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EPA Task Order Project Officer: David Newton

**SUPPLEMENTAL HUMAN HEALTH
RISK ASSESSMENT
UNNAMED ISLAND**

**PETERSON PURITAN SUPERFUND SITE
OPERABLE UNIT 2
Cumberland and Lincoln, Rhode Island**

July 2010

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TABLE OF CONTENTS

1.0	Introduction	1
2.0	Data Evaluation	2
2.1	Analytical Data	2
2.2	Chemicals of Potential Concern	2
2.2.1	Soil	3
2.2.2	Shallow Groundwater	3
2.2.3	Leachate	3
2.2.4	Sediment	4
2.2.5	Surface Water	4
2.2.6	Outdoor Air (Trench Scenario)	4
2.3	Exposure Point Concentrations	4
3.0	Exposure Assessment	5
3.1	Land Use	5
3.2	Exposure Pathways	6
3.2.1	Surface and Subsurface Soil	6
3.2.2	Sediment	6
3.2.2.1	Surface Water	7
3.2.2.2	Shallow Groundwater	7
3.2.2.3	Leachate	7
3.2.2.4	Outdoor Air (Trench)	7
3.2.3	Exposure Factors	8
3.2.3.1	Reasonable Maximum Exposure	8
3.2.3.2	Central Tendency Exposure	10
3.2.3.3	Outdoor Air (Trench) Modeling	12
3.2.4	Intakes	12
3.3	Toxicity Assessment	13
3.4	Risk Characterization	14
3.4.1	Non-Carcinogenic Health Hazards	14
3.4.1.1	Current Adolescent Trespasser	15
3.4.1.2	Future Recreational User	15
3.4.1.3	Future Construction Worker	15
3.4.1.4	Lead Evaluation	15
3.4.2	Carcinogenic Risk	15
3.4.2.1	Current Adolescent Trespasser	17
3.4.2.2	Future Recreational User	17
3.4.2.3	Future Construction Worker	17
3.4.3	Summary	17
3.5	Uncertainty Analysis	18
3.5.1	Exposure Factors	18
3.5.2	Implementation of Supplemental Cancer Guidance	19
3.5.3	Data Usability	19
3.6	Summary and Conclusions	20
4.0	References	21

RAGS Part D Tables

1	Selection for Exposure Pathways
2	Occurrence, Distribution and Selection of Chemicals of Potential Environmental Concern
3	Exposure Point Concentration Summary
4	Values Used for Daily Intake Calculations
5.1	Non-Cancer Toxicity Data – Oral/Dermal
5.2	Non-Cancer Toxicity Data -- Inhalation
6.1	Cancer Toxicity Data – Oral/Dermal
6.2	Cancer Toxicity Data -- Inhalation
7	Calculation of Chemical Cancer Risks and Non-Cancer Risks
9	Summary of Receptor Risks and Hazards for COPCs

Figures

1	Soil Sampling Locations

Appendices

A	Sample Groupings Used to Develop Exposure Point Concentrations
B	Johnson & Ettinger Advanced Soil and Groundwater Models – Outdoor (Trench) Air
C	ProUCL Outputs
D	Lead Evaluation
E	Dermal Calculations
F	Early Life Exposure Calculations

**Supplemental Human Health Risk Assessment
Unnamed Island
Peterson Puritan Site – Operable Unit 2
Cumberland and Lincoln, Rhode Island
July 2010**

1.0 Introduction

This supplemental human health risk assessment (HHRA) evaluates potential human health risks associated with the Unnamed Island portion of the Peterson Puritan Operable Unit 2 (OU2) Superfund Site located in Cumberland and Lincoln, Rhode Island (the site). A baseline HHRA was completed as part of the Remedial Investigation (RI) for OU2 (Arcadis, 2007) for the other subareas of the site including the J.M. Mills Landfill area, debris fields (upstream of the J.M. Mills Landfill), Quinnville Wellfield, Wetlands A, B, C, and D, and the Nunes Parcel in April 2009 (USEPA, 2009c). Since the presumptive remedy approach was initially considered appropriate for the Unnamed Island, soil data were not collected to characterize the impacts of the buried waste on soil quality and to evaluate the risks associated with future soil exposure pathways. However, complications associated with application of the presumptive remedy to areas of buried and surficial waste on the Unnamed Island were recognized. The complications, both technical and regulatory, arose primarily from the island's location within the floodway of the Blackstone River, which results in its complete inundation during flood events. Therefore, since the presumptive remedy may not be applicable, supplemental sampling was performed for the Unnamed Island in order to determine the need to perform remedial actions at this subarea.

This supplemental HHRA is based on the results of the RI completed at the site (Arcadis, 2007) as well as the supplemental sampling conducted by Arcadis US, Inc. at the Unnamed Island in November 2009. The goal of this supplemental HHRA is to evaluate potential human health risks posed by site-related contaminants in surface soil, subsurface soil, leachate, sediment, surface water, and shallow groundwater located on the Unnamed Island and to support any remedial action decision needed to address those risks. Table 1 presents the media and exposure pathways evaluated in this supplemental HHRA for the Unnamed Island.

This supplemental HHRA has been conducted in accordance with the United States Environmental Protection Agency (USEPA) guidance (USEPA, 1989; 1991; 1997a; and 2001), and involves the following four steps: 1) data evaluation, to identify site-related chemicals of interest; 2) exposure assessment, to determine potential exposure pathways and quantify the magnitude of potential exposure; 3) toxicity assessment, to determine types of effects associated with exposures; and 4) risk characterization, to quantify cancer risks and non-cancer health hazards associated with specific exposures at the Unnamed Island. This HHRA is presented in the format outlined in the USEPA guidance entitled *Risk Assessment Guidance for Superfund Volume I – Human Health Evaluation Manual, Part D, Standardized Planning, Reporting, and Review of Superfund Risk Assessments* (USEPA, 2001).

The supplemental HHRA evaluation steps are discussed in Sections 2 through 4. An uncertainty analysis is presented in Section 5. Summary and conclusions of this supplemental HHRA are presented in Section 6. Finally, Section 7 lists the references cited in this supplemental HHRA.

2.0 Data Evaluation

This section briefly describes the datasets used to derive exposure point concentrations (EPCs) and how chemicals of potential concern (COPCs) were identified.

2.1 Analytical Data

The analytical data evaluated in this supplemental HHRA were those collected during the RI on the Unnamed Island as well as the supplemental data collected by Arcadis US, Inc. between November 18, 2009 and November 25, 2009. Only validated data provided by Arcadis US, Inc. were used in this supplemental HHRA. Results without data qualifiers, plus those values with J, JEB, JTB, EB, and TB qualifiers, were treated as detected concentrations at the reported/estimated concentrations. Values qualified with U and UJ were treated as non-detects. Values with R qualifiers, indicating the result was rejected during data validation, were not used in the supplemental HHRA.

Thirty-seven surface soil samples (plus three duplicates) and twenty-two subsurface soil samples (plus two duplicates) were collected from the Unnamed Island between 2003 and 2009. All twenty-two subsurface soil samples were collected during the 2009 supplemental data collection activities while eight of the thirty-seven surface soil samples were collected in 2009. Eighteen sediment samples (plus one duplicate) and fifteen surface water samples (plus two duplicates) were collected between 2003 and 2005 as part of the RI investigation. Groundwater data were collected from the Unnamed Island as part of the RI investigation and 2009 supplemental data collection activities. Figure 1 shows the location of the site features of interest and the 2009 sampling locations. Figures 2-1 through 2-7 of the RI Report (Arcadis, 2007) show the sampling locations from 2003 through 2005. The specific environmental samples used are listed in Appendix A (Sample Groupings) by medium.

Background surface water and sediment data, collected from upstream areas of the Blackstone River, were not used to eliminate COPCs in the screening process, but are presented in the RAGS D Table 2 series for completeness.

2.2 Chemicals of Potential Concern

The COPC screening conducted as part of this supplemental HHRA used USEPA-recommended screening criteria, which were compared to maximum detected concentrations in site media. The screening criteria used to identify COPCs for environmental media (i.e., surface soil, subsurface soil, sediment, shallow groundwater, leachate, surface water, and outdoor air [trench scenario]) are listed below. Details on COPC screening methodology are briefly discussed in the following subsections.

- Surface and Subsurface Soil – USEPA (2009a) Screening Levels for residential soil
- Groundwater – USEPA (2009a) Screening Levels for tap water
- Leachate – USEPA (2009a) Screening Levels for tap water
- Sediment – USEPA (2009a) Screening Levels for residential soil

- Surface Water – USEPA (2009a) Screening Levels for tap water
- Outdoor Air (Trench Scenario) – USEPA (2009a) Screening Levels for residential air

2.2.1 Soil

Prior to selecting COPCs, soil data were divided into surface (0 to 1 foot below ground surface [bgs]) and subsurface (greater than 1 foot bgs) data sets. (It should be noted that the Rhode Island Department of Environmental Management's [RIDEM's] definitions of surface soil [0 to 2 feet bgs] and subsurface soil [greater than 2 feet bgs] differ from USEPA Region 1's definitions of surface soil [0 to 1 foot bgs] and subsurface soil [from 1 foot bgs to up to 10 feet bgs or the water table]. The impact of these differences in regulatory definitions of soil intervals on site cleanup decisions will be addressed in the Feasibility Study.)

Duplicate soil samples were averaged with their parent sample prior to risk evaluation. However, duplicate samples were treated as discrete samples in the COPC screening process. Soil COPCs for direct contact exposures (i.e., incidental ingestion and dermal contact) were identified by comparing maximum detected soil concentrations to the USEPA (2009a) Screening Levels for residential soil. Screening levels for non-carcinogens were adjusted to reflect a target hazard quotient (HQ) of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact soil pathway. Surface soil COPCs for this pathway are presented in Table 2.1. Subsurface soil COPCs for the direct contact soil pathway are presented in Table 2.2.

2.2.2 Shallow Groundwater

Shallow groundwater COPCs for direct contact worker exposures (i.e., ingestion and dermal contact) were identified by comparing maximum detected groundwater concentrations to the USEPA (2009a) Screening Levels for tap water. Groundwater samples were treated as discrete samples. Screening levels for non-carcinogens were adjusted to reflect a target HQ of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact groundwater pathway. Shallow groundwater COPCs for this pathway are presented in Table 2.3.

2.2.3 Leachate

Because no leachate samples have been collected at the site, analytical data from unfiltered grab water samples collected at the bottom of an open excavation were used in the leachate COPC selection process. To identify leachate COPCs for direct contact exposure (i.e., dermal contact), maximum detected concentrations from the grab water samples were compared to the USEPA (2009a) Screening Levels for tap water. Screening levels for non-carcinogens were adjusted to reflect a target HQ of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact leachate pathway. Leachate COPCs for this pathway are presented in Table 2.4. Once COPCs were selected using the grab water sampling data, surrogate groundwater sampling data were used to quantitatively evaluate the leachate pathway for the Unnamed Island. Due to the high turbidity in the grab water samples, shallow groundwater data are likely to be more representative of contaminant concentrations that may be present in leachate. The surrogate groundwater samples used to evaluate the leachate pathway are presented in Appendix A (Sample Groupings). Groundwater samples were treated as discrete samples.

2.2.4 Sediment

Sediment COPCs for direct contact exposures (i.e., incidental ingestion and dermal contact) were identified by comparing maximum detected sediment concentrations in site ponds to the USEPA (2009a) Screening Levels for residential soil. Data for duplicate sediment samples were averaged with their parent sample prior to risk evaluation. However, duplicate samples were treated as discrete samples in the COPC screening process. Screening levels for non-carcinogens were adjusted to reflect a target HQ of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact sediment pathway. Sediment COPCs for this pathway are presented in Table 2.5.

2.2.5 Surface Water

Surface water COPCs for dermal contact were identified by comparing maximum detected surface water concentrations in site ponds to the USEPA (2009a) Screening Levels for tap water. Screening levels for non-carcinogens were adjusted to reflect a target HQ of 0.1. Those chemicals that exceeded these screening levels were selected as COPCs for the direct contact surface water pathway. Duplicate surface water sample data were averaged with their parent sample prior to risk evaluation. However, duplicate samples were treated as discrete samples in the COPC screening process. Both dissolved and total metals surface water data were used in the COPC screening process, but consistent with the USEPA (1989) guidance, only total metals surface water data were used to evaluate the surface water pathway (i.e., dissolved metals data were not used in the quantification of potential risks and hazards). Surface water COPCs for this pathway are presented in Table 2.6.

2.2.6 Outdoor Air (Trench Scenario)

To evaluate potential outdoor air exposures for intrusive (construction) workers under a trenching scenario, groundwater and soils data from the Unnamed Island were used to estimate potential trench air concentrations resulting from vapor intrusion. Surface and subsurface soil and groundwater data were used in the Johnson & Ettinger (USEPA, 2004b) model to estimate potential trench concentrations. These modeled concentrations were subsequently compared to the USEPA (2009a) Screening Levels for residential air to identify COPCs for this pathway. Specifically, maximum detected concentrations in soil and groundwater were used in the Johnson & Ettinger slab-on-grade model to estimate possible indoor air concentrations (Cbuilding). The Cbuilding concentrations were subsequently compared to the USEPA (2009a) Screening Levels for residential air to identify COPCs for trench air. Outdoor (trench) air COPCs are presented in Tables 2.7 and 2.8 for soil and groundwater contributions, respectively. Outputs from the Johnson & Ettinger advanced soil (SL-ADV) and groundwater (GW-ADV) models for outdoor (trench) air are presented as Appendix B. To model trench air (Cbuilding) using the Johnson & Ettinger model, default parameters were used, except for the following assumptions: groundwater was assumed to be 5 feet bgs, the trench was assumed to measure 3 feet wide by 8 feet long by 8 feet high, the soil type was assumed to be sandy, and the air exchange rate (2 per hour) represents that for a trench scenario derived from the Virginia Department of Environmental Quality (VDEQ) (2007).

2.3 Exposure Point Concentrations

EPCs (e.g., 95 percent Upper Confidence Levels [UCLs]) were derived from existing site data using the USEPA ProUCL Software (Version 4.00.04). ProUCL statistical software was used to calculate the UCL of

the unknown population arithmetic mean (USEPA, 2006). The rationale for calculating the UCL term followed the procedures outlined in the ProUCL's User's Guide. Each data set was tested for normality using the Shapiro-Wilk W Test statistic with accompanying Quantile-Quantile (Q-Q) plots. Each data set was also tested for the gamma distribution using the Anderson-Darling and Kolmogorov-Smirnov Empirical Distribution Functions test statistics with accompanying Q-Q plots.

Based on the distribution of the data set, a recommended UCL calculation procedure was followed. In instances where the recommended UCL exceeded the maximum detected concentration, a lower percentage UCL (not less than 95 percent) was used as the EPC consistent with USEPA (2007) guidance. The UCL computation for data sets without any non-detects follows the recommendations in the ProUCL (USEPA, 2006) User's Guide.

For data sets with non-detect observations occurring at multiple detection limits, the Kaplan Meier (KM) estimate method was used. The KM estimate method adjusts for censoring by calculating an estimate of standard error of the mean, which then can be used to calculate a UCL for various methods (e.g., normal approximations, percentile bootstrap, Chebyshev inequality) (USEPA, 2006).

For all media evaluated, the same EPCs were used for both the Reasonable Maximum Exposure (RME) and Central Tendency Exposure (CTE) scenarios with the following exceptions. If ProUCL recommended a UCL that exceeded the maximum detected concentration, a lower percentile UCL or the maximum detected concentration was selected as the EPC. Maximum detected concentrations were also used as EPCs when the sample size was less than 8. In instances where the maximum detected concentration was used as the EPC for the RME scenario, the arithmetic mean was then used as the EPC for the CTE scenario. If the arithmetic mean concentration exceeded the maximum detected concentration, the maximum detected concentration was also used as the EPC for the CTE scenario.

Media- and receptor-specific EPCs are presented in Tables 3.1 through 3.7. ProUCL outputs are provided as Appendix C. Sample groupings that were used to calculate EPCs are provided as Appendix A.

3.0 Exposure Assessment

The exposure assessment identifies potential pathways of human exposure to site-related contaminants and estimates the magnitude of that exposure.

3.1 Land Use

The Peterson Puritan Superfund site is located in the towns of Cumberland and Lincoln, Rhode Island, along the banks of the Blackstone River, beginning at approximately 1 mile below the Ashton Dam and ending at the Pratt Dam. OU2 includes the land formerly owned and operated as a landfill by Mr. Joseph Marzalkowski and his agent(s)/associate(s) for the purposes of waste transfer and disposal. The Unnamed Island, located within the river, is used recreationally. The *Ashton-Pratt Redevelopment Plan* indicates that redevelopment would consist of enhancing recreational uses of the area, maximizing river and canal access, improving transportation facilities and traffic, and overall improvement of aesthetics.

3.2 Exposure Pathways

The exposure pathways quantitatively evaluated in this supplemental HHRA are discussed below for each medium. Table 1 (Selection for Exposure Pathways) presents a summary of these exposure pathways. In addition to those exposure pathways identified in Table 1, the site also presents other physical hazards, such as metal debris, tires, and broken glass. Although these materials are not quantitatively evaluated in this HHRA, potential direct contact exposure of receptors to these materials may also be associated with some risks. These physical hazards will be further considered in the Feasibility Study.

3.2.1 Surface and Subsurface Soil

Surface soil represents a potentially complete exposure pathway for adolescent (ages 9 through 18) trespassers, recreational users (adults and older children 6 through 12 years of age), and construction workers. Subsurface soil exposures are potentially complete for recreational users and construction workers. Potential exposure routes that were quantitatively evaluated as part of the HHRA are incidental ingestion and dermal contact. Inhalation of fugitive dust is likely insignificant due to lack of intrusive activities and dust generation except for the construction worker (see Table 1).

Current scenarios that were quantitatively evaluated as part of this HHRA included:

- exposure of adolescent trespassers to surface soils

Future scenarios that were quantitatively evaluated as part of this HHRA included:

- exposure of recreational users (adults and older children) to surface and subsurface soils
- exposure of construction workers to surface and subsurface soils
- exposure of construction workers to fugitive dust released from surface and subsurface soils

3.2.2 Sediment

Sediment represents a potentially complete exposure pathway for adolescent (ages 9 through 18) trespassers and recreational users (adults and older children 6 through 12 years). Specifically, trespassers and recreational users may be exposed to sediments in Ponds A, D, E, and P and the Excavator Pond. Potential exposure routes quantitatively evaluated as part of this HHRA are incidental ingestion and dermal contact representative of a wading scenario.

Current scenarios quantitatively evaluated as part of this HHRA are:

- exposure of adolescent trespassers to sediments within Ponds A, D, E, and P and the Excavator Pond

Future scenarios quantitatively evaluated as part of this HHRA are:

- exposure of recreational users (adults and older children) to sediments within Ponds A, D, E, P and Excavator Pond

3.2.2.1 *Surface Water*

Surface water represents a potentially complete exposure pathway for adolescent (ages 9 through 18) trespassers and recreational users (adults and older children 6 through 12 years). Specifically, trespassers and recreational users may be exposed to surface water in Ponds A, D, E and P. No surface water samples are available for the Excavator Pond as it was found to be dry at the time of sampling. Potential exposure routes that were quantitatively evaluated as part of this HHRA are dermal contact for a wading scenario.

Current scenarios quantitatively evaluated as part of this HHRA are:

- exposure of adolescent trespassers to surface water in Ponds A, D, E and P

Future scenarios quantitatively evaluated as part of this HHRA are:

- exposure of recreational users (adults and older children) to surface water in Ponds A, D, E and P

3.2.2.2 *Shallow Groundwater*

Shallow groundwater represents a potentially complete future exposure pathway for construction workers. Construction workers may be exposed to shallow groundwater during intrusive activities. Potential exposure routes that were quantitatively evaluated for the construction worker are incidental ingestion and dermal contact.

3.2.2.3 *Leachate*

Leachate at the Unnamed Island was assumed to represent a potentially complete exposure pathway via dermal contact for adolescent (ages 9 through 18) trespassers, recreational users (adults and older children 6 through 12 years), and construction workers. Because true leachate data are not available for the Unnamed Island, shallow groundwater data collected on the Unnamed Island between 2003 and 2009 were used as a surrogate to evaluate this pathway. Exposure of trespassers to leachate was quantitatively evaluated under a current scenario, and exposure of recreational users (adults and older children) and construction workers was quantitatively evaluated under a future scenario.

3.2.2.4 *Outdoor Air (Trench)*

Outdoor air within an excavation trench represents a potentially complete future exposure pathway for the construction workers at the Unnamed Island. Specifically, receptors may be exposed to COPCs that volatilize from soils and/or groundwater to ambient air within an excavation trench. Potential outdoor (trench) air concentrations (C_{building}) were estimated using the Johnson & Ettinger model. These estimated air concentrations were used in the quantification of potential risks and hazards for the construction worker.

3.2.3 Exposure Factors

This HHRA used exposure factors that reflect conditions at the site consistent with current scientific and regulatory policy. While some exposure factors are USEPA default values, others are site-specific values that more accurately reflect exposures at the site. Both the RME and CTE scenarios were evaluated in this HHRA. The RME scenario is intended to represent the “highest exposure that is reasonably expected to occur at a site” (USEPA, 1989), and the CTE scenario is intended to represent more realistic exposures. The exposure factors used for the receptors/pathways identified previously are presented in the Table 4 series and are briefly discussed below for each medium (i.e., soil, shallow groundwater, sediment, surface water, leachate, and outdoor air).

3.2.3.1 Reasonable Maximum Exposure

3.2.3.1.1 Soil

The RME scenario used USEPA (2002) default values for soil ingestion (100 milligrams per day [mg/day] for the trespasser and recreational user, and 330 mg/day for the construction worker. The exposure frequencies used to quantitatively evaluate potential soil exposures for trespassers, recreational users, and construction workers were recommended by the USEPA. For the trespasser and recreational user, it was assumed that these receptors visit the site 104 days per year, which assumes 4 days per week for approximately 6 months. Construction workers were assumed to have more significant exposures to surface and subsurface soils, but for a shorter period of time. Given the types of intrusive activities that might occur at the Unnamed Island, it was assumed that a construction worker may be exposed to soils for 125 days per year for 1 year (assumes that construction activities would occur during a single construction season). For the fugitive dust pathway, construction worker exposures were estimated using a particulate emission factor of $1.36 \times 10^9 \text{ m}^3/\text{kg}$ (USEPA, 2002). Dust inhalation was assumed to occur 8 hours on each day of the construction activities (125 days per year for 1 year).

To evaluate dermal contact with soils for construction workers, the USEPA (2002 and 2004a) default value for skin surface area was used (3,300 square centimeters [cm^2]; assumes hands, arms, and head). The USEPA (2002 and 2004a) default exposure factor for skin surface area for adults, based on residential exposures to soil, is $5,700 \text{ cm}^2$, which represents head, forearms, hands, and lower legs; this value was used for the adult recreational user. The surface area for the adolescent trespasser ($\text{SA} = 5,900 \text{ cm}^2$) and older child recreational user ($\text{SA} = 4,400 \text{ cm}^2$) represents the head, forearms, hands, lower legs, and feet. The USEPA (2002 and 2004a) default exposure factor for dermal adherence was used to evaluate potential soil exposures for construction workers ($0.3 \text{ mg}/\text{cm}^2\text{-day}$). The dermal adherence factor for the construction worker is based on the 95th percentile for construction workers (USEPA, 2004a). The USEPA (2002 and 2004a) default exposure factors for dermal adherence for adults and children, based on residential exposures to soil, are $0.07 \text{ mg}/\text{cm}^2\text{-day}$ (based on the 50th percentile for gardeners) and $0.2 \text{ mg}/\text{cm}^2\text{-day}$ (based on the 50th percentile for children playing in wet soil), respectively; these values were used for the adolescent trespasser and adult recreational user ($0.07 \text{ mg}/\text{cm}^2\text{-day}$) and child recreational user ($0.2 \text{ mg}/\text{cm}^2\text{-day}$), respectively.

3.2.3.1.2 Groundwater

The exposure pathway evaluated included exposure of construction workers to shallow groundwater via incidental ingestion and dermal contact during intrusive activities. To evaluate dermal exposure of construction workers to shallow groundwater, a skin surface area of 2,100 cm² was used (assumes arms and hands). Similar to the evaluation of soil exposures, it was assumed that a construction worker may be exposed to shallow groundwater for 125 days per year for 1 year (assumes that construction activities would be of limited duration).

3.2.3.1.3 Sediment

The exposure pathways evaluated for sediment included current and future exposure of trespassers and recreational users to sediments within the ponds via incidental ingestion and dermal contact. The exposure parameters used for the trespasser and recreational user under a wading scenario were the same as those used to evaluate soil exposures, except for the exposure frequency, surface areas and dermal adherence factor. An exposure frequency of 52 days per year was used, which equals 2 days per week for approximately 6 months. Surface areas used for trespassers, older child recreational users, and adult recreational users were 7,600 cm², 4,170 cm², and 7,310 cm², respectively. A dermal adherence factor of 0.3 mg/cm²-day was used to evaluate sediment exposures; this value represents the 95th percentile for children playing in moist soil (USEPA, 2004a).

3.2.3.1.4 Surface Water

The exposure pathways evaluated for surface water included current and future exposure of trespassers and recreational users to surface water within the ponds via dermal contact under a wading scenario. The exposure parameters used to quantitatively evaluate dermal surface-water exposures for the trespasser and recreational user under a wading scenario were the same as those used to evaluate sediment exposures. The skin surface areas used for the trespasser and recreational user (SA = 7,600 and 7,310 cm², respectively) wading scenario assume hands, feet, forearms, and lower legs.

3.2.3.1.5 Leachate

The exposure pathways evaluated in this HHRA for leachate included current and future exposure of trespassers, recreational users, and construction workers to leachate at the Unnamed Island. This pathway was quantitatively evaluated using surrogate shallow groundwater data collected from the Unnamed Island. Receptors were assumed to be exposed via dermal contact, and the exposure parameters used in the quantification of potential risks/hazards for leachate for the trespasser and recreational user were the same as those used for surface water, except for the skin surface area. Skin surface areas for the trespasser, adult recreational user, and older child recreational user assumed lower legs, feet, and hands (SA = 3,700, 4,500, and 2,700 cm², respectively). Surface area for the construction worker assumed arms and hands (2,100 cm²). The RME exposure frequency was 52 days per year for the trespasser and recreational user. An exposure frequency of 125 days/year was used for the construction worker.

3.2.3.1.6 Outdoor Air (Trench)

To evaluate potential future exposure of construction workers to ambient air within an excavation trench at the Unnamed Island, trench concentrations (C_{building}) were estimated from soil and groundwater concentrations using the Johnson & Ettinger model. Construction workers were assumed to be exposed for 8 hours per day for 125 days per year, which was consistent with the exposure frequency used to evaluate potential soil exposures.

3.2.3.1.7 Fraction Ingested from the Site

It was assumed that site media (e.g., soil, sediment, and surface water) account for 100 percent of potential exposures. This value does not consider exposure of these receptors to other larger and potentially more attractive areas in the region.

3.2.3.2 Central Tendency Exposure

3.2.3.2.1 Soil

The CTE scenario used USEPA (2002) default values for soil ingestion (50 mg/day for the trespasser and recreational user, and 330 mg/day for the construction worker). The exposure frequencies used to quantitatively evaluate potential soil exposures for trespassers, recreational users, and construction workers were recommended by the USEPA. For the trespasser and recreational user, it was assumed that these receptors are visiting the site 52 days per year, which assumes 2 days per week for approximately 6 months. Construction workers were assumed to have more significant exposures to surface and subsurface soils, but for a shorter period of time. Given the types of intrusive activities that might occur at the Unnamed Island, it was assumed that a construction worker may be exposed to on-site soils for 62 days per year for 1 year (assumes that construction activities would occur during a single construction season). For the fugitive dust pathway, construction worker exposures were estimated using a particulate emission factor of 1.36×10^9 m³/kg (USEPA, 2002). Dust inhalation was assumed to occur 8 hours on each day of the construction activities (62 days per year for 1 year).

The exposure parameters (e.g., adherence factors, skin surface areas) used to evaluate dermal contact with on-site soils for trespassers, recreational users, and construction workers were the same as those used for the RME scenario.

3.2.3.2.2 Groundwater

The exposure pathway evaluated included exposure of construction workers to shallow groundwater via incidental ingestion and dermal contact during intrusive activities. To evaluate dermal exposure of construction workers to shallow groundwater, a skin surface area value of 2,100 cm² was used. Similar to the evaluation of soil exposures, it was assumed that a construction worker may be exposed to shallow groundwater for 62 days per year for 1 year (assumes that construction activities would be of limited duration).

3.2.3.2.3 Sediment

The exposure pathways evaluated for sediment included current and future exposure of trespassers and recreational users to sediments within the ponds via incidental ingestion and dermal contact. The exposure parameters used to quantitatively evaluate sediment exposures for the trespasser and recreational user under a CTE wading scenario were the same as those used to evaluate soil exposures, except for the exposure frequency, surface areas, and dermal adherence factor. An exposure frequency of 26 days per year was used, which equals 2 days per week for approximately 3 months. Surface areas used for trespassers, older child recreational users, and adult recreational users were 7,600 cm², 4,170 cm², and 7,310 cm², respectively. A dermal adherence factor of 0.3 was used to evaluate sediment exposures; this value represents the 95th percentile for children playing in moist soil (USEPA, 2004a).

3.2.3.2.4 Surface Water

The exposure pathways evaluated for surface water included current and future exposure of trespassers and recreational users to surface water within the ponds via dermal contact under a wading scenario. The exposure parameters used to quantitatively evaluate dermal surface-water exposures for the trespasser and recreational user under a wading scenario were the same as those used to evaluate sediment exposures. The skin surface areas used for the trespasser and recreational user (SA = 7,600 and 7,310 cm², respectively) wading scenario assume hands, feet, forearms, and lower legs.

3.2.3.2.5 Leachate

The exposure pathways evaluated in this HHRA for leachate included current and future exposure of trespassers, recreational users, and construction workers to leachate at the Unnamed Island. This pathway was quantitatively evaluated using surrogate shallow groundwater data collected on the Unnamed Island. Receptors were assumed to be exposed via dermal contact, and the exposure parameters used in the quantification of potential risks/hazards for leachate were the same as those used for surface water, except for the skin surface area. Skin surface areas for the trespasser, adult recreational user, and older child recreational user assumed lower legs, feet, and hands (SA = 3,700, 4,500, and 2,700 cm², respectively). Surface area for the construction worker assumed arms and hands (2,100 cm²). The CTE exposure frequency was 26 days per year for the trespasser and recreational user. An exposure frequency of 62 days/year was used for the construction worker.

3.2.3.2.6 Outdoor Air (Trench)

To evaluate potential future exposure of construction workers to ambient air within an excavation trench at the Unnamed Island, trench concentrations were estimated from soil and groundwater concentrations using the Johnson & Ettinger model. Construction workers were assumed to be exposed for 8 hours per day for 62 days per year, which was consistent with the exposure frequency used to evaluate potential soil exposures.

3.2.3.2.7 Fraction Ingested from the Site

It was assumed that site media (e.g., soil, sediment, and surface water) account for 100 percent of potential exposures. This value does not consider exposure of these receptors to other larger and potentially more attractive areas in the region.

3.2.3.3 Outdoor Air (Trench) Modeling

To estimate potential outdoor (trench) air concentrations resulting from migration of VOCs and SVOCs from soil and/or groundwater, the Johnson & Ettinger (USEPA, 2004b) slab-on-grade model was used. To be conservative, it was assumed that soils at the Unnamed Island primarily consisted of sand. It was assumed that the excavated trench was 8 feet high, 8 feet long, and 3 feet wide. Depth to groundwater was assumed to be 5 feet bgs. The VDEQ (2007) air exchange rate of 2 per hour was used for the trenching scenario. The VDEQ (2007) air exchange rate of 2 per hour is based on measured ventilation rates of buildings. According to the VDEQ (2007), the air exchange rate is dependent on the ratio of trench width (relative to wind direction) to trench depth; if this ratio is equal to or less than 1, a circulation cell(s) will be set up within the trench that limits the degree of gas exchange with the atmosphere. However, if the ratio of trench width to trench depth is greater than 1, the air exchange is not restricted and is assumed to be upwards of 360 per hour (VDEQ, 2007). Therefore, use of the 2 per hour air exchange rate is thought to be conservative.

The Johnson & Ettinger model outputs for the COPC screening are included in Appendix B. Because no COPCs were selected for the groundwater to outdoor (trench) air pathway, no further evaluation of this pathway was conducted. For the soil to outdoor (trench) air pathway, the same model parameters were used to develop EPCs (i.e., C_{building} concentrations that were used as EPCs in the quantification of potential risks and hazards). To develop EPCs using the model, UCLs were calculated for the soil COPC data using ProUCL; these UCLs were then used in the model to estimate the infinite source building concentrations that were used in the quantitative evaluation of risks and hazards for the outdoor (trench) air pathway.

3.2.4 Intakes

Intakes (i.e., average daily doses) for the ingestion and dermal contact exposure pathways are expressed in milligrams per kilogram of body weight per day (mg/kg-day) and were calculated using the EPC and applying the exposure factors that account for ingestion rates, exposure frequency, exposure duration, body weight, and averaging time.

Intakes for the inhalation exposure pathways are expressed in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) and were calculated using the EPC and applying the exposure factors that account for exposure time, exposure frequency, exposure duration, and averaging time.

Intake equations and associated exposure factors used in this HHRA are presented in the Tables 4 series (Tables 4.1 RME through 4.10 CTE). Intakes for individual exposure pathways and receptors are presented in the Table 7 series.

3.3 Toxicity Assessment

The toxicity assessment identifies the potential effects that are associated with exposure to a given chemical. The USEPA's guidance evaluates two types of toxic effects: carcinogenic effects and non-carcinogenic effects. To quantify carcinogenic effects, the USEPA has derived slope factors (SFs) for those chemicals found to cause a dose-related, statistically significant increase in tumor incidence in an exposed population relative to the incidence of tumors observed in an unexposed population. These dose-related incidence rates are usually determined in a laboratory study. SFs are typically developed based on oral toxicity studies and are reported as risk per dose in units of $(\text{mg/kg-day})^{-1}$. The SFs are used to quantify the potential risk of cancer associated with a given exposure. Unit risk factors are based on inhalation studies and are reported in units of $(\text{ug/m}^3)^{-1}$. The weight-of-evidence classifications for carcinogenic COPCs for the oral/dermal pathways are presented in Table 6.1. The weight-of-evidence classifications for carcinogenic COPCs for the inhalation pathway are presented in Table 6.2.

To quantify non-carcinogenic effects, the USEPA has derived oral reference doses (RfDs) in units of mg/kg-day that represent a threshold of toxicity. RfDs are intended to represent "an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily exposure to the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime" (USEPA, 1989). Reference concentrations were derived for the inhalation pathway and are presented in units of ug/m^3 . Table 5.1 presents non-cancer toxicity data for the oral/dermal pathways, and Table 5.2 presents non-cancer toxicity data for the inhalation pathway. Consistent with the USEPA Region 1 guidance, surrogate RfDs were used for non-carcinogenic PAHs lacking toxicity values (e.g., naphthalene for 2-methylnaphthalene).

The oral SFs and RfDs described above were used to evaluate both ingestion and dermal contact exposure routes. Because most oral toxicity values are based on an administered dose, these toxicity values were sometimes adjusted (expressed as an absorbed dose) when evaluating dermal exposure scenarios. The USEPA requires this adjustment only when the gastrointestinal absorption of a compound is less than 50 percent (USEPA, 2004a).

Toxicity data presented are from the USEPA Integrated Risk Information System on-line database (USEPA, 2010), the USEPA Superfund Technical Support Center (STSC), the California Environmental Protection Agency (CalEPA), the Agency for Toxic Substances and Disease Registry (ATSDR), and the USEPA (1997b) Health Effects Assessment Summary Tables. The selection of toxicity values was based on the USEPA (2003b) recommended hierarchy for human health toxicity values. The USEPA (2003b) memorandum on human health toxicity values describes a three-tiered hierarchy that consists of: Tier 1 – Integrated Risk Information System (IRIS); Tier 2 – Provisional Peer Reviewed Toxicity Values developed by STSC; and Tier 3 – Other Toxicity Values, including USEPA and non-USEPA sources, such as CalEPA, (ATSDR), and Health Effects Assessment Summary Tables. To assess dioxin toxicity equivalents (TEQs), the oral slope factor developed by USEPA (1985) has been used since the value is publicly-available, transparent as to its derivation, adequately peer-reviewed, and based on all tumors combined.

The quantitative evaluation of potential risks for carcinogens with a mutagenic mode of action (i.e., carcinogenic PAHs, hexavalent chromium) followed the USEPA guidance entitled *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (USEPA, 2005). Specifically, the quantification of cancer risks for child receptors involves the use of age-dependent adjustment factors

(ADAFs). An ADAF of 3 was used for exposures occurring between 6 and less than 16 years of age, and an ADAF of 1 was used for exposures occurring after 16 years of age (USEPA, 2005). These ADAFs were used to quantify potential cancer risks for older children and adolescents for all exposure pathways (i.e., ingestion, dermal contact, and inhalation). This approach was used for all carcinogenic PAHs [i.e., all PAHs with a toxic equivalency factor related to benzo(a)pyrene] and total chromium, evaluated as hexavalent chromium. This methodology is further discussed in Section 3.4.2.

3.4 Risk Characterization

The risk characterization integrates the results of the data evaluation, toxicity assessment, and exposure assessment to evaluate potential risks associated with exposure to site-related constituents in site soils, shallow groundwater, sediments, surface water, leachate, and outdoor (trench) air. Consistent with the USEPA (1989) guidance, the potential for carcinogenic risks and non-carcinogenic health hazards are evaluated separately.

The RAGS D Table 7 series and the Table 9 series present the cancer and non-cancer intakes, as well as the cancer risks and non-cancer hazards, respectively. The Table 8 series are not presented as part of this supplemental HHRA because radiation risks are not of concern for the site. The Table 10 series which present the media and exposure points with risks and hazards above the risk management criteria (i.e., incremental lifetime cancer risks [ILCRs] greater than 1×10^{-4} and target organ hazard indices [HIs] greater than 1) are also not present as part of this supplemental HHRA because none of the cumulative receptor cancer risks calculated exceed the risk management criteria.

3.4.1 Non-Carcinogenic Health Hazards

The HI is used to characterize potential non-carcinogenic health hazards associated with exposure to multiple chemicals. This approach assumes that sub-threshold chronic exposures to multiple chemicals are additive. However, HQs should only be summed for constituents with the same target organ. The Table 7 series presents a cumulative HI, while the Table 9 series presents target organ-specific HIs. The HI is calculated as follows:

$$HI = E1/RfD1 + E2/RfD2 + \dots + Ei/RfDi$$

where:

HI = Hazard Index

E/RfD = HQ

E_i = Exposure intake for the i^{th} chemical (mg/kg-day)

RfD_i = RfD for the i^{th} chemical

An HQ value greater than 1 indicates that a calculated exposure is greater than the RfD for a given constituent and that there may be some potential for health concerns. Similarly, an HI greater than 1 indicates that overall exposure to all chemicals of interest may present a concern (USEPA, 1989).

The quantification of potential non-cancer hazards associated with the water pathways (i.e., surface water and shallow groundwater) followed Exhibit 1-2 in the USEPA (2004a) RAGS Part E guidance. Specifically, if dermal assessment was not recommended in USEPA (2004a) RAGS Part E, no further evaluation of the dermal pathway was conducted for that constituent. Documentation related to the dermal pathway is provided in Appendix E.

Non-carcinogenic health hazards for each receptor are discussed separately below.

3.4.1.1 *Current Adolescent Trespasser*

RME and CTE non-cancer hazards for the current adolescent trespasser exposed to surface soil, leachate, surface water, and sediment were less than the USEPA target HI of 1. The total receptor RME HI is 0.3 and the CTE HI is 0.1. Compound-specific HQs and route-specific HIs are presented in Tables 7.1 RME and CTE and Tables 9.1 RME and CTE.

3.4.1.2 *Future Recreational User*

RME and CTE non-cancer hazards for the future older child and adult recreational user exposed to surface and subsurface soil, leachate, surface water, and sediment were less than the USEPA target HI of 1. For the adult, the total receptor RME HI is 0.3 and the CTE HI is 0.09. For the older child, the total receptor RME HI is 0.6 and the CTE HI is 0.2. Compound-specific HQs and route-specific HIs are presented in Tables 7.2 RME and CTE for the adult and Tables 7.3 RME and CTE for the older child. The higher of the older child and adult HIs (i.e., the older child HI) is presented on Tables 9.2 RME and CTE.

3.4.1.3 *Future Construction Worker*

RME and CTE non-cancer hazards for the future construction worker exposed to surface and subsurface soil, shallow groundwater, leachate, and outdoor (trench) air were less than the USEPA target HI of 1. The total receptor RME HI is 0.7 and the CTE HI is 0.4. Compound-specific HQs and route-specific HIs are presented in Tables 7.4 RME and CTE and Tables 9.3 RME and CTE.

3.4.1.4 *Lead Evaluation*

A lead evaluation was conducted for the Unnamed Island. The lead evaluation is presented in Appendix D and summarized briefly here. Specifically, the USEPA (2003c) Adult Lead Model (ALM), as updated in 2009 (USEPA, 2009b), was used to evaluate potential risks associated with exposure of human receptors to lead in site-related media. The lead evaluation identified the construction workers scenario as having estimated lead risks above the USEPA target. Estimated lead risks for future recreational users and current trespassers were less than the USEPA target.

3.4.2 *Carcinogenic Risk*

Carcinogenic risk is expressed as a probability of developing cancer over the course of a lifetime as a result of a given level of exposure (USEPA, 1989) (also referred to as “excess cancer risk”). The Table 7 series and Table 9 series present cancer risks for individual COPCs for each exposure pathway and receptor. As

stated previously, the Table 8 series is not presented as part of this supplemental HHRA because radiation risks are not of concern for the site.

For a given chemical and exposure route, carcinogenic risk is calculated as follows:

$$\text{Risk} = E \times SF$$

where:

E = Exposure Intake (mg/kg-day)

SF = Slope Factor (mg/kg-day)⁻¹

To assess overall cancer risk, risks from various COPCs are assumed to be additive and are summed (USEPA, 1989).

The USEPA uses a range of cancer risks of 1×10^{-4} to 1×10^{-6} as a “target range within which the Agency strives to manage risks as part of a Superfund cleanup” (USEPA, 1991). The National Contingency Plan states that “for known or suspected carcinogens, acceptable exposure levels are generally concentration levels that represent an excess upper bound lifetime cancer risk to an individual of between 1×10^{-4} to 1×10^{-6} ” (USEPA, 2003d). The RIDEM’s target risk range is 1×10^{-5} to 1×10^{-6} .

The quantification of potential cancer risks associated with the water pathways (i.e., surface water and groundwater) followed Exhibit 1-2 in the USEPA (2004a) RAGS Part E guidance. Specifically, if dermal assessment was not recommended in USEPA (2004a) RAGS Part E, no further evaluation of the dermal pathway was conducted for that constituent. Documentation related to the dermal pathway is provided in Appendix E.

For older child and adolescent receptors, the quantification of potential cancer risks for carcinogens with a mutagenic mode of action (i.e., carcinogenic polycyclic aromatic hydrocarbons [PAHs], hexavalent chromium) followed the USEPA guidance entitled *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposure to Carcinogens* (USEPA, 2005). The quantification of cancer risks for child receptors involves the use of ADAFs. Specifically, an ADAF of 3 was used for exposures occurring between 6 and less than 16 years of age, and an ADAF of 1 was used for exposures occurring after 16 years of age (USEPA, 2005). These ADAFs were used to quantify potential cancer risks for older children and adolescents for all exposure pathways (i.e., ingestion, dermal contact, and inhalation), where applicable. The following general equation demonstrates how ADAFs were incorporated into the risk calculations:

$$\text{Risk} = \text{Intake (mg/kg-day)} \times \text{SF (mg/kg-day)}^{-1} \times \text{ADAF}$$

The above equation was used to quantify potential cancer risks for child receptors for carcinogenic PAHs [i.e., all PAHs with a toxic equivalency factor related to benzo(a)pyrene] and hexavalent chromium. The early life cancer risk calculation for the older child recreational user and adolescent trespasser are provided in Appendix F.

Carcinogenic risks for each receptor are discussed separately below.

3.4.2.1 *Current Adolescent Trespasser*

RME and CTE cancer risks for the current adolescent trespasser exposed to surface soil, leachate, surface water, and sediment were within the USEPA target risk range of 1×10^{-4} to 1×10^{-6} . The total receptor RME ILCR is 4×10^{-5} and the CTE ILCR is 1×10^{-5} . Compound-specific ILCRs and route-specific ILCRs are presented in Tables 7.1 RME and CTE and Tables 9.1 RME and CTE.

3.4.2.2 *Future Recreational User*

RME and CTE cancer risks for the future older child and adult recreational user exposed to surface and subsurface soil, leachate, surface water, and sediment were within the USEPA target risk range of 1×10^{-4} to 1×10^{-6} . For the adult, the total receptor ILCR is 4×10^{-5} and the CTE ILCR is 1×10^{-5} . For the older child, the total receptor RME ILCR is 6×10^{-5} and the CTE ILCR is 2×10^{-5} . The total receptor (older child plus adult) ILCR is 1×10^{-4} for the RME scenario and 3×10^{-5} for the CTE scenario. Compound-specific ILCRs and route-specific ILCRs are presented in Tables 7.2 RME and CTE for the adult and Tables 7.3 RME and CTE for the older child. The summed ILCRs for the older child and adult are presented on Tables 9.2 RME and CTE.

3.4.2.3 *Future Construction Worker*

RME and CTE cancer risks for the future construction worker exposed to surface and subsurface soil, leachate, shallow groundwater, and outdoor (trench) air were within the USEPA target risk range of 1×10^{-4} to 1×10^{-6} . The total receptor RME ILCR is 5×10^{-6} and the CTE ILCR is 2×10^{-6} . Compound-specific ILCRs and route-specific ILCRs are presented in Tables 7.4 RME and CTE and Tables 9.3 RME and CTE.

3.4.3 Summary

The following table presents a summary of total risks and hazards (risks/hazards that exceed a cancer risk of 1×10^{-4} and a target organ HI of 1 are highlighted):

Scenario/ Receptor	Exposure Media	RME or CTE	Total Cancer Risks	Total Noncancer Risks	Media > 1E-04 or HI > 1	Major contributors to risk (> 1E-06, HI > 1)
Current Adolescent Trespasser	surface soil, leachate, surface water, sediment	RME	4E-05	3E-01		N/A
		CT	1E-05	1E-01		
Current/Future Young Child/Adult Rec. User	Surface and subsurface soil, leachate, surface water, sediment	RME	1E-04	6E-01		N/A
		CT	3E-05	2E-01		
Future Adult Construction Worker	surface and subsurface soil, shallow groundwater, outdoor (trench) air	RME	5E-06	7E-01		N/A
		CT	2E-06	4E-01		

Notes:

HI - Hazard Index

RME – Reasonable

Maximum Exposure

CTE – Central Tendency

Exposure

N/A - Not Applicable

3.5 Uncertainty Analysis

There are various sources of uncertainty inherent in the risk assessment process. These include uncertainties associated with exposure parameters and toxicity factors for which conservative assumptions are typically used so as not to underestimate risk. The objective of an uncertainty analysis is to present key information regarding assumptions and uncertainties in the risk assessment process to place the quantitative risk estimates in proper perspective (USEPA, 1989).

3.5.1 Exposure Factors

Sources of uncertainty in this HHRA include exposure factors, such as ingestion rates, fraction ingested factors, and exposure frequencies. The majority of the exposure factors used in this HHRA were USEPA-recommended default values that may over-estimate actual site exposure conditions. For example, use of the 330 mg/day soil ingestion rate for construction workers is a conservative approach in that actual exposures are unlikely to be higher and may actually be lower than the default value.

The exposure frequencies used to evaluate soil, sediment, surface water, and leachate exposures for trespassers and recreational users may be overly conservative given the size of the Unnamed Island. Media were assumed to represent 100 percent of potential exposure (i.e., FI = 1), which may be conservative given that trespassers and recreational users may be frequenting other attractive areas within the region rather than just the Unnamed Island itself. The ingestion factors (e.g., soil and sediment) are conservative in that they assume an individual's exposure occurs only at the Unnamed Island, and it does not consider exposure to other environmental media associated with other non-site-related activities (e.g., residential gardening). Using these exposure parameters to estimate potential risk is a conservative

approach, indicating risks are unlikely to be higher and may actually be lower than the risk estimates presented in this supplemental HHRA.

3.5.2 Implementation of Supplemental Cancer Guidance

This supplemental HHRA used the *Supplemental Guidance for Assessing Susceptibility from Early-Life Exposures to Carcinogens* (USEPA, 2005) in the quantitative evaluation of carcinogenic risks for PAHs and hexavalent chromium. Specifically, the USEPA requested that ADAFs be applied to increase potential risk estimates for child receptors (i.e., older children and adolescents) exposed to compounds with mutagenic modes of action. The basis for this adjustment, as reported in the USEPA guidance (2005), is a limited number of animal studies in which tumor incidences were reported for both early-life stages and adults as separate experimental groups. To quantify the potential difference in susceptibility between early-life and adult exposure, the USEPA (2005) estimated the ratio of potency from early life exposure to the potency from adult exposure (USEPA, 2005). The resulting ADAFs are primarily based on studies of acute, repeated, and lifetime exposures for six chemicals with a mutagenic mode of action (USEPA, 2005). The ADAF of 3 for children ages 6 to less than 16 years represents a midpoint between 1 (i.e., no adjustment for adult exposure) and 10 (i.e., 10-fold adjustment for first 2 years of life) on a logarithmic scale (USEPA, 2005). These ADAFs are conservative in that many of the chemical-specific ratios were less than 1 (i.e., 45 percent of the ratios used to derive the ADAF of 10 were less than 1 as indicated in Table 8 of the USEPA guidance [2005]). Further, applying these ADAFs to already-conservative upper-bound SFs provides a conservative upper-bound estimate of potency.

3.5.3 Data Usability

The 2009 supplemental sampling data for the Unnamed Island were validated and qualified following Region I data validation guidelines, which requires qualification of data as unusable if associated quality control measurements (for both quantitative and qualitative identification) indicate high uncertainty in the results. Less than 1% of the data (66 results of a total of 7891 results reported, or 0.84%) were qualified unusable. The unusable data do not represent a significant data gap.

The majority of rejected data (34 results) were for 1,4-dioxane analysis in soil. Rejection of 1,4-dioxane in soil results may not be considered a major gap for the following reasons:

- Environmental contamination by 1,4-dioxane is usually associated with its use as a stabilizer for chlorinated solvents. The soil data do not indicate a significant release of chlorinated solvents, inferring that 1,4-dioxane is unlikely to also be present in significant concentrations.
- 1,4-dioxane is an environmental concern due to its high water solubility and faster migration through groundwater relative to the chlorinated solvents it is associated with. However, all of the groundwater samples were non-detect for 1,4-dioxane, implying there was not a nearby source area of 1,4-dioxane. It should be noted that the laboratory analyzed for 1,4-dioxane in the five groundwater samples (four wells plus a field duplicate) using the SVOC method, and data required no qualification.

Seven results for benzaldehyde were rejected. Although this target analyte is present in site soil, with 14 detections in the remaining 31 results considered usable, the highest detection was an estimated 0.33

mg/kg compared to the USEPA risk-based screening level (HQ = 0.1) of 780 mg/kg. Therefore, it is unlikely that benzaldehyde is present in soil at a level of concern.

Three SVOC target analytes (hexachlorocyclopentadiene, 4-chloroaniline, and 3,3'-dichlorobenzidine) were rejected in one sample. There were no detections of these compounds in any other samples, and therefore, the rejection of these data points is unlikely to represent a significant data gap.

There were 22 rejections of pesticide data (12 for 4,4'-DDT, and lesser numbers of four other target analytes). Of data that was not considered unusable, there were no detections above USEPA risk-based screening levels.

Approximately 18% of the data were qualified as estimated (with a J qualifier). Data qualified as estimated are still considered usable. Though the rejection and qualification of data increase the uncertainty of the risk evaluation, overall the data set was considered usable for the risk assessment.

3.6 Summary and Conclusions

Results of this HHRA indicate that risks/hazards for soil, sediment, surface water, and leachate for trespassers and recreational users, and soil, shallow groundwater, and outdoor (trench) air for construction workers were within USEPA target levels (i.e., risk range of 1×10^{-4} to 1×10^{-6} ; HI of 1).

The lead evaluation identified the construction workers scenario as having estimated lead risks above the USEPA target. Estimated lead risks for future recreational users and current trespassers were less than the USEPA target.

In addition to lead, physical hazards, such as metal debris, tires, and broken glass at the Unnamed Island may also present some risks. These physical hazards will be further considered in the Feasibility Study.

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TABLE 1
SELECTION OF EXPOSURE PATHWAYS

UNNAMED ISLAND
PETERSON-PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age (1)	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current	Soil	Surface Soil	Unnamed Island	Trespasser	Adolescent	Dermal Inhalation Ingestion	Quant Qual Quant	Evidence of trespassing exists. Access by boat may occur infrequently. Dust inhalation likely insignificant due to lack of invasive activities and dust generation while trespassing. Evidence of trespassing exists. Access by boat may occur infrequently.
	Leachate	Leachate	Unnamed Island	Trespasser	Adolescent	Dermal	Quant	Contact with leachate while trespassing may occur.
	Surface Water	Surface Water	Unnamed Island	Trespasser	Adolescent	Dermal Ingestion	Quant Qual	Wading may occur following access via boat. Wading scenario. Ingestion of surface water unlikely during wading.
	Sediment	Sediment	Unnamed Island	Trespasser	Adolescent	Dermal Ingestion	Quant Quant	Wading may occur following access via boat. Wading scenario. Ingestion of sediment is likely during wading.
Future	Groundwater	Shallow Groundwater	Unnamed Island	Construction Worker	Adult	Dermal Ingestion	Quant Quant	Contact with shallow groundwater during future excavation may occur. Incidental ingestion of shallow groundwater may occur during future excavation activities.
	Soil	Surface/ Subsurface Soil	Unnamed Island	Recreational User	Adult	Dermal Inhalation Ingestion	Quant Qual Quant	Assumes future recreational site use. Dust inhalation likely insignificant due to lack of invasive activities and dust generation. Assumes future recreational site use.
					Older Child	Dermal Inhalation Ingestion	Quant Qual Quant	Assumes future recreational site use. Dust inhalation likely insignificant due to lack of invasive activities and dust generation. Assumes future recreational site use.
				Construction Worker	Adult	Dermal Inhalation Ingestion	Quant Quant Quant	Future utility/construction work on-site may be necessary during recreational development. Exposure to fugitive dust likely during trenching activities. Future utility/construction work on-site may be necessary during recreational development.

TABLE 1
SELECTION OF EXPOSURE PATHWAYS

UNNAMED ISLAND
PETERSON-PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age (1)	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
	Soil/ Groundwater	Trench Air	Unnamed Island	Construction Worker	Adult	Inhalation	Quant	Volatile compounds present in soil and groundwater may impact trench air.
	Leachate	Leachate	Unnamed Island	Recreational User	Adult	Dermal	Quant	Contact with leachate may occur during recreational use.
					Older Child	Dermal	Quant	Contact with leachate may occur during recreational use.
				Construction Worker	Adult	Dermal	Quant	Contact with leachate may occur during future excavation work.
	Surface Water	Surface Water	Unnamed Island	Recreational User	Adult	Dermal	Quant	Assumes future recreational site use.
						Ingestion	Qual	Wading scenario. Ingestion of surface water unlikely during wading.
				Older Child		Dermal	Quant	Assumes future recreational site use.
						Ingestion	Qual	Wading scenario. Ingestion of surface water unlikely during wading.
	Sediment	Sediment	Unnamed Island	Recreational User	Adult	Dermal	Quant	Assumes future recreational site use.
						Ingestion	Quant	Wading scenario. Ingestion of sediment is likely during wading.
				Older Child		Dermal	Quant	Assumes future recreational site use.
						Ingestion	Quant	Wading scenario. Ingestion of sediment is likely during wading.

(1) An adolescent is age 9-18 years old; an older child is age 6-12 years old.

