Child)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	5.2E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.0E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	6.0E-03
				ANTIMONY	6.8E+00	mg/kg	6.0E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.0E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.7E-02
				ARSENIC	1.7E+01	mg/kg	8.8E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.3E-06	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.4E-02
				CADMIUM	3.3E+00	mg/kg	2.9E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.4E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.4E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	4.6E-08	mg/kg-day	2.7E+00	$(mg/kg-day)^{-1}$	1.2E-07	5.4E-07	mg/kg-day	3.0E-03	mg/kg-day	None	1.8E-04
				COBALT	6.2E+00	mg/kg	5.4E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.3E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.1E-02
				COPPER	2.6E+02	mg/kg	2.3E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.6E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	6.6E-03
				IRON	3.3E+04	mg/kg	2.9E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.4E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	4.8E-02
				MANGANESE	7.1E+02	mg/kg	6.2E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.2E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.0E-02
				ZINC	6.7E+02	mg/kg	5.9E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.9E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	2.3E-03
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	5.7E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	2.2E-06	6.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	5.0E-07	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	2.0E-05	5.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	6.9E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	2.7E-06	8.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	2.4E-07	mg/kg-day	3.9E-01	$(mg/kg-day)^{-1}$	9.2E-08	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	5.5E-07	mg/kg-day	3.9E-02	$(mg/kg-day)^{-1}$	2.2E-08	6.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	8.4E-08	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	3.3E-06	9.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	2.8E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	1.1E-06	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	1.5E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.9E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.5E-02
				PCB-1248	1.3E+01	mg/kg	1.1E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.3E-06	1.3E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.7E-01
				PCB-1254	1.6E+01	mg/kg	1.4E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.9E-06	1.7E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.3E-01
				PCB-1260	2.6E-01	mg/kg	2.3E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.6E-08	2.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-02
				BETA BHC	3.7E-01	mg/kg	3.2E-08	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	5.8E-08	3.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	4.7E-09	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	7.5E-08	5.5E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.1E-03
				HEPTACHLOR	4.7E-01	mg/kg	4.2E-08	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	1.9E-07	4.8E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	9.7E-04
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	6.9E-09	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	6.3E-08	8.1E-08	mg/kg-day	1.3E-05	mg/kg-day	Liver	6.2E-03
			Exposure Route Total								3.6E-05						1.8E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	1.0E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.6E-07	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.1E-03
				CADMIUM	3.3E+00	mg/kg	6.8E-10	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.0E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	3.2E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	1.1E+02	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.8E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	6.9E-07	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.6E-07	mg/kg-day	3.9E+01	$(mg/kg-day)^{-1}$	6.0E-06	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	2.1E-07	mg/kg-day	3.9E+00	$(mg/kg-day)^{-1}$	8.3E-07	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	7.3E-08	mg/kg-day	3.9E-01	$(mg/kg-day)^{-1}$	2.8E-08	8.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.7E-07	mg/kg-day	3.9E-02	$(mg/kg-day)^{-1}$	6.7E-09	2.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.14a-RME Visitor/Trespasser (Young Child)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.6E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	1.0E-06	3.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	8.5E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-07	9.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	4.8E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.7E-08	5.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.8E-02
				PCB-1248	1.3E+01	mg/kg	3.8E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-07	4.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E-01
				PCB-1254	1.6E+01	mg/kg	4.7E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.5E-07	5.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.8E-01
				PCB-1260	2.6E-01	mg/kg	7.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-08	9.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.5E-03
				BETA BHC	3.7E-01	mg/kg	7.6E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08	8.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.1E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.8E-08	1.3E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.6E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								1.1E-05						5.4E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	4.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.5E-08	mg/m^3	5.0E-03	mg/m^3	CNS	1.1E-05
				ANTIMONY	6.8E+00	mg/kg	5.5E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	1.4E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	5.8E-11	1.6E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.1E-05
				CADMIUM	3.3E+00	mg/kg	2.7E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	4.8E-12	3.1E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	3.1E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	4.3E-10	$\mu g/m^3$	4.5E-01	$(\mu g/m^3)^{-1}$	1.9E-10	5.0E-12	mg/m^3	1.0E-04	mg/m^3	Lung	5.0E-08
				COBALT	6.2E+00	mg/kg	5.0E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	4.5E-11	5.8E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	9.7E-06
				COPPER	2.6E+02	mg/kg	2.1E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	2.7E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	5.7E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.7E-09	mg/m^3	5.0E-05	mg/m^3	CNS	1.3E-04
				ZINC	6.7E+02	mg/kg	5.4E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.6E-06	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	9.6E-10	1.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	4.6E-09	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	2.7E-11	5.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	6.3E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	3.7E-12	7.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	2.2E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.3E-12	2.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	5.1E-09	$\mu g/m^3$	5.9E-05	$(\mu g/m^3)^{-1}$	3.0E-13	5.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	7.7E-10	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	4.9E-12	9.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	2.5E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.5E-12	3.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	3.1E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.8E-09	3.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	2.3E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.3E-08	2.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	2.1E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.2E-08	2.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	2.2E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.3E-10	2.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	2.9E-10	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	1.6E-13	3.4E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	4.3E-11	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	2.0E-13	5.1E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	1.1E-06	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	1.4E-09	1.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	1.0E-07	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	2.7E-10	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								3.0E-08						1.7E-04
		Exposure Point Total									4.7E-05						2.3E+00
	Exposure Medium Total										4.7E-05						2.3E+00
Medium Total for Young Child											4.7E-05						2.3E+00
										Total of Receptor Risks Across All Media	4.7E-05				Total of Receptor Hazards Across All Media		2.3E+00

TABLE 7.14a-RME Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	2.0.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.6.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.5.E-02
Total Immune HI Across All Media =	2.1.E+00
Total Kidney HI Across All Media =	3.7.E-03
Total Liver HI Across All Media =	8.5.E-03
Total Lung HI Across All Media =	5.0.E-08
Total Lung & Respiratory HI Across All Media =	9.7.E-06
Total No Critical Effect Risk HI Across All Media =	1.8.E-04
Total Reproductive HI Across All Media =	1.1.E-05
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.8.E-02
Total Thyroid HI Across All Media =	2.1.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.14a-CTE Visitor/Trespasser (Young Child)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	8.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.5E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.5E-03
				ANTIMONY	6.8E+00	mg/kg	9.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.4E-03
				ARSENIC	1.7E+01	mg/kg	1.5E-07	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.2E-07	2.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	8.6E-03
				CADMIUM	3.3E+00	mg/kg	4.8E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.4E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	8.4E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	7.7E-09	mg/kg-day	2.7E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-08	1.4E-07	mg/kg-day	3.0E-03	mg/kg-day	None	4.5E-05
				COBALT	6.2E+00	mg/kg	9.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	5.3E-03
				COPPER	2.6E+02	mg/kg	3.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.6E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.7E-03
				IRON	3.3E+04	mg/kg	4.8E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.5E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.2E-02
				MANGANESE	7.1E+02	mg/kg	1.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	7.5E-03
				ZINC	6.7E+02	mg/kg	9.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.7E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	5.7E-04
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	9.5E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-07	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	8.4E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	3.3E-06	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.2E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-07	2.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	3.9E-08	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	1.5E-08	6.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	9.2E-08	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	3.6E-09	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.4E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	5.5E-07	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	4.6E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-07	8.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.4E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.9E-08	4.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.1E-02
				PCB-1248	1.3E+01	mg/kg	1.9E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-07	3.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-01
				PCB-1254	1.6E+01	mg/kg	2.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.8E-07	4.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.1E-01
				PCB-1260	2.6E-01	mg/kg	3.9E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.7E-09	6.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.4E-03
				BETA BHC	3.7E-01	mg/kg	5.3E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-09	9.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	7.9E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.3E-08	1.4E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.8E-04
				HEPTACHLOR	4.7E-01	mg/kg	6.9E-09	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	3.1E-08	1.2E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.4E-04
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	1.2E-09	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-08	2.0E-08	mg/kg-day	1.3E-05	mg/kg-day	Liver	1.6E-03
			Exposure Route Total								6.0E-06						4.4E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	3.5E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	5.2E-08	6.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.0E-03
				CADMIUM	3.3E+00	mg/kg	2.3E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.0E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	1.6E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	1.1E+02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	5.9E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-07	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	5.2E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	2.0E-06	9.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	7.1E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-07	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	2.4E-08	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	9.4E-09	4.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	5.7E-08	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-09	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	8.6E-09	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	3.4E-07	1.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.14a-CTE Visitor/Trespasser (Young Child)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	2.8E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07	5.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	1.6E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-08	2.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-02
				PCB-1248	1.3E+01	mg/kg	1.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-07	2.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-01
				PCB-1254	1.6E+01	mg/kg	1.6E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-07	2.8E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-01
				PCB-1260	2.6E-01	mg/kg	2.6E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.1E-09	4.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.2E-03
				BETA BHC	3.7E-01	mg/kg	2.5E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	4.6E-09	4.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	3.7E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	6.0E-09	6.5E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.3E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								3.7E-06						2.7E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	7.9E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.4E-08	mg/m^3	5.0E-03	mg/m^3	CNS	2.8E-06
				ANTIMONY	6.8E+00	mg/kg	9.1E-10	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.6E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	2.3E-09	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	9.7E-12	3.9E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.6E-06
				CADMIUM	3.3E+00	mg/kg	4.4E-10	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	8.0E-13	7.7E-12	mg/m^3	1.0E-05	mg/m^3	Kidney	7.7E-07
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	7.1E-11	$\mu g/m^3$	4.5E-01	$(\mu g/m^3)^{-1}$	3.2E-11	1.2E-12	mg/m^3	1.0E-04	mg/m^3	Lung	1.2E-08
				COBALT	6.2E+00	mg/kg	8.3E-10	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	7.5E-12	1.5E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	2.4E-06
				COPPER	2.6E+02	mg/kg	3.5E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	4.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	9.5E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.7E-09	mg/m^3	5.0E-05	mg/m^3	CNS	3.3E-05
				ZINC	6.7E+02	mg/kg	9.0E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	2.7E-07	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.6E-10	4.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	7.7E-10	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	4.5E-12	1.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.1E-09	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	6.2E-13	1.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	3.6E-10	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	2.1E-13	6.3E-12	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	8.5E-10	$\mu g/m^3$	5.9E-05	$(\mu g/m^3)^{-1}$	5.0E-14	1.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.3E-10	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	8.2E-13	2.3E-12	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	4.2E-10	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	2.5E-13	7.4E-12	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	5.1E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.9E-10	9.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	3.8E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.2E-09	6.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	3.5E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.0E-09	6.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	3.7E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.1E-11	6.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	4.9E-11	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	2.6E-14	8.6E-13	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	7.2E-12	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	3.3E-14	1.3E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	1.8E-07	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	2.4E-10	3.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	1.7E-08	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	4.5E-11	3.0E-10	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								5.0E-09						4.2E-05
		Exposure Point Total									9.7E-06						7.1E-01
	Exposure Medium Total										9.7E-06						7.1E-01
Medium Total for Young Child											9.7E-06						7.1E-01
										Total of Receptor Risks Across All Media	9.7E-06					Total of Receptor Hazards Across All Media	7.1E-01

TABLE 7.14a-CTE Visitor/Trespasser (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	4.9.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	9.1.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.4.E-02
Total Immune HI Across All Media =	6.7.E-01
Total Kidney HI Across All Media =	1.0.E-03
Total Liver HI Across All Media =	2.2.E-03
Total Lung HI Across All Media =	1.2.E-08
Total Lung & Respiratory HI Across All Media =	2.4.E-06
Total No Critical Effect Risk HI Across All Media =	4.5.E-05
Total Reproductive HI Across All Media =	2.6.E-06
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.1.E-02
Total Thyroid HI Across All Media =	5.3.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.14b-RME Visitor/Trespasser (Adolescent)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	3.3E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.9E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.9E-03
				ANTIMONY	6.8E+00	mg/kg	3.8E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.2E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	5.5E-03
				ARSENIC	1.7E+01	mg/kg	5.6E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	8.3E-07	3.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.1E-02
				CADMIUM	3.3E+00	mg/kg	1.8E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.1E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	2.9E-08	mg/kg-day	1.3E+00	$(mg/kg-day)^{-1}$	3.9E-08	1.7E-07	mg/kg-day	3.0E-03	mg/kg-day	None	5.7E-05
				COBALT	6.2E+00	mg/kg	3.4E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	6.7E-03
				COPPER	2.6E+02	mg/kg	1.4E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.3E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	2.1E-03
				IRON	3.3E+04	mg/kg	1.8E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.5E-02
				MANGANESE	7.1E+02	mg/kg	3.9E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.3E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	9.5E-03
				ZINC	6.7E+02	mg/kg	3.7E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.2E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	7.2E-04
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	3.6E-07	mg/kg-day	1.9E+00	$(mg/kg-day)^{-1}$	7.0E-07	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	3.2E-07	mg/kg-day	1.9E+01	$(mg/kg-day)^{-1}$	6.2E-06	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	4.4E-07	mg/kg-day	1.9E+00	$(mg/kg-day)^{-1}$	8.5E-07	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	1.5E-07	mg/kg-day	1.9E-01	$(mg/kg-day)^{-1}$	2.9E-08	8.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	3.5E-07	mg/kg-day	1.9E-02	$(mg/kg-day)^{-1}$	6.8E-09	2.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	5.3E-08	mg/kg-day	1.9E+01	$(mg/kg-day)^{-1}$	1.0E-06	3.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	1.7E-07	mg/kg-day	1.9E+00	$(mg/kg-day)^{-1}$	3.4E-07	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	9.2E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.8E-07	5.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.7E-02
				PCB-1248	1.3E+01	mg/kg	7.2E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.4E-06	4.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.1E-01
				PCB-1254	1.6E+01	mg/kg	9.0E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.8E-06	5.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.6E-01
				PCB-1260	2.6E-01	mg/kg	1.5E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.9E-08	8.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.3E-03
				BETA BHC	3.7E-01	mg/kg	2.0E-08	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	3.6E-08	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	3.0E-09	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	4.8E-08	1.7E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.5E-04
				HEPTACHLOR	4.7E-01	mg/kg	2.6E-08	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	1.2E-07	1.5E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	3.1E-04
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	4.4E-09	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	4.0E-08	2.5E-08	mg/kg-day	1.3E-05	mg/kg-day	Liver	2.0E-03
			Exposure Route Total								1.4E-05						5.6E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	2.8E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	4.3E-07	1.7E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.5E-03
				CADMIUM	3.3E+00	mg/kg	1.9E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	4.3E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	5.3E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	4.8E-07	mg/kg-day	1.9E+00	$(mg/kg-day)^{-1}$	9.3E-07	2.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	4.2E-07	mg/kg-day	1.9E+01	$(mg/kg-day)^{-1}$	8.2E-06	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	5.8E-07	mg/kg-day	1.9E+00	$(mg/kg-day)^{-1}$	1.1E-06	3.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	2.0E-07	mg/kg-day	1.9E-01	$(mg/kg-day)^{-1}$	3.8E-08	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	4.6E-07	mg/kg-day	1.9E-02	$(mg/kg-day)^{-1}$	9.0E-09	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	7.0E-08	mg/kg-day	1.9E+01	$(mg/kg-day)^{-1}$	1.4E-06	4.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.14b-RME Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	2.3E-07	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	4.5E-07	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	1.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-07	7.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.8E-02
				PCB-1248	1.3E+01	mg/kg	1.0E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-06	6.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.0E-01
				PCB-1254	1.6E+01	mg/kg	1.3E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.6E-06	7.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.7E-01
				PCB-1260	2.6E-01	mg/kg	2.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.1E-03
				BETA BHC	3.7E-01	mg/kg	2.1E-08	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	3.7E-08	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	3.0E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	4.9E-08	1.8E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.5E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								1.8E-05						7.3E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	1.9E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-07	mg/m^3	5.0E-03	mg/m^3	CNS	2.2E-05
				ANTIMONY	6.8E+00	mg/kg	2.2E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	5.4E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.3E-10	3.2E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.1E-05
				CADMIUM	3.3E+00	mg/kg	1.1E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.9E-11	6.2E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	6.2E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.7E-09	$\mu g/m^3$	2.2E-01	$(\mu g/m^3)^{-1}$	3.8E-10	1.0E-11	mg/m^3	1.0E-04	mg/m^3	Lung	1.0E-07
				COBALT	6.2E+00	mg/kg	2.0E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.8E-10	1.2E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.9E-05
				COPPER	2.6E+02	mg/kg	8.3E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	1.1E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	2.3E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-08	mg/m^3	5.0E-05	mg/m^3	CNS	2.7E-04
				ZINC	6.7E+02	mg/kg	2.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	6.5E-06	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	1.9E-09	3.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.9E-08	$\mu g/m^3$	2.9E-03	$(\mu g/m^3)^{-1}$	5.4E-11	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	2.5E-08	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	7.4E-12	1.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	8.6E-09	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	2.5E-12	5.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	2.0E-08	$\mu g/m^3$	2.9E-05	$(\mu g/m^3)^{-1}$	6.0E-13	1.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	3.1E-09	$\mu g/m^3$	3.2E-03	$(\mu g/m^3)^{-1}$	9.9E-12	1.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	1.0E-08	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	3.0E-12	5.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	1.2E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	7.0E-09	7.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	9.2E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.2E-08	5.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	8.5E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.8E-08	4.9E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	8.8E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.0E-10	5.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	1.2E-09	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	6.2E-13	6.9E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.7E-10	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	8.0E-13	1.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	4.3E-06	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	5.6E-09	2.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	4.1E-07	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	1.1E-09	2.4E-09	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.2E-07						3.3E-04
		Exposure Point Total									3.1E-05						1.3E+00
	Exposure Medium Total										3.1E-05						1.3E+00
Medium Total for Adolescent											3.1E-05						1.3E+00
										Total of Receptor Risks Across All Media	3.1E-05					Total of Receptor Hazards Across All Media	1.3E+00

TABLE 7.14b-RME Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	6.2.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.2.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.7.E-02
Total Immune HI Across All Media =	1.2.E+00
Total Kidney HI Across All Media =	1.5.E-03
Total Liver HI Across All Media =	3.0.E-03
Total Lung HI Across All Media =	1.0.E-07
Total Lung & Respiratory HI Across All Media =	1.9.E-05
Total No Critical Effect Risk HI Across All Media =	5.7.E-05
Total Reproductive HI Across All Media =	2.1.E-05
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.6.E-02
Total Thyroid HI Across All Media =	6.7.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.14b-CTE Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	2.7E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.7E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	4.7E-04
				ANTIMONY	6.8E+00	mg/kg	3.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.5E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.4E-03
				ARSENIC	1.7E+01	mg/kg	4.6E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	6.9E-08	8.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.7E-03
				CADMIUM	3.3E+00	mg/kg	1.5E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	2.7E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	2.4E-09	mg/kg-day	1.3E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-09	4.3E-08	mg/kg-day	3.0E-03	mg/kg-day	None	1.4E-05
				COBALT	6.2E+00	mg/kg	2.9E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.0E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.7E-03
				COPPER	2.6E+02	mg/kg	1.2E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	5.2E-04
				IRON	3.3E+04	mg/kg	1.5E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.7E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	3.8E-03
				MANGANESE	7.1E+02	mg/kg	3.3E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.7E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.4E-03
				ZINC	6.7E+02	mg/kg	3.1E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-05	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.8E-04
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	3.0E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-08	5.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	2.6E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	5.1E-07	4.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	3.6E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	7.1E-08	6.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	1.2E-08	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	2.4E-09	2.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	2.9E-08	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	5.7E-10	5.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	4.4E-09	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	8.6E-08	7.7E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	1.5E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	2.8E-08	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	7.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-08	1.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.7E-03
				PCB-1248	1.3E+01	mg/kg	6.0E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-07	1.1E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.3E-02
				PCB-1254	1.6E+01	mg/kg	7.5E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-07	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.6E-02
				PCB-1260	2.6E-01	mg/kg	1.2E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-09	2.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-03
				BETA BHC	3.7E-01	mg/kg	1.7E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-09	2.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	2.5E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	4.0E-09	4.3E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	8.7E-05
				HEPTACHLOR	4.7E-01	mg/kg	2.2E-09	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	9.8E-09	3.8E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	7.6E-05
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	3.6E-10	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-09	6.4E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	4.9E-04
			Exposure Route Total								1.1E-06						1.4E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	4.7E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	7.1E-08	8.3E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.8E-03
				CADMIUM	3.3E+00	mg/kg	3.1E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.4E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.2E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	5.3E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	8.0E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-07	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	7.0E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	1.4E-06	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	9.6E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-07	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	3.3E-08	mg/kg-day	1.9E-01	$(mg/kg\text{-}day)^{-1}$	6.4E-09	5.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	7.7E-08	mg/kg-day	1.9E-02	$(mg/kg\text{-}day)^{-1}$	1.5E-09	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.2E-08	mg/kg-day	1.9E+01	$(mg/kg\text{-}day)^{-1}$	2.3E-07	2.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.14b-CTE Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	3.8E-08	mg/kg-day	1.9E+00	$(mg/kg\text{-}day)^{-1}$	7.5E-08	6.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.2E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-08	3.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-02
				PCB-1248	1.3E+01	mg/kg	1.7E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-07	3.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-01
				PCB-1254	1.6E+01	mg/kg	2.1E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-07	3.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-01
				PCB-1260	2.6E-01	mg/kg	3.5E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.9E-09	6.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.0E-03
				BETA BHC	3.7E-01	mg/kg	3.4E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	6.2E-09	6.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	5.1E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	8.1E-09	8.8E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.8E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								2.9E-06						3.6E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	1.6E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.8E-08	mg/m^3	5.0E-03	mg/m^3	CNS	5.5E-06
				ANTIMONY	6.8E+00	mg/kg	1.8E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	4.5E-09	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.9E-11	7.9E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	5.3E-06
				CADMIUM	3.3E+00	mg/kg	8.8E-10	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.6E-12	1.5E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	1.5E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.4E-10	$\mu g/m^3$	2.2E-01	$(\mu g/m^3)^{-1}$	3.2E-11	2.5E-12	mg/m^3	1.0E-04	mg/m^3	Lung	2.5E-08
				COBALT	6.2E+00	mg/kg	1.7E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.5E-11	2.9E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.9E-06
				COPPER	2.6E+02	mg/kg	7.0E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	8.9E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	1.9E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.3E-09	mg/m^3	5.0E-05	mg/m^3	CNS	6.7E-05
				ZINC	6.7E+02	mg/kg	1.8E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	5.4E-07	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	1.6E-10	9.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.5E-09	$\mu g/m^3$	2.9E-03	$(\mu g/m^3)^{-1}$	4.5E-12	2.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	2.1E-09	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	6.2E-13	3.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	7.2E-10	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	2.1E-13	1.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.7E-09	$\mu g/m^3$	2.9E-05	$(\mu g/m^3)^{-1}$	5.0E-14	3.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.6E-10	$\mu g/m^3$	3.2E-03	$(\mu g/m^3)^{-1}$	8.2E-13	4.5E-12	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	8.5E-10	$\mu g/m^3$	2.9E-04	$(\mu g/m^3)^{-1}$	2.5E-13	1.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	1.0E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.9E-10	1.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	7.7E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.4E-09	1.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	7.1E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.0E-09	1.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	7.4E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.2E-11	1.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	9.8E-11	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	5.2E-14	1.7E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.4E-11	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	6.6E-14	2.5E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	3.6E-07	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	4.7E-10	6.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	3.4E-08	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	8.9E-11	6.0E-10	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								9.8E-09						8.4E-05
		Exposure Point Total									4.1E-06						5.0E-01
	Exposure Medium Total										4.1E-06						5.0E-01
Medium Total for Adolescent											4.1E-06						5.0E-01
										Total of Receptor Risks Across All Media	4.1E-06					Total of Receptor Hazards Across All Media	5.0E-01

TABLE 7.14b-CTE Visitor/Trespasser (Adolescent)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.6.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.9.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	4.3.E-03
Total Immune HI Across All Media =	4.9.E-01
Total Kidney HI Across All Media =	4.8.E-04
Total Liver HI Across All Media =	8.3.E-04
Total Lung HI Across All Media =	2.5.E-08
Total Lung & Respiratory HI Across All Media =	4.9.E-06
Total No Critical Effect Risk HI Across All Media =	1.4.E-05
Total Reproductive HI Across All Media =	5.3.E-06
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	5.5.E-03
Total Thyroid HI Across All Media =	1.7.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.14c-RME Visitor/Trespasser (Adult)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	1.6E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.6E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	5.6E-04
				ANTIMONY	6.8E+00	mg/kg	1.9E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.5E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.6E-03
				ARSENIC	1.7E+01	mg/kg	2.8E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	4.1E-07	9.6E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.2E-03
				CADMIUM	3.3E+00	mg/kg	9.0E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.2E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.2E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.5E-08	mg/kg-day	5.0E-01	$(mg/kg-day)^{-1}$	7.3E-09	5.1E-08	mg/kg-day	3.0E-03	mg/kg-day	None	1.7E-05
				COBALT	6.2E+00	mg/kg	1.7E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.0E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.0E-03
				COPPER	2.6E+02	mg/kg	7.1E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.5E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	6.2E-04
				IRON	3.3E+04	mg/kg	9.1E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.2E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	4.5E-03
				MANGANESE	7.1E+02	mg/kg	1.9E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.8E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.8E-03
				ZINC	6.7E+02	mg/kg	1.8E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.4E-05	mg/kg-day	3.0E-01	mg/kg-day	Blood	2.1E-04
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.8E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.3E-07	6.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.6E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.1E-06	5.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	2.2E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.6E-07	7.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	7.4E-08	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	5.4E-09	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.7E-07	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	1.3E-09	6.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.6E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.9E-07	9.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	8.6E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	6.3E-08	3.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	4.6E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	9.1E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.0E-03
				PCB-1248	1.3E+01	mg/kg	3.6E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.2E-07	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.3E-02
				PCB-1254	1.6E+01	mg/kg	4.5E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	8.9E-07	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.8E-02
				PCB-1260	2.6E-01	mg/kg	7.2E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.4E-08	2.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-03
				BETA BHC	3.7E-01	mg/kg	1.0E-08	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	1.8E-08	3.5E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.5E-09	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	2.4E-08	5.2E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.0E-04
				HEPTACHLOR	4.7E-01	mg/kg	1.3E-08	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	5.8E-08	4.5E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	9.1E-05
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	2.2E-09	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	2.0E-08	7.6E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	5.8E-04
			Exposure Route Total								4.0E-06						1.7E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	5.8E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	8.7E-08	2.0E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.8E-04
				CADMIUM	3.3E+00	mg/kg	3.8E-10	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.3E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.3E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	9.8E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	7.2E-08	3.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	8.6E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	6.3E-07	3.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	8.6E-08	4.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	4.0E-08	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	2.9E-09	1.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	9.5E-08	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	6.9E-10	3.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.4E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.1E-07	5.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.14c-RME Visitor/Trespasser (Adult)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	4.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.5E-08	1.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.4E-08	9.4E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.7E-03
				PCB-1248	1.3E+01	mg/kg	2.1E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-07	7.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.7E-02
				PCB-1254	1.6E+01	mg/kg	2.6E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-07	9.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.6E-02
				PCB-1260	2.6E-01	mg/kg	4.3E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-09	1.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.5E-04
				BETA BHC	3.7E-01	mg/kg	4.2E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-09	1.5E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	6.2E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.0E-08	2.2E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	4.4E-05
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								2.1E-06						8.9E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	1.6E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.5E-08	mg/m^3	5.0E-03	mg/m^3	CNS	1.1E-05
				ANTIMONY	6.8E+00	mg/kg	1.8E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	4.5E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.9E-10	1.6E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.1E-05
				CADMIUM	3.3E+00	mg/kg	8.8E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.6E-11	3.1E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	3.1E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.4E-09	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	1.2E-10	5.0E-12	mg/m^3	1.0E-04	mg/m^3	Lung	5.0E-08
				COBALT	6.2E+00	mg/kg	1.7E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.5E-10	5.8E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	9.7E-06
				COPPER	2.6E+02	mg/kg	7.0E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	8.9E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	1.9E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.7E-09	mg/m^3	5.0E-05	mg/m^3	CNS	1.3E-04
				ZINC	6.7E+02	mg/kg	1.8E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	5.4E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	6.0E-10	1.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.5E-08	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.7E-11	5.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	2.1E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	2.3E-12	7.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	7.2E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	7.9E-13	2.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.7E-08	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	1.9E-13	5.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.6E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	3.1E-12	9.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	8.5E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	9.3E-13	3.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	1.0E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.9E-09	3.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	7.7E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.4E-08	2.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	7.1E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.0E-08	2.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	7.4E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.2E-10	2.6E-09	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	9.8E-10	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	5.2E-13	3.4E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.4E-10	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	6.6E-13	5.1E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	3.6E-06	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	4.7E-09	1.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	3.4E-07	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	8.9E-10	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								9.7E-08						1.7E-04
		Exposure Point Total									6.1E-06						2.6E-01
	Exposure Medium Total										6.1E-06						2.6E-01
Medium Total for Adult											6.1E-06						2.6E-01
										Total of Receptor Risks Across All Media	6.1E-06					Total of Receptor Hazards Across All Media	2.6E-01

TABLE 7.14c-RME Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.8.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.5.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.2.E-03
Total Immune HI Across All Media =	2.4.E-01
Total Kidney HI Across All Media =	3.7.E-04
Total Liver HI Across All Media =	8.2.E-04
Total Lung HI Across All Media =	5.0.E-08
Total Lung & Respiratory HI Across All Media =	9.7.E-06
Total No Critical Effect Risk HI Across All Media =	1.7.E-05
Total Reproductive HI Across All Media =	1.1.E-05
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.9.E-03
Total Thyroid HI Across All Media =	2.0.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.14c-CTE Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	8.1E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.4E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.4E-04
				ANTIMONY	6.8E+00	mg/kg	9.3E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.6E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.1E-04
				ARSENIC	1.7E+01	mg/kg	1.4E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.1E-08	2.4E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	8.0E-04
				CADMIUM	3.3E+00	mg/kg	4.5E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.9E-08	mg/kg-day	1.0E-03	mg/kg-day	Kidney	7.9E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	7.3E-10	mg/kg-day	5.0E-01	$(mg/kg-day)^{-1}$	3.6E-10	1.3E-08	mg/kg-day	3.0E-03	mg/kg-day	None	4.2E-06
				COBALT	6.2E+00	mg/kg	8.5E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.5E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	5.0E-04
				COPPER	2.6E+02	mg/kg	3.5E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.2E-06	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.6E-04
				IRON	3.3E+04	mg/kg	4.5E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.9E-04	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.1E-03
				MANGANESE	7.1E+02	mg/kg	9.7E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.7E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	7.1E-04
				ZINC	6.7E+02	mg/kg	9.2E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.6E-05	mg/kg-day	3.0E-01	mg/kg-day	Blood	5.4E-05
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	8.9E-09	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	6.5E-09	1.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	7.9E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	5.7E-08	1.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.1E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	7.9E-09	1.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	3.7E-09	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	2.7E-10	6.4E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	8.7E-09	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	6.3E-11	1.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.3E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	9.6E-09	2.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	4.3E-09	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	3.2E-09	7.6E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.3E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.6E-09	4.0E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-03
				PCB-1248	1.3E+01	mg/kg	1.8E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	3.6E-08	3.1E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-02
				PCB-1254	1.6E+01	mg/kg	2.2E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.5E-08	3.9E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.0E-02
				PCB-1260	2.6E-01	mg/kg	3.6E-10	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.2E-10	6.3E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.2E-04
				BETA BHC	3.7E-01	mg/kg	5.0E-10	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	9.0E-10	8.8E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	7.4E-11	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	1.2E-09	1.3E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.6E-05
				HEPTACHLOR	4.7E-01	mg/kg	6.5E-10	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	2.9E-09	1.1E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.3E-05
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	1.1E-10	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	9.8E-10	1.9E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	1.5E-04
			Exposure Route Total								2.0E-07						4.2E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	5.8E-09	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	8.7E-09	1.0E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.4E-04
				CADMIUM	3.3E+00	mg/kg	3.8E-11	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.7E-10	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.7E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	9.8E-09	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	7.2E-09	1.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	8.6E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	6.3E-08	1.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.2E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	8.6E-09	2.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	4.0E-09	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	2.9E-10	7.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	9.5E-09	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	6.9E-11	1.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.4E-09	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.1E-08	2.5E-08	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.14c-CTE Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	4.7E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.5E-09	8.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.4E-09	4.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.4E-03
				PCB-1248	1.3E+01	mg/kg	2.1E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-08	3.7E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-02
				PCB-1254	1.6E+01	mg/kg	2.6E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-08	4.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.3E-02
				PCB-1260	2.6E-01	mg/kg	4.3E-10	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-10	7.5E-09	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.7E-04
				BETA BHC	3.7E-01	mg/kg	4.2E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	7.6E-10	7.4E-09	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	6.2E-11	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.0E-09	1.1E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.2E-05
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								2.1E-07						4.5E-02
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	1.6E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.8E-08	mg/m^3	5.0E-03	mg/m^3	CNS	5.5E-06
				ANTIMONY	6.8E+00	mg/kg	1.8E-09	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.2E-11	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	4.5E-09	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.9E-11	7.9E-11	mg/m^3	1.5E-05	mg/m^3	Reproductive	5.3E-06
				CADMIUM	3.3E+00	mg/kg	8.8E-10	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.6E-12	1.5E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	1.5E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.4E-10	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	1.2E-11	2.5E-12	mg/m^3	1.0E-04	mg/m^3	Lung	2.5E-08
				COBALT	6.2E+00	mg/kg	1.7E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.5E-11	2.9E-11	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.9E-06
				COPPER	2.6E+02	mg/kg	7.0E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	8.9E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.6E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	1.9E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.3E-09	mg/m^3	5.0E-05	mg/m^3	CNS	6.7E-05
				ZINC	6.7E+02	mg/kg	1.8E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	5.4E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	6.0E-11	9.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.5E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.7E-12	2.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	2.1E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	2.3E-13	3.7E-11	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	7.2E-10	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	7.9E-14	1.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.7E-09	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	1.9E-14	3.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.6E-10	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	3.1E-13	4.5E-12	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	8.5E-10	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	9.3E-14	1.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	1.0E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.9E-10	1.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	7.7E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.4E-09	1.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	7.1E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.0E-09	1.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	7.4E-08	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.2E-11	1.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	9.8E-11	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	5.2E-14	1.7E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.4E-11	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	6.6E-14	2.5E-13	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	3.6E-07	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	4.7E-10	6.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	3.4E-08	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	8.9E-11	6.0E-10	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								9.7E-09						8.4E-05
		Exposure Point Total									4.1E-07						8.7E-02
	Exposure Medium Total										4.1E-07						8.7E-02
Medium Total for Adult											4.1E-07						8.7E-02
										Total of Receptor Risks Across All Media	4.1E-07					Total of Receptor Hazards Across All Media	8.7E-02

TABLE 7.14c-CTE Visitor/Trespasser (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	4.6.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	9.2.E-04
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.3.E-03
Total Immune HI Across All Media =	8.2.E-02
Total Kidney HI Across All Media =	1.1.E-04
Total Liver HI Across All Media =	2.2.E-04
Total Lung HI Across All Media =	2.5.E-08
Total Lung & Respiratory HI Across All Media =	4.9.E-06
Total No Critical Effect Risk HI Across All Media =	4.2.E-06
Total Reproductive HI Across All Media =	5.3.E-06
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.1.E-03
Total Thyroid HI Across All Media =	5.0.E-04
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.15a-RME Indoor Worker (Adult)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	9.0E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.5E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	2.5E-03
				ANTIMONY	6.8E+00	mg/kg	1.0E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.9E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	7.3E-03
				ARSENIC	1.7E+01	mg/kg	1.5E-06	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.3E-06	4.3E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.4E-02
				CADMIUM	3.3E+00	mg/kg	5.0E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.4E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.4E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	8.1E-08	mg/kg-day	5.0E-01	$(mg/kg-day)^{-1}$	4.1E-08	2.3E-07	mg/kg-day	3.0E-03	mg/kg-day	None	7.6E-05
				COBALT	6.2E+00	mg/kg	9.5E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.7E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	8.9E-03
				COPPER	2.6E+02	mg/kg	4.0E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	2.8E-03
				IRON	3.3E+04	mg/kg	5.1E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.4E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	2.0E-02
				MANGANESE	7.1E+02	mg/kg	1.1E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.0E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.3E-02
				ZINC	6.7E+02	mg/kg	1.0E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.9E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	9.6E-04
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.0E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	7.3E-07	2.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	8.8E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	6.4E-06	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.2E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	8.8E-07	3.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	4.1E-07	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	3.0E-08	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	9.7E-07	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	7.0E-09	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.5E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.1E-06	4.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	4.8E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	3.5E-07	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.5E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.1E-07	7.1E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.6E-02
				PCB-1248	1.3E+01	mg/kg	2.0E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.0E-06	5.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.8E-01
				PCB-1254	1.6E+01	mg/kg	2.5E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.0E-06	7.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.5E-01
				PCB-1260	2.6E-01	mg/kg	4.0E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	8.1E-08	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.7E-03
				BETA BHC	3.7E-01	mg/kg	5.6E-08	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	1.0E-07	1.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	8.2E-09	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	1.3E-07	2.3E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	4.6E-04
				HEPTACHLOR	4.7E-01	mg/kg	7.2E-08	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	3.3E-07	2.0E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	4.1E-04
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	1.2E-08	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	1.1E-07	3.4E-08	mg/kg-day	1.3E-05	mg/kg-day	Liver	2.6E-03
			Exposure Route Total								2.2E-05						7.4E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	6.5E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	9.8E-07	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.1E-03
				CADMIUM	3.3E+00	mg/kg	4.3E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.2E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	4.8E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.1E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	8.0E-07	3.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	9.7E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	7.1E-06	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.3E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	9.7E-07	3.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	4.5E-07	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	3.3E-08	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.1E-06	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	7.8E-09	3.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.6E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.2E-06	4.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.15a-RME Indoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	5.3E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.9E-07	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	3.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.0E-07	8.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.2E-02
				PCB-1248	1.3E+01	mg/kg	2.4E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.7E-06	6.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.3E-01
				PCB-1254	1.6E+01	mg/kg	2.9E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.9E-06	8.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	4.1E-01
				PCB-1260	2.6E-01	mg/kg	4.8E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-08	1.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.7E-03
				BETA BHC	3.7E-01	mg/kg	4.7E-08	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	8.5E-08	1.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	7.0E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-07	1.9E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.9E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								2.3E-05						8.0E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	3.5E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	9.9E-07	mg/m^3	5.0E-03	mg/m^3	CNS	2.0E-04
				ANTIMONY	6.8E+00	mg/kg	4.1E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	1.0E-06	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	4.3E-09	2.8E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.9E-04
				CADMIUM	3.3E+00	mg/kg	2.0E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	3.5E-10	5.5E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	5.5E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	3.2E-08	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	2.7E-09	8.9E-11	mg/m^3	1.0E-04	mg/m^3	Lung	8.9E-07
				COBALT	6.2E+00	mg/kg	3.7E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.3E-09	1.0E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.7E-04
				COPPER	2.6E+02	mg/kg	1.6E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	2.0E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	4.2E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-07	mg/m^3	5.0E-05	mg/m^3	CNS	2.4E-03
				ZINC	6.7E+02	mg/kg	4.0E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.2E-04	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.3E-08	3.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	3.4E-07	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	3.8E-10	9.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	4.7E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	5.2E-11	1.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	1.6E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.8E-11	4.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	3.8E-07	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	4.2E-12	1.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	5.7E-08	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	6.9E-11	1.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	1.9E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	2.1E-11	5.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.3E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.3E-07	6.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	1.7E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	9.8E-07	4.8E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	1.6E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	9.0E-07	4.4E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	1.6E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	9.4E-09	4.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	2.2E-08	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	1.2E-11	6.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	3.2E-09	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	1.5E-11	9.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	8.1E-05	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	1.0E-07	2.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	7.6E-06	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	2.0E-08	2.1E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								2.2E-06						3.0E-03
		Exposure Point Total									4.7E-05						1.5E+00
	Exposure Medium Total										4.7E-05						1.5E+00
Medium Total for Adult											4.7E-05						1.5E+00
										Total of Receptor Risks Across All Media	4.7E-05					Total of Receptor Hazards Across All Media	1.5E+00

TABLE 7.15a-RME Indoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	8.2.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.8.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.3.E-02
Total Immune HI Across All Media =	1.5.E+00
Total Kidney HI Across All Media =	1.9.E-03
Total Liver HI Across All Media =	3.9.E-03
Total Lung HI Across All Media =	8.9.E-07
Total Lung & Respiratory HI Across All Media =	1.7.E-04
Total No Critical Effect Risk HI Across All Media =	7.6.E-05
Total Reproductive HI Across All Media =	1.9.E-04
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.0.E-02
Total Thyroid HI Across All Media =	8.9.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.15a-CTE Indoor Worker (Adult)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	8.1E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.3E-04	mg/kg-day	1.0E+00	mg/kg-day	CNS	6.3E-04
				ANTIMONY	6.8E+00	mg/kg	9.4E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.3E-07	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.8E-03
				ARSENIC	1.7E+01	mg/kg	1.4E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.1E-07	1.1E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.6E-03
				CADMIUM	3.3E+00	mg/kg	4.5E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.5E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.5E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	7.3E-09	mg/kg-day	5.0E-01	$(mg/kg-day)^{-1}$	3.6E-09	5.7E-08	mg/kg-day	3.0E-03	mg/kg-day	None	1.9E-05
				COBALT	6.2E+00	mg/kg	8.5E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.6E-07	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.2E-03
				COPPER	2.6E+02	mg/kg	3.6E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.8E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	6.9E-04
				IRON	3.3E+04	mg/kg	4.6E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.5E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	5.1E-03
				MANGANESE	7.1E+02	mg/kg	9.7E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.6E-05	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.2E-03
				ZINC	6.7E+02	mg/kg	9.2E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.2E-05	mg/kg-day	3.0E-01	mg/kg-day	Blood	2.4E-04
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	9.0E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	6.6E-08	7.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	7.9E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	5.8E-07	6.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	7.9E-08	8.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	3.7E-08	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	2.7E-09	2.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	8.7E-08	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	6.3E-10	6.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.3E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	9.6E-08	1.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	4.3E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	3.2E-08	3.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.3E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.6E-08	1.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.9E-03
				PCB-1248	1.3E+01	mg/kg	1.8E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	3.6E-07	1.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.0E-02
				PCB-1254	1.6E+01	mg/kg	2.2E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	4.5E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	8.7E-02
				PCB-1260	2.6E-01	mg/kg	3.6E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.3E-09	2.8E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.4E-03
				BETA BHC	3.7E-01	mg/kg	5.0E-09	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	9.0E-09	3.9E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	7.4E-10	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	1.2E-08	5.8E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.2E-04
				HEPTACHLOR	4.7E-01	mg/kg	6.5E-09	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	2.9E-08	5.1E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.0E-04
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	1.1E-09	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	9.9E-09	8.5E-09	mg/kg-day	1.3E-05	mg/kg-day	Liver	6.5E-04
			Exposure Route Total								2.0E-06						1.9E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	1.2E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.8E-07	9.1E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.0E-03
				CADMIUM	3.3E+00	mg/kg	7.7E-10	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.0E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.4E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	2.0E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.4E-07	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.7E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.3E-06	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	2.4E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.7E-07	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	8.1E-08	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	5.9E-09	6.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.9E-07	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	1.4E-09	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.9E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	2.1E-07	2.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.15a-CTE Indoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	9.5E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.0E-08	7.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	5.4E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-07	4.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.1E-02
				PCB-1248	1.3E+01	mg/kg	4.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.5E-07	3.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-01
				PCB-1254	1.6E+01	mg/kg	5.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-06	4.1E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.1E-01
				PCB-1260	2.6E-01	mg/kg	8.6E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-08	6.7E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.3E-03
				BETA BHC	3.7E-01	mg/kg	8.5E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-08	6.6E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.3E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	2.0E-08	9.7E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.9E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								4.1E-06						4.0E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	6.4E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.9E-07	mg/m^3	5.0E-03	mg/m^3	CNS	9.9E-05
				ANTIMONY	6.8E+00	mg/kg	7.3E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	1.8E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	7.8E-10	1.4E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	9.4E-05
				CADMIUM	3.3E+00	mg/kg	3.5E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	6.4E-11	2.8E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	2.8E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	5.7E-09	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	4.8E-10	4.4E-11	mg/m^3	1.0E-04	mg/m^3	Lung	4.4E-07
				COBALT	6.2E+00	mg/kg	6.7E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	6.0E-10	5.2E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	8.7E-05
				COPPER	2.6E+02	mg/kg	2.8E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	3.6E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.8E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	7.6E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.9E-08	mg/m^3	5.0E-05	mg/m^3	CNS	1.2E-03
				ZINC	6.7E+02	mg/kg	7.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	2.2E-05	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	2.4E-09	1.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	6.2E-08	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	6.8E-11	4.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	8.5E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	9.3E-12	6.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	2.9E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.2E-12	2.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	6.8E-08	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	7.5E-13	5.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.0E-08	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	1.2E-11	8.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	3.4E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.7E-12	2.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	4.1E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.4E-08	3.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	3.1E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.8E-07	2.4E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	2.8E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.6E-07	2.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	3.0E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.7E-09	2.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	3.9E-09	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	2.1E-12	3.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	5.8E-10	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	2.7E-12	4.5E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	1.5E-05	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	1.9E-08	1.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	1.4E-06	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	3.6E-09	1.1E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								3.9E-07						1.5E-03
		Exposure Point Total									6.5E-06						5.9E-01
	Exposure Medium Total										6.5E-06						5.9E-01
Medium Total for Adult											6.5E-06						5.9E-01
										Total of Receptor Risks Across All Media	6.5E-06					Total of Receptor Hazards Across All Media	5.9E-01

TABLE 7.15a-CTE Indoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	2.1.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	5.1.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.8.E-03
Total Immune HI Across All Media =	5.6.E-01
Total Kidney HI Across All Media =	6.2.E-04
Total Liver HI Across All Media =	1.1.E-03
Total Lung HI Across All Media =	4.4.E-07
Total Lung & Respiratory HI Across All Media =	8.7.E-05
Total No Critical Effect Risk HI Across All Media =	1.9.E-05
Total Reproductive HI Across All Media =	9.4.E-05
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	6.6.E-03
Total Thyroid HI Across All Media =	2.2.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.16a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	1.6E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.5E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	4.5E-03
				ANTIMONY	6.8E+00	mg/kg	1.9E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.2E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.3E-02
				ARSENIC	1.7E+01	mg/kg	2.8E-06	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	4.2E-06	7.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.6E-02
				CADMIUM	3.3E+00	mg/kg	9.1E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.5E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	2.5E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.5E-07	mg/kg-day	5.0E-01	$(mg/kg-day)^{-1}$	7.3E-08	4.1E-07	mg/kg-day	3.0E-03	mg/kg-day	None	1.4E-04
				COBALT	6.2E+00	mg/kg	1.7E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.6E-02
				COPPER	2.6E+02	mg/kg	7.1E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.0E-04	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	5.0E-03
				IRON	3.3E+04	mg/kg	9.1E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.6E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	3.6E-02
				MANGANESE	7.1E+02	mg/kg	1.9E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.5E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.3E-02
				ZINC	6.7E+02	mg/kg	1.8E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.2E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.7E-03
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.8E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.3E-06	5.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.6E-06	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.2E-05	4.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	2.2E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.6E-06	6.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	7.4E-07	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	5.4E-08	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.7E-06	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	1.3E-08	4.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.6E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.9E-06	7.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	8.7E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	6.3E-07	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	4.6E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	9.2E-07	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.4E-02
				PCB-1248	1.3E+01	mg/kg	3.6E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.2E-06	1.0E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	5.0E-01
				PCB-1254	1.6E+01	mg/kg	4.5E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	9.0E-06	1.3E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.3E-01
				PCB-1260	2.6E-01	mg/kg	7.3E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.5E-07	2.0E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.0E-02
				BETA BHC	3.7E-01	mg/kg	1.0E-07	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	1.8E-07	2.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.5E-08	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	2.4E-07	4.1E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	8.3E-04
				HEPTACHLOR	4.7E-01	mg/kg	1.3E-07	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	5.9E-07	3.7E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	7.3E-04
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	2.2E-08	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	2.0E-07	6.1E-08	mg/kg-day	1.3E-05	mg/kg-day	Liver	4.7E-03
			Exposure Route Total								4.0E-05						1.3E+00
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	5.9E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	8.8E-07	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.5E-03
				CADMIUM	3.3E+00	mg/kg	3.8E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	4.3E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	9.9E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	7.2E-07	2.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	8.7E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	6.3E-06	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.2E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	8.7E-07	3.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	4.1E-07	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	3.0E-08	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	9.6E-07	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	7.0E-09	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	1.5E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.1E-06	4.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.16a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	4.8E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.5E-07	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.7E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.4E-07	7.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.8E-02
				PCB-1248	1.3E+01	mg/kg	2.1E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-06	6.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.0E-01
				PCB-1254	1.6E+01	mg/kg	2.7E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	5.3E-06	7.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.7E-01
				PCB-1260	2.6E-01	mg/kg	4.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.6E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.0E-03
				BETA BHC	3.7E-01	mg/kg	4.3E-08	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	7.7E-08	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	6.3E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.0E-07	1.8E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.5E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								2.1E-05						7.2E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	3.2E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	8.9E-07	mg/m^3	5.0E-03	mg/m^3	CNS	1.8E-04
				ANTIMONY	6.8E+00	mg/kg	3.7E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-09	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	9.0E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	3.9E-09	2.5E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.7E-04
				CADMIUM	3.3E+00	mg/kg	1.8E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	3.2E-10	5.0E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	5.0E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	2.9E-08	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	2.4E-09	8.0E-11	mg/m^3	1.0E-04	mg/m^3	Lung	8.0E-07
				COBALT	6.2E+00	mg/kg	3.3E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.0E-09	9.4E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	1.6E-04
				COPPER	2.6E+02	mg/kg	1.4E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.9E-08	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	1.8E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	3.8E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-07	mg/m^3	5.0E-05	mg/m^3	CNS	2.1E-03
				ZINC	6.7E+02	mg/kg	3.6E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.1E-04	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.2E-08	3.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	3.1E-07	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	3.4E-10	8.7E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	4.2E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	4.7E-11	1.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	1.4E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.6E-11	4.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	3.4E-07	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	3.7E-12	9.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	5.2E-08	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	6.2E-11	1.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	1.7E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.9E-11	4.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	2.1E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.2E-07	5.8E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	1.5E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	8.8E-07	4.3E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	1.4E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	8.1E-07	4.0E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	1.5E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	8.5E-09	4.1E-08	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	2.0E-08	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	1.0E-11	5.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	2.9E-09	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	1.3E-11	8.1E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	7.3E-05	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	9.4E-08	2.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	6.9E-06	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	1.8E-08	1.9E-08	mg/m^3	NA	mg/m^3	NA	NA
			Exposure Route Total								1.9E-06						2.7E-03
		Exposure Point Total									6.2E-05						2.1E+00
	Exposure Medium Total										6.2E-05						2.1E+00
Medium Total for Adult											6.2E-05						2.1E+00
										Total of Receptor Risks Across All Media	6.2E-05					Total of Receptor Hazards Across All Media	2.1E+00