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
Unnamed Island	75-35-4	1,1-Dichloroethene	0.005 J	0.005 J	mg/Kg	SO-007-UI	1 / 35	0.00157 - 0.014	0.005	N/A	24 n	N/A	N/A	N	BSL
	120-82-1	1,2,4-Trichlorobenzene	0.011	0.011	mg/Kg	SO-W01-UI	1 / 35	0.00157 - 0.014	0.011	N/A	6.2 n	N/A	N/A	N	BSL
	106-46-7	1,4-Dichlorobenzene	0.003 J	0.075	mg/Kg	SO-W01-UI	2 / 35	0.00157 - 0.014	0.075	N/A	2.4 c	N/A	N/A	N	BSL
	78-93-3	2-Butanone	0.012	0.044	mg/Kg	SO-W01-UI	2 / 35	0.00393 - 0.014	0.044	N/A	2800 n	N/A	N/A	N	BSL
	67-64-1	Acetone	0.00309 J	0.13	mg/Kg	SO-W01-UI	10 / 35	0.0052 - 0.051	0.13	N/A	6100 n	N/A	N/A	N	BSL
	71-43-2	Benzene	0.002 J	0.002 J	mg/Kg	SO-W03-UI	1 / 35	0.00157 - 0.014	0.002	N/A	1.1 c	N/A	N/A	N	BSL
	75-15-0	Carbon disulfide	0.005 J	0.005 J	mg/Kg	SO-013-UI	1 / 35	0.00157 - 0.014	0.005	N/A	82 n	N/A	N/A	N	BSL
	56-23-5	Carbon tetrachloride	0.004 J	0.00602	mg/Kg	SO-209-UI (0-1')	2 / 35	0.00157 - 0.014	0.00602	N/A	0.25 c	N/A	N/A	N	BSL
	108-90-7	Chlorobenzene	0.003 J	0.005 J	mg/Kg	SO-W01-UI	2 / 35	0.00157 - 0.014	0.005	N/A	29 n	N/A	N/A	N	BSL
	110-82-7	Cyclohexane	0.002 J	0.002 J	mg/Kg	SO-W01-UI	1 / 35	0.00157 - 0.014	0.002	N/A	700 n	N/A	N/A	N	BSL
	108-87-2	Cyclohexane, methyl-	0.004 J	0.004 J	mg/Kg	SO-W01-UI	1 / 35	0.00157 - 0.014	0.004	N/A	700 n	N/A	N/A	N	BSL
	100-41-4	Ethylbenzene	0.001 J	0.001 J	mg/Kg	SO-W01-UI	1 / 35	0.00157 - 0.014	0.001	N/A	5.4 c	N/A	N/A	N	BSL
	98-82-8	Isopropylbenzene	0.006 J	0.006 J	mg/Kg	SO-W01-UI	1 / 35	0.00157 - 0.014	0.006	N/A	210 n	N/A	N/A	N	BSL
	79-20-9	Methyl acetate	0.00211 J	0.00825 J	mg/Kg	SO-223F-UI-0-1'	2 / 35	0.00208 - 0.014	0.00825	N/A	7800 n	N/A	N/A	N	BSL
	75-09-2	Methylene chloride	0.004 J	0.004 J	mg/Kg	SO-200-UI (0-1')	1 / 35	0.00393 - 0.025	0.004	N/A	11 c	N/A	N/A	N	BSL
	127-18-4	Tetrachloroethene	0.00212 J	0.025	mg/Kg	SO-W03-UI	4 / 35	0.00157 - 0.014	0.025	N/A	0.55 c	N/A	N/A	N	BSL
	108-88-3	Toluene	0.0008 J	0.002 J	mg/Kg	SO-FD02	6 / 35	0.00157 - 0.014	0.002	N/A	500 n	N/A	N/A	N	BSL
	1330-20-7	Xylene (Total)	0.015	0.015	mg/Kg	SO-W01-UI	1 / 27	0.006 - 0.014	0.015	N/A	63 n	N/A	N/A	N	BSL
	92-52-4	1,1'-Biphenyl	0.027 J	0.11 J	mg/Kg	SO-015-UI	6 / 34	0.148 - 0.764	0.11	N/A	390 n	N/A	N/A	N	BSL
	91-57-6	2-Methylnaphthalene	0.0322	0.37 J	mg/Kg	SO-015-UI	19 / 34	0.34 - 0.4	0.37	N/A	31 n	N/A	N/A	N	BSL
	106-44-5	4-Methylphenol	0.059 J	0.059 J	mg/Kg	SO-W02-UI	1 / 34	0.148 - 0.764	0.059	N/A	31 n	N/A	N/A	N	BSL
	83-32-9	Acenaphthene	0.0248	1.3	mg/Kg	SO-015-UI	18 / 34	0.34 - 0.41	1.3	N/A	340 n	N/A	N/A	N	BSL
	208-96-8	Acenaphthylene	0.024 J	0.43	mg/Kg	SO-078-UI	25 / 34	0.34 - 0.4	0.43	N/A	3.6 c	N/A	N/A	N	BSL
	98-86-2	Acetophenone	0.053 J	0.86 J	mg/Kg	SO-086-UI	4 / 34	0.148 - 0.764	0.86	N/A	780 n	N/A	N/A	N	BSL
	120-12-7	Anthracene	0.037 J	1.1	mg/Kg	SO-015-UI	30 / 34	0.35 - 0.38	1.1	N/A	1700 n	N/A	N/A	N	BSL
	100-52-7	Benzaldehyde	0.021 J	0.33 J	mg/Kg	SO-200-UI (0-1')	19 / 34	0.18 - 0.764	0.33	N/A	780 n	N/A	N/A	N	BSL
	50-32-8	Benzo(a)pyrene	0.085 J	4 J	mg/Kg	SO-015-UI	34 / 34	N/A	4	N/A	0.015 c	N/A	N/A	Y	ASL
	205-99-2	Benzo(b)fluoranthene	0.12 J	6.4	mg/Kg	SO-015-UI	31 / 31	N/A	6.4	N/A	0.15 c	N/A	N/A	Y	ASL
	191-24-2	Benzo(g,h,i)perylene	0.043 J	2.7	mg/Kg	SO-015-UI	34 / 34	N/A	2.7	N/A	3.6 c	N/A	N/A	N	BSL
	207-08-9	Benzo(k)fluoranthene	0.036 J	2.41	mg/Kg	SO-200-UI (0-1')	34 / 34	N/A	2.41	N/A	1.5 c	N/A	N/A	Y	ASL
	56-55-3	Benzo[a]anthracene	0.08 J	4.5	mg/Kg	SO-015-UI	34 / 34	N/A	4.5	N/A	0.15 c	N/A	N/A	Y	ASL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.13 J	260 J	mg/Kg	SO-086-UI	21 / 34	0.34 - 0.64	260	N/A	35 c	N/A	N/A	Y	ASL
	85-68-7	Butyl benzyl phthalate	0.038 J	0.29 J	mg/Kg	SO-W02-UI	7 / 34	0.148 - 3.4	0.29	N/A	260 c	N/A	N/A	N	BSL
	86-74-8	Carbazole	0.024 J	0.99	mg/Kg	SO-015-UI	18 / 34	0.148 - 0.764	0.99	N/A	N/A	N/A	N/A	Y	NSL
	218-01-9	Chrysene	0.092 J	5	mg/Kg	SO-015-UI	33 / 34	0.37	5	N/A	15 c	N/A	N/A	N	BSL
	53-70-3	Dibenz[a,h]anthracene	0.041 J	0.75	mg/Kg	SO-015-UI	29 / 34	0.35 - 3.4	0.75	N/A	0.015 c	N/A	N/A	Y	ASL

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
	132-64-9	Dibenzofuran	0.061 J	1.1	mg/Kg	SO-015-UI	14 / 34	0.148 - 0.764	1.1	N/A	N/A	N/A	N/A	Y	NSL
	84-66-2	Diethylphthalate	0.56 J	0.56 J	mg/Kg	SO-W02-UI	1 / 34	0.148 - 0.764	0.56	N/A	4900 n	N/A	N/A	N	BSL
	84-74-2	Di-N-Butyl phthalate	0.023 J	0.39 J	mg/Kg	SO-W02-UI	11 / 34	0.148 - 0.764	0.39	N/A	610 n	N/A	N/A	N	BSL
	117-84-0	Di-N-Octyl phthalate	0.145 J	27 J	mg/Kg	SO-W04-UI	9 / 34	0.148 - 3.4	27	N/A	610 n	N/A	N/A	N	BSL
	206-44-0	Fluoranthene	0.14 J	9 J	mg/Kg	SO-015-UI	34 / 34	N/A	9	N/A	230 n	N/A	N/A	N	BSL
	86-73-7	Fluorene	0.0327	1.1	mg/Kg	SO-015-UI	21 / 34	0.34 - 0.4	1.1	N/A	230 n	N/A	N/A	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.052 J	2.4	mg/Kg	SO-015-UI	34 / 34	N/A	2.4	N/A	0.15 c	N/A	N/A	Y	ASL
	91-20-3	Naphthalene	0.04 J	0.87	mg/Kg	SO-015-UI	26 / 37	0.0048 - 0.4	0.87	N/A	3.6 c	N/A	N/A	N	BSL
	98-95-3	Nitrobenzene	0.53 J	0.53 J	mg/Kg	SO-W02-UI	1 / 34	0.148 - 0.764	0.53	N/A	4.8 c	N/A	N/A	N	BSL
	86-30-6	N-Nitrosodiphenylamine	1.8	1.8	mg/Kg	SO-W01-UI	1 / 34	0.148 - 0.764	1.8	N/A	99 c	N/A	N/A	N	BSL
	85-01-8	Phenanthrene	0.061 J	13 J	mg/Kg	SO-015-UI	34 / 34	N/A	13	N/A	3.6 c	N/A	N/A	Y	ASL
	108-95-2	Phenol	0.009 J	0.647 J	mg/Kg	SO-223F-UI-0-1'	4 / 34	0.148 - 0.764	0.647	N/A	1800 n	N/A	N/A	N	BSL
	129-00-0	Pyrene	0.17 J	18	mg/Kg	SO-015-UI	34 / 34	N/A	18	N/A	170 n	N/A	N/A	N	BSL
	72-54-8	4,4'-DDD	0.0023 J	0.0537	mg/Kg	SO-211-UI (0-1')	17 / 30	0.000336 - 0.0043	0.0537	N/A	2 c	N/A	N/A	N	BSL
	72-55-9	4,4'-DDE	0.0016 J	0.07	mg/Kg	SO-010-UI	19 / 29	0.0035 - 0.042	0.07	N/A	1.4 c	N/A	N/A	N	BSL
	50-29-3	4,4'-DDT	0.0018 J	0.025 J	mg/Kg	SO-078-UI	7 / 23	0.0034 - 0.052	0.025	N/A	1.7 c	N/A	N/A	N	BSL
	319-84-6	alpha-BHC	0.00125	0.00125	mg/Kg	SO-209-UI (0-1')	1 / 34	0.00029 - 0.0027	0.00125	N/A	0.077 c	N/A	N/A	N	BSL
	5103-71-9	alpha-Chlordane	0.00129 J	0.0195 J	mg/Kg	SO-211-UI (0-1')	18 / 34	0.0018 - 0.0024	0.0195	N/A	1.6 c	N/A	N/A	N	BSL
	60-57-1	Dieldrin	0.0031 J	0.81	mg/Kg	SO-010-UI	31 / 34	0.0035 - 0.0038	0.81	N/A	0.03 c	N/A	N/A	Y	ASL
	959-98-8	Endosulfan I	0.00412 J	0.00412 J	mg/Kg	SO-217-UI (0-1')	1 / 33	0.00029 - 0.0027	0.00412	N/A	37 n	N/A	N/A	N	BSL
	33213-65-9	Endosulfan II	0.0061 J	0.00754 J	mg/Kg	SO-223F-UI-0-1'	2 / 34	0.00029 - 0.0052	0.00754	N/A	37 n	N/A	N/A	N	BSL
	1031-07-8	Endosulfan Sulfate	0.003 J	0.01 J	mg/Kg	SO-014-UI	6 / 29	0.00029 - 0.052	0.01	N/A	37 n	N/A	N/A	N	BSL
	7421-36-3	Endrin Aldehyde	0.0044	0.022 J	mg/Kg	SO-080-UI	5 / 29	0.00029 - 0.0047	0.022	N/A	1.8 n	N/A	N/A	N	BSL
	53494-70-5	Endrin Ketone	0.014 J	0.014 J	mg/Kg	SO-016-UI	1 / 32	0.00029 - 0.0052	0.014	N/A	1.8 n	N/A	N/A	N	BSL
	5103-74-2	Gamma-Chlordane	0.00135 J	0.018 J	mg/Kg	SO-010-UI	9 / 23	0.00167 - 0.022	0.018	N/A	1.6 c	N/A	N/A	N	BSL
	1024-57-3	Heptachlor Epoxide	0.013 J	0.013 J	mg/Kg	SO-083-UI	1 / 33	0.00029 - 0.0027	0.013	N/A	0.053 c	N/A	N/A	N	BSL
	72-43-5	Methoxychlor	0.028 J	0.028 J	mg/Kg	SO-W02-UI	2 / 33	0.00029 - 0.027	0.028	N/A	31 n	N/A	N/A	N	BSL
	12767-79-2	Aroclor 1268	0.033 J	0.196 J	mg/Kg	SO-211-UI (0-1')	3 / 8	0.0186 - 0.0673	0.196	N/A	0.22 c	N/A	N/A	N	BSL
	53469-21-9	Aroclor-1242	0.24 J	0.24 J	mg/Kg	SO-208B-UI (0-1')	1 / 34	0.0186 - 0.0767	0.24	N/A	0.22 c	N/A	N/A	Y	ASL
	11097-69-1	Aroclor-1254	0.077 J	1.34 J	mg/Kg	SO-211-UI (0-1')	11 / 34	0.034 - 0.0673	1.34	N/A	0.11 n	N/A	N/A	Y	ASL
	11096-82-5	Aroclor-1260	0.045	1.47 J	mg/Kg	SO-217-UI (0-1')	28 / 34	0.035 - 0.038	1.47	N/A	0.22 c	N/A	N/A	Y	ASL
	1746-01-6	Dioxin TEQ	0.0000088	0.0000671	mg/Kg	SO-203-UI-0-1'	6 / 6	N/A	0.0000671	N/A	0.0000045 c	N/A	N/A	Y	ASL
	7429-90-5	Aluminum	3370	11400	mg/Kg	SO-200-UI (0-1')	34 / 34	N/A	11400	N/A	7700 n	N/A	N/A	Y	ASL
	7440-36-0	Antimony	0.377 J	63.6 J	mg/Kg	SO-W01-UI	14 / 34	0.95 - 15	63.6	N/A	3.1 n	N/A	N/A	Y	ASL

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
	7440-38-2	Arsenic	2	26.1	mg/Kg	SO-010-UI	34 / 34	N/A	26.1	N/A	0.39 c	N/A	N/A	Y	ASL
	7440-39-3	Barium	27.5 J	881 J	mg/Kg	SO-W03-UI	24 / 34	31 - 50	881	N/A	1500 n	N/A	N/A	N	BSL
	7440-41-7	Beryllium	0.15 J	2.4	mg/Kg	SO-W02-UI	30 / 34	0.073 - 0.075	2.4	N/A	16 n	N/A	N/A	N	BSL
	7440-43-9	Cadmium	0.31 J	21.8	mg/Kg	SO-W03-UI	31 / 34	0.87 - 1.1	21.8	N/A	7 n	N/A	N/A	Y	ASL
	7440-70-2	Calcium	336 J	11600 J	mg/Kg	SO-W03-UI	22 / 34	770 - 1435	11600	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	21.4 J	471 J	mg/Kg	SO-W02-UI	34 / 34	N/A	471	N/A	0.29 c	N/A	N/A	Y	ASL
	7440-48-4	Cobalt	2 J	12.8	mg/Kg	SO-W04-UI	21 / 34	7.2 - 13	12.8	N/A	2.3 n	N/A	N/A	Y	ASL
	7440-50-8	Copper	15.7	1420 J	mg/Kg	SO-W04-UI	34 / 34	N/A	1420	N/A	310 n	N/A	N/A	Y	ASL
	57-12-5	Cyanide	0.09	3.8	mg/Kg	SO-083-UI	17 / 34	0.066 - 0.55	3.8	N/A	160 n	N/A	N/A	N	BSL
	7439-89-6	Iron	6130	69200 J	mg/Kg	SO-W04-UI	34 / 34	N/A	69200	N/A	5500 n	N/A	N/A	Y	ASL
	7439-92-1	Lead	19.1 J	2230 J	mg/Kg	SO-W03-UI	34 / 34	N/A	2230	N/A	40 n	N/A	N/A	Y	ASL
	7439-95-4	Magnesium	1320 J	3420	mg/Kg	SO-010-UI	34 / 34	N/A	3420	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	86.1 J	1680	mg/Kg	SO-200-UI (0-1')	32 / 34	N/A	1680	N/A	180 n	N/A	N/A	Y	ASL
	7439-97-6	Mercury	0.037	1.8 J	mg/Kg	SO-W02-UI	34 / 34	N/A	1.8	N/A	0.78 n	N/A	N/A	Y	ASL
	7440-02-0	Nickel	4.6 J	158 J	mg/Kg	SO-W02-UI	32 / 34	7 - 9	158	N/A	150 n	N/A	N/A	Y	ASL
	7440-09-7	Potassium	359 J	1360	mg/Kg	SO-010-UI	9 / 34	720 - 1435	1360	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	Selenium	0.324 J	1.73	mg/Kg	SO-200-UI (0-1')	11 / 30	0.29 - 0.77	1.73	N/A	39 n	N/A	N/A	N	BSL
	7440-22-4	Silver	0.584	8.5 J	mg/Kg	SO-W04-UI	23 / 34	0.35 - 2.5	8.5	N/A	39 n	N/A	N/A	N	BSL
	7440-23-5	Sodium	39.9 J	170	mg/Kg	SO-209-UI (0-1')	9 / 34	720 - 1435	170	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	Thallium	0.059	1.2 J	mg/Kg	SO-085-UI	11 / 34	0.29 - 1.1	1.2	N/A	N/A	N/A	N/A	Y	NSL
	7440-62-2	Vanadium	8	33.3	mg/Kg	SO-010-UI	33 / 34	12	33.3	N/A	0.55 n	N/A	N/A	Y	ASL
	7440-66-6	Zinc	25.9	1570 J	mg/Kg	SO-W03-UI	34 / 34	N/A	1570	N/A	2300 n	N/A	N/A	N	BSL

TABLE 2.1
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)

Notes:

N/A = Not Applicable or Not Available

- [1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- [2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).
- [3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.
- [4] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Soil.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for cadmium associated with dietary intake.
PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.
PRG for chromium VI used for chromium.
PRG for cyclohexane has been used for methylcyclohexane.
PRG for dibutyl phthalate has been used for di-n-octylphthalate.
PRG for Aroclor-1260 has been used for Aroclor 1268.
PRG for endosulfan has been used for endosulfan I, endosulfan II, and endosulfan sulfate.
PRG for endrin has been used for endrin aldehyde and endrin ketone.
PRG for methyl mercury has been used for mercury.
PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.
- [5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
Unnamed Island	120-82-1	1,2,4-Trichlorobenzene	0.00426	0.00426	mg/Kg	SO-224A-UI-1-5'	1 / 22	0.00154 - 0.29	0.00426	N/A	6.2 n	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	0.0017 J	0.0055	mg/Kg	SO-224A-UI-1-5'	2 / 22	0.00154 - 0.29	0.0055	N/A	190 n	N/A	N/A	N	BSL
	106-46-7	1,4-Dichlorobenzene	0.00125 J	1.25	mg/Kg	SO-224A-UI-1-5'	3 / 22	0.00154 - 0.29	1.25	N/A	2.4 c	N/A	N/A	N	BSL
	78-93-3	2-Butanone	0.00456	0.525 J	mg/Kg	SO-224A-UI-1-5'	4 / 22	0.0039 - 0.724	0.525	N/A	2800 n	N/A	N/A	N	BSL
	67-64-1	Acetone	0.00285 J	1.98 J	mg/Kg	SO-224A-UI-1-5'	11 / 22	0.00482 - 0.724	1.98	N/A	6100 n	N/A	N/A	N	BSL
	71-43-2	Benzene	0.013	0.0135 J	mg/Kg	SO-208B-UI (1-5')	2 / 22	0.00154 - 0.29	0.0135	N/A	1.1 c	N/A	N/A	N	BSL
	75-15-0	Carbon disulfide	0.00124 J	0.05	mg/Kg	SO-224A-UI-1-5'	5 / 22	0.00156 - 0.29	0.05	N/A	82 n	N/A	N/A	N	BSL
	56-23-5	Carbon tetrachloride	0.00144 J	0.00144 J	mg/Kg	SO-206-UI (2-3')	1 / 22	0.00154 - 0.29	0.00144	N/A	0.25 c	N/A	N/A	N	BSL
	108-90-7	Chlorobenzene	0.0066	0.127	mg/Kg	SO-224A-UI-1-5'	3 / 22	0.00154 - 0.29	0.127	N/A	29 n	N/A	N/A	N	BSL
	156-59-2	cis-1,2-Dichloroethene	0.00196 J	0.00196 J	mg/Kg	SO-224A-UI-1-5'	1 / 22	0.00154 - 0.29	0.00196	N/A	78 n	N/A	N/A	N	BSL
	110-82-7	Cyclohexane	0.025	0.0443	mg/Kg	SO-224A-UI-1-5'	2 / 22	0.00154 - 0.29	0.0443	N/A	700 n	N/A	N/A	N	BSL
	108-87-2	Cyclohexane, methyl-	0.0847	0.229 J	mg/Kg	SO-224A-UI-1-5'	2 / 22	0.00154 - 0.29	0.229	N/A	700 n	N/A	N/A	N	BSL
	75-71-8	Dichlorodifluoromethane	0.00154 J	0.0209	mg/Kg	SO-205-UI (2-4')	3 / 22	0.00154 - 0.29	0.0209	N/A	18 n	N/A	N/A	N	BSL
	100-41-4	Ethylbenzene	0.00175 J	0.0026 J	mg/Kg	SO-224A-UI-1-5'	2 / 22	0.00154 - 0.29	0.0026	N/A	5.4 c	N/A	N/A	N	BSL
	98-82-8	Isopropylbenzene	0.00123 J	0.0646	mg/Kg	SO-224A-UI-1-5'	3 / 22	0.00154 - 0.29	0.0646	N/A	210 n	N/A	N/A	N	BSL
	79-20-9	Methyl acetate	0.00238	1.11	mg/Kg	SO-226A-UI-6-8'	6 / 22	0.00156 - 0.234	1.11	N/A	7800 n	N/A	N/A	N	BSL
	75-09-2	Methylene chloride	0.00373 J	0.00373 J	mg/Kg	SO-222-UI-1-3'	1 / 22	0.00385 - 0.724	0.00373	N/A	11 c	N/A	N/A	N	BSL
	95-47-6	o-Xylene	0.0029	0.0125	mg/Kg	SO-224A-UI-1-5'	3 / 22	0.00154 - 0.29	0.0125	N/A	380 n	N/A	N/A	N	BSL
	106-42-3/108-38	p/m-Xylene	0.00836	0.0298	mg/Kg	SO-224A-UI-1-5'	2 / 22	0.00308 - 0.58	0.0298	N/A	340 n	N/A	N/A	N	BSL
	100-42-5	Styrene	0.00232 J	0.00232 J	mg/Kg	SO-224A-UI-1-5'	1 / 22	0.00154 - 0.29	0.00232	N/A	630 n	N/A	N/A	N	BSL
	127-18-4	Tetrachloroethene	0.0039	0.00794 J	mg/Kg	SO-208B-UI (1-5')	3 / 22	0.00154 - 0.29	0.00794	N/A	0.55 c	N/A	N/A	N	BSL
	108-88-3	Toluene	0.00221 J	0.608	mg/Kg	SO-226A-UI-6-8'	5 / 22	0.00154 - 0.234	0.608	N/A	500 n	N/A	N/A	N	BSL
	79-01-6	Trichloroethene	0.00281	0.00504	mg/Kg	SO-224A-UI-1-5'	2 / 22	0.00154 - 0.29	0.00504	N/A	2.8 c	N/A	N/A	N	BSL
	75-69-4	Trichlorofluoromethane	0.00114 J	0.0056	mg/Kg	SO-205-UI (2-4')	2 / 22	0.00154 - 0.29	0.0056	N/A	79 n	N/A	N/A	N	BSL
	92-52-4	1,1'-Biphenyl	0.144 J	0.34	mg/Kg	SO-205-UI (2-4')	5 / 22	0.138 - 2.49	0.34	N/A	390 n	N/A	N/A	N	BSL
	91-57-6	2-Methylnaphthalene	0.00308 J	2.78	mg/Kg	SO-224A-UI-1-5'	20 / 22	0.00788 - 0.00864	2.78	N/A	31 n	N/A	N/A	N	BSL
	106-44-5	4-Methylphenol	0.133 J	0.395	mg/Kg	SO-204-UI (2-4')	3 / 22	0.138 - 2.49	0.395	N/A	31 n	N/A	N/A	N	BSL
	83-32-9	Acenaphthene	0.00715	2.01	mg/Kg	SO-226A-UI-6-8'	19 / 22	0.00387 - 0.00864	2.01	N/A	340 n	N/A	N/A	N	BSL
	208-96-8	Acenaphthylene	0.00208 J	1.14	mg/Kg	SO-226A-UI-6-8'	19 / 22	0.00428 - 0.00864	1.14	N/A	3.6 c	N/A	N/A	N	BSL
	98-86-2	Acetophenone	0.1 J	0.188	mg/Kg	SO-206-UI (2-3')	2 / 22	0.138 - 2.49	0.188	N/A	780 n	N/A	N/A	N	BSL
	120-12-7	Anthracene	0.00385 J	4.1	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	4.1	N/A	1700 n	N/A	N/A	N	BSL
	100-52-7	Benzaldehyde	0.13	0.219 J	mg/Kg	SO-204-UI (2-4')	7 / 15	0.138 - 2.49	0.219	N/A	780 n	N/A	N/A	N	BSL
	50-32-8	Benzo(a)pyrene	0.00635	17.2	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	17.2	N/A	0.015 c	N/A	N/A	Y	ASL
	205-99-2	Benzo(b)fluoranthene	0.01	9.63	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	9.63	N/A	0.15 c	N/A	N/A	Y	ASL
	191-24-2	Benzo(g,h,i)perylene	0.00608	8.44	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	8.44	N/A	3.6 c	N/A	N/A	Y	ASL
	207-08-9	Benzo(k)fluoranthene	0.00506	6.18	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	6.18	N/A	1.5 c	N/A	N/A	Y	ASL

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
	56-55-3	Benzo[a]anthracene	0.00807	14.4	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	14.4	N/A	0.15 c	N/A	N/A	Y	ASL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.0846 J	577	mg/Kg	SO-206-UI (2-3')	10 / 22	0.139 - 1.51	577	N/A	35 c	N/A	N/A	Y	ASL
	85-68-7	Butyl benzyl phthalate	0.315 J	0.315 J	mg/Kg	SO-201-UI (4-6')	1 / 23	0.139 - 2.49	0.315	N/A	260 c	N/A	N/A	N	BSL
	86-74-8	Carbazole	0.0821 J	0.376	mg/Kg	SO-204-UI (2-4')	10 / 22	0.138 - 2.49	0.376	N/A	N/A	N/A	N/A	Y	NSL
	218-01-9	Chrysene	0.00892	14.4	mg/Kg	SO-226A-UI-6-8'	21 / 23	0.00788 - 0.00864	14.4	N/A	15 c	N/A	N/A	N	BSL
	53-70-3	Dibenz[a,h]anthracene	0.0032 J	1.73	mg/Kg	SO-226A-UI-6-8'	18 / 22	0.00428 - 0.0667	1.73	N/A	0.015 c	N/A	N/A	Y	ASL
	132-64-9	Dibenzofuran	0.0957 J	0.591	mg/Kg	SO-204-UI (2-4')	8 / 22	0.138 - 2.49	0.591	N/A	N/A	N/A	N/A	Y	NSL
	84-66-2	Diethylphthalate	2.89	2.89	mg/Kg	SO-224A-UI-1-5'	1 / 22	0.138 - 1.51	2.89	N/A	4900 n	N/A	N/A	N	BSL
	84-74-2	Di-N-Butyl phthalate	2.44	2.44	mg/Kg	SO-201-UI (4-6')	1 / 22	0.138 - 2.49	2.44	N/A	610 n	N/A	N/A	N	BSL
	117-84-0	Di-N-Octyl phthalate	0.957	61.2	mg/Kg	SO-206-UI (2-3')	4 / 22	0.138 - 1.51	61.2	N/A	610 n	N/A	N/A	N	BSL
	206-44-0	Fluoranthene	0.0128	37.8	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	37.8	N/A	230 n	N/A	N/A	N	BSL
	86-73-7	Fluorene	0.00811	2.4	mg/Kg	SO-226A-UI-6-8'	18 / 22	0.00387 - 0.00864	2.4	N/A	230 n	N/A	N/A	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.00454	6.21	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	6.21	N/A	0.15 c	N/A	N/A	Y	ASL
	91-20-3	Naphthalene	0.089	4.75	mg/Kg	SO-224A-UI-1-5'	17 / 26	0.00387 - 0.139	4.75	N/A	3.6 c	N/A	N/A	Y	ASL
	86-30-6	N-Nitrosodiphenylamine	0.315	1.6 J	mg/Kg	SO-224A-UI-1-5'	2 / 22	0.138 - 1.51	1.6	N/A	99 c	N/A	N/A	N	BSL
	85-01-8	Phenanthrene	0.00687 J	26.7	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	26.7	N/A	3.6 c	N/A	N/A	Y	ASL
	108-95-2	Phenol	3.79	3.79	mg/Kg	SO-224A-UI-1-5'	1 / 22	0.138 - 1.51	3.79	N/A	1800 n	N/A	N/A	N	BSL
	129-00-0	Pyrene	0.0128	39.5	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.00788 - 0.00864	39.5	N/A	170 n	N/A	N/A	N	BSL
	72-54-8	4,4'-DDD	0.000414	0.0825 J	mg/Kg	SO-225A-UI-1.5-5'	14 / 22	0.000284 - 0.00484	0.0825	N/A	2 c	N/A	N/A	N	BSL
	72-55-9	4,4'-DDE	0.00132	0.0463 J	mg/Kg	SO-225A-UI-1.5-5'	6 / 21	0.000278 - 0.00484	0.0463	N/A	1.4 c	N/A	N/A	N	BSL
	50-29-3	4,4'-DDT	0.00158	0.0596 J	mg/Kg	SO-206-UI (2-3')	4 / 18	0.000278 - 0.00484	0.0596	N/A	1.7 c	N/A	N/A	N	BSL
	319-84-6	alpha-BHC	0.000607	0.00197	mg/Kg	SO-206-UI (2-3')	2 / 22	0.000284 - 0.00484	0.00197	N/A	0.077 c	N/A	N/A	N	BSL
	5103-71-9	alpha-Chlordane	0.000644	0.0964	mg/Kg	SO-201-UI (4-6')	12 / 22	0.000278 - 0.0006	0.0964	N/A	1.6 c	N/A	N/A	N	BSL
	319-86-8	Delta-BHC	0.00132 J	0.00132 J	mg/Kg	SO-205-UI (2-4')	1 / 22	0.000278 - 0.00484	0.00132	N/A	0.077 c	N/A	N/A	N	BSL
	60-57-1	Dieldrin	0.000879 J	0.426 J	mg/Kg	SO-220-UI-1-4.5'	17 / 22	0.000284 - 0.0015	0.426	N/A	0.03 c	N/A	N/A	Y	ASL
	33213-65-9	Endosulfan II	0.000504	0.000504	mg/Kg	SO-223F-UI-11-12'	1 / 22	0.000284 - 0.00484	0.000504	N/A	37 n	N/A	N/A	N	BSL
	72-20-8	Endrin	0.0018	0.00337 J	mg/Kg	SO-207B-UI (2-3')	3 / 21	0.000278 - 0.00484	0.00337	N/A	1.8 n	N/A	N/A	N	BSL
	58-89-9	Gamma-BHC	0.000708 J	0.000739	mg/Kg	SO-206-UI (2-3')	2 / 22	0.000278 - 0.00484	0.000739	N/A	0.52 c	N/A	N/A	N	BSL
	5103-74-2	Gamma-Chlordane	0.00035	0.152	mg/Kg	SO-201-UI (4-6')	10 / 22	0.000278 - 0.00484	0.152	N/A	1.6 c	N/A	N/A	N	BSL
	12767-79-2	Aroclor 1268	0.0938 J	0.147 J	mg/Kg	SO-225A-UI-1.5-5'	2 / 22	0.0111 - 0.0968	0.147	N/A	0.22 c	N/A	N/A	N	BSL
	53469-21-9	Aroclor-1242	0.0306	2.44 J	mg/Kg	SO-224A-UI-1-5'	4 / 22	0.0127 - 0.0845	2.44	N/A	0.22 c	N/A	N/A	Y	ASL
	11097-69-1	Aroclor-1254	0.0165 J	5.33 J	mg/Kg	SO-224A-UI-1-5'	10 / 22	0.0128 - 0.0845	5.33	N/A	0.11 n	N/A	N/A	Y	ASL
	11096-82-5	Aroclor-1260	0.0418	4.57 J	mg/Kg	SO-224A-UI-1-5'	11 / 22	0.0111 - 0.0845	4.57	N/A	0.22 c	N/A	N/A	Y	ASL
	1746-01-6	Dioxin TEQ	8.7E-08	0.00015	mg/Kg	SO-205-UI-3-4.5	12 / 12	N/A	0.00015	N/A	4.5E-06 c	N/A	N/A	Y	ASL

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
	7429-90-5	Aluminum	2420	11800	mg/Kg	SO-204-UI (2-4')	22 / 22	N/A	11800	N/A	7700 n	N/A	N/A	Y	ASL
	7440-36-0	Antimony	0.0272 J	159 J	mg/Kg	SO-207B-UI (1-2')	22 / 22	N/A	159	N/A	3.1 n	N/A	N/A	Y	ASL
	7440-38-2	Arsenic	1.44	57.4	mg/Kg	SO-205-UI (2-4')	22 / 22	N/A	57.4	N/A	0.39 c	N/A	N/A	Y	ASL
	7440-39-3	Barium	9.3 J	1010 J	mg/Kg	SO-208B-UI (1-5')	22 / 22	N/A	1010	N/A	1500 n	N/A	N/A	N	BSL
	7440-41-7	Beryllium	0.129	1.01	mg/Kg	SO-204-UI (2-4')	22 / 22	N/A	1.01	N/A	16 n	N/A	N/A	N	BSL
	7440-43-9	Cadmium	0.084	12	mg/Kg	SO-207B-UI (1-2')	22 / 22	N/A	12	N/A	7 n	N/A	N/A	Y	ASL
	7440-70-2	Calcium	298 J	29700 J	mg/Kg	SO-208B-UI (1-5')	20 / 22	941 - 982	29700	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	6.11	776	mg/Kg	SO-204-UI (2-4')	22 / 22	N/A	776	N/A	0.29 c	N/A	N/A	Y	ASL
	7440-48-4	Cobalt	1.76	18.7	mg/Kg	SO-204-UI (2-4')	22 / 22	N/A	18.7	N/A	2.3 n	N/A	N/A	Y	ASL
	7440-50-8	Copper	2.9	1650	mg/Kg	SO-207B-UI (1-2')	22 / 22	N/A	1650	N/A	310 n	N/A	N/A	Y	ASL
	57-12-5	Cyanide	0.14	0.654	mg/Kg	SO-224A-UI-1-5'	4 / 22	0.044 - 0.129	0.654	N/A	160 n	N/A	N/A	N	BSL
	7439-89-6	Iron	5400	92500	mg/Kg	SO-223F-UI-11-12'	22 / 22	N/A	92500	N/A	5500 n	N/A	N/A	Y	ASL
	7439-92-1	Lead	2.49 J	9640 J	mg/Kg	SO-208B-UI (1-5')	22 / 22	N/A	9640	N/A	40 n	N/A	N/A	Y	ASL
	7439-95-4	Magnesium	744 J	3090 J	mg/Kg	SO-226A-UI-6-8'	22 / 22	N/A	3090	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	71.4	561	mg/Kg	SO-224A-UI-1-5'	22 / 22	N/A	561	N/A	180 n	N/A	N/A	Y	ASL
	7439-97-6	Mercury	0.0069 J	3.43 J	mg/Kg	SO-226A-UI-6-8'	20 / 22	0.011 - 0.013	3.43	N/A	0.78 n	N/A	N/A	Y	ASL
	7440-02-0	Nickel	4.44	248	mg/Kg	SO-224A-UI-1-5'	22 / 22	N/A	248	N/A	150 n	N/A	N/A	Y	ASL
	7440-09-7	Potassium	138 J	1710	mg/Kg	SO-224A-UI-1-5'	22 / 22	N/A	1710	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	Selenium	0.103	2.69	mg/Kg	SO-205-UI (2-4')	21 / 22	0.624	2.69	N/A	39 n	N/A	N/A	N	BSL
	7440-22-4	Silver	0.0272 J	16.1	mg/Kg	SO-207B-UI (1-2')	22 / 22	N/A	16.1	N/A	39 n	N/A	N/A	N	BSL
	7440-23-5	Sodium	21.6 J	256 J	mg/Kg	SO-208B-UI (1-5')	17 / 22	158 - 212	256	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	Thallium	0.0298 J	0.273	mg/Kg	SO-204-UI (2-4')	22 / 22	N/A	0.273	N/A	N/A	N/A	N/A	Y	NSL
	7440-62-2	Vanadium	5.82	49.9	mg/Kg	SO-207B-UI (1-2')	22 / 22	N/A	49.9	N/A	0.55 n	N/A	N/A	Y	ASL
	7440-66-6	Zinc	28.5	2580	mg/Kg	SO-207B-UI (1-2')	22 / 22	N/A	2580	N/A	2300 n	N/A	N/A	Y	ASL

TABLE 2.2
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Subsurface Soil

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)

Notes:

N/A = Not Applicable or Not Available

[1]

Organic Data Qualifiers

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

Inorganic Data Qualifiers

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

[2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).

[3] Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment.

[4] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Soil.

c = Carcinogen

n = Noncarcinogen (adjusted to a hazard quotient of 0.1)

The PRG values for noted analytes are as follows:

PRG for cadmium associated with dietary intake.

PRG for alpha-BHC (most conservative BHC screening level) has been used for delta-BHC.

PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.

PRG for chromium VI used for chromium.

PRG for cyclohexane has been used for methylcyclohexane.

PRG for dibutyl phthalate has been used for di-n-octylphthalate.

PRG for Aroclor-1260 has been used for Aroclor 1268.

PRG for endosulfan has been used for endosulfan I, endosulfan II, and endosulfan sulfate.

PRG for endrin has been used for endrin aldehyde and endrin ketone.

PRG for methyl mercury has been used for mercury.

PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.

[5] Codes used for rationale are as follows:

Selection Reason: Above Screening Levels (ASL)

No Screening Level (NSL)

Deletion Reason: Essential Nutrient (NUT)

Below Screening Level (BSL)

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (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)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Unnamed Island	75-34-3	1,1-Dichloroethane	0.75	0.83	ug/L	GW-026-UI	2 / 14	0.5 - 2	0.83	N/A	2.4 c	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	0.3 J	0.3 J	ug/L	SEA-608	1 / 14	0.5 - 2	0.3	N/A	37 n	600	MCL	N	BSL
	106-46-7	1,4-Dichlorobenzene	0.81	3.19	ug/L	GW-224A-UI	7 / 14	0.5 - 2	3.19	N/A	0.43 c	75	MCL	Y	ASL
	71-43-2	Benzene	0.72	8.3	ug/L	GW-FD03	6 / 14	0.5 - 2	8.3	N/A	0.41 c	5	MCL	Y	ASL
	108-90-7	Chlorobenzene	2.46	28	ug/L	GW-FD03	7 / 14	0.5 - 2	28	N/A	9.1 n	100	MCL	Y	ASL
	75-00-3	Chloroethane	2.1 J	2.1 J	ug/L	SEA-608	1 / 14	0.5 - 2	2.1	N/A	2100 n	N/A	N/A	N	BSL
	156-59-2	cis-1,2-Dichloroethene	0.72	0.72	ug/L	GW-073-UI	1 / 14	0.5 - 2	0.72	N/A	370 c	70	MCL	N	BSL
	110-82-7	Cyclohexane	0.41 J	0.63	ug/L	SEA-608	3 / 14	0.5 - 2	0.63	N/A	1300 n	N/A	N/A	N	BSL
	108-87-2	Cyclohexane, methyl-	0.36 J	1.34 J	ug/L	GW-224A-UI	2 / 14	0.5 - 2	1.34	N/A	1300 n	N/A	N/A	N	BSL
	98-82-8	Isopropylbenzene	0.91	5.2	ug/L	GW-201-UI	4 / 14	0.5 - 2	5.2	N/A	68 n	N/A	N/A	N	BSL
	1634-04-4	Methyl tert-butyl ether	0.27 J	0.36 J	ug/L	GWI-702	2 / 14	0.5 - 2	0.36	N/A	12 c	N/A	N/A	N	BSL
	108-88-3	Toluene	0.22 J	18.7	ug/L	GW-201-UI	3 / 14	0.5 - 2	18.7	N/A	230 n	1000	MCL	N	BSL
	79-01-6	Trichloroethene	0.55	0.55	ug/L	GW-025-UI	1 / 14	0.5 - 2	0.55	N/A	2 c	5	MCL	N	BSL
	106-42-3/108-38	p/m-Xylene	2.12 J	2.12 J	ug/L	GW-224A-UI	1 / 5	4	2.12	N/A	120 n	10000	MCL	N	BSL
	1330-20-7	Xylene (Total)	0.68 J	0.68 J	ug/L	SEA-608	1 / 9	0.5 - 1.5	0.68	N/A	200 c	10000	MCL	N	BSL
	91-57-6	2-Methylnaphthalene	0.0104	0.577	ug/L	GW-201-UI	4 / 14	0.0104 - 11	0.577	N/A	15 n	N/A	N/A	N	BSL
	106-44-5	4-Methylphenol	0.37	0.526	ug/L	DUPLICATE-3	2 / 14	0.515 - 5	0.526	N/A	18 n	N/A	N/A	N	BSL
	83-32-9	Acenaphthene	0.012	0.404	ug/L	DUPLICATE-3	9 / 14	0.1 - 11	0.404	N/A	220 n	N/A	N/A	N	BSL
	208-96-8	Acenaphthylene	0.0178	0.0365	ug/L	GW-201-UI	4 / 14	0.01 - 11	0.0365	N/A	0.14 c	N/A	N/A	N	BSL
	98-86-2	Acetophenone	0.897	0.897	ug/L	GW-224A-UI	1 / 14	0.52 - 5	0.897	N/A	370 n	N/A	N/A	N	BSL
	120-12-7	Anthracene	0.00545 J	0.0868	ug/L	DUPLICATE-3	7 / 14	0.1 - 11	0.0868	N/A	1100 n	N/A	N/A	N	BSL
	1912-24-9	Atrazine	2.9 J	3.4 J	ug/L	GW-026-UI	2 / 14	0.515 - 5	3.4	N/A	0.29 c	3	MCL	Y	ASL
	50-32-8	Benzo(a)pyrene	0.00756 J	0.0197	ug/L	GW-201-UI	3 / 14	0.01 - 11	0.0197	N/A	0.0029 c	0.2	MCL	Y	ASL
	205-99-2	Benzo(b)fluoranthene	0.00867 J	0.0192	ug/L	GW-201-UI	5 / 14	0.01 - 11	0.0192	N/A	0.029 c	N/A	N/A	N	BSL
	191-24-2	Benzo(g,h,i)perylene	0.00826 J	0.0143	ug/L	GW-201-UI	3 / 14	0.01 - 11	0.0143	N/A	0.14 c	N/A	N/A	N	BSL
	207-08-9	Benzo(k)fluoranthene	0.00604 J	0.0198	ug/L	GW-201-UI	4 / 14	0.01 - 11	0.0198	N/A	0.29 c	N/A	N/A	N	BSL
	56-55-3	Benzo[a]anthracene	0.0057 J	0.11	ug/L	GW-026-UI	8 / 14	0.1 - 11	0.11	N/A	0.029 c	N/A	N/A	Y	ASL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.87	5.17	ug/L	DUPLICATE-3	5 / 14	0.52 - 5	5.17	N/A	4.8 c	6	MCL	Y	ASL
	218-01-9	Chrysene	0.0062 J	0.0482	ug/L	DUPLICATE-3	5 / 14	0.0104 - 11	0.0482	N/A	2.9 c	N/A	N/A	N	BSL
	132-64-9	Dibenzofuran	0.283	0.283	ug/L	GW-201-UI	1 / 14	0.515 - 5	0.283	N/A	N/A	N/A	N/A	Y	NSL
	84-66-2	Diethylphthalate	0.283	0.897	ug/L	GW-224A-UI	3 / 14	0.52 - 5	0.897	N/A	2900 n	N/A	N/A	N	BSL
	84-74-2	Di-N-Butyl phthalate	0.434	0.522	ug/L	GW-201-UI	3 / 14	0.515 - 5	0.522	N/A	370 n	N/A	N/A	N	BSL
	117-84-0	Di-N-Octyl phthalate	0.382 J	0.382 J	ug/L	DUPLICATE-3	1 / 14	0.515 - 5	0.382	N/A	370 n	N/A	N/A	N	BSL
	206-44-0	Fluoranthene	0.01	0.174	ug/L	DUPLICATE-3	8 / 14	0.1 - 10	0.174	N/A	150 n	N/A	N/A	N	BSL
	86-73-7	Fluorene	0.011	0.446	ug/L	DUPLICATE-3	6 / 14	0.0104 - 11	0.446	N/A	150 n	N/A	N/A	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.00718 J	0.0116	ug/L	GW-201-UI	3 / 14	0.01 - 11	0.0116	N/A	0.029 c	N/A	N/A	N	BSL
	98-82-8	Isopropylbenzene	2.58 J	2.58 J	ug/L	DUPLICATE-3	1 / 1	N/A	2.58	N/A	68 n	N/A	N/A	N	BSL
	91-20-3	Naphthalene	0.00914 J	3.53	ug/L	GW-201-UI	8 / 14	0.1 - 11	3.53	N/A	0.14 c	N/A	N/A	Y	ASL
	86-30-6	N-Nitrosodiphenylamine	0.67	14.8	ug/L	GW-201-UI	5 / 14	0.52 - 5	14.8	N/A	14 c	N/A	N/A	Y	ASL
	85-01-8	Phenanthrene	0.01	0.92	ug/L	DUPLICATE-3	8 / 14	0.1 - 11	0.92	N/A	0.14 c	N/A	N/A	Y	ASL

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (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)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	129-00-0	Pyrene	0.0183	0.221	ug/L	DUPLICATE-3	5 / 14	0.1 - 11	0.221	N/A	110 n	N/A	N/A	N	BSL
	72-54-8	4,4'-DDD	0.00282 J	0.0119 J	ug/L	GW-224A-UI	2 / 13	0.000526 - 0.01	0.0119	N/A	0.28 c	N/A	N/A	N	BSL
	72-55-9	4,4'-DDE	0.00135 J	0.00135 J	ug/L	DUPLICATE-3	1 / 13	0.0005 - 0.01	0.00135	N/A	0.2 c	N/A	N/A	N	BSL
	309-00-2	Aldrin	0.000857	0.000857	ug/L	GW-207B-UI	1 / 14	0.0005 - 0.01	0.000857	N/A	0.004 c	N/A	N/A	N	BSL
	319-84-6	alpha-BHC	0.000988	0.000988	ug/L	GW-208B-UI	1 / 14	0.0005 - 0.01	0.000988	N/A	0.011 c	N/A	N/A	N	BSL
	5103-71-9	alpha-Chlordane	0.000892	0.00922 J	ug/L	DUPLICATE-3	4 / 14	0.000526 - 0.01	0.00922	N/A	0.19 c	2	MCL	N	BSL
	319-85-7	beta-BHC	0.00278	0.00278	ug/L	GW-207B-UI	1 / 14	0.0005 - 0.01	0.00278	N/A	0.037 c	N/A	N/A	N	BSL
	60-57-1	Dieldrin	0.00177	0.00177	ug/L	GW-207B-UI	1 / 14	0.0005 - 0.01	0.00177	N/A	0.0042 c	N/A	N/A	N	BSL
	1031-07-8	Endosulfan Sulfate	0.107	0.107	ug/L	DUPLICATE-3	1 / 14	0.0005 - 0.01	0.107	N/A	22 n	N/A	N/A	N	BSL
	53469-21-9	Aroclor-1242	0.258	0.3	ug/L	GW-201-UI	2 / 14	0.021 - 0.22	0.3	N/A	0.034 c	0.5	MCL	Y	ASL
	11097-69-1	Aroclor-1254	0.13	4.28	ug/L	GW-224A-UI	3 / 14	0.021 - 0.22	4.28	N/A	0.034 c	0.5	MCL	Y	ASL
	7429-90-5	Aluminum	38	260	ug/L	GUI-702	10 / 14	16 - 200	260	N/A	3700 n	N/A	N/A	N	BSL
	7440-36-0	Antimony	0.62	5.7	ug/L	GW-224A-UI	5 / 14	0.5 - 2	5.7	N/A	1.5 n	6	MCL	Y	ASL
	7440-38-2	Arsenic	0.436 J	8.4	ug/L	GUI-703	14 / 14	N/A	8.4	N/A	0.045 c	10	MCL	Y	ASL
	7440-39-3	Barium	21	870.6	ug/L	GW-207B-UI	10 / 14	200	870.6	N/A	730 n	2000	MCL	Y	ASL
	7440-41-7	Beryllium	0.18	0.18	ug/L	GUI-702	1 / 14	0.1 - 0.5	0.18	N/A	73 c	4	MCL	N	BSL
	7440-43-9	Cadmium	0.43 J	27	ug/L	GUI-702	7 / 14	0.1 - 0.5	27	N/A	1.8 n	5	MCL	Y	ASL
	7440-70-2	Calcium	11000	112000	ug/L	GW-208B-UI	14 / 14	N/A	112000	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	0.58 J	8	ug/L	GW-224A-UI	11 / 14	0.6	8	N/A	0.043 c	100	MCL	Y	ASL
	7440-48-4	Cobalt	0.77	33	ug/L	GUI-703	8 / 14	0.1 - 50	33	N/A	1.1 n	N/A	N/A	Y	ASL
	7440-50-8	Copper	1.8	69	ug/L	GW-224A-UI	7 / 14	0.7 - 25	69	N/A	150 n	1300	MCL	N	BSL
	7439-89-6	Iron	1500	81000	ug/L	DUPLICATE-3	14 / 14	N/A	81000	N/A	2600 n	N/A	N/A	Y	ASL
	7439-92-1	Lead	0.2	48	ug/L	GW-208B-UI	9 / 14	0.7 - 3	48	N/A	15 n	15	MCL	Y	ASL
	7439-95-4	Magnesium	2200 J	19700	ug/L	GW-208B-UI	9 / 14	5000	19700	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	203 J	1700	ug/L	GUI-703	14 / 14	N/A	1700	N/A	88 n	N/A	N/A	Y	ASL
	7439-97-6	Mercury	0.032 J	0.032 J	ug/L	GW-224A-UI	1 / 14	0.05 - 0.5	0.032	N/A	0.37 n	2	MCL	N	BSL
	7440-02-0	Nickel	2.1	115.1	ug/L	GW-224A-UI	8 / 14	0.5 - 40	115.1	N/A	73 n	N/A	N/A	Y	ASL
	7440-09-7	Potassium	1600	3380	ug/L	GW-207B-UI	9 / 14	5000	3380	N/A	N/A	N/A	N/A	N	NUT
	7782-49-2	Selenium	0.66	1.1	ug/L	SEA-608	3 / 14	0.5 - 5	1.1	N/A	18 n	50	MCL	N	BSL
	7440-22-4	Silver	1.5	1.5	ug/L	GW-224A-UI	1 / 14	0.1 - 10	1.5	N/A	18 n	N/A	N/A	N	BSL
	7440-23-5	Sodium	19000	44000	ug/L	GUI-702	14 / 14	N/A	44000	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	Thallium	0.15	5.8 J	ug/L	GW-073-UI	2 / 14	0.1 - 10	5.8	N/A	N/A	2	MCL	Y	ASL
	7440-62-2	Vanadium	0.89 J	2.5 J	ug/L	GW-224A-UI	6 / 14	0.4 - 50	2.5	N/A	0.26 n	N/A	N/A	Y	ASL
	7440-66-6	Zinc	29.4	4100	ug/L	GUI-703	8 / 14	2 - 20	4100	N/A	1100 n	N/A	N/A	Y	ASL

TABLE 2.3
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (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)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)

Notes:

Multiple results from each monitoring well were treated as discrete samples in the selection of COPCs.

N/A = Not Applicable or Not Available

- [1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- Inorganic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- [2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).
- [3] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Tapwater.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for cadmium associated with water intake.
PRG for chromium VI used for chromium.
PRG for cyclohexane has been used for methylcyclohexane.
PRG for endosulfan has been used for endosulfan sulfate.
PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.
The screening toxicity value for lead is the drinking water criterion protective of blood lead levels in children (USEPA, 2002d).
- MCLs - USEPA National Primary Drinking Water Standards - July 1, 2002
- [4] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (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)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Unnamed Island	91-57-6	2-Methylnaphthalene	1.6 J	2.8 J	ug/L	GW-LE3-LF,GW-LE01-UI	3/7	0.1 - 0.45	2.8	N/A	15 n	N/A	N/A	N	BSL
	83-32-9	Acenaphthene	10 J	19 J	ug/L	GW-LE3-LF	3/7	0.1 - 0.9	19	N/A	220 n	670	AWQC	N	BSL
	208-96-8	Acenaphthylene	0.11	15 J	ug/L	GW-LE02-UI	6/7	0.1	15	N/A	0.14 c	N/A	N/A	Y	ASL
	120-12-7	Anthracene	0.12	2.1 J	ug/L	GW-LE01-UI	7/7	N/A	2.1	N/A	1100 n	8300	AWQC	N	BSL
	50-32-8	Benzo(a)pyrene	0.79 J	5.6 J	ug/L	GW-LE02-UI	4/7	0.35 - 0.5	5.6	N/A	0.0029 c	0.0038	AWQC	Y	ASL
	205-99-2	Benzo(b)fluoranthene	0.36	5 J	ug/L	GW-LE02-UI	7/7	N/A	5	N/A	0.029 c	0.0038	AWQC	Y	ASL
	191-24-2	Benzo(g,h,i)perylene	0.24	2.9 J	ug/L	GW-LE02-UI	7/7	N/A	2.9	N/A	0.14 c	N/A	N/A	Y	ASL
	207-08-9	Benzo(k)fluoranthene	0.15	3.6 J	ug/L	GW-LE02-UI	7/7	N/A	3.6	N/A	0.29 c	0.0038	AWQC	Y	ASL
	56-55-3	Benzo[a]anthracene	0.31	6.8 J	ug/L	GW-LE02-UI	7/7	N/A	6.8	N/A	0.029 c	0.0038	AWQC	Y	ASL
	218-01-9	Chrysene	0.3	7.6 J	ug/L	GW-LE02-UI	7/7	N/A	7.6	N/A	2.9 c	0.0038	AWQC	Y	ASL
	53-70-3	Dibenz[a,h]anthracene	0.098 J	0.75 J	ug/L	GW-LE02-UI	6/7	0.1	0.75	N/A	0.0029 c	0.0038	AWQC	Y	ASL
	206-44-0	Fluoranthene	0.31	7.4	ug/L	GW-LE3-LF	7/7	N/A	7.4	N/A	150 n	130	AWQC	N	BSL
	86-73-7	Fluorene	2 J	7.3 J	ug/L	GW-LE3-LF	3/7	0.12 - 0.32	7.3	N/A	150 n	1100	AWQC	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.19	2.3 J	ug/L	GW-LE02-UI	7/7	N/A	2.3	N/A	0.029 c	0.0038	AWQC	Y	ASL
	91-20-3	Naphthalene	3.3	27 J	ug/L	GW-LE01-UI	4/7	0.11 - 1.7	27	N/A	0.14 c*	N/A	N/A	Y	ASL
	85-01-8	Phenanthrene	2.3 J	11 J	ug/L	GW-LE3-LF	4/7	0.19 - 0.88	11	N/A	0.14 c*	N/A	N/A	Y	ASL
	129-00-0	Pyrene	0.41	9.3 J	ug/L	GW-LE02-UI	7/7	N/A	9.3	N/A	110 n	830	AWQC	N	BSL
	92-52-4	1,1'-Biphenyl	63	63	ug/L	GW-LE6-LF	1/7	5	63	N/A	180 n	N/A	N/A	N	BSL
	95-95-4	2,4,5-Trichlorophenol	1.4 J	1.7 J	ug/L	GW-LE01-UI	2/7	20	1.7	N/A	370 n	1800	AWQC	N	BSL
	106-44-5	4-Methylphenol	1.8 J	110	ug/L	GW-LE6-LF	5/7	5	110	N/A	18 n	N/A	N/A	Y	ASL
	1912-24-9	Atrazine	8.3 J	8.3 J	ug/L	GW-LE02-UI	1/7	5	8.3	N/A	0.29 c	N/A	N/A	Y	ASL
	117-81-7	bis(2-Ethylhexyl)phthalate	6.7	130	ug/L	GW-LE3-LF	5/7	5	130	N/A	4.8 c	1.2	AWQC	Y	ASL
	132-64-9	Dibenzofuran	2.2 J	2.7 J	ug/L	GW-LE01-UI	3/7	5	2.7	N/A	N/A	N/A	N/A	Y	NSL
	84-66-2	Diethylphthalate	1 J	9.5	ug/L	GW-LE5-LF	5/7	5	9.5	N/A	2900 n	17000	AWQC	N	BSL
	84-74-2	Di-n-butyl phthalate	1.1 J	2.7 J	ug/L	GW-LE3-LF	2/7	5	2.7	N/A	370 n	2000	AWQC	N	BSL
	86-30-6	N-Nitrosodiphenylamine	5.9	7.6	ug/L	GW-LE3-LF	3/7	5	7.6	N/A	14 c	3.3	AWQC	Y	ASL
	87-86-5	Pentachlorophenol	2.3 J	2.3 J	ug/L	GW-LE6-LF	1/7	5	2.3	N/A	0.56 c	0.27	AWQC	Y	ASL
	108-95-2	Phenol	1.5 J	8.6	ug/L	GW-LE6-LF	5/7	5	8.6	N/A	1100 n	21000	AWQC	N	BSL
	120-82-1	1,2,4-Trichlorobenzene	0.3 J	0.3 J	ug/L	GW-LE01-UI	1/7	0.5	0.3	N/A	0.41 n	35	AWQC	N	BSL
	95-50-1	1,2-Dichlorobenzene	0.3 J	1.1	ug/L	GW-LE3-LF	2/7	0.5	1.1	N/A	37 n	420	AWQC	N	BSL
	106-46-7	1,4-Dichlorobenzene	1.1	7.3	ug/L	GW-LE3-LF	6/7	0.5	7.3	N/A	0.43 c	63	AWQC	Y	ASL
	78-93-3	2-Butanone	18 J	19 J	ug/L	GW-LE01-UI	2/7	5	19	N/A	710 n	N/A	N/A	N	BSL
	67-64-1	Acetone	20 J	25 J	ug/L	GW-LE02-UI	2/7	5	25	N/A	2200 n	N/A	N/A	N	BSL
	71-43-2	Benzene	0.34 J	15	ug/L	GW-LE3-LF	7/7	N/A	15	N/A	0.41 c	2.2	AWQC	Y	ASL
	75-15-0	Carbon disulfide	0.37 J	1.2	ug/L	GW-LE01-UI	4/7	0.5	1.2	N/A	100 n	N/A	N/A	N	BSL

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (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)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	108-90-7	Chlorobenzene	1.2	26	ug/L	GW-LE3-LF	7/7	N/A	26	N/A	9.1 n	130	AWQC	Y	ASL
	156-59-2	cis-1,2-Dichloroethene	0.79	0.8 J	ug/L	GW-FD01	2/7	0.5	0.8	N/A	37 n	N/A	N/A	N	BSL
	100-41-4	Ethylbenzene	0.38 J	9.1	ug/L	GW-LE6-LF	2/7	0.5	9.1	N/A	1.5 c	530	AWQC	Y	ASL
	98-82-8	Isopropylbenzene	1.2	6.5	ug/L	GW-LE3-LF	4/7	0.5	6.5	N/A	68 n	N/A	N/A	N	BSL
	108-88-3	Toluene	0.36 J	13	ug/L	GW-LE6-LF	5/7	0.5	13	N/A	230 n	1300	AWQC	N	BSL
	1330-20-7	Xylene (total)	0.42 J	21	ug/L	GW-LE6-LF	5/7	0.5	21	N/A	20 n	N/A	N/A	Y	ASL
	1336-36-3	Total PCBs	0.45 J	14	ug/L	GW-LE02-UI	3/7	N/A	14	N/A	0.034 c	N/A	N/A	Y	ASL
	72-54-8	4,4'-DDD	0.015 J	0.08 J	ug/L	GW-LE3-LF	3/6	0.05 - 0.5	0.08	N/A	0.28 c	0.00031	AWQC	Y	ASL
	72-55-9	4,4'-DDE	0.02 J	0.12 J	ug/L	GW-LE02-UI	2/7	0.05 - 0.5	0.12	N/A	0.2 c	0.00022	AWQC	Y	ASL
	50-29-3	4,4'-DDT	0.056 J	0.056 J	ug/L	GW-LE01-UI, GW-FD01	2/7	0.005 - 0.05	0.056	N/A	0.2 c	0.00022	AWQC	Y	ASL
	319-84-6	alpha-BHC	0.014 J	0.014 J	ug/L	GW-LE01-UI	1/7	0.0025 - 0.025	0.014	N/A	0.011 c	0.0026	AWQC	Y	ASL
	5103-71-9	alpha-Chlordane	0.0092 J	0.0092 J	ug/L	GW-LE4-LF	1/7	0.025	0.0092	N/A	0.19 c	0.0008	AWQC	Y	ASL
	60-57-1	Dieldrin	0.01 J	0.068 J	ug/L	GW-LE4-LF	2/6	0.05 - 0.5	0.068	N/A	0.0042 c	0.000052	AWQC	Y	ASL
	1031-07-8	Endosulfan Sulfate	0.011 J	0.11 J	ug/L	GW-LE02-UI	2/7	0.05	0.11	N/A	22 n	62	AWQC	N	BSL
	7421-36-3	Endrin aldehyde	0.08 J	0.08 J	ug/L	GW-LE02-UI	1/7	0.005 - 0.05	0.08	N/A	1.1 n	0.29	AWQC	N	BSL
	53494-70-5	Endrin ketone	0.088	0.088	ug/L	GW-LE02-UI	1/7	0.005 - 0.05	0.088	N/A	1.1 n	N/A	N/A	N	BSL
	5103-74-2	Gamma-Chlordane	0.13 J	0.13 J	ug/L	GW-LE02-UI	1/7	0.025 - 0.25	0.13	N/A	0.19 c	0.0008	AWQC	Y	ASL
	72-43-5	Methoxychlor	0.33	0.33	ug/L	GW-LE02-UI	1/7	0.025 - 0.25	0.33	N/A	18 n	100	AWQC	N	BSL
	7429-90-5	Aluminum	11100	156000	ug/L	GW-LE02-UI	7/7	N/A	156000	N/A	3700 n	N/A	N/A	Y	ASL
	7440-36-0	Antimony	4.9 J	38	ug/L	GW-LE5-LF	4/7	60	38	N/A	1.5 n	5.6	AWQC	Y	ASL
	7440-38-2	Arsenic	27	144	ug/L	GW-LE6-LF	7/7	N/A	144	N/A	0.045 c	0.018	AWQC	Y	ASL
	7440-39-3	Barium	569	3700	ug/L	GW-LE02-UI	7/7	N/A	3700	N/A	730 n	1000	AWQC	Y	ASL
	7440-41-7	Beryllium	0.78 J	31.6	ug/L	GW-LE02-UI	7/7	N/A	31.6	N/A	7.3 n	N/A	N/A	Y	ASL
	7440-43-9	Cadmium	13.9	311	ug/L	GW-LE02-UI	7/7	N/A	311	N/A	1.8 n	N/A	N/A	Y	ASL
	7440-70-2	Calcium	27700	259000	ug/L	GW-LE02-UI	7/7	N/A	259000	N/A	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	58	517	ug/L	GW-LE02-UI	7/7	N/A	517	N/A	0.043 c	N/A	N/A	Y	ASL
	7440-48-4	Cobalt	20.1 J	235	ug/L	GW-LE02-UI	7/7	N/A	235	N/A	1.1 n	N/A	N/A	Y	ASL
	7440-50-8	Copper	66	4230	ug/L	GW-LE02-UI	6/7	25	4230	N/A	150 n	1300	AWQC	Y	ASL
	57-12-5	Cyanide	12.8	103	ug/L	GW-FD01, GW-LE02-UI	7/7	N/A	103	N/A	73 n	140	AWQC	Y	ASL
	7439-89-6	Iron	22200	286000	ug/L	GW-LE02-UI	7/7	N/A	286000	N/A	2600 n	300	AWQC	Y	ASL
	7439-92-1	Lead	723	4540	ug/L	GW-FD01	7/7	N/A	4540	N/A	15 n	N/A	N/A	Y	ASL
	7439-95-4	Magnesium	5730	15500	ug/L	GW-LE02-UI	7/7	N/A	15500	N/A	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	952	8540	ug/L	GW-LE4-LF	7/7	N/A	8540	N/A	88 n	50	AWQC	Y	ASL
	7439-97-6	Mercury	1.8	53.7 J	ug/L	GW-LE01-UI	7/7	N/A	53.7	N/A	0.37 n	N/A	N/A	Y	ASL
	7440-02-0	Nickel	94	2020	ug/L	GW-LE02-UI	7/7	N/A	2020	N/A	73 n	610	AWQC	Y	ASL

TABLE 2.4
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (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)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	7440-09-7	Potassium	5460 J	17900 J	ug/L	GW-LE3-LF	5/7	5000	17900	N/A	N/A	N/A	N/A	N	NUT
	7440-22-4	Silver	22	22	ug/L	GW-LE02-UI	1/7	0.6 - 10	22	N/A	18 n	N/A	N/A	Y	ASL
	7440-23-5	Sodium	19100 J	72500 J	ug/L	GW-LE4-LF	7/7	N/A	72500	N/A	N/A	N/A	N/A	N	NUT
	7440-28-0	Thallium	7.5 J	18.1 J	ug/L	GW-LE02-UI	2/7	4	18.1	N/A	N/A	0.24	AWQC	Y	ASL
	7440-62-2	Vanadium	47.4 J	310	ug/L	GW-LE02-UI	7/7	N/A	310	N/A	0.26 n	N/A	N/A	Y	ASL
	7440-66-6	Zinc	854	50900	ug/L	GW-LE02-UI	7/7	N/A	50900	N/A	1100 n	7400	AWQC	Y	ASL

Notes:

Data represent "leachate" data collected from excavation trenches in Landfill and Unnamed Island and are used for COPC screening purposes only.

N/A = Not Applicable or Not Available

[1]

Organic Data Qualifiers

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

Inorganic Data Qualifiers

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

[2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).

[3] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Tapwater.

c = Carcinogen

n = Noncarcinogen (adjusted to a hazard quotient of 0.1)

The PRG values for noted analytes are as follows:

PRG for cadmium associated with water intake.

PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.

PRG for chromium VI used for chromium.

PRG for endosulfan has been used for endosulfan sulfate.

PRG for endrin has been used for endrin aldehyde and endrin ketone.

PRG for methyl mercury has been used for mercury.

PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.

The screening toxicity value for lead is the drinking water criterion protective of blood lead levels in children (USEPA, 2002d).

AWQCs - National Recommended Water Quality Criteria for human health consumption of water and organism - 2006

[4]

Codes used for rationale are as follows:

Selection Reason: Above Screening Levels (ASL)

No Screening Level (NSL)

Deletion Reason: Essential Nutrient (NUT)

Below Screening Level (BSL)

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
Site-Wide (Excluding Wetlands)	91-57-6	2-Methylnaphthalene	0.0036	0.47	mg/kg	T05BR-005	56/94	0.0023 - 0.63	0.47	0.43	31 n	N/A	N/A	N	BSL
	83-32-9	Acenaphthene	0.003	0.85	mg/kg	SE-047-BR	63/94	0.0021 - 0.63	0.85	0.18	340 n	N/A	N/A	N	BSL
	208-96-8	Acenaphthylene	0.007	0.56	mg/kg	T05BR-005	82/94	0.0023 - 0.52	0.56	0.47	3.6 c	N/A	N/A	N	BSL
	120-12-7	Anthracene	0.0048	2.9	mg/kg	BD062105	88/94	0.0023 - 0.52	2.9	0.96	1700 n	N/A	N/A	N	BSL
	50-32-8	Benzo(a)pyrene	0.0063	6.7	mg/kg	BD062105	92/94	0.0023 - 0.0037	6.7	2.7	0.015 c	N/A	N/A	Y	ASL
	205-99-2	Benzo(b)fluoranthene	0.011	4.3	mg/kg	SE-027-BR	87/89	0.0023 - 0.0037	4.3	2.6	0.15 c	N/A	N/A	Y	ASL
	191-24-2	Benzo(g,h,i)perylene	0.0064	2.9	mg/kg	SE-053-WT	91/94	0.0023 - 0.52	2.9	1.9	3.6 c	N/A	N/A	N	BSL
	207-08-9	Benzo(k)fluoranthene	0.004	3.6	mg/kg	BD062105	91/94	0.0023 - 0.004	3.6	2.4	1.5 c	N/A	N/A	Y	ASL
	56-55-3	Benzo[a]anthracene	0.0045	7.1	mg/kg	BD062105	92/94	0.0023 - 0.0037	7.1	2.8	0.15 c	N/A	N/A	Y	ASL
	218-01-9	Chrysene	0.0076	6.9	mg/kg	BD062105	93/94	0.0037	6.9	2.8	15 c	N/A	N/A	N	BSL
	53-70-3	Dibenz[a,h]anthracene	0.0058	0.92	mg/kg	BD062105	74/94	0.0023 - 1.1	0.92	0.7	0.015 c	N/A	N/A	Y	ASL
	206-44-0	Fluoranthene	0.008	10	mg/kg	BD062105	92/94	0.0023 - 0.0037	10	4.9	230 n	N/A	N/A	N	BSL
	86-73-7	Fluorene	0.0024	0.7	mg/kg	SE-047-BR	75/94	0.0023 - 0.63	0.7	0.32	230 n	N/A	N/A	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.0052	2.5	mg/kg	SE-053-WT, T05BR-005	91/94	0.0023 - 0.52	2.5	1.8	0.15 c	N/A	N/A	Y	ASL
	91-20-3	Naphthalene	0.0041	0.7	mg/kg	SE-047-BR	60/94	0.0023 - 0.63	0.7	0.35	3.6 c	N/A	N/A	N	BSL
	85-01-8	Phenanthrene	0.0091	5.3	mg/kg	SE-047-BR	91/94	0.0023 - 0.004	5.3	2.4	3.6 c	N/A	N/A	Y	ASL
	129-00-0	Pyrene	0.0038	13	mg/kg	BD062105	93/94	0.0037	13	4.2	170 n	N/A	N/A	N	BSL
	92-52-4	1,1'-Biphenyl	0.042 J	0.088 J	mg/kg	BD062105	6/94	0.08 - 0.16	0.088	0.065	390 n	N/A	N/A	N	BSL
	95-48-7	2-Methylphenol	0.0075	0.016	mg/kg	T05PD-002	5/94	0.0016 - 0.66	0.016	0.016	310 n	N/A	N/A	N	BSL
	106-44-5	4-Methylphenol	0.054 J	0.068 J	mg/kg	SE-FD-13	4/94	0.08 - 0.66	0.068	0.074	31 n	N/A	N/A	N	BSL
	100-02-7	4-Nitrophenol	0.26	0.26	mg/kg	T05BR-003	1/94	0.08 - 1.7	0.26	ND	24 n	N/A	N/A	N	BSL
	98-86-2	Acetophenone	0.044 J	0.088 J	mg/kg	SE-FD-13	4/94	0.08 - 0.66	0.088	ND	780 n	N/A	N/A	N	BSL
	100-52-7	Benzaldehyde	0.04 J	1.7	mg/kg	SE-FD-13	37/94	0.08 - 0.63	1.7	0.48	780 n	N/A	N/A	N	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	0.043 J	58 J	mg/kg	SE-074-LF	60/94	0.1 - 0.75	58	5.9	35 c	N/A	N/A	Y	ASL
	85-68-7	Butyl benzyl phthalate	0.064 J	0.2 J	mg/kg	SE-032-BR	9/94	0.08 - 0.66	0.2	0.18	260 c	N/A	N/A	N	BSL
	86-74-8	Carbazole	0.034 J	0.88 J	mg/kg	SE-025-BR	51/94	0.08 - 0.61	0.88	0.33	N/A	N/A	N/A	Y	NSL
	132-64-9	Dibenzofuran	0.044 J	0.5	mg/kg	SE-047-BR	27/94	0.08 - 0.63	0.5	0.086	N/A	N/A	N/A	Y	NSL
	131-11-3	Dimethylphthalate	0.062 J	0.062 J	mg/kg	SE-013-WT	1/94	0.08 - 0.66	0.062	ND	4900 n	N/A	N/A	N	BSL
	84-74-2	Di-n-butyl phthalate	0.043 J	2.8	mg/kg	SE-083-BR	9/94	0.08 - 0.63	2.8	ND	610 n	N/A	N/A	N	BSL
	117-84-0	Di-n-octyl phthalate	0.075 J	11 J	mg/kg	SE-029-BR	12/94	0.08 - 0.66	11	0.15	610 n	N/A	N/A	N	BSL
	86-30-6	N-Nitrosodiphenylamine	0.05 J	1.4	mg/kg	SE-078-UI	4/94	0.08 - 0.66	1.4	ND	99 c	N/A	N/A	N	BSL
	87-86-5	Pentachlorophenol	0.18	0.18	mg/kg	T05BR-003	1/90	0.08 - 3	0.18	ND	3 c	N/A	N/A	N	BSL
	108-95-2	Phenol	0.041 J	1.6 J	mg/kg	T05WB-002	11/94	0.08 - 0.66	1.6	0.18	1800 n	N/A	N/A	N	BSL
	75-35-4	1,1-Dichloroethene	0.002 J	0.002 J	mg/kg	SE-019-LF	1/94	0.0013 - 0.046	0.002	0.002	24 n	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	0.001 J	0.009 J	mg/kg	SE-020-LF	4/94	0.0013 - 0.046	0.009	ND	190 n	N/A	N/A	N	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
	106-46-7	1,4-Dichlorobenzene	0.00051 J	0.02	mg/kg	SE-020-LF	7/94	0.0017 - 0.046	0.02	0.00046	2.4 c	N/A	N/A	N	BSL
	78-93-3	2-Butanone	0.003 J	0.75 J	mg/kg	SE-078-UI	58/94	0.0017 - 0.033	0.75	0.056	2800 n	N/A	N/A	N	BSL
	108-10-1	4-Methyl-2-pentanone	0.13 J	0.13 J	mg/kg	SE-078-UI	1/94	0.0013 - 0.046	0.13	ND	530 n	N/A	N/A	N	BSL
	67-64-1	Acetone	0.003 J	2.3 J	mg/kg	SE-078-UI	47/94	0.0049 - 0.04	2.3	0.15	6100 n	N/A	N/A	N	BSL
	71-43-2	Benzene	0.00056 J	0.006 J	mg/kg	SE-078-UI	2/94	0.0013 - 0.046	0.006	ND	1.1 c	N/A	N/A	N	BSL
	75-15-0	Carbon disulfide	0.00088 J	0.044 J	mg/kg	SE-078-UI	29/94	0.0017 - 0.038	0.044	0.013	82 n	N/A	N/A	N	BSL
	108-90-7	Chlorobenzene	0.00081 J	0.053 J	mg/kg	SE-069-NP	12/94	0.0017 - 0.046	0.053	ND	29 n	N/A	N/A	N	BSL
	75-00-3	Chloroethane	0.014 J	0.014 J	mg/kg	SE-FD-12	1/94	0.0013 - 0.046	0.014	ND	1500 n	N/A	N/A	N	BSL
	156-59-2	cis-1,2-Dichloroethene	0.004 J	0.006 J	mg/kg	SE-032-BR	2/94	0.0013 - 0.046	0.006	ND	78 n	N/A	N/A	N	BSL
	110-82-7	Cyclohexane	0.001 J	0.036 J	mg/kg	SE-FD-12	7/94	0.0013 - 0.046	0.036	ND	700 n	N/A	N/A	N	BSL
	108-87-2	Cyclohexane, methyl-	0.00038 J	0.012 J	mg/kg	SE-020-LF	2/94	0.0017 - 0.046	0.012	ND	700 n	N/A	N/A	N	BSL
	100-41-4	Ethylbenzene	0.00054	0.0034	mg/kg	T05WB-002	8/94	0.0013 - 0.046	0.0034	0.0053	5.4 c	N/A	N/A	N	BSL
	98-82-8	Isopropylbenzene	0.002 J	0.003 J	mg/kg	SE-020-LF	2/94	0.0013 - 0.046	0.003	ND	210 n	N/A	N/A	N	BSL
	79-20-9	Methyl acetate	0.001 J	0.038 J	mg/kg	SE-079-UI	7/94	0.0013 - 0.046	0.038	0.001	7800 n	N/A	N/A	N	BSL
	75-09-2	Methylene chloride	0.004 JEB	0.061 J	mg/kg	SE-079-UI	8/94	0.0037 - 0.087	0.061	ND	11 c	N/A	N/A	N	BSL
	100-42-5	Styrene	0.00061	0.0013	mg/kg	T05WB-002	2/94	0.0013 - 0.046	0.0013	0.002	630 n	N/A	N/A	N	BSL
	127-18-4	Tetrachloroethene	0.008 J	0.011	mg/kg	SE-032-BR	2/94	0.0013 - 0.046	0.011	ND	0.55 c	N/A	N/A	N	BSL
	108-88-3	Toluene	0.0005 J	0.038 J	mg/kg	SE-079-UI	23/94	0.0013 - 0.034	0.038	0.00051	500 n	N/A	N/A	N	BSL
	79-01-6	Trichloroethene	0.002 J	0.003 J	mg/kg	SE-032-BR	2/94	0.0013 - 0.046	0.003	0.0024	2.8 c	N/A	N/A	N	BSL
	75-69-4	Trichlorofluoromethane	0.001 J	0.002 J	mg/kg	SE-005-UI, SE-067-BR	3/94	0.0013 - 0.046	0.002	ND	79 n	N/A	N/A	N	BSL
	1330-20-7	Xylene (Total)	0.001 J	0.004 J	mg/kg	SE-078-UI	7/94	0.004 - 0.046	0.004	0.001	63 n	N/A	N/A	N	BSL
	53469-21-9	Aroclor-1242	0.25 J	0.25 J	mg/kg	SE-030-BR	1/92	0.0065 - 0.036	0.25	ND	0.22 c	N/A	N/A	Y	ASL
	12672-29-6	Aroclor-1248	0.066	0.13	mg/kg	T05BR-002	2/92	0.0066 - 0.036	0.13	ND	0.22 c	N/A	N/A	N	BSL
	11097-69-1	Aroclor-1254	0.0094 J	2.8	mg/kg	SE-026-BR	19/92	0.0065 - 0.03	2.8	1.4	0.11 n	N/A	N/A	Y	ASL
	11096-82-5	Aroclor-1260	0.0057 J	0.76	mg/kg	T05BR-005	60/93	0.0071 - 0.012	0.76	0.65	0.22 c	N/A	N/A	Y	ASL
	72-54-8	4,4'-DDD	0.00041 J	0.035 J	mg/kg	SE-051-DF	59/86	0.00073 - 0.0081	0.035	0.018	2 c	N/A	N/A	N	BSL
	72-55-9	4,4'-DDE	0.00045 J	0.037 J	mg/kg	SE-081-BR	55/79	0.00065 - 0.0012	0.037	0.016	1.4 c	N/A	N/A	N	BSL
	50-29-3	4,4'-DDT	0.00072 J	0.005 J	mg/kg	SE-010-WT	13/64	0.00059 - 0.0093	0.005	0.0027	1.7 c	N/A	N/A	N	BSL
	309-00-2	Aldrin	0.0014 J	0.0014 J	mg/kg	SE-008-BR	1/91	0.00034 - 0.0009	0.0014	ND	0.029 c	N/A	N/A	N	BSL
	5103-71-9	Alpha-chlordane	0.00029 J	0.039 J	mg/kg	SE-079-UI	40/86	0.00034 - 0.00082	0.039	0.0063	1.6 c	N/A	N/A	N	BSL
	319-85-7	Beta-BHC	0.00051 J	0.0029	mg/kg	SE-016-WT	2/89	0.00034 - 0.0009	0.0029	ND	0.27 c	N/A	N/A	N	BSL
	319-86-8	Delta-BHC	0.00097	0.0016	mg/kg	T05BR-005	2/92	0.00034 - 0.0009	0.0016	0.0017	0.077 c	N/A	N/A	N	BSL
	60-57-1	Dieldrin	0.0004 J	0.074 J	mg/kg	SE-051-DF	37/84	0.00066 - 0.0081	0.074	0.017	0.03 c	N/A	N/A	Y	ASL
	33213-65-9	Endosulfan II	0.0014	0.0014	mg/kg	SE-064-BR	1/91	0.00059 - 0.0013	0.0014	ND	37 n	N/A	N/A	N	BSL
	1031-07-8	Endosulfan sulfate	0.001 J	0.01 J	mg/kg	SE-080-UI	16/80	0.00059 - 0.0093	0.01	0.013	37 n	N/A	N/A	N	BSL
	72-20-8	Endrin	0.0086 J	0.0086 J	mg/kg	SE-087-UI	1/91	0.00059 - 0.0013	0.0086	ND	1.8 n	N/A	N/A	N	BSL
	7421-36-3	Endrin aldehyde	0.0012 J	0.0095	mg/kg	SE-081-BR	13/77	0.00059 - 0.0045	0.0095	0.0027	1.8 n	N/A	N/A	N	BSL
	53494-70-5	Endrin ketone	0.00075 J	0.0021 J	mg/kg	T05BR-006	9/69	0.00059 - 0.0093	0.0021	0.02	1.8 n	N/A	N/A	N	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
	5103-74-2	Gamma-Chlordane	0.00034 J	0.035 J	mg/kg	SE-FD-13	31/67	0.00034 - 0.0042	0.035	0.0065	1.6 c	N/A	N/A	N	BSL
	1024-57-3	Heptachlor epoxide	0.027 J	0.027 J	mg/kg	SE-080-UI	1/92	0.00034 - 0.0009	0.027	ND	0.053 c	N/A	N/A	N	BSL
	72-43-5	Methoxychlor	0.0045 J	0.016 J	mg/kg	SE-051-DF	8/88	0.00059 - 0.0066	0.016	ND	31 n	N/A	N/A	N	BSL
	7429-90-5	Aluminum	1800	36500	mg/kg	SE-055-WT	94/94	N/A	36500	12	7700 n	N/A	N/A	Y	ASL
	7440-36-0	Antimony	0.2	18.9	mg/kg	SE-001-UI	44/94	0.1 - 58	18.9	0.00076	3.1 n	N/A	N/A	Y	ASL
	7440-38-2	Arsenic	1.1	92.3	mg/kg	SE-041-BR	93/94	0.44	92.3	0.012	0.39 c	N/A	N/A	Y	ASL
	7440-39-3	Barium	8.7	617	mg/kg	SE-001-UI	62/94	0.15 - 76	617	0.14	1500 n	N/A	N/A	N	BSL
	7440-41-7	Beryllium	0.081	1.7	mg/kg	SE-079-UI	53/94	0.063 - 1.9	1.7	0.00088	16 n	N/A	N/A	N	BSL
	7440-43-9	Cadmium	0.09	30.2	mg/kg	SE-069-NP	85/94	0.043 - 0.071	30.2	0.012	7 n	N/A	N/A	Y	ASL
	7440-70-2	Calcium	240	8310	mg/kg	SE-055-WT	71/94	990 - 1900	8310	3.3	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	3.7	354	mg/kg	SE-078-UI	94/94	N/A	354	0.12	0.29 c	N/A	N/A	Y	ASL
	7440-48-4	Cobalt	1.1	32.5	mg/kg	SE-055-WT	48/94	9 - 19	32.5	0.012	2.3 n	N/A	N/A	Y	ASL
	7440-50-8	Copper	5.7	653	mg/kg	SE-001-UI	92/94	5.5 - 5.8	653	0.18	310 n	N/A	N/A	Y	ASL
	57-12-5	Cyanide	0.17	5.7	mg/kg	SE-085-UI	18/78	0.16 - 0.84	5.7	ND	160 n	N/A	N/A	N	BSL
	7439-89-6	Iron	3600	57000	mg/kg	T05WD-003	94/94	N/A	57000	25	5500 n	N/A	N/A	Y	ASL
	7439-92-1	Lead	3	1760	mg/kg	SE-078-UI	94/94	N/A	1760	0.45	40 n	N/A	N/A	Y	ASL
	7439-95-4	Magnesium	680	27400	mg/kg	SE-055-WT	81/94	996 - 1900	27400	4.1	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	30	1900	mg/kg	SE-055-WT	94/94	N/A	1900	0.3	180 n	N/A	N/A	Y	ASL
	7439-97-6	Mercury	0.016	1.1	mg/kg	SE-087-UI	62/94	0.045 - 0.088	1.1	0.00054	0.78 n	N/A	N/A	Y	ASL
	7440-02-0	Nickel	3	82.7	mg/kg	SE-055-WT	66/94	7.3 - 15	82.7	0.052	150 n	N/A	N/A	N	BSL
	7440-09-7	Potassium	310	13500	mg/kg	SE-055-WT	34/94	920 - 1904	13500	1.5	N/A	N/A	N/A	N	NUT
	7782-49-2	Selenium	0.22	31.2	mg/kg	SE-026-BR	69/94	0.6 - 1.9	31.2	0.0025	39 n	N/A	N/A	N	BSL
	7440-22-4	Silver	0.08	23.3	mg/kg	SE-079-UI	91/94	2.3 - 3.7	23.3	0.0052	39 n	N/A	N/A	N	BSL
	7440-23-5	Sodium	28	290	mg/kg	T05WB-002	16/94	860 - 1904	290	2.5	N/A	N/A	N/A	N	NUT
	7440-28-0	Thallium	0.023	1.3	mg/kg	SE-041-BR	25/94	0.35 - 1.1	1.3	0.0004	N/A	N/A	N/A	Y	NSL
	7440-62-2	Vanadium	3.4	86.6	mg/kg	SE-055-WT	71/94	9.9 - 19	86.6	0.031	0.55 n	N/A	N/A	Y	ASL
	7440-66-6	Zinc	20	1470	mg/kg	SE-004-UI	94/94	N/A	1470	0.68	2300 n	N/A	N/A	N	BSL

TABLE 2.5
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)

Notes:

N/A = Not Applicable or Not Available

- [1] **Organic Data Qualifiers**
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
B = The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
E = The compound was quantitated above the calibration range.
Inorganic Data Qualifiers
J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- [2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).
- [3] Values represent maximum background concentrations. Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment. ND = Non-detect.
- [4] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Soil.
c = Carcinogen
n = Noncarcinogen (adjusted to a hazard quotient of 0.1)
The PRG values for noted analytes are as follows:
PRG for beta-hexachlorocyclohexane has been used for delta-BHC.
PRG for cadmium associated with water intake.
PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.
PRG for chromium VI used for chromium.
PRG for cyclohexane has been used for methylcyclohexane.
PRG for dibutyl phthalate has been used for di-n-octylphthalate.
PRG for diethylphthalate has been used for dimethylphthalate.
PRG for endosulfan has been used for endosulfan II and endosulfan sulfate.
PRG for endrin has been used for endrin aldehyde and endrin ketone.
PRG for methyl mercury has been used for mercury.
PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.
PRG for p-nitrotoluene has been used for 4-nitrophenol.
- [5] Codes used for rationale are as follows:
Selection Reason: Above Screening Levels (ASL)
No Screening Level (NSL)
Deletion Reason: Essential Nutrient (NUT)
Below Screening Level (BSL)

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier)	Maximum Concentration (Qualifier)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening	Background Value	Screening Toxicity Value (N/C)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion
			(1)	(1)					(2)	(3)	(4)				(5)
Site-Wide (Excluding Wetlands)	83-32-9	Acenaphthene	0.0062 J	0.0062 J	ug/L	SW-3 Pratt, SW-4 Pratt	2/2	N/A	0.0062	0.0058	220 n	670	AWQC	N	BSL
	208-96-8	Acenaphthylene	0.01 J	0.013	ug/L	SW-4 Pratt	2/2	N/A	0.013	0.01	0.14 c	N/A	N/A	N	BSL
	120-12-7	Anthracene	0.013	0.19 J	ug/L	SW-052-WT	4/66	0.1	0.19	0.014	1100 n	8300	AWQC	N	BSL
	50-32-8	Benzo(a)pyrene	0.11	0.34 J	ug/L	SW-020-LF	6/64	0.1	0.34	0.067	0.0029 c	0.0038	AWQC	Y	ASL
	205-99-2	Benzo(b)fluoranthene	0.1	0.36	ug/L	SW-020-LF	8/64	0.1	0.36	0.086	0.029 c	0.0038	AWQC	Y	ASL
	191-24-2	Benzo(g,h,i)perylene	0.1	0.23	ug/L	SW-020-LF	4/64	0.1	0.23	0.13	0.14 c	N/A	N/A	Y	ASL
	207-08-9	Benzo(k)fluoranthene	0.1	0.26	ug/L	SW-020-LF	2/64	0.1	0.26	0.069	0.29 c	0.0038	AWQC	Y	ASL
	56-55-3	Benzo[a]anthracene	0.1	0.2	ug/L	SW-020-LF	5/64	0.1	0.2	0.044	0.029 c	0.0038	AWQC	Y	ASL
	218-01-9	Chrysene	0.072	0.3	ug/L	SW-020-LF	8/66	0.05	0.3	0.074	2.9 c	0.0038	AWQC	Y	ASL
	206-44-0	Fluoranthene	0.059 J	0.39	ug/L	SW-020-LF	12/66	0.1	0.39	0.083	150 n	130	AWQC	N	BSL
	86-73-7	Fluorene	0.0068 J	0.0076 J	ug/L	SW-3 Pratt	2/2	N/A	0.0076	0.0064	150 n	1100	AWQC	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.1	0.19	ug/L	SW-020-LF	3/64	0.1	0.19	0.13	0.029 c	0.0038	AWQC	Y	ASL
	91-20-3	Naphthalene	0.0067 J	0.19	ug/L	SW-007-UI	4/66	0.1 - 0.13	0.19	0.0084	0.14 c	N/A	N/A	Y	ASL
	85-01-8	Phenanthrene	0.041	0.21	ug/L	SW-075-UI	16/66	0.1	0.21	0.045	0.14 c	N/A	N/A	Y	ASL
	129-00-0	Pyrene	0.071	0.42	ug/L	SW-020-LF	14/66	0.1	0.42	0.087	110 n	830	AWQC	N	BSL
	117-81-7	bis(2-Ethylhexyl)phthalate	1.3 J	10	ug/L	SW-051-DF	4/63	5	10	ND	4.8 c	1.2	AWQC	Y	ASL
	84-74-2	Di-n-butyl phthalate	1.1 J	1.8 J	ug/L	SW-047-BR	2/63	5	1.8	ND	370 n	2000	AWQC	N	BSL
	86-30-6	N-Nitrosodiphenylamine	1.6 J	1.6 J	ug/L	SW-001-UI	1/63	5	1.6	ND	14 c	3.3	AWQC	N	BSL
	106-46-7	1,4-Dichlorobenzene	0.54	0.54	ug/L	SW-020-LF	1/64	0.5	0.54	ND	0.43 c	63	AWQC	Y	ASL
	67-64-1	Acetone	12 J	12 J	ug/L	SW-024-BR	1/64	5 - 11	12	ND	2200 n	N/A	N/A	N	BSL
	71-43-2	Benzene	0.34 J	2.4	ug/L	SW-021-NP	3/64	0.5	2.4	ND	0.41 c	2.2	AWQC	Y	ASL
	75-27-4	Bromodichloromethane	0.31 J	0.31 J	ug/L	SW-029-BR	1/64	0.5	0.31	ND	0.12 c	0.55	AWQC	Y	ASL
	75-25-2	Bromoform	0.5	0.5	ug/L	SW-027-BR	1/64	0.5	0.5	ND	8.5 c	4.3	AWQC	N	BSL
	108-90-7	Chlorobenzene	1.5	3.5	ug/L	SW-021-NP	2/64	0.5	3.5	ND	9.1 n	130	AWQC	N	BSL
	74-87-3	Chloromethane	0.33 J	0.67	ug/L	SW-016-WT	12/64	0.32 - 0.57	0.67	0.37	19 n	N/A	N/A	N	BSL
	1634-04-4	Methyl tert-butyl ether	0.73 J	0.73 J	ug/L	SW-026-BR	1/64	0.5	0.73	ND	12 c	N/A	N/A	N	BSL
	108-88-3	Toluene	0.6	2.6	ug/L	SW-078-UI	2/64	0.5	2.6	ND	230 n	1300	AWQC	N	BSL
	11096-82-5	Aroclor-1260	0.12 J	0.3 J	ug/L	SW-020-LF	2/66	0.023 - 0.056	0.3	ND	0.034 c	0.000064	AWQC	Y	ASL
	72-54-8	4,4'-DDD	0.0047 J	0.025 J	ug/L	SW-020-LF	5/66	0.0011 - 0.0056	0.025	ND	0.28 c	0.00031	AWQC	Y	ASL
	72-55-9	4,4'-DDE	0.0014	0.015 J	ug/L	SW-020-LF	2/66	0.0012 - 0.0056	0.015	0.0014	0.2 c	0.00022	AWQC	Y	ASL
	50-29-3	4,4'-DDT	0.0017	0.0092 J	ug/L	SW-077-UI	2/66	0.0012 - 0.0056	0.0092	ND	0.2 c	0.00022	AWQC	Y	ASL
	319-84-6	alpha-BHC	0.0021 J	0.0026 J	ug/L	SW-4 Pratt	2/66	0.0012 - 0.0028	0.0026	0.0029	0.011 c	0.0026	AWQC	N	BSL
	5103-71-9	alpha-Chlordane	0.0033 J	0.0044 J	ug/L	SW-051-DF	2/66	0.0011 - 0.0028	0.0044	ND	0.19 c	0.0008	AWQC	Y	ASL
	319-85-7	beta-BHC	0.0036 J	0.01 J	ug/L	SW-017-WT	3/64	0.0011 - 0.0028	0.01	ND	0.037 c	0.0091	AWQC	Y	ASL

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
	60-57-1	Dieldrin	0.0013	0.014 J	ug/L	SW-020-LF	6/66	0.005 - 0.0056	0.014	0.0014	0.0042 c	0.000052	AWQC	Y	ASL
	1031-07-8	Endosulfan Sulfate	0.011 J	0.013	ug/L	SW-011-WT	2/63	0.0011 - 0.0056	0.013	ND	22 n	62	AWQC	N	BSL
	53494-70-5	Endrin Ketone	0.006 J	0.006 J	ug/L	SW-021-NP	1/66	0.0011 - 0.0056	0.006	ND	1.1 n	N/A	N/A	N	BSL
	58-89-9	Gamma-BHC	0.0043 J	0.0043 J	ug/L	SW-077-UI	1/66	0.0011 - 0.0028	0.0043	ND	0.061 c	N/A	N/A	N	BSL
	5103-74-2	Gamma-Chlordane	0.0027 J	0.0094	ug/L	SW-077-UI	3/65	0.0011 - 0.0028	0.0094	ND	0.19 c	0.0008	AWQC	Y	ASL
	1024-57-3	Heptachlor Epoxide	0.0029 J	0.0051 J	ug/L	SW-077-UI	3/65	0.0011 - 0.0028	0.0051	ND	0.0074 c	0.000039	AWQC	Y	ASL
		<u>Metals (Total)</u>													
	7429-90-5	Aluminum	23.9 J	20800	ug/L	SW-020-LF	51/66	200	20800	360	3700 n	N/A	N/A	Y	ASL
	7440-38-2	Arsenic	0.29	17.5	ug/L	SW-020-LF	66/66	N/A	17.5	2.29	0.045 c	0.018	AWQC	Y	ASL
	7440-39-3	Barium	23	598 J	ug/L	SW-020-LF	15/66	27.7 - 200	598	25	730 n	1000	AWQC	N	BSL
	7440-41-7	Beryllium	0.37 J	1.6 J	ug/L	SW-020-LF	2/66	0.14 - 0.3	1.6	ND	7.3 n	N/A	N/A	N	BSL
	7440-43-9	Cadmium	0.23 J	19.9	ug/L	SW-020-LF	26/66	0.2 - 1.2	19.9	0.82	1.8 n	N/A	N/A	Y	ASL
	7440-70-2	Calcium	6800	60600	ug/L	SW-052-WT	66/66	N/A	60600	18100	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	0.43 J	260	ug/L	SW-020-LF	37/66	0.4 - 2.1	260	2.8	0.043 c	N/A	N/A	Y	ASL
	7440-48-4	Cobalt	0.51	9.2 J	ug/L	SW-020-LF	17/66	0.37 - 50	9.2	0.54	1.1 n	N/A	N/A	Y	ASL
	7440-50-8	Copper	7.7	428	ug/L	SW-020-LF	4/66	0.8 - 25	428	10	150 n	1300	AWQC	Y	ASL
	57-12-5	Cyanide	3.2 J	179 J	ug/L	SW-017-WT	7/64	3 - 10	179	ND	73 n	140	AWQC	Y	ASL
	7439-89-6	Iron	407 J	54700 J	ug/L	SW-020-LF	55/66	368 - 1940	54700	840	2600 n	300	AWQC	Y	ASL
	7439-92-1	Lead	1.1 J	330	ug/L	SW-020-LF	38/66	0.8 - 2	330	11	15 n	N/A	N/A	Y	ASL
	7439-95-4	Magnesium	1400	16900 J	ug/L	SW-020-LF	28/66	5000	16900	3280	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	15.4 J	1200 J	ug/L	SW-020-LF	66/66	N/A	1200	126	88 n	50	AWQC	Y	ASL
	7439-97-6	Mercury	0.014	0.46 J	ug/L	SW-043-BR	4/66	0.12 - 0.17	0.46	0.019	0.37 n	N/A	N/A	Y	ASL
	7440-02-0	Nickel	1.8 J,J	44.1	ug/L	SW-020-LF	16/66	0.5 - 40	44.1	4.1	73 n	610	AWQC	N	BSL
	7440-09-7	Potassium	1800	26200	ug/L	SW-020-LF	33/66	5000	26200	5640	N/A	N/A	N/A	N	NUT
	7782-49-2	Selenium	0.65	0.65	ug/L	SW-3 Pratt Cumberland	1/30	0.5 - 3	0.65	3.7	18 n	170	AWQC	N	BSL
	7440-22-4	Silver	2.1 J	15.2 J	ug/L	SW-020-LF	4/66	0.13 - 10	15.2	ND	18 n	N/A	N/A	N	BSL
	7440-23-5	Sodium	8110	84200 J	ug/L	SW-020-LF	66/66	N/A	84200	59700	N/A	N/A	N/A	N	NUT
	7440-62-2	Vanadium	0.41 J	60.4	ug/L	SW-020-LF	49/66	0.4 - 50	60.4	2.1	0.26 n	N/A	N/A	Y	ASL
	7440-66-6	Zinc	17.7 J	751	ug/L	SW-020-LF	20/66	3 - 20	751	20.8	1100 n	7400	AWQC	N	BSL
		<u>Metals (Dissolved)</u>													
	7429-90-5	Aluminum	56	58	ug/L	SW-3 Pratt Cumberland	2/6	6	58	64	3700 n	N/A	N/A	N	BSL
	7440-36-0	Antimony	0.53	0.53	ug/L	SW-3 Pratt Cumberland	1/6	0.5 - 3	0.53	ND	1.5 n	5.6	AWQC	N	BSL
	7440-38-2	Arsenic	0.655	1.87	ug/L	SW-026-BR	6/6	N/A	1.87	1.69	0.045 c	0.018	AWQC	Y	ASL
	7440-39-3	Barium	18	18	ug/L	SW-3 Pratt Cumberland, SW-4 Pratt Lincoln	2/6	200	18	19	730 n	1000	AWQC	N	BSL

TABLE 2.6
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Background Value (3)	Screening Toxicity Value (N/C) (4)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (5)
	7440-43-9	Cadmium	0.33	0.34	ug/L	SW-3 Pratt Cumberland	2/6	0.2	0.34	0.37	1.8 n	N/A	N/A	N	BSL
	7440-70-2	Calcium	7000	14200	ug/L	SW-030-BR	6/6	N/A	14200	13800	N/A	N/A	N/A	N	NUT
	7440-47-3	Chromium	0.42 J	0.52 J	ug/L	SW-026-BR	2/6	0.4 - 2	0.52	ND	0.043 c	N/A	N/A	Y	ASL
	7440-48-4	Cobalt	0.73 J	0.73 J	ug/L	SW-030-BR	1/6	0.5	0.73	ND	1.1 n	N/A	N/A	N	BSL
	7440-50-8	Copper	3.8	3.9	ug/L	SW-4 Pratt Lincoln	2/6	25	3.9	3.9	150 n	1300	AWQC	N	BSL
	7439-89-6	Iron	210	395	ug/L	SW-030-BR	6/6	N/A	395	291	2600 n	300	AWQC	Y	ASL
	7439-92-1	Lead	0.61	2.9 J	ug/L	SW-011-WT	6/6	N/A	2.9	4.5	15 n	N/A	N/A	N	BSL
	7439-95-4	Magnesium	1200	2900 J	ug/L	SW-030-BR	3/6	5000	2900	1300	N/A	N/A	N/A	N	NUT
	7439-96-5	Manganese	62	242	ug/L	SW-002-UI	5/6	15	242	63	88 n	50	AWQC	Y	ASL
	7440-02-0	Nickel	2.2	3.9 J	ug/L	SW-030-BR	4/6	40	3.9	3.5	73 n	610	AWQC	N	BSL
	7440-09-7	Potassium	1700	1700	ug/L	SW-3 Pratt Cumberland, SW-4 Pratt Lincoln	2/6	5000	1700	1800	N/A	N/A	N/A	N	NUT
	7440-23-5	Sodium	22900	49600 J	ug/L	SW-026-BR	6/6	N/A	49600	48900	N/A	N/A	N/A	N	NUT
	7440-62-2	Vanadium	0.55 J	1.4	ug/L	SW-4 Pratt Lincoln	3/6	0.4	1.4	1.4	0.26 n	N/A	N/A	Y	ASL
	7440-66-6	Zinc	14.4 J	22	ug/L	SW-4 Pratt Lincoln	4/6	20	22	24	1100 n	7400	AWQC	N	BSL

Notes:

N/A = Not Applicable or Not Available

[1]

Organic Data Qualifiers

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

Inorganic Data Qualifiers

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

[2] The maximum concentration was used. Duplicate samples were treated as discrete samples in the identification of maxima. However, duplicate samples will be averaged prior to statistical evaluation (i.e., development of UCLs).

[3] Values represent maximum background concentrations. Background values were not used for COPC screening purposes, although they may be considered in the risk characterization portion of the risk assessment. ND = Non-detect.

[4] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Tapwater.

c = Carcinogen

n = Noncarcinogen (adjusted to a hazard quotient of 0.1)

The PRG values for noted analytes are as follows:

PRG for cadmium associated with water intake.

PRG for chlordane has been used for alpha-chlordane and gamma-chlordane.

PRG for chromium VI used for chromium.

PRG for endosulfan has been used for endosulfan sulfate.

PRG for endrin has been used for endrin ketone.

PRG for methyl mercury has been used for mercury.

PRG for naphthalene has been used for acenaphthylene, benzo(g,h,i)perylene, and phenanthrene.

The screening toxicity value for lead is the drinking water criterion protective of blood lead levels in children (USEPA, 2002d).

AWQCs - National Recommended Water Quality Criteria for human health consumption of water and organism - 2006

[5]

Codes used for rationale are as follows:

Selection Reason: Above Screening Levels (ASL)

No Screening Level (NSL)

Deletion Reason: Essential Nutrient (NUT)

Below Screening Level (BSL)

TABLE 2.7
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Units	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Unnamed Island	75-35-4	1,1-Dichloroethene	0.005 J	0.005 J	mg/Kg	SO-007-UI	1 / 57	0.00154 - 0.29	22	ug/m3	21 n	N/A	N/A	Y	ASL
	120-82-1	1,2,4-Trichlorobenzene	0.00426	0.011	mg/Kg	SO-W01-UI	2 / 57	0.00154 - 0.29	0.033	ug/m3	0.21 n	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	0.0017 J	0.0055	mg/Kg	SO-224A-UI-1-5'	2 / 57	0.00154 - 0.29	0.18	ug/m3	21 n	N/A	N/A	N	BSL
	106-46-7	1,4-Dichlorobenzene	0.00125 J	1.25	mg/Kg	SO-224A-UI-1-5'	5 / 57	0.00154 - 0.29	54	ug/m3	0.22 c	N/A	N/A	Y	ASL
	78-93-3	2-Butanone	0.00456	0.525 J	mg/Kg	SO-224A-UI-1-5'	6 / 57	0.0039 - 0.724	28	ug/m3	520 n	N/A	N/A	N	BSL
	67-64-1	Acetone	0.00285 J	1.98 J	mg/Kg	SO-224A-UI-1-5'	21 / 57	0.00482 - 0.724	133	ug/m3	3200 n	N/A	N/A	N	BSL
	71-43-2	Benzene	0.002 J	0.0135 J	mg/Kg	SO-208B-UI (1-5')	3 / 57	0.00154 - 0.29	17	ug/m3	0.31 c	N/A	N/A	Y	ASL
	75-15-0	Carbon disulfide	0.00124 J	0.05	mg/Kg	SO-224A-UI-1-5'	6 / 57	0.00156 - 0.29	306	ug/m3	73 n	N/A	N/A	Y	ASL
	56-23-5	Carbon tetrachloride	0.00144 J	0.00602	mg/Kg	SO-209-UI (0-1')	3 / 57	0.00154 - 0.29	106	ug/m3	0.16 c	N/A	N/A	Y	ASL
	108-90-7	Chlorobenzene	0.003 J	0.127	mg/Kg	SO-224A-UI-1-5'	5 / 57	0.00154 - 0.29	27	ug/m3	5.2 n	N/A	N/A	Y	ASL
	156-59-2	cis-1,2-Dichloroethene	0.00196 J	0.00196 J	mg/Kg	SO-224A-UI-1-5'	1 / 57	0.00154 - 0.29	2.2	ug/m3	6.3 n	N/A	N/A	N	BSL
	110-82-7	Cyclohexane	0.002 J	0.0443	mg/Kg	SO-224A-UI-1-5'	3 / 57	0.00154 - 0.29	208	ug/m3	630 n	N/A	N/A	N	BSL
	108-87-2	Cyclohexane, methyl-	0.004 J	0.229 J	mg/Kg	SO-224A-UI-1-5'	3 / 57	0.00154 - 0.29	1250	ug/m3	630 n	N/A	N/A	Y	ASL
	75-71-8	Dichlorodifluoromethane	0.00154 J	0.0209	mg/Kg	SO-205-UI (2-4')	3 / 57	0.00154 - 0.29	89	ug/m3	21 n	N/A	N/A	Y	ASL
	100-41-4	Ethylbenzene	0.001 J	0.0026 J	mg/Kg	SO-224A-UI-1-5'	3 / 57	0.00154 - 0.29	0.72	ug/m3	0.97 c	N/A	N/A	N	BSL
	98-82-8	Isopropylbenzene	0.00123 J	0.0646	mg/Kg	SO-224A-UI-1-5'	4 / 57	0.00154 - 0.29	17	ug/m3	42 n	N/A	N/A	N	BSL
	79-20-9	Methyl acetate	0.00211 J	1.11	mg/Kg	SO-226A-UI-6-8'	8 / 57	0.00156 - 0.234	158	ug/m3	21 n	N/A	N/A	Y	ASL
	75-09-2	Methylene chloride	0.00373 J	0.004 J	mg/Kg	SO-200-UI (0-1')	2 / 57	0.00385 - 0.724	6.7	ug/m3	5.2 c	N/A	N/A	Y	ASL
	100-42-5	Styrene	0.00232 J	0.00232 J	mg/Kg	SO-224A-UI-1-5'	1 / 57	0.00154 - 0.29	0.10	ug/m3	100 n	N/A	N/A	N	BSL
	127-18-4	Tetrachloroethene	0.00212 J	0.025	mg/Kg	SO-W03-UI	7 / 57	0.00154 - 0.29	32	ug/m3	0.41 c	N/A	N/A	Y	ASL
	108-88-3	Toluene	0.0008 J	0.608	mg/Kg	SO-226A-UI-6-8'	11 / 57	0.00154 - 0.234	339	ug/m3	520 n	N/A	N/A	N	BSL
	79-01-6	Trichloroethene	0.00281	0.00504	mg/Kg	SO-224A-UI-1-5'	2 / 57	0.00154 - 0.29	4.3	ug/m3	1.2 c	N/A	N/A	Y	ASL
	75-69-4	Trichlorofluoromethane	0.00114 J	0.0056	mg/Kg	SO-205-UI (2-4')	2 / 57	0.00154 - 0.29	17	ug/m3	73 n	N/A	N/A	N	BSL
	1330-20-7	Xylene (Total)	0.0085	0.0423	mg/Kg	SO-224A-UI-1-5'	4 / 57	0.00462 - 0.87	10.9	ug/m3	10 n	N/A	N/A	Y	ASL
	92-52-4	1,1'-Biphenyl	0.027 J	0.34	mg/Kg	SO-205-UI (2-4')	11 / 56	0.138 - 2.49	0.12	ug/m3	N/A	N/A	N/A	Y	NSL
	91-57-6	2-Methylnaphthalene	0.00308 J	2.78	mg/Kg	SO-224A-UI-1-5'	39 / 56	0.00788 - 0.4	2.8	ug/m3	0.072 c	N/A	N/A	Y	ASL
	106-44-5	4-Methylphenol	0.059 J	0.395	mg/Kg	SO-204-UI (2-4')	4 / 56	0.138 - 2.49	NV						
	83-32-9	Acenaphthene	0.00715	2.01	mg/Kg	SO-226A-UI-6-8'	37 / 56	0.00387 - 0.41	0.19	ug/m3	0.072 c	N/A	N/A	Y	ASL
	208-96-8	Acenaphthylene	0.00208 J	1.14	mg/Kg	SO-226A-UI-6-8'	44 / 56	0.00428 - 0.4	0.42	ug/m3	0.072 c	N/A	N/A	Y	ASL
	98-86-2	Acetophenone	0.053 J	0.86 J	mg/Kg	SO-086-UI	6 / 56	0.138 - 2.49	0.91	ug/m3	0.0031 n	N/A	N/A	Y	ASL
	120-12-7	Anthracene	0.00385 J	4.1	mg/Kg	SO-226A-UI-6-8'	50 / 56	0.00788 - 0.38	0.015	ug/m3	0.072 c	N/A	N/A	N	BSL
	100-52-7	Benzaldehyde	0.021 J	0.33	mg/Kg	SO-200-UI (0-1')	26 / 49	0.138 - 2.49	1.2	ug/m3	N/A	N/A	N/A	Y	NSL
	50-32-8	Benzo(a)pyrene	0.00635	17.2	mg/Kg	SO-226A-UI-6-8'	54 / 56	0.00788 - 0.00864	NV						
	205-99-2	Benzo(b)fluoranthene	0.01	9.63	mg/Kg	SO-226A-UI-6-8'	51 / 53	0.00788 - 0.00864	NV						
	191-24-2	Benzo(g,h,i)perylene	0.00608	8.44	mg/Kg	SO-226A-UI-6-8'	54 / 56	0.00788 - 0.00864	NV						
	207-08-9	Benzo(k)fluoranthene	0.00506	6.18	mg/Kg	SO-226A-UI-6-8'	54 / 56	0.00788 - 0.00864	NV						

TABLE 2.7
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Units	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	56-55-3	Benzo[a]anthracene	0.00807	14.4	mg/Kg	SO-226A-UI-6-8'	54 / 56	0.00788 - 0.00864	NV						
	117-81-7	bis(2-Ethylhexyl)phthalate	0.0846 J	577	mg/Kg	SO-206-UI (2-3')	31 / 56	0.139 - 1.51	NV						
	85-68-7	Butyl benzyl phthalate	0.038 J	0.315	mg/Kg	SO-201-UI (4-6')	8 / 56	0.138 - 3.4	NV						
	86-74-8	Carbazole	0.024 J	0.99	mg/Kg	SO-015-UI	28 / 56	0.138 - 2.49	NV						
	218-01-9	Chrysene	0.00892	14.4	mg/Kg	SO-226A-UI-6-8'	54 / 57	0.00788 - 0.37	NV						
	53-70-3	Dibenz[a,h]anthracene	0.0032 J	1.73	mg/Kg	SO-226A-UI-6-8'	47 / 56	0.00428 - 3.4	NV						
	132-64-9	Dibenzofuran	0.061 J	1.1	mg/Kg	SO-015-UI	22 / 56	0.138 - 2.49	NV						
	84-66-2	Diethylphthalate	0.56 J	2.89	mg/Kg	SO-224A-UI-1-5'	2 / 56	0.138 - 1.51	NV						
	84-74-2	Di-N-Butyl phthalate	0.023 J	2.44	mg/Kg	SO-201-UI (4-6')	12 / 56	0.138 - 2.49	NV						
	117-84-0	Di-N-Octyl phthalate	0.145	61.2	mg/Kg	SO-206-UI (2-3')	13 / 56	0.138 - 3.4	NV						
	206-44-0	Fluoranthene	0.0128	37.8	mg/Kg	SO-226A-UI-6-8'	54 / 56	0.00788 - 0.00864	NV						
	86-73-7	Fluorene	0.00811	2.4	mg/Kg	SO-226A-UI-6-8'	39 / 56	0.00387 - 0.4	0.040	ug/m3	0.072 c	N/A	N/A	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.00454	6.21	mg/Kg	SO-226A-UI-6-8'	54 / 56	0.00788 - 0.00864	NV						
	91-20-3	Naphthalene	0.04 J	4.75	mg/Kg	SO-224A-UI-1-5'	43 / 63	0.00387 - 0.4	1.1	ug/m3	0.072 c	N/A	N/A	Y	ASL
	98-95-3	Nitrobenzene	0.53 J	0.53 J	mg/Kg	SO-W02-UI	1 / 56	0.138 - 2.49	1.7	ug/m3	0.061 c	N/A	N/A	Y	ASL
	86-30-6	N-Nitrosodiphenylamine	0.315	1.8	mg/Kg	SO-W01-UI	3 / 56	0.138 - 1.51	NV						
	85-01-8	Phenanthrene	0.00687 J	26.7	mg/Kg	SO-226A-UI-6-8'	54 / 56	0.00788 - 0.00864	0.74	ug/m3	0.072 c	N/A	N/A	Y	ASL
	108-95-2	Phenol	0.009 J	3.79	mg/Kg	SO-224A-UI-1-5'	5 / 56	0.138 - 1.51	NV						
	129-00-0	Pyrene	0.0128	39.5	mg/Kg	SO-226A-UI-6-8'	54 / 56	0.00788 - 0.00864	0.0071	ug/m3	0.072 c	N/A	N/A	N	BSL
	72-54-8	4,4'-DDD	0.000414	0.0825 J	mg/Kg	SO-225A-UI-1.5-5'	31 / 52	0.000284 - 0.00484	NV						
	72-55-9	4,4'-DDE	0.00132	0.07	mg/Kg	SO-010-UI	25 / 50	0.000278 - 0.042	NV						
	50-29-3	4,4'-DDT	0.00158	0.0596 J	mg/Kg	SO-206-UI (2-3')	11 / 41	0.000278 - 0.052	NV						
	319-84-6	alpha-BHC	0.000607	0.00197	mg/Kg	SO-206-UI (2-3')	3 / 56	0.000284 - 0.00484	NV						
	5103-71-9	alpha-Chlordane	0.000644	0.0964	mg/Kg	SO-201-UI (4-6')	30 / 56	0.000278 - 0.0024	NV						
	319-84-6	Delta-BHC	0.00132	0.00132 J	mg/Kg	SO-205-UI (2-4')	1 / 56	0.000278 - 0.00484	NV						
	60-57-1	Dieldrin	0.000879	0.81	mg/Kg	SO-010-UI	48 / 56	0.000284 - 0.0038	NV						
	959-98-8	Endosulfan I	0.00412 J	0.00412 J	mg/Kg	SO-217-UI (0-1')	1 / 55	0.000278 - 0.00484	NV						
	33213-65-9	Endosulfan II	0.000504	0.00754 J	mg/Kg	SO-223F-UI-0-1'	3 / 56	0.000284 - 0.0052	NV						
	1031-07-8	Endosulfan Sulfate	0.003 J	0.01 J	mg/Kg	SO-014-UI	6 / 51	0.000278 - 0.052	NV						
	72-20-8	Endrin	0.0018	0.00337 J	mg/Kg	SO-207B-UI (2-3')	3 / 55	0.000278 - 0.0052	NV						
	7421-36-3	Endrin Aldehyde	0.0044	0.022 J	mg/Kg	SO-080-UI	5 / 51	0.000278 - 0.00484	NV						
	53494-70-5	Endrin Ketone	0.014 J	0.014 J	mg/Kg	SO-016-UI	1 / 54	0.000278 - 0.0052	NV						
	58-89-9	Gamma-BHC	0.000708 J	0.000739	mg/Kg	SO-206-UI (2-3')	2 / 56	0.000278 - 0.00484	NV						
	5103-74-2	Gamma-Chlordane	0.00035	0.152	mg/Kg	SO-201-UI (4-6')	19 / 45	0.000278 - 0.022	NV						
	1024-57-3	Heptachlor Epoxide	0.013 J	0.013 J	mg/Kg	SO-083-UI	1 / 55	0.000278 - 0.00484	NV						
	72-43-5	Methoxychlor	0.028 J	0.028 J	mg/Kg	SO-W02-UI	2 / 55	0.000278 - 0.027	NV						

TABLE 2.7
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Units	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	12767-79-2	Aroclor 1268	0.033 J	0.196 J	mg/Kg	SO-211-UI (0-1')	5 / 30	0.0111 - 0.0968	NV						
	53469-21-9	Aroclor-1242	0.0306	2.44 J	mg/Kg	SO-224A-UI-1-5'	5 / 56	0.0127 - 0.0845	NV						
	11097-69-1	Aroclor-1254	0.0165 J	5.33 J	mg/Kg	SO-224A-UI-1-5'	21 / 56	0.0128 - 0.0845	NV						
	11096-82-5	Aroclor-1260	0.0418	4.57 J	mg/Kg	SO-224A-UI-1-5'	39 / 56	0.0111 - 0.0845	NV						
	1746-01-6	Dioxin TEQ	8.7E-08	0.00015	mg/Kg	SO-205-UI-3-4.5	18 / 18	N/A	NV						

Notes:

Only includes soils data collected from Unnamed Island.

N/A = Not Applicable or Not Available

[1]

Organic Data Qualifiers

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

Inorganic Data Qualifiers

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

[2]

The maximum concentration was used to estimate possible indoor air concentrations (Cbuilding) using the Johnson-Ettinger (slab-on-grade) model (see Appendix B).

NV = Not Volatile (molecular weight > 200 g/mol or Henry's law constant < 1E-05 atm-m³/mol)

[3]

Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Air.

c = Carcinogen

n = Noncarcinogen (adjusted to a hazard quotient of 0.1)

The PRG values for noted analytes are as follows:

PRG for cyclohexane has been used for methylcyclohexane.

PRG for vinyl acetate has been used for methyl acetate.

PRG for trans-1,2-dichloroethene has been used for cis-1,2-dichloroethene.

PRG for 2-chloroacetophenone has been used for acetophenone.

PRG for naphthalene has been used for 2-methylnaphthalene, acenaphthene, anthracene, fluorene, and pyrene.