TABLE 7.16a-RME Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.5.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.0.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	4.1.E-02
Total Immune HI Across All Media =	1.9.E+00
Total Kidney HI Across All Media =	3.0.E-03
Total Liver HI Across All Media =	6.6.E-03
Total Lung HI Across All Media =	8.0.E-07
Total Lung & Respiratory HI Across All Media =	1.6.E-04
Total No Critical Effect Risk HI Across All Media =	1.4.E-04
Total Reproductive HI Across All Media =	1.7.E-04
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.1.E-02
Total Thyroid HI Across All Media =	1.6.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.16a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Ingestion	ALUMINUM	5.9E+03	mg/kg	1.3E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.1E-03
				ANTIMONY	6.8E+00	mg/kg	1.5E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.3E-06	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.3E-03
				ARSENIC	1.7E+01	mg/kg	2.2E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	3.3E-07	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	6.5E-03
				CADMIUM	3.3E+00	mg/kg	7.3E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.4E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	6.4E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.2E-08	mg/kg-day	5.0E-01	$(mg/kg-day)^{-1}$	5.9E-09	1.0E-07	mg/kg-day	3.0E-03	mg/kg-day	None	3.4E-05
				COBALT	6.2E+00	mg/kg	1.4E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	4.0E-03
				COPPER	2.6E+02	mg/kg	5.7E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.0E-05	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.3E-03
				IRON	3.3E+04	mg/kg	7.3E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	6.4E-03	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	9.2E-03
				MANGANESE	7.1E+02	mg/kg	1.6E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.4E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	5.7E-03
				ZINC	6.7E+02	mg/kg	1.5E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.3E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	4.3E-04
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.4E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.1E-07	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.3E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	9.3E-07	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.7E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.3E-07	1.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	5.9E-08	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	4.3E-09	5.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.4E-07	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	1.0E-09	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.1E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.5E-07	1.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	7.0E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	5.1E-08	6.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	3.7E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.4E-08	3.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-02
				PCB-1248	1.3E+01	mg/kg	2.9E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.8E-07	2.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.3E-01
				PCB-1254	1.6E+01	mg/kg	3.6E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.2E-07	3.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-01
				PCB-1260	2.6E-01	mg/kg	5.8E-09	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	1.2E-08	5.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.6E-03
				BETA BHC	3.7E-01	mg/kg	8.1E-09	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	1.5E-08	7.1E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.2E-09	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	1.9E-08	1.0E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.1E-04
				HEPTACHLOR	4.7E-01	mg/kg	1.0E-08	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	4.7E-08	9.2E-08	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.8E-04
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	1.7E-09	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	1.6E-08	1.5E-08	mg/kg-day	1.3E-05	mg/kg-day	Liver	1.2E-03
			Exposure Route Total								3.2E-06						3.4E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Dermal	ALUMINUM	5.9E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	6.8E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.7E+01	mg/kg	9.4E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.4E-07	8.2E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.7E-03
				CADMIUM	3.3E+00	mg/kg	6.2E-10	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.4E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	2.2E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	6.2E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	2.6E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.3E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.1E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				ZINC	6.7E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	1.6E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.2E-07	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.4E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.0E-06	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.9E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.4E-07	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	6.5E-08	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	4.8E-09	5.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.5E-07	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	1.1E-09	1.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.3E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.7E-07	2.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.16a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	7.7E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	5.6E-08	6.7E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.7E+00	mg/kg	4.4E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.7E-08	3.8E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-02
				PCB-1248	1.3E+01	mg/kg	3.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.9E-07	3.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-01
				PCB-1254	1.6E+01	mg/kg	4.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.5E-07	3.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.9E-01
				PCB-1260	2.6E-01	mg/kg	6.9E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-08	6.1E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.0E-03
				BETA BHC	3.7E-01	mg/kg	6.8E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-08	6.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.0E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.6E-08	8.8E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.8E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								3.3E-06						3.6E-01
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	Inhalation	ALUMINUM	5.9E+03	mg/kg	1.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-07	mg/m^3	5.0E-03	mg/m^3	CNS	2.2E-05
				ANTIMONY	6.8E+00	mg/kg	1.5E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.7E+01	mg/kg	3.6E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.6E-10	3.2E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	2.1E-05
				CADMIUM	3.3E+00	mg/kg	7.1E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.3E-11	6.2E-11	mg/m^3	1.0E-05	mg/m^3	Kidney	6.2E-06
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.1E-09	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	9.7E-11	1.0E-11	mg/m^3	1.0E-04	mg/m^3	Lung	1.0E-07
				COBALT	6.2E+00	mg/kg	1.3E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.2E-10	1.2E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	2.0E-05
				COPPER	2.6E+02	mg/kg	5.6E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.3E+04	mg/kg	7.2E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.1E+02	mg/kg	1.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-08	mg/m^3	5.0E-05	mg/m^3	CNS	2.7E-04
				ZINC	6.7E+02	mg/kg	1.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	6.5E+00	mg/kg	4.4E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	4.8E-10	3.8E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	5.7E+00	mg/kg	1.2E-08	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.4E-11	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	7.9E+00	mg/kg	1.7E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.9E-12	1.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.7E+00	mg/kg	5.8E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	6.4E-13	5.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	6.3E+00	mg/kg	1.4E-08	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	1.5E-13	1.2E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	9.6E-01	mg/kg	2.1E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	2.5E-12	1.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	3.2E+00	mg/kg	6.8E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	7.5E-13	6.0E-11	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.7E+00	mg/kg	8.3E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.7E-09	7.3E-08	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	1.3E+01	mg/kg	6.2E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.5E-08	5.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.6E+01	mg/kg	5.7E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.3E-08	5.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	2.6E-01	mg/kg	5.9E-07	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.4E-10	5.2E-09	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	7.9E-10	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	4.2E-13	6.9E-12	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.2E-10	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	5.4E-13	1.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	2.9E-06	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	3.8E-09	2.6E-08	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	7.9E-02	mg/kg	2.8E-07	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	7.2E-10	2.4E-09	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.16a-CTE Outdoor Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								7.8E-08						3.4E-04
		Exposure Point Total									6.6E-06						7.0E-01
	Exposure Medium Total										6.6E-06						7.0E-01
Medium Total for Adult											6.6E-06						7.0E-01
				Total of Receptor Risks Across All Media							6.6E-06					Total of Receptor Hazards Across All Media	7.0E-01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	3.7.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	7.1.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.0.E-02
Total Immune HI Across All Media =	6.6.E-01
Total Kidney HI Across All Media =	8.6.E-04
Total Liver HI Across All Media =	1.7.E-03
Total Lung HI Across All Media =	1.0.E-07
Total Lung & Respiratory HI Across All Media =	2.0.E-05
Total No Critical Effect Risk HI Across All Media =	3.4.E-05
Total Reproductive HI Across All Media =	2.1.E-05
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	9.2.E-03
Total Thyroid HI Across All Media =	4.0.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.17a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Ingestion	ALUMINUM	6.4E+03	mg/kg	2.6E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.8E-02	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.8E-02
				ANTIMONY	1.5E+02	mg/kg	5.9E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.1E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.0E+00
				ARSENIC	1.6E+01	mg/kg	4.0E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	5.9E-07	2.8E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	9.2E-02
				CADMIUM	2.7E+00	mg/kg	1.1E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.7E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	7.7E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	2.1E-08	mg/kg-day	5.0E-01	$(mg/kg-day)^{-1}$	1.1E-08	1.5E-06	mg/kg-day	3.0E-03	mg/kg-day	None	5.0E-04
				COBALT	7.3E+00	mg/kg	2.9E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.1E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	6.9E-02
				COPPER	3.5E+03	mg/kg	1.4E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.0E-02	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	2.5E-01
				IRON	3.4E+04	mg/kg	1.4E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	9.5E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.4E-01
				MANGANESE	7.0E+02	mg/kg	2.8E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.0E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	8.2E-02
				MERCURY	4.2E-01	mg/kg	1.7E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.2E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.2E-02
				VANADIUM	1.9E+01	mg/kg	7.6E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.3E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	1.1E-02
				ZINC	1.1E+03	mg/kg	4.4E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.1E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.0E-02
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	2.2E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.6E-07	1.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	1.9E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.4E-06	1.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	2.6E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.9E-07	1.8E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	8.4E-08	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	6.1E-09	5.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	2.1E-07	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	1.5E-09	1.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	3.4E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	2.5E-07	2.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	7.8E-08	7.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	4.4E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	8.7E-08	3.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-01
				PCB-1248	4.5E+01	mg/kg	1.8E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	3.6E-06	1.3E-04	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.4E+00
				PCB-1254	1.1E+01	mg/kg	4.4E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	8.8E-07	3.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E+00
				PCB-1260	4.4E+00	mg/kg	1.8E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	3.6E-07	1.2E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.2E-01
				BETA BHC	3.7E-01	mg/kg	1.5E-08	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	2.7E-08	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	2.2E-09	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	3.5E-08	1.5E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.0E-03
				HEPTACHLOR	4.7E-01	mg/kg	1.9E-08	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	8.6E-08	1.3E-06	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.7E-03
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	1.7E-08	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	1.6E-07	1.2E-06	mg/kg-day	1.3E-05	mg/kg-day	Liver	9.3E-02
			Exposure Route Total								8.0E-06						1.0E+01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Dermal	ALUMINUM	6.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	2.5E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	3.8E-08	1.8E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.9E-03
				CADMIUM	2.7E+00	mg/kg	1.4E-10	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	9.8E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	3.9E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	7.3E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	3.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.4E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.0E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	4.2E-01	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				VANADIUM	1.9E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	3.6E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	2.6E-08	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	3.2E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	2.4E-07	2.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.17a-RME Construction Worker (Adult)
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	4.3E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.2E-08	3.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	1.4E-08	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	1.0E-09	9.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	3.5E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	2.6E-10	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	5.7E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-08	4.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	1.8E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.3E-08	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	7.8E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-08	5.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.7E-02
				PCB-1248	4.5E+01	mg/kg	3.3E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.5E-07	2.3E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E+00
				PCB-1254	1.1E+01	mg/kg	7.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-07	5.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.8E-01
				PCB-1260	4.4E+00	mg/kg	3.2E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	6.4E-08	2.2E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-01
				BETA BHC	3.7E-01	mg/kg	1.9E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-09	1.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	2.8E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	4.5E-09	1.9E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.9E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								1.3E-06						1.6E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Inhalation	ALUMINUM	6.4E+03	mg/kg	1.5E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-06	mg/m^3	5.0E-03	mg/m^3	CNS	2.2E-04
				ANTIMONY	1.5E+02	mg/kg	3.5E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.5E-08	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	3.9E-08	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.7E-10	2.7E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	1.8E-04
				CADMIUM	2.7E+00	mg/kg	6.5E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.2E-11	4.6E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	4.6E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.3E-09	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	1.1E-10	8.9E-11	mg/m^3	1.0E-04	mg/m^3	Lung	8.9E-07
				COBALT	7.3E+00	mg/kg	1.7E-08	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.6E-10	1.2E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	2.0E-04
				COPPER	3.5E+03	mg/kg	8.5E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.9E-07	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.4E+04	mg/kg	8.1E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.7E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.0E+02	mg/kg	1.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-07	mg/m^3	5.0E-05	mg/m^3	CNS	2.3E-03
				MERCURY	4.2E-01	mg/kg	3.9E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.7E-06	mg/m^3	3.0E-04	mg/m^3	CNS	9.1E-03
				VANADIUM	1.9E+01	mg/kg	4.5E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.1E-09	mg/m^3	1.0E-04	mg/m^3	Respiratory	3.1E-05
				ZINC	1.1E+03	mg/kg	2.6E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.8E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	4.0E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	4.4E-10	2.8E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	1.2E-08	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.3E-11	8.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	1.5E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.7E-12	1.1E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	5.0E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	5.5E-13	3.5E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	5.2E+00	mg/kg	1.3E-08	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	1.4E-13	8.8E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	2.0E-09	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	2.5E-12	1.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	6.3E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	7.0E-13	4.4E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.1E+00	mg/kg	6.0E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.4E-09	4.2E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	4.5E+01	mg/kg	2.3E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.3E-07	1.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	4.2E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.4E-08	2.9E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	4.4E+00	mg/kg	1.1E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	6.3E-09	7.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	8.8E-10	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	4.6E-13	6.1E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.3E-10	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	5.9E-13	9.0E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	3.2E-06	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	4.2E-09	2.3E-07	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	1.7E-06	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	4.3E-09	1.2E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.17a-RME Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								1.8E-07						1.2E-02
		Exposure Point Total									9.4E-06						1.2E+01
	Exposure Medium Total										9.4E-06						1.2E+01
Medium Total for Adult											9.4E-06						1.2E+01
Total of Receptor Risks Across All Media											9.4E-06	Total of Receptor Hazards Across All Media					1.2E+01

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.0.E+00
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.2.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	3.9.E-01
Total Immune HI Across All Media =	1.0.E+01
Total Kidney HI Across All Media =	8.1.E-03
Total Liver HI Across All Media =	1.0.E-01
Total Lung HI Across All Media =	8.9.E-07
Total Lung & Respiratory HI Across All Media =	2.0.E-04
Total No Critical Effect Risk HI Across All Media =	5.0.E-04
Total Reproductive HI Across All Media =	1.8.E-04
Total Respiratory HI Across All Media =	3.1.E-05
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	9.8.E-02
Total Thyroid HI Across All Media =	6.9.E-02
Total Vascular HI Across All Media =	9.8.E-02
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.17a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Ingestion	ALUMINUM	6.4E+03	mg/kg	6.2E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	4.3E-03
				ANTIMONY	1.5E+02	mg/kg	1.4E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.9E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	2.5E-01
				ARSENIC	1.6E+01	mg/kg	9.5E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-07	6.6E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.2E-02
				CADMIUM	2.7E+00	mg/kg	2.6E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.8E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	1.8E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	5.1E-09	mg/kg-day	5.0E-01	$(mg/kg\text{-}day)^{-1}$	2.6E-09	3.6E-07	mg/kg-day	3.0E-03	mg/kg-day	None	1.2E-04
				COBALT	7.3E+00	mg/kg	7.1E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.9E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.6E-02
				COPPER	3.5E+03	mg/kg	3.4E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	6.0E-02
				IRON	3.4E+04	mg/kg	3.3E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	3.3E-02
				MANGANESE	7.0E+02	mg/kg	6.8E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.7E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	2.0E-02
				MERCURY	4.2E-01	mg/kg	4.0E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.8E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	2.8E-03
				VANADIUM	1.9E+01	mg/kg	1.8E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	2.5E-03
				ZINC	1.1E+03	mg/kg	1.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	7.4E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	2.5E-03
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	5.2E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.8E-08	3.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	4.7E-08	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-07	3.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	6.2E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	4.6E-08	4.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	2.0E-08	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	1.5E-09	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	5.1E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	3.7E-10	3.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	8.3E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	6.0E-08	5.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	2.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-08	1.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	1.0E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-08	7.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.7E-02
				PCB-1248	4.5E+01	mg/kg	4.4E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.7E-07	3.1E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E+00
				PCB-1254	1.1E+01	mg/kg	1.1E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-07	7.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.7E-01
				PCB-1260	4.4E+00	mg/kg	4.3E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	8.5E-08	3.0E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.5E-01
				BETA BHC	3.7E-01	mg/kg	3.5E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	6.4E-09	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	5.2E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	8.3E-09	3.6E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	7.3E-04
				HEPTACHLOR	4.7E-01	mg/kg	4.6E-09	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	2.1E-08	3.2E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	6.4E-04
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	4.2E-09	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-08	2.9E-07	mg/kg-day	1.3E-05	mg/kg-day	Liver	2.2E-02
			Exposure Route Total								1.9E-06						2.5E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Dermal	ALUMINUM	6.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	6.1E-09	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.1E-09	4.3E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.4E-03
				CADMIUM	2.7E+00	mg/kg	3.4E-11	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	9.4E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	7.3E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	3.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.4E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.0E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	4.2E-01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				VANADIUM	1.9E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	8.7E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	6.3E-09	6.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	7.8E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	5.7E-08	5.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.17a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	1.0E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.6E-09	7.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	3.3E-09	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	2.4E-10	2.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	8.5E-09	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	6.2E-11	5.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	1.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.0E-08	9.6E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	4.3E-09	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.1E-09	3.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	1.9E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-09	1.3E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.6E-03
				PCB-1248	4.5E+01	mg/kg	7.8E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-07	5.5E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.7E-01
				PCB-1254	1.1E+01	mg/kg	1.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-08	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.6E-02
				PCB-1260	4.4E+00	mg/kg	7.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-08	5.4E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.7E-02
				BETA BHC	3.7E-01	mg/kg	4.5E-10	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	8.2E-10	3.2E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	6.7E-11	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-09	4.7E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	9.4E-05
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								3.1E-07						3.8E-01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Inhalation	ALUMINUM	6.4E+03	mg/kg	3.7E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.6E-07	mg/m^3	5.0E-03	mg/m^3	CNS	5.2E-05
				ANTIMONY	1.5E+02	mg/kg	8.4E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	9.4E-09	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	4.0E-11	6.6E-10	mg/m^3	1.5E-05	mg/m^3	Reproductive	4.4E-05
				CADMIUM	2.7E+00	mg/kg	1.6E-09	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	2.8E-12	1.1E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	1.1E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	3.1E-10	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	2.6E-11	2.1E-11	mg/m^3	1.0E-04	mg/m^3	Lung	2.1E-07
				COBALT	7.3E+00	mg/kg	4.2E-09	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	3.8E-11	2.9E-10	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.9E-05
				COPPER	3.5E+03	mg/kg	2.0E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.4E-07	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.4E+04	mg/kg	1.9E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.4E-06	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.0E+02	mg/kg	4.0E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.8E-08	mg/m^3	5.0E-05	mg/m^3	CNS	5.6E-04
				MERCURY	4.2E-01	mg/kg	9.4E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.6E-07	mg/m^3	3.0E-04	mg/m^3	CNS	2.2E-03
				VANADIUM	1.9E+01	mg/kg	1.1E-08	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.6E-10	mg/m^3	1.0E-04	mg/m^3	Respiratory	7.6E-06
				ZINC	1.1E+03	mg/kg	6.3E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	9.6E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.1E-10	6.7E-08	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	2.8E-09	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	3.0E-12	1.9E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	3.7E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	4.1E-13	2.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	1.2E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.3E-13	8.3E-11	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	5.2E+00	mg/kg	3.0E-09	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	3.3E-14	2.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	4.9E-10	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	5.9E-13	3.4E-11	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	1.5E-09	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.7E-13	1.1E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.1E+00	mg/kg	1.4E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	8.2E-10	1.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	4.5E+01	mg/kg	5.6E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.2E-08	3.9E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	1.0E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.8E-09	7.1E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	4.4E+00	mg/kg	2.6E-06	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.5E-09	1.8E-07	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	2.1E-10	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	1.1E-13	1.5E-11	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	3.1E-11	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	1.4E-13	2.2E-12	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	7.7E-07	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	1.0E-09	5.4E-08	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	4.0E-07	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	1.0E-09	2.8E-08	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.17a-CTE Construction Worker (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								4.3E-08						2.9E-03
		Exposure Point Total									2.3E-06						2.9E+00
	Exposure Medium Total										2.3E-06						2.9E+00
Medium Total for Adult											2.3E-06						2.9E+00
Total of Receptor Risks Across All Media											2.3E-06	Total of Receptor Hazards Across All Media					2.9E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	2.5.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.0.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	9.3.E-02
Total Immune HI Across All Media =	2.5.E+00
Total Kidney HI Across All Media =	1.9.E-03
Total Liver HI Across All Media =	2.4.E-02
Total Lung HI Across All Media =	2.1.E-07
Total Lung & Respiratory HI Across All Media =	4.9.E-05
Total No Critical Effect Risk HI Across All Media =	1.2.E-04
Total Reproductive HI Across All Media =	4.4.E-05
Total Respiratory HI Across All Media =	7.6.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.4.E-02
Total Thyroid HI Across All Media =	1.6.E-02
Total Vascular HI Across All Media =	2.4.E-02
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 7.18a-RME Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Ingestion	ALUMINUM	6.4E+03	mg/kg	7.0E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.2E-02	mg/kg-day	1.0E+00	mg/kg-day	CNS	8.2E-02
				ANTIMONY	1.5E+02	mg/kg	1.6E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.9E-03	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.7E+00
				ARSENIC	1.6E+01	mg/kg	1.1E-05	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-05	1.3E-04	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	4.2E-01
				CADMIUM	2.7E+00	mg/kg	3.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-05	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.5E-02
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	5.8E-07	mg/kg-day	2.7E+00	$(mg/kg\text{-}day)^{-1}$	1.5E-06	6.8E-06	mg/kg-day	3.0E-03	mg/kg-day	None	2.3E-03
				COBALT	7.3E+00	mg/kg	8.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	9.3E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	3.1E-01
				COPPER	3.5E+03	mg/kg	3.9E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.5E-02	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.1E+00
				IRON	3.4E+04	mg/kg	3.7E-02	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.3E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	6.2E-01
				MANGANESE	7.0E+02	mg/kg	7.7E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.9E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.7E-01
				MERCURY	4.2E-01	mg/kg	4.6E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	5.3E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	5.3E-02
				VANADIUM	1.9E+01	mg/kg	2.1E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.4E-04	mg/kg-day	5.0E-03	mg/kg-day	NA	4.8E-02
				ZINC	1.1E+03	mg/kg	1.2E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.4E-02	mg/kg-day	3.0E-01	mg/kg-day	Blood	4.7E-02
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	5.9E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-05	6.9E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	5.3E-06	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	2.1E-04	6.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	7.1E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	2.7E-05	8.2E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	2.3E-06	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	8.8E-07	2.6E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	5.8E-06	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	2.2E-07	6.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	9.3E-07	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	3.6E-05	1.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	2.9E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.1E-05	3.4E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	1.2E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-06	1.4E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.9E-01
				PCB-1248	4.5E+01	mg/kg	4.9E-05	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.9E-05	5.8E-04	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.9E+01
				PCB-1254	1.1E+01	mg/kg	1.2E-05	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	2.4E-05	1.4E-04	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.0E+00
				PCB-1260	4.4E+00	mg/kg	4.8E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.7E-06	5.6E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.8E+00
				BETA BHC	3.7E-01	mg/kg	4.0E-07	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	7.2E-07	4.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	5.9E-08	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	9.4E-07	6.9E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.4E-02
				HEPTACHLOR	4.7E-01	mg/kg	5.2E-07	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	2.3E-06	6.1E-06	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.2E-02
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	4.7E-07	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	4.3E-06	5.5E-06	mg/kg-day	1.3E-05	mg/kg-day	Liver	4.2E-01
			Exposure Route Total								4.6E-04						4.7E+01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Dermal	ALUMINUM	6.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	1.3E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-06	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.0E-02
				CADMIUM	2.7E+00	mg/kg	7.1E-09	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.2E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	3.3E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	1.1E+02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	7.3E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	3.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.4E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.0E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	4.2E-01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				VANADIUM	1.9E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	1.8E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	7.1E-06	2.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	1.6E-06	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	6.3E-05	1.9E-05	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.18a-RME Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	2.2E-06	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	8.5E-06	2.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	7.0E-07	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	2.7E-07	8.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	1.8E-06	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	6.9E-08	2.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	2.9E-07	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-05	3.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	8.9E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-06	1.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	3.9E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.8E-07	4.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.3E-01
				PCB-1248	4.5E+01	mg/kg	1.6E-05	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.3E-05	1.9E-04	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.6E+00
				PCB-1254	1.1E+01	mg/kg	4.0E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	7.9E-06	4.6E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.3E+00
				PCB-1260	4.4E+00	mg/kg	1.6E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.2E-06	1.9E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.4E-01
				BETA BHC	3.7E-01	mg/kg	9.5E-08	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07	1.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.4E-08	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	2.2E-07	1.6E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.3E-03
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								1.4E-04						1.3E+01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Inhalation	ALUMINUM	6.4E+03	mg/kg	3.9E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.5E-06	mg/m^3	5.0E-03	mg/m^3	CNS	9.0E-04
				ANTIMONY	1.5E+02	mg/kg	8.9E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	9.9E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	4.2E-09	1.2E-08	mg/m^3	1.5E-05	mg/m^3	Reproductive	7.7E-04
				CADMIUM	2.7E+00	mg/kg	1.6E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	3.0E-10	1.9E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	1.9E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	3.2E-08	$\mu g/m^3$	4.5E-01	$(\mu g/m^3)^{-1}$	1.4E-08	3.7E-10	mg/m^3	1.0E-04	mg/m^3	Lung	3.7E-06
				COBALT	7.3E+00	mg/kg	4.4E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	4.0E-09	5.1E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	8.6E-04
				COPPER	3.5E+03	mg/kg	2.1E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.5E-06	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.4E+04	mg/kg	2.0E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.4E-05	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.0E+02	mg/kg	4.2E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.9E-07	mg/m^3	5.0E-05	mg/m^3	CNS	9.8E-03
				MERCURY	4.2E-01	mg/kg	9.9E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-05	mg/m^3	3.0E-04	mg/m^3	CNS	3.8E-02
				VANADIUM	1.9E+01	mg/kg	1.1E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-08	mg/m^3	1.0E-04	mg/m^3	Respiratory	1.3E-04
				ZINC	1.1E+03	mg/kg	6.6E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	1.0E-04	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	5.9E-08	1.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	2.9E-07	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	1.7E-09	3.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	3.9E-07	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	2.3E-10	4.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	1.3E-07	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	7.3E-11	1.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	5.2E+00	mg/kg	3.2E-07	$\mu g/m^3$	5.9E-05	$(\mu g/m^3)^{-1}$	1.9E-11	3.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	5.1E-08	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	3.3E-10	6.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	1.6E-07	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	9.4E-11	1.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.1E+00	mg/kg	1.5E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	8.6E-08	1.7E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	4.5E+01	mg/kg	5.9E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.4E-06	6.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	1.1E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	6.1E-07	1.2E-05	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	4.4E+00	mg/kg	2.8E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.6E-07	3.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	2.2E-08	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	1.2E-11	2.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	3.3E-09	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	1.5E-11	3.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	8.1E-05	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	1.1E-07	9.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	4.2E-05	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	1.1E-07	4.9E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.18a-RME Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								4.5E-06						5.1E-02
		Exposure Point Total									6.1E-04						6.1E+01
	Exposure Medium Total										6.1E-04						6.1E+01
Medium Total for Young Child											6.1E-04						6.1E+01
Groundwater	Tapwater	United Paperboard	Ingestion	ANTIMONY	5.2E+00	µg/L	2.2E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.6E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	6.5E-01
				ARSENIC	3.3E+00	µg/L	1.4E-05	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	2.1E-05	1.7E-04	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.5E-01
				COBALT	1.4E+00	µg/L	6.2E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.2E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.4E-01
				IRON	3.8E+03	µg/L	1.6E-02	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	2.7E-01
				MANGANESE	8.3E+02	µg/L	3.5E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.1E-02	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.7E+00
				SELENIUM	8.5E+00	µg/L	3.7E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.3E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	8.5E-02
				BENZO(A)ANTHRACENE	2.0E-01	µg/L	8.5E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	3.3E-06	1.0E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	6.4E-07	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	2.5E-05	7.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	1.2E-06	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	4.5E-06	1.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	1.3E-06	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	5.2E-05	1.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	1.2E-06	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	4.5E-06	1.3E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	9.2E-03	µg/L	3.9E-08	mg/kg-day	1.6E+01	$mg/kg\text{-}day^{-1}$	6.3E-07	4.6E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	9.2E-03
				CHLOROFORM	3.3E+00	µg/L	1.4E-05	mg/kg-day	3.1E-02	$mg/kg\text{-}day^{-1}$	4.4E-07	1.6E-04	mg/kg-day	1.0E-02	mg/kg-day	Liver	1.6E-02
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	3.1E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.7E-04	mg/kg-day	2.0E-03	mg/kg-day	Kidney	1.8E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	2.0E-05	mg/kg-day	5.0E-02	$mg/kg\text{-}day^{-1}$	1.0E-06	2.4E-04	mg/kg-day	5.0E-04	mg/kg-day	Development, Immune, Vascular	4.7E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	2.0E-05	mg/kg-day	3.7E-02	$mg/kg\text{-}day^{-1}$	7.5E-07	--	mg/kg-day	--	mg/kg-day	--	NA
			Exposure Route Total								1.1E-04						4.2E+00
Groundwater	Tapwater	United Paperboard	Inhalation	BENZO(A)ANTHRACENE	2.0E-01	µg/L	2.9E-03	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.7E-06	3.4E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	NA	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	NA	2.5E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	NA	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	NA	4.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	NA	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	NA	5.3E-05	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	NA	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	NA	4.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	9.2E-03	µg/L	NA	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	NA	1.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				CHLOROFORM	3.3E+00	µg/L	4.8E-02	$\mu g/m^3$	2.3E-05	$(\mu g/m^3)^{-1}$	1.1E-06	5.6E-04	mg/m^3	9.8E-02	mg/m^3	Liver	5.7E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	1.1E-01	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-03	mg/m^3	NA	mg/m^3	NA	NA
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	6.9E-02	$\mu g/m^3$	5.3E-06	$(\mu g/m^3)^{-1}$	3.7E-07	8.0E-04	mg/m^3	2.0E-03	mg/m^3	Development, Immune, Vascular	4.0E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	6.9E-02	$\mu g/m^3$	3.1E-06	$(\mu g/m^3)^{-1}$	2.1E-07	--	mg/m^3	--	mg/m^3	--	NA
			Exposure Route Total								3.4E-06						4.1E-01
		Exposure Point Total									1.2E-04						4.6E+00
	Exposure Medium Total										1.2E-04						4.6E+00
Medium Total for Young Child											1.2E-04						4.6E+00
										Total of Receptor Risks Across All Media	7.3E-04					Total of Receptor Hazards Across All Media	6.5E+01

TABLE 7.18a-RME Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

Trichloroethylene was evaluated for both mutagenic risk to the kidney and non-mutagenic risk to the liver. The total risk for trichloroethylene is summed in Table 9.18a-RME

Inhalation of tapwater was not assessed for risk from metals, PAHs and pesticides that are considered non-volatile or lack a Henry's law constant.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	5.4.E+00
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.3.E+00
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	8.7.E-01
Total GI Tract HI Across All Media =	2.0.E+00
Total Immune HI Across All Media =	5.2.E+01
Total Kidney HI Across All Media =	2.2.E-01
Total Liver HI Across All Media =	4.8.E-01
Total Lung HI Across All Media =	3.7.E-06
Total Lung & Respiratory HI Across All Media =	8.6.E-04
Total No Critical Effect Risk HI Across All Media =	2.3.E-03
Total Reproductive HI Across All Media =	7.7.E-04
Total Respiratory HI Across All Media =	1.3.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.0.E+00
Total Thyroid HI Across All Media =	5.5.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	8.5.E-02

TABLE 7.18a-CTE Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Ingestion	ALUMINUM	6.4E+03	mg/kg	8.8E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.1E-02	mg/kg-day	1.0E+00	mg/kg-day	CNS	2.1E-02
				ANTIMONY	1.5E+02	mg/kg	2.0E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	4.7E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.2E+00
				ARSENIC	1.6E+01	mg/kg	1.3E-06	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-06	3.1E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.0E-01
				CADMIUM	2.7E+00	mg/kg	3.7E-07	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.7E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	8.7E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	7.3E-08	mg/kg-day	2.7E+00	$(mg/kg\text{-}day)^{-1}$	1.9E-07	1.7E-06	mg/kg-day	3.0E-03	mg/kg-day	None	5.6E-04
				COBALT	7.3E+00	mg/kg	1.0E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.3E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	7.8E-02
				COPPER	3.5E+03	mg/kg	4.9E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-02	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	2.8E-01
				IRON	3.4E+04	mg/kg	4.6E-03	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.1E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.5E-01
				MANGANESE	7.0E+02	mg/kg	9.6E-05	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	2.2E-03	mg/kg-day	2.4E-02	mg/kg-day	CNS	9.3E-02
				MERCURY	4.2E-01	mg/kg	5.7E-08	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	1.3E-06	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.3E-02
				VANADIUM	1.9E+01	mg/kg	2.6E-06	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	6.0E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	1.2E-02
				ZINC	1.1E+03	mg/kg	1.5E-04	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	3.5E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.2E-02
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	7.4E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-06	1.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	6.6E-07	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	2.6E-05	1.5E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	8.8E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.4E-06	2.1E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	2.8E-07	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	1.1E-07	6.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	7.2E-07	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	2.8E-08	1.7E-05	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	1.2E-07	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	4.5E-06	2.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	3.6E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.4E-06	8.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	1.5E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-07	3.4E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E-01
				PCB-1248	4.5E+01	mg/kg	6.2E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-05	1.4E-04	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.2E+00
				PCB-1254	1.1E+01	mg/kg	1.5E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.0E-06	3.5E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.7E+00
				PCB-1260	4.4E+00	mg/kg	6.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-06	1.4E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	7.0E-01
				BETA BHC	3.7E-01	mg/kg	5.0E-08	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	9.0E-08	1.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	7.4E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.2E-07	1.7E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.4E-03
				HEPTACHLOR	4.7E-01	mg/kg	6.5E-08	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	2.9E-07	1.5E-06	mg/kg-day	5.0E-04	mg/kg-day	Liver	3.0E-03
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	5.9E-08	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	5.4E-07	1.4E-06	mg/kg-day	1.3E-05	mg/kg-day	Liver	1.1E-01
			Exposure Route Total								5.8E-05						1.2E+01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Dermal	ALUMINUM	6.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	6.4E-08	mg/kg-day	1.5E+00	$(mg/kg\text{-}day)^{-1}$	9.6E-08	1.5E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.0E-03
				CADMIUM	2.7E+00	mg/kg	3.5E-10	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	8.2E-09	mg/kg-day	2.5E-05	mg/kg-day	Kidney	3.3E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	1.1E+02	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	7.3E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	3.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.4E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.0E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	4.2E-01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				VANADIUM	1.9E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	9.1E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	3.5E-07	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	8.1E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	3.2E-06	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.18a-CTE Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units		
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	1.1E-07	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	4.2E-07	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	3.5E-08	mg/kg-day	3.9E-01	$(mg/kg\text{-}day)^{-1}$	1.4E-08	8.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	8.9E-08	mg/kg-day	3.9E-02	$(mg/kg\text{-}day)^{-1}$	3.5E-09	2.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	1.4E-08	mg/kg-day	3.9E+01	$(mg/kg\text{-}day)^{-1}$	5.6E-07	3.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	4.5E-08	mg/kg-day	3.9E+00	$(mg/kg\text{-}day)^{-1}$	1.7E-07	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	2.0E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-08	4.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.3E-02
				PCB-1248	4.5E+01	mg/kg	8.2E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-06	1.9E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.6E-01
				PCB-1254	1.1E+01	mg/kg	2.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.0E-07	4.6E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.3E-01
				PCB-1260	4.4E+00	mg/kg	8.0E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.6E-07	1.9E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	9.4E-02
				BETA BHC	3.7E-01	mg/kg	4.7E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	8.5E-09	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	7.0E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.1E-08	1.6E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.3E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								7.0E-06						1.3E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Inhalation	ALUMINUM	6.4E+03	mg/kg	9.7E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.3E-06	mg/m^3	5.0E-03	mg/m^3	CNS	4.5E-04
				ANTIMONY	1.5E+02	mg/kg	2.2E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	2.5E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.1E-09	5.8E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	3.8E-04
				CADMIUM	2.7E+00	mg/kg	4.1E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	7.4E-11	9.6E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	9.6E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	8.0E-09	$\mu g/m^3$	4.5E-01	$(\mu g/m^3)^{-1}$	3.6E-09	1.9E-10	mg/m^3	1.0E-04	mg/m^3	Lung	1.9E-06
				COBALT	7.3E+00	mg/kg	1.1E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	9.9E-10	2.6E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.3E-04
				COPPER	3.5E+03	mg/kg	5.4E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.4E+04	mg/kg	5.1E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-05	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.0E+02	mg/kg	1.1E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.5E-07	mg/m^3	5.0E-05	mg/m^3	CNS	4.9E-03
				MERCURY	4.2E-01	mg/kg	2.5E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.7E-06	mg/m^3	3.0E-04	mg/m^3	CNS	1.9E-02
				VANADIUM	1.9E+01	mg/kg	2.8E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.6E-09	mg/m^3	1.0E-04	mg/m^3	Respiratory	6.6E-05
				ZINC	1.1E+03	mg/kg	1.7E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.9E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	2.5E-05	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.5E-08	5.9E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	7.3E-08	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	4.3E-10	1.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	9.7E-08	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	5.7E-11	2.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	3.1E-08	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.8E-11	7.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	5.2E+00	mg/kg	7.9E-08	$\mu g/m^3$	5.9E-05	$(\mu g/m^3)^{-1}$	4.7E-12	1.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	1.3E-08	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	8.2E-11	3.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	4.0E-08	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	2.3E-11	9.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.1E+00	mg/kg	3.7E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.1E-08	8.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	4.5E+01	mg/kg	1.5E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	8.4E-07	3.5E-05	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	2.7E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.5E-07	6.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	4.4E+00	mg/kg	6.9E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.9E-08	1.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	5.5E-09	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	2.9E-12	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	8.1E-10	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	3.7E-12	1.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	2.0E-05	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	2.6E-08	4.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	1.0E-05	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	2.7E-08	2.4E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.18a-CTE Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								1.1E-06						2.6E-02
		Exposure Point Total									6.6E-05						1.3E+01
	Exposure Medium Total										6.6E-05						1.3E+01
Medium Total for Young Child											6.6E-05						1.3E+01
Groundwater	Tapwater	United Paperboard	Ingestion	ANTIMONY	5.2E+00	µg/L	6.9E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.0E-01
				ARSENIC	3.3E+00	µg/L	4.4E-06	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	6.7E-06	7.8E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	2.6E-01
				COBALT	1.4E+00	µg/L	1.9E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	3.4E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.1E-01
				IRON	3.8E+03	µg/L	5.0E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	8.8E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.3E-01
				MANGANESE	8.3E+02	µg/L	1.1E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.9E-02	mg/kg-day	2.4E-02	mg/kg-day	CNS	8.1E-01
				SELENIUM	8.5E+00	µg/L	1.1E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.0E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	4.0E-02
				BENZO(A)ANTHRACENE	2.0E-01	µg/L	2.7E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.0E-06	4.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	2.0E-07	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	7.8E-06	3.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	3.6E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.4E-06	6.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	4.1E-07	mg/kg-day	3.9E+01	$mg/kg\text{-}day^{-1}$	1.6E-05	7.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	3.6E-07	mg/kg-day	3.9E+00	$mg/kg\text{-}day^{-1}$	1.4E-06	6.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	9.2E-03	µg/L	1.2E-08	mg/kg-day	1.6E+01	$mg/kg\text{-}day^{-1}$	2.0E-07	2.1E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	4.3E-03
				CHLOROFORM	3.3E+00	µg/L	4.4E-06	mg/kg-day	3.1E-02	$mg/kg\text{-}day^{-1}$	1.4E-07	7.7E-05	mg/kg-day	1.0E-02	mg/kg-day	Liver	7.7E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	9.8E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.7E-04	mg/kg-day	2.0E-03	mg/kg-day	Kidney	8.6E-02
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	6.3E-06	mg/kg-day	5.0E-02	$mg/kg\text{-}day^{-1}$	3.1E-07	1.1E-04	mg/kg-day	5.0E-04	mg/kg-day	Development, Immune, Vascular	2.2E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	6.3E-06	mg/kg-day	3.7E-02	$mg/kg\text{-}day^{-1}$	2.3E-07	--	mg/kg-day	--	mg/kg-day	--	NA
			Exposure Route Total								3.5E-05						2.0E+00
Groundwater	Tapwater	United Paperboard	Inhalation	BENZO(A)ANTHRACENE	2.0E-01	µg/L	1.9E-03	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	1.1E-06	3.4E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	NA	$\mu g/m^3$	5.9E-03	$(\mu g/m^3)^{-1}$	NA	2.5E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	NA	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	NA	4.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	NA	$\mu g/m^3$	6.4E-03	$(\mu g/m^3)^{-1}$	NA	5.3E-05	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	NA	$\mu g/m^3$	5.9E-04	$(\mu g/m^3)^{-1}$	NA	4.6E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	9.2E-03	µg/L	NA	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	NA	1.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				CHLOROFORM	3.3E+00	µg/L	3.2E-02	$\mu g/m^3$	2.3E-05	$(\mu g/m^3)^{-1}$	7.4E-07	5.6E-04	mg/m^3	9.8E-02	mg/m^3	Liver	5.7E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	7.1E-02	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-03	mg/m^3	NA	mg/m^3	NA	NA
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	4.6E-02	$\mu g/m^3$	5.3E-06	$(\mu g/m^3)^{-1}$	2.5E-07	8.0E-04	mg/m^3	2.0E-03	mg/m^3	Development, Immune, Vascular	4.0E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	4.6E-02	$\mu g/m^3$	3.1E-06	$(\mu g/m^3)^{-1}$	1.4E-07	--	mg/m^3	--	mg/m^3	--	NA
			Exposure Route Total								2.3E-06						4.1E-01
		Exposure Point Total									3.8E-05						2.4E+00
	Exposure Medium Total										3.8E-05						2.4E+00
Medium Total for Young Child											3.8E-05						2.4E+00
Total of Receptor Risks Across All Media											1.0E-04	Total of Receptor Hazards Across All Media					1.6E+01

TABLE 7.18a-CTE Resident (Young Child)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

Trichloroethylene was evaluated for both mutagenic risk to the kidney and non-mutagenic risk to the liver. The total risk for trichloroethylene is summed in Table 9.18a-CTE

Inhalation of tapwater was not assessed for risk from metals, PAHs and pesticides that are considered non-volatile or lack a Henry's law constant.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	1.5.E+00
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	9.6.E-01
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	6.2.E-01
Total GI Tract HI Across All Media =	5.6.E-01
Total Immune HI Across All Media =	1.1.E+01
Total Kidney HI Across All Media =	9.5.E-02
Total Liver HI Across All Media =	1.3.E-01
Total Lung HI Across All Media =	1.9.E-06
Total Lung & Respiratory HI Across All Media =	4.3.E-04
Total No Critical Effect Risk HI Across All Media =	5.6.E-04
Total Reproductive HI Across All Media =	3.8.E-04
Total Respiratory HI Across All Media =	6.6.E-05
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.7.E-01
Total Thyroid HI Across All Media =	1.9.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.0.E-02

TABLE 7.18b-RME Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Ingestion	ALUMINUM	6.4E+03	mg/kg	2.2E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	7.7E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	7.7E-03
				ANTIMONY	1.5E+02	mg/kg	5.0E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.8E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	4.4E-01
				ARSENIC	1.6E+01	mg/kg	3.4E-06	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	5.0E-06	1.2E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.9E-02
				CADMIUM	2.7E+00	mg/kg	9.3E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.3E-06	mg/kg-day	1.0E-03	mg/kg-day	Kidney	3.3E-03
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.8E-07	mg/kg-day	5.0E-01	$(mg/kg-day)^{-1}$	9.1E-08	6.4E-07	mg/kg-day	3.0E-03	mg/kg-day	None	2.1E-04
				COBALT	7.3E+00	mg/kg	2.5E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.7E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	2.9E-02
				COPPER	3.5E+03	mg/kg	1.2E-03	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.2E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	1.1E-01
				IRON	3.4E+04	mg/kg	1.2E-02	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.0E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	5.8E-02
				MANGANESE	7.0E+02	mg/kg	2.4E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.4E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	3.5E-02
				MERCURY	4.2E-01	mg/kg	1.4E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.0E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	5.0E-03
				VANADIUM	1.9E+01	mg/kg	6.4E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.2E-05	mg/kg-day	5.0E-03	mg/kg-day	NA	4.5E-03
				ZINC	1.1E+03	mg/kg	3.8E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.3E-03	mg/kg-day	3.0E-01	mg/kg-day	Blood	4.4E-03
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	1.8E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.3E-06	6.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	1.6E-06	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.2E-05	5.8E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	2.2E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.6E-06	7.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	7.1E-07	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	5.2E-08	2.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	1.8E-06	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	1.3E-08	6.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	2.9E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	2.1E-06	1.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	9.0E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	6.6E-07	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	3.7E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.4E-07	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.5E-02
				PCB-1248	4.5E+01	mg/kg	1.5E-05	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	3.1E-05	5.4E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.7E+00
				PCB-1254	1.1E+01	mg/kg	3.7E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	7.5E-06	1.3E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.5E-01
				PCB-1260	4.4E+00	mg/kg	1.5E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	3.0E-06	5.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.6E-01
				BETA BHC	3.7E-01	mg/kg	1.3E-07	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	2.3E-07	4.4E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.8E-08	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	2.9E-07	6.4E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	1.3E-03
				HEPTACHLOR	4.7E-01	mg/kg	1.6E-07	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	7.3E-07	5.7E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	1.1E-03
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	1.5E-07	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	1.3E-06	5.2E-07	mg/kg-day	1.3E-05	mg/kg-day	Liver	4.0E-02
			Exposure Route Total								6.8E-05						4.5E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Dermal	ALUMINUM	6.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	7.1E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	1.1E-06	2.5E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	8.3E-03
				CADMIUM	2.7E+00	mg/kg	3.9E-09	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.4E-08	mg/kg-day	2.5E-05	mg/kg-day	Kidney	5.5E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	7.3E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	3.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.4E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.0E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	4.2E-01	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				VANADIUM	1.9E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	1.0E-06	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	7.4E-07	3.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	9.0E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	6.6E-06	3.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.18b-RME Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	1.2E-06	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	8.8E-07	4.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	3.9E-07	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	2.8E-08	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	9.9E-07	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	7.2E-09	3.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	1.6E-07	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	1.2E-06	5.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	5.0E-07	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	3.6E-07	1.7E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	2.2E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-07	7.6E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.8E-02
				PCB-1248	4.5E+01	mg/kg	9.1E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-05	3.2E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E+00
				PCB-1254	1.1E+01	mg/kg	2.2E-06	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	4.4E-06	7.7E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	3.9E-01
				PCB-1260	4.4E+00	mg/kg	8.9E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	1.8E-06	3.1E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-01
				BETA BHC	3.7E-01	mg/kg	5.3E-08	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	9.5E-08	1.8E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	7.8E-09	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	1.2E-07	2.7E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	5.4E-04
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								3.6E-05						2.2E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Inhalation	ALUMINUM	6.4E+03	mg/kg	1.3E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.5E-06	mg/m^3	5.0E-03	mg/m^3	CNS	9.0E-04
				ANTIMONY	1.5E+02	mg/kg	3.0E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.0E-07	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	3.3E-06	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	1.4E-08	1.2E-08	mg/m^3	1.5E-05	mg/m^3	Reproductive	7.7E-04
				CADMIUM	2.7E+00	mg/kg	5.5E-07	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	9.8E-10	1.9E-09	mg/m^3	1.0E-05	mg/m^3	Kidney	1.9E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.1E-07	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	9.0E-09	3.7E-10	mg/m^3	1.0E-04	mg/m^3	Lung	3.7E-06
				COBALT	7.3E+00	mg/kg	1.5E-06	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	1.3E-08	5.1E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	8.6E-04
				COPPER	3.5E+03	mg/kg	7.1E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.5E-06	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.4E+04	mg/kg	6.8E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.4E-05	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.0E+02	mg/kg	1.4E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	4.9E-07	mg/m^3	5.0E-05	mg/m^3	CNS	9.8E-03
				MERCURY	4.2E-01	mg/kg	3.3E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.1E-05	mg/m^3	3.0E-04	mg/m^3	CNS	3.8E-02
				VANADIUM	1.9E+01	mg/kg	3.8E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.3E-08	mg/m^3	1.0E-04	mg/m^3	Respiratory	1.3E-04
				ZINC	1.1E+03	mg/kg	2.2E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	7.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	3.4E-04	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	3.7E-08	1.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	9.7E-07	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.1E-09	3.4E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	1.3E-06	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.4E-10	4.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	4.2E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	4.6E-11	1.5E-09	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	5.2E+00	mg/kg	1.1E-06	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	1.2E-11	3.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	1.7E-07	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	2.1E-10	6.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	5.3E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	5.9E-11	1.9E-09	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.1E+00	mg/kg	5.0E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.9E-07	1.7E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	4.5E+01	mg/kg	2.0E-02	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.1E-05	6.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	3.5E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	2.0E-06	1.2E-05	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	4.4E+00	mg/kg	9.2E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	5.3E-07	3.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	7.4E-08	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	3.9E-11	2.6E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.1E-08	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	5.0E-11	3.8E-11	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	2.7E-04	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	3.5E-07	9.5E-07	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	1.4E-04	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	3.6E-07	4.9E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.18b-RME Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								1.5E-05						5.1E-02
		Exposure Point Total									1.2E-04						6.7E+00
	Exposure Medium Total										1.2E-04						6.7E+00
Medium Total for Adult											1.2E-04						6.7E+00
Groundwater	Tapwater	United Paperboard	Ingestion	ANTIMONY	5.2E+00	µg/L	4.5E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.6E-04	mg/kg-day	4.0E-04	mg/kg-day	Blood	3.9E-01
				ARSENIC	3.3E+00	µg/L	2.8E-05	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	4.3E-05	1.0E-04	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	3.3E-01
				COBALT	1.4E+00	µg/L	1.2E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	4.3E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	1.4E-01
				IRON	3.8E+03	µg/L	3.2E-02	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.1E-01	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.6E-01
				MANGANESE	8.3E+02	µg/L	7.1E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.5E-02	mg/kg-day	2.4E-02	mg/kg-day	CNS	1.0E+00
				SELENIUM	8.5E+00	µg/L	7.3E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.6E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	5.1E-02
				BENZO(A)ANTHRACENE	2.0E-01	µg/L	1.7E-06	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.3E-06	6.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	1.3E-06	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	9.4E-06	4.5E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	2.3E-06	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.7E-06	8.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	2.7E-06	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.9E-05	9.3E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	2.3E-06	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	1.7E-06	8.1E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	9.2E-03	µg/L	7.9E-08	mg/kg-day	1.6E+01	$mg/kg\text{-}day^{-1}$	1.3E-06	2.8E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	5.5E-03
				CHLOROFORM	3.3E+00	µg/L	2.8E-05	mg/kg-day	3.1E-02	$mg/kg\text{-}day^{-1}$	8.8E-07	9.9E-05	mg/kg-day	1.0E-02	mg/kg-day	Liver	9.9E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	6.3E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.2E-04	mg/kg-day	2.0E-03	mg/kg-day	Kidney	1.1E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	4.1E-05	mg/kg-day	9.3E-03	$mg/kg\text{-}day^{-1}$	3.8E-07	1.4E-04	mg/kg-day	5.0E-04	mg/kg-day	Development, Immune, Vascular	2.8E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	4.1E-05	mg/kg-day	3.7E-02	$mg/kg\text{-}day^{-1}$	1.5E-06	--	mg/kg-day	--	mg/kg-day	--	NA
			Exposure Route Total								8.0E-05						2.5E+00
Groundwater	Tapwater	United Paperboard	Inhalation	BENZO(A)ANTHRACENE	2.0E-01	µg/L	1.6E-02	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	1.8E-06	5.7E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	NA	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	NA	4.3E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	NA	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	NA	7.7E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	NA	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	NA	8.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	NA	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	NA	7.7E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	9.2E-03	µg/L	NA	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	NA	2.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				CHLOROFORM	3.3E+00	µg/L	2.7E-01	$\mu g/m^3$	2.3E-05	$(\mu g/m^3)^{-1}$	6.2E-06	9.5E-04	mg/m^3	9.8E-02	mg/m^3	Liver	9.7E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	6.0E-01	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.1E-03	mg/m^3	NA	mg/m^3	NA	NA
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	3.9E-01	$\mu g/m^3$	1.0E-06	$(\mu g/m^3)^{-1}$	3.9E-07	1.4E-03	mg/m^3	2.0E-03	mg/m^3	Development, Immune, Vascular	6.8E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	3.9E-01	$\mu g/m^3$	3.1E-06	$(\mu g/m^3)^{-1}$	1.2E-06	--	mg/m^3	--	mg/m^3	--	NA
			Exposure Route Total								9.6E-06						6.9E-01
		Exposure Point Total									9.0E-05						3.2E+00
	Exposure Medium Total										9.0E-05						3.2E+00
Medium Total for Adult											9.0E-05						3.2E+00
Total of Receptor Risks Across All Media											2.1E-04	Total of Receptor Hazards Across All Media					9.9E+00

TABLE 7.18b-RME Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

Trichloroethylene was evaluated for both mutagenic risk to the kidney and non-mutagenic risk to the liver. The total risk for trichloroethylene is summed in Table 9.18b-RME

Inhalation of tapwater was not assessed for risk from metals, PAHs and pesticides that are considered non-volatile or lack a Henry's law constant.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total Blood HI Across All Media =	8.3.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.1.E+00
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	9.6.E-01
Total GI Tract HI Across All Media =	3.2.E-01
Total Immune HI Across All Media =	5.8.E+00
Total Kidney HI Across All Media =	1.1.E-01
Total Liver HI Across All Media =	6.8.E-02
Total Lung HI Across All Media =	3.7.E-06
Total Lung & Respiratory HI Across All Media =	8.6.E-04
Total No Critical Effect Risk HI Across All Media =	2.1.E-04
Total Reproductive HI Across All Media =	7.7.E-04
Total Respiratory HI Across All Media =	1.3.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.8.E-01
Total Thyroid HI Across All Media =	1.7.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	5.1.E-02

TABLE 7.18b-CTE Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Ingestion	ALUMINUM	6.4E+03	mg/kg	1.6E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.9E-03	mg/kg-day	1.0E+00	mg/kg-day	CNS	1.9E-03
				ANTIMONY	1.5E+02	mg/kg	3.8E-06	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	4.4E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.1E-01
				ARSENIC	1.6E+01	mg/kg	2.5E-07	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	3.8E-07	2.9E-06	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	9.8E-03
				CADMIUM	2.7E+00	mg/kg	7.0E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	8.1E-07	mg/kg-day	1.0E-03	mg/kg-day	Kidney	8.1E-04
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.4E-08	mg/kg-day	5.0E-01	$(mg/kg-day)^{-1}$	6.8E-09	1.6E-07	mg/kg-day	3.0E-03	mg/kg-day	None	5.3E-05
				COBALT	7.3E+00	mg/kg	1.9E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	7.3E-03
				COPPER	3.5E+03	mg/kg	9.1E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.1E-03	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	2.7E-02
				IRON	3.4E+04	mg/kg	8.7E-04	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.0E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	1.4E-02
				MANGANESE	7.0E+02	mg/kg	1.8E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	2.1E-04	mg/kg-day	2.4E-02	mg/kg-day	CNS	8.7E-03
				MERCURY	4.2E-01	mg/kg	1.1E-08	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	1.2E-07	mg/kg-day	1.0E-04	mg/kg-day	CNS	1.2E-03
				VANADIUM	1.9E+01	mg/kg	4.8E-07	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	5.6E-06	mg/kg-day	5.0E-03	mg/kg-day	NA	1.1E-03
				ZINC	1.1E+03	mg/kg	2.8E-05	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	3.3E-04	mg/kg-day	3.0E-01	mg/kg-day	Blood	1.1E-03
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	1.4E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.0E-07	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	1.2E-07	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	9.0E-07	1.4E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	1.7E-07	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.2E-07	1.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	5.3E-08	mg/kg-day	7.3E-02	$(mg/kg-day)^{-1}$	3.9E-09	6.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	1.3E-07	mg/kg-day	7.3E-03	$(mg/kg-day)^{-1}$	9.8E-10	1.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	2.2E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.6E-07	2.6E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	6.8E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	5.0E-08	7.9E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	2.8E-08	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.5E-08	3.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-02
				PCB-1248	4.5E+01	mg/kg	1.2E-06	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.3E-06	1.3E-05	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.7E-01
				PCB-1254	1.1E+01	mg/kg	2.8E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	5.6E-07	3.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.6E-01
				PCB-1260	4.4E+00	mg/kg	1.1E-07	mg/kg-day	2.0E+00	$(mg/kg-day)^{-1}$	2.3E-07	1.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	6.6E-02
				BETA BHC	3.7E-01	mg/kg	9.4E-09	mg/kg-day	1.8E+00	$(mg/kg-day)^{-1}$	1.7E-08	1.1E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.4E-09	mg/kg-day	1.6E+01	$(mg/kg-day)^{-1}$	2.2E-08	1.6E-08	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.2E-04
				HEPTACHLOR	4.7E-01	mg/kg	1.2E-08	mg/kg-day	4.5E+00	$(mg/kg-day)^{-1}$	5.5E-08	1.4E-07	mg/kg-day	5.0E-04	mg/kg-day	Liver	2.8E-04
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	1.1E-08	mg/kg-day	9.1E+00	$(mg/kg-day)^{-1}$	1.0E-07	1.3E-07	mg/kg-day	1.3E-05	mg/kg-day	Liver	9.9E-03
			Exposure Route Total								5.1E-06						1.1E+00
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Dermal	ALUMINUM	6.4E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E+00	mg/kg-day	CNS	NA
				ANTIMONY	1.5E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	6.0E-05	mg/kg-day	Blood	NA
				ARSENIC	1.6E+01	mg/kg	1.5E-08	mg/kg-day	1.5E+00	$(mg/kg-day)^{-1}$	2.3E-08	1.8E-07	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	5.9E-04
				CADMIUM	2.7E+00	mg/kg	8.4E-11	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	9.8E-10	mg/kg-day	2.5E-05	mg/kg-day	Kidney	3.9E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	NA	mg/kg-day	2.0E+01	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.5E-05	mg/kg-day	None	NA
				COBALT	7.3E+00	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	NA
				COPPER	3.5E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	4.0E-02	mg/kg-day	GI Tract	NA
				IRON	3.4E+04	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	NA
				MANGANESE	7.0E+02	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	9.6E-04	mg/kg-day	CNS	NA
				MERCURY	4.2E-01	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.0E-04	mg/kg-day	CNS	NA
				VANADIUM	1.9E+01	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	1.3E-04	mg/kg-day	NA	NA
				ZINC	1.1E+03	mg/kg	NA	mg/kg-day	NA	$(mg/kg-day)^{-1}$	NA	NA	mg/kg-day	3.0E-01	mg/kg-day	Blood	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	2.2E-08	mg/kg-day	7.3E-01	$(mg/kg-day)^{-1}$	1.6E-08	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	1.9E-08	mg/kg-day	7.3E+00	$(mg/kg-day)^{-1}$	1.4E-07	2.3E-07	mg/kg-day	NA	mg/kg-day	NA	NA

TABLE 7.18b-CTE Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	2.6E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	1.9E-08	3.0E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	8.3E-09	mg/kg-day	7.3E-02	$(mg/kg\text{-}day)^{-1}$	6.1E-10	9.7E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				CHRYSENE	5.2E+00	mg/kg	2.1E-08	mg/kg-day	7.3E-03	$(mg/kg\text{-}day)^{-1}$	1.5E-10	2.5E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	3.4E-09	mg/kg-day	7.3E+00	$(mg/kg\text{-}day)^{-1}$	2.5E-08	4.0E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	1.1E-08	mg/kg-day	7.3E-01	$(mg/kg\text{-}day)^{-1}$	7.8E-09	1.2E-07	mg/kg-day	NA	mg/kg-day	NA	NA
				PCB-1242	1.1E+00	mg/kg	4.7E-09	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.4E-09	5.5E-08	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.7E-03
				PCB-1248	4.5E+01	mg/kg	2.0E-07	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.9E-07	2.3E-06	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-01
				PCB-1254	1.1E+01	mg/kg	4.7E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	9.4E-08	5.5E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	2.8E-02
				PCB-1260	4.4E+00	mg/kg	1.9E-08	mg/kg-day	2.0E+00	$(mg/kg\text{-}day)^{-1}$	3.8E-08	2.2E-07	mg/kg-day	2.0E-05	mg/kg-day	Immune	1.1E-02
				BETA BHC	3.7E-01	mg/kg	1.1E-09	mg/kg-day	1.8E+00	$(mg/kg\text{-}day)^{-1}$	2.0E-09	1.3E-08	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.7E-10	mg/kg-day	1.6E+01	$(mg/kg\text{-}day)^{-1}$	2.7E-09	1.9E-09	mg/kg-day	5.0E-05	mg/kg-day	Liver	3.9E-05
				HEPTACHLOR	4.7E-01	mg/kg	NA	mg/kg-day	4.5E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	5.0E-04	mg/kg-day	Liver	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	NA	mg/kg-day	9.1E+00	$(mg/kg\text{-}day)^{-1}$	NA	NA	mg/kg-day	1.3E-05	mg/kg-day	Liver	NA
			Exposure Route Total								7.7E-07						1.6E-01
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	Inhalation	ALUMINUM	6.4E+03	mg/kg	1.9E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.3E-06	mg/m^3	5.0E-03	mg/m^3	CNS	4.5E-04
				ANTIMONY	1.5E+02	mg/kg	4.4E-06	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.2E-08	mg/m^3	NA	mg/m^3	NA	NA
				ARSENIC	1.6E+01	mg/kg	4.9E-07	$\mu g/m^3$	4.3E-03	$(\mu g/m^3)^{-1}$	2.1E-09	5.8E-09	mg/m^3	1.5E-05	mg/m^3	Reproductive	3.8E-04
				CADMIUM	2.7E+00	mg/kg	8.2E-08	$\mu g/m^3$	1.8E-03	$(\mu g/m^3)^{-1}$	1.5E-10	9.6E-10	mg/m^3	1.0E-05	mg/m^3	Kidney	9.6E-05
				CHROMIUM, HEXAVALENT	5.3E-01	mg/kg	1.6E-08	$\mu g/m^3$	8.4E-02	$(\mu g/m^3)^{-1}$	1.3E-09	1.9E-10	mg/m^3	1.0E-04	mg/m^3	Lung	1.9E-06
				COBALT	7.3E+00	mg/kg	2.2E-07	$\mu g/m^3$	9.0E-03	$(\mu g/m^3)^{-1}$	2.0E-09	2.6E-09	mg/m^3	6.0E-06	mg/m^3	Lung, Respiratory	4.3E-04
				COPPER	3.5E+03	mg/kg	1.1E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				IRON	3.4E+04	mg/kg	1.0E-03	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.2E-05	mg/m^3	NA	mg/m^3	NA	NA
				MANGANESE	7.0E+02	mg/kg	2.1E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	2.5E-07	mg/m^3	5.0E-05	mg/m^3	CNS	4.9E-03
				MERCURY	4.2E-01	mg/kg	4.9E-04	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	5.7E-06	mg/m^3	3.0E-04	mg/m^3	CNS	1.9E-02
				VANADIUM	1.9E+01	mg/kg	5.7E-07	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	6.6E-09	mg/m^3	1.0E-04	mg/m^3	Respiratory	6.6E-05
				ZINC	1.1E+03	mg/kg	3.3E-05	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	3.9E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)ANTHRACENE	5.4E+00	mg/kg	5.0E-05	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	5.5E-09	5.9E-07	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	4.8E+00	mg/kg	1.5E-07	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	1.6E-10	1.7E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	6.4E+00	mg/kg	1.9E-07	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	2.1E-11	2.3E-09	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(K)FLUORANTHENE	2.1E+00	mg/kg	6.3E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	6.9E-12	7.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				CHRYSENE	5.2E+00	mg/kg	1.6E-07	$\mu g/m^3$	1.1E-05	$(\mu g/m^3)^{-1}$	1.7E-12	1.8E-09	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	8.5E-01	mg/kg	2.6E-08	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	3.1E-11	3.0E-10	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.6E+00	mg/kg	8.0E-08	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	8.8E-12	9.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1242	1.1E+00	mg/kg	7.5E-05	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	4.3E-08	8.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1248	4.5E+01	mg/kg	3.0E-03	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	1.7E-06	3.5E-05	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1254	1.1E+01	mg/kg	5.3E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	3.0E-07	6.2E-06	mg/m^3	NA	mg/m^3	NA	NA
				PCB-1260	4.4E+00	mg/kg	1.4E-04	$\mu g/m^3$	5.7E-04	$(\mu g/m^3)^{-1}$	7.9E-08	1.6E-06	mg/m^3	NA	mg/m^3	NA	NA
				BETA BHC	3.7E-01	mg/kg	1.1E-08	$\mu g/m^3$	5.3E-04	$(\mu g/m^3)^{-1}$	5.8E-12	1.3E-10	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	5.4E-02	mg/kg	1.6E-09	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	7.5E-12	1.9E-11	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR	4.7E-01	mg/kg	4.1E-05	$\mu g/m^3$	1.3E-03	$(\mu g/m^3)^{-1}$	5.3E-08	4.7E-07	mg/m^3	NA	mg/m^3	NA	NA
				HEPTACHLOR EPOXIDE	4.3E-01	mg/kg	2.1E-05	$\mu g/m^3$	2.6E-03	$(\mu g/m^3)^{-1}$	5.5E-08	2.4E-07	mg/m^3	NA	mg/m^3	NA	NA

TABLE 7.18b-CTE Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
							Intake/Exposure Concentration		CSF/Unit Risk			Intake/Exposure Concentration		RfD/RfC			
					Value	Units	Value	Units	Value	Units	Cancer Risk	Value	Units	Value	Units	Critical Effect	Hazard Quotient
			Exposure Route Total								2.2E-06						2.6E-02
		Exposure Point Total									8.1E-06						1.3E+00
	Exposure Medium Total										8.1E-06						1.3E+00
Medium Total for Adult											8.1E-06						1.3E+00
Groundwater	Tapwater	United Paperboard	Ingestion	ANTIMONY	5.2E+00	µg/L	8.7E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	7.6E-05	mg/kg-day	4.0E-04	mg/kg-day	Blood	1.9E-01
				ARSENIC	3.3E+00	µg/L	5.6E-06	mg/kg-day	1.5E+00	$mg/kg\text{-}day^{-1}$	8.4E-06	4.9E-05	mg/kg-day	3.0E-04	mg/kg-day	Skin, Vascular	1.6E-01
				COBALT	1.4E+00	µg/L	2.4E-06	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	2.1E-05	mg/kg-day	3.0E-04	mg/kg-day	Thyroid	7.1E-02
				IRON	3.8E+03	µg/L	6.3E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	5.5E-02	mg/kg-day	7.0E-01	mg/kg-day	GI Tract	7.9E-02
				MANGANESE	8.3E+02	µg/L	1.4E-03	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.2E-02	mg/kg-day	2.4E-02	mg/kg-day	CNS	5.1E-01
				SELENIUM	8.5E+00	µg/L	1.4E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.3E-04	mg/kg-day	5.0E-03	mg/kg-day	Whole body	2.5E-02
				BENZO(A)ANTHRACENE	2.0E-01	µg/L	3.4E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	2.5E-07	2.9E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	2.5E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	1.8E-06	2.2E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	4.5E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	3.3E-07	4.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	5.2E-07	mg/kg-day	7.3E+00	$mg/kg\text{-}day^{-1}$	3.8E-06	4.6E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	4.5E-07	mg/kg-day	7.3E-01	$mg/kg\text{-}day^{-1}$	3.3E-07	4.0E-06	mg/kg-day	NA	mg/kg-day	NA	NA
				DIELDRIN	9.2E-03	µg/L	1.5E-08	mg/kg-day	1.6E+01	$mg/kg\text{-}day^{-1}$	2.5E-07	1.4E-07	mg/kg-day	5.0E-05	mg/kg-day	Liver	2.7E-03
				CHLOROFORM	3.3E+00	µg/L	5.5E-06	mg/kg-day	3.1E-02	$mg/kg\text{-}day^{-1}$	1.7E-07	4.9E-05	mg/kg-day	1.0E-02	mg/kg-day	Liver	4.9E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	1.2E-05	mg/kg-day	NA	$mg/kg\text{-}day^{-1}$	NA	1.1E-04	mg/kg-day	2.0E-03	mg/kg-day	Kidney	5.4E-02
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	8.0E-06	mg/kg-day	9.3E-03	$mg/kg\text{-}day^{-1}$	7.4E-08	7.0E-05	mg/kg-day	5.0E-04	mg/kg-day	Development, Immune, Vascular	1.4E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	8.0E-06	mg/kg-day	3.7E-02	$mg/kg\text{-}day^{-1}$	2.9E-07	--	mg/kg-day	--	mg/kg-day	--	NA
			Exposure Route Total								1.6E-05						1.2E+00
Groundwater	Tapwater	United Paperboard	Inhalation	BENZO(A)ANTHRACENE	2.0E-01	µg/L	5.8E-03	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	6.4E-07	5.1E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(A)PYRENE	1.5E-01	µg/L	NA	$\mu g/m^3$	1.1E-03	$(\mu g/m^3)^{-1}$	NA	3.8E-05	mg/m^3	NA	mg/m^3	NA	NA
				BENZO(B)FLUORANTHENE	2.7E-01	µg/L	NA	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	NA	6.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIBENZ(A,H)ANTHRACENE	3.1E-01	µg/L	NA	$\mu g/m^3$	1.2E-03	$(\mu g/m^3)^{-1}$	NA	7.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				INDENO(1,2,3-C,D)PYRENE	2.7E-01	µg/L	NA	$\mu g/m^3$	1.1E-04	$(\mu g/m^3)^{-1}$	NA	6.9E-05	mg/m^3	NA	mg/m^3	NA	NA
				DIELDRIN	9.2E-03	µg/L	NA	$\mu g/m^3$	4.6E-03	$(\mu g/m^3)^{-1}$	NA	2.3E-06	mg/m^3	NA	mg/m^3	NA	NA
				CHLOROFORM	3.3E+00	µg/L	9.6E-02	$\mu g/m^3$	2.3E-05	$(\mu g/m^3)^{-1}$	2.2E-06	8.4E-04	mg/m^3	9.8E-02	mg/m^3	Liver	8.6E-03
				CIS-1,2-DICHLOROETHYLENE	7.3E+00	µg/L	2.1E-01	$\mu g/m^3$	NA	$(\mu g/m^3)^{-1}$	NA	1.9E-03	mg/m^3	NA	mg/m^3	NA	NA
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	1.4E-01	$\mu g/m^3$	1.0E-06	$(\mu g/m^3)^{-1}$	1.4E-07	1.2E-03	mg/m^3	2.0E-03	mg/m^3	Development, Immune, Vascular	6.0E-01
				TRICHLOROETHYLENE (TCE)	4.7E+00	µg/L	1.4E-01	$\mu g/m^3$	3.1E-06	$(\mu g/m^3)^{-1}$	4.3E-07	--	mg/m^3	--	mg/m^3	--	NA
			Exposure Route Total								3.4E-06						6.1E-01
		Exposure Point Total									1.9E-05						1.9E+00
	Exposure Medium Total										1.9E-05						1.9E+00
Medium Total for Adult											1.9E-05						1.9E+00
Total of Receptor Risks Across All Media											2.7E-05	Total of Receptor Hazards Across All Media					3.1E+00

Notes:

CNS = Central Nervous System

CSF = Cancer Slope Factor

EPC = Exposure Point Concentration

HI = Hazard Index

Total Blood HI Across All Media =	3.0.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	5.4.E-01
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	7.4.E-01

TABLE 7.18b-CTE Resident (Adult)

CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations					
					Value	Units	Intake/Exposure Concentration		CSF/Unit Risk		Cancer Risk	Intake/Exposure Concentration		RfD/RfC		Critical Effect	Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units		

NA = Not Applicable or Not Available

RfD/RfC = Reference Dose/Reference Concentration

Age-weighted average (AWA) age-dependent adjustment factors (ADAFs) were applied to cancer CSF for constituents acting via a mutagenic mode of action (MMOA).

MMOA constituents include: chromium, hexavalent; benzo(a)anthracene; benzo(a)pyrene; benzo(b)fluoranthene; benzo(k)fluoranthene; chrysene; dibenz(a,h)anthracene; indeno(1,2,3-c,d)pyrene; and trichloroethylene.

Trichloroethylene was evaluated for both mutagenic risk to the kidney and non-mutagenic risk to the liver. The total risk for trichloroethylene is summed in Table 9.18b-CTE

Inhalation of tapwater was not assessed for risk from metals, PAHs and pesticides that are considered non-volatile or lack a Henry's law constant.

RfD for PCB 1254 was used for PCB 1242; 1248; 1260; and 1268.

RfD for methyl-mercury was used for mercury.

Total GI Tract HI Across All Media =	1.2.E-01
Total Immune HI Across All Media =	1.1.E+00
Total Kidney HI Across All Media =	5.5.E-02
Total Liver HI Across All Media =	2.7.E-02
Total Lung HI Across All Media =	1.9.E-06
Total Lung & Respiratory HI Across All Media =	4.3.E-04
Total No Critical Effect Risk HI Across All Media =	5.3.E-05
Total Reproductive HI Across All Media =	3.8.E-04
Total Respiratory HI Across All Media =	6.6.E-05
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.7.E-01
Total Thyroid HI Across All Media =	7.8.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	2.5.E-02

TABLE 9.1a-RME Recreational User (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	8.6E-04	4.6E-03	NA	5.5E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	1.5E-03	5.7E-06	NA	1.6E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.3E-02	NA	NA	1.3E-02
			ARSENIC	2.9E-07	2.5E-11	6.8E-08	--	3.5E-07	Skin, Vascular	7.4E-03	4.5E-06	1.8E-03	9.2E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	8.0E-04	5.9E-06	NA	8.1E-04
			CADMIUM	NA	3.8E-12	NA	--	3.8E-12	Kidney	1.3E-03	2.5E-06	2.5E-04	1.6E-03
			CHROMIUM, HEXAVALENT	2.9E-08	8.9E-11	NA	--	2.9E-08	None	4.2E-05	2.3E-08	NA	4.2E-05
			COBALT	NA	3.0E-11	NA	--	3.0E-11	Thyroid	7.0E-03	6.5E-06	NA	7.0E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	6.9E-03	NA	NA	6.9E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.6E-02	NA	NA	1.6E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	8.2E-03	7.2E-05	NA	8.3E-03
			MERCURY	NA	NA	NA	--	NA	CNS	6.5E-03	1.6E-03	NA	8.1E-03
			NICKEL	NA	9.5E-12	NA	--	9.5E-12	Body weight	1.2E-03	4.7E-06	NA	1.2E-03
			SILVER	NA	NA	NA	--	NA	Skin	6.4E-04	NA	NA	6.4E-04
			ZINC	NA	NA	NA	--	NA	Blood	1.5E-03	NA	NA	1.5E-03
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	8.4E-05	NA	5.2E-05	1.4E-04
			BENZO(A)ANTHRACENE	1.7E-06	1.5E-09	1.1E-06	--	2.8E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	5.1E-06	1.4E-11	3.1E-06	--	8.2E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.4E-06	6.7E-12	1.5E-06	--	3.9E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.9E-07	8.0E-12	1.8E-07	--	4.6E-07	NA	NA	NA	NA	NA
			CHRYSENE	1.4E-08	4.0E-13	8.9E-09	--	2.3E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.6E-06	7.9E-12	1.6E-06	--	4.2E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	2.8E-04	NA	1.7E-04	4.5E-04
			INDENO(1,2,3-C,D)PYRENE	2.9E-07	8.1E-13	1.8E-07	--	4.8E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	3.8E-09	NA	--	3.8E-09	Body weight	1.2E-04	4.3E-04	7.4E-05	6.3E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	1.4E-04	NA	8.6E-05	2.3E-04
			PCB-1242	4.2E-08	5.1E-10	2.8E-08	--	7.1E-08	Immune	1.2E-02	NA	8.2E-03	2.1E-02
			PCB-1248	6.2E-07	7.1E-09	4.2E-07	--	1.0E-06	Immune	1.8E-01	NA	1.2E-01	3.0E-01
			PCB-1254	4.3E-07	3.6E-09	2.8E-07	--	7.1E-07	Immune	1.2E-01	NA	8.3E-02	2.1E-01
			PCB-1260	5.5E-09	3.0E-11	3.7E-09	--	9.2E-09	Immune	1.6E-03	NA	1.1E-03	2.7E-03

TABLE 9.1a-RME Recreational User (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BETA BHC	4.5E-09	2.4E-14	2.1E-09	--	6.6E-09	NA	NA	NA	NA	NA
			DIELDRIN	4.0E-08	2.1E-13	1.9E-08	--	5.9E-08	Liver	5.8E-04	NA	2.7E-04	8.5E-04
			HEPTACHLOR	4.6E-09	6.9E-11	NA	--	4.7E-09	Liver	2.4E-05	NA	NA	2.4E-05
			HEPTACHLOR EPOXIDE	6.9E-09	5.9E-11	NA	--	7.0E-09	Liver	6.8E-04	NA	NA	6.8E-04
			BIS(2-ETHYLHEXYL) PHTHALATE	2.1E-09	6.5E-15	9.8E-10	--	3.1E-09	Liver	8.6E-05	NA	4.1E-05	1.3E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	1.4E-05	1.7E-08	8.5E-06		2.2E-05		4.0E-01	6.7E-03	2.2E-01	6.2E-01
		Exposure Point Total						2.2E-05					6.2E-01
	Exposure Medium Total							2.2E-05					6.2E-01
Medium Total								2.2E-05					6.2E-01
	Exposure Medium Total							2.2E-05					6.2E-01
Medium Total								2.2E-05					6.2E-01
			Receptor Risk Total					2.2E-05		Receptor HI Total			6.2E-01

Total Blood HI Across All Media =	1.4E-02
Total Body Weight HI Across All Media =	1.8E-03
Total CNS HI Across All Media =	1.8E-02
Total Development HI Across All Media =	0.0E+00
Total GI Tract HI Across All Media =	2.3E-02
Total Immune HI Across All Media =	5.3E-01
Total Kidney HI Across All Media =	2.6E-03
Total Liver HI Across All Media =	1.7E-03
Total Lung HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	4.2E-05
Total Reproductive HI Across All Media =	5.5E-03
Total Respiratory HI Across All Media =	1.4E-04
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	9.2E-03
Total Thyroid HI Across All Media =	7.0E-03
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	4.5E-04

TABLE 9.1a-CTE Recreational User (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	2.3E-04	2.5E-03	NA	2.7E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	4.2E-04	3.1E-06	NA	4.2E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	3.5E-03	NA	NA	3.5E-03
			ARSENIC	5.1E-08	9.0E-12	2.4E-08	--	7.6E-08	Skin, Vascular	2.0E-03	2.4E-06	9.5E-04	2.9E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	2.2E-04	3.2E-06	NA	2.2E-04
			CADMIUM	NA	1.4E-12	NA	--	1.4E-12	Kidney	3.6E-04	1.3E-06	1.4E-04	5.0E-04
			CHROMIUM, HEXAVALENT	5.2E-09	3.2E-11	NA	--	5.2E-09	None	1.1E-05	1.2E-08	NA	1.1E-05
			COBALT	NA	1.1E-11	NA	--	1.1E-11	Thyroid	1.9E-03	3.5E-06	NA	1.9E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	1.9E-03	NA	NA	1.9E-03
			IRON	NA	NA	NA	--	NA	GI Tract	4.4E-03	NA	NA	4.4E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	2.2E-03	3.9E-05	NA	2.2E-03
			MERCURY	NA	NA	NA	--	NA	CNS	1.8E-03	8.4E-04	NA	2.6E-03
			NICKEL	NA	3.4E-12	NA	--	3.4E-12	Body weight	3.1E-04	2.6E-06	NA	3.2E-04
			SILVER	NA	NA	NA	--	NA	Skin	1.7E-04	NA	NA	1.7E-04
			ZINC	NA	NA	NA	--	NA	Blood	4.0E-04	NA	NA	4.0E-04
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	2.3E-05	NA	2.8E-05	5.0E-05
			BENZO(A)ANTHRACENE	3.1E-07	5.2E-10	3.8E-07	--	6.8E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	9.1E-07	5.0E-12	1.1E-06	--	2.0E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	4.3E-07	2.4E-12	5.3E-07	--	9.7E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	5.2E-08	2.9E-12	6.4E-08	--	1.2E-07	NA	NA	NA	NA	NA
			CHRYSENE	2.6E-09	1.4E-13	3.2E-09	--	5.8E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.7E-07	2.8E-12	5.8E-07	--	1.0E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	7.5E-05	NA	9.2E-05	1.7E-04
			INDENO(1,2,3-C,D)PYRENE	5.3E-08	2.9E-13	6.5E-08	--	1.2E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	1.4E-09	NA	--	1.4E-09	Body weight	3.2E-05	2.3E-04	4.0E-05	3.1E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	3.8E-05	NA	4.6E-05	8.4E-05
			PCB-1242	7.6E-09	1.8E-10	1.0E-08	--	1.8E-08	Immune	3.3E-03	NA	4.4E-03	7.8E-03
			PCB-1248	1.1E-07	2.6E-09	1.5E-07	--	2.6E-07	Immune	4.9E-02	NA	6.5E-02	1.1E-01
			PCB-1254	7.7E-08	1.3E-09	1.0E-07	--	1.8E-07	Immune	3.4E-02	NA	4.5E-02	7.8E-02
			PCB-1260	9.9E-10	1.1E-11	1.3E-09	--	2.3E-09	Immune	4.3E-04	NA	5.7E-04	1.0E-03

TABLE 9.1a-CTE Recreational User (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BETA BHC	8.0E-10	8.7E-15	7.6E-10	--	1.6E-09	NA	NA	NA	NA	NA
			DIELDRIN	7.1E-09	7.5E-14	6.8E-09	--	1.4E-08	Liver	1.6E-04	NA	1.5E-04	3.0E-04
			HEPTACHLOR	8.3E-10	2.5E-11	NA	--	8.5E-10	Liver	6.4E-06	NA	NA	6.4E-06
			HEPTACHLOR EPOXIDE	1.2E-09	2.1E-11	NA	--	1.3E-09	Liver	1.8E-04	NA	NA	1.8E-04
			BIS(2-ETHYLHEXYL) PHTHALATE	3.7E-10	2.3E-15	3.5E-10	--	7.2E-10	Liver	2.3E-05	NA	2.2E-05	4.5E-05
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	2.5E-06	6.1E-09	3.0E-06		5.5E-06		1.1E-01	3.6E-03	1.2E-01	2.3E-01
		Exposure Point Total						5.5E-06					2.3E-01
	Exposure Medium Total							5.5E-06					2.3E-01
Medium Total								5.5E-06					2.3E-01
	Exposure Medium Total							5.5E-06					2.3E-01
Medium Total								5.5E-06					2.3E-01
Receptor Risk Total								5.5E-06	Receptor HI Total				2.3E-01

Total Blood HI Across All Media =	3.9E-03
Total Body Weight HI Across All Media =	6.2E-04
Total CNS HI Across All Media =	5.3E-03
Total Development HI Across All Media =	0.0E+00
Total GI Tract HI Across All Media =	6.3E-03
Total Immune HI Across All Media =	2.0E-01
Total Kidney HI Across All Media =	8.0E-04
Total Liver HI Across All Media =	5.4E-04
Total Lung HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	1.1E-05
Total Reproductive HI Across All Media =	2.7E-03
Total Respiratory HI Across All Media =	5.0E-05
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	2.9E-03
Total Thyroid HI Across All Media =	1.9E-03
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	1.7E-04

TABLE 9.1b-RME Recreational User (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	4.1.E-04	1.4.E-02	NA	1.4.E-02
			ALUMINUM	NA	NA	NA	--	NA	CNS	7.3.E-04	1.7.E-05	NA	7.5.E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	6.1.E-03	NA	NA	6.1.E-03
			ARSENIC	2.7.E-07	1.5.E-10	2.8.E-07	--	5.5.E-07	Skin, Vascular	3.5.E-03	1.4.E-05	3.6.E-03	7.1.E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	3.8.E-04	1.8.E-05	NA	4.0.E-04
			CADMIUM	NA	2.3.E-11	NA	--	2.3.E-11	Kidney	6.3.E-04	7.4.E-06	5.2.E-04	1.2.E-03
			CHROMIUM, HEXAVALENT	1.4.E-08	2.7.E-10	NA	--	1.4.E-08	None	2.0.E-05	6.9.E-08	NA	2.0.E-05
			COBALT	NA	1.8.E-10	NA	--	1.8.E-10	Thyroid	3.3.E-03	1.9.E-05	NA	3.3.E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	3.3.E-03	NA	NA	3.3.E-03
			IRON	NA	NA	NA	--	NA	GI Tract	7.7.E-03	NA	NA	7.7.E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	3.9.E-03	2.2.E-04	NA	4.1.E-03
			MERCURY	NA	NA	NA	--	NA	CNS	3.1.E-03	4.7.E-03	NA	7.8.E-03
			NICKEL	NA	5.7.E-11	NA	--	5.7.E-11	Body weight	5.5.E-04	1.4.E-05	NA	5.6.E-04
			SILVER	NA	NA	NA	--	NA	Skin	3.0.E-04	NA	NA	3.0.E-04
			ZINC	NA	NA	NA	--	NA	Blood	7.0.E-04	NA	NA	7.0.E-04
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	4.0.E-05	NA	1.0.E-04	1.4.E-04
			BENZO(A)ANTHRACENE	8.1.E-07	4.4.E-09	2.1.E-06	--	2.9.E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.4.E-06	4.2.E-11	6.4.E-06	--	8.8.E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.1.E-06	2.0.E-11	3.0.E-06	--	4.2.E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.4.E-07	2.4.E-11	3.6.E-07	--	5.0.E-07	NA	NA	NA	NA	NA
			CHRYSENE	6.8.E-09	1.2.E-12	1.8.E-08	--	2.5.E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.2.E-06	2.4.E-11	3.3.E-06	--	4.5.E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	1.3.E-04	NA	3.5.E-04	4.8.E-04
			INDENO(1,2,3-C,D)PYRENE	1.4.E-07	2.4.E-12	3.7.E-07	--	5.1.E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	2.3.E-08	NA	--	2.3.E-08	Body weight	5.7.E-05	1.3.E-03	1.5.E-04	1.5.E-03
			PYRENE	NA	NA	NA	--	NA	Kidney	6.6.E-05	NA	1.7.E-04	2.4.E-04
			PCB-1242	4.0.E-08	3.1.E-09	1.1.E-07	--	1.6.E-07	Immune	5.8.E-03	NA	1.7.E-02	2.3.E-02
			PCB-1248	5.9.E-07	4.3.E-08	1.7.E-06	--	2.3.E-06	Immune	8.6.E-02	NA	2.5.E-01	3.3.E-01
			PCB-1254	4.0.E-07	2.2.E-08	1.2.E-06	--	1.6.E-06	Immune	5.9.E-02	NA	1.7.E-01	2.3.E-01
			PCB-1260	5.2.E-09	1.8.E-10	1.5.E-08	--	2.0.E-08	Immune	7.6.E-04	NA	2.2.E-03	2.9.E-03

TABLE 9.1b-RME Recreational User (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BETA BHC	4.2.E-09	1.5.E-13	8.6.E-09	--	1.3.E-08	NA	NA	NA	NA	NA
			DIELDRIN	3.8.E-08	1.3.E-12	7.7.E-08	--	1.1.E-07	Liver	2.7.E-04	NA	5.6.E-04	8.3.E-04
			HEPTACHLOR	4.3.E-09	4.2.E-10	NA	--	4.8.E-09	Liver	1.1.E-05	NA	NA	1.1.E-05
			HEPTACHLOR EPOXIDE	6.5.E-09	3.5.E-10	NA	--	6.9.E-09	Liver	3.2.E-04	NA	NA	3.2.E-04
			BIS(2-ETHYLHEXYL) PHTHALATE	2.0.E-09	3.9.E-14	4.0.E-09	--	6.0.E-09	Liver	4.1.E-05	NA	8.3.E-05	1.2.E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	7.2.E-06	9.7.E-08	1.9.E-05		2.6.E-05		1.9.E-01	2.0.E-02	4.4.E-01	6.5.E-01
		Exposure Point Total						2.6.E-05					6.5.E-01
	Exposure Medium Total							2.6.E-05					6.5.E-01
Medium Total								2.6.E-05					6.5.E-01
Receptor Risk Total				2.6.E-05					Receptor HI Total				6.5.E-01

Total Blood HI Across All Media =	6.8E-03
Total Body Weight HI Across All Media =	2.1E-03
Total CNS HI Across All Media =	1.3E-02
Total Development HI Across All Media =	0.0E+00
Total GI Tract HI Across All Media =	1.1E-02
Total Immune HI Across All Media =	5.8E-01
Total Kidney HI Across All Media =	1.8E-03
Total Liver HI Across All Media =	1.3E-03
Total Lung HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	2.0E-05
Total Reproductive HI Across All Media =	1.4E-02
Total Respiratory HI Across All Media =	1.4E-04
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	7.1E-03
Total Thyroid HI Across All Media =	3.3E-03
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	4.8E-04

TABLE 9.1b-CTE Recreational User (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	1.0.E-04	3.5.E-03	NA	3.6.E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	1.9.E-04	4.4.E-06	NA	1.9.E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.6.E-03	NA	NA	1.6.E-03
			ARSENIC	2.3.E-08	1.3.E-11	4.7.E-08	--	7.0.E-08	Skin, Vascular	9.0.E-04	3.5.E-06	1.8.E-03	2.7.E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	9.7.E-05	4.5.E-06	NA	1.0.E-04
			CADMIUM	NA	1.9.E-12	NA	--	1.9.E-12	Kidney	1.6.E-04	1.9.E-06	2.6.E-04	4.3.E-04
			CHROMIUM, HEXAVALENT	1.2.E-09	2.3.E-11	NA	--	1.2.E-09	None	5.1.E-06	1.8.E-08	NA	5.1.E-06
			COBALT	NA	1.5.E-11	NA	--	1.5.E-11	Thyroid	8.5.E-04	5.0.E-06	NA	8.6.E-04
			COPPER	NA	NA	NA	--	NA	GI Tract	8.3.E-04	NA	NA	8.3.E-04
			IRON	NA	NA	NA	--	NA	GI Tract	2.0.E-03	NA	NA	2.0.E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	9.9.E-04	5.6.E-05	NA	1.0.E-03
			MERCURY	NA	NA	NA	--	NA	CNS	7.9.E-04	1.2.E-03	NA	2.0.E-03
			NICKEL	NA	4.9.E-12	NA	--	4.9.E-12	Body weight	1.4.E-04	3.6.E-06	NA	1.4.E-04
			SILVER	NA	NA	NA	--	NA	Skin	7.7.E-05	NA	NA	7.7.E-05
			ZINC	NA	NA	NA	--	NA	Blood	1.8.E-04	NA	NA	1.8.E-04
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	1.0.E-05	NA	5.4.E-05	6.4.E-05
			BENZO(A)ANTHRACENE	6.9.E-08	3.7.E-10	3.7.E-07	--	4.3.E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.0.E-07	3.6.E-12	1.1.E-06	--	1.3.E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	9.7.E-08	1.7.E-12	5.2.E-07	--	6.1.E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.2.E-08	2.0.E-12	6.2.E-08	--	7.3.E-08	NA	NA	NA	NA	NA
			CHRYSENE	5.8.E-10	1.0.E-13	3.1.E-09	--	3.7.E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.1.E-07	2.0.E-12	5.6.E-07	--	6.7.E-07	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	3.4.E-05	NA	1.8.E-04	2.1.E-04
			INDENO(1,2,3-C,D)PYRENE	1.2.E-08	2.1.E-13	6.3.E-08	--	7.5.E-08	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	1.9.E-09	NA	--	1.9.E-09	Body weight	1.5.E-05	3.3.E-04	7.7.E-05	4.3.E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	1.7.E-05	NA	9.0.E-05	1.1.E-04
			PCB-1242	3.4.E-09	2.6.E-10	2.0.E-08	--	2.3.E-08	Immune	1.5.E-03	NA	8.6.E-03	1.0.E-02
			PCB-1248	5.0.E-08	3.7.E-09	2.9.E-07	--	3.4.E-07	Immune	2.2.E-02	NA	1.3.E-01	1.5.E-01
			PCB-1254	3.5.E-08	1.9.E-09	2.0.E-07	--	2.3.E-07	Immune	1.5.E-02	NA	8.6.E-02	1.0.E-01
			PCB-1260	4.4.E-10	1.5.E-11	2.5.E-09	--	3.0.E-09	Immune	1.9.E-04	NA	1.1.E-03	1.3.E-03

TABLE 9.1b-CTE Recreational User (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BETA BHC	3.6.E-10	1.2.E-14	1.5.E-09	--	1.8.E-09	NA	NA	NA	NA	NA
			DIELDRIN	3.2.E-09	1.1.E-13	1.3.E-08	--	1.6.E-08	Liver	7.0.E-05	NA	2.9.E-04	3.6.E-04
			HEPTACHLOR	3.7.E-10	3.6.E-11	NA	--	4.1.E-10	Liver	2.9.E-06	NA	NA	2.9.E-06
			HEPTACHLOR EPOXIDE	5.6.E-10	3.0.E-11	NA	--	5.9.E-10	Liver	8.3.E-05	NA	NA	8.3.E-05
			BIS(2-ETHYLHEXYL) PHTHALATE	1.7.E-10	3.3.E-15	6.8.E-10	--	8.5.E-10	Liver	1.0.E-05	NA	4.3.E-05	5.3.E-05
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	6.2.E-07	8.2.E-09	3.2.E-06		3.9.E-06		4.8.E-02	5.2.E-03	2.2.E-01	2.8.E-01
		Exposure Point Total						3.9.E-06					2.8.E-01
	Exposure Medium Total							3.9.E-06					2.8.E-01
Medium Total								3.9.E-06					2.8.E-01
	Exposure Medium Total							3.9.E-06					2.8.E-01
Medium Total								3.9.E-06					2.8.E-01
Receptor Risk Total								3.9.E-06	Receptor HI Total				2.8.E-01

Total Blood HI Across All Media =	1.7E-03
Total Body Weight HI Across All Media =	5.7E-04
Total CNS HI Across All Media =	3.2E-03
Total Development HI Across All Media =	0.0E+00
Total GI Tract HI Across All Media =	2.8E-03
Total Immune HI Across All Media =	2.6E-01
Total Kidney HI Across All Media =	6.4E-04
Total Liver HI Across All Media =	5.0E-04
Total Lung HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	5.1E-06
Total Reproductive HI Across All Media =	3.6E-03
Total Respiratory HI Across All Media =	6.4E-05
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	2.7E-03
Total Thyroid HI Across All Media =	8.6E-04
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	2.1E-04

TABLE 9.1c-RME Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	1.6.E-04	4.6.E-03	NA	4.8.E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	2.9.E-04	5.7.E-06	NA	3.0.E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	2.4.E-03	NA	NA	2.4.E-03
			ARSENIC	1.8.E-07	8.4.E-11	3.8.E-08	--	2.2.E-07	Skin, Vascular	1.4.E-03	4.5.E-06	2.9.E-04	1.7.E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	1.5.E-04	5.9.E-06	NA	1.6.E-04
			CADMIUM	NA	1.3.E-11	NA	--	1.3.E-11	Kidney	2.5.E-04	2.5.E-06	4.2.E-05	3.0.E-04
			CHROMIUM, HEXAVALENT	3.4.E-09	5.6.E-11	NA	--	3.4.E-09	None	7.9.E-06	2.3.E-08	NA	7.9.E-06
			COBALT	NA	1.0.E-10	NA	--	1.0.E-10	Thyroid	1.3.E-03	6.5.E-06	NA	1.3.E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	1.3.E-03	NA	NA	1.3.E-03
			IRON	NA	NA	NA	--	NA	GI Tract	3.1.E-03	NA	NA	3.1.E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	1.5.E-03	7.2.E-05	NA	1.6.E-03
			MERCURY	NA	NA	NA	--	NA	CNS	1.2.E-03	1.6.E-03	NA	2.8.E-03
			NICKEL	NA	3.2.E-11	NA	--	3.2.E-11	Body weight	2.2.E-04	4.7.E-06	NA	2.2.E-04
			SILVER	NA	NA	NA	--	NA	Skin	1.2.E-04	NA	NA	1.2.E-04
			ZINC	NA	NA	NA	--	NA	Blood	2.8.E-04	NA	NA	2.8.E-04
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	1.6.E-05	NA	8.6.E-06	2.4.E-05
			BENZO(A)ANTHRACENE	2.0.E-07	9.1.E-10	1.1.E-07	--	3.1.E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	5.9.E-07	8.8.E-12	3.3.E-07	--	9.2.E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.8.E-07	4.2.E-12	1.6.E-07	--	4.4.E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	3.4.E-08	5.0.E-12	1.8.E-08	--	5.2.E-08	NA	NA	NA	NA	NA
			CHRYSENE	1.7.E-09	2.5.E-13	9.3.E-10	--	2.6.E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	3.1.E-07	4.9.E-12	1.7.E-07	--	4.7.E-07	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	5.2.E-05	NA	2.9.E-05	8.1.E-05
			INDENO(1,2,3-C,D)PYRENE	3.4.E-08	5.1.E-13	1.9.E-08	--	5.3.E-08	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	1.3.E-08	NA	--	1.3.E-08	Body weight	2.3.E-05	4.3.E-04	1.2.E-05	4.7.E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	2.6.E-05	NA	1.4.E-05	4.1.E-05
			PCB-1242	2.7.E-08	1.7.E-09	1.6.E-08	--	4.4.E-08	Immune	2.3.E-03	NA	1.4.E-03	3.7.E-03
			PCB-1248	3.9.E-07	2.4.E-08	2.3.E-07	--	6.5.E-07	Immune	3.4.E-02	NA	2.0.E-02	5.4.E-02
			PCB-1254	2.7.E-07	1.2.E-08	1.6.E-07	--	4.4.E-07	Immune	2.3.E-02	NA	1.4.E-02	3.7.E-02
			PCB-1260	3.4.E-09	1.0.E-10	2.0.E-09	--	5.6.E-09	Immune	3.0.E-04	NA	1.8.E-04	4.8.E-04

TABLE 9.1c-RME Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BETA BHC	2.8.E-09	8.1.E-14	1.2.E-09	--	4.0.E-09	NA	NA	NA	NA	NA
			DIELDRIN	2.5.E-08	7.0.E-13	1.0.E-08	--	3.5.E-08	Liver	1.1.E-04	NA	4.6.E-05	1.5.E-04
			HEPTACHLOR	2.9.E-09	2.3.E-10	NA	--	3.1.E-09	Liver	4.5.E-06	NA	NA	4.5.E-06
			HEPTACHLOR EPOXIDE	4.3.E-09	2.0.E-10	NA	--	4.5.E-09	Liver	1.3.E-04	NA	NA	1.3.E-04
			BIS(2-ETHYLHEXYL) PHTHALATE	1.3.E-09	2.2.E-14	5.5.E-10	--	1.8.E-09	Liver	1.6.E-05	NA	6.8.E-06	2.3.E-05
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	2.4.E-06	5.2.E-08	1.3.E-06		3.7.E-06		7.4.E-02	6.7.E-03	3.6.E-02	1.2.E-01
		Exposure Point Total						3.7.E-06					1.2.E-01
	Exposure Medium Total							3.7.E-06					1.2.E-01
Medium Total								3.7.E-06					1.2.E-01
	Exposure Medium Total							3.7.E-06					1.2.E-01
Medium Total								3.7.E-06					1.2.E-01
Receptor Risk Total								3.7.E-06	Receptor HI Total				1.2.E-01

Total Blood HI Across All Media =	2.7E-03
Total Body Weight HI Across All Media =	6.9E-04
Total CNS HI Across All Media =	4.7E-03
Total Development HI Across All Media =	0.0E+00
Total GI Tract HI Across All Media =	4.4E-03
Total Immune HI Across All Media =	9.6E-02
Total Kidney HI Across All Media =	4.9E-04
Total Liver HI Across All Media =	3.1E-04
Total Lung HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	7.9E-06
Total Reproductive HI Across All Media =	4.8E-03
Total Respiratory HI Across All Media =	2.4E-05
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	1.7E-03
Total Thyroid HI Across All Media =	1.3E-03
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	8.1E-05

TABLE 9.1c-CTE Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	4.3.E-05	1.2.E-03	NA	1.3.E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	7.8.E-05	1.5.E-06	NA	8.0.E-05
			ANTIMONY	NA	NA	NA	--	NA	Blood	6.5.E-04	NA	NA	6.5.E-04
			ARSENIC	9.6.E-09	4.5.E-12	4.1.E-09	--	1.4.E-08	Skin, Vascular	3.7.E-04	1.2.E-06	1.6.E-04	5.3.E-04
			BARIUM	NA	NA	NA	--	NA	Kidney	4.0.E-05	1.6.E-06	NA	4.2.E-05
			CADMIUM	NA	6.8.E-13	NA	--	6.8.E-13	Kidney	6.7.E-05	6.6.E-07	2.3.E-05	9.1.E-05
			CHROMIUM, HEXAVALENT	1.8.E-10	3.0.E-12	NA	--	1.8.E-10	None	2.1.E-06	6.2.E-09	NA	2.1.E-06
			COBALT	NA	5.4.E-12	NA	--	5.4.E-12	Thyroid	3.5.E-04	1.7.E-06	NA	3.6.E-04
			COPPER	NA	NA	NA	--	NA	GI Tract	3.5.E-04	NA	NA	3.5.E-04
			IRON	NA	NA	NA	--	NA	GI Tract	8.3.E-04	NA	NA	8.3.E-04
			MANGANESE	NA	NA	NA	--	NA	CNS	4.1.E-04	1.9.E-05	NA	4.3.E-04
			MERCURY	NA	NA	NA	--	NA	CNS	3.3.E-04	4.2.E-04	NA	7.5.E-04
			NICKEL	NA	1.7.E-12	NA	--	1.7.E-12	Body weight	5.9.E-05	1.3.E-06	NA	6.0.E-05
			SILVER	NA	NA	NA	--	NA	Skin	3.2.E-05	NA	NA	3.2.E-05
			ZINC	NA	NA	NA	--	NA	Blood	7.5.E-05	NA	NA	7.5.E-05
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	4.2.E-06	NA	4.6.E-06	8.9.E-06
			BENZO(A)ANTHRACENE	1.1.E-08	4.9.E-11	1.2.E-08	--	2.3.E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.2.E-08	4.7.E-13	3.5.E-08	--	6.7.E-08	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.5.E-08	2.2.E-13	1.7.E-08	--	3.2.E-08	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.8.E-09	2.7.E-13	2.0.E-09	--	3.8.E-09	NA	NA	NA	NA	NA
			CHRYSENE	9.1.E-11	1.3.E-14	1.0.E-10	--	1.9.E-10	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.6.E-08	2.7.E-13	1.8.E-08	--	3.5.E-08	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	1.4.E-05	NA	1.5.E-05	2.9.E-05
			INDENO(1,2,3-C,D)PYRENE	1.9.E-09	2.7.E-14	2.0.E-09	--	3.9.E-09	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	6.8.E-10	NA	--	6.8.E-10	Body weight	6.1.E-06	1.2.E-04	6.7.E-06	1.3.E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	7.0.E-06	NA	7.7.E-06	1.5.E-05
			PCB-1242	1.4.E-09	9.2.E-11	1.7.E-09	--	3.2.E-09	Immune	6.2.E-04	NA	7.4.E-04	1.4.E-03
			PCB-1248	2.1.E-08	1.3.E-09	2.5.E-08	--	4.7.E-08	Immune	9.2.E-03	NA	1.1.E-02	2.0.E-02
			PCB-1254	1.4.E-08	6.5.E-10	1.7.E-08	--	3.2.E-08	Immune	6.3.E-03	NA	7.4.E-03	1.4.E-02
			PCB-1260	1.8.E-10	5.4.E-12	2.2.E-10	--	4.1.E-10	Immune	8.1.E-05	NA	9.6.E-05	1.8.E-04

TABLE 9.1c-CTE Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BETA BHC	1.5.E-10	4.3.E-15	1.3.E-10	--	2.8.E-10	NA	NA	NA	NA	NA
			DIELDRIN	1.3.E-09	3.8.E-14	1.1.E-09	--	2.5.E-09	Liver	2.9.E-05	NA	2.5.E-05	5.4.E-05
			HEPTACHLOR	1.5.E-10	1.2.E-11	NA	--	1.7.E-10	Liver	1.2.E-06	NA	NA	1.2.E-06
			HEPTACHLOR EPOXIDE	2.3.E-10	1.1.E-11	NA	--	2.4.E-10	Liver	3.4.E-05	NA	NA	3.4.E-05
			BIS(2-ETHYLHEXYL) PHTHALATE	7.0.E-11	1.2.E-15	5.9.E-11	--	1.3.E-10	Liver	4.4.E-06	NA	3.7.E-06	8.0.E-06
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	1.3.E-07	2.8.E-09	1.4.E-07		2.6.E-07		2.0.E-02	1.8.E-03	1.9.E-02	4.1.E-02
		Exposure Point Total						2.6.E-07					4.1.E-02
	Exposure Medium Total							2.6.E-07					4.1.E-02
Medium Total								2.6.E-07					4.1.E-02
	Exposure Medium Total							2.6.E-07					4.1.E-02
Medium Total								2.6.E-07					4.1.E-02
Receptor Risk Total								2.6.E-07	Receptor HI Total				4.1.E-02

Total Blood HI Across All Media =	7.3E-04
Total Body Weight HI Across All Media =	1.9E-04
Total CNS HI Across All Media =	1.3E-03
Total Development HI Across All Media =	0.0E+00
Total GI Tract HI Across All Media =	1.2E-03
Total Immune HI Across All Media =	3.5E-02
Total Kidney HI Across All Media =	1.5E-04
Total Liver HI Across All Media =	9.8E-05
Total Lung HI Across All Media =	0.0E+00
Total No Critical Effect Risk HI Across All Media =	2.1E-06
Total Reproductive HI Across All Media =	1.3E-03
Total Respiratory HI Across All Media =	8.9E-06
Total Skin HI Across All Media =	0.0E+00
Total Skin & Vascular HI Across All Media =	5.3E-04
Total Thyroid HI Across All Media =	3.6E-04
Total Vascular HI Across All Media =	0.0E+00
Total Whole Body HI Across All Media =	2.9E-05

TABLE 9.2a-RME Angler (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	8.6.E-04	4.6.E-03	NA	5.5.E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	1.5.E-03	5.7.E-06	NA	1.6.E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.3.E-02	NA	NA	1.3.E-02
			ARSENIC	2.9.E-07	2.5.E-11	6.8.E-08	--	3.5.E-07	Skin, Vascular	7.4.E-03	4.5.E-06	1.8.E-03	9.2.E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	8.0.E-04	5.9.E-06	NA	8.1.E-04
			CADMIUM	NA	3.8.E-12	NA	--	3.8.E-12	Kidney	1.3.E-03	2.5.E-06	2.5.E-04	1.6.E-03
			CHROMIUM, HEXAVALENT	2.9.E-08	8.9.E-11	NA	--	2.9.E-08	None	4.2.E-05	2.3.E-08	NA	4.2.E-05
			COBALT	NA	3.0.E-11	NA	--	3.0.E-11	Thyroid	7.0.E-03	6.5.E-06	NA	7.0.E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	6.9.E-03	NA	NA	6.9.E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.6.E-02	NA	NA	1.6.E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	8.2.E-03	7.2.E-05	NA	8.3.E-03
			MERCURY	NA	NA	NA	--	NA	CNS	6.5.E-03	1.6.E-03	NA	8.1.E-03
			NICKEL	NA	9.5.E-12	NA	--	9.5.E-12	Body weight	1.2.E-03	4.7.E-06	NA	1.2.E-03
			SILVER	NA	NA	NA	--	NA	Skin	6.4.E-04	NA	NA	6.4.E-04
			ZINC	NA	NA	NA	--	NA	Blood	1.5.E-03	NA	NA	1.5.E-03
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	8.4.E-05	NA	5.2.E-05	1.4.E-04
			BENZO(A)ANTHRACENE	1.7.E-06	1.5.E-09	1.1.E-06	--	2.8.E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	5.1.E-06	1.4.E-11	3.1.E-06	--	8.2.E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.4.E-06	6.7.E-12	1.5.E-06	--	3.9.E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.9.E-07	8.0.E-12	1.8.E-07	--	4.6.E-07	NA	NA	NA	NA	NA
			CHRYSENE	1.4.E-08	4.0.E-13	8.9.E-09	--	2.3.E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.6.E-06	7.9.E-12	1.6.E-06	--	4.2.E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	2.8.E-04	NA	1.7.E-04	4.5.E-04
			INDENO(1,2,3-C,D)PYRENE	2.9.E-07	8.1.E-13	1.8.E-07	--	4.8.E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	3.8.E-09	NA	--	3.8.E-09	Body weight	1.2.E-04	4.3.E-04	7.4.E-05	6.3.E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	1.4.E-04	NA	8.6.E-05	2.3.E-04
			PCB-1242	4.2.E-08	5.1.E-10	2.8.E-08	--	7.1.E-08	Immune	1.2.E-02	NA	8.2.E-03	2.1.E-02
			PCB-1248	6.2.E-07	7.1.E-09	4.2.E-07	--	1.0.E-06	Immune	1.8.E-01	NA	1.2.E-01	3.0.E-01
			PCB-1254	4.3.E-07	3.6.E-09	2.8.E-07	--	7.1.E-07	Immune	1.2.E-01	NA	8.3.E-02	2.1.E-01

TABLE 9.2a-RME Angler (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			PCB-1260	5.5.E-09	3.0.E-11	3.7.E-09	--	9.2.E-09	Immune	1.6.E-03	NA	1.1.E-03	2.7.E-03
			BETA BHC	4.5.E-09	2.4.E-14	2.1.E-09	--	6.6.E-09	NA	NA	NA	NA	NA
			DIELDRIN	4.0.E-08	2.1.E-13	1.9.E-08	--	5.9.E-08	Liver	5.8.E-04	NA	2.7.E-04	8.5.E-04
			HEPTACHLOR	4.6.E-09	6.9.E-11	NA	--	4.7.E-09	Liver	2.4.E-05	NA	NA	2.4.E-05
			HEPTACHLOR EPOXIDE	6.9.E-09	5.9.E-11	NA	--	7.0.E-09	Liver	6.8.E-04	NA	NA	6.8.E-04
			BIS(2-ETHYLHEXYL) PHTHALATE	2.1.E-09	6.5.E-15	9.8.E-10	--	3.1.E-09	Liver	8.6.E-05	NA	4.1.E-05	1.3.E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	1.4.E-05	1.7.E-08	8.5.E-06		2.2.E-05		4.0.E-01	6.7.E-03	2.2.E-01	6.2.E-01
		Exposure Point Total						2.2.E-05					6.2.E-01
	Exposure Medium Total							2.2.E-05					6.2.E-01
Medium Total								2.2.E-05					6.2.E-01
Fish Tissue	Fish Fillet	Creek Channel	ARSENIC	1.5.E-05	--	--	--	1.5.E-05	Skin, Vascular	3.9.E-01	--	--	3.9.E-01
			CHROMIUM, TOTAL	NA	--	--	--	NA	NA	NA	--	--	NA
			COPPER	NA	--	--	--	NA	GI Tract	1.2.E-01	--	--	1.2.E-01
			MERCURY	NA	--	--	--	NA	CNS	2.6.E+00	--	--	2.6.E+00
			SELENIUM	NA	--	--	--	NA	Whole body	6.8.E-02	--	--	6.8.E-02
			VANADIUM	NA	--	--	--	NA	NA	5.7.E-02	--	--	5.7.E-02
			PCB-1254	2.9.E-05	--	--	--	2.9.E-05	Immune	8.6.E+00	--	--	8.6.E+00
			PCB-1260	8.4.E-06	--	--	--	8.4.E-06	Immune	2.5.E+00	--	--	2.5.E+00
			ALDRIN	2.6.E-07	--	--	--	2.6.E-07	Liver	5.9.E-03	--	--	5.9.E-03
			DIELDRIN	3.3.E-06	--	--	--	3.3.E-06	Liver	4.9.E-02	--	--	4.9.E-02
			ENDRIN	NA	--	--	--	NA	CNS	8.9.E-02	--	--	8.9.E-02
			HEPTACHLOR	1.7.E-07	--	--	--	1.7.E-07	Liver	9.0.E-04	--	--	9.0.E-04
			HEPTACHLOR EPOXIDE	4.2.E-06	--	--	--	4.2.E-06	Liver	4.1.E-01	--	--	4.1.E-01
			P,P'-DDE	2.1.E-07	--	--	--	2.1.E-07	NA	NA	--	--	NA
			P,P'-DDT	1.4.E-06	--	--	--	1.4.E-06	Liver	9.6.E-02	--	--	9.6.E-02
			PENTACHLOROPHENOL	1.2.E-06	--	--	--	1.2.E-06	NA	7.1.E-03	--	--	7.1.E-03

TABLE 9.2a-RME Angler (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	6.4.E-05				6.4.E-05		1.5.E+01			1.5.E+01
		Exposure Point Total						6.4.E-05					1.5.E+01
	Exposure Medium Total							6.4.E-05					1.5.E+01
Medium Total								6.4.E-05					1.5.E+01
							Receptor Risk Total	8.6.E-05				Receptor HI Total	1.6.E+01

Total Blood HI Across All Media =	1.4.E-02
Total Body Weight HI Across All Media =	1.8.E-03
Total CNS HI Across All Media =	2.7.E+00
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.4.E-01
Total Immune HI Across All Media =	1.2.E+01
Total Kidney HI Across All Media =	2.6.E-03
Total Liver HI Across All Media =	5.6.E-01
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	4.2.E-05
Total Reproductive HI Across All Media =	5.5.E-03
Total Respiratory HI Across All Media =	1.4.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	4.0.E-01
Total Thyroid HI Across All Media =	7.0.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	6.9.E-02

TABLE 9.2a -CTE Angler (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	2.3.E-04	2.5.E-03	NA	2.7.E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	4.2.E-04	3.1.E-06	NA	4.2.E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	3.5.E-03	NA	NA	3.5.E-03
			ARSENIC	5.1.E-08	9.0.E-12	2.4.E-08	--	7.6.E-08	Skin, Vascular	2.0.E-03	2.4.E-06	9.5.E-04	2.9.E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	2.2.E-04	3.2.E-06	NA	2.2.E-04
			CADMIUM	NA	1.4.E-12	NA	--	1.4.E-12	Kidney	3.6.E-04	1.3.E-06	1.4.E-04	5.0.E-04
			CHROMIUM, HEXAVALENT	5.2.E-09	3.2.E-11	NA	--	5.2.E-09	None	1.1.E-05	1.2.E-08	NA	1.1.E-05
			COBALT	NA	1.1.E-11	NA	--	1.1.E-11	Thyroid	1.9.E-03	3.5.E-06	NA	1.9.E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	1.9.E-03	NA	NA	1.9.E-03
			IRON	NA	NA	NA	--	NA	GI Tract	4.4.E-03	NA	NA	4.4.E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	2.2.E-03	3.9.E-05	NA	2.2.E-03
			MERCURY	NA	NA	NA	--	NA	CNS	1.8.E-03	8.4.E-04	NA	2.6.E-03
			NICKEL	NA	3.4.E-12	NA	--	3.4.E-12	Body weight	3.1.E-04	2.6.E-06	NA	3.2.E-04
			SILVER	NA	NA	NA	--	NA	Skin	1.7.E-04	NA	NA	1.7.E-04
			ZINC	NA	NA	NA	--	NA	Blood	4.0.E-04	NA	NA	4.0.E-04
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	2.3.E-05	NA	2.8.E-05	5.0.E-05
			BENZO(A)ANTHRACENE	3.1.E-07	5.2.E-10	3.8.E-07	--	6.8.E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	9.1.E-07	5.0.E-12	1.1.E-06	--	2.0.E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	4.3.E-07	2.4.E-12	5.3.E-07	--	9.7.E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	5.2.E-08	2.9.E-12	6.4.E-08	--	1.2.E-07	NA	NA	NA	NA	NA
			CHRYSENE	2.6.E-09	1.4.E-13	3.2.E-09	--	5.8.E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.7.E-07	2.8.E-12	5.8.E-07	--	1.0.E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	7.5.E-05	NA	9.2.E-05	1.7.E-04
			INDENO(1,2,3-C,D)PYRENE	5.3.E-08	2.9.E-13	6.5.E-08	--	1.2.E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	1.4.E-09	NA	--	1.4.E-09	Body weight	3.2.E-05	2.3.E-04	4.0.E-05	3.1.E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	3.8.E-05	NA	4.6.E-05	8.4.E-05
			PCB-1242	7.6.E-09	1.8.E-10	1.0.E-08	--	1.8.E-08	Immune	3.3.E-03	NA	4.4.E-03	7.8.E-03
			PCB-1248	1.1.E-07	2.6.E-09	1.5.E-07	--	2.6.E-07	Immune	4.9.E-02	NA	6.5.E-02	1.1.E-01
			PCB-1254	7.7.E-08	1.3.E-09	1.0.E-07	--	1.8.E-07	Immune	3.4.E-02	NA	4.5.E-02	7.8.E-02

TABLE 9.2a -CTE Angler (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			PCB-1260	9.9.E-10	1.1.E-11	1.3.E-09	--	2.3.E-09	Immune	4.3.E-04	NA	5.7.E-04	1.0.E-03
			BETA BHC	8.0.E-10	8.7.E-15	7.6.E-10	--	1.6.E-09	NA	NA	NA	NA	NA
			DIELDRIN	7.1.E-09	7.5.E-14	6.8.E-09	--	1.4.E-08	Liver	1.6.E-04	NA	1.5.E-04	3.0.E-04
			HEPTACHLOR	8.3.E-10	2.5.E-11	NA	--	8.5.E-10	Liver	6.4.E-06	NA	NA	6.4.E-06
			HEPTACHLOR EPOXIDE	1.2.E-09	2.1.E-11	NA	--	1.3.E-09	Liver	1.8.E-04	NA	NA	1.8.E-04
			BIS(2-ETHYLHEXYL) PHTHALATE	3.7.E-10	2.3.E-15	3.5.E-10	--	7.2.E-10	Liver	2.3.E-05	NA	2.2.E-05	4.5.E-05
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	2.5.E-06	6.1.E-09	3.0.E-06		5.5.E-06		1.1.E-01	3.6.E-03	1.2.E-01	2.3.E-01
		Exposure Point Total						5.5.E-06					2.3.E-01
	Exposure Medium Total							5.5.E-06					2.3.E-01
Medium Total								5.5.E-06					2.3.E-01
Fish Tissue	Fish Fillet	Creek Channel	ARSENIC	1.2.E-06	--	--	--	1.2.E-06	Skin, Vascular	4.8.E-02	--	--	4.8.E-02
			CHROMIUM, TOTAL	NA	--	--	--	NA	NA	NA	--	--	NA
			COPPER	NA	--	--	--	NA	GI Tract	1.5.E-02	--	--	1.5.E-02
			MERCURY	NA	--	--	--	NA	CNS	3.2.E-01	--	--	3.2.E-01
			SELENIUM	NA	--	--	--	NA	Whole body	8.4.E-03	--	--	8.4.E-03
			VANADIUM	NA	--	--	--	NA	NA	6.9.E-03	--	--	6.9.E-03
			PCB-1254	1.7.E-06	--	--	--	1.7.E-06	Immune	7.3.E-01	--	--	7.3.E-01
			PCB-1260	4.8.E-07	--	--	--	4.8.E-07	Immune	2.1.E-01	--	--	2.1.E-01
			ALDRIN	2.1.E-08	--	--	--	2.1.E-08	Liver	7.2.E-04	--	--	7.2.E-04
			DIELDRIN	2.7.E-07	--	--	--	2.7.E-07	Liver	6.0.E-03	--	--	6.0.E-03
			ENDRIN	NA	--	--	--	NA	CNS	1.1.E-02	--	--	1.1.E-02
			HEPTACHLOR	1.4.E-08	--	--	--	1.4.E-08	Liver	1.1.E-04	--	--	1.1.E-04
			HEPTACHLOR EPOXIDE	3.4.E-07	--	--	--	3.4.E-07	Liver	5.0.E-02	--	--	5.0.E-02
			P,P'-DDE	1.7.E-08	--	--	--	1.7.E-08	NA	NA	--	--	NA
			P,P'-DDT	1.1.E-07	--	--	--	1.1.E-07	Liver	1.2.E-02	--	--	1.2.E-02
			PENTACHLOROPHENOL	9.9.E-08	--	--	--	9.9.E-08	NA	8.7.E-04	--	--	8.7.E-04