[4]

Codes used for rationale are as follows:

Selection Reason: Above Screening Levels (ASL)

No Screening Level (NSL)

Deletion Reason: Essential Nutrient (NUT)

Below Screening Level (BSL)

TABLE 2.8
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Shallow Groundwater
Exposure Medium: Outdoor (Trench) Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Units	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
Unnamed Island	75-34-3	1,1-Dichloroethane	0.75	0.83	ug/L	GW-026-UI	2 / 14	0.5 - 2	0.016	ug/m3	1.5 c	N/A	N/A	N	BSL
	95-50-1	1,2-Dichlorobenzene	0.3 J	0.3 J	ug/L	SEA-608	1 / 14	0.5 - 2	0.0013	ug/m3	21 n	N/A	N/A	N	BSL
	106-46-7	1,4-Dichlorobenzene	0.81	3.19	ug/L	GW-224A-UI	7 / 14	0.5 - 2	0.018	ug/m3	0.22 c	N/A	N/A	N	BSL
	71-43-2	Benzene	0.72	8.3	ug/L	GW-FD03	6 / 14	0.5 - 2	0.18	ug/m3	0.31 c	N/A	N/A	N	BSL
	108-90-7	Chlorobenzene	2.46	28	ug/L	GW-FD03	7 / 14	0.5 - 2	0.29	ug/m3	5.2 n	N/A	N/A	N	BSL
	75-00-3	Chloroethane	2.1 J	2.1 J	ug/L	SEA-608	1 / 14	0.5 - 2	0.27	ug/m3	1000 n	N/A	N/A	N	BSL
	156-59-2	cis-1,2-Dichloroethene	0.72	0.72	ug/L	GW-073-UI	1 / 14	0.5 - 2	0.01	ug/m3	6.3 n	N/A	N/A	N	BSL
	110-82-7	Cyclohexane	0.41 J	0.63	ug/L	SEA-608	3 / 14	0.5 - 2	0.22	ug/m3	630 n	N/A	N/A	N	BSL
	108-87-2	Cyclohexane, methyl-	0.36 J	1.34 J	ug/L	GW-224A-UI	2 / 14	0.5 - 2	0.43	ug/m3	630 n	N/A	N/A	N	BSL
	98-82-8	Isopropylbenzene	0.91	5.2	ug/L	GW-201-UI	4 / 14	0.5 - 2	0.15	ug/m3	42 n	N/A	N/A	N	BSL
	1634-04-4	Methyl tert-butyl ether	0.27 J	0.36 J	ug/L	GUI-702	2 / 14	0.5 - 2	0.0012	ug/m3	0.94 n	N/A	N/A	N	BSL
	108-88-3	Toluene	0.22 J	18.7	ug/L	GW-201-UI	3 / 14	0.5 - 2	0.44	ug/m3	520 n	N/A	N/A	N	BSL
	79-01-6	Trichloroethene	0.55	0.55	ug/L	GW-025-UI	1 / 14	0.5 - 2	0.019	ug/m3	1.2 c	N/A	N/A	N	BSL
	106-42-3/108-38-6	p/m-Xylene	2.12 J	2.12 J	ug/L	GW-224A-UI	1 / 5	4	0.046	ug/m3	73 n	N/A	N/A	N	BSL
	1330-20-7	Xylene (Total)	0.68 J	0.68 J	ug/L	SEA-608	1 / 9	0.5 - 1.5	0.015	ug/m3	10 n	N/A	N/A	N	BSL
	91-57-6	2-Methylnaphthalene	0.0104	0.577	ug/L	GW-201-UI	4 / 14	0.0104 - 11	0.00041	ug/m3	0.072 c	N/A	N/A	N	BSL
	106-44-5	4-Methylphenol	0.37	0.526	ug/L	DUPLICATE-3	2 / 14	0.515 - 5	NV						
	83-32-9	Acenaphthene	0.012	0.404	ug/L	DUPLICATE-3	9 / 14	0.1 - 11	0.0001	ug/m3	0.072 c	N/A	N/A	N	BSL
	208-96-8	Acenaphthylene	0.0178	0.0365	ug/L	GW-201-UI	4 / 14	0.01 - 11	0.000021	ug/m3	0.072 c	N/A	N/A	N	BSL
	98-86-2	Acetophenone	0.897	0.897	ug/L	GW-224A-UI	1 / 14	0.52 - 5	0.000049	ug/m3	0.0031 n	N/A	N/A	N	BSL
	120-12-7	Anthracene	0.00545 J	0.0868	ug/L	DUPLICATE-3	7 / 14	0.1 - 11	0.0000088	ug/m3	0.072 c	N/A	N/A	N	BSL
	1912-24-9	Atrazine	2.9 J	3.4 J	ug/L	GW-026-UI	2 / 14	0.515 - 5	NV						
	50-32-8	Benzo(a)pyrene	0.00756 J	0.0197	ug/L	GW-201-UI	3 / 14	0.01 - 11	NV						
	205-99-2	Benzo(b)fluoranthene	0.00867 J	0.0192	ug/L	GW-201-UI	5 / 14	0.01 - 11	NV						
	191-24-2	Benzo(g,h,i)perylene	0.00826 J	0.0143	ug/L	GW-201-UI	3 / 14	0.01 - 11	NV						
	207-08-9	Benzo(k)fluoranthene	0.00604 J	0.0198	ug/L	GW-201-UI	4 / 14	0.01 - 11	NV						
	56-55-3	Benzo[a]anthracene	0.0057 J	0.11	ug/L	GW-026-UI	8 / 14	0.1 - 11	NV						
	117-81-7	bis(2-Ethylhexyl)phthalate	0.87	5.17	ug/L	DUPLICATE-3	5 / 14	0.52 - 5	NV						
	218-01-9	Chrysene	0.0062 J	0.0482	ug/L	DUPLICATE-3	5 / 14	0.0104 - 11	NV						
	132-64-9	Dibenzofuran	0.283	0.283	ug/L	GW-201-UI	1 / 14	0.515 - 5	NV						
	84-66-2	Diethylphthalate	0.283	0.897	ug/L	GW-224A-UI	3 / 14	0.52 - 5	NV						
	84-74-2	Di-N-Butyl phthalate	0.434	0.522	ug/L	GW-201-UI	3 / 14	0.515 - 5	NV						
	117-84-0	Di-N-Octyl phthalate	0.382 J	0.382 J	ug/L	DUPLICATE-3	1 / 14	0.515 - 5	NV						
	206-44-0	Fluoranthene	0.01	0.174	ug/L	DUPLICATE-3	8 / 14	0.1 - 10	NV						
	86-73-7	Fluorene	0.011	0.446	ug/L	DUPLICATE-3	6 / 14	0.0104 - 11	0.000055	ug/m3	0.072 c	N/A	N/A	N	BSL
	193-39-5	Indeno(1,2,3-cd)pyrene	0.00718 J	0.0116	ug/L	GW-201-UI	3 / 14	0.01 - 11	NV						

TABLE 2.8
OCCURRENCE, DISTRIBUTION AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Shallow Groundwater
Exposure Medium: Outdoor (Trench) Air

Exposure Point	CAS Number	Chemical	Minimum Concentration (Qualifier) (1)	Maximum Concentration (Qualifier) (1)	Units	Location of Maximum Concentration	Detection Frequency	Range of Detection Limits	Concentration Used for Screening (2)	Units	Screening Toxicity Value (N/C) (3)	Potential ARAR/TBC Value	Potential ARAR/TBC Source	COPC Flag (Y/N)	Rationale for Selection or Deletion (4)
	91-20-3	Naphthalene	0.00914 J	3.53	ug/L	GW-201-UI	8 / 14	0.1 - 11	0.0034	ug/m3	0.072 c	N/A	N/A	N	BSL
	86-30-6	N-Nitrosodiphenylamine	0.67	14.8	ug/L	GW-201-UI	5 / 14	0.52 - 5	NV						
	85-01-8	Phenanthrene	0.01	0.92	ug/L	DUPLICATE-3	8 / 14	0.1 - 11	0.00021	ug/m3	0.072 c	N/A	N/A	N	BSL
	129-00-0	Pyrene	0.0183	0.221	ug/L	DUPLICATE-3	5 / 14	0.1 - 11	0.0000036	ug/m3	0.072 c	N/A	N/A	N	BSL
	72-54-8	4,4'-DDD	0.00282 J	0.0119 J	ug/L	GW-224A-UI	2 / 13	0.000526 - 0.01	NV						
	72-55-9	4,4'-DDE	0.00135 J	0.00135 J	ug/L	DUPLICATE-3	1 / 13	0.0005 - 0.01	NV						
	309-00-2	Aldrin	0.000857	0.000857	ug/L	GW-207B-UI	1 / 14	0.0005 - 0.01	NV						
	319-84-6	alpha-BHC	0.000988	0.000988	ug/L	GW-208B-UI	1 / 14	0.0005 - 0.01	NV						
	5103-71-9	alpha-Chlordane	0.000892	0.00922 J	ug/L	DUPLICATE-3	4 / 14	0.000526 - 0.01	NV						
	319-85-7	beta-BHC	0.00278	0.00278	ug/L	GW-207B-UI	1 / 14	0.0005 - 0.01	NV						
	60-57-1	Dieldrin	0.00177	0.00177	ug/L	GW-207B-UI	1 / 14	0.0005 - 0.01	NV						
	1031-07-8	Endosulfan Sulfate	0.107	0.107	ug/L	DUPLICATE-3	1 / 14	0.0005 - 0.01	NV						
	53469-21-9	Aroclor-1242	0.258	0.3	ug/L	GW-201-UI	2 / 14	0.021 - 0.22	NV						
	11097-69-1	Aroclor-1254	0.13	4.28	ug/L	GW-224A-UI	3 / 14	0.021 - 0.22	NV						

Notes:

Only includes shallow groundwater data collected from Unnamed Island.

N/A = Not Applicable or Not Available

[1] **Organic Data Qualifiers**

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

Inorganic Data Qualifiers

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

[2] The maximum concentration was used to estimate possible indoor air concentrations (Cbuiding) using the Johnson-Ettinger (slab-on-grade) model (see Appendix B).

NV = Not Volatile (molecular weight > 200 g/mol or Henry's law constant < 1E-05 atm-m3/mol)

[3] Screening toxicity values are the USEPA (December 2009) ORNL screening levels for Residential Air.

c = Carcinogen

n = Noncarcinogen (adjusted to a hazard quotient of 0.1)

The PRG values for noted analytes are as follows:

PRG for cyclohexane has been used for methylcyclohexane.

PRG for trans-1,2-dichloroethene has been used for cis-1,2-dichloroethene.

PRG for 2-chloroacetophenone has been used for acetophenone.

PRG for naphthalene has been used for 2-methylnaphthalene, acenaphthene, anthracene, fluorene, and pyrene.

[4] Codes used for rationale are as follows:

Selection Reason: Above Screening Levels (ASL)

No Screening Level (NSL)

Deletion Reason: Essential Nutrient (NUT)

Below Screening Level (BSL)

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island	Benzo(a)anthracene	mg/kg	1.1E+00	1.5E+00 (G)	4.5E+00	1.5E+00	mg/kg	95% Approximate Gamma UCL	(b)
	Benzo(a)pyrene	mg/kg	1.0E+00	1.3E+00 (G)	4.0E+00 (J)	1.3E+00	mg/kg	95% Approximate Gamma UCL	
	Benzo(b)fluoranthene	mg/kg	1.5E+00	2.0E+00 (G)	6.4E+00	2.0E+00	mg/kg	95% Approximate Gamma UCL	
	Benzo(k)fluoranthene	mg/kg	6.4E-01	8.7E-01 (G)	2.4E+00	8.7E-01	mg/kg	95% Approximate Gamma UCL	
	bis(2-Ethylhexyl)phthalate	mg/kg	1.7E+01	3.7E+01 (NP)	2.6E+02 (J)	3.7E+01	mg/kg	95% KM (BCA) UCL	
	Carbazole	mg/kg	1.9E-01	2.4E-01 (NP)	9.9E-01	2.4E-01	mg/kg	95% KM (t) UCL	
	Dibenz(a,h)anthracene	mg/kg	2.6E-01	2.6E-01 (NP)	7.5E-01	2.6E-01	mg/kg	95% KM (BCA) UCL	
	Dibenzofuran	mg/kg	1.8E-01	2.2E-01 (NP)	1.1E+00	2.2E-01	mg/kg	95% KM (t) UCL	
	Indeno(1,2,3-cd)pyrene	mg/kg	6.1E-01	8.1E-01 (G)	2.4E+00	8.1E-01	mg/kg	95% Approximate Gamma UCL	
	Phenanthrene	mg/kg	1.5E+00	2.2E+00 (G)	1.3E+01 (J)	2.2E+00	mg/kg	95% Approximate Gamma UCL	
	Aroclor-1242	mg/kg	2.7E-02	NC	2.4E-01 (J)	2.4E-01	mg/kg	Maximum Concentration	
	Aroclor-1254	mg/kg	2.1E-01	3.7E-01 (NP)	1.3E+00 (J)	3.7E-01	mg/kg	95% KM (t) UCL	
	Aroclor-1260	mg/kg	2.5E-01	5.2E-01 (NP)	1.5E+00 (J)	5.2E-01	mg/kg	95% KM (Chebyshev) UCL	
	Dieldrin	mg/kg	8.8E-02	2.6E-01 (NP)	8.1E-01	2.6E-01	mg/kg	97.5% KM (Chebyshev) UCL	
	Dioxin TEQ	mg/kg	3.5E-05	5.1E-05 (N)	6.7E-05	5.1E-05	mg/kg	95% Student's-t UCL	
	Aluminum	mg/kg	5.9E+03	6.6E+03 (N)	1.1E+04	6.6E+03	mg/kg	95% Modified-t UCL	
	Antimony	mg/kg	6.8E+00	9.5E+00 (NP)	6.4E+01 (J)	9.5E+00	mg/kg	95% KM (t) UCL	
	Arsenic	mg/kg	9.3E+00	1.2E+01 (G)	2.6E+01	1.2E+01	mg/kg	95% Approximate Gamma UCL	
	Cadmium	mg/kg	3.6E+00	6.9E+00 (NP)	2.2E+01	6.9E+00	mg/kg	95% KM (Chebyshev) UCL	
	Chromium	mg/kg	1.1E+02	1.4E+02 (LN)	4.7E+02 (J)	1.4E+02	mg/kg	95% H-UCL	
	Cobalt	mg/kg	4.9E+00	5.6E+00 (NP)	1.3E+01	5.6E+00	mg/kg	95% KM (Percentile Bootstrap) UCL	
	Copper	mg/kg	2.0E+02	3.3E+02 (LN)	1.3E+03	3.3E+02	mg/kg	95% H-UCL	
	Iron	mg/kg	1.6E+04	2.4E+04 (NP)	5.6E+04 (J)	2.4E+04	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	Lead	mg/kg	3.6E+02	1.4E+03 (NP)	2.2E+03 (J)			See Appendix D	
	Manganese	mg/kg	2.7E+02	3.4E+02 (G)	1.7E+03	3.4E+02	mg/kg	95% Approximate Gamma UCL	
	Mercury	mg/kg	4.2E-01	5.5E-01 (G)	1.8E+00 (J)	5.5E-01	mg/kg	95% Approximate Gamma UCL	
	Nickel	mg/kg	2.0E+01	4.2E+01 (NP)	1.6E+02 (J)	4.2E+01	mg/kg	95% KM (Chebyshev) UCL	
	Thallium	mg/kg	3.6E-01	3.0E-01 (NP)	1.2E+00 (J)	3.0E-01	mg/kg	95% KM (BCA) UCL	
	Vanadium	mg/kg	1.5E+01	1.7E+01 (NP)	3.3E+01	1.7E+01	mg/kg	95% KM (BCA) UCL	

TABLE 3.1.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. Note that Dioxin TEQ had all detections. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect
NC = Not calculated

TABLE 3.1.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island	Benzo(a)anthracene	mg/kg	1.1E+00	1.5E+00 (G)	4.5E+00	1.5E+00	mg/kg	95% Approximate Gamma UCL	(e)
	Benzo(a)pyrene	mg/kg	1.0E+00	1.3E+00 (G)	4.0E+00 (J)	1.3E+00	mg/kg	95% Approximate Gamma UCL	
	Benzo(b)fluoranthene	mg/kg	1.5E+00	2.0E+00 (G)	6.4E+00	2.0E+00	mg/kg	95% Approximate Gamma UCL	
	Benzo(k)fluoranthene	mg/kg	6.4E-01	8.7E-01 (G)	2.4E+00	8.7E-01	mg/kg	95% Approximate Gamma UCL	
	bis(2-Ethylhexyl)phthalate	mg/kg	1.7E+01	3.7E+01 (NP)	2.6E+02 (J)	3.7E+01	mg/kg	95% KM (BCA) UCL	
	Carbazole	mg/kg	1.9E-01	2.4E-01 (NP)	9.9E-01	2.4E-01	mg/kg	95% KM (t) UCL	
	Dibenz(a,h)anthracene	mg/kg	2.6E-01	2.6E-01 (NP)	7.5E-01	2.6E-01	mg/kg	95% KM (BCA) UCL	
	Dibenzofuran	mg/kg	1.8E-01	2.2E-01 (NP)	1.1E+00	2.2E-01	mg/kg	95% KM (t) UCL	
	Indeno(1,2,3-cd)pyrene	mg/kg	6.1E-01	8.1E-01 (G)	2.4E+00	8.1E-01	mg/kg	95% Approximate Gamma UCL	
	Phenanthrene	mg/kg	1.5E+00	2.2E+00 (G)	1.3E+01 (J)	2.2E+00	mg/kg	95% Approximate Gamma UCL	
	Aroclor-1242	mg/kg	2.7E-02	NC	2.4E-01 (J)	2.7E-02	mg/kg	Arithmetic Mean	
	Aroclor-1254	mg/kg	2.1E-01	3.7E-01 (NP)	1.3E+00 (J)	3.7E-01	mg/kg	95% KM (t) UCL	
	Aroclor-1260	mg/kg	2.5E-01	5.2E-01 (NP)	1.5E+00 (J)	5.2E-01	mg/kg	95% KM (Chebyshev) UCL	
	Dieldrin	mg/kg	8.8E-02	2.6E-01 (NP)	8.1E-01	2.6E-01	mg/kg	97.5% KM (Chebyshev) UCL	
	Dioxin TEQ	mg/kg	3.5E-05	5.1E-05 (N)	6.7E-05	5.1E-05	mg/kg	95% Student's-t UCL	
	Aluminum	mg/kg	5.9E+03	6.6E+03 (N)	1.1E+04	6.6E+03	mg/kg	95% Modified-t UCL	
	Antimony	mg/kg	6.8E+00	9.5E+00 (NP)	6.4E+01 (J)	9.5E+00	mg/kg	95% KM (t) UCL	
	Arsenic	mg/kg	9.3E+00	1.2E+01 (G)	2.6E+01	1.2E+01	mg/kg	95% Approximate Gamma UCL	
	Cadmium	mg/kg	3.6E+00	6.9E+00 (NP)	2.2E+01	6.9E+00	mg/kg	95% KM (Chebyshev) UCL	
	Chromium	mg/kg	1.1E+02	1.4E+02 (LN)	4.7E+02 (J)	1.4E+02	mg/kg	95% H-UCL	
	Cobalt	mg/kg	4.9E+00	5.6E+00 (NP)	1.3E+01	5.6E+00	mg/kg	95% KM (Percentile Bootstrap) UCL	
	Copper	mg/kg	2.0E+02	3.3E+02 (LN)	1.3E+03	3.3E+02	mg/kg	95% H-UCL	
	Iron	mg/kg	1.6E+04	2.4E+04 (NP)	5.6E+04 (J)	2.4E+04	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	Lead	mg/kg	3.6E+02	1.4E+03 (NP)	2.2E+03 (J)			See Appendix D	
	Manganese	mg/kg	2.7E+02	3.4E+02 (G)	1.7E+03	3.4E+02	mg/kg	95% Approximate Gamma UCL	
	Mercury	mg/kg	4.2E-01	5.5E-01 (G)	1.8E+00 (J)	5.5E-01	mg/kg	95% Approximate Gamma UCL	
	Nickel	mg/kg	2.0E+01	4.2E+01 (NP)	1.6E+02 (J)	4.2E+01	mg/kg	95% KM (Chebyshev) UCL	
	Thallium	mg/kg	3.6E-01	3.0E-01 (NP)	1.2E+00 (J)	3.0E-01	mg/kg	95% KM (BCA) UCL	
	Vanadium	mg/kg	1.5E+01	1.7E+01 (NP)	3.3E+01	1.7E+01	mg/kg	95% KM (BCA) UCL	

TABLE 3.1.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. Note that Dioxin TEQ had all detections. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect
NC = Not calculated

TABLE 3.2.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface + Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island	Benzo(a)anthracene	mg/kg	1.7E+00	3.2E+00 (NP)	1.4E+01	3.2E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(a)pyrene	mg/kg	1.6E+00	3.1E+00 (NP)	1.7E+01	3.1E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(b)fluoranthene	mg/kg	1.8E+00	3.0E+00 (NP)	9.6E+00	3.0E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(g,h,i)perylene	mg/kg	9.5E-01	1.7E+00 (NP)	8.4E+00	1.7E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(k)fluoranthene	mg/kg	9.3E-01	1.7E+00 (NP)	6.2E+00	1.7E+00	mg/kg	95% KM (Chebyshev) UCL	
	bis(2-Ethylhexyl)phthalate	mg/kg	2.5E+01	1.5E+02 (NP)	5.8E+02	1.5E+02	mg/kg	99% KM (Chebyshev) UCL	
	Carbazole	mg/kg	2.1E-01	2.0E-01 (NP)	9.9E-01	2.0E-01	mg/kg	95% KM (t) UCL	
	Dibenz(a,h)anthracene	mg/kg	2.9E-01	4.5E-01 (NP)	1.7E+00	4.5E-01	mg/kg	95% KM (Chebyshev) UCL	
	Dibenzofuran	mg/kg	2.1E-01	2.0E-01 (NP)	1.1E+00	2.0E-01	mg/kg	95% KM (t) UCL	
	Indeno(1,2,3-cd)pyrene	mg/kg	7.8E-01	1.4E+00 (NP)	6.2E+00	1.4E+00	mg/kg	95% KM (Chebyshev) UCL	
	Naphthalene	mg/kg	3.3E-01	7.5E-01 (NP)	4.8E+00	7.5E-01	mg/kg	95% KM (Chebyshev) UCL	
	Phenanthrene	mg/kg	2.2E+00	4.6E+00 (NP)	2.7E+01	4.6E+00	mg/kg	95% KM (Chebyshev) UCL	
	Aroclor-1242	mg/kg	7.0E-02	1.7E-01 (NP)	2.4E+00 (J)	1.7E-01	mg/kg	95% KM (t) UCL	
	Aroclor-1254	mg/kg	3.1E-01	5.0E-01 (NP)	5.3E+00 (J)	5.0E-01	mg/kg	95% KM (t) UCL	
	Aroclor-1260	mg/kg	3.0E-01	7.1E-01 (NP)	4.6E+00 (J)	7.1E-01	mg/kg	95% KM (Chebyshev) UCL	
	Dieldrin	mg/kg	7.3E-02	1.6E-01 (NP)	8.1E-01	1.6E-01	mg/kg	95% KM (Chebyshev) UCL	
	Dioxin TEQ	mg/kg	3.4E-05	6.2E-05 (G)	1.5E-04	6.2E-05	mg/kg	95% Approximate Gamma UCL	
	Aluminum	mg/kg	6.2E+03	6.8E+03 (G)	1.2E+04	6.8E+03	mg/kg	95% Approximate Gamma UCL	
	Antimony	mg/kg	8.9E+00	4.2E+01 (NP)	1.6E+02 (J)	4.2E+01	mg/kg	99% KM (Chebyshev) UCL	
	Arsenic	mg/kg	1.1E+01	1.4E+01 (G)	5.7E+01	1.4E+01	mg/kg	95% Approximate Gamma UCL	
	Cadmium	mg/kg	3.2E+00	5.5E+00 (NP)	2.2E+01	5.5E+00	mg/kg	95% KM (Chebyshev) UCL	
	Chromium	mg/kg	1.4E+02	2.1E+02 (LN)	7.8E+02	2.1E+02	mg/kg	95% H-UCL	
	Cobalt	mg/kg	5.2E+00	6.0E+00 (NP)	1.9E+01	6.0E+00	mg/kg	95% KM (BCA) UCL	
	Copper	mg/kg	2.4E+02	4.1E+02 (LN)	1.7E+03	4.1E+02	mg/kg	95% H-UCL	
	Iron	mg/kg	1.9E+04	2.9E+04 (NP)	9.3E+04	2.9E+04	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	Lead	mg/kg	5.4E+02	1.2E+03 (LN)	9.6E+03 (J)			See Appendix D	
	Manganese	mg/kg	2.4E+02	3.8E+02 (NP)	1.7E+03	3.8E+02	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	Mercury	mg/kg	6.1E-01	1.1E+00 (NP)	3.4E+00 (J)	1.1E+00	mg/kg	95% KM (Chebyshev) UCL	
	Nickel	mg/kg	2.5E+01	4.9E+01 (NP)	2.5E+02	4.9E+01	mg/kg	95% KM (Chebyshev) UCL	
	Thallium	mg/kg	2.6E-01	2.2E-01 (NP)	1.2E+00 (J)	2.2E-01	mg/kg	95% KM (t) UCL	
	Vanadium	mg/kg	1.6E+01	1.8E+01 (NP)	5.0E+01	1.8E+01	mg/kg	95% KM (BCA) UCL	
	Zinc	mg/kg	4.1E+02	9.4E+02 (NP)	2.6E+03	9.4E+02	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	

TABLE 3.2.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface + Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. Note that Dioxin TEQ had all detections. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect
NC = Not calculated

TABLE 3.2.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface + Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island	Benzo(a)anthracene	mg/kg	1.7E+00	3.2E+00 (NP)	1.4E+01	3.2E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(a)pyrene	mg/kg	1.6E+00	3.1E+00 (NP)	1.7E+01	3.1E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(b)fluoranthene	mg/kg	1.8E+00	3.0E+00 (NP)	9.6E+00	3.0E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(g,h,i)perylene	mg/kg	9.5E-01	1.7E+00 (NP)	8.4E+00	1.7E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(k)fluoranthene	mg/kg	9.3E-01	1.7E+00 (NP)	6.2E+00	1.7E+00	mg/kg	95% KM (Chebyshev) UCL	
	bis(2-Ethylhexyl)phthalate	mg/kg	2.5E+01	1.5E+02 (NP)	5.8E+02	1.5E+02	mg/kg	99% KM (Chebyshev) UCL	
	Carbazole	mg/kg	2.1E-01	2.0E-01 (NP)	9.9E-01	2.0E-01	mg/kg	95% KM (t) UCL	
	Dibenz(a,h)anthracene	mg/kg	2.9E-01	4.5E-01 (NP)	1.7E+00	4.5E-01	mg/kg	95% KM (Chebyshev) UCL	
	Dibenzofuran	mg/kg	2.1E-01	2.0E-01 (NP)	1.1E+00	2.0E-01	mg/kg	95% KM (t) UCL	
	Indeno(1,2,3-cd)pyrene	mg/kg	7.8E-01	1.4E+00 (NP)	6.2E+00	1.4E+00	mg/kg	95% KM (Chebyshev) UCL	
	Naphthalene	mg/kg	3.3E-01	7.5E-01 (NP)	4.8E+00	7.5E-01	mg/kg	95% KM (Chebyshev) UCL	
	Phenanthrene	mg/kg	2.2E+00	4.6E+00 (NP)	2.7E+01	4.6E+00	mg/kg	95% KM (Chebyshev) UCL	
	Aroclor-1242	mg/kg	7.0E-02	1.7E-01 (NP)	2.4E+00 (J)	1.7E-01	mg/kg	95% KM (t) UCL	
	Aroclor-1254	mg/kg	3.1E-01	5.0E-01 (NP)	5.3E+00 (J)	5.0E-01	mg/kg	95% KM (t) UCL	
	Aroclor-1260	mg/kg	3.0E-01	7.1E-01 (NP)	4.6E+00 (J)	7.1E-01	mg/kg	95% KM (Chebyshev) UCL	
	Dieldrin	mg/kg	7.3E-02	1.6E-01 (NP)	8.1E-01	1.6E-01	mg/kg	95% KM (Chebyshev) UCL	
	Dioxin TEQ	mg/kg	3.4E-05	6.2E-05 (G)	1.5E-04	6.2E-05	mg/kg	95% Approximate Gamma UCL	
	Aluminum	mg/kg	6.2E+03	6.8E+03 (G)	1.2E+04	6.8E+03	mg/kg	95% Approximate Gamma UCL	
	Antimony	mg/kg	8.9E+00	4.2E+01 (NP)	1.6E+02 (J)	4.2E+01	mg/kg	99% KM (Chebyshev) UCL	
	Arsenic	mg/kg	1.1E+01	1.4E+01 (G)	5.7E+01	1.4E+01	mg/kg	95% Approximate Gamma UCL	
	Cadmium	mg/kg	3.2E+00	5.5E+00 (NP)	2.2E+01	5.5E+00	mg/kg	95% KM (Chebyshev) UCL	
	Chromium	mg/kg	1.4E+02	2.1E+02 (LN)	7.8E+02	2.1E+02	mg/kg	95% H-UCL	
	Cobalt	mg/kg	5.2E+00	6.0E+00 (NP)	1.9E+01	6.0E+00	mg/kg	95% KM (BCA) UCL	
	Copper	mg/kg	2.4E+02	4.1E+02 (LN)	1.7E+03	4.1E+02	mg/kg	95% H-UCL	
	Iron	mg/kg	1.9E+04	2.9E+04 (NP)	9.3E+04	2.9E+04	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	Lead	mg/kg	5.4E+02	1.2E+03 (LN)	9.6E+03 (J)			See Appendix D	
	Manganese	mg/kg	2.4E+02	3.8E+02 (NP)	1.7E+03	3.8E+02	mg/kg	95% Chebyshev (Mean, Sd) UCL	
	Mercury	mg/kg	6.1E-01	1.1E+00 (NP)	3.4E+00 (J)	1.1E+00	mg/kg	95% KM (Chebyshev) UCL	
	Nickel	mg/kg	2.5E+01	4.9E+01 (NP)	2.5E+02	4.9E+01	mg/kg	95% KM (Chebyshev) UCL	
	Thallium	mg/kg	2.6E-01	2.2E-01 (NP)	1.2E+00 (J)	2.2E-01	mg/kg	95% KM (t) UCL	
	Vanadium	mg/kg	1.6E+01	1.8E+01 (NP)	5.0E+01	1.8E+01	mg/kg	95% KM (BCA) UCL	
	Zinc	mg/kg	4.1E+02	9.4E+02 (NP)	2.6E+03	9.4E+02	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	

TABLE 3.2.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Surface + Subsurface Soil

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. Note that Dioxin TEQ had all detections. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.3.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island	Atrazine	ug/L	1.1E+00	NC	3.2E+00 (J)	3.2E+00	ug/L	Maximum Concentration	(b)
	Benzo(a)anthracene	ug/L	9.0E-01	4.5E-02 (NP)	8.0E-02 (J)	4.5E-02	ug/L	95% KM (t) UCL	
	Benzo(a)pyrene	ug/L	1.7E+00	1.7E-02 (NP)	1.9E-02	1.7E-02	ug/L	95% KM (t) UCL	
	bis(2-Ethylhexyl)phthalate	ug/L	1.8E+00	2.8E+00 (NP)	4.8E+00	2.8E+00	ug/L	95% KM (t) UCL	
	Dibenzofuran	ug/L	1.0E+00	NC	2.8E-01 (J)	2.8E-01	ug/L	Maximum Concentration	(b)
	Naphthalene	ug/L	8.4E-01	9.2E-01 (NP)	3.3E+00	9.2E-01	ug/L	95% KM (BCA) UCL	
	N-Nitrosodiphenylamine	ug/L	2.4E+00	4.7E+00 (NP)	1.4E+01	4.7E+00	ug/L	95% KM (t) UCL	
	Phenanthrene	ug/L	5.7E-01	2.7E-01 (NP)	8.9E-01	2.7E-01	ug/L	95% KM (BCA) UCL	
	1,4-Dichlorobenzene	ug/L	1.1E+00	1.8E+00 (NP)	3.2E+00	1.8E+00	ug/L	95% KM (t) UCL	
	Benzene	ug/L	2.1E+00	3.9E+00 (NP)	7.9E+00	3.9E+00	ug/L	95% KM (t) UCL	
	Chlorobenzene	ug/L	5.9E+00	1.2E+01 (NP)	2.8E+01	1.2E+01	ug/L	95% KM (t) UCL	
	Aroclor-1242	ug/L	7.2E-02	NC	2.8E-01	2.8E-01	ug/L	Maximum Concentration	(b)
	Aroclor-1254	ug/L	4.1E-01	5.1E+00 (NP)	4.3E+00	4.3E+00	ug/L	Maximum Concentration	(d)
	Antimony	ug/L	1.2E+00	2.0E+00 (NP)	5.7E+00	2.0E+00	ug/L	95% KM (t) UCL	
	Arsenic	ug/L	2.7E+00	4.1E+00 (G)	8.4E+00	4.1E+00	ug/L	95% Approximate Gamma UCL	
	Barium	ug/L	2.7E+02	6.7E+02 (NP)	8.7E+02	6.7E+02	ug/L	95% KM (Chebyshev) UCL	
	Cadmium	ug/L	3.7E+00	8.3E+00 (NP)	2.7E+01	8.3E+00	ug/L	95% KM (t) UCL	
	Chromium	ug/L	2.0E+00	5.1E+00 (NP)	8.0E+00	5.1E+00	ug/L	95% KM (Chebyshev) UCL	
	Cobalt	ug/L	1.1E+01	1.3E+01 (NP)	3.3E+01	1.3E+01	ug/L	95% KM (BCA) UCL	
	Iron	ug/L	2.0E+04	4.3E+04 (G)	7.8E+04	4.3E+04	ug/L	95% Approximate Gamma UCL	
	Lead	ug/L	9.7E+00	1.8E+01 (NP)	4.8E+01			See Appendix D	
	Manganese	ug/L	8.1E+02	1.1E+03 (N)	1.7E+03	1.1E+03	ug/L	95% Student's-t UCL	
	Nickel	ug/L	2.5E+01	4.1E+01 (NP)	1.2E+02	4.1E+01	ug/L	95% KM (BCA) UCL	
	Thallium	ug/L	1.1E+00	7.6E+00 (NP)	5.8E+00 (J)	5.8E+00	ug/L	Maximum Concentration	(d)
	Vanadium	ug/L	3.5E+00	1.8E+00 (NP)	2.5E+00 (J)	1.8E+00	ug/L	95% KM (t) UCL	
	Zinc	ug/L	5.3E+02	1.3E+03 (NP)	4.1E+03	1.3E+03	ug/L	95% KM (BCA) UCL	

TABLE 3.3.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only except for the following analytes: 2-chlorophenol, 4-chloroaniline, atrazine, benzaldehyde, benzo(g,h,i)perylene, carbazole, 1,2,4-trichlorobenzene, 1,3-dichlorobenzene, 2-butanone, chloroethane, aroclor-1248, 4,4'-DDD, 4,4'-DDT, aldrin, alpha-BHC, and heptachlor, where means were calculated using one-half the laboratory detection limit for non-detects. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect
NC = Not calculated

TABLE 3.3.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island	Atrazine	ug/L	1.1E+00	NC	3.2E+00 (J)	1.1E+00	ug/L	Arithmetic mean	(e)
	Benzo(a)anthracene	ug/L	9.0E-01	4.5E-02 (NP)	8.0E-02 (J)	4.5E-02	ug/L	95% KM (t) UCL	
	Benzo(a)pyrene	ug/L	1.7E+00	1.7E-02 (NP)	1.9E-02	1.7E-02	ug/L	95% KM (t) UCL	
	bis(2-Ethylhexyl)phthalate	ug/L	1.8E+00	2.8E+00 (NP)	4.8E+00	2.8E+00	ug/L	95% KM (t) UCL	
	Dibenzofuran	ug/L	1.0E+00	NC	2.8E-01 (J)	2.8E-01	ug/L	Maximum Concentration	(f)
	Naphthalene	ug/L	8.4E-01	9.2E-01 (NP)	3.3E+00	9.2E-01	ug/L	95% KM (BCA) UCL	
	N-Nitrosodiphenylamine	ug/L	2.4E+00	4.7E+00 (NP)	1.4E+01	4.7E+00	ug/L	95% KM (t) UCL	
	Phenanthrene	ug/L	5.7E-01	2.7E-01 (NP)	8.9E-01	2.7E-01	ug/L	95% KM (BCA) UCL	
	1,4-Dichlorobenzene	ug/L	1.1E+00	1.8E+00 (NP)	3.2E+00	1.8E+00	ug/L	95% KM (t) UCL	
	Benzene	ug/L	2.1E+00	3.9E+00 (NP)	7.9E+00	3.9E+00	ug/L	95% KM (t) UCL	
	Chlorobenzene	ug/L	5.9E+00	1.2E+01 (NP)	2.8E+01	1.2E+01	ug/L	95% KM (t) UCL	
	Aroclor-1242	ug/L	7.2E-02	NC	2.8E-01	7.2E-02	ug/L	Arithmetic mean	(e)
	Aroclor-1254	ug/L	4.1E-01	5.1E+00 (NP)	4.3E+00	4.1E-01	ug/L	Arithmetic mean	(e)
	Antimony	ug/L	1.2E+00	2.0E+00 (NP)	5.7E+00	2.0E+00	ug/L	95% KM (t) UCL	
	Arsenic	ug/L	2.7E+00	4.1E+00 (G)	8.4E+00	4.1E+00	ug/L	95% Approximate Gamma UCL	
	Barium	ug/L	2.7E+02	6.7E+02 (NP)	8.7E+02	6.7E+02	ug/L	95% KM (Chebyshev) UCL	
	Cadmium	ug/L	3.7E+00	8.3E+00 (NP)	2.7E+01	8.3E+00	ug/L	95% KM (t) UCL	
	Chromium	ug/L	2.0E+00	5.1E+00 (NP)	8.0E+00	5.1E+00	ug/L	95% KM (Chebyshev) UCL	
	Cobalt	ug/L	1.1E+01	1.3E+01 (NP)	3.3E+01	1.3E+01	ug/L	95% KM (BCA) UCL	
	Iron	ug/L	2.0E+04	4.3E+04 (G)	7.8E+04	4.3E+04	ug/L	95% Approximate Gamma UCL	
	Lead	ug/L	9.7E+00	1.8E+01 (NP)	4.8E+01			See Appendix D	
	Manganese	ug/L	8.1E+02	1.1E+03 (N)	1.7E+03	1.1E+03	ug/L	95% Student's-t UCL	
	Nickel	ug/L	2.5E+01	4.1E+01 (NP)	1.2E+02	4.1E+01	ug/L	95% KM (BCA) UCL	
	Thallium	ug/L	1.1E+00	7.6E+00 (NP)	5.8E+00 (J)	1.1E+00	ug/L	Arithmetic mean	(e)
	Vanadium	ug/L	3.5E+00	1.8E+00 (NP)	2.5E+00 (J)	1.8E+00	ug/L	95% KM (t) UCL	
	Zinc	ug/L	5.3E+02	1.3E+03 (NP)	4.1E+03	1.3E+03	ug/L	95% KM (BCA) UCL	

TABLE 3.3.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Groundwater
Exposure Medium: Shallow Groundwater

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only except for the following analytes: 2-chlorophenol, 4-chloroaniline, atrazine, benzaldehyde, benzo(g,h,i)perylene, carbazole, 1,2,4-trichlorobenzene, 1,3-dichlorobenzene, 2-butanone, chloroethane, aroclor-1248, 4,4'-DDD, 4,4'-DDT, aldrin, alpha-BHC, and heptachlor, where means were calculated using one-half the laboratory detection limit for non-detects. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect
NC = Not calculated

TABLE 3.4.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Leachate

Exposure Medium: Leachate

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island	4-Methylphenol	ug/L	1.0E+00	NC	4.5E-01 (J)	4.5E-01	ug/L	Maximum concentration	(b)
	Acenaphthylene	ug/L	1.3E+00	2.6E-02 (NP)	3.2E-02	2.6E-02	ug/L	95% KM (t) UCL	
	Atrazine	ug/L	1.1E+00	NC	3.2E+00 (J)	3.2E+00	ug/L	Maximum concentration	(b)
	Benzo(a)anthracene	ug/L	9.0E-01	4.5E-02 (NP)	8.0E-02 (J)	4.5E-02	ug/L	95% KM (t) UCL	
	Benzo(a)pyrene	ug/L	1.7E+00	1.7E-02 (NP)	1.9E-02	1.7E-02	ug/L	95% KM (t) UCL	
	Benzo(b)fluoranthene	ug/L	1.3E+00	1.5E-02 (NP)	1.8E-02	1.5E-02	ug/L	95% KM (t) UCL	
	Benzo(g,h,i)perylene	ug/L	1.7E+00	1.3E-02 (NP)	1.4E-02	1.3E-02	ug/L	95% KM (t) UCL	
	Benzo(k)fluoranthene	ug/L	1.7E+00	1.6E-02 (NP)	1.9E-02	1.6E-02	ug/L	95% KM (t) UCL	
	bis(2-Ethylhexyl)phthalate	ug/L	1.8E+00	2.8E+00 (NP)	4.8E+00	2.8E+00	ug/L	95% KM (t) UCL	
	Chrysene	ug/L	1.3E+00	3.4E-02 (NP)	4.8E-02	3.4E-02	ug/L	95% KM (t) UCL	
	Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	ug/L	NA	
	Dibenzofuran	ug/L	1.0E+00	NC	2.8E-01 (J)	2.8E-01	ug/L	Maximum concentration	(b)
	Indeno(1,2,3-cd)pyrene	ug/L	1.7E+00	1.1E-02 (NP)	1.2E-02	1.1E-02	ug/L	95% KM (t) UCL	
	Naphthalene	ug/L	8.4E-01	9.2E-01 (NP)	3.3E+00	9.2E-01	ug/L	95% KM (BCA) UCL	
	N-Nitrosodiphenylamine	ug/L	2.4E+00	4.7E+00 (NP)	1.4E+01	4.7E+00	ug/L	95% KM (t) UCL	
	Pentachlorophenol	ug/L	ND	ND	ND	ND	ug/L	NA	
	Phenanthrene	ug/L	5.7E-01	2.7E-01 (NP)	8.9E-01	2.7E-01	ug/L	95% KM (BCA) UCL	
	1,4-Dichlorobenzene	ug/L	1.1E+00	1.8E+00 (NP)	3.2E+00	1.8E+00	ug/L	95% KM (t) UCL	
	Benzene	ug/L	2.1E+00	3.9E+00 (NP)	7.9E+00	3.9E+00	ug/L	95% KM (t) UCL	
	Chlorobenzene	ug/L	5.9E+00	1.2E+01 (NP)	2.8E+01	1.2E+01	ug/L	95% KM (t) UCL	
	Ethylbenzene	ug/L	ND	ND	ND	ND	ug/L	NA	
	Xylene (total)	ug/L	1.0E+00	1.2E+00 (NP)	2.1E+00	1.2E+00	ug/L	95% KM (t) UCL	
	Total PCBs	ug/L	4.4E-01	3.5E+00 (NP)	4.3E+00	3.5E+00	ug/L	97.5% KM (Chebyshev) UCL	
	4,4'-DDD	ug/L	3.6E-03	1.2E-02 (NP)	1.2E-02 (J)	1.2E-02	ug/L	95% KM (BCA) UCL	
	4,4'-DDE	ug/L	2.5E-03	NC	1.4E-03 (J)	1.4E-03	ug/L	Maximum concentration	(b)
	4,4'-DDT	ug/L	ND	ND	ND	ND	ug/L	NA	
	alpha-BHC	ug/L	2.0E-03	NC	9.9E-04	9.9E-04	ug/L	Maximum concentration	(b)
	alpha-Chlordane	ug/L	3.0E-03	3.8E-03 (NP)	7.2E-03 (J)	3.8E-03	ug/L	95% KM (t) UCL	
	Dieldrin	ug/L	2.5E-03	NC	1.8E-03 (J)	1.8E-03	ug/L	Maximum concentration	(b)
	Gamma-Chlordane	ug/L	ND	ND	ND	ND	ug/L	NA	
	Aluminum	ug/L	9.9E+01	1.4E+02 (NP)	2.6E+02	1.4E+02	ug/L	95% KM (t) UCL	
	Antimony	ug/L	1.2E+00	2.0E+00 (NP)	5.7E+00	2.0E+00	ug/L	95% KM (t) UCL	

TABLE 3.4.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Leachate

Exposure Medium: Leachate

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
	Arsenic	ug/L	2.7E+00	4.1E+00 (G)	8.4E+00	4.1E+00	ug/L	95% Approximate Gamma UCL	(b)
	Barium	ug/L	2.7E+02	6.7E+02 (NP)	8.7E+02	6.7E+02	ug/L	95% KM (Chebyshev) UCL	
	Beryllium	ug/L	1.5E-01	NC	1.8E-01	1.8E-01	ug/L	Maximum concentration	
	Cadmium	ug/L	3.7E+00	8.3E+00 (NP)	2.7E+01	8.3E+00	ug/L	95% KM (t) UCL	
	Chromium	ug/L	2.0E+00	5.1E+00 (NP)	8.0E+00	5.1E+00	ug/L	95% KM (Chebyshev) UCL	
	Cobalt	ug/L	1.1E+01	1.3E+01 (NP)	3.3E+01	1.3E+01	ug/L	95% KM (BCA) UCL	
	Copper	ug/L	1.1E+01	1.9E+01 (NP)	6.9E+01	1.9E+01	ug/L	95% KM (t) UCL	
	Cyanide	ug/L	ND	ND	ND	ND	ug/L	NA	
	Iron	ug/L	2.0E+04	4.3E+04 (G)	7.8E+04	4.3E+04	ug/L	95% Approximate Gamma UCL	(b)
	Lead	ug/L	9.7E+00	1.8E+01 (NP)	4.8E+01			See Appendix D	
	Manganese	ug/L	8.1E+02	1.1E+03 (N)	1.7E+03	1.1E+03	ug/L	95% Student's-t UCL	
	Mercury	ug/L	9.0E-02	NC	3.2E-02 (J)	3.2E-02	ug/L	Maximum concentration	
	Nickel	ug/L	2.5E+01	4.1E+01 (NP)	1.2E+02	4.1E+01	ug/L	95% KM (BCA) UCL	
	Silver	ug/L	1.9E+00	NC	1.5E+00	1.5E+00	ug/L	Maximum concentration	
	Thallium	ug/L	1.1E+00	7.6E+00 (NP)	5.8E+00 (J)	5.8E+00	ug/L	Maximum concentration	
	Vanadium	ug/L	3.5E+00	1.8E+00 (NP)	2.5E+00 (J)	1.8E+00	ug/L	95% KM (t) UCL	
	Zinc	ug/L	5.3E+02	1.3E+03 (NP)	4.1E+03	1.3E+03	ug/L	95% KM (BCA) UCL	(d)

TABLE 3.4.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

Because there are no "true" leachate data for the site, groundwater data are used as a surrogate to evaluate potential leachate exposures. COPCs selected on Table 2.10 were used to evaluate data from a subset of groundwater data (see Appendix A for list of samples).

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only, except for 4,4'-DDD (calculated using one-half the laboratory detection limit for non-detects. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.4.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Leachate

Exposure Medium: Leachate

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island	4-Methylphenol	ug/L	1.0E+00	NC	4.5E-01 (J)	4.5E-01	ug/L	Maximum concentration	(f)
	Acenaphthylene	ug/L	1.3E+00	2.6E-02 (NP)	3.2E-02	2.6E-02	ug/L	95% KM (t) UCL	(e)
	Atrazine	ug/L	1.1E+00	NC	3.2E+00 (J)	1.1E+00	ug/L	Arithmetic mean	
	Benzo(a)anthracene	ug/L	9.0E-01	4.5E-02 (NP)	8.0E-02 (J)	4.5E-02	ug/L	95% KM (t) UCL	
	Benzo(a)pyrene	ug/L	1.7E+00	1.7E-02 (NP)	1.9E-02	1.7E-02	ug/L	95% KM (t) UCL	
	Benzo(b)fluoranthene	ug/L	1.3E+00	1.5E-02 (NP)	1.8E-02	1.5E-02	ug/L	95% KM (t) UCL	
	Benzo(g,h,i)perylene	ug/L	1.7E+00	1.3E-02 (NP)	1.4E-02	1.3E-02	ug/L	95% KM (t) UCL	
	Benzo(k)fluoranthene	ug/L	1.7E+00	1.6E-02 (NP)	1.9E-02	1.6E-02	ug/L	95% KM (t) UCL	
	bis(2-Ethylhexyl)phthalate	ug/L	1.8E+00	2.8E+00 (NP)	4.8E+00	2.8E+00	ug/L	95% KM (t) UCL	
	Chrysene	ug/L	1.3E+00	3.4E-02 (NP)	4.8E-02	3.4E-02	ug/L	95% KM (t) UCL	
	Dibenz(a,h)anthracene	ug/L	ND	ND	ND	ND	ug/L	NA	(f)
	Dibenzofuran	ug/L	1.0E+00	NC	2.8E-01 (J)	2.8E-01	ug/L	Maximum concentration	
	Indeno(1,2,3-cd)pyrene	ug/L	1.7E+00	1.1E-02 (NP)	1.2E-02	1.1E-02	ug/L	95% KM (t) UCL	
	Naphthalene	ug/L	8.4E-01	9.2E-01 (NP)	3.3E+00	9.2E-01	ug/L	95% KM (BCA) UCL	
	N-Nitrosodiphenylamine	ug/L	2.4E+00	4.7E+00 (NP)	1.4E+01	4.7E+00	ug/L	95% KM (t) UCL	
	Pentachlorophenol	ug/L	ND	ND	ND	ND	ug/L	NA	
	Phenanthrene	ug/L	5.7E-01	2.7E-01 (NP)	8.9E-01	2.7E-01	ug/L	95% KM (BCA) UCL	
	1,4-Dichlorobenzene	ug/L	1.1E+00	1.8E+00 (NP)	3.2E+00	1.8E+00	ug/L	95% KM (t) UCL	
	Benzene	ug/L	2.1E+00	3.9E+00 (NP)	7.9E+00	3.9E+00	ug/L	95% KM (t) UCL	
	Chlorobenzene	ug/L	5.9E+00	1.2E+01 (NP)	2.8E+01	1.2E+01	ug/L	95% KM (t) UCL	
	Ethylbenzene	ug/L	ND	ND	ND	ND	ug/L	NA	(f)
	Xylene (total)	ug/L	1.0E+00	1.2E+00 (NP)	2.1E+00	1.2E+00	ug/L	95% KM (t) UCL	
	Total PCBs	ug/L	4.4E-01	3.5E+00 (NP)	4.3E+00	3.5E+00	ug/L	97.5% KM (Chebyshev) UCL	
	4,4'-DDD	ug/L	3.6E-03	1.2E-02 (NP)	1.2E-02 (J)	1.2E-02	ug/L	95% KM (BCA) UCL	
	4,4'-DDE	ug/L	2.5E-03	NC	1.4E-03 (J)	1.4E-03	ug/L	Maximum concentration	
	4,4'-DDT	ug/L	ND	ND	ND	ND	ug/L	NA	
	alpha-BHC	ug/L	2.0E-03	NC	9.9E-04	9.9E-04	ug/L	Maximum concentration	
	alpha-Chlordane	ug/L	3.0E-03	3.8E-03 (NP)	7.2E-03 (J)	3.8E-03	ug/L	95% KM (t) UCL	
	Dieldrin	ug/L	2.5E-03	NC	1.8E-03 (J)	1.8E-03	ug/L	Maximum concentration	
	Gamma-Chlordane	ug/L	ND	ND	ND	ND	ug/L	NA	
	Aluminum	ug/L	9.9E+01	1.4E+02 (NP)	2.6E+02	1.4E+02	ug/L	95% KM (t) UCL	(f)
	Antimony	ug/L	1.2E+00	2.0E+00 (NP)	5.7E+00	2.0E+00	ug/L	95% KM (t) UCL	

TABLE 3.4.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Leachate

Exposure Medium: Leachate

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration				
						Value	Units	Statistic (4)	Rationale (5)	
	Arsenic	ug/L	2.7E+00	4.1E+00 (G)	8.4E+00	4.1E+00	ug/L	95% Approximate Gamma UCL	(e)	
	Barium	ug/L	2.7E+02	6.7E+02 (NP)	8.7E+02	6.7E+02	ug/L	95% KM (Chebyshev) UCL		
	Beryllium	ug/L	1.5E-01	NC	1.8E-01	1.5E-01	ug/L	Arithmetic mean		
	Cadmium	ug/L	3.7E+00	8.3E+00 (NP)	2.7E+01	8.3E+00	ug/L	95% KM (t) UCL		
	Chromium	ug/L	2.0E+00	5.1E+00 (NP)	8.0E+00	5.1E+00	ug/L	95% KM (Chebyshev) UCL		
	Cobalt	ug/L	1.1E+01	1.3E+01 (NP)	3.3E+01	1.3E+01	ug/L	95% KM (BCA) UCL		
	Copper	ug/L	1.1E+01	1.9E+01 (NP)	6.9E+01	1.9E+01	ug/L	95% KM (t) UCL		
	Cyanide	ug/L	ND	ND	ND	ND	ug/L	NA		
	Iron	ug/L	2.0E+04	4.3E+04 (G)	7.8E+04	4.3E+04	ug/L	95% Approximate Gamma UCL	(f)	
	Lead	ug/L	9.7E+00	1.8E+01 (NP)	4.8E+01	See Appendix D				
	Manganese	ug/L	8.1E+02	1.1E+03 (N)	1.7E+03	1.1E+03	ug/L	95% Student's-t UCL		
	Mercury	ug/L	9.0E-02	NC	3.2E-02 (J)	3.2E-02	ug/L	Maximum concentration		
	Nickel	ug/L	2.5E+01	4.1E+01 (NP)	1.2E+02	4.1E+01	ug/L	95% KM (BCA) UCL		
	Silver	ug/L	1.9E+00	NC	1.5E+00	1.5E+00	ug/L	Maximum concentration		
	Thallium	ug/L	1.1E+00	7.6E+00 (NP)	5.8E+00 (J)	1.1E+00	ug/L	Arithmetic mean		
	Vanadium	ug/L	3.5E+00	1.8E+00 (NP)	2.5E+00 (J)	1.8E+00	ug/L	95% KM (t) UCL		
	Zinc	ug/L	5.3E+02	1.3E+03 (NP)	4.1E+03	1.3E+03	ug/L	95% KM (BCA) UCL		

TABLE 3.4.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Leachate
Exposure Medium: Leachate

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

Because there are no "true" leachate data for the site, groundwater data are used as a surrogate to evaluate potential leachate exposures. COPCs selected on Table 2.10 were used to evaluate data from a subset of groundwater data (see Appendix A for list of samples).