TABLE 9.2a -CTE Angler (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	4.3.E-06				4.3.E-06		1.4.E+00			1.4.E+00
		Exposure Point Total						4.3.E-06					1.4.E+00
	Exposure Medium Total							4.3.E-06					1.4.E+00
Medium Total								4.3.E-06					1.4.E+00
							Receptor Risk Total	9.8.E-06				Receptor HI Total	1.7.E+00

Total Blood HI Across All Media =	3.9.E-03
Total Body Weight HI Across All Media =	6.2.E-04
Total CNS HI Across All Media =	3.4.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.1.E-02
Total Immune HI Across All Media =	1.1.E+00
Total Kidney HI Across All Media =	8.0.E-04
Total Liver HI Across All Media =	6.9.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	1.1.E-05
Total Reproductive HI Across All Media =	2.7.E-03
Total Respiratory HI Across All Media =	5.0.E-05
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	5.1.E-02
Total Thyroid HI Across All Media =	1.9.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	8.6.E-03

TABLE 9.2b -RME Angler (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	4.1.E-04	1.4.E-02	NA	1.4.E-02
			ALUMINUM	NA	NA	NA	--	NA	CNS	7.3.E-04	1.7.E-05	NA	7.5.E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	6.1.E-03	NA	NA	6.1.E-03
			ARSENIC	2.7.E-07	1.5.E-10	2.8.E-07	--	5.5.E-07	Skin, Vascular	3.5.E-03	1.4.E-05	3.6.E-03	7.1.E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	3.8.E-04	1.8.E-05	NA	4.0.E-04
			CADMIUM	NA	2.3.E-11	NA	--	2.3.E-11	Kidney	6.3.E-04	7.4.E-06	5.2.E-04	1.2.E-03
			CHROMIUM, HEXAVALENT	1.4.E-08	2.7.E-10	NA	--	1.4.E-08	None	2.0.E-05	6.9.E-08	NA	2.0.E-05
			COBALT	NA	1.8.E-10	NA	--	1.8.E-10	Thyroid	3.3.E-03	1.9.E-05	NA	3.3.E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	3.3.E-03	NA	NA	3.3.E-03
			IRON	NA	NA	NA	--	NA	GI Tract	7.7.E-03	NA	NA	7.7.E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	3.9.E-03	2.2.E-04	NA	4.1.E-03
			MERCURY	NA	NA	NA	--	NA	CNS	3.1.E-03	4.7.E-03	NA	7.8.E-03
			NICKEL	NA	5.7.E-11	NA	--	5.7.E-11	Body weight	5.5.E-04	1.4.E-05	NA	5.6.E-04
			SILVER	NA	NA	NA	--	NA	Skin	3.0.E-04	NA	NA	3.0.E-04
			ZINC	NA	NA	NA	--	NA	Blood	7.0.E-04	NA	NA	7.0.E-04
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	4.0.E-05	NA	1.0.E-04	1.4.E-04
			BENZO(A)ANTHRACENE	8.1.E-07	4.4.E-09	2.1.E-06	--	2.9.E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.4.E-06	4.2.E-11	6.4.E-06	--	8.8.E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.1.E-06	2.0.E-11	3.0.E-06	--	4.2.E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.4.E-07	2.4.E-11	3.6.E-07	--	5.0.E-07	NA	NA	NA	NA	NA
			CHRYSENE	6.8.E-09	1.2.E-12	1.8.E-08	--	2.5.E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.2.E-06	2.4.E-11	3.3.E-06	--	4.5.E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	1.3.E-04	NA	3.5.E-04	4.8.E-04
			INDENO(1,2,3-C,D)PYRENE	1.4.E-07	2.4.E-12	3.7.E-07	--	5.1.E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	2.3.E-08	NA	--	2.3.E-08	Body weight	5.7.E-05	1.3.E-03	1.5.E-04	1.5.E-03
			PYRENE	NA	NA	NA	--	NA	Kidney	6.6.E-05	NA	1.7.E-04	2.4.E-04
			PCB-1242	4.0.E-08	3.1.E-09	1.1.E-07	--	1.6.E-07	Immune	5.8.E-03	NA	1.7.E-02	2.3.E-02
			PCB-1248	5.9.E-07	4.3.E-08	1.7.E-06	--	2.3.E-06	Immune	8.6.E-02	NA	2.5.E-01	3.3.E-01
			PCB-1254	4.0.E-07	2.2.E-08	1.2.E-06	--	1.6.E-06	Immune	5.9.E-02	NA	1.7.E-01	2.3.E-01

TABLE 9.2b -RME Angler (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			PCB-1260	5.2.E-09	1.8.E-10	1.5.E-08	--	2.0.E-08	Immune	7.6.E-04	NA	2.2.E-03	2.9.E-03
			BETA BHC	4.2.E-09	1.5.E-13	8.6.E-09	--	1.3.E-08	NA	NA	NA	NA	NA
			DIELDRIN	3.8.E-08	1.3.E-12	7.7.E-08	--	1.1.E-07	Liver	2.7.E-04	NA	5.6.E-04	8.3.E-04
			HEPTACHLOR	4.3.E-09	4.2.E-10	NA	--	4.8.E-09	Liver	1.1.E-05	NA	NA	1.1.E-05
			HEPTACHLOR EPOXIDE	6.5.E-09	3.5.E-10	NA	--	6.9.E-09	Liver	3.2.E-04	NA	NA	3.2.E-04
			BIS(2-ETHYLHEXYL) PHTHALATE	2.0.E-09	3.9.E-14	4.0.E-09	--	6.0.E-09	Liver	4.1.E-05	NA	8.3.E-05	1.2.E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	7.2.E-06	9.7.E-08	1.9.E-05		2.6.E-05		1.9.E-01	2.0.E-02	4.4.E-01	6.5.E-01
		Exposure Point Total						2.6.E-05					6.5.E-01
	Exposure Medium Total							2.6.E-05					6.5.E-01
Medium Total								2.6.E-05					6.5.E-01
Fish Tissue	Fish Fillet	Creek Channel	ARSENIC	1.9.E-05	--	--	--	1.9.E-05	Skin, Vascular	2.5.E-01	--	--	2.5.E-01
			CHROMIUM, TOTAL	NA	--	--	--	NA	NA	NA	--	--	NA
			COPPER	NA	--	--	--	NA	GI Tract	7.6.E-02	--	--	7.6.E-02
			MERCURY	NA	--	--	--	NA	CNS	1.7.E+00	--	--	1.7.E+00
			SELENIUM	NA	--	--	--	NA	Whole body	4.3.E-02	--	--	4.3.E-02
			VANADIUM	NA	--	--	--	NA	NA	3.6.E-02	--	--	3.6.E-02
			PCB-1254	3.7.E-05	--	--	--	3.7.E-05	Immune	5.4.E+00	--	--	5.4.E+00
			PCB-1260	1.1.E-05	--	--	--	1.1.E-05	Immune	1.6.E+00	--	--	1.6.E+00
			ALDRIN	3.2.E-07	--	--	--	3.2.E-07	Liver	3.7.E-03	--	--	3.7.E-03
			DIELDRIN	4.2.E-06	--	--	--	4.2.E-06	Liver	3.1.E-02	--	--	3.1.E-02
			ENDRIN	NA	--	--	--	NA	CNS	5.6.E-02	--	--	5.6.E-02
			HEPTACHLOR	2.2.E-07	--	--	--	2.2.E-07	Liver	5.7.E-04	--	--	5.7.E-04
			HEPTACHLOR EPOXIDE	5.3.E-06	--	--	--	5.3.E-06	Liver	2.6.E-01	--	--	2.6.E-01
			P,P'-DDE	2.7.E-07	--	--	--	2.7.E-07	NA	NA	--	--	NA
			P,P'-DDT	1.8.E-06	--	--	--	1.8.E-06	Liver	6.1.E-02	--	--	6.1.E-02
			PENTACHLOROPHENOL	1.5.E-06	--	--	--	1.5.E-06	NA	4.5.E-03	--	--	4.5.E-03

TABLE 9.2b -RME Angler (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	8.0.E-05				8.0.E-05		9.5.E+00			9.5.E+00
		Exposure Point Total						8.0.E-05					9.5.E+00
	Exposure Medium Total							8.0.E-05					9.5.E+00
Medium Total								8.0.E-05					9.5.E+00
							Receptor Risk Total	1.1.E-04				Receptor HI Total	1.0.E+01

Total Blood HI Across All Media =	6.8.E-03
Total Body Weight HI Across All Media =	2.1.E-03
Total CNS HI Across All Media =	1.7.E+00
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	8.7.E-02
Total Immune HI Across All Media =	7.6.E+00
Total Kidney HI Across All Media =	1.8.E-03
Total Liver HI Across All Media =	3.6.E-01
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	2.0.E-05
Total Reproductive HI Across All Media =	1.4.E-02
Total Respiratory HI Across All Media =	1.4.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.5.E-01
Total Thyroid HI Across All Media =	3.3.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.4.E-02

TABLE 9.2b -CTE Angler (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	1.0.E-04	3.5.E-03	NA	3.6.E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	1.9.E-04	4.4.E-06	NA	1.9.E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.6.E-03	NA	NA	1.6.E-03
			ARSENIC	2.3.E-08	1.3.E-11	4.7.E-08	--	7.0.E-08	Skin, Vascular	9.0.E-04	3.5.E-06	1.8.E-03	2.7.E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	9.7.E-05	4.5.E-06	NA	1.0.E-04
			CADMIUM	NA	1.9.E-12	NA	--	1.9.E-12	Kidney	1.6.E-04	1.9.E-06	2.6.E-04	4.3.E-04
			CHROMIUM, HEXAVALENT	1.2.E-09	2.3.E-11	NA	--	1.2.E-09	None	5.1.E-06	1.8.E-08	NA	5.1.E-06
			COBALT	NA	1.5.E-11	NA	--	1.5.E-11	Thyroid	8.5.E-04	5.0.E-06	NA	8.6.E-04
			COPPER	NA	NA	NA	--	NA	GI Tract	8.3.E-04	NA	NA	8.3.E-04
			IRON	NA	NA	NA	--	NA	GI Tract	2.0.E-03	NA	NA	2.0.E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	9.9.E-04	5.6.E-05	NA	1.0.E-03
			MERCURY	NA	NA	NA	--	NA	CNS	7.9.E-04	1.2.E-03	NA	2.0.E-03
			NICKEL	NA	4.9.E-12	NA	--	4.9.E-12	Body weight	1.4.E-04	3.6.E-06	NA	1.4.E-04
			SILVER	NA	NA	NA	--	NA	Skin	7.7.E-05	NA	NA	7.7.E-05
			ZINC	NA	NA	NA	--	NA	Blood	1.8.E-04	NA	NA	1.8.E-04
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	1.0.E-05	NA	5.4.E-05	6.4.E-05
			BENZO(A)ANTHRACENE	6.9.E-08	3.7.E-10	3.7.E-07	--	4.3.E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.0.E-07	3.6.E-12	1.1.E-06	--	1.3.E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	9.7.E-08	1.7.E-12	5.2.E-07	--	6.1.E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.2.E-08	2.0.E-12	6.2.E-08	--	7.3.E-08	NA	NA	NA	NA	NA
			CHRYSENE	5.8.E-10	1.0.E-13	3.1.E-09	--	3.7.E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.1.E-07	2.0.E-12	5.6.E-07	--	6.7.E-07	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	3.4.E-05	NA	1.8.E-04	2.1.E-04
			INDENO(1,2,3-C,D)PYRENE	1.2.E-08	2.1.E-13	6.3.E-08	--	7.5.E-08	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	1.9.E-09	NA	--	1.9.E-09	Body weight	1.5.E-05	3.3.E-04	7.7.E-05	4.3.E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	1.7.E-05	NA	9.0.E-05	1.1.E-04
			PCB-1242	3.4.E-09	2.6.E-10	2.0.E-08	--	2.3.E-08	Immune	1.5.E-03	NA	8.6.E-03	1.0.E-02
			PCB-1248	5.0.E-08	3.7.E-09	2.9.E-07	--	3.4.E-07	Immune	2.2.E-02	NA	1.3.E-01	1.5.E-01
			PCB-1254	3.5.E-08	1.9.E-09	2.0.E-07	--	2.3.E-07	Immune	1.5.E-02	NA	8.6.E-02	1.0.E-01

TABLE 9.2b -CTE Angler (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			PCB-1260	4.4.E-10	1.5.E-11	2.5.E-09	--	3.0.E-09	Immune	1.9.E-04	NA	1.1.E-03	1.3.E-03
			BETA BHC	3.6.E-10	1.2.E-14	1.5.E-09	--	1.8.E-09	NA	NA	NA	NA	NA
			DIELDRIN	3.2.E-09	1.1.E-13	1.3.E-08	--	1.6.E-08	Liver	7.0.E-05	NA	2.9.E-04	3.6.E-04
			HEPTACHLOR	3.7.E-10	3.6.E-11	NA	--	4.1.E-10	Liver	2.9.E-06	NA	NA	2.9.E-06
			HEPTACHLOR EPOXIDE	5.6.E-10	3.0.E-11	NA	--	5.9.E-10	Liver	8.3.E-05	NA	NA	8.3.E-05
			BIS(2-ETHYLHEXYL) PHTHALATE	1.7.E-10	3.3.E-15	6.8.E-10	--	8.5.E-10	Liver	1.0.E-05	NA	4.3.E-05	5.3.E-05
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	6.2.E-07	8.2.E-09	3.2.E-06		3.9.E-06		4.8.E-02	5.2.E-03	2.2.E-01	2.8.E-01
		Exposure Point Total						3.9.E-06					2.8.E-01
	Exposure Medium Total							3.9.E-06					2.8.E-01
Medium Total								3.9.E-06					2.8.E-01
Fish Tissue	Fish Fillet	Creek Channel	ARSENIC	8.0.E-07	--	--	--	8.0.E-07	Skin, Vascular	3.1.E-02	--	--	3.1.E-02
			CHROMIUM, TOTAL	NA	--	--	--	NA	NA	NA	--	--	NA
			COPPER	NA	--	--	--	NA	GI Tract	9.6.E-03	--	--	9.6.E-03
			MERCURY	NA	--	--	--	NA	CNS	2.1.E-01	--	--	2.1.E-01
			SELENIUM	NA	--	--	--	NA	Whole body	5.5.E-03	--	--	5.5.E-03
			VANADIUM	NA	--	--	--	NA	NA	4.5.E-03	--	--	4.5.E-03
			PCB-1254	1.1.E-06	--	--	--	1.1.E-06	Immune	4.8.E-01	--	--	4.8.E-01
			PCB-1260	3.2.E-07	--	--	--	3.2.E-07	Immune	1.4.E-01	--	--	1.4.E-01
			ALDRIN	1.4.E-08	--	--	--	1.4.E-08	Liver	4.7.E-04	--	--	4.7.E-04
			DIELDRIN	1.8.E-07	--	--	--	1.8.E-07	Liver	3.9.E-03	--	--	3.9.E-03
			ENDRIN	NA	--	--	--	NA	CNS	7.1.E-03	--	--	7.1.E-03
			HEPTACHLOR	9.3.E-09	--	--	--	9.3.E-09	Liver	7.2.E-05	--	--	7.2.E-05
			HEPTACHLOR EPOXIDE	2.2.E-07	--	--	--	2.2.E-07	Liver	3.3.E-02	--	--	3.3.E-02
			P,P'-DDE	1.1.E-08	--	--	--	1.1.E-08	NA	NA	--	--	NA
			P,P'-DDT	7.5.E-08	--	--	--	7.5.E-08	Liver	7.7.E-03	--	--	7.7.E-03
			PENTACHLOROPHENOL	6.5.E-08	--	--	--	6.5.E-08	NA	5.7.E-04	--	--	5.7.E-04

TABLE 9.2b -CTE Angler (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	2.8.E-06				2.8.E-06		9.3.E-01			9.3.E-01
		Exposure Point Total						2.8.E-06					9.3.E-01
	Exposure Medium Total							2.8.E-06					9.3.E-01
Medium Total								2.8.E-06					9.3.E-01
							Receptor Risk Total	6.6.E-06				Receptor HI Total	1.2.E+00

Total Blood HI Across All Media =	1.7.E-03
Total Body Weight HI Across All Media =	5.7.E-04
Total CNS HI Across All Media =	2.2.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.2.E-02
Total Immune HI Across All Media =	8.8.E-01
Total Kidney HI Across All Media =	6.4.E-04
Total Liver HI Across All Media =	4.6.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	5.1.E-06
Total Reproductive HI Across All Media =	3.6.E-03
Total Respiratory HI Across All Media =	6.4.E-05
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.4.E-02
Total Thyroid HI Across All Media =	8.6.E-04
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	5.7.E-03

TABLE 9.2c -RME Angler (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	1.6.E-04	4.6.E-03	NA	4.8.E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	2.9.E-04	5.7.E-06	NA	3.0.E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	2.4.E-03	NA	NA	2.4.E-03
			ARSENIC	1.8.E-07	8.4.E-11	3.8.E-08	--	2.2.E-07	Skin, Vascular	1.4.E-03	4.5.E-06	2.9.E-04	1.7.E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	1.5.E-04	5.9.E-06	NA	1.6.E-04
			CADMIUM	NA	1.3.E-11	NA	--	1.3.E-11	Kidney	2.5.E-04	2.5.E-06	4.2.E-05	3.0.E-04
			CHROMIUM, HEXAVALENT	3.4.E-09	5.6.E-11	NA	--	3.4.E-09	None	7.9.E-06	2.3.E-08	NA	7.9.E-06
			COBALT	NA	1.0.E-10	NA	--	1.0.E-10	Thyroid	1.3.E-03	6.5.E-06	NA	1.3.E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	1.3.E-03	NA	NA	1.3.E-03
			IRON	NA	NA	NA	--	NA	GI Tract	3.1.E-03	NA	NA	3.1.E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	1.5.E-03	7.2.E-05	NA	1.6.E-03
			MERCURY	NA	NA	NA	--	NA	CNS	1.2.E-03	1.6.E-03	NA	2.8.E-03
			NICKEL	NA	3.2.E-11	NA	--	3.2.E-11	Body weight	2.2.E-04	4.7.E-06	NA	2.2.E-04
			SILVER	NA	NA	NA	--	NA	Skin	1.2.E-04	NA	NA	1.2.E-04
			ZINC	NA	NA	NA	--	NA	Blood	2.8.E-04	NA	NA	2.8.E-04
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	1.6.E-05	NA	8.6.E-06	2.4.E-05
			BENZO(A)ANTHRACENE	2.0.E-07	9.1.E-10	1.1.E-07	--	3.1.E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	5.9.E-07	8.8.E-12	3.3.E-07	--	9.2.E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.8.E-07	4.2.E-12	1.6.E-07	--	4.4.E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	3.4.E-08	5.0.E-12	1.8.E-08	--	5.2.E-08	NA	NA	NA	NA	NA
			CHRYSENE	1.7.E-09	2.5.E-13	9.3.E-10	--	2.6.E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	3.1.E-07	4.9.E-12	1.7.E-07	--	4.7.E-07	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	5.2.E-05	NA	2.9.E-05	8.1.E-05
			INDENO(1,2,3-C,D)PYRENE	3.4.E-08	5.1.E-13	1.9.E-08	--	5.3.E-08	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	1.3.E-08	NA	--	1.3.E-08	Body weight	2.3.E-05	4.3.E-04	1.2.E-05	4.7.E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	2.6.E-05	NA	1.4.E-05	4.1.E-05
			PCB-1242	2.7.E-08	1.7.E-09	1.6.E-08	--	4.4.E-08	Immune	2.3.E-03	NA	1.4.E-03	3.7.E-03
			PCB-1248	3.9.E-07	2.4.E-08	2.3.E-07	--	6.5.E-07	Immune	3.4.E-02	NA	2.0.E-02	5.4.E-02
			PCB-1254	2.7.E-07	1.2.E-08	1.6.E-07	--	4.4.E-07	Immune	2.3.E-02	NA	1.4.E-02	3.7.E-02

TABLE 9.2c -RME Angler (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			PCB-1260	3.4.E-09	1.0.E-10	2.0.E-09	--	5.6.E-09	Immune	3.0.E-04	NA	1.8.E-04	4.8.E-04
			BETA BHC	2.8.E-09	8.1.E-14	1.2.E-09	--	4.0.E-09	NA	NA	NA	NA	NA
			DIELDRIN	2.5.E-08	7.0.E-13	1.0.E-08	--	3.5.E-08	Liver	1.1.E-04	NA	4.6.E-05	1.5.E-04
			HEPTACHLOR	2.9.E-09	2.3.E-10	NA	--	3.1.E-09	Liver	4.5.E-06	NA	NA	4.5.E-06
			HEPTACHLOR EPOXIDE	4.3.E-09	2.0.E-10	NA	--	4.5.E-09	Liver	1.3.E-04	NA	NA	1.3.E-04
			BIS(2-ETHYLHEXYL) PHTHALATE	1.3.E-09	2.2.E-14	5.5.E-10	--	1.8.E-09	Liver	1.6.E-05	NA	6.8.E-06	2.3.E-05
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	2.4.E-06	5.2.E-08	1.3.E-06		3.7.E-06		7.4.E-02	6.7.E-03	3.6.E-02	1.2.E-01
		Exposure Point Total						3.7.E-06					1.2.E-01
	Exposure Medium Total							3.7.E-06					1.2.E-01
Medium Total								3.7.E-06					1.2.E-01
Fish Tissue	Fish Fillet	Creek Channel	ARSENIC	2.8.E-05	--	--	--	2.8.E-05	Skin, Vascular	2.2.E-01	--	--	2.2.E-01
			CHROMIUM, TOTAL	NA	--	--	--	NA	NA	NA	--	--	NA
			COPPER	NA	--	--	--	NA	GI Tract	6.8.E-02	--	--	6.8.E-02
			MERCURY	NA	--	--	--	NA	CNS	1.5.E+00	--	--	1.5.E+00
			SELENIUM	NA	--	--	--	NA	Whole body	3.9.E-02	--	--	3.9.E-02
			VANADIUM	NA	--	--	--	NA	NA	3.2.E-02	--	--	3.2.E-02
			PCB-1254	5.5.E-05	--	--	--	5.5.E-05	Immune	4.8.E+00	--	--	4.8.E+00
			PCB-1260	1.6.E-05	--	--	--	1.6.E-05	Immune	1.4.E+00	--	--	1.4.E+00
			ALDRIN	4.8.E-07	--	--	--	4.8.E-07	Liver	3.3.E-03	--	--	3.3.E-03
			DIELDRIN	6.3.E-06	--	--	--	6.3.E-06	Liver	2.7.E-02	--	--	2.7.E-02
			ENDRIN	NA	--	--	--	NA	CNS	5.0.E-02	--	--	5.0.E-02
			HEPTACHLOR	3.3.E-07	--	--	--	3.3.E-07	Liver	5.1.E-04	--	--	5.1.E-04
			HEPTACHLOR EPOXIDE	7.8.E-06	--	--	--	7.8.E-06	Liver	2.3.E-01	--	--	2.3.E-01
			P,P'-DDE	4.0.E-07	--	--	--	4.0.E-07	NA	NA	--	--	NA
			P,P'-DDT	2.6.E-06	--	--	--	2.6.E-06	Liver	5.4.E-02	--	--	5.4.E-02
			PENTACHLOROPHENOL	2.3.E-06	--	--	--	2.3.E-06	NA	4.0.E-03	--	--	4.0.E-03

TABLE 9.2c -RME Angler (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	1.2.E-04				1.2.E-04		8.4.E+00			8.4.E+00
		Exposure Point Total						1.2.E-04					8.4.E+00
	Exposure Medium Total							1.2.E-04					8.4.E+00
Medium Total								1.2.E-04					8.4.E+00
							Receptor Risk Total	1.2.E-04				Receptor HI Total	8.5.E+00

Total Blood HI Across All Media =	2.7.E-03
Total Body Weight HI Across All Media =	6.9.E-04
Total CNS HI Across All Media =	1.5.E+00
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	7.2.E-02
Total Immune HI Across All Media =	6.3.E+00
Total Kidney HI Across All Media =	4.9.E-04
Total Liver HI Across All Media =	3.2.E-01
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	7.9.E-06
Total Reproductive HI Across All Media =	4.8.E-03
Total Respiratory HI Across All Media =	2.4.E-05
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.2.E-01
Total Thyroid HI Across All Media =	1.3.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	3.9.E-02

TABLE 9.2c -CTE Angler (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Creek Channel	CYANIDE	NA	NA	NA	--	NA	Reproductive	4.3.E-05	1.2.E-03	NA	1.3.E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	7.8.E-05	1.5.E-06	NA	8.0.E-05
			ANTIMONY	NA	NA	NA	--	NA	Blood	6.5.E-04	NA	NA	6.5.E-04
			ARSENIC	9.6.E-09	4.5.E-12	4.1.E-09	--	1.4.E-08	Skin, Vascular	3.7.E-04	1.2.E-06	1.6.E-04	5.3.E-04
			BARIUM	NA	NA	NA	--	NA	Kidney	4.0.E-05	1.6.E-06	NA	4.2.E-05
			CADMIUM	NA	6.8.E-13	NA	--	6.8.E-13	Kidney	6.7.E-05	6.6.E-07	2.3.E-05	9.1.E-05
			CHROMIUM, HEXAVALENT	1.8.E-10	3.0.E-12	NA	--	1.8.E-10	None	2.1.E-06	6.2.E-09	NA	2.1.E-06
			COBALT	NA	5.4.E-12	NA	--	5.4.E-12	Thyroid	3.5.E-04	1.7.E-06	NA	3.6.E-04
			COPPER	NA	NA	NA	--	NA	GI Tract	3.5.E-04	NA	NA	3.5.E-04
			IRON	NA	NA	NA	--	NA	GI Tract	8.3.E-04	NA	NA	8.3.E-04
			MANGANESE	NA	NA	NA	--	NA	CNS	4.1.E-04	1.9.E-05	NA	4.3.E-04
			MERCURY	NA	NA	NA	--	NA	CNS	3.3.E-04	4.2.E-04	NA	7.5.E-04
			NICKEL	NA	1.7.E-12	NA	--	1.7.E-12	Body weight	5.9.E-05	1.3.E-06	NA	6.0.E-05
			SILVER	NA	NA	NA	--	NA	Skin	3.2.E-05	NA	NA	3.2.E-05
			ZINC	NA	NA	NA	--	NA	Blood	7.5.E-05	NA	NA	7.5.E-05
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	4.2.E-06	NA	4.6.E-06	8.9.E-06
			BENZO(A)ANTHRACENE	1.1.E-08	4.9.E-11	1.2.E-08	--	2.3.E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.2.E-08	4.7.E-13	3.5.E-08	--	6.7.E-08	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.5.E-08	2.2.E-13	1.7.E-08	--	3.2.E-08	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.8.E-09	2.7.E-13	2.0.E-09	--	3.8.E-09	NA	NA	NA	NA	NA
			CHRYSENE	9.1.E-11	1.3.E-14	1.0.E-10	--	1.9.E-10	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.6.E-08	2.7.E-13	1.8.E-08	--	3.5.E-08	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	1.4.E-05	NA	1.5.E-05	2.9.E-05
			INDENO(1,2,3-C,D)PYRENE	1.9.E-09	2.7.E-14	2.0.E-09	--	3.9.E-09	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	6.8.E-10	NA	--	6.8.E-10	Body weight	6.1.E-06	1.2.E-04	6.7.E-06	1.3.E-04
			PYRENE	NA	NA	NA	--	NA	Kidney	7.0.E-06	NA	7.7.E-06	1.5.E-05
			PCB-1242	1.4.E-09	9.2.E-11	1.7.E-09	--	3.2.E-09	Immune	6.2.E-04	NA	7.4.E-04	1.4.E-03
			PCB-1248	2.1.E-08	1.3.E-09	2.5.E-08	--	4.7.E-08	Immune	9.2.E-03	NA	1.1.E-02	2.0.E-02
			PCB-1254	1.4.E-08	6.5.E-10	1.7.E-08	--	3.2.E-08	Immune	6.3.E-03	NA	7.4.E-03	1.4.E-02

TABLE 9.2c -CTE Angler (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			PCB-1260	1.8.E-10	5.4.E-12	2.2.E-10	--	4.1.E-10	Immune	8.1.E-05	NA	9.6.E-05	1.8.E-04
			BETA BHC	1.5.E-10	4.3.E-15	1.3.E-10	--	2.8.E-10	NA	NA	NA	NA	NA
			DIELDRIN	1.3.E-09	3.8.E-14	1.1.E-09	--	2.5.E-09	Liver	2.9.E-05	NA	2.5.E-05	5.4.E-05
			HEPTACHLOR	1.5.E-10	1.2.E-11	NA	--	1.7.E-10	Liver	1.2.E-06	NA	NA	1.2.E-06
			HEPTACHLOR EPOXIDE	2.3.E-10	1.1.E-11	NA	--	2.4.E-10	Liver	3.4.E-05	NA	NA	3.4.E-05
			BIS(2-ETHYLHEXYL) PHTHALATE	7.0.E-11	1.2.E-15	5.9.E-11	--	1.3.E-10	Liver	4.4.E-06	NA	3.7.E-06	8.0.E-06
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	1.3.E-07	2.8.E-09	1.4.E-07		2.6.E-07		2.0.E-02	1.8.E-03	1.9.E-02	4.1.E-02
		Exposure Point Total						2.6.E-07					4.1.E-02
	Exposure Medium Total							2.6.E-07					4.1.E-02
Medium Total								2.6.E-07					4.1.E-02
Fish Tissue	Fish Fillet	Creek Channel	ARSENIC	7.1.E-07	--	--	--	7.1.E-07	Skin, Vascular	2.8.E-02	--	--	2.8.E-02
			CHROMIUM, TOTAL	NA	--	--	--	NA	NA	NA	--	--	NA
			COPPER	NA	--	--	--	NA	GI Tract	8.5.E-03	--	--	8.5.E-03
			MERCURY	NA	--	--	--	NA	CNS	1.9.E-01	--	--	1.9.E-01
			SELENIUM	NA	--	--	--	NA	Whole body	4.8.E-03	--	--	4.8.E-03
			VANADIUM	NA	--	--	--	NA	NA	4.0.E-03	--	--	4.0.E-03
			PCB-1254	9.7.E-07	--	--	--	9.7.E-07	Immune	4.2.E-01	--	--	4.2.E-01
			PCB-1260	2.8.E-07	--	--	--	2.8.E-07	Immune	1.2.E-01	--	--	1.2.E-01
			ALDRIN	1.2.E-08	--	--	--	1.2.E-08	Liver	4.2.E-04	--	--	4.2.E-04
			DIELDRIN	1.6.E-07	--	--	--	1.6.E-07	Liver	3.4.E-03	--	--	3.4.E-03
			ENDRIN	NA	--	--	--	NA	CNS	6.3.E-03	--	--	6.3.E-03
			HEPTACHLOR	8.2.E-09	--	--	--	8.2.E-09	Liver	6.4.E-05	--	--	6.4.E-05
			HEPTACHLOR EPOXIDE	2.0.E-07	--	--	--	2.0.E-07	Liver	2.9.E-02	--	--	2.9.E-02
			P,P'-DDE	9.9.E-09	--	--	--	9.9.E-09	NA	NA	--	--	NA
			P,P'-DDT	6.6.E-08	--	--	--	6.6.E-08	Liver	6.8.E-03	--	--	6.8.E-03
			PENTACHLOROPHENOL	5.7.E-08	--	--	--	5.7.E-08	NA	5.0.E-04	--	--	5.0.E-04

TABLE 9.2c -CTE Angler (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	2.5.E-06				2.5.E-06		8.2.E-01			8.2.E-01
		Exposure Point Total						2.5.E-06					8.2.E-01
	Exposure Medium Total							2.5.E-06					8.2.E-01
Medium Total								2.5.E-06					8.2.E-01
							Receptor Risk Total	2.7.E-06				Receptor HI Total	8.6.E-01

Total Blood HI Across All Media =	7.3.E-04
Total Body Weight HI Across All Media =	1.9.E-04
Total CNS HI Across All Media =	1.9.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	9.7.E-03
Total Immune HI Across All Media =	5.8.E-01
Total Kidney HI Across All Media =	1.5.E-04
Total Liver HI Across All Media =	4.0.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	2.1.E-06
Total Reproductive HI Across All Media =	1.3.E-03
Total Respiratory HI Across All Media =	8.9.E-06
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.8.E-02
Total Thyroid HI Across All Media =	3.6.E-04
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.9.E-03

TABLE 9.3a-RME Visitor/Trespasser (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	3.3E-03	8.9E-03	NA	1.2E-02
			ALUMINUM	NA	NA	NA	--	NA	CNS	8.1E-03	1.5E-05	NA	8.1E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	2.2E-01	NA	NA	2.2E-01
			ARSENIC	1.5E-06	6.4E-11	1.7E-07	--	1.6E-06	Skin, Vascular	3.8E-02	1.2E-05	4.5E-03	4.3E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	4.8E-03	1.8E-05	NA	4.9E-03
			CADMIUM	NA	2.7E-11	NA	--	2.7E-11	Kidney	1.9E-02	1.8E-05	1.8E-03	2.1E-02
			COBALT	NA	9.1E-11	NA	--	9.1E-11	Thyroid	4.3E-02	2.0E-05	NA	4.3E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	1.4E-01	NA	NA	1.4E-01
			IRON	NA	NA	NA	--	NA	GI Tract	1.3E-01	NA	NA	1.3E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	4.4E-02	2.0E-04	NA	4.5E-02
			MERCURY	NA	NA	NA	--	NA	CNS	3.1E-02	3.7E-03	NA	3.4E-02
			NICKEL	NA	5.2E-11	NA	--	5.2E-11	Body weight	1.3E-02	2.6E-05	NA	1.3E-02
			VANADIUM	NA	NA	NA	--	NA	NA	5.3E-03	2.5E-06	NA	5.3E-03
			ZINC	NA	NA	NA	--	NA	Blood	1.5E-02	NA	NA	1.5E-02
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	1.1E-03	NA	3.5E-04	1.5E-03
			BENZO(A)ANTHRACENE	2.6E-05	1.1E-08	8.1E-06	--	3.4E-05	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.0E-05	2.8E-11	6.2E-06	--	2.6E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	3.7E-05	5.1E-11	1.1E-05	--	4.8E-05	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	4.5E-06	6.3E-11	1.4E-06	--	5.9E-06	NA	NA	NA	NA	NA
			CHRYSENE	2.2E-07	3.1E-12	6.9E-08	--	2.9E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.4E-05	2.2E-11	4.4E-06	--	1.9E-05	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	4.3E-03	NA	1.3E-03	5.6E-03
			INDENO(1,2,3-C,D)PYRENE	1.0E-06	1.4E-12	3.1E-07	--	1.3E-06	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	2.0E-08	NA	--	2.0E-08	Body weight	1.2E-03	2.2E-03	3.8E-04	3.9E-03
			PYRENE	NA	NA	NA	--	NA	Kidney	6.1E-04	NA	1.9E-04	8.0E-04
			PCB-1242	5.0E-07	3.0E-09	1.7E-07	--	6.7E-07	Immune	1.5E-01	NA	4.9E-02	2.0E-01
			PCB-1248	5.8E-06	3.3E-08	1.9E-06	--	7.8E-06	Immune	1.7E+00	NA	5.6E-01	2.3E+00
			PCB-1254	1.7E-06	7.3E-09	5.7E-07	--	2.3E-06	Immune	5.0E-01	NA	1.7E-01	6.7E-01
			PCB-1260	2.5E-08	6.7E-11	8.2E-09	--	3.3E-08	Immune	7.2E-03	NA	2.4E-03	9.5E-03
			DIELDRIN	3.1E-07	8.2E-13	7.4E-08	--	3.9E-07	Liver	4.5E-03	NA	1.1E-03	5.6E-03

TABLE 9.3a-RME Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BIS(2-ETHYLHEXYL)PHTHALATE	5.5E-08	8.7E-14	1.3E-08	--	6.8E-08	Liver	2.3E-03	NA	5.5E-04	2.8E-03
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	1.1E-04	7.5E-08	3.5E-05		1.5E-04		3.1E+00	1.5E-02	7.9E-01	3.9E+00
		Exposure Point Total						1.5E-04					3.9E+00
	Exposure Medium Total							1.5E-04					3.9E+00
Medium Total								1.5E-04					3.9E+00
			Receptor Risk Total					1.5E-04		Receptor HI Total			3.9E+00

Total Blood HI Across All Media =	2.3.E-01
Total Body Weight HI Across All Media =	1.6.E-02
Total CNS HI Across All Media =	8.7.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.8.E-01
Total Immune HI Across All Media =	3.1.E+00
Total Kidney HI Across All Media =	2.7.E-02
Total Liver HI Across All Media =	8.5.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.2.E-02
Total Respiratory HI Across All Media =	1.5.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	4.3.E-02
Total Thyroid HI Across All Media =	4.3.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	5.6.E-03

TABLE 9.3a-CTE Visitor/Trespasser (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	8.3E-04	2.2E-03	NA	3.0E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	2.0E-03	3.7E-06	NA	2.0E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	5.5E-02	NA	NA	5.5E-02
			ARSENIC	2.4E-07	1.1E-11	5.8E-08	--	3.0E-07	Skin, Vascular	9.5E-03	2.9E-06	2.3E-03	1.2E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	1.2E-03	4.4E-06	NA	1.2E-03
			CADMIUM	NA	4.5E-12	NA	--	4.5E-12	Kidney	4.8E-03	4.4E-06	9.1E-04	5.7E-03
			COBALT	NA	1.5E-11	NA	--	1.5E-11	Thyroid	1.1E-02	4.9E-06	NA	1.1E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	3.6E-02	NA	NA	3.6E-02
			IRON	NA	NA	NA	--	NA	GI Tract	3.3E-02	NA	NA	3.3E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	1.1E-02	4.9E-05	NA	1.1E-02
			MERCURY	NA	NA	NA	--	NA	CNS	7.7E-03	9.2E-04	NA	8.6E-03
			NICKEL	NA	8.6E-12	NA	--	8.6E-12	Body weight	3.2E-03	6.4E-06	NA	3.2E-03
			VANADIUM	NA	NA	NA	--	NA	NA	1.3E-03	6.2E-07	NA	1.3E-03
			ZINC	NA	NA	NA	--	NA	Blood	3.8E-03	NA	NA	3.8E-03
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	2.8E-04	NA	1.7E-04	4.6E-04
			BENZO(A)ANTHRACENE	4.4E-06	1.9E-09	2.7E-06	--	7.1E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.4E-06	4.7E-12	2.1E-06	--	5.4E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	6.1E-06	8.5E-12	3.8E-06	--	9.9E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	7.6E-07	1.0E-11	4.7E-07	--	1.2E-06	NA	NA	NA	NA	NA
			CHRYSENE	3.7E-08	5.1E-13	2.3E-08	--	6.0E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.4E-06	3.6E-12	1.5E-06	--	3.9E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	1.1E-03	NA	6.6E-04	1.7E-03
			INDENO(1,2,3-C,D)PYRENE	1.7E-07	2.3E-13	1.0E-07	--	2.7E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	3.3E-09	NA	--	3.3E-09	Body weight	3.1E-04	5.6E-04	1.9E-04	1.1E-03
			PYRENE	NA	NA	NA	--	NA	Kidney	1.5E-04	NA	9.5E-05	2.5E-04
			PCB-1242	8.4E-08	5.1E-10	5.6E-08	--	1.4E-07	Immune	3.7E-02	NA	2.4E-02	6.1E-02
			PCB-1248	9.7E-07	5.5E-09	6.5E-07	--	1.6E-06	Immune	4.2E-01	NA	2.8E-01	7.1E-01
			PCB-1254	2.9E-07	1.2E-09	1.9E-07	--	4.8E-07	Immune	1.3E-01	NA	8.4E-02	2.1E-01
			PCB-1260	4.1E-09	1.1E-11	2.7E-09	--	6.8E-09	Immune	1.8E-03	NA	1.2E-03	3.0E-03
			DIELDRIN	5.2E-08	1.4E-13	2.5E-08	--	7.7E-08	Liver	1.1E-03	NA	5.4E-04	1.7E-03

TABLE 9.3a-CTE Visitor/Trespasser (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BIS(2-ETHYLHEXYL)PHTHALATE	9.2E-09	1.5E-14	4.4E-09	--	1.4E-08	Liver	5.8E-04	NA	2.7E-04	8.5E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	1.9E-05	1.2E-08	1.2E-05		3.0E-05		7.7E-01	3.8E-03	4.0E-01	1.2E+00
		Exposure Point Total						3.0E-05					1.2E+00
	Exposure Medium Total							3.0E-05					1.2E+00
Medium Total								3.0E-05					1.2E+00
							Receptor Risk Total	3.0E-05				Receptor HI Total	1.2E+00

Total Blood HI Across All Media =	5.8.E-02
Total Body Weight HI Across All Media =	4.2.E-03
Total CNS HI Across All Media =	2.2.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	6.9.E-02
Total Immune HI Across All Media =	9.8.E-01
Total Kidney HI Across All Media =	7.2.E-03
Total Liver HI Across All Media =	2.5.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	3.0.E-03
Total Respiratory HI Across All Media =	4.6.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.2.E-02
Total Thyroid HI Across All Media =	1.1.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	1.7.E-03

TABLE 9.3b-RME Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	1.0E-03	1.8E-02	NA	1.9E-02
			ALUMINUM	NA	NA	NA	--	NA	CNS	2.5E-03	3.0E-05	NA	2.6E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	6.9E-02	NA	NA	6.9E-02
			ARSENIC	9.3E-07	2.6E-10	4.7E-07	--	1.4E-06	Skin, Vascular	1.2E-02	2.3E-05	6.1E-03	1.8E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	1.5E-03	3.6E-05	NA	1.6E-03
			CADMIUM	NA	1.1E-10	NA	--	1.1E-10	Kidney	6.1E-03	3.5E-05	2.5E-03	8.6E-03
			COBALT	NA	3.6E-10	NA	--	3.6E-10	Thyroid	1.3E-02	3.9E-05	NA	1.4E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	4.5E-02	NA	NA	4.5E-02
			IRON	NA	NA	NA	--	NA	GI Tract	4.2E-02	NA	NA	4.2E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	1.4E-02	3.9E-04	NA	1.4E-02
			MERCURY	NA	NA	NA	--	NA	CNS	9.7E-03	7.4E-03	NA	1.7E-02
			NICKEL	NA	2.1E-10	NA	--	2.1E-10	Body weight	4.0E-03	5.1E-05	NA	4.0E-03
			VANADIUM	NA	NA	NA	--	NA	NA	1.7E-03	4.9E-06	NA	1.7E-03
			ZINC	NA	NA	NA	--	NA	Blood	4.8E-03	NA	NA	4.8E-03
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	3.6E-04	NA	4.7E-04	8.3E-04
			BENZO(A)ANTHRACENE	8.3E-06	2.3E-08	1.1E-05	--	1.9E-05	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	6.4E-06	5.6E-11	8.4E-06	--	1.5E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.2E-05	1.0E-10	1.5E-05	--	2.7E-05	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.4E-06	1.3E-10	1.9E-06	--	3.3E-06	NA	NA	NA	NA	NA
			CHRYSENE	7.0E-08	6.2E-12	9.3E-08	--	1.6E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.5E-06	4.3E-11	6.0E-06	--	1.0E-05	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	1.4E-03	NA	1.8E-03	3.1E-03
			INDENO(1,2,3-C,D)PYRENE	3.2E-07	2.8E-12	4.2E-07	--	7.4E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	7.8E-08	NA	--	7.8E-08	Body weight	3.9E-04	4.5E-03	5.2E-04	5.4E-03
			PYRENE	NA	NA	NA	--	NA	Kidney	1.9E-04	NA	2.6E-04	4.5E-04
			PCB-1242	3.2E-07	1.2E-08	4.5E-07	--	7.8E-07	Immune	4.6E-02	NA	6.6E-02	1.1E-01
			PCB-1248	3.7E-06	1.3E-07	5.2E-06	--	9.0E-06	Immune	5.4E-01	NA	7.6E-01	1.3E+00
			PCB-1254	1.1E-06	2.9E-08	1.6E-06	--	2.7E-06	Immune	1.6E-01	NA	2.3E-01	3.8E-01
			PCB-1260	1.5E-08	2.7E-10	2.2E-08	--	3.8E-08	Immune	2.3E-03	NA	3.2E-03	5.5E-03
			DIELDRIN	2.0E-07	3.3E-12	2.0E-07	--	4.0E-07	Liver	1.4E-03	NA	1.5E-03	2.9E-03

TABLE 9.3b-RME Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BIS(2-ETHYLHEXYL)PHTHALATE	3.5E-08	3.5E-13	3.6E-08	--	7.0E-08	Liver	7.3E-04	NA	7.4E-04	1.5E-03
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	3.9E-05	2.8E-07	5.1E-05		9.0E-05		9.7E-01	3.0E-02	1.1E+00	2.1E+00
		Exposure Point Total						9.0E-05					2.1E+00
	Exposure Medium Total							9.0E-05					2.1E+00
Medium Total								9.0E-05					2.1E+00
							Receptor Risk Total	9.0E-05				Receptor HI Total	2.1E+00

Total Blood HI Across All Media =	7.4.E-02
Total Body Weight HI Across All Media =	9.4.E-03
Total CNS HI Across All Media =	3.4.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	8.7.E-02
Total Immune HI Across All Media =	1.8.E+00
Total Kidney HI Across All Media =	1.1.E-02
Total Liver HI Across All Media =	4.4.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.9.E-02
Total Respiratory HI Across All Media =	8.3.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.8.E-02
Total Thyroid HI Across All Media =	1.4.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	3.1.E-03

TABLE 9.3b-CTE Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	2.6E-04	4.4E-03	NA	4.7E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	6.3E-04	7.4E-06	NA	6.4E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.7E-02	NA	NA	1.7E-02
			ARSENIC	7.7E-08	2.1E-11	7.9E-08	--	1.6E-07	Skin, Vascular	3.0E-03	5.8E-06	3.1E-03	6.1E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	3.8E-04	8.9E-06	NA	3.9E-04
			CADMIUM	NA	9.1E-12	NA	--	9.1E-12	Kidney	1.5E-03	8.8E-06	1.2E-03	2.8E-03
			COBALT	NA	3.0E-11	NA	--	3.0E-11	Thyroid	3.4E-03	9.8E-06	NA	3.4E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	1.1E-02	NA	NA	1.1E-02
			IRON	NA	NA	NA	--	NA	GI Tract	1.1E-02	NA	NA	1.1E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	3.5E-03	9.8E-05	NA	3.6E-03
			MERCURY	NA	NA	NA	--	NA	CNS	2.4E-03	1.8E-03	NA	4.3E-03
			NICKEL	NA	1.7E-11	NA	--	1.7E-11	Body weight	9.9E-04	1.3E-05	NA	1.0E-03
			VANADIUM	NA	NA	NA	--	NA	NA	4.2E-04	1.2E-06	NA	4.2E-04
			ZINC	NA	NA	NA	--	NA	Blood	1.2E-03	NA	NA	1.2E-03
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	8.9E-05	NA	2.4E-04	3.3E-04
			BENZO(A)ANTHRACENE	6.9E-07	1.9E-09	1.8E-06	--	2.5E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	5.3E-07	4.7E-12	1.4E-06	--	1.9E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	9.6E-07	8.5E-12	2.6E-06	--	3.5E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.2E-07	1.0E-11	3.2E-07	--	4.4E-07	NA	NA	NA	NA	NA
			CHRYSENE	5.9E-09	5.1E-13	1.6E-08	--	2.1E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	3.8E-07	3.6E-12	1.0E-06	--	1.4E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	3.4E-04	NA	9.0E-04	1.2E-03
			NAPHTHALENE	NA	6.5E-09	NA	--	6.5E-09	Body weight	9.8E-05	1.1E-03	2.6E-04	1.5E-03
			INDENO(1,2,3-C,D)PYRENE	2.7E-08	2.3E-13	7.0E-08	--	9.7E-08	NA	NA	NA	NA	NA
			PYRENE	NA	NA	NA	--	NA	Kidney	4.8E-05	NA	1.3E-04	1.8E-04
			PCB-1242	2.6E-08	1.0E-09	7.6E-08	--	1.0E-07	Immune	1.2E-02	NA	3.3E-02	4.5E-02
			PCB-1248	3.1E-07	1.1E-08	8.7E-07	--	1.2E-06	Immune	1.3E-01	NA	3.8E-01	5.2E-01
			PCB-1254	9.1E-08	2.4E-09	2.6E-07	--	3.5E-07	Immune	4.0E-02	NA	1.1E-01	1.5E-01
			PCB-1260	1.3E-09	2.2E-11	3.7E-09	--	5.0E-09	Immune	5.6E-04	NA	1.6E-03	2.2E-03
			DIELDRIN	1.6E-08	2.7E-13	3.3E-08	--	5.0E-08	Liver	3.6E-04	NA	7.3E-04	1.1E-03

TABLE 9.3b-CTE Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BIS(2-ETHYLHEXYL)PHTHALATE	2.9E-09	2.9E-14	5.9E-09	--	8.8E-09	Liver	1.8E-04	NA	3.7E-04	5.5E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	3.2E-06	2.3E-08	8.5E-06		1.2E-05		2.4E-01	7.6E-03	5.4E-01	7.9E-01
		Exposure Point Total						1.2E-05					7.9E-01
	Exposure Medium Total							1.2E-05					7.9E-01
Medium Total								1.2E-05					7.9E-01
							Receptor Risk Total	1.2E-05				Receptor HI Total	7.9E-01

Total Blood HI Across All Media =	1.8.E-02
Total Body Weight HI Across All Media =	2.5.E-03
Total CNS HI Across All Media =	8.5.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.2.E-02
Total Immune HI Across All Media =	7.2.E-01
Total Kidney HI Across All Media =	3.3.E-03
Total Liver HI Across All Media =	1.6.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	4.7.E-03
Total Respiratory HI Across All Media =	3.3.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	6.1.E-03
Total Thyroid HI Across All Media =	3.4.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	1.2.E-03

TABLE 9.3c-RME Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	3.1E-04	8.9E-03	NA	9.2E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	7.6E-04	1.5E-05	NA	7.7E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	2.0E-02	NA	NA	2.0E-02
			ARSENIC	4.6E-07	2.1E-10	9.7E-08	--	5.6E-07	Skin, Vascular	3.6E-03	1.2E-05	7.5E-04	4.3E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	4.5E-04	1.8E-05	NA	4.7E-04
			CADMIUM	NA	9.1E-11	NA	--	9.1E-11	Kidney	1.8E-03	1.8E-05	3.0E-04	2.1E-03
			COBALT	NA	3.0E-10	NA	--	3.0E-10	Thyroid	4.0E-03	2.0E-05	NA	4.0E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	1.4E-02	NA	NA	1.4E-02
			IRON	NA	NA	NA	--	NA	GI Tract	1.2E-02	NA	NA	1.2E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	4.2E-03	2.0E-04	NA	4.4E-03
			MERCURY	NA	NA	NA	--	NA	CNS	2.9E-03	3.7E-03	NA	6.6E-03
			NICKEL	NA	1.7E-10	NA	--	1.7E-10	Body weight	1.2E-03	2.6E-05	NA	1.2E-03
			VANADIUM	NA	NA	NA	--	NA	NA	5.0E-04	2.5E-06	NA	5.0E-04
			ZINC	NA	NA	NA	--	NA	Blood	1.4E-03	NA	NA	1.4E-03
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	1.1E-04	NA	5.8E-05	1.6E-04
			BENZO(A)ANTHRACENE	1.5E-06	7.0E-09	8.5E-07	--	2.4E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.2E-06	1.7E-11	6.5E-07	--	1.8E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.1E-06	3.2E-11	1.2E-06	--	3.3E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.7E-07	3.9E-11	1.5E-07	--	4.1E-07	NA	NA	NA	NA	NA
			CHRYSENE	1.3E-08	1.9E-12	7.2E-09	--	2.0E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	8.4E-07	1.4E-11	4.6E-07	--	1.3E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	4.0E-04	NA	2.2E-04	6.2E-04
			INDENO(1,2,3-C,D)PYRENE	5.9E-08	8.7E-13	3.2E-08	--	9.2E-08	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	6.5E-08	NA	--	6.5E-08	Body weight	1.2E-04	2.2E-03	6.4E-05	2.4E-03
			PYRENE	NA	NA	NA	--	NA	Kidney	5.8E-05	NA	3.2E-05	8.9E-05
			PCB-1242	1.6E-07	1.0E-08	9.3E-08	--	2.6E-07	Immune	1.4E-02	NA	8.1E-03	2.2E-02
			PCB-1248	1.8E-06	1.1E-07	1.1E-06	--	3.0E-06	Immune	1.6E-01	NA	9.4E-02	2.5E-01
			PCB-1254	5.4E-07	2.4E-08	3.2E-07	--	8.8E-07	Immune	4.7E-02	NA	2.8E-02	7.5E-02
			PCB-1260	7.7E-09	2.2E-10	4.5E-09	--	1.2E-08	Immune	6.7E-04	NA	4.0E-04	1.1E-03
			DIELDRIN	9.7E-08	2.7E-12	4.1E-08	--	1.4E-07	Liver	4.3E-04	NA	1.8E-04	6.1E-04

TABLE 9.3c-RME Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BIS(2-ETHYLHEXYL)PHTHALATE	1.7E-08	2.9E-13	7.3E-09	--	2.5E-08	Liver	2.2E-04	NA	9.1E-05	3.1E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	9.1E-06	2.2E-07	5.0E-06		1.4E-05		2.9E-01	1.5E-02	1.3E-01	4.4E-01
		Exposure Point Total						1.4E-05					4.4E-01
	Exposure Medium Total							1.4E-05					4.4E-01
Medium Total								1.4E-05					4.4E-01
							Receptor Risk Total	1.4E-05				Receptor HI Total	4.4E-01

Total Blood HI Across All Media =	2.2.E-02
Total Body Weight HI Across All Media =	3.6.E-03
Total CNS HI Across All Media =	1.2.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.6.E-02
Total Immune HI Across All Media =	3.5.E-01
Total Kidney HI Across All Media =	2.7.E-03
Total Liver HI Across All Media =	9.1.E-04
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	9.2.E-03
Total Respiratory HI Across All Media =	1.6.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	4.3.E-03
Total Thyroid HI Across All Media =	4.0.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	6.2.E-04

TABLE 9.3c-CTE Visitor/Trespasser (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	7.8E-05	4.4E-03	NA	4.5E-03
			ALUMINUM	NA	NA	NA	--	NA	CNS	1.9E-04	7.4E-06	NA	2.0E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	5.1E-03	NA	NA	5.1E-03
			ARSENIC	2.3E-08	2.1E-11	9.7E-09	--	3.3E-08	Skin, Vascular	8.9E-04	5.8E-06	3.8E-04	1.3E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	1.1E-04	8.9E-06	NA	1.2E-04
			CADMIUM	NA	9.1E-12	NA	--	9.1E-12	Kidney	4.5E-04	8.8E-06	1.5E-04	6.1E-04
			COBALT	NA	3.0E-11	NA	--	3.0E-11	Thyroid	1.0E-03	9.8E-06	NA	1.0E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	3.4E-03	NA	NA	3.4E-03
			IRON	NA	NA	NA	--	NA	GI Tract	3.1E-03	NA	NA	3.1E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	1.0E-03	9.8E-05	NA	1.1E-03
			MERCURY	NA	NA	NA	--	NA	CNS	7.2E-04	1.8E-03	NA	2.6E-03
			NICKEL	NA	1.7E-11	NA	--	1.7E-11	Body weight	3.0E-04	1.3E-05	NA	3.1E-04
			VANADIUM	NA	NA	NA	--	NA	NA	1.3E-04	1.2E-06	NA	1.3E-04
			ZINC	NA	NA	NA	--	NA	Blood	3.5E-04	NA	NA	3.5E-04
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	2.7E-05	NA	2.9E-05	5.6E-05
			BENZO(A)ANTHRACENE	7.7E-08	7.0E-10	8.5E-08	--	1.6E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	5.9E-08	1.7E-12	6.5E-08	--	1.2E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.1E-07	3.2E-12	1.2E-07	--	2.3E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.3E-08	3.9E-12	1.5E-08	--	2.8E-08	NA	NA	NA	NA	NA
			CHRYSENE	6.5E-10	1.9E-13	7.2E-10	--	1.4E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.2E-08	1.4E-12	4.6E-08	--	8.8E-08	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	1.0E-04	NA	1.1E-04	2.1E-04
			INDENO(1,2,3-C,D)PYRENE	3.0E-09	8.7E-14	3.2E-09	--	6.2E-09	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	6.5E-09	NA	--	6.5E-09	Body weight	2.9E-05	1.1E-03	3.2E-05	1.2E-03
			PYRENE	NA	NA	NA	--	NA	Kidney	1.4E-05	NA	1.6E-05	3.0E-05
			PCB-1242	7.9E-09	1.0E-09	9.3E-09	--	1.8E-08	Immune	3.4E-03	NA	4.1E-03	7.5E-03
			PCB-1248	9.1E-08	1.1E-08	1.1E-07	--	2.1E-07	Immune	4.0E-02	NA	4.7E-02	8.7E-02
			PCB-1254	2.7E-08	2.4E-09	3.2E-08	--	6.1E-08	Immune	1.2E-02	NA	1.4E-02	2.6E-02
			PCB-1260	3.8E-10	2.2E-11	4.5E-10	--	8.6E-10	Immune	1.7E-04	NA	2.0E-04	3.7E-04
			DIELDRIN	4.9E-09	2.7E-13	4.1E-09	--	9.0E-09	Liver	1.1E-04	NA	9.0E-05	2.0E-04