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only, except for 4,4'-DDD (calculated using one-half the laboratory detection limit for non-detects. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.5.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island Ponds	Benzo(a)anthracene	mg/kg	1.2E+00	2.3E+00 (NP)	4.0E+00 (J)	2.3E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(a)pyrene	mg/kg	1.3E+00	2.4E+00 (NP)	4.0E+00 (J)	2.4E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(b)fluoranthene	mg/kg	1.3E+00	1.8E+00 (NP)	3.2E+00	1.8E+00	mg/kg	95% KM (t) UCL	
	Benzo(k)fluoranthene	mg/kg	7.3E-01	1.4E+00 (NP)	2.2E+00 (J)	1.4E+00	mg/kg	95% KM (Chebyshev) UCL	
	bis(2-Ethylhexyl)phthalate	mg/kg	2.9E+00	1.6E+01 (NP)	2.0E+01	1.6E+01	mg/kg	99% KM (Chebyshev) UCL	
	Carbazole	mg/kg	1.4E-01	1.4E-01 (NP)	2.0E-01	1.4E-01	mg/kg	95% KM (t) UCL	
	Dibenz(a,h)anthracene	mg/kg	2.1E-01	2.8E-01 (NP)	5.8E-01 (J)	2.8E-01	mg/kg	95% KM (BCA) UCL	
	Dibenzofuran	mg/kg	1.5E-01	9.0E-02 (NP)	1.0E-01 (J)	9.0E-02	mg/kg	95% KM (t) UCL	
	Indeno(1,2,3-cd)pyrene	mg/kg	5.7E-01	1.1E+00 (NP)	1.4E+00	1.1E+00	mg/kg	95% KM (Chebyshev) UCL	
	Phenanthrene	mg/kg	1.0E+00	1.4E+00 (NP)	2.8E+00 (J)	1.4E+00	mg/kg	95% KM (t) UCL	
	Aroclor-1242	mg/kg	ND	ND	ND	ND	mg/kg	NA	
	Aroclor-1254	mg/kg	7.6E-02	1.6E-01 (NP)	4.2E-01 (J)	1.6E-01	mg/kg	95% KM (t) UCL	
	Aroclor-1260	mg/kg	1.2E-01	2.2E-01 (NP)	5.5E-01	2.2E-01	mg/kg	95% KM (BCA) UCL	
	Dieldrin	mg/kg	4.8E-03	9.0E-03 (NP)	2.1E-02 (J)	9.0E-03	mg/kg	95% KM (t) UCL	
	Aluminum	mg/kg	5.9E+03	7.3E+03 (N)	1.2E+04	7.3E+03	mg/kg	95% Student's-t UCL	
	Antimony	mg/kg	2.2E+00	9.1E+00 (NP)	1.9E+01 (J)	9.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	Arsenic	mg/kg	9.2E+00	1.2E+01 (NP)	2.2E+01	1.2E+01	mg/kg	95% KM (t) UCL	
	Cadmium	mg/kg	7.8E+00	1.3E+01 (G)	2.5E+01	1.3E+01	mg/kg	95% Approximate Gamma UCL	
	Chromium	mg/kg	1.0E+02	1.7E+02 (G)	3.5E+02	1.7E+02	mg/kg	95% Approximate Gamma UCL	
	Cobalt	mg/kg	6.5E+00	9.2E+00 (NP)	1.4E+01	9.2E+00	mg/kg	95% KM (t) UCL	
	Copper	mg/kg	1.5E+02	3.3E+02 (NP)	6.5E+02	3.3E+02	mg/kg	95% KM (Chebyshev) UCL	
	Iron	mg/kg	1.4E+04	1.9E+04 (G)	5.0E+04 (J)	1.9E+04	mg/kg	95% Approximate Gamma UCL	
	Lead	mg/kg	2.6E+02	1.4E+03 (LN)	1.8E+03			See Appendix D	
	Manganese	mg/kg	1.9E+02	2.4E+02 (N)	4.5E+02 (J)	2.4E+02	mg/kg	95% Student's-t UCL	
	Mercury	mg/kg	4.0E-01	5.3E-01 (NP)	1.1E+00	5.3E-01	mg/kg	95% KM (t) UCL	
	Thallium	mg/kg	2.8E-01	3.6E-01 (NP)	9.6E-01 (J)	3.6E-01	mg/kg	95% KM (t) UCL	
	Vanadium	mg/kg	1.5E+01	1.9E+01 (NP)	3.4E+01 (J)	1.9E+01	mg/kg	95% KM (t) UCL	

TABLE 3.5.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.5.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island Ponds	Benzo(a)anthracene	mg/kg	1.2E+00	2.3E+00 (NP)	4.0E+00 (J)	2.3E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(a)pyrene	mg/kg	1.3E+00	2.4E+00 (NP)	4.0E+00 (J)	2.4E+00	mg/kg	95% KM (Chebyshev) UCL	
	Benzo(b)fluoranthene	mg/kg	1.3E+00	1.8E+00 (NP)	3.2E+00	1.8E+00	mg/kg	95% KM (t) UCL	
	Benzo(k)fluoranthene	mg/kg	7.3E-01	1.4E+00 (NP)	2.2E+00 (J)	1.4E+00	mg/kg	95% KM (Chebyshev) UCL	
	bis(2-Ethylhexyl)phthalate	mg/kg	2.9E+00	1.6E+01 (NP)	2.0E+01	1.6E+01	mg/kg	99% KM (Chebyshev) UCL	
	Carbazole	mg/kg	1.4E-01	1.4E-01 (NP)	2.0E-01	1.4E-01	mg/kg	95% KM (t) UCL	
	Dibenz(a,h)anthracene	mg/kg	2.1E-01	2.8E-01 (NP)	5.8E-01 (J)	2.8E-01	mg/kg	95% KM (BCA) UCL	
	Dibenzofuran	mg/kg	1.5E-01	9.0E-02 (NP)	1.0E-01 (J)	9.0E-02	mg/kg	95% KM (t) UCL	
	Indeno(1,2,3-cd)pyrene	mg/kg	5.7E-01	1.1E+00 (NP)	1.4E+00	1.1E+00	mg/kg	95% KM (Chebyshev) UCL	
	Phenanthrene	mg/kg	1.0E+00	1.4E+00 (NP)	2.8E+00 (J)	1.4E+00	mg/kg	95% KM (t) UCL	
	Aroclor-1242	mg/kg	ND	ND	ND	ND	mg/kg	NA	
	Aroclor-1254	mg/kg	7.6E-02	1.6E-01 (NP)	4.2E-01 (J)	1.6E-01	mg/kg	95% KM (t) UCL	
	Aroclor-1260	mg/kg	1.2E-01	2.2E-01 (NP)	5.5E-01	2.2E-01	mg/kg	95% KM (BCA) UCL	
	Dieldrin	mg/kg	4.8E-03	9.0E-03 (NP)	2.1E-02 (J)	9.0E-03	mg/kg	95% KM (t) UCL	
	Aluminum	mg/kg	5.9E+03	7.3E+03 (N)	1.2E+04	7.3E+03	mg/kg	95% Student's-t UCL	
	Antimony	mg/kg	2.2E+00	9.1E+00 (NP)	1.9E+01 (J)	9.1E+00	mg/kg	97.5% KM (Chebyshev) UCL	
	Arsenic	mg/kg	9.2E+00	1.2E+01 (NP)	2.2E+01	1.2E+01	mg/kg	95% KM (t) UCL	
	Cadmium	mg/kg	7.8E+00	1.3E+01 (G)	2.5E+01	1.3E+01	mg/kg	95% Approximate Gamma UCL	
	Chromium	mg/kg	1.0E+02	1.7E+02 (G)	3.5E+02	1.7E+02	mg/kg	95% Approximate Gamma UCL	
	Cobalt	mg/kg	6.5E+00	9.2E+00 (NP)	1.4E+01	9.2E+00	mg/kg	95% KM (t) UCL	
	Copper	mg/kg	1.5E+02	3.3E+02 (NP)	6.5E+02	3.3E+02	mg/kg	95% KM (Chebyshev) UCL	
	Iron	mg/kg	1.4E+04	1.9E+04 (G)	5.0E+04 (J)	1.9E+04	mg/kg	95% Approximate Gamma UCL	
	Lead	mg/kg	2.6E+02	1.4E+03 (LN)	1.8E+03			See Appendix D	
	Manganese	mg/kg	1.9E+02	2.4E+02 (N)	4.5E+02 (J)	2.4E+02	mg/kg	95% Student's-t UCL	
	Mercury	mg/kg	4.0E-01	5.3E-01 (NP)	1.1E+00	5.3E-01	mg/kg	95% KM (t) UCL	
	Thallium	mg/kg	2.8E-01	3.6E-01 (NP)	9.6E-01 (J)	3.6E-01	mg/kg	95% KM (t) UCL	
	Vanadium	mg/kg	1.5E+01	1.9E+01 (NP)	3.4E+01 (J)	1.9E+01	mg/kg	95% KM (t) UCL	

TABLE 3.5.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.6.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island Ponds	Benzo(a)anthracene	ug/L	6.1E-02	1.3E-01 (NP)	1.4E-01 (J)	1.3E-01	ug/L	95% KM (t) UCL	
	Benzo(a)pyrene	ug/L	6.5E-02	1.2E-01 (NP)	1.5E-01	1.2E-01	ug/L	95% KM (t) UCL	
	Benzo(b)fluoranthene	ug/L	6.3E-02	NC	2.5E-01	2.5E-01	ug/L	Maximum concentration	(b)
	Benzo(g,h,i)perylene	ug/L	5.4E-02	NC	1.1E-01	1.1E-01	ug/L	Maximum concentration	(b)
	Benzo(k)fluoranthene	ug/L	ND	ND	ND	ND	ug/L	NA	
	bis(2-Ethylhexyl)phthalate	ug/L	2.4E+00	2.1E+00 (NP)	1.9E+00 (J)	1.9E+00	ug/L	Maximum concentration	(d)
	Chrysene	ug/L	6.3E-02	1.4E-01 (NP)	1.6E-01	1.4E-01	ug/L	95% KM (t) UCL	
	Indeno(1,2,3-cd)pyrene	ug/L	5.4E-02	NC	1.1E-01	1.1E-01	ug/L	Maximum concentration	(b)
	Naphthalene	ug/L	5.9E-02	NC	1.9E-01	1.9E-01	ug/L	Maximum concentration	(b)
	Phenanthrene	ug/L	8.7E-02	1.4E-01 (NP)	2.1E-01	1.4E-01	ug/L	95% KM (t) UCL	
	1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	ug/L	NA	
	Benzene	ug/L	ND	ND	ND	ND	ug/L	NA	
	Bromodichloromethane	ug/L	ND	ND	ND	ND	ug/L	NA	
	Aroclor-1260	ug/L	ND	ND	ND	ND	ug/L	NA	
	4,4'-DDD	ug/L	3.1E-03	NC	1.2E-02 (J)	1.2E-02	ug/L	Maximum concentration	(b)
	4,4'-DDE	ug/L	ND	ND	ND	ND	ug/L	NA	
	4,4'-DDT	ug/L	3.0E-03	NC	9.2E-03 (J)	9.2E-03	ug/L	Maximum concentration	(b)
	alpha-Chlordane	ug/L	1.4E-03	NC	3.3E-03 (J)	3.3E-03	ug/L	Maximum concentration	(b)
	beta-BHC	ug/L	ND	ND	ND	ND	ug/L	NA	
	Dieldrin	ug/L	ND	ND	ND	ND	ug/L	NA	
	Gamma-Chlordane	ug/L	2.1E-03	4.2E-03 (NP)	9.4E-03	4.2E-03	ug/L	95% KM (t) UCL	
	Heptachlor Epoxide	ug/L	1.5E-03	NC	5.1E-03 (J)	5.1E-03	ug/L	Maximum concentration	(b)
	Aluminum	ug/L	4.3E+02	3.3E+03 (NP)	4.3E+03	3.3E+03	ug/L	95% KM (Chebyshev) UCL	
	Arsenic	ug/L	2.0E+00	3.2E+00 (NP)	5.1E+00	3.2E+00	ug/L	95% Chebyshev (Mean, Sd) UCL	
	Cadmium	ug/L	6.7E-01	1.4E+00 (NP)	4.7E+00	1.4E+00	ug/L	95% KM (t) UCL	
	Chromium	ug/L	5.6E+00	1.4E+01 (NP)	5.9E+01	1.4E+01	ug/L	95% KM (t) UCL	
	Cobalt	ug/L	ND	ND	ND	ND	ug/L	NA	
	Copper	ug/L	1.1E+01	NC	7.0E+01	7.0E+01	ug/L	Maximum concentration	(b)
	Cyanide	ug/L	2.0E+00	3.6E+00 (NP)	4.8E+00	3.6E+00	ug/L	95% KM (t) UCL	
	Iron	ug/L	4.3E+03	1.0E+04 (NP)	2.1E+04 (J)	1.0E+04	ug/L	95% Chebyshev (Mean, Sd) UCL	
	Lead	ug/L	1.0E+01	2.1E+01 (NP)	8.3E+01			See Appendix D	
	Manganese	ug/L	4.7E+02	5.8E+02 (N)	1.2E+03 (J)	5.8E+02	ug/L	95% Modified-t UCL	
	Mercury	ug/L	ND	ND	ND	ND	ug/L	NA	
	Vanadium	ug/L	1.3E+00	2.6E+00 (NP)	9.8E+00	2.6E+00	ug/L	95% KM (BCA) UCL	

TABLE 3.6.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.6.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future

Medium: Surface Water

Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)
Unnamed Island Ponds	Benzo(a)anthracene	ug/L	6.1E-02	1.3E-01 (NP)	1.4E-01 (J)	1.3E-01	ug/L	95% KM (t) UCL	
	Benzo(a)pyrene	ug/L	6.5E-02	1.2E-01 (NP)	1.5E-01	1.2E-01	ug/L	95% KM (t) UCL	
	Benzo(b)fluoranthene	ug/L	6.3E-02	NC	2.5E-01	6.3E-02	ug/L	Arithmetic mean	(e)
	Benzo(g,h,i)perylene	ug/L	5.4E-02	NC	1.1E-01	5.4E-02	ug/L	Arithmetic mean	(e)
	Benzo(k)fluoranthene	ug/L	ND	ND	ND	ND	ug/L	NA	
	bis(2-Ethylhexyl)phthalate	ug/L	2.4E+00	2.1E+00 (NP)	1.9E+00 (J)	1.9E+00	ug/L	Maximum concentration	(f)
	Chrysene	ug/L	6.3E-02	1.4E-01 (NP)	1.6E-01	1.4E-01	ug/L	95% KM (t) UCL	
	Indeno(1,2,3-cd)pyrene	ug/L	5.4E-02	NC	1.1E-01	5.4E-02	ug/L	Maximum concentration	(e)
	Naphthalene	ug/L	5.9E-02	NC	1.9E-01	5.9E-02	ug/L	Maximum concentration	(e)
	Phenanthrene	ug/L	8.7E-02	1.4E-01 (NP)	2.1E-01	1.4E-01	ug/L	95% KM (t) UCL	
	1,4-Dichlorobenzene	ug/L	ND	ND	ND	ND	ug/L	NA	
	Benzene	ug/L	ND	ND	ND	ND	ug/L	NA	
	Bromodichloromethane	ug/L	ND	ND	ND	ND	ug/L	NA	
	Aroclor-1260	ug/L	ND	ND	ND	ND	ug/L	NA	
	4,4'-DDD	ug/L	3.1E-03	NC	1.2E-02 (J)	3.1E-03	ug/L	Arithmetic mean	(e)
	4,4'-DDE	ug/L	ND	ND	ND	ND	ug/L	NA	
	4,4'-DDT	ug/L	3.0E-03	NC	9.2E-03 (J)	3.0E-03	ug/L	Arithmetic mean	(e)
	alpha-Chlordane	ug/L	1.4E-03	NC	3.3E-03 (J)	1.4E-03	ug/L	Arithmetic mean	(e)
	beta-BHC	ug/L	ND	ND	ND	ND	ug/L	NA	
	Dieldrin	ug/L	ND	ND	ND	ND	ug/L	NA	
	Gamma-Chlordane	ug/L	2.1E-03	4.2E-03 (NP)	9.4E-03	4.2E-03	ug/L	95% KM (t) UCL	
	Heptachlor Epoxide	ug/L	1.5E-03	NC	5.1E-03 (J)	1.5E-03	ug/L	Arithmetic mean	(e)
	Aluminum	ug/L	4.3E+02	3.3E+03 (NP)	4.3E+03	3.3E+03	ug/L	95% KM (Chebyshev) UCL	
	Arsenic	ug/L	2.0E+00	3.2E+00 (NP)	5.1E+00	3.2E+00	ug/L	95% Chebyshev (Mean, Sd) UCL	
	Cadmium	ug/L	6.7E-01	1.4E+00 (NP)	4.7E+00	1.4E+00	ug/L	95% KM (t) UCL	
	Chromium	ug/L	5.6E+00	1.4E+01 (NP)	5.9E+01	1.4E+01	ug/L	95% KM (t) UCL	
	Cobalt	ug/L	ND	ND	ND	ND	ug/L	NA	
	Copper	ug/L	1.1E+01	NC	7.0E+01	1.1E+01	ug/L	Arithmetic mean	(e)
	Cyanide	ug/L	2.0E+00	3.6E+00 (NP)	4.8E+00	3.6E+00	ug/L	95% KM (t) UCL	
	Iron	ug/L	4.3E+03	1.0E+04 (NP)	2.1E+04 (J)	1.0E+04	ug/L	95% Chebyshev (Mean, Sd) UCL	
	Lead	ug/L	1.0E+01	2.1E+01 (NP)	8.3E+01			See Appendix D	
	Manganese	ug/L	4.7E+02	5.8E+02 (N)	1.2E+03 (J)	5.8E+02	ug/L	95% Modified-t UCL	
	Mercury	ug/L	ND	ND	ND	ND	ug/L	NA	
	Vanadium	ug/L	1.3E+00	2.6E+00 (NP)	9.8E+00	2.6E+00	ug/L	95% KM (BCA) UCL	

TABLE 3.6.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current/Future
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (2)	Maximum Concentration (Qualifier) (3)	Exposure Point Concentration			
						Value	Units	Statistic (4)	Rationale (5)

Notes:

- (1) Arithmetic means were calculated with ProUCL software version 4.0 and represent means of detected concentrations only. NA = Not applicable.
- (2) UCL calculations were performed using ProUCL software version 4.0, developed by Lockheed-Martin for USEPA.
NP = Non-parametric; N = Normal; LN = Lognormal; G = Gamma; NA = Not applicable.
- (3) J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- (4) 95% Student's-t UCL = Calculated using a normal Student's t approximation procedure.
95% Modified-t UCL = Calculated using a modified Student's t approximation procedure.
95% Approx. Gamma UCL = Calculated using an Approximate Gamma distribution procedure.
95% H-UCL = Calculated using Land's H-stat for lognormal distributions.
95% Chebyshev (Mean, Sd) UCL = Calculated using Chebyshev inequality non-parametric procedure.
95% KM (t) UCL = Calculated using 95% Kaplan Meier (Student's t approximation) non-parametric procedure.
95% KM (BCA) UCL = Calculated using 95% Kaplan Meier (Bias-corrected accelerated bootstrap) non-parametric procedure.
95% KM (Chebyshev) UCL = Calculated using 95% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
95% KM (% Bootstrap) UCL = Calculated using 95% Kaplan Meier (Percentile Bootstrap) non-parametric procedure.
97.5% KM (Chebyshev) UCL = Calculated using 97.5% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
99% KM (Chebyshev) UCL = Calculated using 99% Kaplan Meier (Chebyshev inequality) non-parametric procedure.
- (5) For data sets with multiple detection limits for non-detects, the use of the Kaplan Meier non-parametric test procedure is recommended and used to calculate an appropriate UCL. For the Kaplan Meier test procedure, the type of data distribution was determined using a series of tests (Shapiro-Wilk, Kolmogorov-Smirnov, Anderson-Darling) for normal, lognormal, or gamma data distributions. The results of these distribution tests determined which UCL calculation was performed.
 - (a) UCL may not be reliable due to the high frequency of non-detects present.
 - (b) Maximum detected concentration used for EPC due to the low number of detections.
 - (c) Due to small sample size, the maximum detected concentration is used.
 - (d) 95% UCL exceeds maximum detected concentration. Therefore, maximum concentration used for EPC
 - (e) When the maximum detected concentration is selected as the RME EPC, the arithmetic mean concentration is selected as the CT EPC.
 - (f) If the arithmetic mean concentration equals or exceeds the maximum detected concentration, the maximum detected concentration is used as the CT EPC.

ND = Non-detect

NC = Not calculated

TABLE 3.7.RME
EXPOSURE POINT CONCENTRATION SUMMARY
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (1)	Maximum Concentration (Qualifier) (1)	Exposure Point Concentration (2)			
						Value (2)	Units	Statistic	Rationale
Unnamed Island	1,1'-Biphenyl	mg/kg	NA	1.3E-01	NA	4.3E-02	ug/m ³	Johnson & Ettinger model	see Appendix B
	2-Methylnaphthalene	mg/kg	NA	4.5E-01	NA	4.5E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Acenaphthene	mg/kg	NA	4.2E-01	NA	4.0E-02	ug/m ³	Johnson & Ettinger model	see Appendix B
	Acenaphthylene	mg/kg	NA	3.2E-01	NA	1.2E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Acetophenone	mg/kg	NA	1.4E-01	NA	1.4E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Benzaldehyde	mg/kg	NA	1.7E-01	NA	6.0E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Naphthalene	mg/kg	NA	7.5E-01	NA	1.5E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Nitrobenzene	mg/kg	NA	NA	5.3E-01 (a)	1.7E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Phenanthrene	mg/kg	NA	4.6E+00	NA	1.3E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	1,1-Dichloroethene	mg/kg	NA	NA	5.0E-03 (a)	2.2E+01	ug/m ³	Johnson & Ettinger model	see Appendix B
	1,4-Dichlorobenzene	mg/kg	NA	7.0E-02	NA	3.1E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Benzene	mg/kg	NA	3.1E-03	NA	3.9E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Carbon disulfide	mg/kg	NA	5.2E-03	NA	3.2E+01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Carbon tetrachloride	mg/kg	NA	2.1E-03	NA	4.4E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Chlorobenzene	mg/kg	NA	1.7E-02	NA	3.6E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Cyclohexane, methyl-	mg/kg	NA	2.0E-02	NA	1.1E+02	ug/m ³	Johnson & Ettinger model	see Appendix B
	Dichlorodifluoromethane	mg/kg	NA	2.8E-03	NA	1.2E+01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Methyl acetate	mg/kg	NA	8.0E-02	NA	1.1E+01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Methylene chloride	mg/kg	NA	3.9E-03	NA	6.5E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Tetrachloroethene	mg/kg	NA	3.9E-03	NA	4.9E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Trichloroethene	mg/kg	NA	3.1E-03	NA	2.7E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Xylene (Total)	mg/kg	NA	1.1E-02	NA	2.7E+00	ug/m ³	Johnson & Ettinger model	see Appendix B

Notes:

- (1) Only statistics utilized for Johnson & Ettinger modeling have been presented. Refer to Appendix C for statistics on each COPC.
NA = Not applicable.
(a) The EPC presented is the maximum detected concentration due to the large number of non-detects in the dataset.
(2) The exposure point concentrations were estimated using the Johnson & Ettinger (slab-on-grade) model (see Appendix B).

TABLE 3.7.CT
EXPOSURE POINT CONCENTRATION SUMMARY
CENTRAL TENDENCY EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Medium: Soil
Exposure Medium: Outdoor (Trench) Air

Exposure Point	Chemical of Potential Concern	Units	Arithmetic Mean (1)	UCL (Distribution) (1)	Maximum Concentration (Qualifier) (1)	Exposure Point Concentration (2)			
						Value (2)	Units	Statistic	Rationale
Unnamed Island	1,1'-Biphenyl	mg/kg	NA	1.3E-01	NA	4.3E-02	ug/m ³	Johnson & Ettinger model	see Appendix B
	2-Methylnaphthalene	mg/kg	NA	4.5E-01	NA	4.5E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Acenaphthene	mg/kg	NA	4.2E-01	NA	4.0E-02	ug/m ³	Johnson & Ettinger model	see Appendix B
	Acenaphthylene	mg/kg	NA	3.2E-01	NA	1.2E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Acetophenone	mg/kg	NA	1.4E-01	NA	1.4E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Benzaldehyde	mg/kg	NA	1.7E-01	NA	6.0E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Naphthalene	mg/kg	NA	7.5E-01	NA	1.5E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Nitrobenzene	mg/kg	NA	NA	5.3E-01 (a)	1.7E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Phenanthrene	mg/kg	NA	4.6E+00	NA	1.3E-01	ug/m ³	Johnson & Ettinger model	see Appendix B
	1,1-Dichloroethene	mg/kg	NA	NA	5.0E-03 (a)	2.2E+01	ug/m ³	Johnson & Ettinger model	see Appendix B
	1,4-Dichlorobenzene	mg/kg	NA	7.0E-02	NA	3.1E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Benzene	mg/kg	NA	3.1E-03	NA	3.9E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Carbon disulfide	mg/kg	NA	5.2E-03	NA	3.2E+01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Carbon tetrachloride	mg/kg	NA	2.1E-03	NA	4.4E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Chlorobenzene	mg/kg	NA	1.7E-02	NA	3.6E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Cyclohexane, methyl-	mg/kg	NA	2.0E-02	NA	1.1E+02	ug/m ³	Johnson & Ettinger model	see Appendix B
	Dichlorodifluoromethane	mg/kg	NA	2.8E-03	NA	1.2E+01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Methyl acetate	mg/kg	NA	8.0E-02	NA	1.1E+01	ug/m ³	Johnson & Ettinger model	see Appendix B
	Methylene chloride	mg/kg	NA	3.9E-03	NA	6.5E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Tetrachloroethene	mg/kg	NA	3.9E-03	NA	4.9E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Trichloroethene	mg/kg	NA	3.1E-03	NA	2.7E+00	ug/m ³	Johnson & Ettinger model	see Appendix B
	Xylene (Total)	mg/kg	NA	1.1E-02	NA	2.7E+00	ug/m ³	Johnson & Ettinger model	see Appendix B

Notes:

- (1) Only statistics utilized for Johnson & Ettinger modeling have been presented. Refer to Appendix C for statistics on each COPC.
NA = Not applicable.
(a) The EPC presented is the maximum detected concentration due to the large number of non-detects in the dataset.
(2) The exposure point concentrations were estimated using the Johnson & Ettinger (slab-on-grade) model (see Appendix B).

TABLE 4.1.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe: Current
Medium: Soil
Exposure Medium: Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.1	mg/kg	See Table 3.1	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	100	mg/day	USEPA, 2002	
				EF	Exposure Frequency	104	days/yr	Professional Judgement	
				ED	Exposure Duration	10	years	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	Unnamed Island	ATnc	Averaging Time - noncancer	3,650	days	USEPA, 1989	
				CS	Chemical Concentration in Soil	See Table 3.1	mg/kg	See Table 3.1	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	5,900	cm ²	USEPA, 1997	
				AF	Adherence Factor	0.07	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	104	days/yr	Professional Judgement	
				ED	Exposure Duration	10	years	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,650	days	USEPA, 1989	

Adherence factor for adolescent soil exposure represents the geometric mean for adult gardeners.

Adolescent surface area assumes head, forearms, hands, lower legs, and feet.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.1.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Current
Medium:	Soil
Exposure Medium:	Surface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.1	mg/kg	See Table 3.1	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	50	mg/day	USEPA, 1997; 2002	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	10	years	USEPA, 1989	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,650	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.1	mg/kg	See Table 3.1	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	5,900	cm ²	USEPA, 2004	
				AF	Adherence Factor	0.07	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	10	years	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,650	days	USEPA, 1989	

Adherence factor for adolescent soil exposure represents that for teens in moist soil conditions.

Adolescent surface area assumes head, forearms, hands, lower legs, and feet.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.2.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe: Current
Medium: Leachate
Exposure Medium: Leachate

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal - wading	Trespasser	Adolescent	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.4	ug/L	See Table 3.4	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	3,700	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hrs/event	USEPA, 2004	
				EV	Event Frequency	1	events/day	Professional Judgement	
				EF	Exposure Frequency	52	days/year	Professional Judgement	
				ED	Exposure Duration	10	years	USEPA, 1989	
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3650	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	

Surface area assumes lower legs, feet, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.2.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Current
Medium:	Leachate
Exposure Medium:	Leachate

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal-wading	Trespasser	Adolescent	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.4	ug/L	See Table 3.4	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	3,700	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hrs/event	USEPA, 2004	
				EV	Event Frequency	1	events/day	Professional Judgement	
				EF	Exposure Frequency	26	days/year	Professional Judgement	
				ED	Exposure Duration	10	years	USEPA, 1989	
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3650	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	

Surface area assumes lower legs, feet, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.3.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Current
Medium:	Surface water
Exposure Medium:	Surface water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal - wading	Trespasser	Adolescent	Unnamed Island Ponds	CW	Chemical Concentration in Water	See Table 3.6	ug/L	See Table 3.6	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	7,600	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hrs/event	USEPA, 2004	
				EV	Event Frequency	1.0	events/day	Professional Judgement	
				EF	Exposure Frequency	52	days/year	Professional Judgement	
				ED	Exposure Duration	10	years	USEPA, 1989	
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3650	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

Surface areas for wading exposures assume hands, feet, forearms, and lower legs.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.3.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Current
Medium:	Surface water
Exposure Medium:	Surface water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal-wading	Trespasser	Adolescent	Unnamed Island Ponds	CW	Chemical Concentration in Water	See Table 3.6	ug/L	See Table 3.6	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	7,600	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hrs/event	USEPA, 2004	
				EV	Event Frequency	1.0	events/day	Professional Judgement	
				EF	Exposure Frequency	26	days/year	Professional Judgement	
				ED	Exposure Duration	10	years	USEPA, 1989	
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3650	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	

Surface areas for wading exposures assume hands, feet, forearms, and lower legs.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.4.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Current
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Trespasser	Adolescent	Unnamed Island Ponds	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$CS \times IR \times EF \times ED \times CF \times FI$ BW x AT
				IR	Ingestion Rate	100	mg/day	USEPA, 1989; 1997; 2002	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	10	years	Professional Judgement	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,650	days	USEPA, 1989	
Dermal	Trespasser	Adolescent	Unnamed Island Ponds	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$CS \times SA \times AF \times ABS \times EF \times ED \times CF$ BW x AT
				SA	Surface Area	7,600	cm ²	USEPA, 1997	
				AF	Adherence Factor	0.30	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	10	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,650	days	USEPA, 1989	

Surface areas assume lower legs, feet, forearms, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.4.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Current
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion - wading	Trespasser	Adolescent	Unnamed Island Ponds	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	50	mg/day	USEPA, 1989; 2002	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	10	years	Professional Judgement	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,650	days	USEPA, 1989	
Dermal - wading	Trespasser	Adolescent	Unnamed Island Ponds	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	7,600	cm ²	USEPA, 1997	
				AF	Adherence Factor	0.30	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	10	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	50	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	3,650	days	USEPA, 1989	

Surface areas assume lower legs, feet, forearms, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.5.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker	Adult	Shallow Monitoring Well on Unnamed Island	CW	Chemical Concentration in Water	See Table 3.3	ug/L	See Table 3.3	$\frac{CW \times CR \times EF \times ED \times CF}{BW \times AT}$
				CR	Contact Rate	0.05	liters/day	USEPA, 1989	
				EF	Exposure Frequency	125	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
Dermal	Construction Worker	Adult	Shallow Monitoring Well on Unnamed Island	CW	Chemical Concentration in Water	See Table 3.3	ug/L	See Table 3.3	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	2,100	cm ²	USEPA, 2004	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	0.2	hour/event	USEPA, 2004	
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	125	days/yr	USEPA, 2004	
				ED	Exposure Duration	1	years	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	

Surface areas for construction worker assumes arms and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.5.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Groundwater
Exposure Medium:	Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker	Adult	Shallow Monitoring Wells on Unnamed Island	CW	Chemical Concentration in Water	See Table 3.3	ug/L	See Table 3.3	$\frac{CW \times CR \times EF \times ED \times CF}{BW \times AT}$
				CR	Contact Rate	0.05	liters/day	USEPA, 1989	
				EF	Exposure Frequency	62	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				CF	Conversion Factor	0.001	mg/ug		
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
Dermal	Construction Worker	Adult	Shallow Monitoring Wells on Unnamed Island	ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				CW	Chemical Concentration in Water	See Table 3.3	ug/L	See Table 3.3	
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	2,100	cm ²	USEPA, 2004	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	0.2	hour/event	USEPA, 2004	
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	62	days/yr	USEPA, 2004	
				ED	Exposure Duration	1	years	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	

Surface areas for construction worker assumes arms and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.6.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Recreational User	Adult	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	100	mg/day	USEPA, 1997; 2002	
				EF	Exposure Frequency	104	days/yr	Professional Judgement	
				ED	Exposure Duration	24	years	USEPA, 1989	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	8,760	days	USEPA, 1989	
Dermal	Recreational User	Adult	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	5,700	cm ²	USEPA, 1997	
				AF	Adherence Factor	0.07	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	104	days/yr	Professional Judgement	
				ED	Exposure Duration	24	years	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	8,760	days	USEPA, 1989	
Ingestion	Recreational User	Older child	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	100	mg/day	USEPA, 1997; 2002	
				EF	Exposure Frequency	104	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1989	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	35	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	
Dermal	Recreational User	Older child	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	4,400	cm ²	USEPA, 2004	
				AF	Adherence Factor	0.20	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	104	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	35	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.6.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion	Construction Worker	Adult	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	330	mg/day	USEPA, 2002	
				EF	Exposure Frequency	125	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
Dermal	Construction Worker	Adult	Unnamed Island	ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
				CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	3,300	cm ²	USEPA, 2004	
				AF	Adherence Factor	0.3	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	125	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
Inhalation of fugitive dust	Construction Worker	Adult	Unnamed Island	BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
				CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times ET \times EF \times ED \times CF_2}{PEF \times AT \times CF_1}$
				ET	Exposure Time	8	hrs/day	Professional judgement	
				EF	Exposure Frequency	125	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				PEF	Particulate Emission Factor	1.36E+09	m ³ /kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	-	
				CF2	Conversion Factor 2	1000	ug/mg	-	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	

Exposure time for construction worker assumes 8-hr work day.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.6.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Recreational User	Adult	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	50	mg/day	USEPA, 1997	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	Professional Judgement	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989					
Dermal	Recreational User	Adult	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	5,700	cm ²	USEPA, 2004	
				AF	Adherence Factor	0.07	mg/cm ² -day	USEPA, 2004	
				Abs	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	70	kg	USEPA, 1989	
ATc	Averaging Time - cancer	25,550	days	USEPA, 1989					
ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989					
Ingestion	Recreational User	Older child	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	50	mg/day	USEPA, 1997	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	Professional Judgement	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	35	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989					
Dermal	Recreational User	Older child	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	4,400	cm ²	USEPA, 2004	
				AF	Adherence Factor	0.20	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	35	kg	USEPA, 1989	
ATc	Averaging Time - cancer	25,550	days	USEPA, 1989					
ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989					

TABLE 4.6.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Soil
Exposure Medium:	Surface/Subsurface Soil

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion	Construction Worker	Adult	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	330	mg/day	USEPA, 2002	
				EF	Exposure Frequency	62	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
Dermal	Construction Worker	Adult	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	$\frac{CS \times SA \times AF \times Abs \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	3,300	cm ²	USEPA, 2004	
				AF	Adherence Factor	0.3	mg/cm ² -day	USEPA, 2004	
				Abs	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	62	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				CF	Conversion Factor	1.00E-06	kg/mg	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
Inhalation of fugitive dust	Construction Worker	Adult	Unnamed Island	CS	Chemical Concentration in Soil	See Table 3.2	mg/kg	See Tables 3.2	Chronic Daily Intake (CDI) (ug/m ³) = $\frac{CS \times ET \times EF \times ED \times CF2}{PEF \times AT \times CF1}$
				ET	Exposure Time	8	hrs/day	Professional judgement	
				EF	Exposure Frequency	62	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				PEF	Particulate Emission Factor	1.36E+09	m ³ /kg	USEPA, 2002	
				CF1	Conversion Factor 1	24	hrs/day	-	
				CF2	Conversion Factor 2	1000	ug/mg	-	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	

Exposure time for construction worker assumes 8-hr work day.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.7.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Soil/Groundwater
Exposure Medium:	Ambient/Outdoor (Trench) Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker	Adult	Unnamed Island	CA	Chemical Concentration in Trench Air	See Table 3.7	ug/m ³	See Table 3.7	$\frac{CA \times ET \times EF \times ED}{AT \times CF}$
				ET	Exposure Time	8	hrs/day	Professional judgement	
				EF	Exposure Frequency	125	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				CF	Conversion factor	24	hours/day		
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	

Exposure time for construction worker assumes 8-hr work day.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

TABLE 4.7.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Soil/Groundwater
Exposure Medium:	Ambient/Outdoor (Trench) Air

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Inhalation	Construction Worker	Adult	Unnamed Island	CA	Chemical Concentration in Trench Air	See Table 3.7	ug/m ³	See Table 3.7	$\frac{CA \times ET \times EF \times ED}{AT \times CF}$
				ET	Exposure Time	8	hrs/day	Professional judgement	
				EF	Exposure Frequency	62	days/yr	Professional Judgement	
				ED	Exposure Duration	1	years	Professional Judgement	
				CF	Conversion factor	24	hours/day	Professional Judgement	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	

Exposure time for construction worker assumes 8-hr work day.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

TABLE 4.8.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Leachate
Exposure Medium:	Leachate

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Dermal - wading	Recreational User	Adult	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.4	ug/L	See Table 3.4	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	4,500	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hour/event	USEPA, 2004	
				EV	Event Frequency	1.0	event/day	Professional Judgement	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	24	years	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	8760	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	
Dermal - wading	Recreational User	Older child	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.4	ug/L	See Table 3.4	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	2,700	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hour/event	USEPA, 2004	
				EV	Event Frequency	1.0	event/day	Professional Judgement	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1989	
				BW	Body Weight	35	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2190	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	
Dermal	Construction Worker	Adult	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.4	ug/L	See Table 3.4	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	2,100	cm ²	USEPA, 2004	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	0.2	hour/event	USEPA, 2004	
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	125	days/yr	USEPA, 2004	
				ED	Exposure Duration	1	years	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	

Surface areas for recreational user assume lower legs, feet, and hands; surface area for construction worker assumes arms and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.8.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Leachate
Exposure Medium:	Leachate

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal-wading	Recreational User	Adult	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.4	ug/L	See Table 3.4	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	4,500	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hour/event	USEPA, 2004	
				EV	Event Frequency	1.0	event/day	Professional Judgement	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7300	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	
Dermal-wading	Recreational User	Older child	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.4	ug/L	See Table 3.4	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	2,700	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hour/event	USEPA, 2004	
				EV	Event Frequency	1.0	event/day	Professional Judgement	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1989	
				BW	Body Weight	35	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2190	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	
Dermal	Construction Worker	Adult	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.4	ug/L	See Table 3.4	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	2,100	cm ²	USEPA, 2004	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	0.2	hour/event	USEPA, 2004	
				EV	Event Frequency	1	event/day	USEPA, 2004	
				EF	Exposure Frequency	62	days/yr	USEPA, 2004	
				ED	Exposure Duration	1	years	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	365	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	

Surface areas for recreational user assume lower legs, feet, and hands; surface area for construction worker assumes arms and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.9.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Surface water
Exposure Medium:	Surface water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal - wading	Recreational User	Adult	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.6	ug/L	See Table 3.6	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	7,310	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hour/event	Professional Judgement	
				EV	Event Frequency	1.0	event/day	Professional Judgement	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	24	years	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	8760	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	
Dermal-wading	Recreational User	Older child	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.6	ug/L	See Table 3.6	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	4,170	cm ²	USEPA, 2004	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hour/event	USEPA, 2004	
				EV	Event Frequency	1.0	event/day	Professional Judgement	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1989	
				BW	Body Weight	35	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2190	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	--	
				CF2	Conversion Factor 2	0.001	mg/ug	--	

Surface areas for wading exposures assume hands, forearms, lower legs, and feet.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.9.CTE
VALUES USED FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe: Future
Medium: Surface water
Exposure Medium: Surface water

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal - wading	Recreational User	Adult	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.6	ug/L	See Table 3.6	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	7,310	cm ²	USEPA, 1997	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hour/event	Professional Judgement	
				EV	Event Frequency	1.0	event/day	Professional Judgement	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 1989	
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7300	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	
Dermal-wading	Recreational User	Older child	Unnamed Island	CW	Chemical Concentration in Water	See Table 3.6	ug/L	See Table 3.6	Organics: Chronic Daily Intake (CDI) (mg/kg-day) = $\frac{DA \times SA \times EV \times EF \times ED}{BW \times AT}$ Inorganics: CDI (mg/kg-day) = $\frac{CW \times SA \times PC \times ET \times EV \times EF \times ED \times CF1 \times CF2}{BW \times AT}$
				DA	Dose Absorbed per Unit Area per Event	see Appendix E	mg/cm ² -event	USEPA, 2004	
				SA	Surface Area	4,170	cm ²	USEPA, 2004	
				PC	Permeability Constant	see Appendix E	cm/hr	USEPA, 2004	
				ET	Event Time	1	hour/event	USEPA, 2004	
				EV	Event Frequency	1.0	event/day	Professional Judgement	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1989	
				BW	Body Weight	35	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2190	days	USEPA, 1989	
				CF1	Conversion Factor 1	0.001	L/cm ³	- -	
				CF2	Conversion Factor 2	0.001	mg/ug	- -	

Surface areas for wading exposures assume hands, forearms, lower legs, and feet.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.10.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Ingestion - wading	Recreational User	Adult	Unnamed Island	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	100	mg/day	USEPA, 1989; 1997; 2002	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	24	years	USEPA, 1989	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	70	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
Dermal - wading	Recreational User	Adult	Unnamed Island	ATnc	Averaging Time - noncancer	8,760	days	USEPA, 1989	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	
				SA	Surface Area	7,310	cm ²	USEPA, 1997	
				AF	Adherence Factor	0.30	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	24	years	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
Ingestion - wading	Recreational User	Older child	Unnamed Island	BW	Body Weight	70	kg	USEPA, 1989	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	8,760	days	USEPA, 1989	
				CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	
				IR	Ingestion Rate	100	mg/day	USEPA, 1989; 1997; 2002	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1989	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
Ingestion - wading	Recreational User	Older child	Unnamed Island	CF	Conversion Factor	1.00E-06	kg/mg		$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				BW	Body Weight	35	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.10.RME
VALUES USED FOR DAILY INTAKE CALCULATIONS
REASONABLE MAXIMUM EXPOSURE
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal - wading	Recreational User	Older child	Unnamed Island	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	4,170	cm ²	USEPA, 1997	
				AF	Adherence Factor	0.30	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	52	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	35	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

Surface areas assume lower legs, feet, forearms, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 4.10.CTE
VALUES FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/Reference	Intake Equation/Model Name
Ingestion - wading	Recreational User	Adult	Unnamed Island	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	50	mg/day	USEPA, 1989; 1997; 2002	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 1989	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	70	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Dermal - wading	Recreational User	Adult	Unnamed Island	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	7,310	cm ²	USEPA, 1997	
				AF	Adherence Factor	0.30	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	20	years	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	70	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	7,300	days	USEPA, 1989	
Ingestion - wading	Recreational User	Older child	Unnamed Island	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$\frac{CS \times IR \times EF \times ED \times CF \times FI}{BW \times AT}$
				IR	Ingestion Rate	50	mg/day	USEPA, 1989; 1997; 2002	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	Professional Judgement	
				FI	Fraction Ingested from Site	1	unitless	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	35	kg	USEPA, 1997	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

TABLE 4.10.CTE
VALUES FOR DAILY INTAKE CALCULATIONS
CENTRAL TENDENCY
Peterson Puritan Superfund Site - Operable Unit 2

Scenario Timeframe:	Future
Medium:	Sediment
Exposure Medium:	Sediment

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Intake Equation/ Model Name
Dermal - wading	Recreational User	Older child	Unnamed Island	CS	Chemical Concentration in Sediment	See Table 3.5	mg/kg	See Table 3.5	$\frac{CS \times SA \times AF \times ABS \times EF \times ED \times CF}{BW \times AT}$
				SA	Surface Area	4,170	cm ²	USEPA, 1997	
				AF	Adherence Factor	0.30	mg/cm ² -day	USEPA, 2004	
				ABS	Dermal absorption fraction	see Appendix E	unitless	USEPA, 2004	
				EF	Exposure Frequency	26	days/yr	Professional Judgement	
				ED	Exposure Duration	6	years	USEPA, 1989	
				CF	Conversion Factor	1.00E-06	kg/mg		
				BW	Body Weight	35	kg	USEPA, 1989	
				ATc	Averaging Time - cancer	25,550	days	USEPA, 1989	
				ATnc	Averaging Time - noncancer	2,190	days	USEPA, 1989	

Surface areas assume lower legs, feet, forearms, and hands.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

USEPA. 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August 1997.

USEPA. 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. OSWER 9355.4-24. December 2002.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern (3)	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
1,4-Dichlorobenzene	Chronic	7.0E-02	mg/kg-day	(4)	7.0E-02	mg/kg-day	Liver	100	ATSDR	04/18/10
Benzene	Chronic	4.0E-03	mg/kg-day	(4)	4.0E-03	mg/kg-day	Immune System	300	IRIS	04/18/10
Bromodichloromethane	Chronic	2.0E-02	mg/kg-day	(4)	2.0E-02	mg/kg-day	Kidney	1000	IRIS	04/18/10
Chlorobenzene	Chronic	2.0E-02	mg/kg-day	(4)	2.0E-02	mg/kg-day	Liver/Kidney	1000	IRIS	04/18/10
Ethylbenzene	Chronic	1E-01	mg/kg-day	(4)	1E-01	mg/kg-day	Liver/Kidney	1000	IRIS	04/18/10
Xylene (total)	Chronic	2.0E-01	mg/kg-day	(4)	2.0E-01	mg/kg-day	General Toxicity	1000	IRIS	04/18/10
4-Methylphenol	Chronic	5.0E-03	mg/kg-day	(4)	5.0E-03	mg/kg-day	CNS	1000	HEAST	July 1997
Acenaphthylene	Chronic	6.0E-02	mg/kg-day	(4)	6.0E-02	mg/kg-day	Liver	3000	IRIS	04/18/10
Atrazine	Chronic	3.5E-02	mg/kg-day	(4)	3.5E-02	mg/kg-day	General Toxicity/Cardiovascular	100	IRIS	04/18/10
Benzo(a)anthracene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(a)pyrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(b)fluoranthene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(g,h,i)perylene	Chronic	3.0E-02	mg/kg-day	(4)	3.0E-02	mg/kg-day	Kidney	3000	IRIS	04/18/10
Benzo(k)fluoranthene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Bis(2-ethylhexyl)phthalate	Chronic	2.0E-02	mg/kg-day	(4)	2.0E-02	mg/kg-day	Liver	1000	IRIS	04/18/10
Carbazole	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Chrysene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dibenz(a,h)anthracene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dibenzofuran	Chronic	4.0E-03	mg/kg-day	(4)	4.0E-03	mg/kg-day	Kidney	3000	PPRTV	04/18/10
Indeno(1,2,3-cd)pyrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Naphthalene	Chronic	2.0E-02	mg/kg-day	(4)	2.0E-02	mg/kg-day	General Toxicity	3000	IRIS	04/18/10
N-Nitrosodiphenylamine	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Pentachlorophenol	Chronic	3E-02	mg/kg-day	(4)	3E-02	mg/kg-day	Liver/Kidney	100	IRIS	04/18/10
Phenanthrene	Chronic	3.0E-02	mg/kg-day	(4)	3.0E-02	mg/kg-day	Kidney	3000	IRIS	04/18/10
Aroclor-1242	Chronic	2.0E-05	mg/kg-day	(4)	2.0E-05	mg/kg-day	General Toxicity/Immune System	300	IRIS	04/18/10
Aroclor-1254	Chronic	2.0E-05	mg/kg-day	(4)	2.0E-05	mg/kg-day	General Toxicity/Immune System	300	IRIS	04/18/10
Aroclor-1260	Chronic	2.0E-05	mg/kg-day	(4)	2.0E-05	mg/kg-day	General Toxicity/Immune System	300	IRIS	04/18/10
Total PCBs	Chronic	2.0E-05	mg/kg-day	(4)	2.0E-05	mg/kg-day	General Toxicity/Immune System	300	IRIS	04/18/10
4,4'-DDD	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDE	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDT	Chronic	5.0E-04	mg/kg-day	(4)	5.0E-04	mg/kg-day	Liver	100	IRIS	04/18/10

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern (3)	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
alpha-BHC	Chronic	8.0E-03	mg/kg-day	(4)	8.0E-03	mg/kg-day	Liver	100	ATSDR	04/18/10
alpha-Chlordane	Chronic	5.0E-04	mg/kg-day	(4)	5.0E-04	mg/kg-day	Liver	300	IRIS	04/18/10
beta-BHC	Chronic	6.0E-04	mg/kg-day	(4)	6.0E-04	mg/kg-day	Liver	300	ATSDR	04/18/10
Dieldrin	Chronic	5.0E-05	mg/kg-day	(4)	5.0E-05	mg/kg-day	Liver	100	IRIS	04/18/10
gamma-Chlordane	Chronic	5.0E-04	mg/kg-day	(4)	5.0E-04	mg/kg-day	Liver	300	IRIS	04/18/10
Heptachlor epoxide	Chronic	1.3E-05	mg/kg-day	(4)	1.3E-05	mg/kg-day	Liver	1000	IRIS	04/18/10
Dioxin TEQ	Chronic	1.0E-09	mg/kg-day	(4)	1.0E-09	mg/kg-day	Developmental	100	ATSDR	04/18/10
Aluminum	Chronic	1.0E+00	mg/kg-day	0.01	1.0E-02	mg/kg-day	Developmental	100	PPRTV	04/18/10
Antimony	Chronic	4.0E-04	mg/kg-day	0.15	6.0E-05	mg/kg-day	General Toxicity	1000	IRIS	04/18/10
Arsenic	Chronic	3.0E-04	mg/kg-day	(4)	3.0E-04	mg/kg-day	Skin	3	IRIS	04/18/10
Barium	Chronic	2.0E-01	mg/kg-day	0.07	1.4E-02	mg/kg-day	Kidney	300	IRIS	04/18/10
Beryllium	Chronic	2.0E-03	mg/kg-day	0.007	1.4E-05	mg/kg-day	GI System	300	IRIS	04/18/10
Cadmium (drinking water)	Chronic	5.0E-04	mg/kg-day	0.05	2.5E-05	mg/kg-day	Kidney	10	IRIS	04/18/10
Cadmium (other media)	Chronic	1.0E-03	mg/kg-day	0.025	2.5E-05	mg/kg-day	Kidney	10	IRIS	04/18/10
Chromium	Chronic	3.0E-03	mg/kg-day	0.025	7.5E-05	mg/kg-day	GI System	300	IRIS	04/18/10
Cobalt	Chronic	3.0E-04	mg/kg-day	(4)	3.0E-04	mg/kg-day	Endocrine	3000	PPRTV	04/18/10
Copper	Chronic	4.0E-02	mg/kg-day	(4)	4.0E-02	mg/kg-day	GI System	100	HEAST	July 1997
Cyanide	Chronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Endocrine/CNS	500	IRIS	04/18/10
Iron	Chronic	7.0E-01	mg/kg-day	(4)	7.0E-01	mg/kg-day	Liver/GI System	1.5	PPRTV	04/18/10
Lead	Chronic	N/A	N/A	N/A	N/A	N/A	CNS	N/A	IRIS	04/18/10
Manganese (drinking water)	Chronic	2.4E-02	mg/kg-day	0.04	9.6E-04	mg/kg-day	CNS	9	IRIS	04/18/10
Manganese (food)	Chronic	1.4E-01	mg/kg-day	1	1.4E-01	mg/kg-day	CNS	1	IRIS	04/18/10
Manganese (other media)	Chronic	7.0E-02	mg/kg-day	1	7.0E-02	mg/kg-day	CNS	3	IRIS	04/18/10
Mercury (other media)	Chronic	1.0E-04	mg/kg-day	(4)	1.0E-04	mg/kg-day	CNS	10	IRIS	04/18/10
Mercury (water)	Chronic	3.0E-04	mg/kg-day	0.07	2.1E-05	mg/kg-day	Immune System	1000	IRIS	04/18/10
Nickel	Chronic	2.0E-02	mg/kg-day	0.04	8.0E-04	mg/kg-day	General Toxicity	300	IRIS	04/18/10
Silver	Chronic	5.0E-03	mg/kg-day	0.04	2.0E-04	mg/kg-day	Skin	3	IRIS	04/18/10
Thallium	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	04/18/10
Vanadium	Chronic	7.0E-03	mg/kg-day	0.026	1.8E-04	mg/kg-day	Kidney	100	HEAST	July 1997
Zinc	Chronic	3.0E-01	mg/kg-day	(4)	3.0E-01	mg/kg-day	Blood	3	IRIS	04/18/10

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern (3)	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
1,4-Dichlorobenzene	Subchronic	7.0E-02	mg/kg-day	(4)	7.0E-02	mg/kg-day	Liver	100	ATSDR	04/18/10
Benzene	Subchronic	1.2E-02	mg/kg-day	(4)	1.2E-02	mg/kg-day	Immune System	100	IRIS	04/18/10
Bromodichloromethane	Subchronic	2.0E-02	mg/kg-day	(4)	2.0E-02	mg/kg-day	Kidney	1000	IRIS	04/18/10
Chlorobenzene	Subchronic	7.0E-02	mg/kg-day	(4)	7.0E-02	mg/kg-day	Liver/Kidney	300	IRIS	04/18/10
Ethylbenzene	Subchronic	1E+00	mg/kg-day	(4)	1E+00	mg/kg-day	Liver/Kidney	100	IRIS	04/18/10
Xylene (Total)	Subchronic	2.0E-01	mg/kg-day	(4)	2.0E-01	mg/kg-day	General Toxicity	1000	IRIS	04/18/10
4-Methylphenol	Subchronic	5E-03	mg/kg-day	(4)	5E-03	mg/kg-day	CNS	1000	HEAST	July 1997
Acenaphthylene	Subchronic	6E-01	mg/kg-day	(4)	6E-01	mg/kg-day	Liver	300	IRIS	04/18/10
Atrazine	Subchronic	3.5E-02	mg/kg-day	(4)	3.5E-02	mg/kg-day	General Toxicity/Cardiovascular	100	IRIS	04/18/10
Benzo(a)anthracene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(a)pyrene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(b)fluoranthene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(g,h,i)perylene	Subchronic	3E-01	mg/kg-day	(4)	3E-01	mg/kg-day	Kidney	300	IRIS	04/18/10
Benzo(k)fluoranthene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Bis(2-ethylhexyl)phthalate	Subchronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Liver	1000	IRIS	04/18/10
Carbazole	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Chrysene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dibenz(a,h)anthracene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dibenzofuran	Subchronic	4.0E-03	mg/kg-day	(4)	4.0E-03	mg/kg-day	Kidney	3000	PPRTV	04/18/10
Indeno(1,2,3-cd)pyrene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Naphthalene	Subchronic	2E-01	mg/kg-day	(4)	2E-01	mg/kg-day	General Toxicity	300	IRIS	04/18/10
N-Nitrosodiphenylamine	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Pentachlorophenol	Subchronic	3E-02	mg/kg-day	(4)	3E-02	mg/kg-day	Liver/Kidney	100	IRIS	04/18/10
Phenanthrene	Subchronic	3E-01	mg/kg-day	(4)	3E-01	mg/kg-day	Kidney	300	IRIS	04/18/10
Aroclor-1242	Subchronic	6E-05	mg/kg-day	(4)	6E-05	mg/kg-day	General Toxicity/Immune System	100	IRIS	04/18/10
Aroclor-1254	Subchronic	6E-05	mg/kg-day	(4)	6E-05	mg/kg-day	General Toxicity/Immune System	100	IRIS	04/18/10
Aroclor-1260	Subchronic	6E-05	mg/kg-day	(4)	6E-05	mg/kg-day	General Toxicity/Immune System	100	IRIS	04/18/10
Total PCBs	Subchronic	6E-05	mg/kg-day	(4)	6E-05	mg/kg-day	General Toxicity/Immune System	100	IRIS	04/18/10
4,4'-DDD	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
4,4'-DDE	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
4,4'-DDT	Subchronic	5.0E-04	mg/kg-day	(4)	5.0E-04	mg/kg-day	Liver	100	IRIS	04/18/10

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern (3)	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
alpha-BHC	Subchronic	8E-03	mg/kg-day	(4)	8E-03	mg/kg-day	Liver	100	ATSDR	04/18/10
alpha-Chlordane	Subchronic	5E-04	mg/kg-day	(4)	5E-04	mg/kg-day	Liver	300	IRIS	04/18/10
beta-BHC	Subchronic	6.0E-04	mg/kg-day	(4)	6.0E-04	mg/kg-day	Liver	300	ATSDR	04/18/10
Dieldrin	Subchronic	5E-05	mg/kg-day	(4)	5E-05	mg/kg-day	Liver	100	IRIS	04/18/10
gamma-Chlordane	Subchronic	5E-04	mg/kg-day	(4)	5E-04	mg/kg-day	Liver	300	IRIS	04/18/10
Heptachlor epoxide	Subchronic	1.3E-05	mg/kg-day	(4)	1.3E-05	mg/kg-day	Liver	1000	IRIS	04/18/10
Dioxin TEQ	Subchronic	2.0E-08	mg/kg-day	(4)	2.0E-08	mg/kg-day	Immune System	30	ATSDR	04/18/10
Aluminum	Subchronic	1E+00	mg/kg-day	0.01	1.0E-02	mg/kg-day	Developmental	100	PPRTV	04/18/10
Antimony	Subchronic	4E-04	mg/kg-day	0.15	6.0E-05	mg/kg-day	General Toxicity	1000	IRIS	04/18/10
Arsenic	Subchronic	3E-04	mg/kg-day	(4)	3E-04	mg/kg-day	Skin	3	IRIS	04/18/10
Barium	Subchronic	2E-01	mg/kg-day	0.07	1.4E-02	mg/kg-day	Kidney	300	IRIS	04/18/10
Beryllium	Subchronic	2E-03	mg/kg-day	0.007	1.4E-05	mg/kg-day	GI System	300	IRIS	04/18/10
Cadmium (drinking water)	Subchronic	5E-04	mg/kg-day	0.05	2.5E-05	mg/kg-day	Kidney	10	IRIS	04/18/10
Cadmium (other media)	Subchronic	1E-03	mg/kg-day	0.025	2.5E-05	mg/kg-day	Kidney	10	IRIS	04/18/10
Chromium	Subchronic	9E-03	mg/kg-day	0.025	2.3E-04	mg/kg-day	GI System	100	IRIS	04/18/10
Cobalt	Subchronic	3E-03	mg/kg-day	(4)	3E-03	mg/kg-day	Endocrine	300	PPRTV	04/18/10
Copper	Subchronic	4E-02	mg/kg-day	(4)	4E-02	mg/kg-day	GI System	100	HEAST	July 1997
Cyanide	Subchronic	2E-02	mg/kg-day	(4)	2E-02	mg/kg-day	Endocrine/CNS	500	IRIS	04/18/10
Iron	Subchronic	7E-01	mg/kg-day	(4)	7E-01	mg/kg-day	Liver/GI System	1.5	PPRTV	04/18/10
Lead	Subchronic	N/A	N/A	N/A	N/A	N/A	CNS	N/A	IRIS	04/18/10
Manganese (drinking water)	Subchronic	2.4E-02	mg/kg-day	0.04	9.6E-04	mg/kg-day	CNS	9	IRIS	04/18/10
Manganese (food)	Subchronic	1.4E-01	mg/kg-day	1	1.4E-01	mg/kg-day	CNS	1	IRIS	04/18/10
Manganese (other media)	Subchronic	7E-02	mg/kg-day	1	7.0E-02	mg/kg-day	CNS	3	IRIS	04/18/10
Mercury (other media)	Subchronic	1E-04	mg/kg-day	(4)	1E-04	mg/kg-day	CNS	10	IRIS	04/18/10
Mercury (water)	Subchronic	3E-03	mg/kg-day	0.07	2.1E-04	mg/kg-day	Immune System	100	IRIS	04/18/10
Nickel	Subchronic	2E-02	mg/kg-day	0.04	8.0E-04	mg/kg-day	General Toxicity	300	IRIS	04/18/10
Silver	Subchronic	5E-03	mg/kg-day	0.04	2.0E-04	mg/kg-day	Skin	3	IRIS	04/18/10
Thallium	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	IRIS	04/18/10
Vanadium	Subchronic	7E-03	mg/kg-day	0.026	1.8E-04	mg/kg-day	Kidney	100	HEAST	July 1997
Zinc	Subchronic	3E-01	mg/kg-day	(4)	3E-01	mg/kg-day	Blood	3	IRIS	04/18/10

TABLE 5.1
NON-CANCER TOXICITY DATA -- ORAL/DERMAL
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern (3)	Chronic/ Subchronic	Oral RfD		Oral Absorption Efficiency for Dermal (1)	Absorbed RfD for Dermal (2)		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfD:Target Organ(s)	
		Value	Units		Value	Units			Source(s)	Date(s) (MM/DD/YYYY)

(1) Oral Absorption Efficiencies from Exhibit 4-1, RAGS Part E, USEPA 2004b.

Oral absorption efficiencies for aluminum, cobalt, copper and iron obtained from ATSDR Toxicological Profiles.

(2) Calculated as: (oral RfD) x (oral to dermal adjustment factor).

(3) RfD for Aroclor 1254 used as a surrogate for Aroclor 1242 and Aroclor 1260.

RfDs for manganese are based on total allowable intake (10 mg/day) minus the background intake (5 mg/day). The remaining intake (5 mg/day) is divided by 70 kg.

RfD for mercury (water/inorganic) based on mercuric chloride; for mercury (other media/organic), based on methylmercury.

RfD for acenaphthene used as a surrogate for acenaphthylene.

RfD for pyrene used as a surrogate for phenanthrene and benzo(g,h,i)perylene.

RfD for nickel is based on nickel, soluble salts.

RfD for chlordane used as a surrogate for alpha-chlordane and gamma-chlordane.

Subchronic RfD for beta-BHC used as chronic RfD.

Subchronic RfD for dibenzofuran used as chronic RfD.

(4) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral reference dose is necessary (USEPA, 2001).

When the chronic RfD is based on a subchronic study, a subchronic RfD has been developed by the elimination of the 10-fold uncertainty factor for subchronic to chronic adjustment. If no subchronic data are available, the chronic RfD has been adopted as the subchronic RfD.

(5) Permeability constants (Kp) used for water absorption calculations: 2E-03 cm/hr for chromium (VI), 4E-04 cm/hr for cobalt, 1E-04 cm/hr for lead, 2E-04 cm/hr for nickel, 6E-04 cm/hr for silver and zinc, and 1E-03 cm/hr for the remaining inorganics (USEPA, 2004); for organics, see Appendix U.

(6) See Appendix D for lead model calculations.