TABLE 9.3c-CTE Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BIS(2-ETHYLHEXYL)PHTHALATE	8.6E-10	2.9E-14	7.3E-10	--	1.6E-09	Liver	5.4E-05	NA	4.6E-05	1.0E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	4.6E-07	2.2E-08	5.0E-07		9.8E-07		7.2E-02	7.6E-03	6.6E-02	1.5E-01
		Exposure Point Total						9.8E-07					1.5E-01
	Exposure Medium Total							9.8E-07					1.5E-01
Medium Total								9.8E-07					1.5E-01
							Receptor Risk Total	9.8E-07				Receptor HI Total	1.5E-01

Total Blood HI Across All Media =	5.5.E-03
Total Body Weight HI Across All Media =	1.5.E-03
Total CNS HI Across All Media =	3.9.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	6.5.E-03
Total Immune HI Across All Media =	1.2.E-01
Total Kidney HI Across All Media =	7.6.E-04
Total Liver HI Across All Media =	3.0.E-04
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	4.5.E-03
Total Respiratory HI Across All Media =	5.6.E-05
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.3.E-03
Total Thyroid HI Across All Media =	1.0.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	2.1.E-04

TABLE 9.4a-RME Outdoor Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	2.5E-03	1.4E-01	NA	1.5E-01
			ALUMINUM	NA	NA	NA	--	NA	CNS	6.1E-03	2.4E-04	NA	6.3E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.6E-01	NA	NA	1.6E-01
			ARSENIC	4.6E-06	4.3E-09	9.8E-07	--	5.6E-06	Skin, Vascular	2.9E-02	1.9E-04	6.1E-03	3.5E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	3.6E-03	2.9E-04	NA	3.9E-03
			CADMIUM	NA	1.8E-09	NA	--	1.8E-09	Kidney	1.5E-02	2.8E-04	2.5E-03	1.7E-02
			COBALT	NA	6.1E-09	NA	--	6.1E-09	Thyroid	3.2E-02	3.2E-04	NA	3.2E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	1.1E-01	NA	NA	1.1E-01
			IRON	NA	NA	NA	--	NA	GI Tract	1.0E-01	NA	NA	1.0E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	3.3E-02	3.1E-03	NA	3.7E-02
			MERCURY	NA	NA	NA	--	NA	CNS	2.3E-02	5.9E-02	NA	8.2E-02
			NICKEL	NA	3.5E-09	NA	--	3.5E-09	Body weight	9.5E-03	4.1E-04	NA	9.9E-03
			VANADIUM	NA	NA	NA	--	NA	NA	4.0E-03	4.0E-05	NA	4.1E-03
			ZINC	NA	NA	NA	--	NA	Blood	1.1E-02	NA	NA	1.1E-02
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	8.5E-04	NA	4.7E-04	1.3E-03
			BENZO(A)ANTHRACENE	1.5E-05	1.4E-07	8.5E-06	--	2.4E-05	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.2E-05	3.5E-10	6.5E-06	--	1.8E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.2E-05	6.4E-10	1.2E-05	--	3.3E-05	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.7E-06	7.9E-10	1.5E-06	--	4.1E-06	NA	NA	NA	NA	NA
			CHRYSENE	1.3E-07	3.9E-11	7.2E-08	--	2.0E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	8.4E-06	2.7E-10	4.6E-06	--	1.3E-05	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	3.2E-03	NA	1.8E-03	5.0E-03
			INDENO(1,2,3-C,D)PYRENE	5.9E-07	1.8E-11	3.3E-07	--	9.2E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	1.3E-06	NA	--	1.3E-06	Body weight	9.3E-04	3.6E-02	5.1E-04	3.7E-02
			PYRENE	NA	NA	NA	--	NA	Kidney	4.6E-04	NA	2.5E-04	7.2E-04
			PCB-1242	1.6E-06	2.0E-07	9.4E-07	--	2.7E-06	Immune	1.1E-01	NA	6.6E-02	1.8E-01
			PCB-1248	1.8E-05	2.2E-06	1.1E-05	--	3.1E-05	Immune	1.3E+00	NA	7.6E-01	2.0E+00
			PCB-1254	5.4E-06	4.9E-07	3.2E-06	--	9.1E-06	Immune	3.8E-01	NA	2.2E-01	6.0E-01
			PCB-1260	7.7E-08	4.5E-09	4.6E-08	--	1.3E-07	Immune	5.4E-03	NA	3.2E-03	8.6E-03
			DIELDRIN	9.8E-07	5.5E-11	4.1E-07	--	1.4E-06	Liver	3.4E-03	NA	1.4E-03	4.9E-03

TABLE 9.4a-RME Outdoor Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BIS(2-ETHYLHEXYL)PHTHALATE	1.7E-07	5.8E-12	7.3E-08	--	2.5E-07	Liver	1.7E-03	NA	7.3E-04	2.5E-03
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	9.2E-05	4.4E-06	5.0E-05		1.5E-04		2.3E+00	2.4E-01	1.1E+00	3.6E+00
		Exposure Point Total						1.5E-04					3.6E+00
	Exposure Medium Total							1.5E-04					3.6E+00
Medium Total								1.5E-04					3.6E+00
							Receptor Risk Total	1.5E-04				Receptor HI Total	3.6E+00

Total Blood HI Across All Media =	1.8.E-01
Total Body Weight HI Across All Media =	4.7.E-02
Total CNS HI Across All Media =	1.3.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.1.E-01
Total Immune HI Across All Media =	2.8.E+00
Total Kidney HI Across All Media =	2.2.E-02
Total Liver HI Across All Media =	7.3.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.5.E-01
Total Respiratory HI Across All Media =	1.3.E-03
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.5.E-02
Total Thyroid HI Across All Media =	3.2.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	5.0.E-03

TABLE 9.4a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	6.3E-04	1.8E-02	NA	1.9E-02
			ALUMINUM	NA	NA	NA	--	NA	CNS	1.5E-03	3.0E-05	NA	1.6E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.1E-02	NA	NA	4.1E-02
			ARSENIC	3.7E-07	1.7E-10	1.6E-07	--	5.3E-07	Skin, Vascular	7.2E-03	2.4E-05	3.0E-03	1.0E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	9.2E-04	3.6E-05	NA	9.5E-04
			CADMIUM	NA	7.3E-11	NA	--	7.3E-11	Kidney	3.6E-03	3.6E-05	1.2E-03	4.9E-03
			COBALT	NA	2.4E-10	NA	--	2.4E-10	Thyroid	8.1E-03	4.0E-05	NA	8.1E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	2.7E-02	NA	NA	2.7E-02
			IRON	NA	NA	NA	--	NA	GI Tract	2.5E-02	NA	NA	2.5E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	8.4E-03	3.9E-04	NA	8.8E-03
			MERCURY	NA	NA	NA	--	NA	CNS	5.8E-03	7.4E-03	NA	1.3E-02
			NICKEL	NA	1.4E-10	NA	--	1.4E-10	Body weight	2.4E-03	5.2E-05	NA	2.4E-03
			VANADIUM	NA	NA	NA	--	NA	NA	1.0E-03	5.0E-06	NA	1.0E-03
			ZINC	NA	NA	NA	--	NA	Blood	2.9E-03	NA	NA	2.9E-03
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	2.1E-04	NA	2.4E-04	4.5E-04
			BENZO(A)ANTHRACENE	1.2E-06	5.7E-09	1.4E-06	--	2.6E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	9.6E-07	1.4E-11	1.1E-06	--	2.0E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.7E-06	2.6E-11	1.9E-06	--	3.6E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.1E-07	3.2E-11	2.4E-07	--	4.5E-07	NA	NA	NA	NA	NA
			CHRYSENE	1.1E-08	1.6E-12	1.2E-08	--	2.2E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	6.8E-07	1.1E-11	7.4E-07	--	1.4E-06	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	8.1E-04	NA	8.9E-04	1.7E-03
			INDENO(1,2,3-C,D)PYRENE	4.8E-08	7.1E-13	5.3E-08	--	1.0E-07	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	5.3E-08	NA	--	5.3E-08	Body weight	2.3E-04	4.5E-03	2.6E-04	5.0E-03
			PYRENE	NA	NA	NA	--	NA	Kidney	1.2E-04	NA	1.3E-04	2.4E-04
			PCB-1242	1.3E-07	8.2E-09	1.5E-07	--	2.9E-07	Immune	2.8E-02	NA	3.3E-02	6.1E-02
			PCB-1248	1.5E-06	9.0E-08	1.7E-06	--	3.3E-06	Immune	3.2E-01	NA	3.8E-01	7.0E-01
			PCB-1254	4.4E-07	2.0E-08	5.2E-07	--	9.7E-07	Immune	9.5E-02	NA	1.1E-01	2.1E-01
			PCB-1260	6.2E-09	1.8E-10	7.3E-09	--	1.4E-08	Immune	1.4E-03	NA	1.6E-03	3.0E-03
			DIELDRIN	7.9E-08	2.2E-12	6.6E-08	--	1.5E-07	Liver	8.6E-04	NA	7.3E-04	1.6E-03

TABLE 9.4a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			BIS(2-ETHYLHEXYL)PHTHALATE	1.4E-08	2.3E-13	1.2E-08	--	2.6E-08	Liver	4.4E-04	NA	3.7E-04	8.0E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	7.4E-06	1.8E-07	8.0E-06		1.6E-05		5.8E-01	3.0E-02	5.4E-01	1.2E+00
		Exposure Point Total						1.6E-05					1.2E+00
	Exposure Medium Total							1.6E-05					1.2E+00
Medium Total								1.6E-05					1.2E+00
							Receptor Risk Total	1.6E-05				Receptor HI Total	1.2E+00

Total Blood HI Across All Media =	4.4.E-02
Total Body Weight HI Across All Media =	7.4.E-03
Total CNS HI Across All Media =	2.4.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.2.E-02
Total Immune HI Across All Media =	9.7.E-01
Total Kidney HI Across All Media =	6.1.E-03
Total Liver HI Across All Media =	2.4.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	1.9.E-02
Total Respiratory HI Across All Media =	4.5.E-04
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.0.E-02
Total Thyroid HI Across All Media =	8.1.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	1.7.E-03

TABLE 9.5a-RME Construction Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	1.2E-02	2.2E-01	NA	2.3E-01
			ALUMINUM	NA	NA	NA	--	NA	CNS	2.0E-02	2.4E-04	NA	2.1E-02
			ANTIMONY	NA	NA	NA	--	NA	Blood	2.3E+00	NA	NA	2.3E+00
			ARSENIC	7.0E-07	2.0E-10	4.5E-08	--	7.4E-07	Skin, Vascular	1.1E-01	2.1E-04	6.9E-03	1.2E-01
			BARIUM	NA	NA	NA	--	NA	Kidney	7.6E-03	1.8E-04	NA	7.8E-03
			CADMIUM	NA	5.2E-11	NA	--	5.2E-11	Kidney	3.4E-02	2.0E-04	1.7E-03	3.6E-02
			CHROMIUM, HEXAVALENT	1.0E-08	1.0E-10	NA	--	1.1E-08	None	4.9E-04	8.7E-07	NA	4.9E-04
			COBALT	NA	3.2E-10	NA	--	3.2E-10	Thyroid	1.4E-01	4.2E-04	NA	1.4E-01
			COPPER	NA	NA	NA	--	NA	GI Tract	7.6E-01	NA	NA	7.6E-01
			IRON	NA	NA	NA	--	NA	GI Tract	3.1E-01	NA	NA	3.1E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	9.8E-02	2.8E-03	NA	1.0E-01
			MERCURY	NA	NA	NA	--	NA	CNS	1.7E-01	1.3E-01	NA	3.0E-01
			NICKEL	NA	2.3E-10	NA	--	2.3E-10	Body weight	5.2E-02	6.9E-04	NA	5.3E-02
			SILVER	NA	NA	NA	--	NA	Skin	1.4E-02	NA	NA	1.4E-02
			VANADIUM	NA	NA	NA	--	NA	NA	1.2E-02	3.7E-05	NA	1.2E-02
			ZINC	NA	NA	NA	--	NA	Blood	5.2E-02	NA	NA	5.2E-02
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	1.4E-03	NA	2.3E-04	1.6E-03
			BENZO(A)ANTHRACENE	5.6E-07	1.6E-09	9.4E-08	--	6.6E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	8.2E-07	7.3E-12	1.4E-07	--	9.5E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	7.4E-07	6.6E-12	1.2E-07	--	8.6E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	8.8E-08	7.9E-12	1.5E-08	--	1.0E-07	NA	NA	NA	NA	NA
			CHRYSENE	4.9E-09	4.4E-13	8.2E-10	--	5.8E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	6.5E-07	6.3E-12	1.1E-07	--	7.5E-07	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	4.2E-03	NA	7.1E-04	4.9E-03
			INDENO(1,2,3-C,D)PYRENE	7.0E-08	6.3E-13	1.2E-08	--	8.2E-08	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	1.3E-08	NA	--	1.3E-08	Body weight	7.8E-04	9.1E-03	1.3E-04	1.0E-02
			PYRENE	NA	NA	NA	--	NA	Kidney	1.5E-03	NA	2.4E-04	1.7E-03
			PCB-1242	2.5E-07	9.6E-09	4.4E-08	--	3.0E-07	Immune	4.3E-01	NA	7.7E-02	5.1E-01
			PCB-1248	1.7E-06	6.4E-08	3.1E-07	--	2.1E-06	Immune	3.0E+00	NA	5.5E-01	3.6E+00
			PCB-1254	7.9E-07	2.2E-08	1.4E-07	--	9.6E-07	Immune	1.4E+00	NA	2.5E-01	1.6E+00

TABLE 9.5a-RME Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			PCB-1260	1.3E-08	2.2E-10	2.3E-09	--	1.5E-08	Immune	2.2E-02	NA	4.0E-03	2.6E-02
			PCB-1262	2.8E-09	4.8E-14	5.0E-10	--	3.3E-09	Immune	4.9E-03	NA	8.8E-04	5.8E-03
			DIELDRIN	3.4E-08	5.9E-13	4.4E-09	--	3.9E-08	Liver	3.0E-03	NA	3.9E-04	3.4E-03
			HEPTACHLOR EPOXIDE	2.4E-09	6.7E-11	NA	--	2.5E-09	Liver	1.4E-03	NA	NA	1.4E-03
			BIS(2-ETHYLHEXYL)PHTHALATE	8.8E-09	9.0E-14	1.1E-09	--	9.9E-09	Liver	2.2E-03	NA	2.8E-04	2.5E-03
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	6.5E-06	1.1E-07	1.0E-06		7.6E-06		9.0E+00	3.6E-01	8.9E-01	1.0E+01
		Exposure Point Total						7.6E-06					1.0E+01
	Exposure Medium Total							7.6E-06					1.0E+01
Medium Total								7.6E-06					1.0E+01
	Exposure Medium Total							7.6E-06					1.0E+01
Medium Total								7.6E-06					1.0E+01
			Receptor Risk Total					7.6E-06	Receptor HI Total				1.0E+01

Total Blood HI Across All Media =	2.4.E+00
Total Body Weight HI Across All Media =	6.3.E-02
Total CNS HI Across All Media =	4.2.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.1.E+00
Total Immune HI Across All Media =	5.8.E+00
Total Kidney HI Across All Media =	4.5.E-02
Total Liver HI Across All Media =	7.3.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	4.9.E-04
Total Reproductive HI Across All Media =	2.3.E-01
Total Respiratory HI Across All Media =	1.6.E-03
Total Skin HI Across All Media =	1.4.E-02
Total Skin & Vascular HI Across All Media =	1.2.E-01
Total Thyroid HI Across All Media =	1.4.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.9.E-03

TABLE 9.5a-CTE Construction Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	CYANIDE	NA	NA	NA	--	NA	Reproductive	3.0E-03	5.2E-02	NA	5.5E-02
			ALUMINUM	NA	NA	NA	--	NA	CNS	4.9E-03	5.8E-05	NA	5.0E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	5.6E-01	NA	NA	5.6E-01
			ARSENIC	1.7E-07	4.7E-11	1.1E-08	--	1.8E-07	Skin, Vascular	2.6E-02	5.1E-05	1.7E-03	2.8E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	1.8E-03	4.4E-05	NA	1.9E-03
			CADMIUM	NA	1.2E-11	NA	--	1.2E-11	Kidney	8.1E-03	4.8E-05	4.2E-04	8.6E-03
			CHROMIUM, HEXAVALENT	2.5E-09	2.5E-11	NA	--	2.5E-09	None	1.2E-04	2.1E-07	NA	1.2E-04
			COBALT	NA	7.7E-11	NA	--	7.7E-11	Thyroid	3.4E-02	1.0E-04	NA	3.4E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	1.8E-01	NA	NA	1.8E-01
			IRON	NA	NA	NA	--	NA	GI Tract	7.5E-02	NA	NA	7.5E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	2.3E-02	6.7E-04	NA	2.4E-02
			MERCURY	NA	NA	NA	--	NA	CNS	4.0E-02	3.1E-02	NA	7.1E-02
			NICKEL	NA	5.6E-11	NA	--	5.6E-11	Body weight	1.3E-02	1.7E-04	NA	1.3E-02
			SILVER	NA	NA	NA	--	NA	Skin	3.3E-03	NA	NA	3.3E-03
			VANADIUM	NA	NA	NA	--	NA	NA	3.0E-03	8.9E-06	NA	3.0E-03
			ZINC	NA	NA	NA	--	NA	Blood	1.2E-02	NA	NA	1.2E-02
			2-METHYLNAPHTHALENE	NA	NA	NA	--	NA	Respiratory	3.3E-04	NA	5.6E-05	3.9E-04
			BENZO(A)ANTHRACENE	1.4E-07	3.8E-10	2.3E-08	--	1.6E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.0E-07	1.8E-12	3.3E-08	--	2.3E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.8E-07	1.6E-12	3.0E-08	--	2.1E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.1E-08	1.9E-12	3.5E-09	--	2.5E-08	NA	NA	NA	NA	NA
			CHRYSENE	1.2E-09	1.1E-13	2.0E-10	--	1.4E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.6E-07	1.5E-12	2.6E-08	--	1.8E-07	NA	NA	NA	NA	NA
			FLUORANTHENE	NA	NA	NA	--	NA	Whole body	1.0E-03	NA	1.7E-04	1.2E-03
			INDENO(1,2,3-C,D)PYRENE	1.7E-08	1.5E-13	2.8E-09	--	2.0E-08	NA	NA	NA	NA	NA
			NAPHTHALENE	NA	3.2E-09	NA	--	3.2E-09	Body weight	1.9E-04	2.2E-03	3.1E-05	2.4E-03
			PYRENE	NA	NA	NA	--	NA	Kidney	3.5E-04	NA	5.8E-05	4.1E-04
			PCB-1242	5.9E-08	2.3E-09	1.1E-08	--	7.2E-08	Immune	1.0E-01	NA	1.9E-02	1.2E-01
			PCB-1248	4.2E-07	1.5E-08	7.5E-08	--	5.1E-07	Immune	7.3E-01	NA	1.3E-01	8.6E-01
			PCB-1254	1.9E-07	5.2E-09	3.4E-08	--	2.3E-07	Immune	3.3E-01	NA	6.0E-02	3.9E-01

TABLE 9.5a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			PCB-1260	3.1E-09	5.4E-11	5.5E-10	--	3.7E-09	Immune	5.4E-03	NA	9.6E-04	6.3E-03
			PCB-1262	6.7E-10	1.1E-14	1.2E-10	--	7.9E-10	Immune	1.2E-03	NA	2.1E-04	1.4E-03
			DIELDRIN	8.3E-09	1.4E-13	1.1E-09	--	9.3E-09	Liver	7.2E-04	NA	9.3E-05	8.2E-04
			HEPTACHLOR EPOXIDE	5.9E-10	1.6E-11	NA	--	6.0E-10	Liver	3.5E-04	NA	NA	3.5E-04
			BIS(2-ETHYLHEXYL)PHTHALATE	2.1E-09	2.1E-14	2.7E-10	--	2.4E-09	Liver	5.3E-04	NA	6.8E-05	5.9E-04
			DIBENZOFURAN	NA	NA	NA	--	NA	NA	NA	NA	NA	NA
			Chemical Total	1.6E-06	2.7E-08	2.5E-07		1.8E-06		2.2E+00	8.6E-02	2.1E-01	2.5E+00
		Exposure Point Total						1.8E-06					2.5E+00
	Exposure Medium Total							1.8E-06					2.5E+00
Medium Total								1.8E-06					2.5E+00
	Exposure Medium Total							1.8E-06					2.5E+00
Medium Total								1.8E-06					2.5E+00
			Receptor Risk Total					1.8E-06	Receptor HI Total				2.5E+00

Total Blood HI Across All Media =	5.7.E-01
Total Body Weight HI Across All Media =	1.5.E-02
Total CNS HI Across All Media =	1.0.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.6.E-01
Total Immune HI Across All Media =	1.4.E+00
Total Kidney HI Across All Media =	1.1.E-02
Total Liver HI Across All Media =	1.8.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	1.2.E-04
Total Reproductive HI Across All Media =	5.5.E-02
Total Respiratory HI Across All Media =	3.9.E-04
Total Skin HI Across All Media =	3.3.E-03
Total Skin & Vascular HI Across All Media =	2.8.E-02
Total Thyroid HI Across All Media =	3.4.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	1.2.E-03

TABLE 9.6a-RME Recreational User (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	1.4E-02	2.7E-05	NA	1.5E-02
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.3E-01	NA	NA	1.3E-01
			ARSENIC	3.5E-06	1.5E-10	4.1E-07	--	3.9E-06	Skin, Vascular	9.0E-02	2.8E-05	1.1E-02	1.0E-01
			BARIUM	NA	NA	NA	--	NA	Kidney	9.4E-03	3.4E-05	NA	9.4E-03
			CADMIUM	NA	2.3E-11	NA	--	2.3E-11	Kidney	1.6E-02	1.5E-05	3.9E-05	1.6E-02
			COBALT	NA	1.9E-10	NA	--	1.9E-10	Thyroid	8.7E-02	4.0E-05	NA	8.7E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	4.0E-02	NA	NA	4.0E-02
			IRON	NA	NA	NA	--	NA	GI Tract	1.6E-01	NA	NA	1.6E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	8.4E-02	3.7E-04	NA	8.5E-02
			MERCURY	NA	NA	NA	--	NA	CNS	4.8E-02	5.8E-03	NA	5.4E-02
			SILVER	NA	NA	NA	--	NA	Skin	1.4E-02	NA	NA	1.4E-02
			VANADIUM	NA	NA	NA	--	NA	NA	8.0E-03	3.7E-06	NA	8.0E-03
			ZINC	NA	NA	NA	--	NA	Blood	7.8E-03	NA	NA	7.8E-03
			BENZO(A)ANTHRACENE	3.5E-06	1.5E-09	1.1E-06	--	4.5E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.1E-05	4.3E-11	9.6E-06	--	4.1E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	3.9E-06	5.5E-12	1.2E-06	--	5.2E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.6E-07	2.2E-12	5.0E-08	--	2.1E-07	NA	NA	NA	NA	NA
			CHRYSENE	3.3E-08	4.6E-13	1.0E-08	--	4.4E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.1E-06	6.2E-12	1.3E-06	--	5.4E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.6E-06	2.2E-12	4.8E-07	--	2.0E-06	NA	NA	NA	NA	NA
			PCB-1248	1.1E-05	6.2E-08	3.6E-06	--	1.4E-05	Immune	3.2E+00	NA	1.0E+00	4.2E+00
			PCB-1254	7.4E-06	3.1E-08	2.5E-06	--	9.9E-06	Immune	2.2E+00	NA	7.2E-01	2.9E+00
			PCB-1260	4.1E-08	1.1E-10	1.4E-08	--	5.5E-08	Immune	1.2E-02	NA	4.0E-03	1.6E-02
			HEPTACHLOR	6.9E-08	5.2E-10	NA	--	7.0E-08	Liver	3.6E-04	NA	NA	3.6E-04
			P,P'-DDE	4.4E-08	7.5E-11	NA	--	4.4E-08	NA	NA	NA	NA	NA
			P,P'-DDT	6.0E-08	1.6E-13	4.2E-09	--	6.4E-08	Liver	4.1E-03	NA	2.9E-04	4.4E-03

TABLE 9.6a-RME Recreational User (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	6.6E-05	9.6E-08	2.0E-05		8.7E-05		6.0E+00	6.3E-03	1.8E+00	7.8E+00
		Exposure Point Total						8.7E-05					7.8E+00
	Exposure Medium Total							8.7E-05					7.8E+00
Medium Total								8.7E-05					7.8E+00
							Receptor Risk Total	8.7E-05				Receptor HI Total	7.8E+00

Total Blood HI Across All Media =	1.3.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.5.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.0.E-01
Total Immune HI Across All Media =	7.1.E+00
Total Kidney HI Across All Media =	2.6.E-02
Total Liver HI Across All Media =	4.7.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.0.E-01
Total Thyroid HI Across All Media =	8.7.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.6a-CTE Recreational User (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	7.2E-03	1.3E-05	NA	7.3E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	6.3E-02	NA	NA	6.3E-02
			ARSENIC	1.2E-06	5.1E-11	1.4E-07	--	1.3E-06	Skin, Vascular	4.5E-02	1.4E-05	5.4E-03	5.0E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	4.7E-03	1.7E-05	NA	4.7E-03
			CADMIUM	NA	7.7E-12	NA	--	7.7E-12	Kidney	8.1E-03	7.5E-06	1.9E-05	8.1E-03
			COBALT	NA	6.2E-11	NA	--	6.2E-11	Thyroid	4.4E-02	2.0E-05	NA	4.4E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	2.0E-02	NA	NA	2.0E-02
			IRON	NA	NA	NA	--	NA	GI Tract	7.8E-02	NA	NA	7.8E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	4.2E-02	1.9E-04	NA	4.2E-02
			MERCURY	NA	NA	NA	--	NA	CNS	2.4E-02	2.9E-03	NA	2.7E-02
			SILVER	NA	NA	NA	--	NA	Skin	6.8E-03	NA	NA	6.8E-03
			VANADIUM	NA	NA	NA	--	NA	NA	4.0E-03	1.8E-06	NA	4.0E-03
			ZINC	NA	NA	NA	--	NA	Blood	3.9E-03	NA	NA	3.9E-03
			BENZO(A)ANTHRACENE	1.2E-06	4.9E-10	3.5E-07	--	1.5E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.0E-05	1.4E-11	3.2E-06	--	1.4E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.3E-06	1.8E-12	4.1E-07	--	1.7E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	5.4E-08	7.4E-13	1.7E-08	--	7.0E-08	NA	NA	NA	NA	NA
			CHRYSENE	1.1E-08	1.5E-13	3.4E-09	--	1.5E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.4E-06	2.1E-12	4.2E-07	--	1.8E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	5.2E-07	7.2E-13	1.6E-07	--	6.8E-07	NA	NA	NA	NA	NA
			PCB-1248	3.6E-06	2.1E-08	1.2E-06	--	4.8E-06	Immune	1.6E+00	NA	5.2E-01	2.1E+00
			PCB-1254	2.5E-06	1.0E-08	8.2E-07	--	3.3E-06	Immune	1.1E+00	NA	3.6E-01	1.4E+00
			PCB-1260	1.4E-08	3.7E-11	4.5E-09	--	1.8E-08	Immune	6.0E-03	NA	2.0E-03	8.0E-03
			HEPTACHLOR	2.3E-08	1.7E-10	NA	--	2.3E-08	Liver	1.8E-04	NA	NA	1.8E-04
			P,P'-DDE	1.5E-08	2.5E-11	NA	--	1.5E-08	NA	NA	NA	NA	NA
			P,P'-DDT	2.0E-08	5.2E-14	1.4E-09	--	2.1E-08	Liver	2.0E-03	NA	1.5E-04	2.2E-03

TABLE 9.6a-CTE Recreational User (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	2.2E-05	3.2E-08	6.7E-06		2.9E-05		3.0E+00	3.2E-03	8.9E-01	3.9E+00
		Exposure Point Total						2.9E-05					3.9E+00
	Exposure Medium Total							2.9E-05					3.9E+00
Medium Total								2.9E-05					3.9E+00
							Receptor Risk Total	2.9E-05				Receptor HI Total	3.9E+00

Total Blood HI Across All Media =	6.3.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	7.7.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	9.8.E-02
Total Immune HI Across All Media =	3.5.E+00
Total Kidney HI Across All Media =	1.3.E-02
Total Liver HI Across All Media =	2.4.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	5.0.E-02
Total Thyroid HI Across All Media =	4.4.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.6b-RME Recreational User (Adolescent)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	3.4E-03	4.0E-05	NA	3.5E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	3.0E-02	NA	NA	3.0E-02
			ARSENIC	1.6E-06	4.6E-10	8.4E-07	--	2.5E-06	Skin, Vascular	2.1E-02	4.1E-05	1.1E-02	3.2E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	2.2E-03	5.2E-05	NA	2.3E-03
			CADMIUM	NA	6.9E-11	NA	--	6.9E-11	Kidney	3.8E-03	2.2E-05	3.9E-05	3.9E-03
			COBALT	NA	5.6E-10	NA	--	5.6E-10	Thyroid	2.1E-02	6.0E-05	NA	2.1E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	9.4E-03	NA	NA	9.4E-03
			IRON	NA	NA	NA	--	NA	GI Tract	3.7E-02	NA	NA	3.7E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	2.0E-02	5.6E-04	NA	2.0E-02
			MERCURY	NA	NA	NA	--	NA	CNS	1.1E-02	8.7E-03	NA	2.0E-02
			SILVER	NA	NA	NA	--	NA	Skin	3.2E-03	NA	NA	3.2E-03
			VANADIUM	NA	NA	NA	--	NA	NA	1.9E-03	5.5E-06	NA	1.9E-03
			ZINC	NA	NA	NA	--	NA	Blood	1.8E-03	NA	NA	1.8E-03
			BENZO(A)ANTHRACENE	8.2E-07	2.2E-09	1.1E-06	--	1.9E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	7.4E-06	6.5E-11	9.8E-06	--	1.7E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	9.3E-07	8.2E-12	1.2E-06	--	2.2E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	3.8E-08	3.3E-12	5.0E-08	--	8.8E-08	NA	NA	NA	NA	NA
			CHRYSENE	7.9E-09	7.0E-13	1.0E-08	--	1.8E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	9.8E-07	9.4E-12	1.3E-06	--	2.3E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	3.7E-07	3.2E-12	4.9E-07	--	8.6E-07	NA	NA	NA	NA	NA
			PCB-1248	5.1E-06	1.9E-07	7.3E-06	--	1.3E-05	Immune	7.4E-01	NA	1.1E+00	1.8E+00
			PCB-1254	3.5E-06	9.4E-08	5.0E-06	--	8.6E-06	Immune	5.1E-01	NA	7.3E-01	1.2E+00
			PCB-1260	1.9E-08	3.4E-10	2.8E-08	--	4.7E-08	Immune	2.8E-03	NA	4.0E-03	6.9E-03
			HEPTACHLOR	3.3E-08	1.6E-09	NA	--	3.4E-08	Liver	8.5E-05	NA	NA	8.5E-05
			P,P'-DDE	2.1E-08	2.2E-10	NA	--	2.1E-08	NA	NA	NA	NA	NA
			P,P'-DDT	2.8E-08	4.7E-13	8.6E-09	--	3.7E-08	Liver	9.7E-04	NA	3.0E-04	1.3E-03

TABLE 9.6b-RME Recreational User (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	2.1E-05	2.8E-07	2.7E-05		4.8E-05		1.4E+00	9.5E-03	1.8E+00	3.2E+00
		Exposure Point Total						4.8E-05					3.2E+00
	Exposure Medium Total							4.8E-05					3.2E+00
Medium Total								4.8E-05					3.2E+00
							Receptor Risk Total	4.8E-05				Receptor HI Total	3.2E+00

Total Blood HI Across All Media =	3.0.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	4.4.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	4.6.E-02
Total Immune HI Across All Media =	3.1.E+00
Total Kidney HI Across All Media =	6.2.E-03
Total Liver HI Across All Media =	1.3.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.2.E-02
Total Thyroid HI Across All Media =	2.1.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.6b-CTE Recreational User (Adolescent)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	1.7E-03	2.0E-05	NA	1.7E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.5E-02	NA	NA	1.5E-02
			ARSENIC	2.7E-07	7.6E-11	1.4E-07	--	4.1E-07	Skin, Vascular	1.1E-02	2.1E-05	5.4E-03	1.6E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	1.1E-03	2.6E-05	NA	1.1E-03
			CADMIUM	NA	1.2E-11	NA	--	1.2E-11	Kidney	1.9E-03	1.1E-05	2.0E-05	2.0E-03
			COBALT	NA	9.3E-11	NA	--	9.3E-11	Thyroid	1.0E-02	3.0E-05	NA	1.0E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	4.7E-03	NA	NA	4.7E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.8E-02	NA	NA	1.8E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	9.9E-03	2.8E-04	NA	1.0E-02
			MERCURY	NA	NA	NA	--	NA	CNS	5.7E-03	4.3E-03	NA	1.0E-02
			SILVER	NA	NA	NA	--	NA	Skin	1.6E-03	NA	NA	1.6E-03
			VANADIUM	NA	NA	NA	--	NA	NA	9.4E-04	2.8E-06	NA	9.4E-04
			ZINC	NA	NA	NA	--	NA	Blood	9.2E-04	NA	NA	9.2E-04
			BENZO(A)ANTHRACENE	1.4E-07	3.7E-10	1.8E-07	--	3.2E-07	NA	NA	NA	NA	0.0E+00
			BENZO(A)PYRENE	1.2E-06	1.1E-11	1.6E-06	--	2.9E-06	NA	NA	NA	NA	0.0E+00
			BENZO(B)FLUORANTHENE	1.6E-07	1.4E-12	2.1E-07	--	3.6E-07	NA	NA	NA	NA	0.0E+00
			BENZO(K)FLUORANTHENE	6.3E-09	5.6E-13	8.4E-09	--	1.5E-08	NA	NA	NA	NA	0.0E+00
			CHRYSENE	1.3E-09	1.2E-13	1.7E-09	--	3.1E-09	NA	NA	NA	NA	0.0E+00
			DIBENZ(A,H)ANTHRACENE	1.6E-07	1.6E-12	2.2E-07	--	3.8E-07	NA	NA	NA	NA	0.0E+00
			INDENO(1,2,3-C,D)PYRENE	6.1E-08	5.4E-13	8.1E-08	--	1.4E-07	NA	NA	NA	NA	0.0E+00
			PCB-1248	8.5E-07	3.1E-08	1.2E-06	--	2.1E-06	Immune	3.7E-01	NA	5.3E-01	9.0E-01
			PCB-1254	5.8E-07	1.6E-08	8.3E-07	--	1.4E-06	Immune	2.5E-01	NA	3.6E-01	6.2E-01
			PCB-1260	3.2E-09	5.6E-11	4.6E-09	--	7.9E-09	Immune	1.4E-03	NA	2.0E-03	3.4E-03
			HEPTACHLOR	5.4E-09	2.6E-10	NA	--	5.7E-09	Liver	4.2E-05	NA	NA	4.2E-05
			P,P'-DDE	3.5E-09	3.7E-11	NA	--	3.5E-09	NA	NA	NA	NA	0.0E+00
			P,P'-DDT	4.7E-09	7.8E-14	1.4E-09	--	6.1E-09	Liver	4.8E-04	NA	1.5E-04	6.3E-04

TABLE 9.6b-CTE Recreational User (Adolescent)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	3.5E-06	4.7E-08	4.5E-06		8.0E-06		7.1E-01	4.7E-03	9.0E-01	1.6E+00
		Exposure Point Total						8.0E-06					1.6E+00
	Exposure Medium Total							8.0E-06					1.6E+00
Medium Total								8.0E-06					1.6E+00
			Receptor Risk Total					8.0E-06				Receptor HI Total	1.6E+00

Total Blood HI Across All Media =	1.5.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.2.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.3.E-02
Total Immune HI Across All Media =	1.5.E+00
Total Kidney HI Across All Media =	3.1.E-03
Total Liver HI Across All Media =	6.7.E-04
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.6.E-02
Total Thyroid HI Across All Media =	1.0.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.6c-RME Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	1.4E-03	2.7E-05	NA	1.4E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.2E-02	NA	NA	1.2E-02
			ARSENIC	1.1E-06	5.1E-10	2.3E-07	--	1.3E-06	Skin, Vascular	8.5E-03	2.8E-05	1.8E-03	1.0E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	8.8E-04	3.4E-05	NA	9.1E-04
			CADMIUM	NA	7.7E-11	NA	--	7.7E-11	Kidney	1.5E-03	1.5E-05	6.4E-06	1.5E-03
			COBALT	NA	6.2E-10	NA	--	6.2E-10	Thyroid	8.2E-03	4.0E-05	NA	8.2E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	3.7E-03	NA	NA	3.7E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.5E-02	NA	NA	1.5E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	7.9E-03	3.7E-04	NA	8.3E-03
			MERCURY	NA	NA	NA	--	NA	CNS	4.5E-03	5.8E-03	NA	1.0E-02
			SILVER	NA	NA	NA	--	NA	Skin	1.3E-03	NA	NA	1.3E-03
			VANADIUM	NA	NA	NA	--	NA	NA	7.5E-04	3.7E-06	NA	7.5E-04
			ZINC	NA	NA	NA	--	NA	Blood	7.3E-04	NA	NA	7.3E-04
			BENZO(A)ANTHRACENE	2.0E-07	9.2E-10	1.1E-07	--	3.1E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.8E-06	2.7E-11	1.0E-06	--	2.8E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.3E-07	3.4E-12	1.3E-07	--	3.6E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	9.4E-09	1.4E-12	5.2E-09	--	1.5E-08	NA	NA	NA	NA	NA
			CHRYSENE	2.0E-09	2.9E-13	1.1E-09	--	3.0E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.4E-07	3.9E-12	1.3E-07	--	3.7E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	9.1E-08	1.3E-12	5.0E-08	--	1.4E-07	NA	NA	NA	NA	NA
			PCB-1248	3.4E-06	2.1E-07	2.0E-06	--	5.6E-06	Immune	3.0E-01	NA	1.7E-01	4.7E-01
			PCB-1254	2.3E-06	1.0E-07	1.4E-06	--	3.8E-06	Immune	2.0E-01	NA	1.2E-01	3.2E-01
			PCB-1260	1.3E-08	3.7E-10	7.6E-09	--	2.1E-08	Immune	1.1E-03	NA	6.6E-04	1.8E-03
			HEPTACHLOR	2.2E-08	1.7E-09	NA	--	2.3E-08	Liver	3.4E-05	NA	NA	3.4E-05
			P,P'-DDE	1.4E-08	2.5E-10	NA	--	1.4E-08	NA	NA	NA	NA	NA
			P,P'-DDT	1.9E-08	5.2E-13	2.4E-09	--	2.1E-08	Liver	3.8E-04	NA	4.9E-05	4.3E-04

TABLE 9.6c-RME Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	9.4E-06	3.1E-07	5.0E-06		1.5E-05		5.6E-01	6.3E-03	3.0E-01	8.7E-01
		Exposure Point Total						1.5E-05					8.7E-01
	Exposure Medium Total							1.5E-05					8.7E-01
Medium Total								1.5E-05					8.7E-01
			Receptor Risk Total					1.5E-05				Receptor HI Total	8.7E-01

Total Blood HI Across All Media =	1.2.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.0.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.8.E-02
Total Immune HI Across All Media =	7.9.E-01
Total Kidney HI Across All Media =	2.5.E-03
Total Liver HI Across All Media =	4.7.E-04
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.0.E-02
Total Thyroid HI Across All Media =	8.2.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.6c-CTE Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	6.8E-04	1.3E-05	NA	6.9E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	5.9E-03	NA	NA	5.9E-03
			ARSENIC	1.1E-07	5.1E-11	2.3E-08	--	1.3E-07	Skin, Vascular	4.2E-03	1.4E-05	8.9E-04	5.1E-03
			BARIUM	NA	NA	NA	--	NA	Kidney	4.4E-04	1.7E-05	NA	4.6E-04
			CADMIUM	NA	7.7E-12	NA	--	7.7E-12	Kidney	7.6E-04	7.5E-06	3.2E-06	7.7E-04
			COBALT	NA	6.2E-11	NA	--	6.2E-11	Thyroid	4.1E-03	2.0E-05	NA	4.1E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	1.9E-03	NA	NA	1.9E-03
			IRON	NA	NA	NA	--	NA	GI Tract	7.3E-03	NA	NA	7.3E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	3.9E-03	1.9E-04	NA	4.1E-03
			MERCURY	NA	NA	NA	--	NA	CNS	2.3E-03	2.9E-03	NA	5.2E-03
			SILVER	NA	NA	NA	--	NA	Skin	6.4E-04	NA	NA	6.4E-04
			VANADIUM	NA	NA	NA	--	NA	NA	3.7E-04	1.8E-06	NA	3.8E-04
			ZINC	NA	NA	NA	--	NA	Blood	3.7E-04	NA	NA	3.7E-04
			BENZO(A)ANTHRACENE	2.0E-08	9.2E-11	1.1E-08	--	3.1E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.8E-07	2.7E-12	1.0E-07	--	2.8E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.3E-08	3.4E-13	1.3E-08	--	3.6E-08	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	9.4E-10	1.4E-13	5.2E-10	--	1.5E-09	NA	NA	NA	NA	NA
			CHRYSENE	2.0E-10	2.9E-14	1.1E-10	--	3.0E-10	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.4E-08	3.9E-13	1.3E-08	--	3.7E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	9.1E-09	1.3E-13	5.0E-09	--	1.4E-08	NA	NA	NA	NA	NA
			PCB-1248	3.4E-07	2.1E-08	2.0E-07	--	5.6E-07	Immune	1.5E-01	NA	8.7E-02	2.3E-01
			PCB-1254	2.3E-07	1.0E-08	1.4E-07	--	3.8E-07	Immune	1.0E-01	NA	6.0E-02	1.6E-01
			PCB-1260	1.3E-09	3.7E-11	7.6E-10	--	2.1E-09	Immune	5.6E-04	NA	3.3E-04	8.9E-04
			HEPTACHLOR	2.2E-09	1.7E-10	NA	--	2.3E-09	Liver	1.7E-05	NA	NA	1.7E-05
			P,P'-DDE	1.4E-09	2.5E-11	NA	--	1.4E-09	NA	NA	NA	NA	NA
			P,P'-DDT	1.9E-09	5.2E-14	2.4E-10	--	2.1E-09	Liver	1.9E-04	NA	2.4E-05	2.2E-04

TABLE 9.6c-CTE Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	9.4E-07	3.1E-08	5.0E-07		1.5E-06		2.8E-01	3.2E-03	1.5E-01	4.3E-01
		Exposure Point Total						1.5E-06					4.3E-01
	Exposure Medium Total							1.5E-06					4.3E-01
Medium Total								1.5E-06					4.3E-01
			Receptor Risk Total					1.5E-06				Receptor HI Total	4.3E-01

Total Blood HI Across All Media =	5.9.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.0.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	9.2.E-03
Total Immune HI Across All Media =	4.0.E-01
Total Kidney HI Across All Media =	1.2.E-03
Total Liver HI Across All Media =	2.3.E-04
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	5.1.E-03
Total Thyroid HI Across All Media =	4.1.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.7a-RME Outdoor Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	5.5E-03	2.1E-04	NA	5.7E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.7E-02	NA	NA	4.7E-02
			ARSENIC	5.5E-06	5.1E-09	1.2E-06	--	6.6E-06	Skin, Vascular	3.4E-02	2.2E-04	7.2E-03	4.1E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	3.5E-03	2.8E-04	NA	3.8E-03
			CADMIUM	NA	7.7E-10	NA	--	7.7E-10	Kidney	6.1E-03	1.2E-04	2.6E-05	6.3E-03
			COBALT	NA	6.2E-09	NA	--	6.2E-09	Thyroid	3.3E-02	3.2E-04	NA	3.3E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	1.5E-02	NA	NA	1.5E-02
			IRON	NA	NA	NA	--	NA	GI Tract	5.9E-02	NA	NA	5.9E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	3.2E-02	3.0E-03	NA	3.5E-02
			MERCURY	NA	NA	NA	--	NA	CNS	1.8E-02	4.7E-02	NA	6.5E-02
			SILVER	NA	NA	NA	--	NA	Skin	5.1E-03	NA	NA	5.1E-03
			VANADIUM	NA	NA	NA	--	NA	NA	3.0E-03	3.0E-05	NA	3.0E-03
			ZINC	NA	NA	NA	--	NA	Blood	2.9E-03	NA	NA	2.9E-03
			BENZO(A)ANTHRACENE	1.0E-06	9.3E-09	5.6E-07	--	1.6E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	9.2E-06	2.7E-10	5.0E-06	--	1.4E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.2E-06	3.4E-11	6.4E-07	--	1.8E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	4.7E-08	1.4E-11	2.6E-08	--	7.3E-08	NA	NA	NA	NA	NA
			CHRYSENE	9.8E-09	2.9E-12	5.4E-09	--	1.5E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.2E-06	3.9E-11	6.7E-07	--	1.9E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	4.6E-07	1.4E-11	2.5E-07	--	7.1E-07	NA	NA	NA	NA	NA
			PCB-1248	1.7E-05	2.1E-06	1.0E-05	--	2.9E-05	Immune	1.2E+00	NA	7.0E-01	1.9E+00
			PCB-1254	1.2E-05	1.0E-06	6.9E-06	--	2.0E-05	Immune	8.1E-01	NA	4.8E-01	1.3E+00
			PCB-1260	6.4E-08	3.7E-09	3.8E-08	--	1.1E-07	Immune	4.5E-03	NA	2.7E-03	7.2E-03
			HEPTACHLOR	1.1E-07	1.7E-08	NA	--	1.3E-07	Liver	1.4E-04	NA	NA	1.4E-04
			P,P'-DDE	6.9E-08	2.5E-09	NA	--	7.1E-08	NA	NA	NA	NA	NA
			P,P'-DDT	9.3E-08	5.2E-12	1.2E-08	--	1.1E-07	Liver	1.5E-03	NA	2.0E-04	1.7E-03

TABLE 9.7a-RME Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	4.7E-05	3.2E-06	2.5E-05		7.6E-05		2.3E+00	5.1E-02	1.2E+00	3.5E+00
		Exposure Point Total						7.6E-05					3.5E+00
	Exposure Medium Total							7.6E-05					3.5E+00
Medium Total								7.6E-05					3.5E+00
			Receptor Risk Total					7.6E-05				Receptor HI Total	3.5E+00

Total Blood HI Across All Media =	4.7.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.1.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	7.4.E-02
Total Immune HI Across All Media =	3.2.E+00
Total Kidney HI Across All Media =	1.0.E-02
Total Liver HI Across All Media =	1.9.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	4.1.E-02
Total Thyroid HI Across All Media =	3.3.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.7a-CTE Outdoor Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	5.5E-03	2.7E-05	NA	5.5E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.7E-02	NA	NA	4.7E-02
			ARSENIC	4.4E-07	2.1E-10	1.9E-07	--	6.2E-07	Skin, Vascular	3.4E-02	2.8E-05	3.6E-03	3.8E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	3.5E-03	3.5E-05	NA	3.6E-03
			CADMIUM	NA	3.1E-11	NA	--	3.1E-11	Kidney	6.1E-03	1.5E-05	1.3E-05	6.1E-03
			COBALT	NA	2.5E-10	NA	--	2.5E-10	Thyroid	3.3E-02	4.0E-05	NA	3.3E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	1.5E-02	NA	NA	1.5E-02
			IRON	NA	NA	NA	--	NA	GI Tract	5.9E-02	NA	NA	5.9E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	3.2E-02	3.7E-04	NA	3.2E-02
			MERCURY	NA	NA	NA	--	NA	CNS	1.8E-02	5.8E-03	NA	2.4E-02
			SILVER	NA	NA	NA	--	NA	Skin	5.1E-03	NA	NA	5.1E-03
			VANADIUM	NA	NA	NA	--	NA	NA	3.0E-03	3.7E-06	NA	3.0E-03
			ZINC	NA	NA	NA	--	NA	Blood	2.9E-03	NA	NA	2.9E-03
			BENZO(A)ANTHRACENE	8.2E-08	3.7E-10	9.0E-08	--	1.7E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	7.4E-07	1.1E-11	8.1E-07	--	1.5E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	9.3E-08	1.4E-12	1.0E-07	--	2.0E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	3.8E-09	5.6E-13	4.2E-09	--	8.0E-09	NA	NA	NA	NA	NA
			CHRYSENE	7.9E-10	1.2E-13	8.7E-10	--	1.7E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	9.8E-08	1.6E-12	1.1E-07	--	2.1E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	3.7E-08	5.4E-13	4.1E-08	--	7.7E-08	NA	NA	NA	NA	NA
			PCB-1248	1.4E-06	8.3E-08	1.6E-06	--	3.1E-06	Immune	1.2E+00	NA	3.5E-01	1.5E+00
			PCB-1254	9.3E-07	4.2E-08	1.1E-06	--	2.1E-06	Immune	8.1E-01	NA	2.4E-01	1.1E+00
			PCB-1260	5.2E-09	1.5E-10	6.1E-09	--	1.1E-08	Immune	4.5E-03	NA	1.3E-03	5.8E-03
			HEPTACHLOR	8.7E-09	7.0E-10	NA	--	9.4E-09	Liver	1.4E-04	NA	NA	1.4E-04
			P,P'-DDE	5.5E-09	1.0E-10	NA	--	5.6E-09	NA	NA	NA	NA	NA
			P,P'-DDT	7.5E-09	2.1E-13	1.9E-09	--	9.4E-09	Liver	1.5E-03	NA	9.8E-05	1.6E-03

TABLE 9.7a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	3.8E-06	1.3E-07	4.1E-06		8.0E-06		2.3E+00	6.4E-03	6.0E-01	2.9E+00
		Exposure Point Total						8.0E-06					2.9E+00
	Exposure Medium Total							8.0E-06					2.9E+00
Medium Total								8.0E-06					2.9E+00
			Receptor Risk Total					8.0E-06		Receptor HI Total			2.9E+00

Total Blood HI Across All Media =	4.7.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	6.2.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	7.4.E-02
Total Immune HI Across All Media =	2.6.E+00
Total Kidney HI Across All Media =	9.7.E-03
Total Liver HI Across All Media =	1.8.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.8.E-02
Total Thyroid HI Across All Media =	3.3.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.8a-RME Construction Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	1.8E-02	2.2E-04	NA	1.8E-02
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.4E-01	NA	NA	1.4E-01
			ARSENIC	6.7E-07	1.9E-10	4.3E-08	--	7.1E-07	Skin, Vascular	1.0E-01	2.1E-04	6.6E-03	1.1E-01
			BARIUM	NA	NA	NA	--	NA	Kidney	1.2E-02	3.0E-04	NA	1.3E-02
			CADMIUM	NA	3.6E-11	NA	--	3.6E-11	Kidney	2.4E-02	1.4E-04	3.0E-05	2.4E-02
			COBALT	NA	2.4E-10	NA	--	2.4E-10	Thyroid	1.1E-01	3.2E-04	NA	1.1E-01
			COPPER	NA	NA	NA	--	NA	GI Tract	4.8E-02	NA	NA	4.8E-02
			IRON	NA	NA	NA	--	NA	GI Tract	2.3E-01	NA	NA	2.3E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	1.3E-01	3.8E-03	NA	1.4E-01
			MERCURY	NA	NA	NA	--	NA	CNS	9.7E-02	7.5E-02	NA	1.7E-01
			SILVER	NA	NA	NA	--	NA	Skin	1.2E-02	NA	NA	1.2E-02
			VANADIUM	NA	NA	NA	--	NA	NA	9.7E-03	2.9E-05	NA	9.7E-03
			ZINC	NA	NA	NA	--	NA	Blood	9.4E-03	NA	NA	9.4E-03
			BENZO(A)ANTHRACENE	1.4E-07	4.0E-10	2.4E-08	--	1.7E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.3E-06	1.2E-11	2.2E-07	--	1.5E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.7E-07	1.5E-12	2.8E-08	--	1.9E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	6.7E-09	6.0E-13	1.1E-09	--	7.9E-09	NA	NA	NA	NA	NA
			CHRYSENE	1.4E-09	1.3E-13	2.3E-10	--	1.6E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.7E-07	1.7E-12	2.9E-08	--	2.0E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	6.5E-08	5.9E-13	1.1E-08	--	7.6E-08	NA	NA	NA	NA	NA
			PCB-1248	1.5E-06	5.6E-08	2.7E-07	--	1.8E-06	Immune	2.6E+00	NA	4.7E-01	3.1E+00
			PCB-1254	1.0E-06	2.9E-08	1.9E-07	--	1.3E-06	Immune	1.8E+00	NA	3.3E-01	2.2E+00
			PCB-1260	1.1E-06	1.9E-08	2.0E-07	--	1.3E-06	Immune	1.9E+00	NA	3.4E-01	2.2E+00
			PCB-1268	1.9E-07	NA	3.5E-08		2.3E-07	Immune	3.4E-01	NA	6.0E-02	4.0E-01
			HEPTACHLOR	1.6E-08	7.8E-10	NA	--	1.7E-08	Liver	5.0E-04	NA	NA	5.0E-04
			P,P'-DDE	1.0E-08	1.1E-10	NA	--	1.0E-08	NA	NA	NA	NA	NA
			P,P'-DDT	1.4E-08	2.3E-13	5.3E-10	--	1.4E-08	Liver	5.6E-03	NA	2.2E-04	5.9E-03

TABLE 9.8a-RME Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	6.4E-06	1.1E-07	1.0E-06		7.5E-06		7.6E+00	8.0E-02	1.2E+00	8.9E+00
		Exposure Point Total						7.5E-06					8.9E+00
	Exposure Medium Total							7.5E-06					8.9E+00
Medium Total								7.5E-06					8.9E+00
			Receptor Risk Total					7.5E-06					Receptor HI Total 8.9E+00

Total Blood HI Across All Media =	1.4.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.3.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.8.E-01
Total Immune HI Across All Media =	7.9.E+00
Total Kidney HI Across All Media =	3.7.E-02
Total Liver HI Across All Media =	6.4.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.1.E-01
Total Thyroid HI Across All Media =	1.1.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.8a-CTE Construction Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Upson Park	ALUMINUM	NA	NA	NA	--	NA	CNS	4.4E-03	5.2E-05	5.2E-05	4.5E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	3.3E-02	NA	NA	3.3E-02
			ARSENIC	1.6E-07	4.5E-11	1.0E-08	--	1.7E-07	Skin, Vascular	2.5E-02	4.9E-05	1.6E-03	2.6E-02
			BARIUM	NA	NA	NA	--	NA	Kidney	3.0E-03	7.1E-05	NA	3.1E-03
			CADMIUM	NA	8.7E-12	NA	--	8.7E-12	Kidney	5.7E-03	3.4E-05	7.3E-06	5.7E-03
			COBALT	NA	5.9E-11	NA	--	5.9E-11	Thyroid	2.6E-02	7.6E-05	NA	2.6E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	1.2E-02	NA	NA	1.2E-02
			IRON	NA	NA	NA	--	NA	GI Tract	5.6E-02	NA	NA	5.6E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	3.2E-02	9.0E-04	NA	3.2E-02
			MERCURY	NA	NA	NA	--	NA	CNS	2.3E-02	1.8E-02	NA	4.1E-02
			SILVER	NA	NA	NA	--	NA	Skin	3.0E-03	NA	NA	3.0E-03
			VANADIUM	NA	NA	NA	--	NA	NA	2.3E-03	6.9E-06	NA	2.3E-03
			ZINC	NA	NA	NA	--	NA	Blood	2.3E-03	NA	NA	2.3E-03
			BENZO(A)ANTHRACENE	3.5E-08	9.6E-11	5.8E-09	--	4.1E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.1E-07	2.8E-12	5.2E-08	--	3.7E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	4.0E-08	3.6E-13	6.6E-09	--	4.6E-08	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.6E-09	1.4E-13	2.7E-10	--	1.9E-09	NA	NA	NA	NA	NA
			CHRYSENE	3.4E-10	3.0E-14	5.6E-11	--	3.9E-10	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.2E-08	4.1E-13	7.0E-09	--	4.9E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.6E-08	1.4E-13	2.6E-09	--	1.8E-08	NA	NA	NA	NA	NA
			PCB-1248	3.6E-07	1.3E-08	6.5E-08	--	4.4E-07	Immune	6.3E-01	NA	1.1E-01	7.5E-01
			PCB-1254	2.5E-07	6.8E-09	4.5E-08	--	3.0E-07	Immune	4.4E-01	NA	7.9E-02	5.2E-01
			PCB-1260	2.6E-07	4.6E-09	4.7E-08	--	3.1E-07	Immune	4.6E-01	NA	8.2E-02	5.4E-01
			PCB-1268	4.6E-08	7.8E-13	8.3E-09		5.4E-08	Immune	8.1E-02	NA	1.5E-02	9.5E-02
			HEPTACHLOR	3.8E-09	1.9E-10	NA	--	4.0E-09	Liver	1.2E-04	NA	NA	1.2E-04
			P,P'-DDE	2.4E-09	2.7E-11	NA	--	2.5E-09	NA	NA	NA	NA	NA
			P,P'-DDT	3.3E-09	5.6E-14	1.3E-10	--	3.4E-09	Liver	1.4E-03	NA	5.2E-05	1.4E-03