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

N/A = Not Applicable/Not Available

NOAEL = No Observed Adverse Effects Level

STSC = Superfund Technical Support Center

ATSDR = Agency for Toxic Substances and Disease Registry

PPRTV = Provisional Peer Reviewed Toxicity Values developed by STSC

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD ⁽¹⁾		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
1,1-Dichloroethane	Chronic	5.0E+02	ug/m ³	N/A	N/A	Kidney	1000	HEAST	July 1997
1,1-Dichloroethene	Chronic	2E+02	ug/m ³	N/A	N/A	Liver	30	IRIS	04/18/10
1,4-Dichlorobenzene	Chronic	8.0E+02	ug/m ³	N/A	N/A	Liver	100	IRIS	04/18/10
Benzene	Chronic	3.0E+01	ug/m ³	N/A	N/A	Immune System	300	IRIS	04/18/10
Carbon disulfide	Chronic	7.0E+02	ug/m ³	N/A	N/A	CNS	30	IRIS	04/18/10
Carbon tetrachloride	Chronic	1.0E+02	ug/m ³	N/A	N/A	Liver	100	IRIS	04/18/10
Chlorobenzene	Chronic	5.0E+01	ug/m ³	N/A	N/A	Liver/Kidney	1000	PPRTV	04/18/10
Cyclohexane, methyl-	Chronic	3.0E+03	ug/m ³	N/A	N/A	Kidney	100	HEAST	July 1997
Dichlorodifluoromethane	Chronic	2.0E+02	ug/m ³	N/A	N/A	Liver	10000	HEAST	July 1997
Methyl acetate	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Methylene Chloride	Chronic	1.0E+03	ug/m ³	N/A	N/A	Liver	30	ATSDR	04/18/10
Tetrachloroethene	Chronic	2.7E+02	ug/m ³	N/A	N/A	CNS	100	ATSDR	04/18/10
Trichloroethene	Chronic	1.0E+01	ug/m ³	N/A	N/A	CNS	1000	NYSDOH	04/18/10
Xylene (Total)	Chronic	1.0E+02	ug/m ³	N/A	N/A	CNS	300	IRIS	04/18/10
1,1'-Biphenyl	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
2-Methylnaphthalene	Chronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Acenaphthene	Chronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Acenaphthylene	Chronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Acetophenone	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzaldehyde	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(a)anthracene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(a)pyrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(b)fluoranthene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(g,h,i)perylene	Chronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Benzo(k)fluoranthene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Bis(2-ethylhexyl)phthalate	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Carbazole	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dibenz(a,h)anthracene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dibenzofuran	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Indeno(1,2,3-cd)pyrene	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10

TABLE 5.2
 NON-CANCER TOXICITY DATA -- INHALATION
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD ⁽¹⁾		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Naphthalene	Chronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Nitrobenzene	Chronic	9.0E+00	ug/m ³	N/A	N/A	Respiratory	30	IRIS	04/18/10
Phenanthrene	Chronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Aroclor-1242	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Aroclor-1254	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Aroclor-1260	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dieldrin	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dioxin TEQ	Chronic	4.0E-05	ug/m ³	N/A	N/A	Liver/Immune System	100	CalEPA	04/18/10
Aluminum	Chronic	5.0E+00	ug/m ³	N/A	N/A	CNS	300	PPRTV	04/18/10
Antimony	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Arsenic	Chronic	1.5E-02	ug/m ³	N/A	N/A	Developmental	30	CalEPA	04/18/10
Cadmium (other media)	Chronic	1.0E-02	ug/m ³	N/A	N/A	Kidney	9	ATSDR	04/18/10
Chromium	Chronic	1.0E-01	ug/m ³	N/A	N/A	Respiratory	300	IRIS	04/18/10
Cobalt	Chronic	6.0E-03	ug/m ³	N/A	N/A	Respiratory	300	PPRTV	04/18/10
Copper	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Iron	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Lead	Chronic	N/A	N/A	N/A	N/A	CNS	N/A	IRIS	04/18/10
Manganese (food)	Chronic	5.0E-02	ug/m ³	N/A	N/A	CNS	1000	IRIS	04/18/10
Manganese (other media)	Chronic	5.0E-02	ug/m ³	N/A	N/A	CNS	1000	IRIS	04/18/10
Mercury (other media)	Chronic	3.0E-02	ug/m ³	N/A	N/A	CNS	300	CalEPA	04/18/10
Nickel	Chronic	9.0E-02	ug/m ³	N/A	N/A	Respiratory	30	ATSDR	04/18/10
Thallium	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Vanadium	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Zinc	Chronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD ⁽¹⁾		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
1,1-Dichloroethane	Subchronic	5.0E+03	ug/m ³	N/A	N/A	Kidney	100	HEAST	July 1997
1,1-Dichloroethene	Subchronic	2E+02	ug/m ³	N/A	N/A	Liver	30	IRIS	04/18/10
1,4-Dichlorobenzene	Subchronic	2.4E+03	ug/m ³	N/A	N/A	Liver	30	IRIS	04/18/10
Benzene	Subchronic	9.0E+01	ug/m ³	N/A	N/A	Immune System	100	IRIS	04/18/10
Carbon disulfide	Subchronic	7.0E+02	ug/m ³	N/A	N/A	CNS	30	IRIS	04/18/10
Carbon tetrachloride	Subchronic	1.0E+02	ug/m ³	N/A	N/A	Liver	100	IRIS	04/18/10
Chlorobenzene	Subchronic	5.0E+02	ug/m ³	N/A	N/A	Liver/Kidney	100	PPRTV	04/18/10
Cyclohexane, methyl-	Subchronic	3.0E+03	ug/m ³	N/A	N/A	Kidney	100	HEAST	July 1997
Dichlorodifluoromethane	Subchronic	2.0E+03	ug/m ³	N/A	N/A	Liver	1000	HEAST	July 1997
Methyl acetate	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Methylene Chloride	Subchronic	1.0E+03	ug/m ³	N/A	N/A	Liver	100	ATSDR	04/18/10
Tetrachloroethene	Subchronic	2.7E+02	ug/m ³	N/A	N/A	CNS	100	ATSDR	04/18/10
Trichloroethene	Subchronic	1.0E+02	ug/m ³	N/A	N/A	CNS	100	NYSDOH	04/18/10
Xylene (Total)	Subchronic	3.0E+02	ug/m ³	N/A	N/A	CNS	100	IRIS	04/18/10
1,1'-Biphenyl	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
2-Methylnaphthalene	Subchronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Acenaphthene	Subchronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Acenaphthylene	Subchronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Acetophenone	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzaldehyde	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(a)anthracene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(a)pyrene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(b)fluoranthene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(g,h,i)perylene	Subchronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Benzo(k)fluoranthene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Bis(2-ethylhexyl)phthalate	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Carbazole	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dibenz(a,h)anthracene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dibenzofuran	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Indeno(1,2,3-cd)pyrene	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Naphthalene	Subchronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD ⁽¹⁾		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)
Nitrobenzene	Subchronic	9.0E+00	ug/m ³	N/A	N/A	Respiratory	30	IRIS	04/18/10
Phenanthrene	Subchronic	3.0E+00	ug/m ³	N/A	N/A	Respiratory	3000	IRIS	04/18/10
Aroclor-1242	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Aroclor-1254	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Aroclor-1260	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dieldrin	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dioxin TEQ	Subchronic	4.0E-05	ug/m ³	N/A	N/A	Liver/Immune System	100	CalEPA	04/18/10
Aluminum	Subchronic	5.0E+00	ug/m ³	N/A	N/A	CNS	300	PPRTV	04/18/10
Antimony	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Arsenic	Subchronic	1.5E-02	ug/m ³	N/A	N/A	Developmental	30	CalEPA	04/18/10
Cadmium (other media)	Subchronic	1.0E-02	ug/m ³	N/A	N/A	Kidney	9	ATSDR	04/18/10
Chromium	Subchronic	3.0E-01	ug/m ³	N/A	N/A	Respiratory	100	IRIS	04/18/10
Cobalt	Subchronic	2.0E-02	ug/m ³	N/A	N/A	Respiratory	100	PPRTV	04/18/10
Copper	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Iron	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Lead	Subchronic	N/A	N/A	N/A	N/A	CNS	N/A	IRIS	04/18/10
Manganese (food)	Subchronic	5.0E-02	ug/m ³	N/A	N/A	CNS	1000	IRIS	04/18/10
Manganese (other media)	Subchronic	5.0E-02	ug/m ³	N/A	N/A	CNS	1000	IRIS	04/18/10
Mercury (other media)	Subchronic	3.0E-02	ug/m ³	N/A	N/A	CNS	300	CalEPA	04/18/10
Nickel	Subchronic	2.0E-01	ug/m ³	N/A	N/A	Respiratory	30	ATSDR	04/18/10
Thallium	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Vanadium	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Zinc	Subchronic	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10

TABLE 5.2
NON-CANCER TOXICITY DATA -- INHALATION
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern	Chronic/ Subchronic	Inhalation RfC		Extrapolated RfD ⁽¹⁾		Primary Target Organ(s)	Combined Uncertainty/Modifying Factors	RfC : Target Organ(s)	
		Value	Units	Value	Units			Source(s)	Date(s) (MM/DD/YYYY)

IRIS = Integrated Risk Information System

HEAST = Health Effects Assessment Summary Tables

STSC = Superfund Technical Support Center

PPRTV = Provisional Peer Reviewed Toxicity Value developed by STSC

CalEPA = California Environmental Protection Agency, Office of Environmental
Health Hazard Assessment

ATSDR = Agency for Toxic Substances and Disease Registry

NYSDOH = New York State Department of Health

N/A = Not Applicable or Not Available

(1) RfC for naphthalene used as a surrogate for all noncarcinogenic PAHs.

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern (3)	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
1,4-Dichlorobenzene	5.4E-03	(mg/kg-day) ⁻¹	(1)	5.4E-03	(mg/kg-day) ⁻¹	C	CalEPA	04/18/10
Benzene	5.5E-02	(mg/kg-day) ⁻¹	(1)	5.5E-02	(mg/kg-day) ⁻¹	A	IRIS	04/18/10
Bromodichloromethane	6.2E-02	(mg/kg-day) ⁻¹	(1)	6.2E-02	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Chlorobenzene	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Ethylbenzene	1.10E-02	(mg/kg-day) ⁻¹	(1)	1.10E-02	(mg/kg-day) ⁻¹	B2	CalEPA	04/18/10
Xylene (Total)	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
4-Methylphenol	N/A	N/A	N/A	N/A	N/A	C	IRIS	04/18/10
Acenaphthylene	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Atrazine	2.3E-01	(mg/kg-day) ⁻¹	(1)	2.3E-01	(mg/kg-day) ⁻¹	C	CalEPA	04/18/10
Benzo(a)anthracene	7.3E-01	(mg/kg-day) ⁻¹	(1)	7.3E-01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Benzo(a)pyrene	7.3E+00	(mg/kg-day) ⁻¹	(1)	7.3E+00	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Benzo(b)fluoranthene	7.3E-01	(mg/kg-day) ⁻¹	(1)	7.3E-01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Benzo(g,h,i)perylene	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Benzo(k)fluoranthene	7.3E-02	(mg/kg-day) ⁻¹	(1)	7.3E-02	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Bis(2-ethylhexyl)phthalate	1.4E-02	(mg/kg-day) ⁻¹	(1)	1.4E-02	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Carbazole	2.0E-02	(mg/kg-day) ⁻¹	(1)	2.0E-02	(mg/kg-day) ⁻¹	B2	HEAST	July 1997
Chrysene	7.3E-03	(mg/kg-day) ⁻¹	(1)	7.3E-03	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Dibenz(a,h)anthracene	7.3E+00	(mg/kg-day) ⁻¹	(1)	7.3E+00	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Dibenzofuran	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Indeno(1,2,3-cd)pyrene	7.3E-01	(mg/kg-day) ⁻¹	(1)	7.3E-01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Naphthalene	N/A	N/A	N/A	N/A	N/A	C	IRIS	04/18/10
N-Nitrosodiphenylamine	4.9E-03	(mg/kg-day) ⁻¹	(1)	4.9E-03	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Pentachlorophenol	1.2E-01	(mg/kg-day) ⁻¹	(1)	1.2E-01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Phenanthrene	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Aroclor-1242	2.0E+00	(mg/kg-day) ⁻¹	(1)	2.0E+00	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Aroclor-1254	2.0E+00	(mg/kg-day) ⁻¹	(1)	2.0E+00	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Aroclor-1260	2.0E+00	(mg/kg-day) ⁻¹	(1)	2.0E+00	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Total PCBs	2.0E+00	(mg/kg-day) ⁻¹	(1)	2.0E+00	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
4,4'-DDD	2.4E-01	(mg/kg-day) ⁻¹	(1)	2.4E-01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
4,4'-DDE	3.4E-01	(mg/kg-day) ⁻¹	(1)	3.4E-01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern (3)	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
4,4'-DDT	3.4E-01	(mg/kg-day) ⁻¹	(1)	3.4E-01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
alpha-BHC	6.3E+00	(mg/kg-day) ⁻¹	(1)	6.3E+00	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
alpha-Chlordane	3.5E-01	(mg/kg-day) ⁻¹	(1)	3.5E-01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
beta-BHC	1.8E+00	(mg/kg-day) ⁻¹	(1)	1.8E+00	(mg/kg-day) ⁻¹	C	IRIS	04/18/10
Dieldrin	1.6E+01	(mg/kg-day) ⁻¹	(1)	1.6E+01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
gamma-Chlordane	3.5E-01	(mg/kg-day) ⁻¹	(1)	3.5E-01	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Heptachlor epoxide	9.1E+00	(mg/kg-day) ⁻¹	(1)	9.1E+00	(mg/kg-day) ⁻¹	B2	IRIS	04/18/10
Dioxin TEQ	1.56E+05	(mg/kg-day) ⁻¹	(1)	1.56E+05	(mg/kg-day) ⁻¹	B2	OHEA (4)	1985
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Antimony	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Arsenic	1.5E+00	(mg/kg-day) ⁻¹	(1)	1.5E+00	(mg/kg-day) ⁻¹	A	IRIS	04/18/10
Barium	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Beryllium	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Cadmium (drinking water)	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Cadmium (other media)	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Chromium	5.0E-01	(mg/kg-day) ⁻¹	0.025	1.25E-02	(mg/kg-day) ⁻¹	A	New Jersey	04/18/10
Cobalt	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Copper	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Cyanide	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Iron	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Lead	N/A	N/A	N/A	N/A	N/A	B2	IRIS	04/18/10
Manganese (drinking water)	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Manganese (food)	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Manganese (other media)	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Mercury (other media)	N/A	N/A	N/A	N/A	N/A	C	IRIS	04/18/10
Mercury (water)	N/A	N/A	N/A	N/A	N/A	C	IRIS	04/18/10
Nickel	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Silver	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Thallium	N/A	N/A	N/A	N/A	N/A	"inadequate"	IRIS	04/18/10
Vanadium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Zinc	N/A	N/A	N/A	N/A	N/A	D	IRIS	04/18/10

TABLE 6.1
CANCER TOXICITY DATA -- ORAL/DERMAL
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern (3)	Oral Cancer Slope Factor		Oral Absorption Efficiency for Dermal (1)	Absorbed Cancer Slope Factor for Dermal (2)		Weight of Evidence/ Cancer Guideline Description	Oral CSF	
	Value	Units		Value	Units		Source(s)	Date(s) (MM/DD/YYYY)

IRIS = Integrated Risk Information System

STSC = Superfund Technical Support Center

PPRTV = Provisional Peer Reviewed Toxicity Value developed by STSC

N/A = Not Applicable/Not Available

CalEPA = California Environmental Protection Agency, Office of Environmental Health Hazard Assessment

OHEA = EPA's Office of Health and Environmental Assessment

Slope factor for benzo(a)pyrene, along with the appropriate relative potency factor

(USEPA, 1993), used for the other carcinogenic PAHs.

The slope factor presented for benzene is the high end of the range from 0.015 to 0.055 per mg/kg-day.

For PCBs, the RME slope factor presented represents the upper-bound slope factor for high risk and persistence situations.

The CTE slope factor is 1 per mg/kg-day and represents the central-estimate slope factor.

(1) Oral absorption efficiency exceeds 50%. Therefore, no adjustment of the oral slope factor is necessary.

Oral Absorption Efficiencies from Exhibit 4-1, RAGS Part E, USEPA 2004b.

(2) Calculated as: (oral slope factor) / (oral to dermal adjustment factor)

(3) See Appendix D for lead model calculations.

(4) EPA. 1985. Health Assessment Document for Polychlorinated Dibenzo-p-Dioxins. U.S. Environmental Protection Agency, Office of Health and Environmental Assessment. EPA 600/8-84-014F.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and
inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

E - Evidence of noncarcinogenicity

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
1,1-Dichloroethane	1.6E-06	(ug/m ³) ⁻¹	N/A	N/A	C	CalEPA	04/18/10
1,1-Dichloroethene	N/A	N/A	N/A	N/A	C	IRIS	04/18/10
1,4-Dichlorobenzene	1.1E-05	(ug/m ³) ⁻¹	N/A	N/A	C	CalEPA	04/18/10
Benzene	7.8E-06	(ug/m ³) ⁻¹	N/A	N/A	A	IRIS	04/18/10
Carbon disulfide	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Carbon tetrachloride	6.0E-06	(ug/m ³) ⁻¹	N/A	N/A	"likely"	IRIS	04/18/10
Chlorobenzene	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Cyclohexane, methyl-	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Dichlorodifluoromethane	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Methyl acetate	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Methylene Chloride	4.7E-07	(ug/m ³) ⁻¹	N/A	N/A	B2	IRIS	04/18/10
Tetrachloroethene	5.9E-06	(ug/m ³) ⁻¹	N/A	N/A	B2	CalEPA	04/18/10
Trichloroethene	2.0E-06	(ug/m ³) ⁻¹	N/A	N/A	C-B2	CalEPA	04/18/10
Xylene (Total)	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
1,1'-Biphenyl	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
2-Methylnaphthalene	N/A	N/A	N/A	N/A	C	IRIS	04/18/10
Acenaphthene	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Acenaphthylene	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Acetophenone	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Benzaldehyde	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Benzo(a)anthracene	1.1E-04	(ug/m ³) ⁻¹	N/A	N/A	B2	CalEPA	04/18/10
Benzo(a)pyrene	1.1E-03	(ug/m ³) ⁻¹	N/A	N/A	B2	CalEPA	04/18/10
Benzo(b)fluoranthene	1.1E-04	(ug/m ³) ⁻¹	N/A	N/A	B2	CalEPA	04/18/10
Benzo(g,h,i)perylene	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Benzo(k)fluoranthene	1.1E-04	(ug/m ³) ⁻¹	N/A	N/A	B2	CalEPA	04/18/10
Bis(2-ethylhexyl)phthalate	2.4E-06	(ug/m ³) ⁻¹	N/A	N/A	B2	CalEPA	04/18/10
Carbazole	N/A	N/A	N/A	N/A	B2	HEAST	July 1997
Dibenz(a,h)anthracene	1.2E-03	(ug/m ³) ⁻¹	N/A	N/A	B2	CalEPA	04/18/10
Dibenzofuran	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Indeno(1,2,3-cd)pyrene	1.1E-04	(ug/m ³) ⁻¹	N/A	N/A	B2	CalEPA	04/18/10

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)
Naphthalene	3.4E-05	(ug/m ³) ⁻¹	N/A	N/A	C	CalEPA	04/18/10
Nitrobenzene	4.0E-05	(ug/m ³) ⁻¹	N/A	N/A	"likely"	IRIS	04/18/10
Phenanthrene	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Aroclor-1242	5.7E-04	(ug/m ³) ⁻¹	N/A	N/A	B2	IRIS	04/18/10
Aroclor-1254	5.7E-04	(ug/m ³) ⁻¹	N/A	N/A	B2	IRIS	04/18/10
Aroclor-1260	5.7E-04	(ug/m ³) ⁻¹	N/A	N/A	B2	IRIS	04/18/10
Dieldrin	4.6E-03	(ug/m ³) ⁻¹	N/A	N/A	B2	IRIS	04/18/10
Dioxin TEQ	3.8E+01	(ug/m ³) ⁻¹	N/A	N/A	B2	CalEPA	04/18/10
Aluminum	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Antimony	N/A	N/A	N/A	N/A	N/A	IRIS	04/18/10
Arsenic	4.3E-03	(ug/m ³) ⁻¹	N/A	N/A	A	IRIS	04/18/10
Cadmium (other media)	1.8E-03	(ug/m ³) ⁻¹	N/A	N/A	B1	IRIS	04/18/10
Chromium	8.4E-02	(ug/m ³) ⁻¹	N/A	N/A	A	IRIS	04/18/10
Cobalt	9.0E-03	(ug/m ³) ⁻¹	N/A	N/A	B2	PPRTV	04/18/10
Copper	N/A	N/A	N/A	N/A	D	IRIS	01/15/09
Iron	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Lead	N/A	N/A	N/A	N/A	B2	IRIS	04/18/10
Manganese (food)	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Manganese (other media)	N/A	N/A	N/A	N/A	D	IRIS	04/18/10
Mercury (other media)	N/A	N/A	N/A	N/A	C	IRIS	04/18/10
Nickel	2.6E-04	(ug/m ³) ⁻¹	N/A	N/A	N/A	CalEPA	04/18/10
Thallium	N/A	N/A	N/A	N/A	"inadequate"	IRIS	04/18/10
Vanadium	N/A	N/A	N/A	N/A	N/A	N/A	04/18/10
Zinc	N/A	N/A	N/A	N/A	D	IRIS	04/18/10

TABLE 6.2
CANCER TOXICITY DATA -- INHALATION
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Chemical of Potential Concern	Unit Risk		Inhalation Cancer Slope Factor		Weight of Evidence/ Cancer Guideline Description	Unit Risk : Inhalation CSF	
	Value	Units	Value	Units		Source(s)	Date(s) (MM/DD/YYYY)

IRIS = Integrated Risk Information System

STSC = Superfund Technical Support Center

PPRTV = Provisional Peer Reviewed Toxicity Values developed by STSC

CalEPA = California Environmental Protection Agency, Office of Environmental
Health Hazard Assessment

HEAST = Health Effects Assessment Summary Tables

N/A = Not Applicable

(1) See Appendix D for lead model calculations.

The unit risk presented for benzene is the high end of the range from 2.2E-06 to 7E-06 per ug/m³.

EPA Group:

A - Human carcinogen

B1 - Probable human carcinogen - indicates that limited human data are available

B2 - Probable human carcinogen - indicates sufficient evidence in animals and
inadequate or no evidence in humans

C - Possible human carcinogen

D - Not classifiable as a human carcinogen (by the oral route)

E - Evidence of noncarcinogenicity

TABLE 7.1.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
 Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.3E-07	8.6E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	1E+00	mg/kg	1.1E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.1E-06	7.7E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	1.7E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.1E-07	1.2E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	9E-01	mg/kg	7.1E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.3E-08	5.0E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	4E+01	mg/kg	3.0E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	4.2E-08	2.1E-05	mg/kg-day	2.0E-02	mg/kg-day	1.0E-03
				Carbazole	2E-01	mg/kg	2.0E-08	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	3.9E-10	1.4E-07	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	2.1E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	4.0E-07	1.5E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	1.8E-08	mg/kg-day	N/A	N/A	N/A	1.2E-07	mg/kg-day	4.0E-03	mg/kg-day	3.1E-05
				Indeno(1,2,3-cd)pyrene	8E-01	mg/kg	6.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.3E-07	4.6E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	2E+00	mg/kg	1.8E-07	mg/kg-day	N/A	N/A	N/A	1.3E-06	mg/kg-day	3.0E-02	mg/kg-day	4.2E-05
				Aroclor-1242	2E-01	mg/kg	2.0E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	3.9E-08	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	6.8E-03
				Aroclor-1254	4E-01	mg/kg	3.0E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	6.1E-08	2.1E-07	mg/kg-day	2.0E-05	mg/kg-day	1.1E-02
				Aroclor-1260	5E-01	mg/kg	4.2E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	8.4E-08	2.9E-07	mg/kg-day	2.0E-05	mg/kg-day	1.5E-02
				Dieldrin	3E-01	mg/kg	2.1E-08	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	3.4E-07	1.5E-07	mg/kg-day	5.0E-05	mg/kg-day	3.0E-03
				Dioxin TEQ	5E-05	mg/kg	4.2E-12	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	6.5E-07	2.9E-11	mg/kg-day	1.0E-09	mg/kg-day	2.9E-02
				Aluminum	7E+03	mg/kg	5.4E-04	mg/kg-day	N/A	N/A	N/A	3.8E-03	mg/kg-day	1.0E+00	mg/kg-day	3.8E-03
				Antimony	9E+00	mg/kg	7.7E-07	mg/kg-day	N/A	N/A	N/A	5.4E-06	mg/kg-day	4.0E-04	mg/kg-day	1.4E-02
				Arsenic	1E+01	mg/kg	9.4E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	1.4E-06	6.6E-06	mg/kg-day	3.0E-04	mg/kg-day	2.2E-02
				Cadmium (other media)	7E+00	mg/kg	5.6E-07	mg/kg-day	N/A	N/A	N/A	3.9E-06	mg/kg-day	1.0E-03	mg/kg-day	3.9E-03
				Chromium	1E+02	mg/kg	1.2E-05	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	1.5E-05	8.2E-05	mg/kg-day	3.0E-03	mg/kg-day	2.7E-02
				Cobalt	6E+00	mg/kg	4.5E-07	mg/kg-day	N/A	N/A	N/A	3.2E-06	mg/kg-day	3.0E-04	mg/kg-day	1.1E-02
				Copper	3E+02	mg/kg	2.7E-05	mg/kg-day	N/A	N/A	N/A	1.9E-04	mg/kg-day	4.0E-02	mg/kg-day	4.6E-03
				Iron	2E+04	mg/kg	2.0E-03	mg/kg-day	N/A	N/A	N/A	1.4E-02	mg/kg-day	7.0E-01	mg/kg-day	2.0E-02
				Lead												
				Manganese (other media)	3E+02	mg/kg	2.8E-05	mg/kg-day	N/A	N/A	N/A	2.0E-04	mg/kg-day	7.0E-02	mg/kg-day	2.8E-03
				Mercury (other media)	5E-01	mg/kg	4.5E-08	mg/kg-day	N/A	N/A	N/A	3.1E-07	mg/kg-day	1.0E-04	mg/kg-day	3.1E-03
				Nickel	4E+01	mg/kg	3.4E-06	mg/kg-day	N/A	N/A	N/A	2.4E-05	mg/kg-day	2.0E-02	mg/kg-day	1.2E-03
				Thallium	3E-01	mg/kg	2.4E-08	mg/kg-day	N/A	N/A	N/A	1.7E-07	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	1.4E-06	mg/kg-day	N/A	N/A	N/A	1.0E-05	mg/kg-day	7.0E-03	mg/kg-day	1.4E-03
				Exp. Route Total										2E-05		
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	6.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.3E-07	4.6E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	1E+00	mg/kg	5.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.1E-06	4.1E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	8.9E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.7E-07	6.2E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	9E-01	mg/kg	3.8E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	7.2E-09	2.7E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	4E+01	mg/kg	1.2E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.7E-08	8.6E-06	mg/kg-day	2.0E-02	mg/kg-day	4.3E-04
				Carbazole	2E-01	mg/kg	1.1E-08	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	2.1E-10	7.4E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	1.1E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.2E-07	8.0E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	7.2E-09	mg/kg-day	N/A	N/A	N/A	5.1E-08	mg/kg-day	4.0E-03	mg/kg-day	1.3E-05
				Indeno(1,2,3-cd)pyrene	8E-01	mg/kg	3.5E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	6.7E-08	2.5E-07	mg/kg-day	N/A	N/A	N/A

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Phenanthrene	2E+00	mg/kg	9.7E-08	mg/kg-day	N/A	N/A	N/A	6.8E-07	mg/kg-day	3.0E-02	mg/kg-day	2.3E-05
				Aroclor-1242	2E-01	mg/kg	1.1E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.3E-08	7.9E-08	mg/kg-day	2.0E-05	mg/kg-day	4.0E-03
				Aroclor-1254	4E-01	mg/kg	1.8E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	3.5E-08	1.2E-07	mg/kg-day	2.0E-05	mg/kg-day	6.1E-03
				Aroclor-1260	5E-01	mg/kg	2.4E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	4.9E-08	1.7E-07	mg/kg-day	2.0E-05	mg/kg-day	8.5E-03
				Dieldrin	3E-01	mg/kg	8.7E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.4E-07	6.1E-08	mg/kg-day	5.0E-05	mg/kg-day	1.2E-03
				Dioxin TEQ	5E-05	mg/kg	5.2E-13	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	8.1E-08	3.6E-12	mg/kg-day	1.0E-09	mg/kg-day	3.6E-03
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				Antimony	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	1E+01	mg/kg	1.2E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	1.8E-07	8.2E-07	mg/kg-day	3.0E-04	mg/kg-day	2.7E-03
				Cadmium (other media)	7E+00	mg/kg	2.3E-09	mg/kg-day	N/A	N/A	N/A	1.6E-08	mg/kg-day	2.5E-05	mg/kg-day	6.5E-04
				Chromium	1E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				Cobalt	6E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Iron	2E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (other media)	5E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A
				Nickel	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A
				Thallium	3E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
			Exp. Route Total								2E-06					3E-02
		Exposure Point Total									2E-05					2E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Leachate	Leachate	Unnamed Island	Dermal	4-Methylphenol	5E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0E-03	mg/kg-day	N/A
				Acenaphthylene	3E-02	ug/L	8.7E-09	mg/kg-day	N/A	N/A	N/A	6.1E-08	mg/kg-day	6.0E-02	mg/kg-day	1.0E-06
				Atrazine	3E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(g,h,i)perylene	1E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	9.4E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.3E-08	6.6E-06	mg/kg-day	2.0E-02	mg/kg-day	3.3E-04
				Chrysene	3E-02	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenzofuran	3E-01	ug/L	1.2E-07	mg/kg-day	N/A	N/A	N/A	8.2E-07	mg/kg-day	4.0E-03	mg/kg-day	2.1E-04
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	9E-01	ug/L	1.3E-07	mg/kg-day	N/A	N/A	N/A	9.3E-07	mg/kg-day	2.0E-02	mg/kg-day	4.6E-05
				N-Nitrosodiphenylamine	5E+00	ug/L	N/A	N/A	4.9E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Pentachlorophenol	ND	ug/L	N/A	N/A	1.2E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A

TABLE 7.1.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
 Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	2E+00	ug/L	2.7E-07	mg/kg-day	5.4E-03	(mg/kg-day) ⁻¹	1.4E-09	1.9E-06	mg/kg-day	7.0E-02	mg/kg-day	2.7E-05
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Chlorobenzene	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Ethylbenzene	ND	ug/L	N/A	N/A	1.1E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.0E-01	mg/kg-day	N/A
				Xylene (total)	1E+00	ug/L	1.7E-07	mg/kg-day	N/A	N/A	N/A	1.2E-06	mg/kg-day	2.0E-01	mg/kg-day	5.8E-06
				Total PCBs	3E+00	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	1E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-BHC	1E-03	ug/L	1.1E-10	mg/kg-day	6.3E+00	(mg/kg-day) ⁻¹	6.8E-10	7.6E-10	mg/kg-day	8.0E-03	mg/kg-day	9.5E-08
				alpha-Chlordane	4E-03	ug/L	1.7E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	5.9E-10	1.2E-08	mg/kg-day	5.0E-04	mg/kg-day	2.4E-05
				Dieldrin	2E-03	ug/L	2.7E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	4.4E-09	1.9E-09	mg/kg-day	5.0E-05	mg/kg-day	3.8E-05
				Gamma-Chlordane	ND	ug/L	N/A	N/A	3.5E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				Aluminum	1E+02	ug/L	2.0E-07	mg/kg-day	N/A	N/A	N/A	1.4E-06	mg/kg-day	1.0E-02	mg/kg-day	1.4E-04
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A
				Beryllium	2E-01	ug/L	2.7E-10	mg/kg-day	N/A	N/A	N/A	1.9E-09	mg/kg-day	1.4E-05	mg/kg-day	1.4E-04
				Cadmium (other media)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	5E+00	ug/L	1.5E-08	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	5.0E-10	1.1E-07	mg/kg-day	7.5E-05	mg/kg-day	1.4E-03
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	2E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												N/A
				Manganese (other media)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (water)	3E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A
				Silver	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-04	mg/kg-day	N/A
				Thallium	6E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
			Exp. Route Total								2E-08					2E-03
		Exposure Point Total									2E-08					2E-03
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Surface Water	Surface Water	Unnamed Island	Dermal	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7.1.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
 Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Benzo(b)fluoranthene	3E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(g,h,i)perylene	1E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+00	ug/L	1.3E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.8E-08	9.1E-06	mg/kg-day	2.0E-02	mg/kg-day	4.6E-04
				Chrysene	1E-01	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Indeno(1,2,3-cd)pyrene	1E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	2E-01	ug/L	5.6E-08	mg/kg-day	N/A	N/A	N/A	3.9E-07	mg/kg-day	2.0E-02	mg/kg-day	2.0E-05
				Phenanthrene	1E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	ND	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Benzene	ND	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Bromodichloromethane	ND	ug/L	N/A	N/A	6.2E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Aroclor-1260	ND	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	9E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-Chlordane	3E-03	ug/L	3.0E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	1.1E-09	2.1E-08	mg/kg-day	5.0E-04	mg/kg-day	4.3E-05
				beta-BHC	ND	ug/L	N/A	N/A	1.8E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-04	mg/kg-day	N/A
				Dieldrin	ND	ug/L	N/A	N/A	1.6E+01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-05	mg/kg-day	N/A
				Gamma-Chlordane	4E-03	ug/L	3.9E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	1.4E-09	2.7E-08	mg/kg-day	5.0E-04	mg/kg-day	5.5E-05
				Heptachlor Epoxide	5E-03	ug/L	3.6E-09	mg/kg-day	9.1E+00	(mg/kg-day) ⁻¹	3.3E-08	2.5E-08	mg/kg-day	1.3E-05	mg/kg-day	2.0E-03
				Aluminum	3E+03	ug/L	1.0E-05	mg/kg-day	N/A	N/A	N/A	7.1E-05	mg/kg-day	1.0E-02	mg/kg-day	7.1E-03
				Arsenic	3E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Cadmium (other media)	1E+00	ug/L	4.4E-09	mg/kg-day	N/A	N/A	N/A	3.1E-08	mg/kg-day	2.5E-05	mg/kg-day	1.2E-03
				Chromium	1E+01	ug/L	8.4E-08	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	2.7E-09	5.9E-07	mg/kg-day	7.5E-05	mg/kg-day	7.8E-03
				Cobalt	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	7E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	6E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (water)	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Vanadium	3E+00	ug/L	7.9E-09	mg/kg-day	N/A	N/A	N/A	5.5E-08	mg/kg-day	1.8E-04	mg/kg-day	3.0E-04
			Exp. Route Total								6E-08					2E-02
		Exposure Point Total									6E-08					2E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	9.5E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.8E-07	6.6E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	9.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.9E-06	6.9E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	7.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.4E-07	5.0E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	5.8E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.1E-08	4.1E-07	mg/kg-day	N/A	N/A	N/A

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	6.5E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	9.1E-09	4.6E-06	mg/kg-day	2.0E-02	mg/kg-day	2.3E-04
				Carbazole	1E-01	mg/kg	5.7E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	1.1E-10	4.0E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	1.1E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.2E-07	7.9E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	9E-02	mg/kg	3.7E-09	mg/kg-day	N/A	N/A	N/A	2.6E-08	mg/kg-day	4.0E-03	mg/kg-day	6.4E-06
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	4.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	8.2E-08	3.0E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	1E+00	mg/kg	5.6E-08	mg/kg-day	N/A	N/A	N/A	3.9E-07	mg/kg-day	3.0E-02	mg/kg-day	1.3E-05
				Aroclor-1242	ND	mg/kg	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				Aroclor-1254	2E-01	mg/kg	6.6E-09	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	1.3E-08	4.6E-08	mg/kg-day	2.0E-05	mg/kg-day	2.3E-03
				Aroclor-1260	2E-01	mg/kg	8.9E-09	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	1.8E-08	6.2E-08	mg/kg-day	2.0E-05	mg/kg-day	3.1E-03
				Dieldrin	9E-03	mg/kg	3.7E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	5.9E-09	2.6E-09	mg/kg-day	5.0E-05	mg/kg-day	5.1E-05
				Aluminum	7E+03	mg/kg	3.0E-04	mg/kg-day	N/A	N/A	N/A	2.1E-03	mg/kg-day	1.0E+00	mg/kg-day	2.1E-03
				Antimony	9E+00	mg/kg	3.7E-07	mg/kg-day	N/A	N/A	N/A	2.6E-06	mg/kg-day	4.0E-04	mg/kg-day	6.5E-03
				Arsenic	1E+01	mg/kg	4.9E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	7.4E-07	3.5E-06	mg/kg-day	3.0E-04	mg/kg-day	1.2E-02
				Cadmium (other media)	1E+01	mg/kg	5.3E-07	mg/kg-day	N/A	N/A	N/A	3.7E-06	mg/kg-day	1.0E-03	mg/kg-day	3.7E-03
				Chromium	2E+02	mg/kg	6.8E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	8.9E-06	4.8E-05	mg/kg-day	3.0E-03	mg/kg-day	1.6E-02
				Cobalt	9E+00	mg/kg	3.7E-07	mg/kg-day	N/A	N/A	N/A	2.6E-06	mg/kg-day	3.0E-04	mg/kg-day	8.7E-03
				Copper	3E+02	mg/kg	1.3E-05	mg/kg-day	N/A	N/A	N/A	9.4E-05	mg/kg-day	4.0E-02	mg/kg-day	2.4E-03
				Iron	2E+04	mg/kg	7.5E-04	mg/kg-day	N/A	N/A	N/A	5.3E-03	mg/kg-day	7.0E-01	mg/kg-day	7.5E-03
				Lead												
				Manganese (other media)	2E+02	mg/kg	9.6E-06	mg/kg-day	N/A	N/A	N/A	6.7E-05	mg/kg-day	7.0E-02	mg/kg-day	9.6E-04
				Mercury (other media)	5E-01	mg/kg	2.2E-08	mg/kg-day	N/A	N/A	N/A	1.5E-07	mg/kg-day	1.0E-04	mg/kg-day	1.5E-03
				Thallium	4E-01	mg/kg	1.4E-08	mg/kg-day	N/A	N/A	N/A	1.0E-07	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	7.8E-07	mg/kg-day	N/A	N/A	N/A	5.4E-06	mg/kg-day	7.0E-03	mg/kg-day	7.8E-04
			Exp. Route Total								1E-05					7E-02
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	2.8E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	5.3E-07	2.0E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	2.9E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	5.6E-06	2.1E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	2.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	4.0E-07	1.5E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	1.7E-07	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	3.3E-08	1.2E-06	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	1.5E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	2.1E-08	1.0E-05	mg/kg-day	2.0E-02	mg/kg-day	5.2E-04
				Carbazole	1E-01	mg/kg	1.7E-08	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	3.4E-10	1.2E-07	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	3.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	6.4E-07	2.4E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	9E-02	mg/kg	8.4E-09	mg/kg-day	N/A	N/A	N/A	5.9E-08	mg/kg-day	4.0E-03	mg/kg-day	1.5E-05
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.4E-07	8.9E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	1E+00	mg/kg	1.7E-07	mg/kg-day	N/A	N/A	N/A	1.2E-06	mg/kg-day	3.0E-02	mg/kg-day	3.9E-05
				Aroclor-1242	ND	mg/kg	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				Aroclor-1254	2E-01	mg/kg	2.1E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	4.2E-08	1.5E-07	mg/kg-day	2.0E-05	mg/kg-day	7.3E-03
				Aroclor-1260	2E-01	mg/kg	2.8E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	5.7E-08	2.0E-07	mg/kg-day	2.0E-05	mg/kg-day	1.0E-02
				Dieldrin	9E-03	mg/kg	8.4E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.3E-08	5.9E-09	mg/kg-day	5.0E-05	mg/kg-day	1.2E-04
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A

TABLE 7.1.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Antimony	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	1E+01	mg/kg	3.4E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	5.1E-07	2.4E-06	mg/kg-day	3.0E-04	mg/kg-day	7.9E-03
				Cadmium (other media)	1E+01	mg/kg	1.2E-08	mg/kg-day	N/A	N/A	N/A	8.5E-08	mg/kg-day	2.5E-05	mg/kg-day	3.4E-03
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				Cobalt	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Iron	2E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	2E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (other media)	5E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A
				Thallium	4E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
						Exp. Route Total						8E-06				
		Exposure Point Total								2E-05					1E-01	
	Exposure Medium Total									N/A					N/A	
Medium Total										N/A					N/A	
					Total of Receptor Risks Across All Media					N/A	Total of Receptor Hazards Across All Media				N/A	

Notes
Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for 8/10 of the result (ages 9-16) and an ADAF of 1 for 2/10 of the result (ages 17-18).
Highlighted cancer risk are calculated in Appendix F

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	3.1E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	5.9E-08	2.2E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	1E+00	mg/kg	2.7E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	5.2E-07	1.9E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	4.1E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	7.9E-08	2.9E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	9E-01	mg/kg	1.8E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	3.4E-09	1.2E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	4E+01	mg/kg	7.5E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.0E-08	5.2E-06	mg/kg-day	2.0E-02	mg/kg-day	2.6E-04
				Carbazole	2E-01	mg/kg	4.9E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	9.8E-11	3.4E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	5.3E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.0E-07	3.7E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	4.4E-09	mg/kg-day	N/A	N/A	N/A	3.1E-08	mg/kg-day	4.0E-03	mg/kg-day	7.7E-06
				Indeno(1,2,3-cd)pyrene	8E-01	mg/kg	1.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.1E-08	1.2E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	2E+00	mg/kg	4.5E-08	mg/kg-day	N/A	N/A	N/A	3.2E-07	mg/kg-day	3.0E-02	mg/kg-day	1.1E-05
				Aroclor-1242	3E-02	mg/kg	5.4E-10	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	5.4E-10	3.8E-09	mg/kg-day	2.0E-05	mg/kg-day	1.9E-04
				Aroclor-1254	4E-01	mg/kg	7.6E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	7.6E-09	5.3E-08	mg/kg-day	2.0E-05	mg/kg-day	2.6E-03
				Aroclor-1260	5E-01	mg/kg	1.1E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.1E-08	7.4E-08	mg/kg-day	2.0E-05	mg/kg-day	3.7E-03
				Dieldrin	3E-01	mg/kg	5.3E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	8.5E-08	3.7E-08	mg/kg-day	5.0E-05	mg/kg-day	7.4E-04
				Dioxin TEQ	5E-05	mg/kg	1.0E-12	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	1.6E-07	7.3E-12	mg/kg-day	1.0E-09	mg/kg-day	7.3E-03
				Aluminum	7E+03	mg/kg	1.3E-04	mg/kg-day	N/A	N/A	N/A	9.4E-04	mg/kg-day	1.0E+00	mg/kg-day	9.4E-04
				Antimony	9E+00	mg/kg	1.9E-07	mg/kg-day	N/A	N/A	N/A	1.4E-06	mg/kg-day	4.0E-04	mg/kg-day	3.4E-03
				Arsenic	1E+01	mg/kg	2.4E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	3.5E-07	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	5.5E-03
				Cadmium (other media)	7E+00	mg/kg	1.4E-07	mg/kg-day	N/A	N/A	N/A	9.9E-07	mg/kg-day	1.0E-03	mg/kg-day	9.9E-04
				Chromium	1E+02	mg/kg	2.9E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	3.8E-06	2.0E-05	mg/kg-day	3.0E-03	mg/kg-day	6.8E-03
				Cobalt	6E+00	mg/kg	1.1E-07	mg/kg-day	N/A	N/A	N/A	7.9E-07	mg/kg-day	3.0E-04	mg/kg-day	2.6E-03
				Copper	3E+02	mg/kg	6.6E-06	mg/kg-day	N/A	N/A	N/A	4.6E-05	mg/kg-day	4.0E-02	mg/kg-day	1.2E-03
				Iron	2E+04	mg/kg	4.9E-04	mg/kg-day	N/A	N/A	N/A	3.5E-03	mg/kg-day	7.0E-01	mg/kg-day	4.9E-03
				Lead												
				Manganese (other media)	3E+02	mg/kg	7.0E-06	mg/kg-day	N/A	N/A	N/A	4.9E-05	mg/kg-day	7.0E-02	mg/kg-day	7.0E-04
				Mercury (other media)	5E-01	mg/kg	1.1E-08	mg/kg-day	N/A	N/A	N/A	7.8E-08	mg/kg-day	1.0E-04	mg/kg-day	7.8E-04
				Nickel	4E+01	mg/kg	8.6E-07	mg/kg-day	N/A	N/A	N/A	6.0E-06	mg/kg-day	2.0E-02	mg/kg-day	3.0E-04
				Thallium	3E-01	mg/kg	6.1E-09	mg/kg-day	N/A	N/A	N/A	4.3E-08	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	3.6E-07	mg/kg-day	N/A	N/A	N/A	2.5E-06	mg/kg-day	7.0E-03	mg/kg-day	3.6E-04
				Exp. Route Total										5E-06		
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	3.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	6.3E-08	2.3E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	1E+00	mg/kg	2.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	5.6E-07	2.1E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	4.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	8.4E-08	3.1E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	9E-01	mg/kg	1.9E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	3.6E-09	1.3E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	4E+01	mg/kg	6.2E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	8.6E-09	4.3E-06	mg/kg-day	2.0E-02	mg/kg-day	2.2E-04
				Carbazole	2E-01	mg/kg	5.3E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	1.1E-10	3.7E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	5.7E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.1E-07	4.0E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	3.6E-09	mg/kg-day	N/A	N/A	N/A	2.5E-08	mg/kg-day	4.0E-03	mg/kg-day	6.3E-06
				Indeno(1,2,3-cd)pyrene	8E-01	mg/kg	1.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.4E-08	1.2E-07	mg/kg-day	N/A	N/A	N/A

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Phenanthrene	2E+00	mg/kg	4.8E-08	mg/kg-day	N/A	N/A	N/A	3.4E-07	mg/kg-day	3.0E-02	mg/kg-day	1.1E-05
				Aroclor-1242	3E-02	mg/kg	6.2E-10	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	6.2E-10	4.4E-09	mg/kg-day	2.0E-05	mg/kg-day	2.2E-04
				Aroclor-1254	4E-01	mg/kg	8.8E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	8.8E-09	6.1E-08	mg/kg-day	2.0E-05	mg/kg-day	3.1E-03
				Aroclor-1260	5E-01	mg/kg	1.2E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.2E-08	8.5E-08	mg/kg-day	2.0E-05	mg/kg-day	4.3E-03
				Dieldrin	3E-01	mg/kg	4.4E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	7.0E-08	3.1E-08	mg/kg-day	5.0E-05	mg/kg-day	6.1E-04
				Dioxin TEQ	5E-05	mg/kg	2.6E-13	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	4.0E-08	1.8E-12	mg/kg-day	1.0E-09	mg/kg-day	1.8E-03
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				Antimony	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	1E+01	mg/kg	5.8E-08	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	8.8E-08	4.1E-07	mg/kg-day	3.0E-04	mg/kg-day	1.4E-03
				Cadmium (other media)	7E+00	mg/kg	1.2E-09	mg/kg-day	N/A	N/A	N/A	8.1E-09	mg/kg-day	2.5E-05	mg/kg-day	3.3E-04
				Chromium	1E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				Cobalt	6E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Iron	2E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (other media)	5E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A
				Nickel	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A
				Thallium	3E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
			Exp. Route Total								1E-06					1E-02
		Exposure Point Total									6E-06					6E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Leachate	Leachate	Unnamed Island	Dermal	4-Methylphenol	5E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0E-03	mg/kg-day	N/A
				Acenaphthylene	3E-02	ug/L	4.3E-09	mg/kg-day	N/A	N/A	N/A	3.0E-08	mg/kg-day	6.0E-02	mg/kg-day	5.0E-07
				Atrazine	1E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(g,h,i)perylene	1E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	4.7E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	6.6E-09	3.3E-06	mg/kg-day	2.0E-02	mg/kg-day	1.7E-04
				Chrysene	3E-02	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenzofuran	3E-01	ug/L	5.9E-08	mg/kg-day	N/A	N/A	N/A	4.1E-07	mg/kg-day	4.0E-03	mg/kg-day	1.0E-04
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	9E-01	ug/L	6.6E-08	mg/kg-day	N/A	N/A	N/A	4.6E-07	mg/kg-day	2.0E-02	mg/kg-day	2.3E-05
				N-Nitrosodiphenylamine	5E+00	ug/L	N/A	N/A	4.9E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Pentachlorophenol	ND	ug/L	N/A	N/A	1.2E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	2E+00	ug/L	1.3E-07	mg/kg-day	5.4E-03	(mg/kg-day) ⁻¹	7.2E-10	9.4E-07	mg/kg-day	7.0E-02	mg/kg-day	1.3E-05
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Chlorobenzene	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Ethylbenzene	ND	ug/L	N/A	N/A	1.1E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.0E-01	mg/kg-day	N/A
				Xylene (total)	1E+00	ug/L	8.3E-08	mg/kg-day	N/A	N/A	N/A	5.8E-07	mg/kg-day	2.0E-01	mg/kg-day	2.9E-06
				Total PCBs	3E+00	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	1E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-BHC	1E-03	ug/L	5.4E-11	mg/kg-day	6.3E+00	(mg/kg-day) ⁻¹	3.4E-10	3.8E-10	mg/kg-day	8.0E-03	mg/kg-day	4.7E-08
				alpha-Chlordane	4E-03	ug/L	8.5E-10	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	3.0E-10	5.9E-09	mg/kg-day	5.0E-04	mg/kg-day	1.2E-05
				Dieldrin	2E-03	ug/L	1.4E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	2.2E-09	9.5E-10	mg/kg-day	5.0E-05	mg/kg-day	1.9E-05
				Gamma-Chlordane	ND	ug/L	N/A	N/A	3.5E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				Aluminum	1E+02	ug/L	1.0E-07	mg/kg-day	N/A	N/A	N/A	7.1E-07	mg/kg-day	1.0E-02	mg/kg-day	7.1E-05
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A
				Beryllium	2E-01	ug/L	1.1E-10	mg/kg-day	N/A	N/A	N/A	7.9E-10	mg/kg-day	1.4E-05	mg/kg-day	5.6E-05
				Cadmium (other media)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	5E+00	ug/L	7.7E-09	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	2.5E-10	5.4E-08	mg/kg-day	7.5E-05	mg/kg-day	7.2E-04
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	2E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												N/A
				Manganese (other media)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (water)	3E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A
				Silver	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-04	mg/kg-day	N/A
				Thallium	1E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
			Exp. Route Total								1E-08					1E-03
		Exposure Point Total									1E-08					1E-03
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Surface Water	Surface Water	Unnamed Island	Dermal	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Benzo(b)fluoranthene	6E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(g,h,i)perylene	5E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+00	ug/L	6.5E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	9.1E-09	4.6E-06	mg/kg-day	2.0E-02	mg/kg-day	2.3E-04
				Chrysene	1E-01	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Indeno(1,2,3-cd)pyrene	5E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	6E-02	ug/L	8.7E-09	mg/kg-day	N/A	N/A	N/A	6.1E-08	mg/kg-day	2.0E-02	mg/kg-day	3.1E-06
				Phenanthrene	1E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	ND	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Benzene	ND	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Bromodichloromethane	ND	ug/L	N/A	N/A	6.2E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Aroclor-1260	ND	ug/L	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	3E-03	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	3E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-Chlordane	1E-03	ug/L	6.5E-10	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	2.3E-10	4.5E-09	mg/kg-day	5.0E-04	mg/kg-day	9.0E-06
				beta-BHC	ND	ug/L	N/A	N/A	1.8E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-04	mg/kg-day	N/A
				Dieldrin	ND	ug/L	N/A	N/A	1.6E+01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-05	mg/kg-day	N/A
				Gamma-Chlordane	4E-03	ug/L	2.0E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	6.8E-10	1.4E-08	mg/kg-day	5.0E-04	mg/kg-day	2.7E-05
				Heptachlor Epoxide	2E-03	ug/L	5.3E-10	mg/kg-day	9.1E+00	(mg/kg-day) ⁻¹	4.9E-09	3.7E-09	mg/kg-day	1.3E-05	mg/kg-day	2.9E-04
				Aluminum	3E+03	ug/L	5.0E-06	mg/kg-day	N/A	N/A	N/A	3.5E-05	mg/kg-day	1.0E-02	mg/kg-day	3.5E-03
				Arsenic	3E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Cadmium (other media)	1E+00	ug/L	2.2E-09	mg/kg-day	N/A	N/A	N/A	1.5E-08	mg/kg-day	2.5E-05	mg/kg-day	6.2E-04
				Chromium	1E+01	ug/L	4.2E-08	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	1.4E-09	2.9E-07	mg/kg-day	7.5E-05	mg/kg-day	3.9E-03
				Cobalt	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	6E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (water)	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Vanadium	3E+00	ug/L	4.0E-09	mg/kg-day	N/A	N/A	N/A	2.8E-08	mg/kg-day	1.8E-04	mg/kg-day	1.5E-04
			Exp. Route Total								2E-08					9E-03
		Exposure Point Total									2E-08					9E-03
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	2.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	4.5E-08	1.7E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	2.5E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	4.7E-07	1.7E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	1.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.4E-08	1.3E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	1.5E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	2.8E-09	1.0E-07	mg/kg-day	N/A	N/A	N/A

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	1.6E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	2.3E-09	1.1E-06	mg/kg-day	2.0E-02	mg/kg-day	5.7E-05
				Carbazole	1E-01	mg/kg	1.4E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	2.8E-11	9.9E-09	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	2.8E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	5.4E-08	2.0E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	9E-02	mg/kg	9.2E-10	mg/kg-day	N/A	N/A	N/A	6.4E-09	mg/kg-day	4.0E-03	mg/kg-day	1.6E-06
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.1E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.0E-08	7.5E-08	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	1E+00	mg/kg	1.4E-08	mg/kg-day	N/A	N/A	N/A	9.8E-08	mg/kg-day	3.0E-02	mg/kg-day	3.3E-06
				Aroclor-1242	ND	mg/kg	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				Aroclor-1254	2E-01	mg/kg	1.6E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.6E-09	1.1E-08	mg/kg-day	2.0E-05	mg/kg-day	5.7E-04
				Aroclor-1260	2E-01	mg/kg	2.2E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	2.2E-09	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	7.8E-04
				Dieldrin	9E-03	mg/kg	9.2E-11	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.5E-09	6.4E-10	mg/kg-day	5.0E-05	mg/kg-day	1.3E-05
				Aluminum	7E+03	mg/kg	7.4E-05	mg/kg-day	N/A	N/A	N/A	5.2E-04	mg/kg-day	1.0E+00	mg/kg-day	5.2E-04
				Antimony	9E+00	mg/kg	9.3E-08	mg/kg-day	N/A	N/A	N/A	6.5E-07	mg/kg-day	4.0E-04	mg/kg-day	1.6E-03
				Arsenic	1E+01	mg/kg	1.2E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	1.9E-07	8.6E-07	mg/kg-day	3.0E-04	mg/kg-day	2.9E-03
				Cadmium (other media)	1E+01	mg/kg	1.3E-07	mg/kg-day	N/A	N/A	N/A	9.3E-07	mg/kg-day	1.0E-03	mg/kg-day	9.3E-04
				Chromium	2E+02	mg/kg	1.7E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	2.2E-06	1.2E-05	mg/kg-day	3.0E-03	mg/kg-day	4.0E-03
				Cobalt	9E+00	mg/kg	9.4E-08	mg/kg-day	N/A	N/A	N/A	6.6E-07	mg/kg-day	3.0E-04	mg/kg-day	2.2E-03
				Copper	3E+02	mg/kg	3.4E-06	mg/kg-day	N/A	N/A	N/A	2.4E-05	mg/kg-day	4.0E-02	mg/kg-day	5.9E-04
				Iron	2E+04	mg/kg	1.9E-04	mg/kg-day	N/A	N/A	N/A	1.3E-03	mg/kg-day	7.0E-01	mg/kg-day	1.9E-03
				Lead												
				Manganese (other media)	2E+02	mg/kg	2.4E-06	mg/kg-day	N/A	N/A	N/A	1.7E-05	mg/kg-day	7.0E-02	mg/kg-day	2.4E-04
				Mercury (other media)	5E-01	mg/kg	5.4E-09	mg/kg-day	N/A	N/A	N/A	3.8E-08	mg/kg-day	1.0E-04	mg/kg-day	3.8E-04
				Thallium	4E-01	mg/kg	3.6E-09	mg/kg-day	N/A	N/A	N/A	2.5E-08	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	1.9E-07	mg/kg-day	N/A	N/A	N/A	1.4E-06	mg/kg-day	7.0E-03	mg/kg-day	1.9E-04
			Exp. Route Total								3E-06					2E-02
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	1.4E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.7E-07	9.8E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	1.5E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.8E-06	1.0E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.0E-07	7.5E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	8.6E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.6E-08	6.0E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	7.4E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.0E-08	5.2E-06	mg/kg-day	2.0E-02	mg/kg-day	2.6E-04
				Carbazole	1E-01	mg/kg	8.4E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	1.7E-10	5.9E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	1.7E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	3.2E-07	1.2E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	9E-02	mg/kg	4.2E-09	mg/kg-day	N/A	N/A	N/A	2.9E-08	mg/kg-day	4.0E-03	mg/kg-day	7.3E-06
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	6.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07	4.5E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	1E+00	mg/kg	8.3E-08	mg/kg-day	N/A	N/A	N/A	5.8E-07	mg/kg-day	3.0E-02	mg/kg-day	1.9E-05
				Aroclor-1242	ND	mg/kg	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				Aroclor-1254	2E-01	mg/kg	1.0E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.0E-08	7.3E-08	mg/kg-day	2.0E-05	mg/kg-day	3.7E-03
				Aroclor-1260	2E-01	mg/kg	1.4E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.4E-08	1.0E-07	mg/kg-day	2.0E-05	mg/kg-day	5.0E-03
				Dieldrin	9E-03	mg/kg	4.2E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	6.7E-09	2.9E-09	mg/kg-day	5.0E-05	mg/kg-day	5.9E-05
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A

TABLE 7.1.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Antimony	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	1E+01	mg/kg	1.7E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	2.5E-07	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	3.9E-03
				Cadmium (other media)	1E+01	mg/kg	6.1E-09	mg/kg-day	N/A	N/A	N/A	4.3E-08	mg/kg-day	2.5E-05	mg/kg-day	1.7E-03
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				Cobalt	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Iron	2E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	2E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (other media)	5E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A
				Thallium	4E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
					Exp. Route Total								4E-06			
			Exposure Point Total									7E-06				3E-02
	Exposure Medium Total									N/A				N/A		
Medium Total										N/A				N/A		
					Total of Receptor Risks Across All Media					N/A	Total of Receptor Hazards Across All Media					N/A

TABLE 7.2.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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	
Soil	Surface/Subsurface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	3E+00	mg/kg	4.5E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.3E-07	1.3E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	4.4E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	3.2E-06	1.3E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	4.2E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.1E-07	1.2E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	2.4E-07	mg/kg-day	N/A	N/A	N/A	7.1E-07	mg/kg-day	3.0E-02	mg/kg-day	2.4E-05
				Benzo(k)fluoranthene	2E+00	mg/kg	2.4E-07	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.7E-08	7.0E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	2.1E-05	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	2.9E-07	6.0E-05	mg/kg-day	2.0E-02	mg/kg-day	3.0E-03
				Carbazole	2E-01	mg/kg	2.8E-08	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	5.6E-10	8.2E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	6.3E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	4.6E-07	1.8E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	2.7E-08	mg/kg-day	N/A	N/A	N/A	8.0E-08	mg/kg-day	4.0E-03	mg/kg-day	2.0E-05
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.9E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.4E-07	5.7E-07	mg/kg-day	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	1.0E-07	mg/kg-day	N/A	N/A	N/A	3.0E-07	mg/kg-day	2.0E-02	mg/kg-day	1.5E-05
				Phenanthrene	5E+00	mg/kg	6.5E-07	mg/kg-day	N/A	N/A	N/A	1.9E-06	mg/kg-day	3.0E-02	mg/kg-day	6.3E-05
				Aroclor-1242	2E-01	mg/kg	2.3E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	4.7E-08	6.8E-08	mg/kg-day	2.0E-05	mg/kg-day	3.4E-03
				Aroclor-1254	5E-01	mg/kg	7.0E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	1.4E-07	2.0E-07	mg/kg-day	2.0E-05	mg/kg-day	1.0E-02
				Aroclor-1260	7E-01	mg/kg	9.9E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.0E-07	2.9E-07	mg/kg-day	2.0E-05	mg/kg-day	1.4E-02
				Dieldrin	2E-01	mg/kg	2.2E-08	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	3.5E-07	6.3E-08	mg/kg-day	5.0E-05	mg/kg-day	1.3E-03
				Dioxin TEQ	6E-05	mg/kg	8.6E-12	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	1.3E-06	2.5E-11	mg/kg-day	1.0E-09	mg/kg-day	2.5E-02
				Aluminum	7E+03	mg/kg	9.5E-04	mg/kg-day	N/A	N/A	N/A	2.8E-03	mg/kg-day	1.0E+00	mg/kg-day	2.8E-03
				Antimony	4E+01	mg/kg	5.9E-06	mg/kg-day	N/A	N/A	N/A	1.7E-05	mg/kg-day	4.0E-04	mg/kg-day	4.3E-02
				Arsenic	1E+01	mg/kg	1.9E-06	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	2.9E-06	5.6E-06	mg/kg-day	3.0E-04	mg/kg-day	1.9E-02
				Cadmium (other media)	5E+00	mg/kg	7.6E-07	mg/kg-day	N/A	N/A	N/A	2.2E-06	mg/kg-day	1.0E-03	mg/kg-day	2.2E-03
				Chromium	2E+02	mg/kg	3.0E-05	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	1.5E-05	8.7E-05	mg/kg-day	3.0E-03	mg/kg-day	2.9E-02
				Cobalt	6E+00	mg/kg	8.3E-07	mg/kg-day	N/A	N/A	N/A	2.4E-06	mg/kg-day	3.0E-04	mg/kg-day	8.1E-03
				Copper	4E+02	mg/kg	5.8E-05	mg/kg-day	N/A	N/A	N/A	1.7E-04	mg/kg-day	4.0E-02	mg/kg-day	4.2E-03
				Iron	3E+04	mg/kg	4.1E-03	mg/kg-day	N/A	N/A	N/A	1.2E-02	mg/kg-day	7.0E-01	mg/kg-day	1.7E-02
				Lead												
				Manganese (other media)	4E+02	mg/kg	5.4E-05	mg/kg-day	N/A	N/A	N/A	1.6E-04	mg/kg-day	7.0E-02	mg/kg-day	2.2E-03
				Mercury (other media)	1E+00	mg/kg	1.5E-07	mg/kg-day	N/A	N/A	N/A	4.4E-07	mg/kg-day	1.0E-04	mg/kg-day	4.4E-03
				Nickel	5E+01	mg/kg	6.9E-06	mg/kg-day	N/A	N/A	N/A	2.0E-05	mg/kg-day	2.0E-02	mg/kg-day	1.0E-03
				Thallium	2E-01	mg/kg	3.0E-08	mg/kg-day	N/A	N/A	N/A	8.9E-08	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	2.5E-06	mg/kg-day	N/A	N/A	N/A	7.3E-06	mg/kg-day	7.0E-03	mg/kg-day	1.0E-03
				Zinc	9E+02	mg/kg	1.3E-04	mg/kg-day	N/A	N/A	N/A	3.8E-04	mg/kg-day	3.0E-01	mg/kg-day	1.3E-03
			Exp. Route Total								2E-05					2E-01
			Dermal	Benzo(a)anthracene	3E+00	mg/kg	2.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.7E-07	6.8E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	2.3E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.7E-06	6.6E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	2.2E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.6E-07	6.4E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	1.3E-07	mg/kg-day	N/A	N/A	N/A	3.7E-07	mg/kg-day	3.0E-02	mg/kg-day	1.2E-05
				Benzo(k)fluoranthene	2E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	9.0E-09	3.6E-07	mg/kg-day	N/A	N/A	N/A

TABLE 7.2.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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				
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	8.2E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.1E-07	2.4E-05	mg/kg-day	2.0E-02	mg/kg-day	1.2E-03			
				Carbazole	2E-01	mg/kg	1.5E-08	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	2.9E-10	4.2E-08	mg/kg-day	N/A	N/A	N/A			
				Dibenz(a,h)anthracene	4E-01	mg/kg	3.2E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.4E-07	9.5E-08	mg/kg-day	N/A	N/A	N/A			
				Dibenzofuran	2E-01	mg/kg	1.1E-08	mg/kg-day	N/A	N/A	N/A	3.2E-08	mg/kg-day	4.0E-03	mg/kg-day	8.0E-06			
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.0E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	7.4E-08	2.9E-07	mg/kg-day	N/A	N/A	N/A			
				Naphthalene	7E-01	mg/kg	5.4E-08	mg/kg-day	N/A	N/A	N/A	1.6E-07	mg/kg-day	2.0E-02	mg/kg-day	7.9E-06			
				Phenanthrene	5E+00	mg/kg	3.3E-07	mg/kg-day	N/A	N/A	N/A	9.8E-07	mg/kg-day	3.0E-02	mg/kg-day	3.3E-05			
				Aroclor-1242	2E-01	mg/kg	1.3E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.6E-08	3.8E-08	mg/kg-day	2.0E-05	mg/kg-day	1.9E-03			
				Aroclor-1254	5E-01	mg/kg	3.9E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	7.8E-08	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	5.7E-03			
				Aroclor-1260	7E-01	mg/kg	5.5E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	1.1E-07	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	8.0E-03			
				Dieldrin	2E-01	mg/kg	8.6E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.4E-07	2.5E-08	mg/kg-day	5.0E-05	mg/kg-day	5.0E-04			
				Dioxin TEQ	6E-05	mg/kg	1.0E-12	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	1.6E-07	3.0E-12	mg/kg-day	1.0E-09	mg/kg-day	3.0E-03			
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A			
				Antimony	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A			
				Arsenic	1E+01	mg/kg	2.3E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	3.5E-07	6.7E-07	mg/kg-day	3.0E-04	mg/kg-day	2.2E-03			
				Cadmium (other media)	5E+00	mg/kg	3.0E-09	mg/kg-day	N/A	N/A	N/A	8.9E-09	mg/kg-day	2.5E-05	mg/kg-day	3.5E-04			
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A			
				Cobalt	6E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A			
				Copper	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A			
				Iron	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A			
				Lead															
				Manganese (other media)	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A			
				Mercury (other media)	1E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A			
				Nickel	5E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A			
				Thallium	2E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A			
				Zinc	9E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A			
							Exp. Route Total								3E-06				2E-02
							Exposure Point Total								3E-05				2E-01
			Exposure Medium Total								N/A				N/A				
			Medium Total								N/A				N/A				
Leachate	Leachate	Unnamed Island	Dermal	4-Methylphenol	5E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0E-03	mg/kg-day	N/A			
				Acenaphthylene	3E-02	ug/L	1.8E-08	mg/kg-day	N/A	N/A	N/A	5.3E-08	mg/kg-day	6.0E-02	mg/kg-day	8.8E-07			
				Atrazine	3E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A			
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A				
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A				
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A				
				Benzo(g,h,i)perylene	1E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A			
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A				
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	2.0E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	2.8E-08	5.7E-06	mg/kg-day	2.0E-02	mg/kg-day	2.9E-04			

TABLE 7.2.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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	
				Chrysene	3E-02	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenzofuran	3E-01	ug/L	2.4E-07	mg/kg-day	N/A	N/A	N/A	7.1E-07	mg/kg-day	4.0E-03	mg/kg-day	1.8E-04
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	9E-01	ug/L	2.8E-07	mg/kg-day	N/A	N/A	N/A	8.1E-07	mg/kg-day	2.0E-02	mg/kg-day	4.0E-05
				N-Nitrosodiphenylamine	5E+00	ug/L	6.9E-07	mg/kg-day	4.9E-03	(mg/kg-day) ⁻¹	3.4E-09	2.0E-06	mg/kg-day	N/A	N/A	N/A
				Pentachlorophenol	ND	ug/L	N/A	N/A	1.2E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	2E+00	ug/L	5.6E-07	mg/kg-day	5.4E-03	(mg/kg-day) ⁻¹	3.0E-09	1.6E-06	mg/kg-day	7.0E-02	mg/kg-day	2.3E-05
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Chlorobenzene	1E+01	ug/L	2.0E-06	mg/kg-day	N/A	N/A	N/A	5.8E-06	mg/kg-day	2.0E-02	mg/kg-day	2.9E-04
				Ethylbenzene	ND	ug/L	N/A	N/A	1.1E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.0E-01	mg/kg-day	N/A
				Xylene (total)	1E+00	ug/L	3.4E-07	mg/kg-day	N/A	N/A	N/A	1.0E-06	mg/kg-day	2.0E-01	mg/kg-day	5.0E-06
				Total PCBs	3E+00	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	1E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-BHC	1E-03	ug/L	2.3E-10	mg/kg-day	6.3E+00	(mg/kg-day) ⁻¹	1.4E-09	6.6E-10	mg/kg-day	8.0E-03	mg/kg-day	8.2E-08
				alpha-Chlordane	4E-03	ug/L	3.5E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	1.2E-09	1.0E-08	mg/kg-day	5.0E-04	mg/kg-day	2.1E-05
				Dieldrin	2E-03	ug/L	5.7E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	9.1E-09	1.7E-09	mg/kg-day	5.0E-05	mg/kg-day	3.3E-05
				Gamma-Chlordane	ND	ug/L	N/A	N/A	3.5E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				Aluminum	1E+02	ug/L	4.3E-07	mg/kg-day	N/A	N/A	N/A	1.2E-06	mg/kg-day	1.0E-02	mg/kg-day	1.2E-04
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A
				Beryllium	2E-01	ug/L	5.7E-10	mg/kg-day	N/A	N/A	N/A	1.6E-09	mg/kg-day	1.4E-05	mg/kg-day	1.2E-04
				Cadmium (other media)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	5E+00	ug/L	3.2E-08	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	4.0E-10	9.4E-08	mg/kg-day	7.5E-05	mg/kg-day	1.2E-03
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	2E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (water)	3E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A

TABLE 7.2.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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		
				Silver	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-04	mg/kg-day	N/A	
				Thallium	6E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
				Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A		
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A			
					Exp. Route Total						5E-08				2E-03		
		Exposure Point Total							5E-08				2E-03				
	Exposure Medium Total											N/A				N/A	
Medium Total												N/A				N/A	
Surface Water	Surface Water	Unnamed Island	Dermal (wading)	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				Benzo(b)fluoranthene	3E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				Benzo(g,h,i)perylene	1E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				bis(2-Ethylhexyl)phthalate	2E+00	ug/L	2.2E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	3.0E-08	6.3E-06	mg/kg-day	2.0E-02	mg/kg-day	3.1E-04	
				Chrysene	1E-01	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				Indeno(1,2,3-cd)pyrene	1E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				Naphthalene	2E-01	ug/L	9.3E-08	mg/kg-day	N/A	N/A	N/A	2.7E-07	mg/kg-day	2.0E-02	mg/kg-day	1.3E-05	
				Phenanthrene	1E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A	
				1,4-Dichlorobenzene	ND	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A	
				Benzene	ND	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A	
				Bromodichloromethane	ND	ug/L	N/A	N/A	6.2E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A	
				Aroclor-1260	ND	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A	
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				4,4'-DDE	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				4,4'-DDT	9E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A	
				alpha-Chlordane	3E-03	ug/L	5.0E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	1.8E-09	1.5E-08	mg/kg-day	5.0E-04	mg/kg-day	2.9E-05	
				beta-BHC	ND	ug/L	N/A	N/A	1.8E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-04	mg/kg-day	N/A	
				Dieldrin	ND	ug/L	N/A	N/A	1.6E+01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-05	mg/kg-day	N/A	
				Gamma-Chlordane	4E-03	ug/L	6.4E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	2.3E-09	1.9E-08	mg/kg-day	5.0E-04	mg/kg-day	3.8E-05	
				Heptachlor Epoxide	5E-03	ug/L	6.0E-09	mg/kg-day	9.1E+00	(mg/kg-day) ⁻¹	5.5E-08	1.7E-08	mg/kg-day	1.3E-05	mg/kg-day	1.3E-03	
				Aluminum	3E+03	ug/L	1.7E-05	mg/kg-day	N/A	N/A	N/A	4.9E-05	mg/kg-day	1.0E-02	mg/kg-day	4.9E-03	
				Arsenic	3E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A	
				Cadmium (other media)	1E+00	ug/L	7.3E-09	mg/kg-day	N/A	N/A	N/A	2.1E-08	mg/kg-day	2.5E-05	mg/kg-day	8.5E-04	
				Chromium	1E+01	ug/L	1.4E-07	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	1.7E-09	4.0E-07	mg/kg-day	7.5E-05	mg/kg-day	5.4E-03	
				Cobalt	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A	
				Copper	7E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A	
				Cyanide	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A	
				Iron	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A	
Lead																	
Manganese (other media)	6E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A					

TABLE 7.2.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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	
				Mercury (water)	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Vanadium	3E+00	ug/L	1.3E-08	mg/kg-day	N/A	N/A	N/A	3.8E-08	mg/kg-day	1.8E-04	mg/kg-day	2.1E-04
			Exp. Route Total							9E-08					1E-02	
			Exposure Point Total								9E-08				1E-02	
		Exposure Medium Total								N/A				N/A		
Medium Total											N/A				N/A	
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	1.6E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07	4.7E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	1.7E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.2E-06	4.9E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	9.0E-08	3.6E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	1.0E-07	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	7.3E-09	2.9E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	1.1E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.6E-08	3.3E-06	mg/kg-day	2.0E-02	mg/kg-day	1.6E-04
				Carbazole	1E-01	mg/kg	9.7E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	1.9E-10	2.8E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	1.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.4E-07	5.7E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	9E-02	mg/kg	6.3E-09	mg/kg-day	N/A	N/A	N/A	1.8E-08	mg/kg-day	4.0E-03	mg/kg-day	4.6E-06
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	7.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	5.4E-08	2.1E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	1E+00	mg/kg	9.6E-08	mg/kg-day	N/A	N/A	N/A	2.8E-07	mg/kg-day	3.0E-02	mg/kg-day	9.4E-06
				Aroclor-1242	ND	mg/kg	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				Aroclor-1254	2E-01	mg/kg	1.1E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.2E-08	3.3E-08	mg/kg-day	2.0E-05	mg/kg-day	1.6E-03
				Aroclor-1260	2E-01	mg/kg	1.5E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	3.1E-08	4.5E-08	mg/kg-day	2.0E-05	mg/kg-day	2.2E-03
				Dieldrin	9E-03	mg/kg	6.3E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.0E-08	1.8E-09	mg/kg-day	5.0E-05	mg/kg-day	3.7E-05
				Aluminum	7E+03	mg/kg	5.1E-04	mg/kg-day	N/A	N/A	N/A	1.5E-03	mg/kg-day	1.0E+00	mg/kg-day	1.5E-03
				Antimony	9E+00	mg/kg	6.4E-07	mg/kg-day	N/A	N/A	N/A	1.9E-06	mg/kg-day	4.0E-04	mg/kg-day	4.6E-03
				Arsenic	1E+01	mg/kg	8.5E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	1.3E-06	2.5E-06	mg/kg-day	3.0E-04	mg/kg-day	8.2E-03
				Cadmium (other media)	1E+01	mg/kg	9.1E-07	mg/kg-day	N/A	N/A	N/A	2.7E-06	mg/kg-day	1.0E-03	mg/kg-day	2.7E-03
				Chromium	2E+02	mg/kg	1.2E-05	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	5.9E-06	3.4E-05	mg/kg-day	3.0E-03	mg/kg-day	1.1E-02
				Cobalt	9E+00	mg/kg	6.4E-07	mg/kg-day	N/A	N/A	N/A	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	6.2E-03
				Copper	3E+02	mg/kg	2.3E-05	mg/kg-day	N/A	N/A	N/A	6.7E-05	mg/kg-day	4.0E-02	mg/kg-day	1.7E-03
				Iron	2E+04	mg/kg	1.3E-03	mg/kg-day	N/A	N/A	N/A	3.8E-03	mg/kg-day	7.0E-01	mg/kg-day	5.4E-03
				Lead												
				Manganese (other media)	2E+02	mg/kg	1.6E-05	mg/kg-day	N/A	N/A	N/A	4.8E-05	mg/kg-day	7.0E-02	mg/kg-day	6.8E-04
				Mercury (other media)	5E-01	mg/kg	3.7E-08	mg/kg-day	N/A	N/A	N/A	1.1E-07	mg/kg-day	1.0E-04	mg/kg-day	1.1E-03
				Thallium	4E-01	mg/kg	2.5E-08	mg/kg-day	N/A	N/A	N/A	7.2E-08	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	1.3E-06	mg/kg-day	N/A	N/A	N/A	3.9E-06	mg/kg-day	7.0E-03	mg/kg-day	5.5E-04
				Exp. Route Total								9E-06				
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	4.6E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.4E-07	1.3E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	4.8E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	3.5E-06	1.4E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	3.5E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.6E-07	1.0E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	2.8E-07	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	2.1E-08	8.3E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	2.5E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	3.4E-08	7.2E-06	mg/kg-day	2.0E-02	mg/kg-day	3.6E-04
				Carbazole	1E-01	mg/kg	2.8E-08	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	5.5E-10	8.1E-08	mg/kg-day	N/A	N/A	N/A

TABLE 7.2.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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				
				Dibenz(a,h)anthracene	3E-01	mg/kg	5.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	4.1E-07	1.6E-07	mg/kg-day	N/A	N/A	N/A			
				Dibenzofuran	9E-02	mg/kg	1.4E-08	mg/kg-day	N/A	N/A	N/A	4.0E-08	mg/kg-day	4.0E-03	mg/kg-day	1.0E-05			
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	2.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.5E-07	6.1E-07	mg/kg-day	N/A	N/A	N/A			
				Phenanthrene	1E+00	mg/kg	2.7E-07	mg/kg-day	N/A	N/A	N/A	8.0E-07	mg/kg-day	3.0E-02	mg/kg-day	2.7E-05			
				Aroclor-1242	ND	mg/kg	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A			
				Aroclor-1254	2E-01	mg/kg	3.4E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	6.9E-08	1.0E-07	mg/kg-day	2.0E-05	mg/kg-day	5.0E-03			
				Aroclor-1260	2E-01	mg/kg	4.7E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	9.4E-08	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	6.8E-03			
				Dieldrin	9E-03	mg/kg	1.4E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	2.2E-08	4.0E-09	mg/kg-day	5.0E-05	mg/kg-day	8.1E-05			
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A			
				Antimony	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A			
				Arsenic	1E+01	mg/kg	5.6E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	8.3E-07	1.6E-06	mg/kg-day	3.0E-04	mg/kg-day	5.4E-03			
				Cadmium (other media)	1E+01	mg/kg	2.0E-08	mg/kg-day	N/A	N/A	N/A	5.8E-08	mg/kg-day	2.5E-05	mg/kg-day	2.3E-03			
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A			
				Cobalt	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A			
				Copper	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A			
				Iron	2E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A			
				Lead															
				Manganese (other media)	2E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A			
				Mercury (other media)	5E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A			
				Thallium	4E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A			
							Exp. Route Total								6E-06				2E-02
							Exposure Point Total								1E-05				7E-02
							Exposure Medium Total								N/A				N/A
				Medium Total										N/A				N/A	
Total of Receptor Risks Across All Media											N/A	Total of Receptor Hazards Across All Media				N/A			

TABLE 7.2.CT
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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	
Soil	Surface/Subsurface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	3E+00	mg/kg	9.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	6.8E-08	3.3E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	9.1E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	6.6E-07	3.2E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	8.8E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	6.4E-08	3.1E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	5.0E-08	mg/kg-day	N/A	N/A	N/A	1.8E-07	mg/kg-day	3.0E-02	mg/kg-day	5.9E-06
				Benzo(k)fluoranthene	2E+00	mg/kg	5.0E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	3.6E-09	1.7E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	4.3E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	6.0E-08	1.5E-05	mg/kg-day	2.0E-02	mg/kg-day	7.5E-04
				Carbazole	2E-01	mg/kg	5.8E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	1.2E-10	2.0E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	1.3E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	9.5E-08	4.6E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	5.7E-09	mg/kg-day	N/A	N/A	N/A	2.0E-08	mg/kg-day	4.0E-03	mg/kg-day	5.0E-06
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	4.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.0E-08	1.4E-07	mg/kg-day	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	2.2E-08	mg/kg-day	N/A	N/A	N/A	7.6E-08	mg/kg-day	2.0E-02	mg/kg-day	3.8E-06
				Phenanthrene	5E+00	mg/kg	1.3E-07	mg/kg-day	N/A	N/A	N/A	4.7E-07	mg/kg-day	3.0E-02	mg/kg-day	1.6E-05
				Aroclor-1242	2E-01	mg/kg	4.9E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	4.9E-09	1.7E-08	mg/kg-day	2.0E-05	mg/kg-day	8.5E-04
				Aroclor-1254	5E-01	mg/kg	1.5E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.5E-08	5.1E-08	mg/kg-day	2.0E-05	mg/kg-day	2.5E-03
				Aroclor-1260	7E-01	mg/kg	2.1E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	2.1E-08	7.2E-08	mg/kg-day	2.0E-05	mg/kg-day	3.6E-03
				Dieldrin	2E-01	mg/kg	4.5E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	7.2E-08	1.6E-08	mg/kg-day	5.0E-05	mg/kg-day	3.2E-04
				Dioxin TEQ	6E-05	mg/kg	1.8E-12	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	2.8E-07	6.3E-12	mg/kg-day	1.0E-09	mg/kg-day	6.3E-03
				Aluminum	7E+03	mg/kg	2.0E-04	mg/kg-day	N/A	N/A	N/A	6.9E-04	mg/kg-day	1.0E+00	mg/kg-day	6.9E-04
				Antimony	4E+01	mg/kg	1.2E-06	mg/kg-day	N/A	N/A	N/A	4.3E-06	mg/kg-day	4.0E-04	mg/kg-day	1.1E-02
				Arsenic	1E+01	mg/kg	4.0E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	6.0E-07	1.4E-06	mg/kg-day	3.0E-04	mg/kg-day	4.7E-03
				Cadmium (other media)	5E+00	mg/kg	1.6E-07	mg/kg-day	N/A	N/A	N/A	5.6E-07	mg/kg-day	1.0E-03	mg/kg-day	5.6E-04
				Chromium	2E+02	mg/kg	6.2E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	3.1E-06	2.2E-05	mg/kg-day	3.0E-03	mg/kg-day	7.3E-03
				Cobalt	6E+00	mg/kg	1.7E-07	mg/kg-day	N/A	N/A	N/A	6.1E-07	mg/kg-day	3.0E-04	mg/kg-day	2.0E-03
				Copper	4E+02	mg/kg	1.2E-05	mg/kg-day	N/A	N/A	N/A	4.2E-05	mg/kg-day	4.0E-02	mg/kg-day	1.1E-03
				Iron	3E+04	mg/kg	8.5E-04	mg/kg-day	N/A	N/A	N/A	3.0E-03	mg/kg-day	7.0E-01	mg/kg-day	4.2E-03
				Lead												
				Manganese (other media)	4E+02	mg/kg	1.1E-05	mg/kg-day	N/A	N/A	N/A	3.9E-05	mg/kg-day	7.0E-02	mg/kg-day	5.6E-04
				Mercury (other media)	1E+00	mg/kg	3.1E-08	mg/kg-day	N/A	N/A	N/A	1.1E-07	mg/kg-day	1.0E-04	mg/kg-day	1.1E-03
				Nickel	5E+01	mg/kg	1.4E-06	mg/kg-day	N/A	N/A	N/A	5.0E-06	mg/kg-day	2.0E-02	mg/kg-day	2.5E-04
				Thallium	2E-01	mg/kg	6.3E-09	mg/kg-day	N/A	N/A	N/A	2.2E-08	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	5.2E-07	mg/kg-day	N/A	N/A	N/A	1.8E-06	mg/kg-day	7.0E-03	mg/kg-day	2.6E-04
				Zinc	9E+02	mg/kg	2.7E-05	mg/kg-day	N/A	N/A	N/A	9.6E-05	mg/kg-day	3.0E-01	mg/kg-day	3.2E-04
			Exp. Route Total								5E-06					5E-02
			Dermal	Benzo(a)anthracene	3E+00	mg/kg	9.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	7.1E-08	3.4E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	9.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	6.9E-07	3.3E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	9.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	6.7E-08	3.2E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	5.2E-08	mg/kg-day	N/A	N/A	N/A	1.8E-07	mg/kg-day	3.0E-02	mg/kg-day	6.1E-06
				Benzo(k)fluoranthene	2E+00	mg/kg	5.2E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	3.8E-09	1.8E-07	mg/kg-day	N/A	N/A	N/A

TABLE 7.2.CT
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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						
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	3.4E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	4.8E-08	1.2E-05	mg/kg-day	2.0E-02	mg/kg-day	6.0E-04					
				Carbazole	2E-01	mg/kg	6.1E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	1.2E-10	2.1E-08	mg/kg-day	N/A	N/A	N/A					
				Dibenz(a,h)anthracene	4E-01	mg/kg	1.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	9.9E-08	4.7E-08	mg/kg-day	N/A	N/A	N/A					
				Dibenzofuran	2E-01	mg/kg	4.5E-09	mg/kg-day	N/A	N/A	N/A	1.6E-08	mg/kg-day	4.0E-03	mg/kg-day	4.0E-06					
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	4.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.1E-08	1.5E-07	mg/kg-day	N/A	N/A	N/A					
				Naphthalene	7E-01	mg/kg	2.2E-08	mg/kg-day	N/A	N/A	N/A	7.9E-08	mg/kg-day	2.0E-02	mg/kg-day	3.9E-06					
				Phenanthrene	5E+00	mg/kg	1.4E-07	mg/kg-day	N/A	N/A	N/A	4.9E-07	mg/kg-day	3.0E-02	mg/kg-day	1.6E-05					
								Aroclor-1242	2E-01	mg/kg	5.4E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	5.4E-09	1.9E-08	mg/kg-day	2.0E-05	mg/kg-day	9.5E-04	
								Aroclor-1254	5E-01	mg/kg	1.6E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.6E-08	5.7E-08	mg/kg-day	2.0E-05	mg/kg-day	2.8E-03	
								Aroclor-1260	7E-01	mg/kg	2.3E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	2.3E-08	8.0E-08	mg/kg-day	2.0E-05	mg/kg-day	4.0E-03	
								Dieldrin	2E-01	mg/kg	3.6E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	5.8E-08	1.3E-08	mg/kg-day	5.0E-05	mg/kg-day	2.5E-04	
								Dioxin TEQ	6E-05	mg/kg	4.3E-13	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	6.7E-08	1.5E-12	mg/kg-day	1.0E-09	mg/kg-day	1.5E-03	
								Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A	
								Antimony	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A	
								Arsenic	1E+01	mg/kg	9.6E-08	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	1.4E-07	3.4E-07	mg/kg-day	3.0E-04	mg/kg-day	1.1E-03	
								Cadmium (other media)	5E+00	mg/kg	1.3E-09	mg/kg-day	N/A	N/A	N/A	4.4E-09	mg/kg-day	2.5E-05	mg/kg-day	1.8E-04	
								Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A	
								Cobalt	6E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A	
								Copper	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A	
								Iron	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A	
								Lead													
								Manganese (other media)	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A	
								Mercury (other media)	1E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A	
								Nickel	5E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A	
								Thallium	2E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
								Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A	
								Zinc	9E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A	
							Exp. Route Total									1E-06					1E-02
							Exposure Point Total									6E-06					6E-02
							Exposure Medium Total									N/A					N/A
Medium Total											N/A					N/A					
Leachate	Leachate	Unnamed Island	Dermal	4-Methylphenol	5E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0E-03	mg/kg-day	N/A					
				Acenaphthylene	3E-02	ug/L	7.5E-09	mg/kg-day	N/A	N/A	N/A	2.6E-08	mg/kg-day	6.0E-02	mg/kg-day	4.4E-07					
				Atrazine	1E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A					
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A					
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A					
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A					
				Benzo(g,h,i)perylene	1E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A					
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A					
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	8.2E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.1E-08	2.9E-06	mg/kg-day	2.0E-02	mg/kg-day	1.4E-04					

TABLE 7.2.CT
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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	
				Chrysene	3E-02	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenzofuran	3E-01	ug/L	1.0E-07	mg/kg-day	N/A	N/A	N/A	3.6E-07	mg/kg-day	4.0E-03	mg/kg-day	8.9E-05
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	9E-01	ug/L	1.2E-07	mg/kg-day	N/A	N/A	N/A	4.0E-07	mg/kg-day	2.0E-02	mg/kg-day	2.0E-05
				N-Nitrosodiphenylamine	5E+00	ug/L	2.9E-07	mg/kg-day	4.9E-03	(mg/kg-day) ⁻¹	1.4E-09	1.0E-06	mg/kg-day	N/A	N/A	N/A
				Pentachlorophenol	ND	ug/L	N/A	N/A	1.2E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	2E+00	ug/L	2.3E-07	mg/kg-day	5.4E-03	(mg/kg-day) ⁻¹	1.3E-09	8.2E-07	mg/kg-day	7.0E-02	mg/kg-day	1.2E-05
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Chlorobenzene	1E+01	ug/L	8.2E-07	mg/kg-day	N/A	N/A	N/A	2.9E-06	mg/kg-day	2.0E-02	mg/kg-day	1.4E-04
				Ethylbenzene	ND	ug/L	N/A	N/A	1.1E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.0E-01	mg/kg-day	N/A
				Xylene (total)	1E+00	ug/L	1.4E-07	mg/kg-day	N/A	N/A	N/A	5.0E-07	mg/kg-day	2.0E-01	mg/kg-day	2.5E-06
				Total PCBs	3E+00	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	1E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-BHC	1E-03	ug/L	9.4E-11	mg/kg-day	6.3E+00	(mg/kg-day) ⁻¹	5.9E-10	3.3E-10	mg/kg-day	8.0E-03	mg/kg-day	4.1E-08
				alpha-Chlordane	4E-03	ug/L	1.5E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	5.2E-10	5.2E-09	mg/kg-day	5.0E-04	mg/kg-day	1.0E-05
				Dieldrin	2E-03	ug/L	2.4E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	3.8E-09	8.3E-10	mg/kg-day	5.0E-05	mg/kg-day	1.7E-05
				Gamma-Chlordane	ND	ug/L	N/A	N/A	3.5E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				Aluminum	1E+02	ug/L	1.8E-07	mg/kg-day	N/A	N/A	N/A	6.2E-07	mg/kg-day	1.0E-02	mg/kg-day	6.2E-05
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A
				Beryllium	2E-01	ug/L	2.0E-10	mg/kg-day	N/A	N/A	N/A	6.9E-10	mg/kg-day	1.4E-05	mg/kg-day	4.9E-05
				Cadmium (other media)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	5E+00	ug/L	1.3E-08	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	1.7E-10	4.7E-08	mg/kg-day	7.5E-05	mg/kg-day	6.2E-04
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	2E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (water)	3E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A

TABLE 7.2.CT
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Adult (wading)

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	
				Silver	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-04	mg/kg-day	N/A
				Thallium	1E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
			Exp. Route Total								2E-08					1E-03
		Exposure Point Total									2E-08					1E-03
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Surface Water	Surface Water	Unnamed Island	Dermal (wading)	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(b)fluoranthene	6E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(g,h,i)perylene	5E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+00	ug/L	9.0E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.3E-08	3.1E-06	mg/kg-day	2.0E-02	mg/kg-day	1.6E-04
				Chrysene	1E-01	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Indeno(1,2,3-cd)pyrene	5E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	6E-02	ug/L	1.2E-08	mg/kg-day	N/A	N/A	N/A	4.2E-08	mg/kg-day	2.0E-02	mg/kg-day	2.1E-06
				Phenanthrene	1E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	ND	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Benzene	ND	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Bromodichloromethane	ND	ug/L	N/A	N/A	6.2E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Aroclor-1260	ND	ug/L	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	3E-03	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	3E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-Chlordane	1E-03	ug/L	8.9E-10	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	3.1E-10	3.1E-09	mg/kg-day	5.0E-04	mg/kg-day	6.2E-06
				beta-BHC	ND	ug/L	N/A	N/A	1.8E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-04	mg/kg-day	N/A
				Dieldrin	ND	ug/L	N/A	N/A	1.6E+01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-05	mg/kg-day	N/A
				Gamma-Chlordane	4E-03	ug/L	2.7E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	9.4E-10	9.4E-09	mg/kg-day	5.0E-04	mg/kg-day	1.9E-05
				Heptachlor Epoxide	2E-03	ug/L	7.3E-10	mg/kg-day	9.1E+00	(mg/kg-day) ⁻¹	6.7E-09	2.6E-09	mg/kg-day	1.3E-05	mg/kg-day	2.0E-04
				Aluminum	3E+03	ug/L	6.9E-06	mg/kg-day	N/A	N/A	N/A	2.4E-05	mg/kg-day	1.0E-02	mg/kg-day	2.4E-03
				Arsenic	3E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Cadmium (other media)	1E+00	ug/L	3.0E-09	mg/kg-day	N/A	N/A	N/A	1.1E-08	mg/kg-day	2.5E-05	mg/kg-day	4.2E-04
				Chromium	1E+01	ug/L	5.7E-08	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	7.2E-10	2.0E-07	mg/kg-day	7.5E-05	mg/kg-day	2.7E-03
				Cobalt	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	6E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A

TABLE 7.2.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

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	
				Mercury (water)	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Vanadium	3E+00	ug/L	5.4E-09	mg/kg-day	N/A	N/A	N/A	1.9E-08	mg/kg-day	1.8E-04	mg/kg-day	1.0E-04
			Exp. Route Total							2E-08					6E-03	
			Exposure Point Total								2E-08				6E-03	
		Exposure Medium Total								N/A				N/A		
Medium Total											N/A				N/A	
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	3.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.5E-08	1.2E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	3.5E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.6E-07	1.2E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	2.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.9E-08	9.0E-08	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	2.1E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.5E-09	7.3E-08	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	2.3E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	3.3E-09	8.2E-07	mg/kg-day	2.0E-02	mg/kg-day	4.1E-05
				Carbazole	1E-01	mg/kg	2.0E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	4.0E-11	7.1E-09	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	4.1E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	3.0E-08	1.4E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	9E-02	mg/kg	1.3E-09	mg/kg-day	N/A	N/A	N/A	4.6E-09	mg/kg-day	4.0E-03	mg/kg-day	1.1E-06
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.5E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.1E-08	5.4E-08	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	1E+00	mg/kg	2.0E-08	mg/kg-day	N/A	N/A	N/A	7.0E-08	mg/kg-day	3.0E-02	mg/kg-day	2.3E-06
				Aroclor-1242	ND	mg/kg	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				Aroclor-1254	2E-01	mg/kg	2.3E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	2.3E-09	8.2E-09	mg/kg-day	2.0E-05	mg/kg-day	4.1E-04
				Aroclor-1260	2E-01	mg/kg	3.2E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	3.2E-09	1.1E-08	mg/kg-day	2.0E-05	mg/kg-day	5.6E-04
				Dieldrin	9E-03	mg/kg	1.3E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	2.1E-09	4.6E-10	mg/kg-day	5.0E-05	mg/kg-day	9.2E-06
				Aluminum	7E+03	mg/kg	1.1E-04	mg/kg-day	N/A	N/A	N/A	3.7E-04	mg/kg-day	1.0E+00	mg/kg-day	3.7E-04
				Antimony	9E+00	mg/kg	1.3E-07	mg/kg-day	N/A	N/A	N/A	4.6E-07	mg/kg-day	4.0E-04	mg/kg-day	1.2E-03
				Arsenic	1E+01	mg/kg	1.8E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	2.6E-07	6.2E-07	mg/kg-day	3.0E-04	mg/kg-day	2.1E-03
				Cadmium (other media)	1E+01	mg/kg	1.9E-07	mg/kg-day	N/A	N/A	N/A	6.7E-07	mg/kg-day	1.0E-03	mg/kg-day	6.7E-04
				Chromium	2E+02	mg/kg	2.4E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	1.2E-06	8.6E-06	mg/kg-day	3.0E-03	mg/kg-day	2.9E-03
				Cobalt	9E+00	mg/kg	1.3E-07	mg/kg-day	N/A	N/A	N/A	4.7E-07	mg/kg-day	3.0E-04	mg/kg-day	1.6E-03
				Copper	3E+02	mg/kg	4.8E-06	mg/kg-day	N/A	N/A	N/A	1.7E-05	mg/kg-day	4.0E-02	mg/kg-day	4.2E-04
				Iron	2E+04	mg/kg	2.7E-04	mg/kg-day	N/A	N/A	N/A	9.4E-04	mg/kg-day	7.0E-01	mg/kg-day	1.3E-03
				Lead												
				Manganese (other media)	2E+02	mg/kg	3.4E-06	mg/kg-day	N/A	N/A	N/A	1.2E-05	mg/kg-day	7.0E-02	mg/kg-day	1.7E-04
				Mercury (other media)	5E-01	mg/kg	7.7E-09	mg/kg-day	N/A	N/A	N/A	2.7E-08	mg/kg-day	1.0E-04	mg/kg-day	2.7E-04
				Thallium	4E-01	mg/kg	5.2E-09	mg/kg-day	N/A	N/A	N/A	1.8E-08	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	2.8E-07	mg/kg-day	N/A	N/A	N/A	9.7E-07	mg/kg-day	7.0E-03	mg/kg-day	1.4E-04
				Exp. Route Total								2E-06				
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	1.9E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.4E-07	6.7E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	2.0E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.5E-06	7.0E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	1.5E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.1E-07	5.1E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	8.6E-09	4.1E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	1.0E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.4E-08	3.6E-06	mg/kg-day	2.0E-02	mg/kg-day	1.8E-04
				Carbazole	1E-01	mg/kg	1.2E-08	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	2.3E-10	4.0E-08	mg/kg-day	N/A	N/A	N/A

TABLE 7.2.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Adult (wading)

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		
				Dibenz(a,h)anthracene	3E-01	mg/kg	2.3E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.7E-07	8.1E-08	mg/kg-day	N/A	N/A	N/A	
				Dibenzofuran	9E-02	mg/kg	5.8E-09	mg/kg-day	N/A	N/A	N/A	2.0E-08	mg/kg-day	4.0E-03	mg/kg-day	5.0E-06	
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	8.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	6.4E-08	3.1E-07	mg/kg-day	N/A	N/A	N/A	
				Phenanthrene	1E+00	mg/kg	1.1E-07	mg/kg-day	N/A	N/A	N/A	4.0E-07	mg/kg-day	3.0E-02	mg/kg-day	1.3E-05	
				Aroclor-1242	ND	mg/kg	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A	
				Aroclor-1254	2E-01	mg/kg	1.4E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.4E-08	5.0E-08	mg/kg-day	2.0E-05	mg/kg-day	2.5E-03	
				Aroclor-1260	2E-01	mg/kg	2.0E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	2.0E-08	6.8E-08	mg/kg-day	2.0E-05	mg/kg-day	3.4E-03	
				Dieldrin	9E-03	mg/kg	5.8E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	9.2E-09	2.0E-09	mg/kg-day	5.0E-05	mg/kg-day	4.0E-05	
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A	
				Antimony	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A	
				Arsenic	1E+01	mg/kg	2.3E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	3.5E-07	8.1E-07	mg/kg-day	3.0E-04	mg/kg-day	2.7E-03	
				Cadmium (other media)	1E+01	mg/kg	8.4E-09	mg/kg-day	N/A	N/A	N/A	2.9E-08	mg/kg-day	2.5E-05	mg/kg-day	1.2E-03	
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A	
				Cobalt	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A	
				Copper	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A	
				Iron	2E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A	
				Lead													
				Manganese (other media)	2E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A	
				Mercury (other media)	5E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A	
				Thallium	4E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A	
						Exp. Route Total						2E-06					1E-02
					Exposure Point Total					4E-06					2E-02		
				Exposure Medium Total					N/A					N/A			
Medium Total								N/A					N/A				
Total of Receptor Risks Across All Media											N/A	Total of Receptor Hazards Across All Media				N/A	

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

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	
Soil	Surface/Subsurface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	3E+00	mg/kg	2.2E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	4.9E-07	2.6E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	2.2E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	4.8E-06	2.5E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	2.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	4.6E-07	2.5E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	1.2E-07	mg/kg-day	N/A	N/A	N/A	1.4E-06	mg/kg-day	3.0E-02	mg/kg-day	4.7E-05
				Benzo(k)fluoranthene	2E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	2.6E-08	1.4E-06	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	1.0E-05	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.4E-07	1.2E-04	mg/kg-day	2.0E-02	mg/kg-day	6.0E-03
				Carbazole	2E-01	mg/kg	1.4E-08	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	2.8E-10	1.6E-07	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	3.1E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	6.8E-07	3.6E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	1.4E-08	mg/kg-day	N/A	N/A	N/A	1.6E-07	mg/kg-day	4.0E-03	mg/kg-day	4.0E-05
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	9.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.1E-07	1.1E-06	mg/kg-day	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	5.2E-08	mg/kg-day	N/A	N/A	N/A	6.1E-07	mg/kg-day	2.0E-02	mg/kg-day	3.0E-05
				Phenanthrene	5E+00	mg/kg	3.2E-07	mg/kg-day	N/A	N/A	N/A	3.8E-06	mg/kg-day	3.0E-02	mg/kg-day	1.3E-04
				Aroclor-1242	2E-01	mg/kg	1.2E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.3E-08	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	6.8E-03
				Aroclor-1254	5E-01	mg/kg	3.5E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	7.0E-08	4.1E-07	mg/kg-day	2.0E-05	mg/kg-day	2.0E-02
				Aroclor-1260	7E-01	mg/kg	4.9E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	9.9E-08	5.8E-07	mg/kg-day	2.0E-05	mg/kg-day	2.9E-02
				Dieldrin	2E-01	mg/kg	1.1E-08	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.7E-07	1.3E-07	mg/kg-day	5.0E-05	mg/kg-day	2.5E-03
				Dioxin TEQ	6E-05	mg/kg	4.3E-12	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	6.7E-07	5.0E-11	mg/kg-day	1.0E-09	mg/kg-day	5.0E-02
				Aluminum	7E+03	mg/kg	4.8E-04	mg/kg-day	N/A	N/A	N/A	5.6E-03	mg/kg-day	1.0E+00	mg/kg-day	5.6E-03
				Antimony	4E+01	mg/kg	3.0E-06	mg/kg-day	N/A	N/A	N/A	3.5E-05	mg/kg-day	4.0E-04	mg/kg-day	8.6E-02
				Arsenic	1E+01	mg/kg	9.7E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	1.4E-06	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	3.8E-02
				Cadmium (other media)	5E+00	mg/kg	3.8E-07	mg/kg-day	N/A	N/A	N/A	4.4E-06	mg/kg-day	1.0E-03	mg/kg-day	4.4E-03
				Chromium	2E+02	mg/kg	1.5E-05	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	2.2E-05	1.7E-04	mg/kg-day	3.0E-03	mg/kg-day	5.8E-02
				Cobalt	6E+00	mg/kg	4.2E-07	mg/kg-day	N/A	N/A	N/A	4.9E-06	mg/kg-day	3.0E-04	mg/kg-day	1.6E-02
				Copper	4E+02	mg/kg	2.9E-05	mg/kg-day	N/A	N/A	N/A	3.4E-04	mg/kg-day	4.0E-02	mg/kg-day	8.4E-03
				Iron	3E+04	mg/kg	2.0E-03	mg/kg-day	N/A	N/A	N/A	2.4E-02	mg/kg-day	7.0E-01	mg/kg-day	3.4E-02
				Lead												
				Manganese (other media)	4E+02	mg/kg	2.7E-05	mg/kg-day	N/A	N/A	N/A	3.1E-04	mg/kg-day	7.0E-02	mg/kg-day	4.5E-03
				Mercury (other media)	1E+00	mg/kg	7.5E-08	mg/kg-day	N/A	N/A	N/A	8.7E-07	mg/kg-day	1.0E-04	mg/kg-day	8.7E-03
				Nickel	5E+01	mg/kg	3.5E-06	mg/kg-day	N/A	N/A	N/A	4.0E-05	mg/kg-day	2.0E-02	mg/kg-day	2.0E-03
				Thallium	2E-01	mg/kg	1.5E-08	mg/kg-day	N/A	N/A	N/A	1.8E-07	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	1.3E-06	mg/kg-day	N/A	N/A	N/A	1.5E-05	mg/kg-day	7.0E-03	mg/kg-day	2.1E-03
				Zinc	9E+02	mg/kg	6.6E-05	mg/kg-day	N/A	N/A	N/A	7.6E-04	mg/kg-day	3.0E-01	mg/kg-day	2.5E-03
			Exp. Route Total								3E-05					4E-01
			Dermal	Benzo(a)anthracene	3E+00	mg/kg	2.6E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	5.6E-07	3.0E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	2.5E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	5.5E-06	2.9E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	2.4E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	5.3E-07	2.8E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	1.4E-07	mg/kg-day	N/A	N/A	N/A	1.6E-06	mg/kg-day	3.0E-02	mg/kg-day	5.4E-05
				Benzo(k)fluoranthene	2E+00	mg/kg	1.4E-07	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	3.0E-08	1.6E-06	mg/kg-day	N/A	N/A	N/A

TABLE 7.3.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Older Child (wading)

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				
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	9.1E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.3E-07	1.1E-04	mg/kg-day	2.0E-02	mg/kg-day	5.3E-03			
				Carbazole	2E-01	mg/kg	1.6E-08	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	3.2E-10	1.9E-07	mg/kg-day	N/A	N/A	N/A			
				Dibenz(a,h)anthracene	4E-01	mg/kg	3.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	7.8E-07	4.2E-07	mg/kg-day	N/A	N/A	N/A			
				Dibenzofuran	2E-01	mg/kg	1.2E-08	mg/kg-day	N/A	N/A	N/A	1.4E-07	mg/kg-day	4.0E-03	mg/kg-day	3.5E-05			
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.1E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.4E-07	1.3E-06	mg/kg-day	N/A	N/A	N/A			
				Naphthalene	7E-01	mg/kg	5.9E-08	mg/kg-day	N/A	N/A	N/A	6.9E-07	mg/kg-day	2.0E-02	mg/kg-day	3.5E-05			
				Phenanthrene	5E+00	mg/kg	3.7E-07	mg/kg-day	N/A	N/A	N/A	4.3E-06	mg/kg-day	3.0E-02	mg/kg-day	1.4E-04			
				Aroclor-1242	2E-01	mg/kg	1.4E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.9E-08	1.7E-07	mg/kg-day	2.0E-05	mg/kg-day	8.4E-03			
				Aroclor-1254	5E-01	mg/kg	4.3E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	8.6E-08	5.0E-07	mg/kg-day	2.0E-05	mg/kg-day	2.5E-02			
				Aroclor-1260	7E-01	mg/kg	6.1E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	1.2E-07	7.1E-07	mg/kg-day	2.0E-05	mg/kg-day	3.5E-02			
				Dieldrin	2E-01	mg/kg	9.5E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.5E-07	1.1E-07	mg/kg-day	5.0E-05	mg/kg-day	2.2E-03			
				Dioxin TEQ	6E-05	mg/kg	1.1E-12	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	1.8E-07	1.3E-11	mg/kg-day	1.0E-09	mg/kg-day	1.3E-02			
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A			
				Antimony	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A			
				Arsenic	1E+01	mg/kg	2.6E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	3.8E-07	3.0E-06	mg/kg-day	3.0E-04	mg/kg-day	9.9E-03			
				Cadmium (other media)	5E+00	mg/kg	3.4E-09	mg/kg-day	N/A	N/A	N/A	3.9E-08	mg/kg-day	2.5E-05	mg/kg-day	1.6E-03			
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A			
				Cobalt	6E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A			
				Copper	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A			
				Iron	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A			
				Lead															
				Manganese (other media)	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A			
				Mercury (other media)	1E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A			
				Nickel	5E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A			
				Thallium	2E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A			
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A			
				Zinc	9E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A			
							Exp. Route Total							9E-06					1E-01
							Exposure Point Total							4E-05					5E-01
			Exposure Medium Total							N/A					N/A				
			Medium Total							N/A					N/A				
Leachate	Leachate	Unnamed Island	Dermal	4-Methylphenol	5E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0E-03	mg/kg-day	N/A			
				Acenaphthylene	3E-02	ug/L	5.4E-09	mg/kg-day	N/A	N/A	N/A	6.3E-08	mg/kg-day	6.0E-02	mg/kg-day	1.1E-06			
				Atrazine	3E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A			
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A				
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A				
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A				
				Benzo(g,h,i)perylene	1E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A			
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A				
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	5.9E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	8.3E-09	6.9E-06	mg/kg-day	2.0E-02	mg/kg-day	3.4E-04			

TABLE 7.3.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Older Child (wading)

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	
				Chrysene	3E-02	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenzofuran	3E-01	ug/L	7.3E-08	mg/kg-day	N/A	N/A	N/A	8.6E-07	mg/kg-day	4.0E-03	mg/kg-day	2.1E-04
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	9E-01	ug/L	8.3E-08	mg/kg-day	N/A	N/A	N/A	9.7E-07	mg/kg-day	2.0E-02	mg/kg-day	4.8E-05
				N-Nitrosodiphenylamine	5E+00	ug/L	N/A	N/A	4.9E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Pentachlorophenol	ND	ug/L	N/A	N/A	1.2E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	2E+00	ug/L	1.7E-07	mg/kg-day	5.4E-03	(mg/kg-day) ⁻¹	9.1E-10	2.0E-06	mg/kg-day	7.0E-02	mg/kg-day	2.8E-05
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Chlorobenzene	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Ethylbenzene	ND	ug/L	N/A	N/A	1.1E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.0E-01	mg/kg-day	N/A
				Xylene (total)	1E+00	ug/L	1.0E-07	mg/kg-day	N/A	N/A	N/A	1.2E-06	mg/kg-day	2.0E-01	mg/kg-day	6.0E-06
				Total PCBs	3E+00	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	1E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-BHC	1E-03	ug/L	N/A	N/A	6.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	8.0E-03	mg/kg-day	N/A
				alpha-Chlordane	4E-03	ug/L	1.1E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	3.7E-10	1.2E-08	mg/kg-day	5.0E-04	mg/kg-day	2.5E-05
				Dieldrin	2E-03	ug/L	1.7E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	2.7E-09	2.0E-09	mg/kg-day	5.0E-05	mg/kg-day	4.0E-05
				Gamma-Chlordane	ND	ug/L	N/A	N/A	3.5E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				Aluminum	1E+02	ug/L	1.3E-07	mg/kg-day	N/A	N/A	N/A	1.5E-06	mg/kg-day	1.0E-02	mg/kg-day	1.5E-04
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A
				Beryllium	2E-01	ug/L	1.7E-10	mg/kg-day	N/A	N/A	N/A	2.0E-09	mg/kg-day	1.4E-05	mg/kg-day	1.4E-04
				Cadmium (other media)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	5E+00	ug/L	9.6E-09	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	3.6E-10	1.1E-07	mg/kg-day	7.5E-05	mg/kg-day	1.5E-03
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	2E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (water)	3E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A

TABLE 7.3.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Older Child (wading)

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	
				Silver	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-04	mg/kg-day	N/A
				Thallium	6E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
				Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A	
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A	
			Exp. Route Total								1E-08				2E-03	
	Exposure Point Total										1E-08					2E-03
Exposure Medium Total												N/A				N/A
Medium Total												N/A				N/A
Surface Water	Surface Water	Unnamed Island	Dermal (wading)	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(g,h,i)perylene	1E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+00	ug/L	6.1E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	8.6E-09	7.2E-06	mg/kg-day	2.0E-02	mg/kg-day	3.6E-04
				Chrysene	1E-01	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Indeno(1,2,3-cd)pyrene	1E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	2E-01	ug/L	2.6E-08	mg/kg-day	N/A	N/A	N/A	3.1E-07	mg/kg-day	2.0E-02	mg/kg-day	1.5E-05
				Phenanthrene	1E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	ND	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Benzene	ND	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Bromodichloromethane	ND	ug/L	N/A	N/A	6.2E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Aroclor-1260	ND	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	9E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-Chlordane	3E-03	ug/L	1.4E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	5.0E-10	1.7E-08	mg/kg-day	5.0E-04	mg/kg-day	3.3E-05
				beta-BHC	ND	ug/L	N/A	N/A	1.8E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-04	mg/kg-day	N/A
				Dieldrin	ND	ug/L	N/A	N/A	1.6E+01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-05	mg/kg-day	N/A
				Gamma-Chlordane	4E-03	ug/L	1.8E-09	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	6.4E-10	2.1E-08	mg/kg-day	5.0E-04	mg/kg-day	4.3E-05
				Heptachlor Epoxide	5E-03	ug/L	1.7E-09	mg/kg-day	9.1E+00	(mg/kg-day) ⁻¹	1.6E-08	2.0E-08	mg/kg-day	1.3E-05	mg/kg-day	1.5E-03
				Aluminum	3E+03	ug/L	4.7E-06	mg/kg-day	N/A	N/A	N/A	5.5E-05	mg/kg-day	1.0E-02	mg/kg-day	5.5E-03
				Arsenic	3E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Cadmium (other media)	1E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	1E+01	ug/L	3.9E-08	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	1.5E-09	4.6E-07	mg/kg-day	7.5E-05	mg/kg-day	6.1E-03
				Cobalt	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	7E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	6E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

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	
				Mercury (water)	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Vanadium	3E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A	
			Exp. Route Total							3E-08					1E-02	
			Exposure Point Total							3E-08					1E-02	
		Exposure Medium Total							N/A					N/A		
Medium Total											N/A				N/A	
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	8.1E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.8E-07	9.5E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	8.5E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.9E-06	9.9E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	6.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.4E-07	7.2E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	5.0E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.1E-08	5.8E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	5.6E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	7.8E-09	6.5E-06	mg/kg-day	2.0E-02	mg/kg-day	3.3E-04
				Carbazole	1E-01	mg/kg	4.8E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	9.7E-11	5.7E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	9.7E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.1E-07	1.1E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	9E-02	mg/kg	3.2E-09	mg/kg-day	N/A	N/A	N/A	3.7E-08	mg/kg-day	4.0E-03	mg/kg-day	9.2E-06
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	3.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	8.1E-08	4.3E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	1E+00	mg/kg	4.8E-08	mg/kg-day	N/A	N/A	N/A	5.6E-07	mg/kg-day	3.0E-02	mg/kg-day	1.9E-05
				Aroclor-1242	ND	mg/kg	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				Aroclor-1254	2E-01	mg/kg	5.6E-09	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	1.1E-08	6.6E-08	mg/kg-day	2.0E-05	mg/kg-day	3.3E-03
				Aroclor-1260	2E-01	mg/kg	7.6E-09	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	1.5E-08	8.9E-08	mg/kg-day	2.0E-05	mg/kg-day	4.5E-03
				Dieldrin	9E-03	mg/kg	3.2E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	5.0E-09	3.7E-09	mg/kg-day	5.0E-05	mg/kg-day	7.4E-05
				Aluminum	7E+03	mg/kg	2.5E-04	mg/kg-day	N/A	N/A	N/A	3.0E-03	mg/kg-day	1.0E+00	mg/kg-day	3.0E-03
				Antimony	9E+00	mg/kg	3.2E-07	mg/kg-day	N/A	N/A	N/A	3.7E-06	mg/kg-day	4.0E-04	mg/kg-day	9.3E-03
				Arsenic	1E+01	mg/kg	4.2E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	6.3E-07	4.9E-06	mg/kg-day	3.0E-04	mg/kg-day	1.6E-02
				Cadmium (other media)	1E+01	mg/kg	4.6E-07	mg/kg-day	N/A	N/A	N/A	5.3E-06	mg/kg-day	1.0E-03	mg/kg-day	5.3E-03
				Chromium	2E+02	mg/kg	5.9E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	8.8E-06	6.8E-05	mg/kg-day	3.0E-03	mg/kg-day	2.3E-02
				Cobalt	9E+00	mg/kg	3.2E-07	mg/kg-day	N/A	N/A	N/A	3.7E-06	mg/kg-day	3.0E-04	mg/kg-day	1.2E-02
				Copper	3E+02	mg/kg	1.2E-05	mg/kg-day	N/A	N/A	N/A	1.3E-04	mg/kg-day	4.0E-02	mg/kg-day	3.4E-03
				Iron	2E+04	mg/kg	6.5E-04	mg/kg-day	N/A	N/A	N/A	7.5E-03	mg/kg-day	7.0E-01	mg/kg-day	1.1E-02
				Lead												
				Manganese (other media)	2E+02	mg/kg	8.2E-06	mg/kg-day	N/A	N/A	N/A	9.6E-05	mg/kg-day	7.0E-02	mg/kg-day	1.4E-03
				Mercury (other media)	5E-01	mg/kg	1.8E-08	mg/kg-day	N/A	N/A	N/A	2.2E-07	mg/kg-day	1.0E-04	mg/kg-day	2.2E-03
				Thallium	4E-01	mg/kg	1.2E-08	mg/kg-day	N/A	N/A	N/A	1.4E-07	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	6.6E-07	mg/kg-day	N/A	N/A	N/A	7.8E-06	mg/kg-day	7.0E-03	mg/kg-day	1.1E-03
				Exp. Route Total								1E-05				
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	1.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.9E-07	1.5E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	1.4E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	3.0E-06	1.6E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	1.0E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.2E-07	1.2E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	8.1E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.8E-08	9.5E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	7.0E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	9.8E-09	8.2E-06	mg/kg-day	2.0E-02	mg/kg-day	4.1E-04
				Carbazole	1E-01	mg/kg	7.9E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	1.6E-10	9.2E-08	mg/kg-day	N/A	N/A	N/A

TABLE 7.3.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

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	
				Dibenz(a,h)anthracene	3E-01	mg/kg	1.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	3.5E-07	1.8E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	9E-02	mg/kg	3.9E-09	mg/kg-day	N/A	N/A	N/A	4.6E-08	mg/kg-day	4.0E-03	mg/kg-day	1.1E-05
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	6.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.3E-07	7.0E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	1E+00	mg/kg	7.8E-08	mg/kg-day	N/A	N/A	N/A	9.1E-07	mg/kg-day	3.0E-02	mg/kg-day	3.0E-05
				Aroclor-1242	ND	mg/kg	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				Aroclor-1254	2E-01	mg/kg	9.8E-09	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.0E-08	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	5.7E-03
				Aroclor-1260	2E-01	mg/kg	1.3E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.7E-08	1.6E-07	mg/kg-day	2.0E-05	mg/kg-day	7.8E-03
				Dieldrin	9E-03	mg/kg	3.9E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	6.3E-09	4.6E-09	mg/kg-day	5.0E-05	mg/kg-day	9.2E-05
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				Antimony	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	1E+01	mg/kg	1.6E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	2.4E-07	1.9E-06	mg/kg-day	3.0E-04	mg/kg-day	6.2E-03
				Cadmium (other media)	1E+01	mg/kg	5.7E-09	mg/kg-day	N/A	N/A	N/A	6.7E-08	mg/kg-day	2.5E-05	mg/kg-day	2.7E-03
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
				Cobalt	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Iron	2E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	2E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (other media)	5E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A
				Thallium	4E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
			Exp. Route Total					4E-06					2E-02			
			Exposure Point Total					2E-05					1E-01			
			Exposure Medium Total					N/A					N/A			
Medium Total							N/A					N/A				
Total of Receptor Risks Across All Media							N/A	Total of Receptor Hazards Across All Media					N/A			