TABLE 9.8a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	1.5E-06	2.5E-08	2.5E-07		1.8E-06		1.8E+00	1.9E-02	2.9E-01	2.1E+00
		Exposure Point Total						1.8E-06					2.1E+00
	Exposure Medium Total							1.8E-06					2.1E+00
Medium Total								1.8E-06					2.1E+00
							Receptor Risk Total	1.8E-06				Receptor HI Total	2.1E+00

Total Blood HI Across All Media =	3.3.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	7.8.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	6.7.E-02
Total Immune HI Across All Media =	1.9.E+00
Total Kidney HI Across All Media =	8.8.E-03
Total Liver HI Across All Media =	1.5.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.6.E-02
Total Thyroid HI Across All Media =	2.6.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.9a-RME Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	5.7E-03	1.1E-05	NA	5.7E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.7E-03	NA	NA	4.7E-03
			ARSENIC	9.5E-07	4.2E-11	1.1E-07	--	1.1E-06	Skin, Vascular	2.5E-02	7.5E-06	2.9E-03	2.8E-02
			CADMIUM	NA	5.3E-12	NA	--	5.3E-12	Kidney	3.7E-03	3.4E-06	3.6E-04	4.1E-03
			COBALT	NA	4.8E-11	NA	--	4.8E-11	Thyroid	2.3E-02	1.0E-05	NA	2.3E-02
			IRON	NA	NA	NA	--	NA	GI Tract	5.1E-02	NA	NA	5.1E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	2.7E-02	1.2E-04	NA	2.7E-02
			BENZO(A)ANTHRACENE	1.8E-07	7.7E-11	5.5E-08	--	2.3E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.5E-06	2.0E-12	4.5E-07	--	1.9E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	3.0E-07	4.1E-13	9.1E-08	--	3.9E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	3.4E-07	5.2E-13	1.1E-07	--	4.5E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	8.5E-08	1.2E-13	2.6E-08	--	1.1E-07	NA	NA	NA	NA	NA
			PCB-1254	6.9E-09	2.9E-11	2.3E-09	--	9.3E-09	Immune	2.0E-03	NA	6.7E-04	2.7E-03
			PCB-1260	2.8E-08	7.6E-11	9.2E-09	--	3.7E-08	Immune	8.1E-03	NA	2.7E-03	1.1E-02
			Chemical Total	3.3E-06	2.8E-10	8.5E-07		4.2E-06		1.5E-01	1.5E-04	6.6E-03	1.6E-01
		Exposure Point Total						4.2E-06					1.6E-01
	Exposure Medium Total							4.2E-06					1.6E-01
Medium Total								4.2E-06					1.6E-01
							Receptor Risk Total	4.2E-06				Receptor HI Total	1.6E-01

TABLE 9.9a-RME Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	4.7.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.2.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.1.E-02
Total Immune HI Across All Media =	1.3.E-02
Total Kidney HI Across All Media =	4.1.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.8.E-02
Total Thyroid HI Across All Media =	2.3.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.9a-CTE Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	1.4E-03	2.6E-06	NA	1.4E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.2E-03	NA	NA	1.2E-03
			ARSENIC	1.6E-07	6.9E-12	3.8E-08	--	2.0E-07	Skin, Vascular	6.1E-03	1.9E-06	1.5E-03	7.6E-03
			CADMIUM	NA	8.8E-13	NA	--	8.8E-13	Kidney	9.4E-04	8.6E-07	1.8E-04	1.1E-03
			COBALT	NA	8.0E-12	NA	--	8.0E-12	Thyroid	5.6E-03	2.6E-06	NA	5.6E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.3E-02	NA	NA	1.3E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	6.6E-03	2.9E-05	NA	6.7E-03
			BENZO(A)ANTHRACENE	3.0E-08	1.3E-11	1.8E-08	--	4.8E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.4E-07	3.4E-13	1.5E-07	--	3.9E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	4.9E-08	6.8E-14	3.0E-08	--	8.0E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	5.7E-08	8.7E-14	3.5E-08	--	9.3E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.4E-08	2.0E-14	8.7E-09	--	2.3E-08	NA	NA	NA	NA	NA
			PCB-1254	1.2E-09	4.9E-12	7.7E-10	--	1.9E-09	Immune	5.1E-04	NA	3.4E-04	8.4E-04
			PCB-1260	4.6E-09	1.3E-11	3.1E-09	--	7.7E-09	Immune	2.0E-03	NA	1.3E-03	3.4E-03
			Chemical Total	5.6E-07	4.7E-11	2.8E-07		8.4E-07		3.7E-02	3.7E-05	3.3E-03	4.1E-02
		Exposure Point Total						8.4E-07					4.1E-02
	Exposure Medium Total							8.4E-07					4.1E-02
Medium Total								8.4E-07					4.1E-02
							Receptor Risk Total	8.4E-07				Receptor HI Total	4.1E-02

TABLE 9.9a-CTE Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: White Transportation

Receptor Population: Visitor/Trespasser

Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	1.2.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	8.1.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.3.E-02
Total Immune HI Across All Media =	4.2.E-03
Total Kidney HI Across All Media =	1.1.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	7.6.E-03
Total Thyroid HI Across All Media =	5.6.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.9b-RME Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	1.8E-03	2.1E-05	NA	1.8E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.5E-03	NA	NA	1.5E-03
			ARSENIC	6.0E-07	1.7E-10	3.0E-07	--	9.0E-07	Skin, Vascular	7.7E-03	1.5E-05	4.0E-03	1.2E-02
			CADMIUM	NA	2.1E-11	NA	--	2.1E-11	Kidney	1.2E-03	6.9E-06	4.8E-04	1.7E-03
			COBALT	NA	1.9E-10	NA	--	1.9E-10	Thyroid	7.1E-03	2.1E-05	NA	7.1E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.6E-02	NA	NA	1.6E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	8.4E-03	2.3E-04	NA	8.6E-03
			BENZO(A)ANTHRACENE	5.6E-08	1.5E-10	7.5E-08	--	1.3E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	4.6E-07	4.0E-12	6.1E-07	--	1.1E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	9.3E-08	8.2E-13	1.2E-07	--	2.2E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.1E-07	1.0E-12	1.4E-07	--	2.5E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	2.7E-08	2.4E-13	3.6E-08	--	6.2E-08	NA	NA	NA	NA	NA
			PCB-1254	4.4E-09	1.2E-10	6.2E-09	--	1.1E-08	Immune	6.4E-04	NA	9.1E-04	1.5E-03
			PCB-1260	1.7E-08	3.0E-10	2.5E-08	--	4.3E-08	Immune	2.5E-03	NA	3.6E-03	6.2E-03
			Chemical Total	1.4E-06	9.6E-10	1.3E-06		2.7E-06		4.7E-02	3.0E-04	9.0E-03	5.6E-02
		Exposure Point Total						2.7E-06					5.6E-02
	Exposure Medium Total							2.7E-06					5.6E-02
Medium Total								2.7E-06					5.6E-02
							Receptor Risk Total	2.7E-06				Receptor HI Total	5.6E-02

TABLE 9.9b-RME Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	1.5.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.0.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.6.E-02
Total Immune HI Across All Media =	7.7.E-03
Total Kidney HI Across All Media =	1.7.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.2.E-02
Total Thyroid HI Across All Media =	7.1.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.9b-CTE Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	4.5E-04	5.3E-06	NA	4.6E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	3.7E-04	NA	NA	3.7E-04
			ARSENIC	5.0E-08	1.4E-11	5.1E-08	--	1.0E-07	Skin, Vascular	1.9E-03	3.8E-06	2.0E-03	3.9E-03
			CADMIUM	NA	1.8E-12	NA	--	1.8E-12	Kidney	2.9E-04	1.7E-06	2.4E-04	5.4E-04
			COBALT	NA	1.6E-11	NA	--	1.6E-11	Thyroid	1.8E-03	5.2E-06	NA	1.8E-03
			IRON	NA	NA	NA	--	NA	GI Tract	4.0E-03	NA	NA	4.0E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	2.1E-03	5.9E-05	NA	2.2E-03
			BENZO(A)ANTHRACENE	4.7E-09	1.3E-11	1.2E-08	--	1.7E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.8E-08	3.4E-13	1.0E-07	--	1.4E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	7.8E-09	6.8E-14	2.1E-08	--	2.8E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	9.1E-09	8.7E-14	2.4E-08	--	3.3E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	2.2E-09	2.0E-14	5.9E-09	--	8.2E-09	NA	NA	NA	NA	NA
			PCB-1254	3.6E-10	9.8E-12	1.0E-09	--	1.4E-09	Immune	1.6E-04	NA	4.6E-04	6.2E-04
			PCB-1260	1.5E-09	2.5E-11	4.2E-09	--	5.6E-09	Immune	6.4E-04	NA	1.8E-03	2.5E-03
			Chemical Total	1.1E-07	8.0E-11	2.2E-07		3.3E-07		1.2E-02	7.5E-05	4.5E-03	1.6E-02
		Exposure Point Total						3.3E-07					1.6E-02
	Exposure Medium Total							3.3E-07					1.6E-02
Medium Total								3.3E-07					1.6E-02
							Receptor Risk Total	3.3E-07				Receptor HI Total	1.6E-02

TABLE 9.9b-CTE Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	3.7.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.6.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	4.0.E-03
Total Immune HI Across All Media =	3.1.E-03
Total Kidney HI Across All Media =	5.4.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.9.E-03
Total Thyroid HI Across All Media =	1.8.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.9c-RME Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	5.4E-04	1.1E-05	NA	5.5E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.4E-04	NA	NA	4.4E-04
			ARSENIC	3.0E-07	1.4E-10	6.3E-08	--	3.6E-07	Skin, Vascular	2.3E-03	7.5E-06	4.9E-04	2.8E-03
			CADMIUM	NA	1.8E-11	NA	--	1.8E-11	Kidney	3.5E-04	3.4E-06	5.9E-05	4.1E-04
			COBALT	NA	1.6E-10	NA	--	1.6E-10	Thyroid	2.1E-03	1.0E-05	NA	2.1E-03
			IRON	NA	NA	NA	--	NA	GI Tract	4.8E-03	NA	NA	4.8E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	2.5E-03	1.2E-04	NA	2.6E-03
			BENZO(A)ANTHRACENE	1.0E-08	4.8E-11	5.8E-09	--	1.6E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	8.5E-08	1.3E-12	4.7E-08	--	1.3E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.7E-08	2.6E-13	9.5E-09	--	2.7E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.0E-08	3.3E-13	1.1E-08	--	3.1E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	5.0E-09	7.4E-14	2.7E-09	--	7.7E-09	NA	NA	NA	NA	NA
			PCB-1254	2.2E-09	9.8E-11	1.3E-09	--	3.6E-09	Immune	1.9E-04	NA	1.1E-04	3.0E-04
			PCB-1260	8.7E-09	2.5E-10	5.1E-09	--	1.4E-08	Immune	7.6E-04	NA	4.5E-04	1.2E-03
			Chemical Total	4.5E-07	7.2E-10	1.4E-07		5.9E-07		1.4E-02	1.5E-04	1.1E-03	1.5E-02
		Exposure Point Total						5.9E-07					1.5E-02
	Exposure Medium Total							5.9E-07					1.5E-02
Medium Total								5.9E-07					1.5E-02
							Receptor Risk Total	5.9E-07				Receptor HI Total	1.5E-02

TABLE 9.9c-RME Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	4.4.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.2.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	4.8.E-03
Total Immune HI Across All Media =	1.5.E-03
Total Kidney HI Across All Media =	4.1.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.8.E-03
Total Thyroid HI Across All Media =	2.1.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.9c-CTE Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	1.3E-04	5.3E-06	NA	1.4E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.1E-04	NA	NA	1.1E-04
			ARSENIC	1.5E-08	1.4E-11	6.3E-09	--	2.1E-08	Skin, Vascular	5.8E-04	3.8E-06	2.4E-04	8.2E-04
			CADMIUM	NA	1.8E-12	NA	--	1.8E-12	Kidney	8.8E-05	1.7E-06	3.0E-05	1.2E-04
			COBALT	NA	1.6E-11	NA	--	1.6E-11	Thyroid	5.3E-04	5.2E-06	NA	5.3E-04
			IRON	NA	NA	NA	--	NA	GI Tract	1.2E-03	NA	NA	1.2E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	6.2E-04	5.9E-05	NA	6.8E-04
			BENZO(A)ANTHRACENE	5.2E-10	4.8E-12	5.8E-10	--	1.1E-09	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	4.3E-09	1.3E-13	4.7E-09	--	8.9E-09	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	8.7E-10	2.6E-14	9.5E-10	--	1.8E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.0E-09	3.3E-14	1.1E-09	--	2.1E-09	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	2.5E-10	7.4E-15	2.7E-10	--	5.2E-10	NA	NA	NA	NA	NA
			PCB-1254	1.1E-10	9.8E-12	1.3E-10	--	2.5E-10	Immune	4.7E-05	NA	5.6E-05	1.0E-04
			PCB-1260	4.3E-10	2.5E-11	5.1E-10	--	9.7E-10	Immune	1.9E-04	NA	2.2E-04	4.1E-04
			Chemical Total	2.2E-08	7.2E-11	1.4E-08		3.7E-08		3.5E-03	7.5E-05	5.5E-04	4.1E-03
		Exposure Point Total						3.7E-08					4.1E-03
	Exposure Medium Total							3.7E-08					4.1E-03
Medium Total								3.7E-08					4.1E-03
							Receptor Risk Total	3.7E-08				Receptor HI Total	4.1E-03

TABLE 9.9c-CTE Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	1.1.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	8.2.E-04
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.2.E-03
Total Immune HI Across All Media =	5.2.E-04
Total Kidney HI Across All Media =	1.2.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	8.2.E-04
Total Thyroid HI Across All Media =	5.3.E-04
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.10a-RME Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	2.4E-03	1.9E-04	NA	2.6E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	2.0E-03	NA	NA	2.0E-03
			ARSENIC	1.7E-06	3.1E-09	7.0E-07	--	2.4E-06	Skin, Vascular	1.0E-02	1.3E-04	4.4E-03	1.5E-02
			CADMIUM	NA	3.9E-10	NA	--	3.9E-10	Kidney	1.6E-03	6.1E-05	5.3E-04	2.2E-03
			COBALT	NA	3.6E-09	NA	--	3.6E-09	Thyroid	9.4E-03	1.9E-04	NA	9.6E-03
			IRON	NA	NA	NA	--	NA	GI Tract	2.1E-02	NA	NA	2.1E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	1.1E-02	2.1E-03	NA	1.3E-02
			BENZO(A)ANTHRACENE	5.8E-08	1.1E-09	6.4E-08	--	1.2E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	4.8E-07	2.8E-11	5.2E-07	--	1.0E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	9.7E-08	5.7E-12	1.1E-07	--	2.0E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.1E-07	7.3E-12	1.2E-07	--	2.4E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	2.8E-08	1.6E-12	3.1E-08	--	5.8E-08	NA	NA	NA	NA	NA
			PCB-1254	1.2E-08	2.2E-09	1.4E-08	--	2.9E-08	Immune	8.5E-04	NA	1.0E-03	1.9E-03
			PCB-1260	4.8E-08	5.6E-09	5.7E-08	--	1.1E-07	Immune	3.4E-03	NA	4.0E-03	7.4E-03
			Chemical Total	2.5E-06	1.6E-08	1.6E-06		4.1E-06		6.2E-02	2.7E-03	9.9E-03	7.5E-02
		Exposure Point Total						4.1E-06					7.5E-02
	Exposure Medium Total							4.1E-06					7.5E-02
Medium Total								4.1E-06					7.5E-02
							Receptor Risk Total	4.1E-06				Receptor HI Total	7.5E-02

TABLE 9.10a-RME Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	2.0.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.6.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.1.E-02
Total Immune HI Across All Media =	9.2.E-03
Total Kidney HI Across All Media =	2.2.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.5.E-02
Total Thyroid HI Across All Media =	9.6.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.10a-CTE Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	6.0E-04	9.4E-05	NA	6.9E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.9E-04	NA	NA	4.9E-04
			ARSENIC	1.5E-07	5.6E-10	1.3E-07	--	2.8E-07	Skin, Vascular	2.6E-03	6.7E-05	2.2E-03	4.8E-03
			CADMIUM	NA	7.1E-11	NA	--	7.1E-11	Kidney	3.9E-04	3.1E-05	2.7E-04	6.9E-04
			COBALT	NA	6.4E-10	NA	--	6.4E-10	Thyroid	2.4E-03	9.3E-05	NA	2.5E-03
			IRON	NA	NA	NA	--	NA	GI Tract	5.4E-03	NA	NA	5.4E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	2.8E-03	1.0E-03	NA	3.8E-03
			BENZO(A)ANTHRACENE	5.3E-09	1.9E-10	1.2E-08	--	1.7E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	4.3E-08	5.1E-12	9.4E-08	--	1.4E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	8.7E-09	1.0E-12	1.9E-08	--	2.8E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.0E-08	1.3E-12	2.2E-08	--	3.2E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	2.5E-09	3.0E-13	5.5E-09	--	8.0E-09	NA	NA	NA	NA	NA
			PCB-1254	1.1E-09	3.9E-10	2.6E-09	--	4.1E-09	Immune	2.1E-04	NA	5.0E-04	7.1E-04
			PCB-1260	4.3E-09	1.0E-09	1.0E-08	--	1.6E-08	Immune	8.5E-04	NA	2.0E-03	2.8E-03
			Chemical Total	2.2E-07	2.9E-09	2.9E-07		5.2E-07		1.6E-02	1.3E-03	4.9E-03	2.2E-02
		Exposure Point Total						5.2E-07					2.2E-02
	Exposure Medium Total							5.2E-07					2.2E-02
Medium Total								5.2E-07					2.2E-02
							Receptor Risk Total	5.2E-07				Receptor HI Total	2.2E-02

TABLE 9.10a-CTE Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	4.9.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	4.5.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.4.E-03
Total Immune HI Across All Media =	3.6.E-03
Total Kidney HI Across All Media =	6.9.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	4.8.E-03
Total Thyroid HI Across All Media =	2.5.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.11a-RME Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	4.3E-03	1.7E-04	NA	4.5E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	3.5E-03	NA	NA	3.5E-03
			ARSENIC	3.0E-06	2.8E-09	6.3E-07	--	3.6E-06	Skin, Vascular	1.9E-02	1.2E-04	3.9E-03	2.3E-02
			CADMIUM	NA	3.6E-10	NA	--	3.6E-10	Kidney	2.8E-03	5.5E-05	4.8E-04	3.4E-03
			COBALT	NA	3.2E-09	NA	--	3.2E-09	Thyroid	1.7E-02	1.7E-04	NA	1.7E-02
			IRON	NA	NA	NA	--	NA	GI Tract	3.9E-02	NA	NA	3.9E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	2.0E-02	1.9E-03	NA	2.2E-02
			BENZO(A)ANTHRACENE	1.1E-07	9.6E-10	5.8E-08	--	1.6E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	8.6E-07	2.5E-11	4.7E-07	--	1.3E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.7E-07	5.1E-12	9.6E-08	--	2.7E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.0E-07	6.5E-12	1.1E-07	--	3.1E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	5.0E-08	1.5E-12	2.8E-08	--	7.8E-08	NA	NA	NA	NA	NA
			PCB-1254	2.2E-08	2.0E-09	1.3E-08	--	3.7E-08	Immune	1.5E-03	NA	9.0E-04	2.4E-03
			PCB-1260	8.7E-08	5.1E-09	5.2E-08	--	1.4E-07	Immune	6.1E-03	NA	3.6E-03	9.7E-03
			Chemical Total	4.5E-06	1.4E-08	1.5E-06		5.9E-06		1.1E-01	2.4E-03	8.9E-03	1.2E-01
		Exposure Point Total						5.9E-06					1.2E-01
	Exposure Medium Total							5.9E-06					1.2E-01
Medium Total								5.9E-06					1.2E-01
							Receptor Risk Total	5.9E-06				Receptor HI Total	1.2E-01

TABLE 9.11a-RME Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	3.5.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.6.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	3.9.E-02
Total Immune HI Across All Media =	1.2.E-02
Total Kidney HI Across All Media =	3.4.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.3.E-02
Total Thyroid HI Across All Media =	1.7.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.11a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	1.1E-03	2.1E-05	NA	1.1E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	8.8E-04	NA	NA	8.8E-04
			ARSENIC	2.4E-07	1.1E-10	1.0E-07	--	3.4E-07	Skin, Vascular	4.7E-03	1.5E-05	2.0E-03	6.6E-03
			CADMIUM	NA	1.4E-11	NA	--	1.4E-11	Kidney	7.1E-04	6.9E-06	2.4E-04	9.5E-04
			COBALT	NA	1.3E-10	NA	--	1.3E-10	Thyroid	4.3E-03	2.1E-05	NA	4.3E-03
			IRON	NA	NA	NA	--	NA	GI Tract	9.7E-03	NA	NA	9.7E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	5.0E-03	2.4E-04	NA	5.3E-03
			BENZO(A)ANTHRACENE	8.5E-09	3.9E-11	9.3E-09	--	1.8E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	6.9E-08	1.0E-12	7.6E-08	--	1.4E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.4E-08	2.1E-13	1.5E-08	--	2.9E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.6E-08	2.6E-13	1.8E-08	--	3.4E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	4.0E-09	5.9E-14	4.4E-09	--	8.4E-09	NA	NA	NA	NA	NA
			PCB-1254	1.8E-09	7.9E-11	2.1E-09	--	3.9E-09	Immune	3.8E-04	NA	4.5E-04	8.4E-04
			PCB-1260	7.0E-09	2.0E-10	8.3E-09	--	1.5E-08	Immune	1.5E-03	NA	1.8E-03	3.3E-03
			Chemical Total	3.6E-07	5.8E-10	2.3E-07		5.9E-07		2.8E-02	3.0E-04	4.5E-03	3.3E-02
		Exposure Point Total						5.9E-07					3.3E-02
	Exposure Medium Total							5.9E-07					3.3E-02
Medium Total								5.9E-07					3.3E-02
							Receptor Risk Total	5.9E-07				Receptor HI Total	3.3E-02

TABLE 9.11a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	8.8.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	6.4.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	9.7.E-03
Total Immune HI Across All Media =	4.2.E-03
Total Kidney HI Across All Media =	9.5.E-04
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	6.6.E-03
Total Thyroid HI Across All Media =	4.3.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.12a-RME Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	1.6E-02	1.8E-04	NA	1.6E-02
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.3E-02	NA	NA	1.3E-02
			ARSENIC	3.9E-07	1.1E-10	2.5E-08	--	4.1E-07	Skin, Vascular	6.0E-02	1.2E-04	3.8E-03	6.4E-02
			CADMIUM	NA	1.8E-11	NA	--	1.8E-11	Kidney	1.2E-02	6.9E-05	5.9E-04	1.2E-02
			COBALT	NA	1.4E-10	NA	--	1.4E-10	Thyroid	6.2E-02	1.8E-04	NA	6.2E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	6.5E-03	NA	NA	6.5E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.1E-01	NA	NA	1.1E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	9.6E-02	2.7E-03	NA	9.8E-02
			BENZO(A)ANTHRACENE	1.2E-08	3.5E-11	2.1E-09	--	1.5E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.1E-07	9.5E-13	1.8E-08	--	1.2E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.0E-08	1.8E-13	3.3E-09	--	2.3E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.5E-08	2.4E-13	4.1E-09	--	2.9E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	6.3E-09	5.6E-14	1.0E-09	--	7.3E-09	NA	NA	NA	NA	NA
			PCB-1248	2.7E-08	9.8E-10	4.8E-09	--	3.2E-08	Immune	4.7E-02	NA	8.4E-03	5.5E-02
			PCB-1254	4.0E-08	1.1E-09	7.2E-09	--	4.8E-08	Immune	7.0E-02	NA	1.3E-02	8.3E-02
			PCB-1260	9.1E-09	1.6E-10	1.6E-09	--	1.1E-08	Immune	1.6E-02	NA	2.9E-03	1.9E-02
			Chemical Total	6.3E-07	2.5E-09	6.7E-08		7.0E-07		5.0E-01	3.3E-03	2.8E-02	5.3E-01
		Exposure Point Total						7.0E-07					5.3E-01
	Exposure Medium Total							7.0E-07					5.3E-01
Medium Total								7.0E-07					5.3E-01
							Receptor Risk Total	7.0E-07				Receptor HI Total	5.3E-01

TABLE 9.12a-RME Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	1.3.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.1.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.1.E-01
Total Immune HI Across All Media =	1.6.E-01
Total Kidney HI Across All Media =	1.2.E-02
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	6.4.E-02
Total Thyroid HI Across All Media =	6.2.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.12a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	3.7E-03	4.4E-05	NA	3.8E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	3.2E-03	NA	NA	3.2E-03
			ARSENIC	9.2E-08	2.6E-11	5.9E-09	--	9.8E-08	Skin, Vascular	1.4E-02	2.8E-05	9.2E-04	1.5E-02
			CADMIUM	NA	4.2E-12	NA	--	4.2E-12	Kidney	2.8E-03	1.6E-05	1.4E-04	2.9E-03
			COBALT	NA	3.4E-11	NA	--	3.4E-11	Thyroid	1.5E-02	4.4E-05	NA	1.5E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	1.6E-03	NA	NA	1.6E-03
			IRON	NA	NA	NA	--	NA	GI Tract	2.6E-02	NA	NA	2.6E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	2.3E-02	6.5E-04	NA	2.4E-02
			BENZO(A)ANTHRACENE	3.0E-09	8.3E-12	5.0E-10	--	3.5E-09	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.6E-08	2.3E-13	4.3E-09	--	3.0E-08	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	4.8E-09	4.3E-14	8.0E-10	--	5.6E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	5.9E-09	5.8E-14	9.9E-10	--	6.9E-09	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.5E-09	1.3E-14	2.5E-10	--	1.8E-09	NA	NA	NA	NA	NA
			PCB-1248	6.4E-09	2.4E-10	1.1E-09	--	7.8E-09	Immune	1.1E-02	NA	2.0E-03	1.3E-02
			PCB-1254	9.6E-09	2.6E-10	1.7E-09	--	1.2E-08	Immune	1.7E-02	NA	3.0E-03	2.0E-02
			PCB-1260	2.2E-09	3.9E-11	3.9E-10	--	2.6E-09	Immune	3.8E-03	NA	6.9E-04	4.5E-03
			Chemical Total	1.5E-07	6.1E-10	1.6E-08		1.7E-07		1.2E-01	7.9E-04	6.8E-03	1.3E-01
		Exposure Point Total						1.7E-07					1.3E-01
	Exposure Medium Total							1.7E-07					1.3E-01
Medium Total								1.7E-07					1.3E-01
							Receptor Risk Total	1.7E-07				Receptor HI Total	1.3E-01

TABLE 9.12a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	3.2.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.7.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.7.E-02
Total Immune HI Across All Media =	3.8.E-02
Total Kidney HI Across All Media =	2.9.E-03
Total Liver HI Across All Media =	0.0.E+00
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.5.E-02
Total Thyroid HI Across All Media =	1.5.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.13a-RME Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	7.0E-02	7.8E-04	NA	7.1E-02
			ANTIMONY	NA	NA	NA	--	NA	Blood	6.0E-02	NA	NA	6.0E-02
			ARSENIC	1.0E-05	2.8E-09	1.2E-06	--	1.2E-05	Skin, Vascular	2.7E-01	5.0E-04	3.2E-02	3.0E-01
			CADMIUM	NA	4.5E-10	NA	--	4.5E-10	Kidney	5.2E-02	2.9E-04	5.0E-03	5.8E-02
			COBALT	NA	3.6E-09	NA	--	3.6E-09	Thyroid	2.8E-01	7.7E-04	NA	2.8E-01
			COPPER	NA	NA	NA	--	NA	GI Tract	2.9E-02	NA	NA	2.9E-02
			IRON	NA	NA	NA	--	NA	GI Tract	4.8E-01	NA	NA	4.8E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	4.3E-01	1.1E-02	NA	4.4E-01
			BENZO(A)ANTHRACENE	1.8E-06	4.6E-09	5.6E-07	--	2.4E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.5E-05	1.3E-10	4.8E-06	--	2.0E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.9E-06	2.4E-11	8.9E-07	--	3.8E-06	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	3.6E-06	3.2E-11	1.1E-06	--	4.7E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	9.1E-07	7.6E-12	2.8E-07	--	1.2E-06	NA	NA	NA	NA	NA
			PCB-1248	7.2E-07	2.5E-08	2.4E-07	--	9.9E-07	Immune	2.1E-01	NA	7.0E-02	2.8E-01
			PCB-1254	1.1E-06	2.8E-08	3.6E-07	--	1.5E-06	Immune	3.2E-01	NA	1.1E-01	4.2E-01
			PCB-1260	2.5E-07	4.1E-09	8.2E-08	--	3.3E-07	Immune	7.2E-02	NA	2.4E-02	9.6E-02
			Chemical Total	3.7E-05	6.8E-08	9.5E-06		4.7E-05		2.3E+00	1.4E-02	2.4E-01	2.5E+00
		Exposure Point Total						4.7E-05					2.5E+00
	Exposure Medium Total							4.7E-05					2.5E+00
Medium Total								4.7E-05					2.5E+00
Groundwater	Tapwater	White Transportation	ANTIMONY	NA	--	--	--	NA	Blood	6.5E-01	--	--	6.5E-01
			ARSENIC	2.1E-05	--	--	--	2.1E-05	Skin, Vascular	5.5E-01	--	--	5.5E-01
			COBALT	NA	--	--	--	NA	Thyroid	2.4E-01	--	--	2.4E-01
			IRON	NA	--	--	--	NA	GI Tract	2.7E-01	--	--	2.7E-01
			MANGANESE	NA	--	--	--	NA	CNS	1.7E+00	--	--	1.7E+00
			SELENIUM	NA	--	--	--	NA	Whole body	8.5E-02	--	--	8.5E-02
			BENZO(A)ANTHRACENE	3.3E-06	1.7E-06	--	--	5.0E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	2.5E-05	NA	--	--	2.5E-05	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	4.5E-06	NA	--	--	4.5E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	5.2E-05	NA	--	--	5.2E-05	NA	NA	NA	--	NA

TABLE 9.13a-RME Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			INDENO(1,2,3-C,D)PYRENE	4.5E-06	NA	--	--	4.5E-06	NA	NA	NA	--	NA
			DIELDRIN	6.3E-07	NA	--	--	6.3E-07	Liver	9.2E-03	NA	--	9.2E-03
			CHLOROFORM	4.4E-07	1.1E-06	--	--	1.5E-06	Liver	1.6E-02	5.7E-03	--	2.2E-02
			CIS-1,2-DICHLOROETHYLENE	NA	NA	--	--	NA	Kidney	1.8E-01	NA	--	1.8E-01
			TRICHLOROETHYLENE (TCE)	1.8E-06	5.8E-07	--	--	2.3E-06	Development, Immune, Vascular	4.7E-01	4.0E-01	--	8.7E-01
			Chemical Total	1.1E-04	3.4E-06			1.2E-04		4.2E+00	4.1E-01		4.6E+00
		Exposure Point Total						1.2E-04					4.6E+00
	Exposure Medium Total							1.2E-04					4.6E+00
Medium Total								1.2E-04					4.6E+00
							Receptor Risk Total	1.6E-04				Receptor HI Total	7.1E+00

Medium Total	1.2E-04
Receptor Risk Total	1.6E-04

Total Blood HI Across All Media =	7.1.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.2.E+00
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	8.7.E-01
Total GI Tract HI Across All Media =	7.8.E-01
Total Immune HI Across All Media =	8.0.E-01
Total Kidney HI Across All Media =	2.4.E-01
Total Liver HI Across All Media =	3.1.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	8.6.E-01
Total Thyroid HI Across All Media =	5.2.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	8.5.E-02

TABLE 9.13a-CTE Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	1.8E-02	3.9E-04	NA	1.8E-02
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.5E-02	NA	NA	1.5E-02
			ARSENIC	1.3E-06	6.9E-10	6.2E-08	--	1.4E-06	Skin, Vascular	6.8E-02	2.5E-04	3.2E-03	7.1E-02
			CADMIUM	NA	1.1E-10	NA	--	1.1E-10	Kidney	1.3E-02	1.4E-04	5.0E-04	1.4E-02
			COBALT	NA	8.9E-10	NA	--	8.9E-10	Thyroid	7.0E-02	3.8E-04	NA	7.0E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	7.3E-03	NA	NA	7.3E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.2E-01	NA	NA	1.2E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	1.1E-01	5.7E-03	NA	1.1E-01
			BENZO(A)ANTHRACENE	2.3E-07	1.2E-09	2.8E-08	--	2.5E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.9E-06	3.2E-11	2.4E-07	--	2.2E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	3.6E-07	6.0E-12	4.4E-08	--	4.1E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.5E-07	8.1E-12	5.5E-08	--	5.0E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.1E-07	1.9E-12	1.4E-08	--	1.3E-07	NA	NA	NA	NA	NA
			PCB-1248	9.0E-08	6.2E-09	1.2E-08	--	1.1E-07	Immune	5.3E-02	NA	7.0E-03	6.0E-02
			PCB-1254	1.4E-07	6.9E-09	1.8E-08	--	1.6E-07	Immune	7.9E-02	NA	1.1E-02	9.0E-02
			PCB-1260	3.1E-08	1.0E-09	4.1E-09	--	3.6E-08	Immune	1.8E-02	NA	2.4E-03	2.0E-02
			Chemical Total	4.6E-06	1.7E-08	4.8E-07		5.1E-06		5.7E-01	6.9E-03	2.4E-02	6.0E-01
		Exposure Point Total						5.1E-06					6.0E-01
	Exposure Medium Total							5.1E-06					6.0E-01
Medium Total								5.1E-06					6.0E-01
Groundwater	Tapwater	White Transportation	ANTIMONY	NA	--	--	--	NA	Blood	3.0E-01	--	--	3.0E-01
			ARSENIC	6.7E-06	--	--	--	6.7E-06	Skin, Vascular	2.6E-01	--	--	2.6E-01
			COBALT	NA	--	--	--	NA	Thyroid	1.1E-01	--	--	1.1E-01
			IRON	NA	--	--	--	NA	GI Tract	1.3E-01	--	--	1.3E-01
			MANGANESE	NA	--	--	--	NA	CNS	8.1E-01	--	--	8.1E-01
			SELENIUM	NA	--	--	--	NA	Whole body	4.0E-02	--	--	4.0E-02
			BENZO(A)ANTHRACENE	1.0E-06	1.1E-06	--	--	2.2E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	7.8E-06	NA	--	--	7.8E-06	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	1.4E-06	NA	--	--	1.4E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	1.6E-05	NA	--	--	1.6E-05	NA	NA	NA	--	NA

TABLE 9.13a-CTE Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			INDENO(1,2,3-C,D)PYRENE	1.4E-06	NA	--	--	1.4E-06	NA	NA	NA	--	NA
			DIELDRIN	2.0E-07	NA	--	--	2.0E-07	Liver	4.3E-03	NA	--	4.3E-03
			CHLOROFORM	1.4E-07	7.4E-07	--	--	8.7E-07	Liver	7.7E-03	5.7E-03	--	1.3E-02
			CIS-1,2-DICHLOROETHYLENE	NA	NA	--	--	NA	Kidney	8.6E-02	NA	--	8.6E-02
			TRICHLOROETHYLENE (TCE)	5.5E-07	3.9E-07	--	--	9.3E-07	Development, Immune, Vascular	2.2E-01	4.0E-01	--	6.2E-01
			Chemical Total	3.5E-05	2.3E-06			3.8E-05		2.0E+00	4.1E-01		2.4E+00
		Exposure Point Total						3.8E-05					2.4E+00
	Exposure Medium Total							3.8E-05					2.4E+00
Medium Total								3.8E-05					2.4E+00
							Receptor Risk Total	4.3E-05				Receptor HI Total	3.0E+00
Medium Total								3.8E-05					2.4E+00
							Receptor Risk Total	4.3E-05				Receptor HI Total	3.0E+00

Total Blood HI Across All Media =	3.2.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	9.4.E-01
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	6.2.E-01
Total GI Tract HI Across All Media =	2.5.E-01
Total Immune HI Across All Media =	1.7.E-01
Total Kidney HI Across All Media =	9.9.E-02
Total Liver HI Across All Media =	1.8.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.3.E-01
Total Thyroid HI Across All Media =	1.8.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.0.E-02

TABLE 9.13b-RME Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	6.6E-03	7.8E-04	NA	7.4E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	5.7E-03	NA	NA	5.7E-03
			ARSENIC	3.3E-06	9.2E-09	6.9E-07	--	4.0E-06	Skin, Vascular	2.5E-02	5.0E-04	5.4E-03	3.1E-02
			CADMIUM	NA	1.5E-09	NA	--	1.5E-09	Kidney	4.9E-03	2.9E-04	8.3E-04	6.0E-03
			COBALT	NA	1.2E-08	NA	--	1.2E-08	Thyroid	2.6E-02	7.7E-04	NA	2.7E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	2.8E-03	NA	NA	2.8E-03
			IRON	NA	NA	NA	--	NA	GI Tract	4.5E-02	NA	NA	4.5E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	4.1E-02	1.1E-02	NA	5.2E-02
			BENZO(A)ANTHRACENE	1.1E-07	2.9E-09	5.8E-08	--	1.7E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	9.1E-07	8.0E-11	5.0E-07	--	1.4E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.7E-07	1.5E-11	9.3E-08	--	2.6E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.1E-07	2.0E-11	1.1E-07	--	3.2E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	5.3E-08	4.7E-12	2.9E-08	--	8.2E-08	NA	NA	NA	NA	NA
			PCB-1248	2.3E-07	8.3E-08	1.3E-07	--	4.4E-07	Immune	2.0E-02	NA	1.2E-02	3.1E-02
			PCB-1254	3.4E-07	9.2E-08	2.0E-07	--	6.3E-07	Immune	3.0E-02	NA	1.8E-02	4.7E-02
			PCB-1260	7.7E-08	1.4E-08	4.6E-08	--	1.4E-07	Immune	6.8E-03	NA	4.0E-03	1.1E-02
			Chemical Total	5.4E-06	2.1E-07	1.9E-06		7.4E-06		2.1E-01	1.4E-02	3.9E-02	2.7E-01
		Exposure Point Total						7.4E-06					2.7E-01
	Exposure Medium Total							7.4E-06					2.7E-01
Medium Total								7.4E-06					2.7E-01
Groundwater	Tapwater	White Transportation	ANTIMONY	NA	--	--	--	NA	Blood	3.9E-01	--	--	3.9E-01
			ARSENIC	4.3E-05	--	--	--	4.3E-05	Skin, Vascular	3.3E-01	--	--	3.3E-01
			COBALT	NA	--	--	--	NA	Thyroid	1.4E-01	--	--	1.4E-01
			IRON	NA	--	--	--	NA	GI Tract	1.6E-01	--	--	1.6E-01
			MANGANESE	NA	--	--	--	NA	CNS	1.0E+00	--	--	1.0E+00
			SELENIUM	NA	--	--	--	NA	Whole body	5.1E-02	--	--	5.1E-02
			BENZO(A)ANTHRACENE	1.3E-06	1.8E-06	--	--	3.1E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	9.4E-06	NA	--	--	9.4E-06	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	1.7E-06	NA	--	--	1.7E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	1.9E-05	NA	--	--	1.9E-05	NA	NA	NA	--	NA

TABLE 9.13b-RME Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			INDENO(1,2,3-C,D)PYRENE	1.7E-06	NA	--	--	1.7E-06	NA	NA	NA	--	NA
			DIELDRIN	1.3E-06	NA	--	--	1.3E-06	Liver	5.5E-03	NA	--	5.5E-03
			CHLOROFORM	8.8E-07	6.2E-06	--	--	7.1E-06	Liver	9.9E-03	9.7E-03	--	2.0E-02
			CIS-1,2-DICHLOROETHYLENE	NA	NA	--	--	NA	Kidney	1.1E-01	NA	--	1.1E-01
			TRICHLOROETHYLENE (TCE)	1.9E-06	1.6E-06	--	--	3.5E-06	Development, Immune, Vascular	2.8E-01	6.8E-01	--	9.6E-01
			Chemical Total	8.0E-05	9.6E-06			9.0E-05		2.5E+00	6.9E-01		3.2E+00
		Exposure Point Total						9.0E-05					3.2E+00
	Exposure Medium Total							9.0E-05					3.2E+00
Medium Total								9.0E-05					3.2E+00
							Receptor Risk Total	9.7E-05				Receptor HI Total	3.5E+00

Medium Total	9.0E-05
Receptor Risk Total	9.7E-05

Medium Total	3.2E+00
Receptor HI Total	3.5E+00

Total Blood HI Across All Media =	4.0.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.1.E+00
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	9.6.E-01
Total GI Tract HI Across All Media =	2.1.E-01
Total Immune HI Across All Media =	9.0.E-02
Total Kidney HI Across All Media =	1.2.E-01
Total Liver HI Across All Media =	2.5.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.6.E-01
Total Thyroid HI Across All Media =	1.7.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	5.1.E-02

TABLE 9.13b-CTE Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	ALUMINUM	NA	NA	NA	--	NA	CNS	1.7E-03	3.9E-04	NA	2.0E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.4E-03	NA	NA	1.4E-03
			ARSENIC	2.5E-07	1.4E-09	1.5E-08	--	2.6E-07	Skin, Vascular	6.4E-03	2.5E-04	3.8E-04	7.0E-03
			CADMIUM	NA	2.2E-10	NA	--	2.2E-10	Kidney	1.2E-03	1.4E-04	5.9E-05	1.4E-03
			COBALT	NA	1.8E-09	NA	--	1.8E-09	Thyroid	6.5E-03	3.8E-04	NA	6.9E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	6.9E-04	NA	NA	6.9E-04
			IRON	NA	NA	NA	--	NA	GI Tract	1.1E-02	NA	NA	1.1E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	1.0E-02	5.7E-03	NA	1.6E-02
			BENZO(A)ANTHRACENE	7.9E-09	4.4E-10	1.2E-09	--	9.6E-09	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	6.8E-08	1.2E-11	1.1E-08	--	7.9E-08	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.3E-08	2.2E-12	2.0E-09	--	1.5E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.6E-08	3.0E-12	2.5E-09	--	1.8E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	4.0E-09	7.1E-13	6.3E-10	--	4.6E-09	NA	NA	NA	NA	NA
			PCB-1248	1.7E-08	1.2E-08	2.9E-09	--	3.2E-08	Immune	4.9E-03	NA	8.4E-04	5.8E-03
			PCB-1254	2.5E-08	1.4E-08	4.3E-09	--	4.4E-08	Immune	7.4E-03	NA	1.3E-03	8.7E-03
			PCB-1260	5.8E-09	2.0E-09	9.8E-10	--	8.8E-09	Immune	1.7E-03	NA	2.9E-04	2.0E-03
			Chemical Total	4.0E-07	3.2E-08	4.0E-08		4.7E-07		5.3E-02	6.9E-03	2.8E-03	6.3E-02
		Exposure Point Total						4.7E-07					6.3E-02
	Exposure Medium Total							4.7E-07					6.3E-02
Medium Total								4.7E-07					6.3E-02
Groundwater	Tapwater	White Transportation	ANTIMONY	NA	--	--	--	NA	Blood	1.9E-01	--	--	1.9E-01
			ARSENIC	8.4E-06	--	--	--	8.4E-06	Skin, Vascular	1.6E-01	--	--	1.6E-01
			COBALT	NA	--	--	--	NA	Thyroid	7.1E-02	--	--	7.1E-02
			IRON	NA	--	--	--	NA	GI Tract	7.9E-02	--	--	7.9E-02
			MANGANESE	NA	--	--	--	NA	CNS	5.1E-01	--	--	5.1E-01
			SELENIUM	NA	--	--	--	NA	Whole body	2.5E-02	--	--	2.5E-02
			BENZO(A)ANTHRACENE	2.5E-07	6.4E-07	--	--	8.9E-07	NA	NA	NA	--	NA
			BENZO(A)PYRENE	1.8E-06	NA	--	--	1.8E-06	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	3.3E-07	NA	--	--	3.3E-07	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	3.8E-06	NA	--	--	3.8E-06	NA	NA	NA	--	NA

TABLE 9.13b-CTE Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			INDENO(1,2,3-C,D)PYRENE	3.3E-07	NA	--	--	3.3E-07	NA	NA	NA	--	NA
			DIELDRIN	2.5E-07	NA	--	--	2.5E-07	Liver	2.7E-03	NA	--	2.7E-03
			CHLOROFORM	1.7E-07	2.2E-06	--	--	2.4E-06	Liver	4.9E-03	8.6E-03	--	1.3E-02
			CIS-1,2-DICHLOROETHYLENE	NA	NA	--	--	NA	Kidney	5.4E-02	NA	--	5.4E-02
			TRICHLOROETHYLENE (TCE)	3.7E-07	5.7E-07	--	--	9.3E-07	Development, Immune, Vascular	1.4E-01	6.0E-01	--	7.4E-01
			Chemical Total	1.6E-05	3.4E-06			1.9E-05		1.2E+00	6.1E-01		1.9E+00
		Exposure Point Total						1.9E-05					1.9E+00
	Exposure Medium Total							1.9E-05					1.9E+00
Medium Total								1.9E-05					1.9E+00
							Receptor Risk Total	2.0E-05				Receptor HI Total	1.9E+00
Medium Total								1.9E-05					1.9E+00
							Receptor Risk Total	2.0E-05				Receptor HI Total	1.9E+00

Total Blood HI Across All Media =	1.9.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	5.3.E-01
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	7.4.E-01
Total GI Tract HI Across All Media =	9.1.E-02
Total Immune HI Across All Media =	1.6.E-02
Total Kidney HI Across All Media =	5.5.E-02
Total Liver HI Across All Media =	1.6.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	0.0.E+00
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.7.E-01
Total Thyroid HI Across All Media =	7.8.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	2.5.E-02

TABLE 9.14a-RME Visitor/Trespasser (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	6.0E-03	1.1E-05	NA	6.0E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.7E-02	NA	NA	1.7E-02
			ARSENIC	1.3E-06	5.8E-11	1.6E-07	--	1.5E-06	Skin, Vascular	3.4E-02	1.1E-05	4.1E-03	3.8E-02
			CADMIUM	NA	4.8E-12	NA	--	4.8E-12	Kidney	3.4E-03	3.1E-06	3.2E-04	3.7E-03
			CHROMIUM, HEXAVALENT	1.2E-07	1.9E-10	NA	--	1.2E-07	None	1.8E-04	5.0E-08	NA	1.8E-04
			COBALT	NA	4.5E-11	NA	--	4.5E-11	Thyroid	2.1E-02	9.7E-06	NA	2.1E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	6.6E-03	NA	NA	6.6E-03
			IRON	NA	NA	NA	--	NA	GI Tract	4.8E-02	NA	NA	4.8E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	3.0E-02	1.3E-04	NA	3.0E-02
			ZINC	NA	NA	NA	--	NA	Blood	2.3E-03	NA	NA	2.3E-03
			BENZO(A)ANTHRACENE	2.2E-06	9.6E-10	6.9E-07	--	2.9E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.0E-05	2.7E-11	6.0E-06	--	2.6E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.7E-06	3.7E-12	8.3E-07	--	3.5E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	9.2E-08	1.3E-12	2.8E-08	--	1.2E-07	NA	NA	NA	NA	NA
			CHRYSENE	2.2E-08	3.0E-13	6.7E-09	--	2.8E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	3.3E-06	4.9E-12	1.0E-06	--	4.3E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.1E-06	1.5E-12	3.3E-07	--	1.4E-06	NA	NA	NA	NA	NA
			PCB-1242	2.9E-07	1.8E-09	9.7E-08	--	3.9E-07	Immune	8.5E-02	NA	2.8E-02	1.1E-01
			PCB-1248	2.3E-06	1.3E-08	7.6E-07	--	3.1E-06	Immune	6.7E-01	NA	2.2E-01	8.9E-01
			PCB-1254	2.9E-06	1.2E-08	9.5E-07	--	3.8E-06	Immune	8.3E-01	NA	2.8E-01	1.1E+00
			PCB-1260	4.6E-08	1.3E-10	1.5E-08	--	6.2E-08	Immune	1.4E-02	NA	4.5E-03	1.8E-02
			BETA BHC	5.8E-08	1.6E-13	1.4E-08	--	7.1E-08	NA	NA	NA	NA	NA
			DIELDRIN	7.5E-08	2.0E-13	1.8E-08	--	9.3E-08	Liver	1.1E-03	NA	2.6E-04	1.4E-03
			HEPTACHLOR	1.9E-07	1.4E-09	NA	--	1.9E-07	Liver	9.7E-04	NA	NA	9.7E-04
			HEPTACHLOR EPOXIDE	6.3E-08	2.7E-10	NA	--	6.3E-08	Liver	6.2E-03	NA	NA	6.2E-03

TABLE 9.14a-RME Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	3.6E-05	3.0E-08	1.1E-05		4.7E-05		1.8E+00	1.7E-04	5.4E-01	2.3E+00
		Exposure Point Total						4.7E-05					2.3E+00
	Exposure Medium Total							4.7E-05					2.3E+00
Medium Total								4.7E-05					2.3E+00
			Receptor Risk Total					4.7E-05				Receptor HI Total	2.3E+00

Total Blood HI Across All Media =	2.0.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.6.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.5.E-02
Total Immune HI Across All Media =	2.1.E+00
Total Kidney HI Across All Media =	3.7.E-03
Total Liver HI Across All Media =	8.5.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	1.8.E-04
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.8.E-02
Total Thyroid HI Across All Media =	2.1.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.14a-CTE Visitor/Trespasser (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	6.0E-03	1.1E-05	NA	6.0E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.4E-03	NA	NA	4.4E-03
			ARSENIC	2.2E-07	9.7E-12	5.2E-08	--	2.7E-07	Skin, Vascular	8.6E-03	2.6E-06	2.0E-03	1.1E-02
			CADMIUM	NA	8.0E-13	NA	--	8.0E-13	Kidney	8.4E-04	7.7E-07	1.6E-04	1.0E-03
			CHROMIUM, HEXAVALENT	2.1E-08	3.2E-11	NA	--	2.1E-08	None	4.5E-05	1.2E-08	NA	4.5E-05
			COBALT	NA	7.5E-12	NA	--	7.5E-12	Thyroid	5.3E-03	2.4E-06	NA	5.3E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	1.7E-03	NA	NA	1.7E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.2E-02	NA	NA	1.2E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	7.5E-03	3.3E-05	NA	7.6E-03
			ZINC	NA	NA	NA	--	NA	Blood	5.7E-04	NA	NA	5.7E-04
			BENZO(A)ANTHRACENE	3.7E-07	1.6E-10	2.3E-07	--	6.0E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.3E-06	4.5E-12	2.0E-06	--	5.3E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	4.5E-07	6.2E-13	2.8E-07	--	7.2E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.5E-08	2.1E-13	9.4E-09	--	2.5E-08	NA	NA	NA	NA	NA
			CHRYSENE	3.6E-09	5.0E-14	2.2E-09	--	5.8E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	5.5E-07	8.2E-13	3.4E-07	--	8.8E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.8E-07	2.5E-13	1.1E-07	--	2.9E-07	NA	NA	NA	NA	NA
			PCB-1242	4.9E-08	2.9E-10	3.2E-08	--	8.1E-08	Immune	2.1E-02	NA	1.4E-02	3.5E-02
			PCB-1248	3.8E-07	2.2E-09	2.5E-07	--	6.4E-07	Immune	1.7E-01	NA	1.1E-01	2.8E-01
			PCB-1254	4.8E-07	2.0E-09	3.2E-07	--	7.9E-07	Immune	2.1E-01	NA	1.4E-01	3.5E-01
			PCB-1260	7.7E-09	2.1E-11	5.1E-09	--	1.3E-08	Immune	3.4E-03	NA	2.2E-03	5.6E-03
			BETA BHC	9.6E-09	2.6E-14	4.6E-09	--	1.4E-08	NA	NA	NA	NA	NA
			DIELDRIN	1.3E-08	3.3E-14	6.0E-09	--	1.9E-08	Liver	2.8E-04	NA	1.3E-04	4.1E-04
			HEPTACHLOR	3.1E-08	2.4E-10	NA	--	3.1E-08	Liver	2.4E-04	NA	NA	2.4E-04
			HEPTACHLOR EPOXIDE	1.1E-08	4.5E-11	NA	--	1.1E-08	Liver	1.6E-03	NA	NA	1.6E-03

TABLE 9.14a-CTE Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	6.0E-06	5.0E-09	3.7E-06		9.7E-06		4.5E-01	5.0E-05	2.7E-01	7.2E-01
		Exposure Point Total						9.7E-06					7.2E-01
	Exposure Medium Total							9.7E-06					7.2E-01
Medium Total								9.7E-06					7.2E-01
			Receptor Risk Total					9.7E-06	Receptor HI Total				7.2E-01

Total Blood HI Across All Media =	4.9.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.4.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.4.E-02
Total Immune HI Across All Media =	6.7.E-01
Total Kidney HI Across All Media =	1.0.E-03
Total Liver HI Across All Media =	2.2.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	4.5.E-05
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.1.E-02
Total Thyroid HI Across All Media =	5.3.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.14b-RME Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	1.9E-03	2.2E-05	NA	1.9E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	5.5E-03	NA	NA	5.5E-03
			ARSENIC	8.3E-07	2.3E-10	4.3E-07	--	1.3E-06	Skin, Vascular	1.1E-02	2.1E-05	5.5E-03	1.6E-02
			CADMIUM	NA	1.9E-11	NA	--	1.9E-11	Kidney	1.1E-03	6.2E-06	4.3E-04	1.5E-03
			CHROMIUM, HEXAVALENT	3.9E-08	3.8E-10	NA	--	3.9E-08	None	5.7E-05	1.0E-07	NA	5.7E-05
			COBALT	NA	1.8E-10	NA	--	1.8E-10	Thyroid	6.7E-03	1.9E-05	NA	6.7E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	2.1E-03	NA	NA	2.1E-03
			IRON	NA	NA	NA	--	NA	GI Tract	1.5E-02	NA	NA	1.5E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	9.5E-03	2.7E-04	NA	9.8E-03
			ZINC	NA	NA	NA	--	NA	Blood	7.2E-04	NA	NA	7.2E-04
			BENZO(A)ANTHRACENE	7.0E-07	1.9E-09	9.3E-07	--	1.6E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	6.2E-06	5.4E-11	8.2E-06	--	1.4E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	8.5E-07	7.4E-12	1.1E-06	--	2.0E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.9E-08	2.5E-12	3.8E-08	--	6.7E-08	NA	NA	NA	NA	NA
			CHRYSENE	6.8E-09	6.0E-13	9.0E-09	--	1.6E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.0E-06	9.9E-12	1.4E-06	--	2.4E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	3.4E-07	3.0E-12	4.5E-07	--	7.9E-07	NA	NA	NA	NA	NA
			PCB-1242	1.8E-07	7.0E-09	2.6E-07	--	4.5E-07	Immune	2.7E-02	NA	3.8E-02	6.5E-02
			PCB-1248	1.4E-06	5.2E-08	2.1E-06	--	3.6E-06	Immune	2.1E-01	NA	3.0E-01	5.1E-01
			PCB-1254	1.8E-06	4.8E-08	2.6E-06	--	4.4E-06	Immune	2.6E-01	NA	3.7E-01	6.4E-01
			PCB-1260	2.9E-08	5.0E-10	4.2E-08	--	7.1E-08	Immune	4.3E-03	NA	6.1E-03	1.0E-02
			BETA BHC	3.6E-08	6.2E-13	3.7E-08	--	7.3E-08	NA	NA	NA	NA	NA
			DIELDRIN	4.8E-08	8.0E-13	4.9E-08	--	9.6E-08	Liver	3.5E-04	NA	3.5E-04	7.0E-04
			HEPTACHLOR	1.2E-07	5.6E-09	NA	--	1.2E-07	Liver	3.1E-04	NA	NA	3.1E-04
			HEPTACHLOR EPOXIDE	4.0E-08	1.1E-09	NA	--	4.1E-08	Liver	2.0E-03	NA	NA	2.0E-03

TABLE 9.14b-RME Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	1.4E-05	1.2E-07	1.8E-05		3.1E-05		5.6E-01	3.3E-04	7.3E-01	1.3E+00
		Exposure Point Total						3.1E-05					1.3E+00
	Exposure Medium Total							3.1E-05					1.3E+00
Medium Total								3.1E-05					1.3E+00
			Receptor Risk Total					3.1E-05				Receptor HI Total	1.3E+00

Total Blood HI Across All Media =	6.2.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.2.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.7.E-02
Total Immune HI Across All Media =	1.2.E+00
Total Kidney HI Across All Media =	1.5.E-03
Total Liver HI Across All Media =	3.0.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	5.7.E-05
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.6.E-02
Total Thyroid HI Across All Media =	6.7.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.14b-CTE Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	4.7E-04	5.5E-06	NA	4.8E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.4E-03	NA	NA	1.4E-03
			ARSENIC	6.9E-08	1.9E-11	7.1E-08	--	1.4E-07	Skin, Vascular	2.7E-03	5.3E-06	2.8E-03	5.5E-03
			CADMIUM	NA	1.6E-12	NA	--	1.6E-12	Kidney	2.7E-04	1.5E-06	2.2E-04	4.8E-04
			CHROMIUM, HEXAVALENT	3.3E-09	3.2E-11	NA	--	3.3E-09	None	1.4E-05	2.5E-08	NA	1.4E-05
			COBALT	NA	1.5E-11	NA	--	1.5E-11	Thyroid	1.7E-03	4.9E-06	NA	1.7E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	5.2E-04	NA	NA	5.2E-04
			IRON	NA	NA	NA	--	NA	GI Tract	3.8E-03	NA	NA	3.8E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	2.4E-03	6.7E-05	NA	2.4E-03
			ZINC	NA	NA	NA	--	NA	Blood	1.8E-04	NA	NA	1.8E-04
			BENZO(A)ANTHRACENE	5.9E-08	1.6E-10	1.6E-07	--	2.1E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	5.1E-07	4.5E-12	1.4E-06	--	1.9E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	7.1E-08	6.2E-13	1.9E-07	--	2.6E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.4E-09	2.1E-13	6.4E-09	--	8.8E-09	NA	NA	NA	NA	NA
			CHRYSENE	5.7E-10	5.0E-14	1.5E-09	--	2.1E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	8.6E-08	8.2E-13	2.3E-07	--	3.1E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	2.8E-08	2.5E-13	7.5E-08	--	1.0E-07	NA	NA	NA	NA	NA
			PCB-1242	1.5E-08	5.9E-10	4.4E-08	--	6.0E-08	Immune	6.7E-03	NA	1.9E-02	2.6E-02
			PCB-1248	1.2E-07	4.4E-09	3.4E-07	--	4.7E-07	Immune	5.3E-02	NA	1.5E-01	2.0E-01
			PCB-1254	1.5E-07	4.0E-09	4.3E-07	--	5.8E-07	Immune	6.6E-02	NA	1.9E-01	2.5E-01
			PCB-1260	2.4E-09	4.2E-11	6.9E-09	--	9.4E-09	Immune	1.1E-03	NA	3.0E-03	4.1E-03
			BETA BHC	3.0E-09	5.2E-14	6.2E-09	--	9.2E-09	NA	NA	NA	NA	NA
			DIELDRIN	4.0E-09	6.6E-14	8.1E-09	--	1.2E-08	Liver	8.7E-05	NA	1.8E-04	2.6E-04
			HEPTACHLOR	9.8E-09	4.7E-10	NA	--	1.0E-08	Liver	7.6E-05	NA	NA	7.6E-05
			HEPTACHLOR EPOXIDE	3.3E-09	8.9E-11	NA	--	3.4E-09	Liver	4.9E-04	NA	NA	4.9E-04

TABLE 9.14b-CTE Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	1.1E-06	9.8E-09	2.9E-06		4.1E-06		1.4E-01	8.4E-05	3.6E-01	5.0E-01
		Exposure Point Total						4.1E-06					5.0E-01
	Exposure Medium Total							4.1E-06					5.0E-01
Medium Total								4.1E-06					5.0E-01
			Receptor Risk Total					4.1E-06				Receptor HI Total	5.0E-01

Total Blood HI Across All Media =	1.6.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.9.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	4.3.E-03
Total Immune HI Across All Media =	4.9.E-01
Total Kidney HI Across All Media =	4.8.E-04
Total Liver HI Across All Media =	8.3.E-04
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	1.4.E-05
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	5.5.E-03
Total Thyroid HI Across All Media =	1.7.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.14c-RME Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	5.6E-04	1.1E-05	NA	5.8E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.6E-03	NA	NA	1.6E-03
			ARSENIC	4.1E-07	1.9E-10	8.7E-08	--	5.0E-07	Skin, Vascular	3.2E-03	1.1E-05	6.8E-04	3.9E-03
			CADMIUM	NA	1.6E-11	NA	--	1.6E-11	Kidney	3.2E-04	3.1E-06	5.3E-05	3.7E-04
			CHROMIUM, HEXAVALENT	7.3E-09	1.2E-10	NA	--	7.4E-09	None	1.7E-05	5.0E-08	NA	1.7E-05
			COBALT	NA	1.5E-10	NA	--	1.5E-10	Thyroid	2.0E-03	9.7E-06	NA	2.0E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	6.2E-04	NA	NA	6.2E-04
			IRON	NA	NA	NA	--	NA	GI Tract	4.5E-03	NA	NA	4.5E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	2.8E-03	1.3E-04	NA	3.0E-03
			ZINC	NA	NA	NA	--	NA	Blood	2.1E-04	NA	NA	2.1E-04
			BENZO(A)ANTHRACENE	1.3E-07	6.0E-10	7.2E-08	--	2.0E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.1E-06	1.7E-11	6.3E-07	--	1.8E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.6E-07	2.3E-12	8.6E-08	--	2.4E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	5.4E-09	7.9E-13	2.9E-09	--	8.3E-09	NA	NA	NA	NA	NA
			CHRYSENE	1.3E-09	1.9E-13	6.9E-10	--	2.0E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.9E-07	3.1E-12	1.1E-07	--	3.0E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	6.3E-08	9.3E-13	3.5E-08	--	9.8E-08	NA	NA	NA	NA	NA
			PCB-1242	9.1E-08	5.9E-09	5.4E-08	--	1.5E-07	Immune	8.0E-03	NA	4.7E-03	1.3E-02
			PCB-1248	7.2E-07	4.4E-08	4.2E-07	--	1.2E-06	Immune	6.3E-02	NA	3.7E-02	1.0E-01
			PCB-1254	8.9E-07	4.0E-08	5.3E-07	--	1.5E-06	Immune	7.8E-02	NA	4.6E-02	1.2E-01
			PCB-1260	1.4E-08	4.2E-10	8.6E-09	--	2.3E-08	Immune	1.3E-03	NA	7.5E-04	2.0E-03
			BETA BHC	1.8E-08	5.2E-13	7.6E-09	--	2.6E-08	NA	NA	NA	NA	NA
			DIELDRIN	2.4E-08	6.6E-13	1.0E-08	--	3.4E-08	Liver	1.0E-04	NA	4.4E-05	1.5E-04
			HEPTACHLOR	5.8E-08	4.7E-09	NA	--	6.3E-08	Liver	9.1E-05	NA	NA	9.1E-05
			HEPTACHLOR EPOXIDE	2.0E-08	8.9E-10	NA	--	2.1E-08	Liver	5.8E-04	NA	NA	5.8E-04

TABLE 9.14c-RME Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	4.0E-06	9.7E-08	2.1E-06		6.1E-06		1.7E-01	1.7E-04	8.9E-02	2.6E-01
		Exposure Point Total						6.1E-06					2.6E-01
	Exposure Medium Total							6.1E-06					2.6E-01
Medium Total								6.1E-06					2.6E-01
			Receptor Risk Total					6.1E-06				Receptor HI Total	2.6E-01

Total Blood HI Across All Media =	1.8.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.5.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.2.E-03
Total Immune HI Across All Media =	2.4.E-01
Total Kidney HI Across All Media =	3.7.E-04
Total Liver HI Across All Media =	8.2.E-04
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	1.7.E-05
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.9.E-03
Total Thyroid HI Across All Media =	2.0.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.14c-CTE Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	1.4E-04	5.5E-06	NA	1.5E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.1E-04	NA	NA	4.1E-04
			ARSENIC	2.1E-08	1.9E-11	8.7E-09	--	2.9E-08	Skin, Vascular	8.0E-04	5.3E-06	3.4E-04	1.1E-03
			CADMIUM	NA	1.6E-12	NA	--	1.6E-12	Kidney	7.9E-05	1.5E-06	2.7E-05	1.1E-04
			CHROMIUM, HEXAVALENT	3.6E-10	1.2E-11	NA	--	3.7E-10	None	4.2E-06	2.5E-08	NA	4.3E-06
			COBALT	NA	1.5E-11	NA	--	1.5E-11	Thyroid	5.0E-04	4.9E-06	NA	5.0E-04
			COPPER	NA	NA	NA	--	NA	GI Tract	1.6E-04	NA	NA	1.6E-04
			IRON	NA	NA	NA	--	NA	GI Tract	1.1E-03	NA	NA	1.1E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	7.1E-04	6.7E-05	NA	7.7E-04
			ZINC	NA	NA	NA	--	NA	Blood	5.4E-05	NA	NA	5.4E-05
			BENZO(A)ANTHRACENE	6.5E-09	6.0E-11	7.2E-09	--	1.4E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	5.7E-08	1.7E-12	6.3E-08	--	1.2E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	7.9E-09	2.3E-13	8.6E-09	--	1.7E-08	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.7E-10	7.9E-14	2.9E-10	--	5.6E-10	NA	NA	NA	NA	NA
			CHRYSENE	6.3E-11	1.9E-14	6.9E-11	--	1.3E-10	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	9.6E-09	3.1E-13	1.1E-08	--	2.0E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	3.2E-09	9.3E-14	3.5E-09	--	6.6E-09	NA	NA	NA	NA	NA
			PCB-1242	4.6E-09	5.9E-10	5.4E-09	--	1.1E-08	Immune	2.0E-03	NA	2.4E-03	4.3E-03
			PCB-1248	3.6E-08	4.4E-09	4.2E-08	--	8.3E-08	Immune	1.6E-02	NA	1.9E-02	3.4E-02
			PCB-1254	4.5E-08	4.0E-09	5.3E-08	--	1.0E-07	Immune	2.0E-02	NA	2.3E-02	4.3E-02
			PCB-1260	7.2E-10	4.2E-11	8.6E-10	--	1.6E-09	Immune	3.2E-04	NA	3.7E-04	6.9E-04
			BETA BHC	9.0E-10	5.2E-14	7.6E-10	--	1.7E-09	NA	NA	NA	NA	NA
			DIELDRIN	1.2E-09	6.6E-14	1.0E-09	--	2.2E-09	Liver	2.6E-05	NA	2.2E-05	4.8E-05
			HEPTACHLOR	2.9E-09	4.7E-10	NA	--	3.4E-09	Liver	2.3E-05	NA	NA	2.3E-05
			HEPTACHLOR EPOXIDE	9.8E-10	8.9E-11	NA	--	1.1E-09	Liver	1.5E-04	NA	NA	1.5E-04

TABLE 9.14c-CTE Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	2.0E-07	9.7E-09	2.1E-07		4.1E-07		4.2E-02	8.4E-05	4.5E-02	8.7E-02
		Exposure Point Total						4.1E-07					8.7E-02
	Exposure Medium Total							4.1E-07					8.7E-02
Medium Total								4.1E-07					8.7E-02
			Receptor Risk Total					4.1E-07				Receptor HI Total	8.7E-02

Total Blood HI Across All Media =	4.6.E-04
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	9.2.E-04
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.3.E-03
Total Immune HI Across All Media =	8.2.E-02
Total Kidney HI Across All Media =	1.1.E-04
Total Liver HI Across All Media =	2.2.E-04
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	4.3.E-06
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.1.E-03
Total Thyroid HI Across All Media =	5.0.E-04
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.15a-RME Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	2.5E-03	2.0E-04	NA	2.7E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	7.3E-03	NA	NA	7.3E-03
			ARSENIC	2.3E-06	4.3E-09	9.8E-07	--	3.3E-06	Skin, Vascular	1.4E-02	1.9E-04	6.1E-03	2.1E-02
			CADMIUM	NA	3.5E-10	NA	--	3.5E-10	Kidney	1.4E-03	5.5E-05	4.8E-04	1.9E-03
			CHROMIUM, HEXAVALENT	4.1E-08	2.7E-09	NA	--	4.3E-08	None	7.6E-05	8.9E-07	NA	7.7E-05
			COBALT	NA	3.3E-09	NA	--	3.3E-09	Thyroid	8.9E-03	1.7E-04	NA	9.0E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	2.8E-03	NA	NA	2.8E-03
			IRON	NA	NA	NA	--	NA	GI Tract	2.0E-02	NA	NA	2.0E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	1.3E-02	2.4E-03	NA	1.5E-02
			ZINC	NA	NA	NA	--	NA	Blood	9.6E-04	NA	NA	9.6E-04
			BENZO(A)ANTHRACENE	7.3E-07	1.3E-08	8.0E-07	--	1.5E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	6.4E-06	3.8E-10	7.1E-06	--	1.3E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	8.8E-07	5.2E-11	9.7E-07	--	1.8E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	3.0E-08	1.8E-11	3.3E-08	--	6.3E-08	NA	NA	NA	NA	NA
			CHRYSENE	7.0E-09	4.2E-12	7.8E-09	--	1.5E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.1E-06	6.9E-11	1.2E-06	--	2.2E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	3.5E-07	2.1E-11	3.9E-07	--	7.4E-07	NA	NA	NA	NA	NA
			PCB-1242	5.1E-07	1.3E-07	6.0E-07	--	1.2E-06	Immune	3.6E-02	NA	4.2E-02	7.8E-02
			PCB-1248	4.0E-06	9.8E-07	4.7E-06	--	9.7E-06	Immune	2.8E-01	NA	3.3E-01	6.1E-01
			PCB-1254	5.0E-06	9.0E-07	5.9E-06	--	1.2E-05	Immune	3.5E-01	NA	4.1E-01	7.6E-01
			PCB-1260	8.1E-08	9.4E-09	9.6E-08	--	1.9E-07	Immune	5.7E-03	NA	6.7E-03	1.2E-02
			BETA BHC	1.0E-07	1.2E-11	8.5E-08	--	1.9E-07	NA	NA	NA	NA	NA
			DIELDRIN	1.3E-07	1.5E-11	1.1E-07	--	2.4E-07	Liver	4.6E-04	NA	3.9E-04	8.5E-04
			HEPTACHLOR	3.3E-07	1.0E-07	NA	--	4.3E-07	Liver	4.1E-04	NA	NA	4.1E-04
			HEPTACHLOR EPOXIDE	1.1E-07	2.0E-08	NA	--	1.3E-07	Liver	2.6E-03	NA	NA	2.6E-03

TABLE 9.15a-RME Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	2.2E-05	2.2E-06	2.3E-05		4.7E-05		7.4E-01	3.0E-03	8.0E-01	1.5E+00
		Exposure Point Total						4.7E-05					1.5E+00
	Exposure Medium Total							4.7E-05					1.5E+00
Medium Total								4.7E-05					1.5E+00
			Receptor Risk Total					4.7E-05	Receptor HI Total				1.5E+00

Total Blood HI Across All Media =	8.2.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.8.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	2.3.E-02
Total Immune HI Across All Media =	1.5.E+00
Total Kidney HI Across All Media =	1.9.E-03
Total Liver HI Across All Media =	3.9.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	7.7.E-05
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.1.E-02
Total Thyroid HI Across All Media =	9.0.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.15a-CTE Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	6.3E-04	9.9E-05	NA	7.3E-04
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.8E-03	NA	NA	1.8E-03
			ARSENIC	2.1E-07	7.8E-10	1.8E-07	--	3.8E-07	Skin, Vascular	3.6E-03	9.4E-05	3.0E-03	6.7E-03
			CADMIUM	NA	6.4E-11	NA	--	6.4E-11	Kidney	3.5E-04	2.8E-05	2.4E-04	6.2E-04
			CHROMIUM, HEXAVALENT	3.6E-09	4.8E-10	NA	--	4.1E-09	None	1.9E-05	4.4E-07	NA	1.9E-05
			COBALT	NA	6.0E-10	NA	--	6.0E-10	Thyroid	2.2E-03	8.7E-05	NA	2.3E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	6.9E-04	NA	NA	6.9E-04
			IRON	NA	NA	NA	--	NA	GI Tract	5.1E-03	NA	NA	5.1E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	3.2E-03	1.2E-03	NA	4.3E-03
			ZINC	NA	NA	NA	--	NA	Blood	2.4E-04	NA	NA	2.4E-04
			BENZO(A)ANTHRACENE	6.6E-08	2.4E-09	1.4E-07	--	2.1E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	5.8E-07	6.8E-11	1.3E-06	--	1.8E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	7.9E-08	9.3E-12	1.7E-07	--	2.5E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	2.7E-09	3.2E-12	5.9E-09	--	8.6E-09	NA	NA	NA	NA	NA
			CHRYSENE	6.3E-10	7.5E-13	1.4E-09	--	2.0E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	9.6E-08	1.2E-11	2.1E-07	--	3.1E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	3.2E-08	3.7E-12	7.0E-08	--	1.0E-07	NA	NA	NA	NA	NA
			PCB-1242	4.6E-08	2.4E-08	1.1E-07	--	1.8E-07	Immune	8.9E-03	NA	2.1E-02	3.0E-02
			PCB-1248	3.6E-07	1.8E-07	8.5E-07	--	1.4E-06	Immune	7.0E-02	NA	1.7E-01	2.4E-01
			PCB-1254	4.5E-07	1.6E-07	1.1E-06	--	1.7E-06	Immune	8.7E-02	NA	2.1E-01	2.9E-01
			PCB-1260	7.3E-09	1.7E-09	1.7E-08	--	2.6E-08	Immune	1.4E-03	NA	3.3E-03	4.8E-03
			BETA BHC	9.0E-09	2.1E-12	1.5E-08	--	2.4E-08	NA	NA	NA	NA	NA
			DIELDRIN	1.2E-08	2.7E-12	2.0E-08	--	3.2E-08	Liver	1.2E-04	NA	1.9E-04	3.1E-04
			HEPTACHLOR	2.9E-08	1.9E-08	NA	--	4.8E-08	Liver	1.0E-04	NA	NA	1.0E-04
			HEPTACHLOR EPOXIDE	9.9E-09	3.6E-09	NA	--	1.3E-08	Liver	6.5E-04	NA	NA	6.5E-04

TABLE 9.15a-CTE Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	2.0E-06	3.9E-07	4.1E-06		6.5E-06		1.9E-01	1.5E-03	4.0E-01	5.9E-01
		Exposure Point Total						6.5E-06					5.9E-01
	Exposure Medium Total							6.5E-06					5.9E-01
Medium Total								6.5E-06					5.9E-01
							Receptor Risk Total	6.5E-06				Receptor HI Total	5.9E-01

Total Blood HI Across All Media =	2.1.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	5.1.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	5.8.E-03
Total Immune HI Across All Media =	5.6.E-01
Total Kidney HI Across All Media =	6.2.E-04
Total Liver HI Across All Media =	1.1.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	1.9.E-05
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	6.7.E-03
Total Thyroid HI Across All Media =	2.3.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.16a-RME Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	4.5E-03	1.8E-04	NA	4.7E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.3E-02	NA	NA	1.3E-02
			ARSENIC	4.2E-06	3.9E-09	8.8E-07	--	5.0E-06	Skin, Vascular	2.6E-02	1.7E-04	5.5E-03	3.1E-02
			CADMIUM	NA	3.2E-10	NA	--	3.2E-10	Kidney	2.5E-03	5.0E-05	4.3E-04	3.0E-03
			CHROMIUM, HEXAVALENT	7.3E-08	2.4E-09	NA	--	7.5E-08	None	1.4E-04	8.0E-07	NA	1.4E-04
			COBALT	NA	3.0E-09	NA	--	3.0E-09	Thyroid	1.6E-02	1.6E-04	NA	1.6E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	5.0E-03	NA	NA	5.0E-03
			IRON	NA	NA	NA	--	NA	GI Tract	3.6E-02	NA	NA	3.6E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	2.3E-02	2.1E-03	NA	2.5E-02
			ZINC	NA	NA	NA	--	NA	Blood	1.7E-03	NA	NA	1.7E-03
			BENZO(A)ANTHRACENE	1.3E-06	1.2E-08	7.2E-07	--	2.0E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.2E-05	3.4E-10	6.3E-06	--	1.8E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.6E-06	4.7E-11	8.7E-07	--	2.5E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	5.4E-08	1.6E-11	3.0E-08	--	8.4E-08	NA	NA	NA	NA	NA
			CHRYSENE	1.3E-08	3.7E-12	7.0E-09	--	2.0E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.9E-06	6.2E-11	1.1E-06	--	3.0E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	6.3E-07	1.9E-11	3.5E-07	--	9.8E-07	NA	NA	NA	NA	NA
			PCB-1242	9.2E-07	1.2E-07	5.4E-07	--	1.6E-06	Immune	6.4E-02	NA	3.8E-02	1.0E-01
			PCB-1248	7.2E-06	8.8E-07	4.3E-06	--	1.2E-05	Immune	5.0E-01	NA	3.0E-01	8.0E-01
			PCB-1254	9.0E-06	8.1E-07	5.3E-06	--	1.5E-05	Immune	6.3E-01	NA	3.7E-01	1.0E+00
			PCB-1260	1.5E-07	8.5E-09	8.6E-08	--	2.4E-07	Immune	1.0E-02	NA	6.0E-03	1.6E-02
			BETA BHC	1.8E-07	1.0E-11	7.7E-08	--	2.6E-07	NA	NA	NA	NA	NA
			DIELDRIN	2.4E-07	1.3E-11	1.0E-07	--	3.4E-07	Liver	8.3E-04	NA	3.5E-04	1.2E-03
			HEPTACHLOR	5.9E-07	9.4E-08	NA	--	6.8E-07	Liver	7.3E-04	NA	NA	7.3E-04
			HEPTACHLOR EPOXIDE	2.0E-07	1.8E-08	NA	--	2.2E-07	Liver	4.7E-03	NA	NA	4.7E-03

TABLE 9.16a-RME Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	4.0E-05	1.9E-06	2.1E-05		6.2E-05		1.3E+00	2.7E-03	7.2E-01	2.1E+00
		Exposure Point Total						6.2E-05					2.1E+00
	Exposure Medium Total							6.2E-05					2.1E+00
Medium Total								6.2E-05					2.1E+00
							Receptor Risk Total	6.2E-05				Receptor HI Total	2.1E+00

Total Blood HI Across All Media =	1.5.E-02
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.0.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	4.1.E-02
Total Immune HI Across All Media =	1.9.E+00
Total Kidney HI Across All Media =	3.0.E-03
Total Liver HI Across All Media =	6.6.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	1.4.E-04
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.1.E-02
Total Thyroid HI Across All Media =	1.6.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.16a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	1.1E-03	2.2E-05	NA	1.2E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	3.3E-03	NA	NA	3.3E-03
			ARSENIC	3.3E-07	1.6E-10	1.4E-07	--	4.8E-07	Skin, Vascular	6.5E-03	2.1E-05	2.7E-03	9.3E-03
			CADMIUM	NA	1.3E-11	NA	--	1.3E-11	Kidney	6.4E-04	6.2E-06	2.2E-04	8.6E-04
			CHROMIUM, HEXAVALENT	5.9E-09	9.7E-11	NA	--	6.0E-09	None	3.4E-05	1.0E-07	NA	3.4E-05
			COBALT	NA	1.2E-10	NA	--	1.2E-10	Thyroid	4.0E-03	2.0E-05	NA	4.0E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	1.3E-03	NA	NA	1.3E-03
			IRON	NA	NA	NA	--	NA	GI Tract	9.2E-03	NA	NA	9.2E-03
			MANGANESE	NA	NA	NA	--	NA	CNS	5.7E-03	2.7E-04	NA	6.0E-03
			ZINC	NA	NA	NA	--	NA	Blood	4.3E-04	NA	NA	4.3E-04
			BENZO(A)ANTHRACENE	1.1E-07	4.8E-10	1.2E-07	--	2.2E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	9.3E-07	1.4E-11	1.0E-06	--	1.9E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.3E-07	1.9E-12	1.4E-07	--	2.7E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	4.3E-09	6.4E-13	4.8E-09	--	9.1E-09	NA	NA	NA	NA	NA
			CHRYSENE	1.0E-09	1.5E-13	1.1E-09	--	2.1E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.5E-07	2.5E-12	1.7E-07	--	3.3E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	5.1E-08	7.5E-13	5.6E-08	--	1.1E-07	NA	NA	NA	NA	NA
			PCB-1242	7.4E-08	4.7E-09	8.7E-08	--	1.7E-07	Immune	1.6E-02	NA	1.9E-02	3.5E-02
			PCB-1248	5.8E-07	3.5E-08	6.9E-07	--	1.3E-06	Immune	1.3E-01	NA	1.5E-01	2.8E-01
			PCB-1254	7.2E-07	3.3E-08	8.5E-07	--	1.6E-06	Immune	1.6E-01	NA	1.9E-01	3.4E-01
			PCB-1260	1.2E-08	3.4E-10	1.4E-08	--	2.6E-08	Immune	2.6E-03	NA	3.0E-03	5.6E-03
			BETA BHC	1.5E-08	4.2E-13	1.2E-08	--	2.7E-08	NA	NA	NA	NA	NA
			DIELDRIN	1.9E-08	5.4E-13	1.6E-08	--	3.5E-08	Liver	2.1E-04	NA	1.8E-04	3.8E-04
			HEPTACHLOR	4.7E-08	3.8E-09	NA	--	5.1E-08	Liver	1.8E-04	NA	NA	1.8E-04
			HEPTACHLOR EPOXIDE	1.6E-08	7.2E-10	NA	--	1.7E-08	Liver	1.2E-03	NA	NA	1.2E-03

TABLE 9.16a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	3.2E-06	7.8E-08	3.3E-06		6.6E-06		3.4E-01	3.4E-04	3.6E-01	7.0E-01
		Exposure Point Total						6.6E-06					7.0E-01
	Exposure Medium Total							6.6E-06					7.0E-01
Medium Total								6.6E-06					7.0E-01
			Receptor Risk Total					6.6E-06	Receptor HI Total				7.0E-01

Total Blood HI Across All Media =	3.7.E-03
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	7.1.E-03
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	1.0.E-02
Total Immune HI Across All Media =	6.6.E-01
Total Kidney HI Across All Media =	8.6.E-04
Total Liver HI Across All Media =	1.7.E-03
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	3.4.E-05
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	9.3.E-03
Total Thyroid HI Across All Media =	4.0.E-03
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.17a-RME Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	1.8E-02	2.2E-04	NA	1.8E-02
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.0E+00	NA	NA	1.0E+00
			ARSENIC	5.9E-07	1.7E-10	3.8E-08	--	6.3E-07	Skin, Vascular	9.2E-02	1.8E-04	5.9E-03	9.8E-02
			CADMIUM	NA	1.2E-11	NA	--	1.2E-11	Kidney	7.7E-03	4.6E-05	3.9E-04	8.1E-03
			CHROMIUM, HEXAVALENT	1.1E-08	1.1E-10	NA	--	1.1E-08	None	5.0E-04	8.9E-07	NA	5.0E-04
			COBALT	NA	1.6E-10	NA	--	1.6E-10	Thyroid	6.9E-02	2.0E-04	NA	6.9E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	2.5E-01	NA	NA	2.5E-01
			IRON	NA	NA	NA	--	NA	GI Tract	1.4E-01	NA	NA	1.4E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	8.2E-02	2.3E-03	NA	8.5E-02
			MERCURY	NA	NA	NA	--	NA	CNS	1.2E-02	9.1E-03	NA	2.1E-02
			VANADIUM	NA	NA	NA	--	NA	NA	1.1E-02	3.1E-05	NA	1.1E-02
			ZINC	NA	NA	NA	--	NA	Blood	1.0E-02	NA	NA	1.0E-02
			BENZO(A)ANTHRACENE	1.6E-07	4.4E-10	2.6E-08	--	1.9E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.4E-06	1.3E-11	2.4E-07	--	1.7E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.9E-07	1.7E-12	3.2E-08	--	2.2E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	6.1E-09	5.5E-13	1.0E-09	--	7.1E-09	NA	NA	NA	NA	NA
			CHRYSENE	1.5E-09	1.4E-13	2.6E-10	--	1.8E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.5E-07	2.5E-12	4.2E-08	--	2.9E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	7.8E-08	7.0E-13	1.3E-08	--	9.1E-08	NA	NA	NA	NA	NA
			PCB-1242	8.7E-08	3.4E-09	1.6E-08	--	1.1E-07	Immune	1.5E-01	NA	2.7E-02	1.8E-01
			PCB-1248	3.6E-06	1.3E-07	6.5E-07	--	4.4E-06	Immune	6.4E+00	NA	1.1E+00	7.5E+00
			PCB-1254	8.8E-07	2.4E-08	1.6E-07	--	1.1E-06	Immune	1.5E+00	NA	2.8E-01	1.8E+00
			PCB-1260	3.6E-07	6.3E-09	6.4E-08	--	4.3E-07	Immune	6.2E-01	NA	1.1E-01	7.3E-01
			BETA BHC	2.7E-08	4.6E-13	3.4E-09	--	3.0E-08	NA	NA	NA	NA	NA
			DIELDRIN	3.5E-08	5.9E-13	4.5E-09	--	3.9E-08	Liver	3.0E-03	NA	3.9E-04	3.4E-03
			HEPTACHLOR	8.6E-08	4.2E-09	NA	--	9.0E-08	Liver	2.7E-03	NA	NA	2.7E-03
			HEPTACHLOR EPOXIDE	1.6E-07	4.3E-09	NA	--	1.6E-07	Liver	9.3E-02	NA	NA	9.3E-02

TABLE 9.17a-RME Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	8.0E-06	1.8E-07	1.3E-06		9.4E-06		1.0E+01	1.2E-02	1.6E+00	1.2E+01
		Exposure Point Total						9.4E-06					1.2E+01
	Exposure Medium Total							9.4E-06					1.2E+01
Medium Total								9.4E-06					1.2E+01
			Receptor Risk Total					9.4E-06				Receptor HI Total	1.2E+01

Total Blood HI Across All Media =	1.0.E+00
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.2.E-01
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	3.9.E-01
Total Immune HI Across All Media =	1.0.E+01
Total Kidney HI Across All Media =	8.1.E-03
Total Liver HI Across All Media =	1.0.E-01
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	5.0.E-04
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	9.8.E-02
Total Thyroid HI Across All Media =	6.9.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.17a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	4.3E-03	5.2E-05	NA	4.4E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	2.5E-01	NA	NA	2.5E-01
			ARSENIC	1.4E-07	4.0E-11	9.1E-09	--	1.5E-07	Skin, Vascular	2.2E-02	4.4E-05	1.4E-03	2.4E-02
			CADMIUM	NA	2.8E-12	NA	--	2.8E-12	Kidney	1.8E-03	1.1E-05	9.4E-05	1.9E-03
			CHROMIUM, HEXAVALENT	2.6E-09	2.6E-11	NA	--	2.6E-09	None	1.2E-04	2.1E-07	NA	1.2E-04
			COBALT	NA	3.8E-11	NA	--	3.8E-11	Thyroid	1.6E-02	4.9E-05	NA	1.7E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	6.0E-02	NA	NA	6.0E-02
			IRON	NA	NA	NA	--	NA	GI Tract	3.3E-02	NA	NA	3.3E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	2.0E-02	5.6E-04	NA	2.0E-02
			MERCURY	NA	NA	NA	--	NA	CNS	2.8E-03	2.2E-03	NA	5.0E-03
			VANADIUM	NA	NA	NA	--	NA	NA	2.5E-03	7.6E-06	NA	2.5E-03
			ZINC	NA	NA	NA	--	NA	Blood	2.5E-03	NA	NA	2.5E-03
			BENZO(A)ANTHRACENE	3.8E-08	1.1E-10	6.3E-09	--	4.5E-08	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.4E-07	3.0E-12	5.7E-08	--	4.0E-07	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	4.6E-08	4.1E-13	7.6E-09	--	5.3E-08	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.5E-09	1.3E-13	2.4E-10	--	1.7E-09	NA	NA	NA	NA	NA
			CHRYSENE	3.7E-10	3.3E-14	6.2E-11	--	4.3E-10	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	6.0E-08	5.9E-13	1.0E-08	--	7.0E-08	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.9E-08	1.7E-13	3.1E-09	--	2.2E-08	NA	NA	NA	NA	NA
			PCB-1242	2.1E-08	8.2E-10	3.8E-09	--	2.5E-08	Immune	3.7E-02	NA	6.6E-03	4.3E-02
			PCB-1248	8.7E-07	3.2E-08	1.6E-07	--	1.1E-06	Immune	1.5E+00	NA	2.7E-01	1.8E+00
			PCB-1254	2.1E-07	5.8E-09	3.8E-08	--	2.5E-07	Immune	3.7E-01	NA	6.6E-02	4.4E-01
			PCB-1260	8.5E-08	1.5E-09	1.5E-08	--	1.0E-07	Immune	1.5E-01	NA	2.7E-02	1.8E-01
			BETA BHC	6.4E-09	1.1E-13	8.2E-10	--	7.2E-09	NA	NA	NA	NA	NA
			DIELDRIN	8.3E-09	1.4E-13	1.1E-09	--	9.4E-09	Liver	7.3E-04	NA	9.4E-05	8.2E-04
			HEPTACHLOR	2.1E-08	1.0E-09	NA	--	2.2E-08	Liver	6.4E-04	NA	NA	6.4E-04
			HEPTACHLOR EPOXIDE	3.8E-08	1.0E-09	NA	--	3.9E-08	Liver	2.2E-02	NA	NA	2.2E-02

TABLE 9.17a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	1.9E-06	4.3E-08	3.1E-07		2.3E-06		2.5E+00	2.9E-03	3.8E-01	2.9E+00
		Exposure Point Total						2.3E-06					2.9E+00
	Exposure Medium Total							2.3E-06					2.9E+00
Medium Total								2.3E-06					2.9E+00
			Receptor Risk Total					2.3E-06				Receptor HI Total	2.9E+00

Total Blood HI Across All Media =	2.5.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	3.0.E-02
Total Development HI Across All Media =	0.0.E+00
Total GI Tract HI Across All Media =	9.3.E-02
Total Immune HI Across All Media =	2.5.E+00
Total Kidney HI Across All Media =	1.9.E-03
Total Liver HI Across All Media =	2.4.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	1.2.E-04
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	2.4.E-02
Total Thyroid HI Across All Media =	1.7.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	0.0.E+00

TABLE 9.18a-RME Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	8.2E-02	9.0E-04	NA	8.3E-02
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.7E+00	NA	NA	4.7E+00
			ARSENIC	1.6E-05	4.2E-09	1.9E-06	--	1.8E-05	Skin, Vascular	4.2E-01	7.7E-04	5.0E-02	4.7E-01
			CADMIUM	NA	3.0E-10	NA	--	3.0E-10	Kidney	3.5E-02	1.9E-04	3.3E-03	3.8E-02
			CHROMIUM, HEXAVALENT	1.5E-06	1.4E-08	NA	--	1.6E-06	None	2.3E-03	3.7E-06	NA	2.3E-03
			COBALT	NA	4.0E-09	NA	--	4.0E-09	Thyroid	3.1E-01	8.6E-04	NA	3.1E-01
			COPPER	NA	NA	NA	--	NA	GI Tract	1.1E+00	NA	NA	1.1E+00
			IRON	NA	NA	NA	--	NA	GI Tract	6.2E-01	NA	NA	6.2E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	3.7E-01	9.8E-03	NA	3.8E-01
			MERCURY	NA	NA	NA	--	NA	CNS	5.3E-02	3.8E-02	NA	9.2E-02
			VANADIUM	NA	NA	NA	--	NA	NA	4.8E-02	1.3E-04	NA	4.8E-02
			ZINC	NA	NA	NA	--	NA	Blood	4.7E-02	NA	NA	4.7E-02
			BENZO(A)ANTHRACENE	2.3E-05	5.9E-08	7.1E-06	--	3.0E-05	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.1E-04	1.7E-09	6.3E-05	--	2.7E-04	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.7E-05	2.3E-10	8.5E-06	--	3.6E-05	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	8.8E-07	7.3E-11	2.7E-07	--	1.2E-06	NA	NA	NA	NA	NA
			CHRYSENE	2.2E-07	1.9E-11	6.9E-08	--	2.9E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	3.6E-05	3.3E-10	1.1E-05	--	4.8E-05	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.1E-05	9.4E-11	3.5E-06	--	1.5E-05	NA	NA	NA	NA	NA
			PCB-1242	2.4E-06	8.6E-08	7.8E-07	--	3.2E-06	Immune	6.9E-01	NA	2.3E-01	9.2E-01
			PCB-1248	9.9E-05	3.4E-06	3.3E-05	--	1.3E-04	Immune	2.9E+01	NA	9.6E+00	3.8E+01
			PCB-1254	2.4E-05	6.1E-07	7.9E-06	--	3.2E-05	Immune	7.0E+00	NA	2.3E+00	9.3E+00
			PCB-1260	9.7E-06	1.6E-07	3.2E-06	--	1.3E-05	Immune	2.8E+00	NA	9.4E-01	3.8E+00
			BETA BHC	7.2E-07	1.2E-11	1.7E-07	--	8.9E-07	NA	NA	NA	NA	NA
			DIELDRIN	9.4E-07	1.5E-11	2.2E-07	--	1.2E-06	Liver	1.4E-02	NA	3.3E-03	1.7E-02
			HEPTACHLOR	2.3E-06	1.1E-07	NA	--	2.4E-06	Liver	1.2E-02	NA	NA	1.2E-02
			HEPTACHLOR EPOXIDE	4.3E-06	1.1E-07	NA	--	4.4E-06	Liver	4.2E-01	NA	NA	4.2E-01

TABLE 9.18a-RME Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	4.6E-04	4.5E-06	1.4E-04		6.1E-04		4.7E+01	5.1E-02	1.3E+01	6.1E+01
		Exposure Point Total						6.1E-04					6.1E+01
	Exposure Medium Total							6.1E-04					6.1E+01
Medium Total								6.1E-04					6.1E+01
Groundwater	Tapwater	United Paperboard	ANTIMONY	NA	--	--	--	NA	Blood	6.5E-01	--	--	6.5E-01
			ARSENIC	2.1E-05	--	--	--	2.1E-05	Skin, Vascular	5.5E-01	--	--	5.5E-01
			COBALT	NA	--	--	--	NA	Thyroid	2.4E-01	--	--	2.4E-01
			IRON	NA	--	--	--	NA	GI Tract	2.7E-01	--	--	2.7E-01
			MANGANESE	NA	--	--	--	NA	CNS	1.7E+00	--	--	1.7E+00
			SELENIUM	NA	--	--	--	NA	Whole body	8.5E-02	--	--	8.5E-02
			BENZO(A)ANTHRACENE	3.3E-06	1.7E-06	--	--	5.0E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	2.5E-05	NA	--	--	2.5E-05	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	4.5E-06	NA	--	--	4.5E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	5.2E-05	NA	--	--	5.2E-05	NA	NA	NA	--	NA
			INDENO(1,2,3-C,D)PYRENE	4.5E-06	NA	--	--	4.5E-06	NA	NA	NA	--	NA
			DIELDRIN	6.3E-07	NA	--	--	6.3E-07	Liver	9.2E-03	NA	--	9.2E-03
			CHLOROFORM	4.4E-07	1.1E-06	--	--	1.5E-06	Liver	1.6E-02	5.7E-03	--	2.2E-02
			CIS-1,2-DICHLOROETHYLENE	NA	NA	--	--	NA	Kidney	1.8E-01	NA	--	1.8E-01
			TRICHLOROETHYLENE (TCE)	1.8E-06	5.8E-07	--	--	2.3E-06	Development, Immune, Vascular	4.7E-01	4.0E-01	--	8.7E-01
			Chemical Total	1.1E-04	3.4E-06			1.2E-04		4.2E+00	4.1E-01		4.6E+00
		Exposure Point Total						1.2E-04					4.6E+00
	Exposure Medium Total							1.2E-04					4.6E+00
Medium Total								1.2E-04					4.6E+00
							Receptor Risk Total	7.3E-04				Receptor HI Total	6.5E+01

TABLE 9.18a-RME Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	5.4.E+00
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	2.3.E+00
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	8.7.E-01
Total GI Tract HI Across All Media =	2.0.E+00
Total Immune HI Across All Media =	5.2.E+01
Total Kidney HI Across All Media =	2.2.E-01
Total Liver HI Across All Media =	4.8.E-01
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	2.3.E-03
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.0.E+00
Total Thyroid HI Across All Media =	5.5.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	8.5.E-02

TABLE 9.18a-CTE Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	2.1E-02	4.5E-04	NA	2.1E-02
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.2E+00	NA	NA	1.2E+00
			ARSENIC	2.0E-06	1.1E-09	9.6E-08	--	2.1E-06	Skin, Vascular	1.0E-01	3.8E-04	5.0E-03	1.1E-01
			CADMIUM	NA	7.4E-11	NA	--	7.4E-11	Kidney	8.7E-03	9.6E-05	3.3E-04	9.1E-03
			CHROMIUM, HEXAVALENT	1.9E-07	3.6E-09	NA	--	2.0E-07	None	5.6E-04	1.9E-06	NA	5.7E-04
			COBALT	NA	9.9E-10	NA	--	9.9E-10	Thyroid	7.8E-02	4.3E-04	NA	7.8E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	2.8E-01	NA	NA	2.8E-01
			IRON	NA	NA	NA	--	NA	GI Tract	1.5E-01	NA	NA	1.5E-01
			MANGANESE	NA	NA	NA	--	NA	CNS	9.3E-02	4.9E-03	NA	9.8E-02
			MERCURY	NA	NA	NA	--	NA	CNS	1.3E-02	1.9E-02	NA	3.2E-02
			VANADIUM	NA	NA	NA	--	NA	NA	1.2E-02	6.6E-05	NA	1.2E-02
			ZINC	NA	NA	NA	--	NA	Blood	1.2E-02	NA	NA	1.2E-02
			BENZO(A)ANTHRACENE	2.9E-06	1.5E-08	3.5E-07	--	3.2E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.6E-05	4.3E-10	3.2E-06	--	2.9E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	3.4E-06	5.7E-11	4.2E-07	--	3.9E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.1E-07	1.8E-11	1.4E-08	--	1.2E-07	NA	NA	NA	NA	NA
			CHRYSENE	2.8E-08	4.7E-12	3.5E-09	--	3.1E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.5E-06	8.2E-11	5.6E-07	--	5.1E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.4E-06	2.3E-11	1.7E-07	--	1.6E-06	NA	NA	NA	NA	NA
			PCB-1242	3.0E-07	2.1E-08	3.9E-08	--	3.6E-07	Immune	1.7E-01	NA	2.3E-02	2.0E-01
			PCB-1248	1.2E-05	8.4E-07	1.6E-06	--	1.5E-05	Immune	7.2E+00	NA	9.6E-01	8.1E+00
			PCB-1254	3.0E-06	1.5E-07	4.0E-07	--	3.5E-06	Immune	1.7E+00	NA	2.3E-01	2.0E+00
			PCB-1260	1.2E-06	3.9E-08	1.6E-07	--	1.4E-06	Immune	7.0E-01	NA	9.4E-02	8.0E-01
			BETA BHC	9.0E-08	2.9E-12	8.5E-09	--	9.9E-08	NA	NA	NA	NA	NA
			DIELDRIN	1.2E-07	3.7E-12	1.1E-08	--	1.3E-07	Liver	3.4E-03	NA	3.3E-04	3.8E-03
			HEPTACHLOR	2.9E-07	2.6E-08	NA	--	3.2E-07	Liver	3.0E-03	NA	NA	3.0E-03
			HEPTACHLOR EPOXIDE	5.4E-07	2.7E-08	NA	--	5.6E-07	Liver	1.1E-01	NA	NA	1.1E-01

TABLE 9.18a-CTE Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	5.8E-05	1.1E-06	7.0E-06		6.6E-05		1.2E+01	2.6E-02	1.3E+00	1.3E+01
		Exposure Point Total						6.6E-05					1.3E+01
	Exposure Medium Total							6.6E-05					1.3E+01
Medium Total								6.6E-05					1.3E+01
Groundwater	Tapwater	United Paperboard	ANTIMONY	NA	--	--	--	NA	Blood	3.0E-01	--	--	3.0E-01
			ARSENIC	6.7E-06	--	--	--	6.7E-06	Skin, Vascular	2.6E-01	--	--	2.6E-01
			COBALT	NA	--	--	--	NA	Thyroid	1.1E-01	--	--	1.1E-01
			IRON	NA	--	--	--	NA	GI Tract	1.3E-01	--	--	1.3E-01
			MANGANESE	NA	--	--	--	NA	CNS	8.1E-01	--	--	8.1E-01
			SELENIUM	NA	--	--	--	NA	Whole body	4.0E-02	--	--	4.0E-02
			BENZO(A)ANTHRACENE	1.0E-06	1.1E-06	--	--	2.2E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	7.8E-06	NA	--	--	7.8E-06	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	1.4E-06	NA	--	--	1.4E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	1.6E-05	NA	--	--	1.6E-05	NA	NA	NA	--	NA
			INDENO(1,2,3-C,D)PYRENE	1.4E-06	NA	--	--	1.4E-06	NA	NA	NA	--	NA
			DIELDRIN	2.0E-07	NA	--	--	2.0E-07	Liver	4.3E-03	NA	--	4.3E-03
			CHLOROFORM	1.4E-07	7.4E-07	--	--	8.7E-07	Liver	7.7E-03	5.7E-03	--	1.3E-02
			CIS-1,2-DICHLOROETHYLENE	NA	NA	--	--	NA	Kidney	8.6E-02	NA	--	8.6E-02
			TRICHLOROETHYLENE (TCE)	5.5E-07	3.9E-07	--	--	9.3E-07	Development, Immune, Vascular	2.2E-01	4.0E-01	--	6.2E-01
			Chemical Total	3.5E-05	2.3E-06			3.8E-05		2.0E+00	4.1E-01		2.4E+00
		Exposure Point Total						3.8E-05					2.4E+00
	Exposure Medium Total							3.8E-05					2.4E+00
Medium Total								3.8E-05					2.4E+00
							Receptor Risk Total	1.0E-04				Receptor HI Total	1.6E+01

TABLE 9.18a-CTE Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Blood HI Across All Media =	1.5.E+00
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	9.6.E-01
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	6.2.E-01
Total GI Tract HI Across All Media =	5.6.E-01
Total Immune HI Across All Media =	1.1.E+01
Total Kidney HI Across All Media =	9.5.E-02
Total Liver HI Across All Media =	1.3.E-01
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	5.7.E-04
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.7.E-01
Total Thyroid HI Across All Media =	1.9.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	4.0.E-02

TABLE 9.18b-RME Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	7.7E-03	9.0E-04	NA	8.6E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	4.4E-01	NA	NA	4.4E-01
			ARSENIC	5.0E-06	1.4E-08	1.1E-06	--	6.1E-06	Skin, Vascular	3.9E-02	7.7E-04	8.3E-03	4.8E-02
			CADMIUM	NA	9.8E-10	NA	--	9.8E-10	Kidney	3.3E-03	1.9E-04	5.5E-04	4.0E-03
			CHROMIUM, HEXAVALENT	9.1E-08	9.0E-09	NA	--	1.0E-07	None	2.1E-04	3.7E-06	NA	2.2E-04
			COBALT	NA	1.3E-08	NA	--	1.3E-08	Thyroid	2.9E-02	8.6E-04	NA	3.0E-02
			COPPER	NA	NA	NA	--	NA	GI Tract	1.1E-01	NA	NA	1.1E-01
			IRON	NA	NA	NA	--	NA	GI Tract	5.8E-02	NA	NA	5.8E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	3.5E-02	9.8E-03	NA	4.5E-02
			MERCURY	NA	NA	NA	--	NA	CNS	5.0E-03	3.8E-02	NA	4.3E-02
			VANADIUM	NA	NA	NA	--	NA	NA	4.5E-03	1.3E-04	NA	4.6E-03
			ZINC	NA	NA	NA	--	NA	Blood	4.4E-03	NA	NA	4.4E-03
			BENZO(A)ANTHRACENE	1.3E-06	3.7E-08	7.4E-07	--	2.1E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.2E-05	1.1E-09	6.6E-06	--	1.9E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.6E-06	1.4E-10	8.8E-07	--	2.5E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	5.2E-08	4.6E-11	2.8E-08	--	8.0E-08	NA	NA	NA	NA	NA
			CHRYSENE	1.3E-08	1.2E-11	7.2E-09	--	2.0E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.1E-06	2.1E-10	1.2E-06	--	3.3E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	6.6E-07	5.9E-11	3.6E-07	--	1.0E-06	NA	NA	NA	NA	NA
			PCB-1242	7.4E-07	2.9E-07	4.4E-07	--	1.5E-06	Immune	6.5E-02	NA	3.8E-02	1.0E-01
			PCB-1248	3.1E-05	1.1E-05	1.8E-05	--	6.0E-05	Immune	2.7E+00	NA	1.6E+00	4.3E+00
			PCB-1254	7.5E-06	2.0E-06	4.4E-06	--	1.4E-05	Immune	6.5E-01	NA	3.9E-01	1.0E+00
			PCB-1260	3.0E-06	5.3E-07	1.8E-06	--	5.3E-06	Immune	2.6E-01	NA	1.6E-01	4.2E-01
			BETA BHC	2.3E-07	3.9E-11	9.5E-08	--	3.2E-07	NA	NA	NA	NA	NA
			DIELDRIN	2.9E-07	5.0E-11	1.2E-07	--	4.2E-07	Liver	1.3E-03	NA	5.4E-04	1.8E-03
			HEPTACHLOR	7.3E-07	3.5E-07	NA	--	1.1E-06	Liver	1.1E-03	NA	NA	1.1E-03
			HEPTACHLOR EPOXIDE	1.34E-06	3.64E-07	NA	--	1.7E-06	Liver	4.0E-02	NA	NA	4.0E-02
			Chemical Total	6.8E-05	1.5E-05	3.6E-05		1.2E-04		4.5E+00	5.1E-02	2.2E+00	6.7E+00
		Exposure Point Total						1.2E-04					6.7E+00

TABLE 9.18b-RME Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
	Exposure Medium Total							1.2E-04					6.7E+00
Medium Total								1.2E-04					6.7E+00
Groundwater	Tapwater	United Paperboard	ANTIMONY	NA	--	--	--	NA	Blood	3.9E-01	--	--	3.9E-01
			ARSENIC	4.3E-05	--	--	--	4.3E-05	Skin, Vascular	3.3E-01	--	--	3.3E-01
			COBALT	NA	--	--	--	NA	Thyroid	1.4E-01	--	--	1.4E-01
			IRON	NA	--	--	--	NA	GI Tract	1.6E-01	--	--	1.6E-01
			MANGANESE	NA	--	--	--	NA	CNS	1.0E+00	--	--	1.0E+00
			SELENIUM	NA	--	--	--	NA	Whole body	5.1E-02	--	--	5.1E-02
			BENZO(A)ANTHRACENE	1.3E-06	1.8E-06	--	--	3.1E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	9.4E-06	NA	--	--	9.4E-06	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	1.7E-06	NA	--	--	1.7E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	1.9E-05	NA	--	--	1.9E-05	NA	NA	NA	--	NA
			INDENO(1,2,3-C,D)PYRENE	1.7E-06	NA	--	--	1.7E-06	NA	NA	NA	--	NA
			DIELDRIN	1.3E-06	NA	--	--	1.3E-06	Liver	5.5E-03	NA	--	5.5E-03
			CHLOROFORM	8.8E-07	6.2E-06	--	--	7.1E-06	Liver	9.9E-03	9.7E-03	--	2.0E-02
			CIS-1,2-DICHLOROETHYLENE	NA	NA	--	--	NA	Kidney	1.1E-01	NA	--	1.1E-01
			TRICHLOROETHYLENE (TCE)	1.9E-06	1.6E-06	--	--	3.5E-06	Development, Immune, Vascular	2.8E-01	6.8E-01	--	9.6E-01
			Chemical Total	8.0E-05	9.6E-06			9.0E-05		2.5E+00	6.9E-01		3.2E+00
		Exposure Point Total						9.0E-05					3.2E+00
	Exposure Medium Total							9.0E-05					3.2E+00
Medium Total								9.0E-05					3.2E+00
							Receptor Risk Total	2.1E-04				Receptor HI Total	9.9E+00

Total Blood HI Across All Media =	8.3.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	1.1.E+00
Total Development HI Across All Media =	0.0.E+00
Total Development, Immune & Vascular HI Across All Media =	9.6.E-01
Total GI Tract HI Across All Media =	3.2.E-01

TABLE 9.18b-RME Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Immune HI Across All Media =	5.8.E+00
Total Kidney HI Across All Media =	1.1.E-01
Total Liver HI Across All Media =	6.8.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	2.2.E-04
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	3.8.E-01
Total Thyroid HI Across All Media =	1.7.E-01
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	5.1.E-02

TABLE 9.18b-CTE Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ALUMINUM	NA	NA	NA	--	NA	CNS	1.9E-03	4.5E-04	NA	2.4E-03
			ANTIMONY	NA	NA	NA	--	NA	Blood	1.1E-01	NA	NA	1.1E-01
			ARSENIC	3.8E-07	2.1E-09	2.3E-08	--	4.0E-07	Skin, Vascular	9.8E-03	3.8E-04	5.9E-04	1.1E-02
			CADMIUM	NA	1.5E-10	NA	--	1.5E-10	Kidney	8.1E-04	9.6E-05	3.9E-05	9.5E-04
			CHROMIUM, HEXAVALENT	6.8E-09	1.3E-09	NA	--	8.2E-09	None	5.3E-05	1.9E-06	NA	5.5E-05
			COBALT	NA	2.0E-09	NA	--	2.0E-09	Thyroid	7.3E-03	4.3E-04	NA	7.7E-03
			COPPER	NA	NA	NA	--	NA	GI Tract	2.7E-02	NA	NA	2.7E-02
			IRON	NA	NA	NA	--	NA	GI Tract	1.4E-02	NA	NA	1.4E-02
			MANGANESE	NA	NA	NA	--	NA	CNS	8.7E-03	4.9E-03	NA	1.4E-02
			MERCURY	NA	NA	NA	--	NA	CNS	1.2E-03	1.9E-02	NA	2.0E-02
			VANADIUM	NA	NA	NA	--	NA	NA	1.1E-03	6.6E-05	NA	1.2E-03
			ZINC	NA	NA	NA	--	NA	Blood	1.1E-03	NA	NA	1.1E-03
			BENZO(A)ANTHRACENE	1.0E-07	5.5E-09	1.6E-08	--	1.2E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	9.0E-07	1.6E-10	1.4E-07	--	1.0E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.2E-07	2.1E-11	1.9E-08	--	1.4E-07	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	3.9E-09	6.9E-12	6.1E-10	--	4.5E-09	NA	NA	NA	NA	NA
			CHRYSENE	9.8E-10	1.7E-12	1.5E-10	--	1.1E-09	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.6E-07	3.1E-11	2.5E-08	--	1.8E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	5.0E-08	8.8E-12	7.8E-09	--	5.7E-08	NA	NA	NA	NA	NA
			PCB-1242	5.5E-08	4.3E-08	9.4E-09	--	1.1E-07	Immune	1.6E-02	NA	2.7E-03	1.9E-02
			PCB-1248	2.3E-06	1.7E-06	3.9E-07	--	4.4E-06	Immune	6.7E-01	NA	1.1E-01	7.9E-01
			PCB-1254	5.6E-07	3.0E-07	9.4E-08	--	9.6E-07	Immune	1.6E-01	NA	2.8E-02	1.9E-01
			PCB-1260	2.3E-07	7.9E-08	3.8E-08	--	3.4E-07	Immune	6.6E-02	NA	1.1E-02	7.7E-02
			BETA BHC	1.7E-08	5.8E-12	2.0E-09	--	1.9E-08	NA	NA	NA	NA	NA
			DIELDRIN	2.2E-08	7.5E-12	2.7E-09	--	2.5E-08	Liver	3.2E-04	NA	3.9E-05	3.6E-04
			HEPTACHLOR	5.5E-08	5.3E-08	NA	--	1.1E-07	Liver	2.8E-04	NA	NA	2.8E-04
			HEPTACHLOR EPOXIDE	1.0E-07	5.5E-08	NA	--	1.6E-07	Liver	9.9E-03	NA	NA	9.9E-03

TABLE 9.18b-CTE Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Chemical Total	5.1E-06	2.2E-06	7.7E-07		8.1E-06		1.1E+00	2.6E-02	1.6E-01	1.3E+00
		Exposure Point Total						8.1E-06					1.3E+00
	Exposure Medium Total							8.1E-06					1.3E+00
Medium Total								8.1E-06					1.3E+00
Groundwater	Tapwater	United Paperboard	ANTIMONY	NA	--	--	--	NA	Blood	1.9E-01	--	--	1.9E-01
			ARSENIC	8.4E-06	--	--	--	8.4E-06	Skin, Vascular	1.6E-01	--	--	1.6E-01
			COBALT	NA	--	--	--	NA	Thyroid	7.1E-02	--	--	7.1E-02
			IRON	NA	--	--	--	NA	GI Tract	7.9E-02	--	--	7.9E-02
			MANGANESE	NA	--	--	--	NA	CNS	5.1E-01	--	--	5.1E-01
			SELENIUM	NA	--	--	--	NA	Whole body	2.5E-02	--	--	2.5E-02
			BENZO(A)ANTHRACENE	2.5E-07	6.4E-07	--	--	8.9E-07	NA	NA	NA	--	NA
			BENZO(A)PYRENE	1.8E-06	NA	--	--	1.8E-06	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	3.3E-07	NA	--	--	3.3E-07	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	3.8E-06	NA	--	--	3.8E-06	NA	NA	NA	--	NA
			INDENO(1,2,3-C,D)PYRENE	3.3E-07	NA	--	--	3.3E-07	NA	NA	NA	--	NA
			DIELDRIN	2.5E-07	NA	--	--	2.5E-07	Liver	2.7E-03	NA	--	2.7E-03
			CHLOROFORM	1.7E-07	2.2E-06	--	--	2.4E-06	Liver	4.9E-03	8.6E-03	--	1.3E-02
			CIS-1,2-DICHLOROETHYLENE	NA	NA	--	--	NA	Kidney	5.4E-02	NA	--	5.4E-02
			TRICHLOROETHYLENE (TCE)	3.7E-07	5.7E-07	--	--	9.3E-07	Development, Immune, Vascular	1.4E-01	6.0E-01	--	7.4E-01
			Chemical Total	1.6E-05	3.4E-06			1.9E-05		1.2E+00	6.1E-01		1.9E+00
		Exposure Point Total						1.9E-05					1.9E+00
	Exposure Medium Total							1.9E-05					1.9E+00
Medium Total								1.9E-05					1.9E+00
							Receptor Risk Total	2.7E-05				Receptor HI Total	3.1E+00

Total Blood HI Across All Media =	3.0.E-01
Total Body Weight HI Across All Media =	0.0.E+00
Total CNS HI Across All Media =	5.4.E-01
Total Development HI Across All Media =	0.0.E+00

TABLE 9.18b-CTE Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total

Total Development, Immune & Vascular HI Across All Media =	7.4.E-01
Total GI Tract HI Across All Media =	1.2.E-01
Total Immune HI Across All Media =	1.1.E+00
Total Kidney HI Across All Media =	5.5.E-02
Total Liver HI Across All Media =	2.7.E-02
Total Lung HI Across All Media =	0.0.E+00
Total No Critical Effect Risk HI Across All Media =	5.5.E-05
Total Reproductive HI Across All Media =	0.0.E+00
Total Respiratory HI Across All Media =	0.0.E+00
Total Skin HI Across All Media =	0.0.E+00
Total Skin & Vascular HI Across All Media =	1.7.E-01
Total Thyroid HI Across All Media =	7.8.E-02
Total Vascular HI Across All Media =	0.0.E+00
Total Whole Body HI Across All Media =	2.5.E-02

TABLE 10.1a-RME Recreational User (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.
Table not required.

TABLE 10.1a-CTE Recreational User (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Young Child

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.
Table not required.

TABLE 10.1b-RME Recreational User (Adolescent)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.
Table not required.

TABLE 10.1b-CTE Recreational User (Adolescent)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adolescent

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.
Table not required.

TABLE 10.1c-RME Recreational User (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.
Table not required.

TABLE 10.1c-CTE Recreational User (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Recreational User
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.
Table not required.

TABLE 10.2a -RME Angler (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs for soil/sediment.													
Fish Tissue	Fish Fillet	Creek Channel	MERCURY	NA	--	--	--	NA	CNS	2.6.E+00	--	--	2.6
			PCB-1254	2.9.E-05	--	--	--	2.9.E-05	Immune	8.6.E+00	--	--	8.6
			PCB-1260	8.4.E-06	--	--	--	8.4.E-06	Immune	2.5.E+00	--	--	2.5
			Chemical Total	3.8.E-05				3.8.E-05		1.4.E+01			14
		Exposure Point Total						3.8.E-05					14
	Exposure Medium Total							3.8.E-05					14
Medium Total								3.8.E-05					14
The total cancer risk for young child and adult exceeds $1x10^{-4}$; therefore, the risk values are presented in this Table.													
							Receptor Risk Total	3.8.E-05				Receptor HI Total	14

Total CNS HI Across All Media = 2.6

Total Immune HI Across All Media = 11

TABLE 10.2a -CTE Angler (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs for soil/sediment.													
Fish Tissue	Fish Fillet	Creek Channel	MERCURY	NA	--	--	--	NA	CNS	3.2.E-01	--	--	0.3
			PCB-1254	1.7.E-06	--	--	--	1.7.E-06	Immune	7.3.E-01	--	--	0.7
			PCB-1260	4.8.E-07	--	--	--	4.8.E-07	Immune	2.1.E-01	--	--	0.2
			Chemical Total	4.8.E-07				4.8.E-07		2.1.E-01			0.2
		Exposure Point Total						4.8.E-07					0.2
	Exposure Medium Total							4.8.E-07					0.2
Medium Total								4.8.E-07					0.2
The total cancer risk for young child and adult exceeds $1x10^{-4}$; therefore, the risk values are presented in this Table.													
							Receptor Risk Total	4.8.E-07				Receptor HI Total	0.2

Total CNS HI Across All Media =	0.3
Total Immune HI Across All Media =	0.9

TABLE 10.2b -RME Angler (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs for soil/sediment.													
Fish Tissue	Fish Fillet	Creek Channel	MERCURY	NA	--	--	--	NA	CNS	1.7.E+00	--	--	1.7
			PCB-1254	3.7.E-05	--	--	--	3.7.E-05	Immune	5.4.E+00	--	--	5.4
			PCB-1260	1.1.E-05	--	--	--	1.1.E-05	Immune	1.6.E+00	--	--	1.6
			Chemical Total	4.8.E-05				4.8.E-05		8.6.E+00			8.6
		Exposure Point Total						4.8.E-05					8.6
	Exposure Medium Total							4.8.E-05					8.6
Medium Total								4.8.E-05					8.6
The total cancer risk for young child and adult exceeds $1x10^{-4}$; therefore, the risk values are presented in this Table.													
							Receptor Risk Total	4.8.E-05				Receptor HI Total	8.6

Total CNS HI Across All Media =	1.7
Total Immune HI Across All Media =	7.0

TABLE 10.2b -CTE Angler (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs for soil/sediment.													
Fish Tissue	Fish Fillet	Creek Channel	MERCURY	NA	--	--	--	NA	CNS	2.1.E-01	--	--	0.2
			PCB-1254	1.1.E-06	--	--	--	1.1.E-06	Immune	4.8.E-01	--	--	0.5
			PCB-1260	3.2.E-07	--	--	--	3.2.E-07	Immune	1.4.E-01	--	--	0.1
			Chemical Total	1.4E-06				1.4E-06		8.3E-01			0.8
		Exposure Point Total						1.4E-06					0.8
	Exposure Medium Total							1.4E-06					0.8
Medium Total								1.4E-06					0.8
The total cancer risk for young child and adult exceeds $1x10^{-4}$; therefore, the risk values are presented in this Table.													
							Receptor Risk Total	1.4E-06				Receptor HI Total	0.8

Total CNS HI Across All Media =	0.2
Total Immune HI Across All Media =	0.6

TABLE 10.2c -RME Angler (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs for soil/sediment.													
Fish Tissue	Fish Fillet	Creek Channel	MERCURY	NA	--	--	--	NA	CNS	1.5.E+00	--	--	1.5
			PCB-1254	5.5.E-05	--	--	--	5.5.E-05	Immune	4.8.E+00	--	--	4.8
			PCB-1260	1.6.E-05	--	--	--	1.6.E-05	Immune	1.4.E+00	--	--	1.4
			Chemical Total	7.1.E-05				7.1.E-05		7.7.E+00			7.7
		Exposure Point Total						7.1.E-05					7.7
	Exposure Medium Total							7.1.E-05					7.7
Medium Total								7.1.E-05					7.7
The total cancer risk for young child and adult exceeds $1x10^{-4}$; therefore, the risk values are presented in this Table.													
							Receptor Risk Total	7.1.E-05				Receptor HI Total	7.7

Total CNS HI Across All Media =	1.5
Total Immune HI Across All Media =	6.2

TABLE 10.2c -CTE Angler (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Creek Channel
Receptor Population: Angler
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs for soil/sediment.													
Fish Tissue	Fish Fillet	Creek Channel	MERCURY	NA	--	--	--	NA	CNS	1.9.E-01	--	--	0.2
			PCB-1254	9.7.E-07	--	--	--	9.7.E-07	Immune	4.2.E-01	--	--	0.4
			PCB-1260	2.8.E-07	--	--	--	2.8.E-07	Immune	1.2.E-01	--	--	0.1
			Chemical Total	1.2E-06				1.2E-06		7.3E-01			0.7
		Exposure Point Total						1.2E-06					0.7
	Exposure Medium Total							1.2E-06					0.7
Medium Total								1.2E-06					0.7
The total cancer risk for young child and adult exceeds $1x10^{-4}$; therefore, the risk values are presented in this Table.													
							Receptor Risk Total	1.2E-06				Receptor HI Total	0.7

Total CNS HI Across All Media =	0.2
Total Immune HI Across All Media =	0.5

TABLE 10.3a-RME Visitor/Trespasser (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	BENZO(A)ANTHRACENE	2.6E-05	1.1E-08	8.1E-06	--	3.4E-05	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.0E-05	2.8E-11	6.2E-06	--	2.6E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	3.7E-05	5.1E-11	1.1E-05	--	4.8E-05	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	4.5E-06	6.3E-11	1.4E-06	--	5.9E-06	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	1.4E-05	2.2E-11	4.4E-06	--	1.9E-05	NA	NA	NA	NA	NA
			PCB-1242	5.0E-07	3.0E-09	1.7E-07	--	6.7E-07	Immune	1.5E-01	NA	4.9E-02	0.2
			PCB-1248	5.8E-06	3.3E-08	1.9E-06	--	7.8E-06	Immune	1.7E+00	NA	5.6E-01	2.3
			PCB-1254	1.7E-06	7.3E-09	5.7E-07	--	2.3E-06	Immune	5.0E-01	NA	1.7E-01	0.7
			PCB-1260	2.5E-08	6.7E-11	8.2E-09	--	3.3E-08	Immune	7.2E-03	NA	2.4E-03	0.0
			Chemical Total	1.1.E-04	5.5.E-08	3.4.E-05		1.4.E-04		2.4.E+00	0.0.E+00	7.8.E-01	3.1
		Exposure Point Total						1.4.E-04					3.1
	Exposure Medium Total							1.4.E-04					3.1
Medium Total								1.4.E-04					3.1
			Receptor Risk Total					1.4.E-04	Receptor HI Total				3.1

Total Immune HI Across All Media = 3.1

TABLE 10.3a-CTE Visitor/Trespasser (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	BENZO(A)ANTHRACENE	4.4E-06	1.9E-09	2.7E-06	--	7.1E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	3.4E-06	4.7E-12	2.1E-06	--	5.4E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	6.1E-06	8.5E-12	3.8E-06	--	9.9E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	7.6E-07	1.0E-11	4.7E-07	--	1.2E-06	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	2.4E-06	3.6E-12	1.5E-06	--	3.9E-06	NA	NA	NA	NA	NA
			PCB-1242	8.4E-08	5.1E-10	5.6E-08	--	1.4E-07	Immune	3.7E-02	NA	2.4E-02	0.1
			PCB-1248	9.7E-07	5.5E-09	6.5E-07	--	1.6E-06	Immune	4.2E-01	NA	2.8E-01	0.7
			PCB-1254	2.9E-07	1.2E-09	1.9E-07	--	4.8E-07	Immune	1.3E-01	NA	8.4E-02	0.2
			PCB-1260	4.1E-09	1.1E-11	2.7E-09	--	6.8E-09	Immune	1.8E-03	NA	1.2E-03	0.0
			Chemical Total	1.8.E-05	9.2.E-09	1.1.E-05		3.0.E-05		5.9.E-01	0.0.E+00	3.9.E-01	1.0
		Exposure Point Total						3.0.E-05					1.0
	Exposure Medium Total							3.0.E-05					1.0
Medium Total								3.0.E-05					1.0
							Receptor Risk Total	3.0.E-05				Receptor HI Total	1.0

Total Immune HI Across All Media = 1.0

TABLE 10.3b-RME Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: Flintkote

Receptor Population: Visitor/Trespasser

Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	PCB-1242	3.2E-07	1.2E-08	4.5E-07	--	7.8E-07	Immune	4.6E-02	NA	6.6E-02	0.1
			PCB-1248	3.7E-06	1.3E-07	5.2E-06	--	9.0E-06	Immune	5.4E-01	NA	7.6E-01	1.3
			PCB-1254	1.1E-06	2.9E-08	1.6E-06	--	2.7E-06	Immune	1.6E-01	NA	2.3E-01	0.4
			PCB-1260	1.5E-08	2.7E-10	2.2E-08	--	3.8E-08	Immune	2.3E-03	NA	3.2E-03	0.0
			Chemical Total	5.1.E-06	1.7.E-07	7.3.E-06		1.3.E-05		7.4.E-01	0.0.E+00	1.1.E+00	1.8
		Exposure Point Total						1.3.E-05					1.8
	Exposure Medium Total							1.3.E-05					1.8
Medium Total								1.3.E-05					1.8
Receptor Risk Total								1.3.E-05	Receptor HI Total				1.8

Total Immune HI Across All Media = 1.8

TABLE 10.3b-CTE Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	PCB-1242	2.6E-08	1.0E-09	7.6E-08	--	1.0E-07	Immune	1.2E-02	NA	3.3E-02	0.0
			PCB-1248	3.1E-07	1.1E-08	8.7E-07	--	1.2E-06	Immune	1.3E-01	NA	3.8E-01	0.5
			PCB-1254	9.1E-08	2.4E-09	2.6E-07	--	3.5E-07	Immune	4.0E-02	NA	1.1E-01	0.2
			PCB-1260	1.3E-09	2.2E-11	3.7E-09	--	5.0E-09	Immune	5.6E-04	NA	1.6E-03	0.0
			Chemical Total	4.2.E-07	1.5.E-08	1.2.E-06		1.7.E-06		1.9.E-01	NA	5.3.E-01	0.7
		Exposure Point Total						1.7.E-06					0.7
	Exposure Medium Total							1.7.E-06					0.7
Medium Total								1.7.E-06					0.7
Receptor Risk Total								1.7.E-06	Receptor HI Total				0.7

Total Immune HI Across All Media = 0.7

TABLE 10.3c-RME Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: Flintkote

Receptor Population: Visitor/Trespasser

Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.3c-CTE Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: Flintkote

Receptor Population: Visitor/Trespasser

Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.4a-RME Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Flintkote
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	BENZO(A)ANTHRACENE	1.5E-05	1.4E-07	8.5E-06	--	2.4E-05	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.2E-05	3.5E-10	6.5E-06	--	1.8E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.2E-05	6.4E-10	1.2E-05	--	3.3E-05	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	8.4E-06	2.7E-10	4.6E-06	--	1.3E-05	NA	NA	NA	NA	NA
			PCB-1242	1.6E-06	2.0E-07	9.4E-07	--	2.7E-06	Immune	1.1E-01	NA	6.6E-02	0.2
			PCB-1248	1.8E-05	2.2E-06	1.1E-05	--	3.1E-05	Immune	1.3E+00	NA	7.6E-01	2.0
			PCB-1254	5.4E-06	4.9E-07	3.2E-06	--	9.1E-06	Immune	3.8E-01	NA	2.2E-01	0.6
			PCB-1260	7.7E-08	4.5E-09	4.6E-08	--	1.3E-07	Immune	5.4E-03	NA	3.2E-03	0.0
			Chemical Total	8.3.E-05	3.1.E-06	4.7.E-05		1.3.E-04		1.8.E+00	0.0.E+00	1.1.E+00	2.8
		Exposure Point Total						1.3.E-04					2.8
	Exposure Medium Total							1.3.E-04					2.8
Medium Total								1.3.E-04					2.8
							Receptor Risk Total	1.3.E-04				Receptor HI Total	2.8

Total Immune HI Across All Media = 2.8

TABLE 10.4a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: Flintkote

Receptor Population: Outdoor Worker

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Flintkote	BENZO(A)ANTHRACENE	1.2E-06	5.7E-09	1.4E-06	--	2.6E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	9.6E-07	1.4E-11	1.1E-06	--	2.0E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	1.7E-06	2.6E-11	1.9E-06	--	3.6E-06	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	6.8E-07	1.1E-11	7.4E-07	--	1.4E-06	NA	NA	NA	NA	NA
			PCB-1242	1.3E-07	8.2E-09	1.5E-07	--	2.9E-07	Immune	2.8E-02	NA	3.3E-02	0.1
			PCB-1248	1.5E-06	9.0E-08	1.7E-06	--	3.3E-06	Immune	3.2E-01	NA	3.8E-01	0.7
			PCB-1254	4.4E-07	2.0E-08	5.2E-07	--	9.7E-07	Immune	9.5E-02	NA	1.1E-01	0.2
			PCB-1260	6.2E-09	1.8E-10	7.3E-09	--	1.4E-08	Immune	1.4E-03	NA	1.6E-03	0.0
			Chemical Total	6.6.E-06	1.2.E-07	7.5.E-06		1.4.E-05		4.5.E-01	0.0.E+00	5.3.E-01	1.0
		Exposure Point Total						1.4.E-05					1.0
	Exposure Medium Total							1.4.E-05					1.0
Medium Total								1.4.E-05					1.0
							Receptor Risk Total	1.4.E-05				Receptor HI Total	1.0

Total Immune HI Across All Media = 1.0

TABLE 10.5a-RME Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: Flintkote

Receptor Population: Construction Worker

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	ANTIMONY	NA	NA	NA	--	NA	Blood	2.3E+00	NA	NA	2.3
			COPPER	NA	NA	NA	--	NA	GI Tract	7.6E-01	NA	NA	0.8
			IRON	NA	NA	NA	--	NA	GI Tract	3.1E-01	NA	NA	0.3
			PCB-1242	2.5E-07	9.6E-09	4.4E-08	--	3.0E-07	Immune	4.3E-01	NA	7.7E-02	0.5
			PCB-1248	1.7E-06	6.4E-08	3.1E-07	--	2.1E-06	Immune	3.0E+00	NA	5.5E-01	3.6
			PCB-1254	7.9E-07	2.2E-08	1.4E-07	--	9.6E-07	Immune	1.4E+00	NA	2.5E-01	1.6
			PCB-1260	1.3E-08	2.2E-10	2.3E-09	--	1.5E-08	Immune	2.2E-02	NA	4.0E-03	0.0
			PCB-1262	2.8E-09	4.8E-14	5.0E-10	--	3.3E-09	Immune	4.9E-03	NA	8.8E-04	0.0
			Chemical Total	2.8.E-06	9.6.E-08	5.0.E-07		3.4.E-06		8.3.E+00	0.0.E+00	8.8.E-01	9.2
		Exposure Point Total						3.4.E-06					9.2
	Exposure Medium Total							3.4.E-06					9.2
Medium Total								3.4.E-06					9.2
			Receptor Risk Total					3.4.E-06	Receptor HI Total				9.2

Total Blood HI Across All Media =	2.3
Total GI Tract HI Across All Media =	1.1
Total Immune HI Across All Media =	5.8

TABLE 10.5a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: Flintkote

Receptor Population: Construction Worker

Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Flintkote	ANTIMONY	NA	NA	NA	--	NA	Blood	5.6E-01	NA	NA	0.6
			COPPER	NA	NA	NA	--	NA	GI Tract	1.8E-01	NA	NA	0.2
			IRON	NA	NA	NA	--	NA	GI Tract	7.5E-02	NA	NA	0.1
			PCB-1242	5.9E-08	2.3E-09	1.1E-08	--	7.2E-08	Immune	1.0E-01	NA	1.9E-02	0.1
			PCB-1248	4.2E-07	1.5E-08	7.5E-08	--	5.1E-07	Immune	7.3E-01	NA	1.3E-01	0.9
			PCB-1254	1.9E-07	5.2E-09	3.4E-08	--	2.3E-07	Immune	3.3E-01	NA	6.0E-02	0.4
			PCB-1260	3.1E-09	5.4E-11	5.5E-10	--	3.7E-09	Immune	5.4E-03	NA	9.6E-04	0.0
			PCB-1262	6.7E-10	1.1E-14	1.2E-10	--	7.9E-10	Immune	1.2E-03	NA	2.1E-04	0.0
			Chemical Total	6.7.E-07	2.3.E-08	1.2.E-07		8.1.E-07		2.0.E+00	0.0.E+00	2.1.E-01	2.2
		Exposure Point Total						8.1.E-07					2.2
	Exposure Medium Total							8.1.E-07					2.2
Medium Total								8.1.E-07					2.2
							Receptor Risk Total	8.1.E-07				Receptor HI Total	2.2

Total Blood HI Across All Media =	0.6
Total GI Tract HI Across All Media =	0.3
Total Immune HI Across All Media =	1.4

TABLE 10.6a-RME Recreational User (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	PCB-1248	1.1E-05	6.2E-08	3.6E-06	--	1.4E-05	Immune	3.2E+00	NA	1.0E+00	4.2
			PCB-1254	7.4E-06	3.1E-08	2.5E-06	--	9.9E-06	Immune	2.2E+00	NA	7.2E-01	2.9
			PCB-1260	4.1E-08	1.1E-10	1.4E-08	--	5.5E-08	Immune	1.2E-02	NA	4.0E-03	0.0
			Chemical Total	1.8E-05	9.3E-08	6.1E-06		2.4E-05		5.3E+00	0.0E+00	1.8E+00	7.1
		Exposure Point Total						2.4E-05					7.1
	Exposure Medium Total							2.4E-05					7.1
Medium Total								2.4E-05					7.1
							Receptor Risk Total	2.4E-05				Receptor HI Total	7.1

Total Immune HI Across All Media = 7.1

TABLE 10.6a-CTE Recreational User (Young Child)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	PCB-1248	3.6E-06	2.1E-08	1.2E-06	--	4.8E-06	Immune	1.6E+00	NA	5.2E-01	2.1
			PCB-1254	2.5E-06	1.0E-08	8.2E-07	--	3.3E-06	Immune	1.1E+00	NA	3.6E-01	1.4
			PCB-1260	1.4E-08	3.7E-11	4.5E-09	--	1.8E-08	Immune	6.0E-03	NA	2.0E-03	0.0
			Chemical Total	6.1E-06	3.1E-08	2.0E-06		8.1E-06		2.7E+00	0.0E+00	8.8E-01	3.5
		Exposure Point Total						8.1E-06					3.5
	Exposure Medium Total							8.1E-06					3.5
Medium Total								8.1E-06					3.5
							Receptor Risk Total	8.1E-06				Receptor HI Total	3.5

Total Immune HI Across All Media = 3.5

TABLE 10.6b-RME Recreational User (Adolescent)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	PCB-1248	5.1E-06	1.9E-07	7.3E-06	--	1.3E-05	Immune	7.4E-01	NA	1.1E+00	1.8
			PCB-1254	3.5E-06	9.4E-08	5.0E-06	--	8.6E-06	Immune	5.1E-01	NA	7.3E-01	1.2
			PCB-1260	1.9E-08	3.4E-10	2.8E-08	--	4.7E-08	Immune	2.8E-03	NA	4.0E-03	0.0
			Chemical Total	8.6E-06	2.8E-07	1.2E-05		2.1E-05		1.3E+00	0.0E+00	1.8E+00	3.1
		Exposure Point Total						2.1E-05					3.1
	Exposure Medium Total							2.1E-05					3.1
Medium Total								2.1E-05					3.1
							Receptor Risk Total	2.1E-05				Receptor HI Total	3.1

Total Immune HI Across All Media = 3.1

TABLE 10.6b-CTE Recreational User (Adolescent)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	PCB-1248	8.5E-07	3.1E-08	1.2E-06	--	2.1E-06	Immune	3.7E-01	NA	5.3E-01	0.9
			PCB-1254	5.8E-07	1.6E-08	8.3E-07	--	1.4E-06	Immune	2.5E-01	NA	3.6E-01	0.6
			PCB-1260	3.2E-09	5.6E-11	4.6E-09	--	7.9E-09	Immune	1.4E-03	NA	2.0E-03	0.0
			Chemical Total	1.4.E-06	4.7.E-08	2.1.E-06		3.5.E-06		6.3.E-01	0.0.E+00	9.0.E-01	1.5
		Exposure Point Total						3.5.E-06					1.5
	Exposure Medium Total							3.5.E-06					1.5
Medium Total								3.5.E-06					1.5
							Receptor Risk Total	3.5.E-06				Receptor HI Total	1.5

Total Immune HI Across All Media = 1.5

TABLE 10.6c-RME Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: Upson Park

Receptor Population: Recreational User

Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.6c-CTE Recreational User (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Recreational User
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.7a-RME Outdoor Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	PCB-1248	1.7E-05	2.1E-06	1.0E-05	--	2.9E-05	Immune	1.2E+00	NA	7.0E-01	1.9
			PCB-1254	1.2E-05	1.0E-06	6.9E-06	--	2.0E-05	Immune	8.1E-01	NA	4.8E-01	1.3
			PCB-1260	6.4E-08	3.7E-09	3.8E-08	--	1.1E-07	Immune	4.5E-03	NA	2.7E-03	0.0
			Chemical Total	2.9E-05	3.1E-06	1.7E-05		4.9E-05		2.0E+00	0.0E+00	1.2E+00	3.2
		Exposure Point Total						4.9E-05					3.2
	Exposure Medium Total							4.9E-05					3.2
Medium Total								4.9E-05					3.2
							Receptor Risk Total	4.9E-05				Receptor HI Total	3.2

Total Immune HI Across All Media = 3.2

TABLE 10.7a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	Upson Park	PCB-1248	1.4E-06	8.3E-08	1.6E-06	--	3.1E-06	Immune	1.2E+00	NA	3.5E-01	1.5
			PCB-1254	9.3E-07	4.2E-08	1.1E-06	--	2.1E-06	Immune	8.1E-01	NA	2.4E-01	1.1
			PCB-1260	5.2E-09	1.5E-10	6.1E-09	--	1.1E-08	Immune	4.5E-03	NA	1.3E-03	0.0
			Chemical Total	2.3E-06	1.3E-07	2.7E-06		5.1E-06		2.0E+00	0.0E+00	6.0E-01	2.6
		Exposure Point Total						5.1E-06					2.6
	Exposure Medium Total							5.1E-06					2.6
Medium Total								5.1E-06					2.6
							Receptor Risk Total	5.1E-06				Receptor HI Total	2.6

Total Immune HI Across All Media = 2.6

TABLE 10.8a-RME Construction Worker (Adult)
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Upson Park	PCB-1248	1.5E-06	5.6E-08	2.7E-07	--	1.8E-06	Immune	2.6E+00	NA	4.7E-01	3.1
			PCB-1254	1.0E-06	2.9E-08	1.9E-07	--	1.3E-06	Immune	1.8E+00	NA	3.3E-01	2.2
			PCB-1260	1.1E-06	1.9E-08	2.0E-07	--	1.3E-06	Immune	1.9E+00	NA	3.4E-01	2.2
			PCB-1268	1.9E-07	NA	3.5E-08		2.3E-07	Immune	3.4E-01	NA	6.0E-02	0.4
			Chemical Total	3.8E-06	1.0E-07	6.9E-07		4.6E-06		6.7E+00	0.0E+00	1.2E+00	7.9
		Exposure Point Total						4.6E-06					7.9
	Exposure Medium Total							4.6E-06					7.9
Medium Total								4.6E-06					7.9
							Receptor Risk Total	4.6E-06				Receptor HI Total	7.9

Total Immune HI Across All Media = 7.9

TABLE 10.8a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: Upson Park
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	Upson Park	PCB-1248	3.6E-07	1.3E-08	6.5E-08	--	4.4E-07	Immune	6.3E-01	NA	1.1E-01	0.7
			PCB-1254	2.5E-07	6.8E-09	4.5E-08	--	3.0E-07	Immune	4.4E-01	NA	7.9E-02	0.5
			PCB-1260	2.6E-07	4.6E-09	4.7E-08	--	3.1E-07	Immune	4.6E-01	NA	8.2E-02	0.5
			PCB-1268	4.6E-08	7.8E-13	8.3E-09		5.4E-08	Immune	8.1E-02	NA	1.5E-02	0.1
			Chemical Total	9.2E-07	2.5E-08	1.7E-07		1.1E-06		1.6E+00	0.0E+00	2.9E-01	1.9
		Exposure Point Total						1.1E-06					1.9
	Exposure Medium Total							1.1E-06					1.9
Medium Total								1.1E-06					1.9
							Receptor Risk Total	1.1E-06				Receptor HI Total	1.9

Total Immune HI Across All Media = 1.9

TABLE 10.9a-RME Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: White Transportation

Receptor Population: Visitor/Trespasser

Receptor Age: Young Child

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.9a-CTE Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.9b-RME Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: White Transportation

Receptor Population: Visitor/Trespasser

Receptor Age: Adolescent

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.9b-CTE Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.9c-RME Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: White Transportation

Receptor Population: Visitor/Trespasser

Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.9c-CTE Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.10a-RME Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Indoor Worker
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.10a-CTE Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: White Transportation

Receptor Population: Indoor Worker

Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.11a-RME Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.11a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Outdoor Worker
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.12a-RME Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future

Exposure Point: White Transportation

Receptor Population: Construction Worker

Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.12a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: White Transportation
Receptor Population: Construction Worker
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.13a-RME Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	MANGANESE	NA	NA	NA	--	NA	CNS	4.3E-01	1.1E-02	NA	0.4
			BENZO(A)ANTHRACENE	1.8E-06	4.6E-09	5.6E-07	--	2.4E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.5E-05	1.3E-10	4.8E-06	--	2.0E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.9E-06	2.4E-11	8.9E-07	--	3.8E-06	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	3.6E-06	3.2E-11	1.1E-06	--	4.7E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	9.1E-07	7.6E-12	2.8E-07	--	1.2E-06	NA	NA	NA	NA	NA
			Chemical Total	2.5E-05	4.8E-09	7.6E-06		3.2E-05		4.3E-01	1.1E-02	0.0E+00	0.4
		Exposure Point Total						3.2E-05					0.4
	Exposure Medium Total							3.2E-05					0.4
Medium Total								3.2E-05					0.4
Groundwater	Tapwater	White Transportation	MANGANESE	NA	--	--	--	NA	CNS	1.7E+00	--	--	1.7
			BENZO(A)ANTHRACENE	3.3E-06	1.7E-06	--	--	5.0E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	2.5E-05	NA	--	--	2.5E-05	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	4.5E-06	NA	--	--	4.5E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	5.2E-05	NA	--	--	5.2E-05	NA	NA	NA	--	NA
			INDENO(1,2,3-C,D)PYRENE	4.5E-06	NA	--	--	4.5E-06	NA	NA	NA	--	NA
			Chemical Total	8.9E-05	1.7E-06			9.1E-05		1.7E+00	0.0E+00		1.7
		Exposure Point Total						9.1E-05					1.7
	Exposure Medium Total							9.1E-05					1.7
Medium Total								9.1E-05					1.7
							Receptor Risk Total	1.2E-04				Receptor HI Total	2.1

Total CNS HI Across All Media = 2.1

TABLE 10.13a-CTE Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	MANGANESE	NA	NA	NA	--	NA	CNS	1.1E-01	5.7E-03	NA	0.1
			BENZO(A)ANTHRACENE	2.3E-07	1.2E-09	2.8E-08	--	2.5E-07	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	1.9E-06	3.2E-11	2.4E-07	--	2.2E-06	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	3.6E-07	6.0E-12	4.4E-08	--	4.1E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.5E-07	8.1E-12	5.5E-08	--	5.0E-07	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.1E-07	1.9E-12	1.4E-08	--	1.3E-07	NA	NA	NA	NA	NA
			Chemical Total	3.1E-06	1.2E-09	3.8E-07		3.5E-06		1.1E-01	5.7E-03	0.0E+00	0.1
		Exposure Point Total						3.5E-06					0.1
	Exposure Medium Total							3.5E-06					0.1
Medium Total								3.5E-06					0.1
Groundwater	Tapwater	White Transportation	MANGANESE	NA	--	--	--	NA	CNS	8.1E-01	--	--	0.8
			BENZO(A)ANTHRACENE	1.0E-06	1.1E-06	--	--	2.2E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	7.8E-06	NA	--	--	7.8E-06	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	1.4E-06	NA	--	--	1.4E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	1.6E-05	NA	--	--	1.6E-05	NA	NA	NA	--	NA
			INDENO(1,2,3-C,D)PYRENE	1.4E-06	NA	--	--	1.4E-06	NA	NA	NA	--	NA
			Chemical Total	2.8E-05	1.1E-06			2.9E-05		8.1E-01	0.0E+00		0.8
		Exposure Point Total						2.9E-05					0.8
	Exposure Medium Total							2.9E-05					0.8
Medium Total								2.9E-05					0.8
							Receptor Risk Total	3.2E-05				Receptor HI Total	0.9

Total CNS HI Across All Media = 0.9

TABLE 10.13b-RME Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	MANGANESE	NA	NA	NA	--	NA	CNS	4.1E-02	1.1E-02	NA	0.1
			Chemical Total	0.0E+00	0.0E+00	0.0E+00		0.0E+00		4.1E-02	1.1E-02	0.0E+00	0.1
		Exposure Point Total						0.0E+00					0.1
	Exposure Medium Total							0.0E+00					0.1
Medium Total								0.0E+00					0.1
Groundwater	Tapwater	White Transportation	MANGANESE	NA	--	--	--	NA	CNS	1.0E+00	--	--	1.0
			Chemical Total	0.0E+00	0.0E+00			0.0E+00		1.0E+00	0.0E+00		1.0
		Exposure Point Total						0.0E+00					1.0
	Exposure Medium Total							0.0E+00					1.0
Medium Total								0.0E+00					1.0
							Receptor Risk Total	0.0E+00				Receptor HI Total	1.1

Total CNS HI Across All Media = 1.1

TABLE 10.13b-CTE Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: White Transportation
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	White Transportation	MANGANESE	NA	NA	NA	--	NA	CNS	1.0E-02	5.7E-03	NA	0.0
			Chemical Total	0.0E+00	0.0E+00	0.0E+00		0.0E+00		1.0E-02	5.7E-03	0.0E+00	0.0
		Exposure Point Total						0.0E+00					0.0
	Exposure Medium Total							0.0E+00					0.0
Medium Total								0.0E+00					0.0
Groundwater	Tapwater	White Transportation	MANGANESE	NA	--	--	--	NA	CNS	5.1E-01	--	--	0.5
			Chemical Total	0.0E+00	0.0E+00			0.0E+00		5.1E-01	0.0E+00		0.5
		Exposure Point Total						0.0E+00					0.5
	Exposure Medium Total							0.0E+00					0.5
Medium Total								0.0E+00					0.5
							Receptor Risk Total	0.0E+00				Receptor HI Total	0.5

Total CNS HI Across All Media = 0.5

TABLE 10.14a-RME Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	PCB-1242	2.9E-07	1.8E-09	9.7E-08	--	3.9E-07	Immune	8.5E-02	NA	2.8E-02	0.1
			PCB-1248	2.3E-06	1.3E-08	7.6E-07	--	3.1E-06	Immune	6.7E-01	NA	2.2E-01	0.9
			PCB-1254	2.9E-06	1.2E-08	9.5E-07	--	3.8E-06	Immune	8.3E-01	NA	2.8E-01	1.1
			PCB-1260	4.6E-08	1.3E-10	1.5E-08	--	6.2E-08	Immune	1.4E-02	NA	4.5E-03	0.0
			Chemical Total	5.5E-06	2.7E-08	1.8E-06		7.3E-06		1.6E+00	0.0E+00	5.3E-01	2.1
		Exposure Point Total						7.3E-06					2.1
	Exposure Medium Total							7.3E-06					2.1
Medium Total								7.3E-06					2.1
			Receptor Risk Total					7.3E-06	Receptor HI Total				2.1

Total Immune HI Across All Media = 2.1

TABLE 10.14a-CTE Visitor/Trespasser (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	PCB-1242	4.9E-08	2.9E-10	3.2E-08	--	8.1E-08	Immune	2.1E-02	NA	1.4E-02	0.0
			PCB-1248	3.8E-07	2.2E-09	2.5E-07	--	6.4E-07	Immune	1.7E-01	NA	1.1E-01	0.3
			PCB-1254	4.8E-07	2.0E-09	3.2E-07	--	7.9E-07	Immune	2.1E-01	NA	1.4E-01	0.3
			PCB-1260	7.7E-09	2.1E-11	5.1E-09	--	1.3E-08	Immune	3.4E-03	NA	2.2E-03	0.0
			Chemical Total	9.15E-07	4.52E-09	6.08E-07		1.5E-06		4.00E-01	0.00E+00	2.66E-01	0.7
		Exposure Point Total						1.5E-06					0.7
	Exposure Medium Total							1.5E-06					0.7
Medium Total								1.53E-06					0.7
			Receptor Risk Total					1.53E-06	Receptor HI Total				0.7

Total Immune HI Across All Media = 0.7

TABLE 10.14b-RME Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	PCB-1242	1.8E-07	7.0E-09	2.6E-07	--	4.5E-07	Immune	2.7E-02	NA	3.8E-02	0.1
			PCB-1248	1.4E-06	5.2E-08	2.1E-06	--	3.6E-06	Immune	2.1E-01	NA	3.0E-01	0.5
			PCB-1254	1.8E-06	4.8E-08	2.6E-06	--	4.4E-06	Immune	2.6E-01	NA	3.7E-01	0.6
			PCB-1260	2.9E-08	5.0E-10	4.2E-08	--	7.1E-08	Immune	4.3E-03	NA	6.1E-03	0.0
			Chemical Total	3.46E-06	1.08E-07	4.94E-06		8.5E-06		5.04E-01	0.00E+00	7.20E-01	1.2
		Exposure Point Total						8.5E-06					1.2
	Exposure Medium Total							8.5E-06					1.2
Medium Total								8.5E-06					1.2
			Receptor Risk Total					8.5E-06	Receptor HI Total				1.2

Total Immune HI Across All Media = 1.2

TABLE 10.14b-CTE Visitor/Trespasser (Adolescent)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	PCB-1242	1.5E-08	5.9E-10	4.4E-08	--	6.0E-08	Immune	6.7E-03	NA	1.9E-02	0.0
			PCB-1248	1.2E-07	4.4E-09	3.4E-07	--	4.7E-07	Immune	5.3E-02	NA	1.5E-01	0.2
			PCB-1254	1.5E-07	4.0E-09	4.3E-07	--	5.8E-07	Immune	6.6E-02	NA	1.9E-01	0.3
			PCB-1260	2.4E-09	4.2E-11	6.9E-09	--	9.4E-09	Immune	1.1E-03	NA	3.0E-03	0.0
			Chemical Total	2.9E-07	9.0E-09	8.2E-07		1.1E-06		1.3E-01	0.0E+00	3.6E-01	0.5
		Exposure Point Total						1.1E-06					0.5
	Exposure Medium Total							1.1E-06					0.5
Medium Total								1.1E-06					0.5
			Receptor Risk Total					1.1E-06	Receptor HI Total				0.5

Total Immune HI Across All Media = 0.5

TABLE 10.14c-RME Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.14c-CTE Visitor/Trespasser (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Visitor/Trespasser
Receptor Age: Adult

The cancer risk is less than 10^{-4} and the non-cancer risk is less than 1 for all COPCs.

Table not required.

TABLE 10.15a-RME Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	PCB-1242	5.1E-07	1.3E-07	6.0E-07	--	1.2E-06	Immune	3.6E-02	NA	4.2E-02	0.1
			PCB-1248	4.0E-06	9.8E-07	4.7E-06	--	9.7E-06	Immune	2.8E-01	NA	3.3E-01	0.6
			PCB-1254	5.0E-06	9.0E-07	5.9E-06	--	1.2E-05	Immune	3.5E-01	NA	4.1E-01	0.8
			PCB-1260	8.1E-08	9.4E-09	9.6E-08	--	1.9E-07	Immune	5.7E-03	NA	6.7E-03	0.0
			Chemical Total	9.6E-06	2.0E-06	1.1E-05		2.3E-05		6.7E-01	0.0E+00	7.9E-01	1.5
		Exposure Point Total						2.3E-05					1.5
	Exposure Medium Total							2.3E-05					1.5
Medium Total								2.3E-05					1.5
			Receptor Risk Total					2.3E-05	Receptor HI Total				1.5

Total Immune HI Across All Media = 1.5

TABLE 10.15a-CTE Indoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Indoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	PCB-1242	4.6E-08	2.4E-08	1.1E-07	--	1.8E-07	Immune	8.9E-03	NA	2.1E-02	0.0
			PCB-1248	3.6E-07	1.8E-07	8.5E-07	--	1.4E-06	Immune	7.0E-02	NA	1.7E-01	0.2
			PCB-1254	4.5E-07	1.6E-07	1.1E-06	--	1.7E-06	Immune	8.7E-02	NA	2.1E-01	0.3
			PCB-1260	7.3E-09	1.7E-09	1.7E-08	--	2.6E-08	Immune	1.4E-03	NA	3.3E-03	0.0
			Chemical Total	8.6E-07	3.6E-07	2.0E-06		3.3E-06		1.7E-01	0.0E+00	4.0E-01	0.6
		Exposure Point Total						3.3E-06					0.6
	Exposure Medium Total							3.3E-06					0.6
Medium Total								3.3E-06					0.6
			Receptor Risk Total					3.3E-06	Receptor HI Total				0.6

Total Immune HI Across All Media = 0.6

TABLE 10.16a-RME Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	PCB-1242	9.2E-07	1.2E-07	5.4E-07	--	1.6E-06	Immune	6.4E-02	NA	3.8E-02	0.1
			PCB-1248	7.2E-06	8.8E-07	4.3E-06	--	1.2E-05	Immune	5.0E-01	NA	3.0E-01	0.8
			PCB-1254	9.0E-06	8.1E-07	5.3E-06	--	1.5E-05	Immune	6.3E-01	NA	3.7E-01	1.0
			PCB-1260	1.5E-07	8.5E-09	8.6E-08	--	2.4E-07	Immune	1.0E-02	NA	6.0E-03	0.0
			Chemical Total	1.7E-05	1.8E-06	1.0E-05		2.9E-05		1.2E+00	0.0E+00	7.1E-01	1.9
		Exposure Point Total						2.9E-05					1.9
	Exposure Medium Total							2.9E-05					1.9
Medium Total								2.9E-05					1.9
			Receptor Risk Total					2.9E-05	Receptor HI Total				1.9

Total Immune HI Across All Media = 1.9

TABLE 10.16a-CTE Outdoor Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Outdoor Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 2 Feet)	Surface Soil & Sediment (0 to 2 Feet)	United Paperboard	PCB-1242	7.4E-08	4.7E-09	8.7E-08	--	1.7E-07	Immune	1.6E-02	NA	1.9E-02	0.0
			PCB-1248	5.8E-07	3.5E-08	6.9E-07	--	1.3E-06	Immune	1.3E-01	NA	1.5E-01	0.3
			PCB-1254	7.2E-07	3.3E-08	8.5E-07	--	1.6E-06	Immune	1.6E-01	NA	1.9E-01	0.3
			PCB-1260	1.2E-08	3.4E-10	1.4E-08	--	2.6E-08	Immune	2.6E-03	NA	3.0E-03	0.0
			Chemical Total	1.4E-06	7.3E-08	1.6E-06		3.1E-06		3.0E-01	0.0E+00	3.6E-01	0.7
		Exposure Point Total						3.1E-06					0.7
	Exposure Medium Total							3.1E-06					0.7
Medium Total								3.1E-06					0.7
			Receptor Risk Total					3.1E-06	Receptor HI Total				0.7

Total Immune HI Across All Media = 0.7

TABLE 10.17a-RME Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ANTIMONY	NA	NA	NA	--	NA	Blood	1.0E+00	NA	NA	1.0
			PCB-1242	8.7E-08	3.4E-09	1.6E-08	--	1.1E-07	Immune	1.5E-01	NA	2.7E-02	0.2
			PCB-1248	3.6E-06	1.3E-07	6.5E-07	--	4.4E-06	Immune	6.4E+00	NA	1.1E+00	7.5
			PCB-1254	8.8E-07	2.4E-08	1.6E-07	--	1.1E-06	Immune	1.5E+00	NA	2.8E-01	1.8
			PCB-1260	3.6E-07	6.3E-09	6.4E-08	--	4.3E-07	Immune	6.2E-01	NA	1.1E-01	0.7
			Chemical Total	5.0E-06	1.7E-07	8.9E-07		6.0E-06		9.7E+00	0.0E+00	1.6E+00	11
		Exposure Point Total						6.0E-06					11
	Exposure Medium Total							6.0E-06					11
Medium Total								6.0E-06					11
			Receptor Risk Total					6.0E-06		Receptor HI Total			11

Total Blood HI Across All Media =	1.0
Total Immune HI Across All Media =	10

TABLE 10.17a-CTE Construction Worker (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Current/Future
Exposure Point: United Paperboard
Receptor Population: Construction Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ANTIMONY	NA	NA	NA	--	NA	Blood	2.5E-01	NA	NA	0.2
			PCB-1242	2.1E-08	8.2E-10	3.8E-09	--	2.5E-08	Immune	3.7E-02	NA	6.6E-03	0.0
			PCB-1248	8.7E-07	3.2E-08	1.6E-07	--	1.1E-06	Immune	1.5E+00	NA	2.7E-01	1.8
			PCB-1254	2.1E-07	5.8E-09	3.8E-08	--	2.5E-07	Immune	3.7E-01	NA	6.6E-02	0.4
			PCB-1260	8.5E-08	1.5E-09	1.5E-08	--	1.0E-07	Immune	1.5E-01	NA	2.7E-02	0.2
			Chemical Total	1.2E-06	4.0E-08	2.1E-07		1.4E-06		2.3E+00	0.0E+00	3.7E-01	2.7
		Exposure Point Total						1.4E-06					2.7
	Exposure Medium Total							1.4E-06					2.7
Medium Total								1.4E-06					2.7
			Receptor Risk Total					1.4E-06	Receptor HI Total				2.7

Total Blood HI Across All Media =	0.2
Total Immune HI Across All Media =	2.5

TABLE 10.18a-RME Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future

Exposure Point: United Paperboard

Receptor Population: Resident

Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ANTIMONY	NA	NA	NA	--	NA	Blood	4.7E+00	NA	NA	4.7
			ARSENIC	1.6E-05	4.2E-09	1.9E-06	--	1.8E-05	Skin, Vascular	4.2E-01	7.7E-04	5.0E-02	0.5
			COPPER	NA	NA	NA	--	NA	GI Tract	1.1E+00	NA	NA	1.1
			MANGANESE	NA	NA	NA	--	NA	CNS	3.7E-01	9.8E-03	NA	0.4
			BENZO(A)ANTHRACENE	2.3E-05	5.9E-08	7.1E-06	--	3.0E-05	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.1E-04	1.7E-09	6.3E-05	--	2.7E-04	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	2.7E-05	2.3E-10	8.5E-06	--	3.6E-05	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	8.8E-07	7.3E-11	2.7E-07	--	1.2E-06	NA	NA	NA	NA	NA
			CHRYSENE	2.2E-07	1.9E-11	6.9E-08	--	2.9E-07	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	3.6E-05	3.3E-10	1.1E-05	--	4.8E-05	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.1E-05	9.4E-11	3.5E-06	--	1.5E-05	NA	NA	NA	NA	NA
			PCB-1242	2.4E-06	8.6E-08	7.8E-07	--	3.2E-06	Immune	6.9E-01	NA	2.3E-01	0.9
			PCB-1248	9.9E-05	3.4E-06	3.3E-05	--	1.3E-04	Immune	2.9E+01	NA	9.6E+00	38
			PCB-1254	2.4E-05	6.1E-07	7.9E-06	--	3.2E-05	Immune	7.0E+00	NA	2.3E+00	9.3
			PCB-1260	9.7E-06	1.6E-07	3.2E-06	--	1.3E-05	Immune	2.8E+00	NA	9.4E-01	3.8
			Chemical Total	4.5E-04	4.3E-06	1.4E-04		6.0E-04		4.6E+01	1.1E-02	1.3E+01	59
		Exposure Point Total						6.0E-04					59
	Exposure Medium Total							6.0E-04					59
Medium Total								6.0E-04					59

TABLE 10.18a-RME Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Tapwater	United Paperboard	ANTIMONY	NA	--	--	--	NA	Blood	6.5E-01	--	--	0.6
			ARSENIC	2.1E-05	--	--	--	2.1E-05	Skin, Vascular	5.5E-01	--	--	0.6
			MANGANESE	NA	--	--	--	NA	CNS	1.7E+00	--	--	1.7
			BENZO(A)ANTHRACENE	3.3E-06	1.7E-06	--	--	5.0E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	2.5E-05	NA	--	--	2.5E-05	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	4.5E-06	NA	--	--	4.5E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	5.2E-05	NA	--	--	5.2E-05	NA	NA	NA	--	NA
			INDENO(1,2,3-C,D)PYRENE	4.5E-06	NA	--	--	4.5E-06	NA	NA	NA	--	NA
			Chemical Total	1.1E-04	1.7E-06			1.1E-04		2.9E+00	0.0E+00		2.9
		Exposure Point Total						1.1E-04					2.9
	Exposure Medium Total							1.1E-04					2.9
Medium Total								1.1E-04					2.9
							Receptor Risk Total	7.1E-04				Receptor HI Total	62

Total Blood HI Across All Media =	5.3
Total CNS HI Across All Media =	2.1
Total GI Tract HI Across All Media =	1.1
Total Immune HI Across All Media =	52
Total Skin & Vascular HI Across All Media =	1.0

TABLE 10.18a-CTE Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	ANTIMONY	NA	NA	NA	--	NA	Blood	1.2E+00	NA	NA	1.2
			ARSENIC	2.0E-06	1.1E-09	9.6E-08	--	2.1E-06	Skin, Vascular	1.0E-01	3.8E-04	5.0E-03	0.1
			COPPER	NA	NA	NA	--	NA	GI Tract	2.8E-01	NA	NA	0.3
			MANGANESE	NA	NA	NA	--	NA	CNS	9.3E-02	4.9E-03	NA	0.1
			BENZO(A)ANTHRACENE	2.9E-06	1.5E-08	3.5E-07	--	3.2E-06	NA	NA	NA	NA	NA
			BENZO(A)PYRENE	2.6E-05	4.3E-10	3.2E-06	--	2.9E-05	NA	NA	NA	NA	NA
			BENZO(B)FLUORANTHENE	3.4E-06	5.7E-11	4.2E-07	--	3.9E-06	NA	NA	NA	NA	NA
			BENZO(K)FLUORANTHENE	1.1E-07	1.8E-11	1.4E-08	--	1.2E-07	NA	NA	NA	NA	NA
			CHRYSENE	2.8E-08	4.7E-12	3.5E-09	--	3.1E-08	NA	NA	NA	NA	NA
			DIBENZ(A,H)ANTHRACENE	4.5E-06	8.2E-11	5.6E-07	--	5.1E-06	NA	NA	NA	NA	NA
			INDENO(1,2,3-C,D)PYRENE	1.4E-06	2.3E-11	1.7E-07	--	1.6E-06	NA	NA	NA	NA	NA
			PCB-1242	3.0E-07	2.1E-08	3.9E-08	--	3.6E-07	Immune	1.7E-01	NA	2.3E-02	0.2
			PCB-1248	1.2E-05	8.4E-07	1.6E-06	--	1.5E-05	Immune	7.2E+00	NA	9.6E-01	8.1
			PCB-1254	3.0E-06	1.5E-07	4.0E-07	--	3.5E-06	Immune	1.7E+00	NA	2.3E-01	2.0
			PCB-1260	1.2E-06	3.9E-08	1.6E-07	--	1.4E-06	Immune	7.0E-01	NA	9.4E-02	0.8
			Chemical Total	5.7E-05	1.1E-06	7.0E-06		6.5E-05		1.1E+01	5.3E-03	1.3E+00	13
		Exposure Point Total						6.5E-05					13
	Exposure Medium Total							6.5E-05					13
Medium Total								6.5E-05					13

TABLE 10.18a-CTE Resident (Young Child)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Young Child

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Groundwater	Tapwater	United Paperboard	ANTIMONY	NA	--	--	--	NA	Blood	3.0E-01	--	--	0.3
			ARSENIC	6.7E-06	--	--	--	6.7E-06	Skin, Vascular	2.6E-01	--	--	0.3
			MANGANESE	NA	--	--	--	NA	CNS	8.1E-01	--	--	0.8
			BENZO(A)ANTHRACENE	1.0E-06	1.1E-06	--	--	2.2E-06	NA	NA	NA	--	NA
			BENZO(A)PYRENE	7.8E-06	NA	--	--	7.8E-06	NA	NA	NA	--	NA
			BENZO(B)FLUORANTHENE	1.4E-06	NA	--	--	1.4E-06	NA	NA	NA	--	NA
			DIBENZ(A,H)ANTHRACENE	1.6E-05	NA	--	--	1.6E-05	NA	NA	NA	--	NA
			INDENO(1,2,3-C,D)PYRENE	1.4E-06	NA	--	--	1.4E-06	NA	NA	NA	--	NA
			Chemical Total	3.4E-05	1.1E-06			3.6E-05		1.4E+00	0.0E+00		1.4
		Exposure Point Total						3.6E-05					1.4
	Exposure Medium Total							3.6E-05					1.4
Medium Total								3.6E-05					1.4
							Receptor Risk Total	1.0E-04				Receptor HI Total	14

Total Blood HI Across All Media =	1.5
Total CNS HI Across All Media =	0.9
Total GI Tract HI Across All Media =	0.3
Total Immune HI Across All Media =	11
Total Skin & Vascular HI Across All Media =	0.4

TABLE 10.18b-RME Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

REASONABLE MAXIMUM EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	MANGANESE	NA	NA	NA	--	NA	CNS	3.5E-02	9.8E-03	NA	0.04
			PCB-1242	7.4E-07	2.9E-07	4.4E-07	--	1.5E-06	Immune	6.5E-02	NA	3.8E-02	0.1
			PCB-1248	3.1E-05	1.1E-05	1.8E-05	--	6.0E-05	Immune	2.7E+00	NA	1.6E+00	4.3
			PCB-1254	7.5E-06	2.0E-06	4.4E-06	--	1.4E-05	Immune	6.5E-01	NA	3.9E-01	1.0
			PCB-1260	3.0E-06	5.3E-07	1.8E-06	--	5.3E-06	Immune	2.6E-01	NA	1.6E-01	0.4
			Chemical Total	4.2E-05	1.4E-05	2.5E-05		8.1E-05		3.7E+00	9.8E-03	2.2E+00	5.9
		Exposure Point Total						8.1E-05					5.9
	Exposure Medium Total							8.1E-05					5.9
Medium Total								8.1E-05					5.9
Groundwater	Tapwater	United Paperboard	MANGANESE	NA	--	--	--	NA	CNS	1.0E+00	--	--	1.04
			Chemical Total	0.0E+00	0.0E+00			0.0E+00		1.0E+00	0.0E+00		1.0
		Exposure Point Total						0.0E+00					1.0
	Exposure Medium Total							0.0E+00					1.0
Medium Total								0.0E+00					1.0
Receptor Risk Total								8.1E-05	Receptor HI Total				6.9

Total CNS HI Across All Media =	1.1
Total Immune HI Across All Media =	5.8

TABLE 10.18b-CTE Resident (Adult)

SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs

CENTRAL TENDENCY EXPOSURE

Eighteenmile Creek Superfund Site OU2, Niagara County, New York

Scenario Timeframe: Future
Exposure Point: United Paperboard
Receptor Population: Resident
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Inhalation	Dermal	Exposure Routes Total
Surface Soil & Sediment (0 to 10 Feet)	Surface Soil & Sediment (0 to 10 Feet)	United Paperboard	MANGANESE	NA	NA	NA	--	NA	CNS	8.7E-03	4.9E-03	NA	0.01
			PCB-1242	5.5E-08	4.3E-08	9.4E-09	--	1.1E-07	Immune	1.6E-02	NA	2.7E-03	0.02
			PCB-1248	2.3E-06	1.7E-06	3.9E-07	--	4.4E-06	Immune	6.7E-01	NA	1.1E-01	0.8
			PCB-1254	5.6E-07	3.0E-07	9.4E-08	--	9.6E-07	Immune	1.6E-01	NA	2.8E-02	0.2
			PCB-1260	2.3E-07	7.9E-08	3.8E-08	--	3.4E-07	Immune	6.6E-02	NA	1.1E-02	0.1
			Chemical Total	3.2E-06	2.1E-06	5.3E-07		5.8E-06		9.3E-01	4.9E-03	1.6E-01	1.1
		Exposure Point Total						5.8E-06					1.1
	Exposure Medium Total							5.8E-06					1.1
Medium Total								5.8E-06					1.1
Groundwater	Tapwater	United Paperboard	MANGANESE	NA	--	--	--	NA	CNS	5.1E-01	--	--	0.5
			Chemical Total	0.0E+00	0.0E+00			0.0E+00		5.1E-01	0.0E+00		0.5
		Exposure Point Total						0.0E+00					0.5
	Exposure Medium Total							0.0E+00					0.5
Medium Total								0.0E+00					0.5
Receptor Risk Total								5.8E-06	Receptor HI Total				1.6

Total CNS HI Across All Media = 0.5

Total Immune HI Across All Media = 1.1