TABLE 7.3.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

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	
Soil	Surface/Subsurface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	3E+00	mg/kg	5.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07	6.5E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	5.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.2E-06	6.4E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	5.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07	6.2E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	3.0E-08	mg/kg-day	N/A	N/A	N/A	3.5E-07	mg/kg-day	3.0E-02	mg/kg-day	1.2E-05
				Benzo(k)fluoranthene	2E+00	mg/kg	3.0E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	6.5E-09	3.5E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	2.6E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	3.6E-08	3.0E-05	mg/kg-day	2.0E-02	mg/kg-day	1.5E-03
				Carbazole	2E-01	mg/kg	3.5E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	7.0E-11	4.1E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	7.8E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.7E-07	9.1E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	3.4E-09	mg/kg-day	N/A	N/A	N/A	4.0E-08	mg/kg-day	4.0E-03	mg/kg-day	1.0E-05
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	2.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	5.3E-08	2.8E-07	mg/kg-day	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	1.3E-08	mg/kg-day	N/A	N/A	N/A	1.5E-07	mg/kg-day	2.0E-02	mg/kg-day	7.6E-06
				Phenanthrene	5E+00	mg/kg	8.1E-08	mg/kg-day	N/A	N/A	N/A	9.4E-07	mg/kg-day	3.0E-02	mg/kg-day	3.1E-05
				Aroclor-1242	2E-01	mg/kg	2.9E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	2.9E-09	3.4E-08	mg/kg-day	2.0E-05	mg/kg-day	1.7E-03
				Aroclor-1254	5E-01	mg/kg	8.7E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	8.7E-09	1.0E-07	mg/kg-day	2.0E-05	mg/kg-day	5.1E-03
				Aroclor-1260	7E-01	mg/kg	1.2E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.2E-08	1.4E-07	mg/kg-day	2.0E-05	mg/kg-day	7.2E-03
				Dieldrin	2E-01	mg/kg	2.7E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	4.3E-08	3.2E-08	mg/kg-day	5.0E-05	mg/kg-day	6.3E-04
				Dioxin TEQ	6E-05	mg/kg	1.1E-12	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	1.7E-07	1.3E-11	mg/kg-day	1.0E-09	mg/kg-day	1.3E-02
				Aluminum	7E+03	mg/kg	1.2E-04	mg/kg-day	N/A	N/A	N/A	1.4E-03	mg/kg-day	1.0E+00	mg/kg-day	1.4E-03
				Antimony	4E+01	mg/kg	7.4E-07	mg/kg-day	N/A	N/A	N/A	8.6E-06	mg/kg-day	4.0E-04	mg/kg-day	2.2E-02
				Arsenic	1E+01	mg/kg	2.4E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	3.6E-07	2.8E-06	mg/kg-day	3.0E-04	mg/kg-day	9.4E-03
				Cadmium (other media)	5E+00	mg/kg	9.5E-08	mg/kg-day	N/A	N/A	N/A	1.1E-06	mg/kg-day	1.0E-03	mg/kg-day	1.1E-03
				Chromium	2E+02	mg/kg	3.7E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	5.6E-06	4.4E-05	mg/kg-day	3.0E-03	mg/kg-day	1.5E-02
				Cobalt	6E+00	mg/kg	1.0E-07	mg/kg-day	N/A	N/A	N/A	1.2E-06	mg/kg-day	3.0E-04	mg/kg-day	4.1E-03
				Copper	4E+02	mg/kg	7.2E-06	mg/kg-day	N/A	N/A	N/A	8.4E-05	mg/kg-day	4.0E-02	mg/kg-day	2.1E-03
				Iron	3E+04	mg/kg	5.1E-04	mg/kg-day	N/A	N/A	N/A	5.9E-03	mg/kg-day	7.0E-01	mg/kg-day	8.5E-03
				Lead												
				Manganese (other media)	4E+02	mg/kg	6.7E-06	mg/kg-day	N/A	N/A	N/A	7.8E-05	mg/kg-day	7.0E-02	mg/kg-day	1.1E-03
				Mercury (other media)	1E+00	mg/kg	1.9E-08	mg/kg-day	N/A	N/A	N/A	2.2E-07	mg/kg-day	1.0E-04	mg/kg-day	2.2E-03
				Nickel	5E+01	mg/kg	8.6E-07	mg/kg-day	N/A	N/A	N/A	1.0E-05	mg/kg-day	2.0E-02	mg/kg-day	5.0E-04
				Thallium	2E-01	mg/kg	3.8E-09	mg/kg-day	N/A	N/A	N/A	4.4E-08	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	3.1E-07	mg/kg-day	N/A	N/A	N/A	3.6E-06	mg/kg-day	7.0E-03	mg/kg-day	5.2E-04
				Zinc	9E+02	mg/kg	1.6E-05	mg/kg-day	N/A	N/A	N/A	1.9E-04	mg/kg-day	3.0E-01	mg/kg-day	6.4E-04
			Exp. Route Total								8E-06					1E-01
			Dermal	Benzo(a)anthracene	3E+00	mg/kg	1.3E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.8E-07	1.5E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	1.2E-07	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.7E-06	1.5E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	1.2E-07	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.7E-07	1.4E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	6.9E-08	mg/kg-day	N/A	N/A	N/A	8.1E-07	mg/kg-day	3.0E-02	mg/kg-day	2.7E-05
				Benzo(k)fluoranthene	2E+00	mg/kg	6.8E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.5E-08	8.0E-07	mg/kg-day	N/A	N/A	N/A

TABLE 7.3.CT
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Older Child (wading)

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					
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	4.5E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	6.3E-08	5.3E-05	mg/kg-day	2.0E-02	mg/kg-day	2.6E-03				
				Carbazole	2E-01	mg/kg	8.0E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	1.6E-10	9.4E-08	mg/kg-day	N/A	N/A	N/A				
				Dibenz(a,h)anthracene	4E-01	mg/kg	1.8E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	3.9E-07	2.1E-07	mg/kg-day	N/A	N/A	N/A				
				Dibenzofuran	2E-01	mg/kg	6.0E-09	mg/kg-day	N/A	N/A	N/A	7.0E-08	mg/kg-day	4.0E-03	mg/kg-day	1.8E-05				
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	5.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07	6.5E-07	mg/kg-day	N/A	N/A	N/A				
				Naphthalene	7E-01	mg/kg	3.0E-08	mg/kg-day	N/A	N/A	N/A	3.5E-07	mg/kg-day	2.0E-02	mg/kg-day	1.7E-05				
				Phenanthrene	5E+00	mg/kg	1.8E-07	mg/kg-day	N/A	N/A	N/A	2.2E-06	mg/kg-day	3.0E-02	mg/kg-day	7.2E-05				
								Aroclor-1242	2E-01	mg/kg	7.2E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	7.2E-09	8.4E-08	mg/kg-day	2.0E-05	mg/kg-day	4.2E-03
								Aroclor-1254	5E-01	mg/kg	2.1E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	2.1E-08	2.5E-07	mg/kg-day	2.0E-05	mg/kg-day	1.3E-02
								Aroclor-1260	7E-01	mg/kg	3.0E-08	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	3.0E-08	3.5E-07	mg/kg-day	2.0E-05	mg/kg-day	1.8E-02
								Dieldrin	2E-01	mg/kg	4.8E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	7.6E-08	5.6E-08	mg/kg-day	5.0E-05	mg/kg-day	1.1E-03
								Dioxin TEQ	6E-05	mg/kg	5.7E-13	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	8.9E-08	6.6E-12	mg/kg-day	1.0E-09	mg/kg-day	6.6E-03
								Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
								Antimony	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
								Arsenic	1E+01	mg/kg	1.3E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	1.9E-07	1.5E-06	mg/kg-day	3.0E-04	mg/kg-day	5.0E-03
								Cadmium (other media)	5E+00	mg/kg	1.7E-09	mg/kg-day	N/A	N/A	N/A	2.0E-08	mg/kg-day	2.5E-05	mg/kg-day	7.8E-04
								Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A
								Cobalt	6E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
								Copper	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
								Iron	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
								Lead												
								Manganese (other media)	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
								Mercury (other media)	1E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A
								Nickel	5E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A
								Thallium	2E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
								Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
								Zinc	9E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
							Exp. Route Total								4E-06					5E-02
							Exposure Point Total								1E-05					1E-01
							Exposure Medium Total								N/A					N/A
				Medium Total											N/A					N/A
Leachate	Leachate	Unnamed Island	Dermal	4-Methylphenol	5E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0E-03	mg/kg-day	N/A				
				Acenaphthylene	3E-02	ug/L	2.7E-09	mg/kg-day	N/A	N/A	N/A	3.2E-08	mg/kg-day	6.0E-02	mg/kg-day	5.3E-07				
				Atrazine	1E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A				
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A				
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A				
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A				
				Benzo(g,h,i)perylene	1E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A				
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A				
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	2.9E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	4.1E-09	3.4E-06	mg/kg-day	2.0E-02	mg/kg-day	1.7E-04				

TABLE 7.3.CT
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Older Child (wading)

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	
				Chrysene	3E-02	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenzofuran	3E-01	ug/L	3.7E-08	mg/kg-day	N/A	N/A	N/A	4.3E-07	mg/kg-day	4.0E-03	mg/kg-day	1.1E-04
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	9E-01	ug/L	4.2E-08	mg/kg-day	N/A	N/A	N/A	4.8E-07	mg/kg-day	2.0E-02	mg/kg-day	2.4E-05
				N-Nitrosodiphenylamine	5E+00	ug/L	N/A	N/A	4.9E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Pentachlorophenol	ND	ug/L	N/A	N/A	1.2E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	2E+00	ug/L	8.4E-08	mg/kg-day	5.4E-03	(mg/kg-day) ⁻¹	4.5E-10	9.8E-07	mg/kg-day	7.0E-02	mg/kg-day	1.4E-05
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Chlorobenzene	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Ethylbenzene	ND	ug/L	N/A	N/A	1.1E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.0E-01	mg/kg-day	N/A
				Xylene (total)	1E+00	ug/L	5.2E-08	mg/kg-day	N/A	N/A	N/A	6.0E-07	mg/kg-day	2.0E-01	mg/kg-day	3.0E-06
				Total PCBs	3E+00	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	1E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-BHC	1E-03	ug/L	N/A	N/A	6.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	8.0E-03	mg/kg-day	N/A
				alpha-Chlordane	4E-03	ug/L	5.3E-10	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	1.9E-10	6.2E-09	mg/kg-day	5.0E-04	mg/kg-day	1.2E-05
				Dieldrin	2E-03	ug/L	8.5E-11	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.4E-09	9.9E-10	mg/kg-day	5.0E-05	mg/kg-day	2.0E-05
				Gamma-Chlordane	ND	ug/L	N/A	N/A	3.5E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				Aluminum	1E+02	ug/L	6.4E-08	mg/kg-day	N/A	N/A	N/A	7.5E-07	mg/kg-day	1.0E-02	mg/kg-day	7.5E-05
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A
				Beryllium	2E-01	ug/L	7.1E-11	mg/kg-day	N/A	N/A	N/A	8.2E-10	mg/kg-day	1.4E-05	mg/kg-day	5.9E-05
				Cadmium (other media)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	5E+00	ug/L	4.8E-09	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	1.8E-10	5.6E-08	mg/kg-day	7.5E-05	mg/kg-day	7.5E-04
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	2E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (water)	3E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A

TABLE 7.3.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

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	
				Silver	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-04	mg/kg-day	N/A
				Thallium	1E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
			Exp. Route Total								6E-09					1E-03
		Exposure Point Total									6E-09					1E-03
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Surface Water	Surface Water	Unnamed Island	Dermal (wading)	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(b)fluoranthene	6E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(g,h,i)perylene	5E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+00	ug/L	3.1E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	4.3E-09	3.6E-06	mg/kg-day	2.0E-02	mg/kg-day	1.8E-04
				Chrysene	1E-01	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Indeno(1,2,3-cd)pyrene	5E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	6E-02	ug/L	4.1E-09	mg/kg-day	N/A	N/A	N/A	4.8E-08	mg/kg-day	2.0E-02	mg/kg-day	2.4E-06
				Phenanthrene	1E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				1,4-Dichlorobenzene	ND	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Benzene	ND	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	4.0E-03	mg/kg-day	N/A
				Bromodichloromethane	ND	ug/L	N/A	N/A	6.2E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Aroclor-1260	ND	ug/L	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				4,4'-DDD	3E-03	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDE	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				4,4'-DDT	3E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A
				alpha-Chlordane	1E-03	ug/L	3.0E-10	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	1.1E-10	3.5E-09	mg/kg-day	5.0E-04	mg/kg-day	7.1E-06
				beta-BHC	ND	ug/L	N/A	N/A	1.8E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-04	mg/kg-day	N/A
				Dieldrin	ND	ug/L	N/A	N/A	1.6E+01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-05	mg/kg-day	N/A
				Gamma-Chlordane	4E-03	ug/L	9.2E-10	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	3.2E-10	1.1E-08	mg/kg-day	5.0E-04	mg/kg-day	2.1E-05
				Heptachlor Epoxide	2E-03	ug/L	2.5E-10	mg/kg-day	9.1E+00	(mg/kg-day) ⁻¹	2.3E-09	2.9E-09	mg/kg-day	1.3E-05	mg/kg-day	2.3E-04
				Aluminum	3E+03	ug/L	2.4E-06	mg/kg-day	N/A	N/A	N/A	2.8E-05	mg/kg-day	1.0E-02	mg/kg-day	2.8E-03
				Arsenic	3E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Cadmium (other media)	1E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	1E+01	ug/L	2.0E-08	mg/kg-day	1.3E-02	(mg/kg-day) ⁻¹	7.4E-10	2.3E-07	mg/kg-day	7.5E-05	mg/kg-day	3.1E-03
				Cobalt	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Copper	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Cyanide	4E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A
				Iron	1E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	6E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A

TABLE 7.3.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

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	
				Mercury (water)	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-05	mg/kg-day	N/A
				Vanadium	3E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A	
			Exp. Route Total							8E-09					6E-03	
			Exposure Point Total							8E-09					6E-03	
		Exposure Medium Total							N/A					N/A		
Medium Total											N/A				N/A	
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	2.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	4.4E-08	2.4E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	2.1E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	4.6E-07	2.5E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	1.5E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	3.4E-08	1.8E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	1.2E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	2.7E-09	1.5E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	1.4E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	2.0E-09	1.6E-06	mg/kg-day	2.0E-02	mg/kg-day	8.2E-05
				Carbazole	1E-01	mg/kg	1.2E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	2.4E-11	1.4E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	3E-01	mg/kg	2.4E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	5.3E-08	2.8E-08	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	9E-02	mg/kg	7.9E-10	mg/kg-day	N/A	N/A	N/A	9.2E-09	mg/kg-day	4.0E-03	mg/kg-day	2.3E-06
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	9.2E-09	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.0E-08	1.1E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	1E+00	mg/kg	1.2E-08	mg/kg-day	N/A	N/A	N/A	1.4E-07	mg/kg-day	3.0E-02	mg/kg-day	4.7E-06
				Aroclor-1242	ND	mg/kg	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A
				Aroclor-1254	2E-01	mg/kg	1.4E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.4E-09	1.6E-08	mg/kg-day	2.0E-05	mg/kg-day	8.2E-04
				Aroclor-1260	2E-01	mg/kg	1.9E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.9E-09	2.2E-08	mg/kg-day	2.0E-05	mg/kg-day	1.1E-03
				Dieldrin	9E-03	mg/kg	7.9E-11	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.3E-09	9.2E-10	mg/kg-day	5.0E-05	mg/kg-day	1.8E-05
				Aluminum	7E+03	mg/kg	6.3E-05	mg/kg-day	N/A	N/A	N/A	7.4E-04	mg/kg-day	1.0E+00	mg/kg-day	7.4E-04
				Antimony	9E+00	mg/kg	8.0E-08	mg/kg-day	N/A	N/A	N/A	9.3E-07	mg/kg-day	4.0E-04	mg/kg-day	2.3E-03
				Arsenic	1E+01	mg/kg	1.1E-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	4.1E-03
				Cadmium (other media)	1E+01	mg/kg	1.1E-07	mg/kg-day	N/A	N/A	N/A	1.3E-06	mg/kg-day	1.0E-03	mg/kg-day	1.3E-03
				Chromium	2E+02	mg/kg	1.5E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	2.2E-06	1.7E-05	mg/kg-day	3.0E-03	mg/kg-day	5.7E-03
				Cobalt	9E+00	mg/kg	8.0E-08	mg/kg-day	N/A	N/A	N/A	9.4E-07	mg/kg-day	3.0E-04	mg/kg-day	3.1E-03
				Copper	3E+02	mg/kg	2.9E-06	mg/kg-day	N/A	N/A	N/A	3.4E-05	mg/kg-day	4.0E-02	mg/kg-day	8.4E-04
				Iron	2E+04	mg/kg	1.6E-04	mg/kg-day	N/A	N/A	N/A	1.9E-03	mg/kg-day	7.0E-01	mg/kg-day	2.7E-03
				Lead												
				Manganese (other media)	2E+02	mg/kg	2.1E-06	mg/kg-day	N/A	N/A	N/A	2.4E-05	mg/kg-day	7.0E-02	mg/kg-day	3.4E-04
				Mercury (other media)	5E-01	mg/kg	4.6E-09	mg/kg-day	N/A	N/A	N/A	5.4E-08	mg/kg-day	1.0E-04	mg/kg-day	5.4E-04
				Thallium	4E-01	mg/kg	3.1E-09	mg/kg-day	N/A	N/A	N/A	3.6E-08	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	1.7E-07	mg/kg-day	N/A	N/A	N/A	1.9E-06	mg/kg-day	7.0E-03	mg/kg-day	2.8E-04
				Exp. Route Total								3E-06				
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	6.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.4E-07	7.7E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E+00	mg/kg	6.9E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.5E-06	8.0E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E+00	mg/kg	5.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.1E-07	5.9E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(k)fluoranthene	1E+00	mg/kg	4.1E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	8.9E-09	4.7E-07	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	2E+01	mg/kg	3.5E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	4.9E-09	4.1E-06	mg/kg-day	2.0E-02	mg/kg-day	2.0E-04
				Carbazole	1E-01	mg/kg	3.9E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	7.9E-11	4.6E-08	mg/kg-day	N/A	N/A	N/A

TABLE 7.3.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child (wading)

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					
				Dibenz(a,h)anthracene	3E-01	mg/kg	7.9E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.7E-07	9.2E-08	mg/kg-day	N/A	N/A	N/A				
				Dibenzofuran	9E-02	mg/kg	2.0E-09	mg/kg-day	N/A	N/A	N/A	2.3E-08	mg/kg-day	4.0E-03	mg/kg-day	5.7E-06				
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	3.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	6.6E-08	3.5E-07	mg/kg-day	N/A	N/A	N/A				
				Phenanthrene	1E+00	mg/kg	3.9E-08	mg/kg-day	N/A	N/A	N/A	4.6E-07	mg/kg-day	3.0E-02	mg/kg-day	1.5E-05				
				Aroclor-1242	ND	mg/kg	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.0E-05	mg/kg-day	N/A				
				Aroclor-1254	2E-01	mg/kg	4.9E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	4.9E-09	5.7E-08	mg/kg-day	2.0E-05	mg/kg-day	2.9E-03				
				Aroclor-1260	2E-01	mg/kg	6.7E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	6.7E-09	7.8E-08	mg/kg-day	2.0E-05	mg/kg-day	3.9E-03				
				Dieldrin	9E-03	mg/kg	2.0E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	3.2E-09	2.3E-09	mg/kg-day	5.0E-05	mg/kg-day	4.6E-05				
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A				
				Antimony	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A				
				Arsenic	1E+01	mg/kg	7.9E-08	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	1.2E-07	9.3E-07	mg/kg-day	3.0E-04	mg/kg-day	3.1E-03				
				Cadmium (other media)	1E+01	mg/kg	2.9E-09	mg/kg-day	N/A	N/A	N/A	3.3E-08	mg/kg-day	2.5E-05	mg/kg-day	1.3E-03				
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.5E-05	mg/kg-day	N/A				
				Cobalt	9E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A				
				Copper	3E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A				
				Iron	2E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A				
				Lead																
				Manganese (other media)	2E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A				
				Mercury (other media)	5E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A				
				Thallium	4E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A				
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A				
							Exp. Route Total							2E-06					1E-02	
							Exposure Point Total								5E-06					4E-02
							Exposure Medium Total								N/A					N/A
Medium Total											N/A					N/A				
Total of Receptor Risks Across All Media											N/A	Total of Receptor Hazards Across All Media				N/A				

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the result by the default age-dependent adjustment factor (ADAF) of 3 for an older child (ages 6-12).

Highlighted cancer risk are calculated in Appendix F

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	3E+00	mg/kg	7.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	5.4E-08	5.2E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	7.2E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	5.3E-07	5.0E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	7.0E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	5.1E-08	4.9E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	4.0E-08	mg/kg-day	N/A	N/A	N/A	2.8E-06	mg/kg-day	3.0E-01	mg/kg-day	9.3E-06
				Benzo(k)fluoranthene	2E+00	mg/kg	3.9E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	2.9E-09	2.8E-06	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	3.4E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	4.8E-08	2.4E-04	mg/kg-day	2.0E-02	mg/kg-day	1.2E-02
				Carbazole	2E-01	mg/kg	4.6E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	9.3E-11	3.2E-07	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	1.0E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	7.5E-08	7.2E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	4.5E-09	mg/kg-day	N/A	N/A	N/A	3.2E-07	mg/kg-day	4.0E-03	mg/kg-day	7.9E-05
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	3.2E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.3E-08	2.2E-06	mg/kg-day	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	1.7E-08	mg/kg-day	N/A	N/A	N/A	1.2E-06	mg/kg-day	2.0E-01	mg/kg-day	6.0E-06
				Phenanthrene	5E+00	mg/kg	1.1E-07	mg/kg-day	N/A	N/A	N/A	7.5E-06	mg/kg-day	3.0E-01	mg/kg-day	2.5E-05
				Aroclor-1242	2E-01	mg/kg	3.9E-09	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	7.7E-09	2.7E-07	mg/kg-day	6.0E-05	mg/kg-day	4.5E-03
				Aroclor-1254	5E-01	mg/kg	1.2E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.3E-08	8.1E-07	mg/kg-day	6.0E-05	mg/kg-day	1.3E-02
				Aroclor-1260	7E-01	mg/kg	1.6E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	3.3E-08	1.1E-06	mg/kg-day	6.0E-05	mg/kg-day	1.9E-02
				Dieldrin	2E-01	mg/kg	3.6E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	5.7E-08	2.5E-07	mg/kg-day	5.0E-05	mg/kg-day	5.0E-03
				Dioxin TEQ	6E-05	mg/kg	1.4E-12	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	2.2E-07	1.0E-10	mg/kg-day	2.0E-08	mg/kg-day	5.0E-03
				Aluminum	7E+03	mg/kg	1.6E-04	mg/kg-day	N/A	N/A	N/A	1.1E-02	mg/kg-day	1.0E+00	mg/kg-day	1.1E-02
				Antimony	4E+01	mg/kg	9.8E-07	mg/kg-day	N/A	N/A	N/A	6.8E-05	mg/kg-day	4.0E-04	mg/kg-day	1.7E-01
				Arsenic	1E+01	mg/kg	3.2E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	4.8E-07	2.2E-05	mg/kg-day	3.0E-04	mg/kg-day	7.5E-02
				Cadmium (other media)	5E+00	mg/kg	1.3E-07	mg/kg-day	N/A	N/A	N/A	8.8E-06	mg/kg-day	1.0E-03	mg/kg-day	8.8E-03
				Chromium	2E+02	mg/kg	5.0E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	2.5E-06	3.5E-04	mg/kg-day	9.0E-03	mg/kg-day	3.9E-02
				Cobalt	6E+00	mg/kg	1.4E-07	mg/kg-day	N/A	N/A	N/A	9.6E-06	mg/kg-day	3.0E-03	mg/kg-day	3.2E-03
				Copper	4E+02	mg/kg	9.5E-06	mg/kg-day	N/A	N/A	N/A	6.7E-04	mg/kg-day	4.0E-02	mg/kg-day	1.7E-02
				Iron	3E+04	mg/kg	6.7E-04	mg/kg-day	N/A	N/A	N/A	4.7E-02	mg/kg-day	7.0E-01	mg/kg-day	6.7E-02
				Lead												
				Manganese (other media)	4E+02	mg/kg	8.8E-06	mg/kg-day	N/A	N/A	N/A	6.2E-04	mg/kg-day	7.0E-02	mg/kg-day	8.8E-03
				Mercury (other media)	1E+00	mg/kg	2.5E-08	mg/kg-day	N/A	N/A	N/A	1.7E-06	mg/kg-day	1.0E-04	mg/kg-day	1.7E-02
				Nickel	5E+01	mg/kg	1.1E-06	mg/kg-day	N/A	N/A	N/A	8.0E-05	mg/kg-day	2.0E-02	mg/kg-day	4.0E-03
				Thallium	2E-01	mg/kg	5.0E-09	mg/kg-day	N/A	N/A	N/A	3.5E-07	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	4.1E-07	mg/kg-day	N/A	N/A	N/A	2.9E-05	mg/kg-day	7.0E-03	mg/kg-day	4.1E-03
				Zinc	9E+02	mg/kg	2.2E-05	mg/kg-day	N/A	N/A	N/A	1.5E-03	mg/kg-day	3.0E-01	mg/kg-day	5.1E-03
			Exp. Route Total								4E-06					5E-01
			Dermal	Benzo(a)anthracene	3E+00	mg/kg	2.9E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.1E-08	2.0E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	2.8E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.1E-07	2.0E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	2.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.0E-08	1.9E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	1.6E-08	mg/kg-day	N/A	N/A	N/A	1.1E-06	mg/kg-day	3.0E-01	mg/kg-day	3.6E-06
				Benzo(k)fluoranthene	2E+00	mg/kg	1.5E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.1E-09	1.1E-06	mg/kg-day	N/A	N/A	N/A

TABLE 7.4.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	1.0E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.4E-08	7.1E-05	mg/kg-day	2.0E-02	mg/kg-day	3.6E-03
				Carbazole	2E-01	mg/kg	1.8E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	3.6E-11	1.3E-07	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	4.0E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.9E-08	2.8E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	1.4E-09	mg/kg-day	N/A	N/A	N/A	9.5E-08	mg/kg-day	4.0E-03	mg/kg-day	2.4E-05
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.3E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	9.1E-09	8.8E-07	mg/kg-day	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	6.7E-09	mg/kg-day	N/A	N/A	N/A	4.7E-07	mg/kg-day	2.0E-01	mg/kg-day	2.3E-06
				Phenanthrene	5E+00	mg/kg	4.2E-08	mg/kg-day	N/A	N/A	N/A	2.9E-06	mg/kg-day	3.0E-01	mg/kg-day	9.7E-06
				Aroclor-1242	2E-01	mg/kg	1.6E-09	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	3.2E-09	1.1E-07	mg/kg-day	6.0E-05	mg/kg-day	1.9E-03
				Aroclor-1254	5E-01	mg/kg	4.8E-09	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	9.7E-09	3.4E-07	mg/kg-day	6.0E-05	mg/kg-day	5.6E-03
				Aroclor-1260	7E-01	mg/kg	6.8E-09	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	1.4E-08	4.8E-07	mg/kg-day	6.0E-05	mg/kg-day	8.0E-03
				Dieldrin	2E-01	mg/kg	1.1E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	1.7E-08	7.5E-08	mg/kg-day	5.0E-05	mg/kg-day	1.5E-03
				Dioxin TEQ	6E-05	mg/kg	1.3E-13	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	2.0E-08	9.0E-12	mg/kg-day	2.0E-08	mg/kg-day	4.5E-04
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				Antimony	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	1E+01	mg/kg	2.9E-08	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	4.3E-08	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	6.7E-03
				Cadmium (other media)	5E+00	mg/kg	3.8E-10	mg/kg-day	N/A	N/A	N/A	2.6E-08	mg/kg-day	2.5E-05	mg/kg-day	1.1E-03
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.3E-04	mg/kg-day	N/A
				Cobalt	6E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-03	mg/kg-day	N/A
				Copper	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Iron	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (other media)	1E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A
				Nickel	5E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A
				Thallium	2E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
				Zinc	9E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
			Exp. Route Total								4E-07					3E-02
			Inhalation of fugitive dust													
				Benzo(a)anthracene	3E+00	mg/kg	3.8E-09	ug/m3	1.1E-04	(ug/m3) ⁻¹	4.2E-13	2.7E-07	ug/m3	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	3.7E-09	ug/m3	1.1E-03	(ug/m3) ⁻¹	4.1E-12	2.6E-07	ug/m3	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	3.6E-09	ug/m3	1.1E-04	(ug/m3) ⁻¹	4.0E-13	2.5E-07	ug/m3	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	2.1E-09	ug/m3	N/A	N/A	N/A	1.5E-07	ug/m3	3.0E+00	ug/m3	4.9E-08
				Benzo(k)fluoranthene	2E+00	mg/kg	2.1E-09	ug/m3	1.1E-04	(ug/m3) ⁻¹	2.3E-13	1.4E-07	ug/m3	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	1.8E-07	ug/m3	2.4E-06	(ug/m3) ⁻¹	4.2E-13	1.2E-05	ug/m3	N/A	N/A	N/A
				Carbazole	2E-01	mg/kg	2.4E-10	ug/m3	N/A	N/A	N/A	1.7E-08	ug/m3	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	5.4E-10	ug/m3	1.2E-03	(ug/m3) ⁻¹	6.4E-13	3.8E-08	ug/m3	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	2.4E-10	ug/m3	N/A	N/A	N/A	1.6E-08	ug/m3	N/A	N/A	N/A
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.7E-09	ug/m3	1.1E-04	(ug/m3) ⁻¹	1.8E-13	1.2E-07	ug/m3	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	8.9E-10	ug/m3	3.4E-05	(ug/m3) ⁻¹	3.0E-14	6.3E-08	ug/m3	3.0E+00	ug/m3	2.1E-08

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Phenanthrene	5E+00	mg/kg	5.5E-09	ug/m3	N/A	N/A	N/A	3.9E-07	ug/m3	3.0E+00	ug/m3	1.3E-07
				Aroclor-1242	2E-01	mg/kg	2.0E-10	ug/m3	5.7E-04	(ug/m3) ⁻¹	1.1E-13	1.4E-08	ug/m3	N/A	N/A	N/A
				Aroclor-1254	5E-01	mg/kg	6.0E-10	ug/m3	5.7E-04	(ug/m3) ⁻¹	3.4E-13	4.2E-08	ug/m3	N/A	N/A	N/A
				Aroclor-1260	7E-01	mg/kg	8.5E-10	ug/m3	5.7E-04	(ug/m3) ⁻¹	4.8E-13	5.9E-08	ug/m3	N/A	N/A	N/A
				Dieldrin	2E-01	mg/kg	1.9E-10	ug/m3	4.6E-03	(ug/m3) ⁻¹	8.5E-13	1.3E-08	ug/m3	N/A	N/A	N/A
				Dioxin TEQ	6E-05	mg/kg	7.4E-14	ug/m3	3.8E+01	(ug/m3) ⁻¹	2.8E-12	5.2E-12	ug/m3	4.0E-05	ug/m3	1.3E-07
				Aluminum	7E+03	mg/kg	8.2E-06	ug/m3	N/A	N/A	N/A	5.7E-04	ug/m3	5.0E+00	ug/m3	1.1E-04
				Antimony	4E+01	mg/kg	5.1E-08	ug/m3	N/A	N/A	N/A	3.6E-06	ug/m3	N/A	N/A	N/A
				Arsenic	1E+01	mg/kg	1.7E-08	ug/m3	4.3E-03	(ug/m3) ⁻¹	7.1E-11	1.2E-06	ug/m3	1.5E-02	ug/m3	7.8E-05
				Cadmium (other media)	5E+00	mg/kg	6.5E-09	ug/m3	1.8E-03	(ug/m3) ⁻¹	1.2E-11	4.6E-07	ug/m3	1.0E-02	ug/m3	4.6E-05
				Chromium	2E+02	mg/kg	2.6E-07	ug/m3	8.4E-02	(ug/m3) ⁻¹	2.2E-08	1.8E-05	ug/m3	3.0E-01	ug/m3	6.0E-05
				Cobalt	6E+00	mg/kg	7.2E-09	ug/m3	9.0E-03	(ug/m3) ⁻¹	6.4E-11	5.0E-07	ug/m3	2.0E-02	ug/m3	2.5E-05
				Copper	4E+02	mg/kg	5.0E-07	ug/m3	N/A	N/A	N/A	3.5E-05	ug/m3	N/A	N/A	N/A
				Iron	3E+04	mg/kg	3.5E-05	ug/m3	N/A	N/A	N/A	2.5E-03	ug/m3	N/A	N/A	N/A
				Lead												
				Manganese (other media)	4E+02	mg/kg	4.6E-07	ug/m3	N/A	N/A	N/A	3.2E-05	ug/m3	5.0E-02	ug/m3	6.4E-04
				Mercury (other media)	1E+00	mg/kg	1.3E-09	ug/m3	N/A	N/A	N/A	9.0E-08	ug/m3	3.0E-02	ug/m3	3.0E-06
				Nickel	5E+01	mg/kg	5.9E-08	ug/m3	2.6E-04	(ug/m3) ⁻¹	1.5E-11	4.2E-06	ug/m3	2.0E-01	ug/m3	2.1E-05
				Thallium	2E-01	mg/kg	2.6E-10	ug/m3	N/A	N/A	N/A	1.8E-08	ug/m3	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	2.1E-08	ug/m3	N/A	N/A	N/A	1.5E-06	ug/m3	N/A	N/A	N/A
				Zinc	9E+02	mg/kg	1.1E-06	ug/m3	N/A	N/A	N/A	7.9E-05	ug/m3	N/A	N/A	N/A
			Exp. Route Total								2E-08					1E-03
		Exposure Point Total									5E-06					5E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Leachate	Leachate	Unnamed Island	Dermal	4-Methylphenol	5E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0E-03	mg/kg-day	N/A
				Acenaphthylene	3E-02	ug/L	3.8E-10	mg/kg-day	N/A	N/A	N/A	2.6E-08	mg/kg-day	6.0E-01	mg/kg-day	4.4E-08
				Atrazine	3E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(g,h,i)perylene	1E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	4.1E-08	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	5.8E-10	2.9E-06	mg/kg-day	2.0E-02	mg/kg-day	1.4E-04
				Chrysene	3E-02	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenzofuran	3E-01	ug/L	5.1E-09	mg/kg-day	N/A	N/A	N/A	3.6E-07	mg/kg-day	4.0E-03	mg/kg-day	9.0E-05
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	9E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-01	mg/kg-day	N/A
				N-Nitrosodiphenylamine	5E+00	ug/L	N/A	N/A	4.9E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7.4.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 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		Hazard Quotient	
							Value	Units	Value	Units		Value	Units	Value	Units		
				Pentachlorophenol	ND	ug/L	N/A	N/A	1.2E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A	
				1,4-Dichlorobenzene	2E+00	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A	
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.2E-02	mg/kg-day	N/A	
				Chlorobenzene	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A	
				Ethylbenzene	ND	ug/L	N/A	N/A	1.1E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.0E+00	mg/kg-day	N/A	
				Xylene (total)	1E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-01	mg/kg-day	N/A	
				Total PCBs	3E+00	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A	
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				4,4'-DDE	1E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				4,4'-DDT	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A	
				alpha-BHC	1E-03	ug/L	N/A	N/A	6.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	8.0E-03	mg/kg-day	N/A	
				alpha-Chlordane	4E-03	ug/L	7.4E-11	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	2.6E-11	5.2E-09	mg/kg-day	5.0E-04	mg/kg-day	1.0E-05	
				Dieldrin	2E-03	ug/L	N/A	N/A	1.6E+01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-05	mg/kg-day	N/A	
				Gamma-Chlordane	ND	ug/L	N/A	N/A	3.5E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A	
				Aluminum	1E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A	
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A	
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A	
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A	
				Beryllium	2E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-05	mg/kg-day	N/A	
				Cadmium (other media)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A	
				Chromium	5E+00	ug/L	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.3E-04	mg/kg-day	N/A	
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-03	mg/kg-day	N/A	
				Copper	2E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A	
				Cyanide	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A	
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A	
				Lead													
				Manganese (other media)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A	
				Mercury (water)	3E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-04	mg/kg-day	N/A	
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A	
				Silver	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-04	mg/kg-day	N/A	
				Thallium	6E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
				Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A	
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A	
				Exp. Route Total							6E-10					2E-04	
				Exposure Point Total							6E-10					2E-04	
				Exposure Medium Total							N/A					N/A	
Medium Total										N/A					N/A		

TABLE 7.4.RME
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Outdoor (Trench) Air	Unnamed Island	Inhalation	1,1'-Biphenyl	4E-02	ug/m ³	6.9E-05	ug/m3	N/A	N/A	N/A	4.9E-03	ug/m3	N/A	N/A	N/A
				2-Methylnaphthalene	5E-01	ug/m ³	7.3E-04	ug/m3	N/A	N/A	N/A	5.1E-02	ug/m3	3.0E+00	ug/m3	1.7E-02
				Acenaphthene	4E-02	ug/m ³	6.5E-05	ug/m3	N/A	N/A	N/A	4.5E-03	ug/m3	3.0E+00	ug/m3	1.5E-03
				Acenaphthylene	1E-01	ug/m ³	1.9E-04	ug/m3	N/A	N/A	N/A	1.3E-02	ug/m3	3.0E+00	ug/m3	4.5E-03
				Acetophenone	1E-01	ug/m ³	2.3E-04	ug/m3	N/A	N/A	N/A	1.6E-02	ug/m3	N/A	N/A	N/A
				Benzaldehyde	6E-01	ug/m ³	9.8E-04	ug/m3	N/A	N/A	N/A	6.9E-02	ug/m3	N/A	N/A	N/A
				Naphthalene	2E+00	ug/m ³	2.4E-03	ug/m3	3.4E-05	(ug/m3) ⁻¹	8.3E-08	1.7E-01	ug/m3	3.0E+00	ug/m3	5.7E-02
				Nitrobenzene	2E+00	ug/m ³	2.7E-03	ug/m3	4.0E-05	(ug/m3) ⁻¹	1.1E-07	1.9E-01	ug/m3	9.0E+00	ug/m3	2.1E-02
				Phenanthrene	1E-01	ug/m ³	2.1E-04	ug/m3	N/A	N/A	N/A	1.5E-02	ug/m3	3.0E+00	ug/m3	4.9E-03
				1,1-Dichloroethene	2E+01	ug/m ³	3.7E-02	ug/m3	N/A	N/A	N/A	2.6E+00	ug/m3	2.0E+02	ug/m3	1.3E-02
				1,4-Dichlorobenzene	3E+00	ug/m ³	5.0E-03	ug/m3	1.1E-05	(ug/m3) ⁻¹	5.5E-08	3.5E-01	ug/m3	2.4E+03	ug/m3	1.5E-04
				Benzene	4E+00	ug/m ³	6.4E-03	ug/m3	7.8E-06	(ug/m3) ⁻¹	5.0E-08	4.5E-01	ug/m3	9.0E+01	ug/m3	5.0E-03
				Carbon disulfide	3E+01	ug/m ³	5.2E-02	ug/m3	N/A	N/A	N/A	3.6E+00	ug/m3	7.0E+02	ug/m3	5.2E-03
				Carbon tetrachloride	4E+00	ug/m ³	7.2E-03	ug/m3	6.0E-06	(ug/m3) ⁻¹	4.3E-08	5.0E-01	ug/m3	1.0E+02	ug/m3	5.0E-03
				Chlorobenzene	4E+00	ug/m ³	5.9E-03	ug/m3	N/A	N/A	N/A	4.1E-01	ug/m3	5.0E+02	ug/m3	8.2E-04
				Cyclohexane, methyl-	1E+02	ug/m ³	1.7E-01	ug/m3	N/A	N/A	N/A	1.2E+01	ug/m3	3.0E+03	ug/m3	4.1E-03
				Dichlorodifluoromethane	1E+01	ug/m ³	1.9E-02	ug/m3	N/A	N/A	N/A	1.4E+00	ug/m3	2.0E+03	ug/m3	6.8E-04
				Methyl acetate	1E+01	ug/m ³	1.9E-02	ug/m3	N/A	N/A	N/A	1.3E+00	ug/m3	N/A	N/A	N/A
				Methylene chloride	6E+00	ug/m ³	1.1E-02	ug/m3	4.7E-07	(ug/m3) ⁻¹	5.0E-09	7.4E-01	ug/m3	1.0E+03	ug/m3	7.4E-04
				Tetrachloroethene	5E+00	ug/m ³	8.0E-03	ug/m3	5.9E-06	(ug/m3) ⁻¹	4.7E-08	5.6E-01	ug/m3	2.7E+02	ug/m3	2.1E-03
				Trichloroethene	3E+00	ug/m ³	4.3E-03	ug/m3	2.0E-06	(ug/m3) ⁻¹	8.6E-09	3.0E-01	ug/m3	1.0E+02	ug/m3	3.0E-03
				Xylene (Total)	3E+00	ug/m ³	4.5E-03	ug/m3	N/A	N/A	N/A	3.1E-01	ug/m3	3.0E+02	ug/m3	1.0E-03
			Exp. Route Total								4E-07					1E-01
		Exposure Point Total									4E-07					1E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Groundwater	Groundwater	Shallow Groundwater	Ingestion	Atrazine	3E+00	ug/L	1.1E-08	mg/kg-day	2.3E-01	(mg/kg-day) ⁻¹	2.6E-09	7.8E-07	mg/kg-day	3.5E-02	mg/kg-day	2.2E-05
				Benzo(a)anthracene	4E-02	ug/L	1.6E-10	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.1E-10	1.1E-08	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E-02	ug/L	5.8E-11	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	4.3E-10	4.1E-09	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	9.8E-09	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	1.4E-10	6.9E-07	mg/kg-day	2.0E-02	mg/kg-day	3.4E-05
				Dibenzofuran	3E-01	ug/L	9.9E-10	mg/kg-day	N/A	N/A	N/A	6.9E-08	mg/kg-day	4.0E-03	mg/kg-day	1.7E-05
				Naphthalene	9E-01	ug/L	3.2E-09	mg/kg-day	N/A	N/A	N/A	2.3E-07	mg/kg-day	2.0E-01	mg/kg-day	1.1E-06
				N-Nitrosodiphenylamine	5E+00	ug/L	1.6E-08	mg/kg-day	4.9E-03	(mg/kg-day) ⁻¹	8.0E-11	1.1E-06	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	3E-01	ug/L	9.6E-10	mg/kg-day	N/A	N/A	N/A	6.7E-08	mg/kg-day	3.0E-01	mg/kg-day	2.2E-07
				1,4-Dichlorobenzene	2E+00	ug/L	6.4E-09	mg/kg-day	5.4E-03	(mg/kg-day) ⁻¹	3.5E-11	4.5E-07	mg/kg-day	7.0E-02	mg/kg-day	6.4E-06
				Benzene	4E+00	ug/L	1.4E-08	mg/kg-day	5.5E-02	(mg/kg-day) ⁻¹	7.5E-10	9.5E-07	mg/kg-day	1.2E-02	mg/kg-day	7.9E-05
				Chlorobenzene	1E+01	ug/L	4.2E-08	mg/kg-day	N/A	N/A	N/A	2.9E-06	mg/kg-day	7.0E-02	mg/kg-day	4.2E-05
				Aroclor-1242	3E-01	ug/L	9.8E-10	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	2.0E-09	6.8E-08	mg/kg-day	6.0E-05	mg/kg-day	1.1E-03

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Aroclor-1254	4E+00	ug/L	1.5E-08	mg/kg-day	2.0E+00	(mg/kg-day) ⁻¹	3.0E-08	1.0E-06	mg/kg-day	6.0E-05	mg/kg-day	1.7E-02
				Antimony	2E+00	ug/L	7.1E-09	mg/kg-day	N/A	N/A	N/A	5.0E-07	mg/kg-day	4.0E-04	mg/kg-day	1.2E-03
				Arsenic	4E+00	ug/L	1.4E-08	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	2.2E-08	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	3.4E-03
				Barium	7E+02	ug/L	2.3E-06	mg/kg-day	N/A	N/A	N/A	1.6E-04	mg/kg-day	2.0E-01	mg/kg-day	8.2E-04
				Cadmium (drinking water)	8E+00	ug/L	2.9E-08	mg/kg-day	N/A	N/A	N/A	2.0E-06	mg/kg-day	5.0E-04	mg/kg-day	4.1E-03
				Chromium	5E+00	ug/L	1.8E-08	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	8.9E-09	1.2E-06	mg/kg-day	9.0E-03	mg/kg-day	1.4E-04
				Cobalt	1E+01	ug/L	4.4E-08	mg/kg-day	N/A	N/A	N/A	3.1E-06	mg/kg-day	3.0E-03	mg/kg-day	1.0E-03
				Iron	4E+04	ug/L	1.5E-04	mg/kg-day	N/A	N/A	N/A	1.0E-02	mg/kg-day	7.0E-01	mg/kg-day	1.5E-02
				Lead												
				Manganese (drinking water)	1E+03	ug/L	3.8E-06	mg/kg-day	N/A	N/A	N/A	2.6E-04	mg/kg-day	2.4E-02	mg/kg-day	1.1E-02
				Nickel	4E+01	ug/L	1.4E-07	mg/kg-day	N/A	N/A	N/A	1.0E-05	mg/kg-day	2.0E-02	mg/kg-day	5.0E-04
				Thallium	6E+00	ug/L	2.0E-08	mg/kg-day	N/A	N/A	N/A	1.4E-06	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+00	ug/L	6.5E-09	mg/kg-day	N/A	N/A	N/A	4.5E-07	mg/kg-day	7.0E-03	mg/kg-day	6.5E-05
				Zinc	1E+03	ug/L	4.4E-06	mg/kg-day	N/A	N/A	N/A	3.1E-04	mg/kg-day	3.0E-01	mg/kg-day	1.0E-03
			Exp. Route Total								7E-08					6E-02
			Dermal													
				Atrazine	3E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	4.1E-08	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	5.8E-10	2.9E-06	mg/kg-day	2.0E-02	mg/kg-day	1.4E-04
				Dibenzofuran	3E-01	ug/L	5.1E-09	mg/kg-day	N/A	N/A	N/A	3.6E-07	mg/kg-day	4.0E-03	mg/kg-day	9.0E-05
				Naphthalene	9E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-01	mg/kg-day	N/A
				N-Nitrosodiphenylamine	5E+00	ug/L	N/A	N/A	4.9E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
				1,4-Dichlorobenzene	2E+00	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.2E-02	mg/kg-day	N/A
				Chlorobenzene	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Aroclor-1242	3E-01	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Aroclor-1254	4E+00	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A
				Cadmium (drinking water)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	5E+00	ug/L	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.3E-04	mg/kg-day	N/A
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-03	mg/kg-day	N/A
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (drinking water)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A
				Thallium	6E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7.4.RME
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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		Hazard Quotient	
							Value	Units	Value	Units		Value	Units	Value	Units		
			Exp. Route Total	Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A	
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A		
									6E-10							2E-04	
									7E-08							6E-02	
		Exposure Point Total												N/A			
	Exposure Medium Total												N/A				
Medium Total														N/A			
Total of Receptor Risks Across All Media							N/A					Total of Receptor Hazards Across All Media					N/A

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Surface/Subsurface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	3E+00	mg/kg	3.7E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.7E-08	2.6E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	3.6E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.6E-07	2.5E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	3.5E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	2.5E-08	2.4E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	2.0E-08	mg/kg-day	N/A	N/A	N/A	1.4E-06	mg/kg-day	3.0E-01	mg/kg-day	4.6E-06
				Benzo(k)fluoranthene	2E+00	mg/kg	2.0E-08	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	1.4E-09	1.4E-06	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	1.7E-06	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	2.4E-08	1.2E-04	mg/kg-day	2.0E-02	mg/kg-day	5.9E-03
				Carbazole	2E-01	mg/kg	2.3E-09	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	4.6E-11	1.6E-07	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	5.1E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	3.7E-08	3.6E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	2.2E-09	mg/kg-day	N/A	N/A	N/A	1.6E-07	mg/kg-day	4.0E-03	mg/kg-day	3.9E-05
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.6E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.2E-08	1.1E-06	mg/kg-day	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	8.5E-09	mg/kg-day	N/A	N/A	N/A	6.0E-07	mg/kg-day	2.0E-01	mg/kg-day	3.0E-06
				Phenanthrene	5E+00	mg/kg	5.3E-08	mg/kg-day	N/A	N/A	N/A	3.7E-06	mg/kg-day	3.0E-01	mg/kg-day	1.2E-05
				Aroclor-1242	2E-01	mg/kg	1.9E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.9E-09	1.3E-07	mg/kg-day	6.0E-05	mg/kg-day	2.2E-03
				Aroclor-1254	5E-01	mg/kg	5.7E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	5.7E-09	4.0E-07	mg/kg-day	6.0E-05	mg/kg-day	6.7E-03
				Aroclor-1260	7E-01	mg/kg	8.1E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	8.1E-09	5.7E-07	mg/kg-day	6.0E-05	mg/kg-day	9.4E-03
				Dieldrin	2E-01	mg/kg	1.8E-09	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	2.8E-08	1.2E-07	mg/kg-day	5.0E-05	mg/kg-day	2.5E-03
				Dioxin TEQ	6E-05	mg/kg	7.1E-13	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	1.1E-07	4.9E-11	mg/kg-day	2.0E-08	mg/kg-day	2.5E-03
				Aluminum	7E+03	mg/kg	7.8E-05	mg/kg-day	N/A	N/A	N/A	5.5E-03	mg/kg-day	1.0E+00	mg/kg-day	5.5E-03
				Antimony	4E+01	mg/kg	4.9E-07	mg/kg-day	N/A	N/A	N/A	3.4E-05	mg/kg-day	4.0E-04	mg/kg-day	8.5E-02
				Arsenic	1E+01	mg/kg	1.6E-07	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	2.4E-07	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	3.7E-02
				Cadmium (other media)	5E+00	mg/kg	6.2E-08	mg/kg-day	N/A	N/A	N/A	4.4E-06	mg/kg-day	1.0E-03	mg/kg-day	4.4E-03
				Chromium	2E+02	mg/kg	2.5E-06	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	1.2E-06	1.7E-04	mg/kg-day	9.0E-03	mg/kg-day	1.9E-02
				Cobalt	6E+00	mg/kg	6.8E-08	mg/kg-day	N/A	N/A	N/A	4.8E-06	mg/kg-day	3.0E-03	mg/kg-day	1.6E-03
				Copper	4E+02	mg/kg	4.7E-06	mg/kg-day	N/A	N/A	N/A	3.3E-04	mg/kg-day	4.0E-02	mg/kg-day	8.3E-03
				Iron	3E+04	mg/kg	3.3E-04	mg/kg-day	N/A	N/A	N/A	2.3E-02	mg/kg-day	7.0E-01	mg/kg-day	3.3E-02
				Lead												
				Manganese (other media)	4E+02	mg/kg	4.4E-06	mg/kg-day	N/A	N/A	N/A	3.1E-04	mg/kg-day	7.0E-02	mg/kg-day	4.4E-03
				Mercury (other media)	1E+00	mg/kg	1.2E-08	mg/kg-day	N/A	N/A	N/A	8.6E-07	mg/kg-day	1.0E-04	mg/kg-day	8.6E-03
				Nickel	5E+01	mg/kg	5.7E-07	mg/kg-day	N/A	N/A	N/A	4.0E-05	mg/kg-day	2.0E-02	mg/kg-day	2.0E-03
				Thallium	2E-01	mg/kg	2.5E-09	mg/kg-day	N/A	N/A	N/A	1.7E-07	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	2.1E-07	mg/kg-day	N/A	N/A	N/A	1.4E-05	mg/kg-day	7.0E-03	mg/kg-day	2.1E-03
				Zinc	9E+02	mg/kg	1.1E-05	mg/kg-day	N/A	N/A	N/A	7.5E-04	mg/kg-day	3.0E-01	mg/kg-day	2.5E-03
Exp. Route Total											2E-06					2E-01
Dermal																
				Benzo(a)anthracene	3E+00	mg/kg	1.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	1.0E-08	1.0E-06	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	1.4E-08	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.0E-07	9.8E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	1.4E-08	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	9.9E-09	9.5E-07	mg/kg-day	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	7.7E-09	mg/kg-day	N/A	N/A	N/A	5.4E-07	mg/kg-day	3.0E-01	mg/kg-day	1.8E-06
				Benzo(k)fluoranthene	2E+00	mg/kg	7.6E-09	mg/kg-day	7.3E-02	(mg/kg-day) ⁻¹	5.6E-10	5.3E-07	mg/kg-day	N/A	N/A	N/A

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	5.1E-07	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	7.1E-09	3.5E-05	mg/kg-day	2.0E-02	mg/kg-day	1.8E-03
				Carbazole	2E-01	mg/kg	9.0E-10	mg/kg-day	2.0E-02	(mg/kg-day) ⁻¹	1.8E-11	6.3E-08	mg/kg-day	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	2.0E-09	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	1.5E-08	1.4E-07	mg/kg-day	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	6.7E-10	mg/kg-day	N/A	N/A	N/A	4.7E-08	mg/kg-day	4.0E-03	mg/kg-day	1.2E-05
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	6.2E-09	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	4.5E-09	4.3E-07	mg/kg-day	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	3.3E-09	mg/kg-day	N/A	N/A	N/A	2.3E-07	mg/kg-day	2.0E-01	mg/kg-day	1.2E-06
				Phenanthrene	5E+00	mg/kg	2.1E-08	mg/kg-day	N/A	N/A	N/A	1.4E-06	mg/kg-day	3.0E-01	mg/kg-day	4.8E-06
				Aroclor-1242	2E-01	mg/kg	8.0E-10	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	8.0E-10	5.6E-08	mg/kg-day	6.0E-05	mg/kg-day	9.4E-04
				Aroclor-1254	5E-01	mg/kg	2.4E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	2.4E-09	1.7E-07	mg/kg-day	6.0E-05	mg/kg-day	2.8E-03
				Aroclor-1260	7E-01	mg/kg	3.4E-09	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	3.4E-09	2.4E-07	mg/kg-day	6.0E-05	mg/kg-day	4.0E-03
				Dieldrin	2E-01	mg/kg	5.3E-10	mg/kg-day	1.6E+01	(mg/kg-day) ⁻¹	8.5E-09	3.7E-08	mg/kg-day	5.0E-05	mg/kg-day	7.4E-04
				Dioxin TEQ	6E-05	mg/kg	6.4E-14	mg/kg-day	1.6E+05	(mg/kg-day) ⁻¹	9.9E-09	4.4E-12	mg/kg-day	2.0E-08	mg/kg-day	2.2E-04
				Aluminum	7E+03	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A
				Antimony	4E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	1E+01	mg/kg	1.4E-08	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	2.1E-08	1.0E-06	mg/kg-day	3.0E-04	mg/kg-day	3.3E-03
				Cadmium (other media)	5E+00	mg/kg	1.9E-10	mg/kg-day	N/A	N/A	N/A	1.3E-08	mg/kg-day	2.5E-05	mg/kg-day	5.2E-04
				Chromium	2E+02	mg/kg	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.3E-04	mg/kg-day	N/A
				Cobalt	6E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-03	mg/kg-day	N/A
				Copper	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A
				Iron	3E+04	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (other media)	4E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Mercury (other media)	1E+00	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-04	mg/kg-day	N/A
				Nickel	5E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A
				Thallium	2E-01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A
				Zinc	9E+02	mg/kg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
			Exp. Route Total								2E-07					1E-02
			Inhalation of fugitive dust													
				Benzo(a)anthracene	3E+00	mg/kg	1.9E-09	ug/m3	1.1E-04	(ug/m3) ⁻¹	2.1E-13	1.3E-07	ug/m3	N/A	N/A	N/A
				Benzo(a)pyrene	3E+00	mg/kg	1.9E-09	ug/m3	1.1E-03	(ug/m3) ⁻¹	2.0E-12	1.3E-07	ug/m3	N/A	N/A	N/A
				Benzo(b)fluoranthene	3E+00	mg/kg	1.8E-09	ug/m3	1.1E-04	(ug/m3) ⁻¹	2.0E-13	1.3E-07	ug/m3	N/A	N/A	N/A
				Benzo(g,h,i)perylene	2E+00	mg/kg	1.0E-09	ug/m3	N/A	N/A	N/A	7.2E-08	ug/m3	3.0E+00	ug/m3	2.4E-08
				Benzo(k)fluoranthene	2E+00	mg/kg	1.0E-09	ug/m3	1.1E-04	(ug/m3) ⁻¹	1.1E-13	7.1E-08	ug/m3	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	1E+02	mg/kg	8.8E-08	ug/m3	2.4E-06	(ug/m3) ⁻¹	2.1E-13	6.1E-06	ug/m3	N/A	N/A	N/A
				Carbazole	2E-01	mg/kg	1.2E-10	ug/m3	N/A	N/A	N/A	8.4E-09	ug/m3	N/A	N/A	N/A
				Dibenz(a,h)anthracene	4E-01	mg/kg	2.7E-10	ug/m3	1.2E-03	(ug/m3) ⁻¹	3.2E-13	1.9E-08	ug/m3	N/A	N/A	N/A
				Dibenzofuran	2E-01	mg/kg	1.2E-10	ug/m3	N/A	N/A	N/A	8.2E-09	ug/m3	N/A	N/A	N/A
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	8.3E-10	ug/m3	1.1E-04	(ug/m3) ⁻¹	9.1E-14	5.8E-08	ug/m3	N/A	N/A	N/A
				Naphthalene	7E-01	mg/kg	4.4E-10	ug/m3	3.4E-05	(ug/m3) ⁻¹	1.5E-14	3.1E-08	ug/m3	3.0E+00	ug/m3	1.0E-08

TABLE 7.4.CT
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Phenanthrene	5E+00	mg/kg	2.8E-09	ug/m3	N/A	N/A	N/A	1.9E-07	ug/m3	3.0E+00	ug/m3	6.4E-08
				Aroclor-1242	2E-01	mg/kg	9.9E-11	ug/m3	5.7E-04	(ug/m3) ⁻¹	5.7E-14	7.0E-09	ug/m3	N/A	N/A	N/A
				Aroclor-1254	5E-01	mg/kg	3.0E-10	ug/m3	5.7E-04	(ug/m3) ⁻¹	1.7E-13	2.1E-08	ug/m3	N/A	N/A	N/A
				Aroclor-1260	7E-01	mg/kg	4.2E-10	ug/m3	5.7E-04	(ug/m3) ⁻¹	2.4E-13	2.9E-08	ug/m3	N/A	N/A	N/A
				Dieldrin	2E-01	mg/kg	9.2E-11	ug/m3	4.6E-03	(ug/m3) ⁻¹	4.2E-13	6.5E-09	ug/m3	N/A	N/A	N/A
				Dioxin TEQ	6E-05	mg/kg	3.7E-14	ug/m3	3.8E+01	(ug/m3) ⁻¹	1.4E-12	2.6E-12	ug/m3	4.0E-05	ug/m3	6.4E-08
				Aluminum	7E+03	mg/kg	4.1E-06	ug/m3	N/A	N/A	N/A	2.8E-04	ug/m3	5.0E+00	ug/m3	5.7E-05
				Antimony	4E+01	mg/kg	2.5E-08	ug/m3	N/A	N/A	N/A	1.8E-06	ug/m3	N/A	N/A	N/A
				Arsenic	1E+01	mg/kg	8.2E-09	ug/m3	4.3E-03	(ug/m3) ⁻¹	3.5E-11	5.8E-07	ug/m3	1.5E-02	ug/m3	3.8E-05
				Cadmium (other media)	5E+00	mg/kg	3.2E-09	ug/m3	1.8E-03	(ug/m3) ⁻¹	5.8E-12	2.3E-07	ug/m3	1.0E-02	ug/m3	2.3E-05
				Chromium	2E+02	mg/kg	1.3E-07	ug/m3	8.4E-02	(ug/m3) ⁻¹	1.1E-08	8.9E-06	ug/m3	3.0E-01	ug/m3	3.0E-05
				Cobalt	6E+00	mg/kg	3.6E-09	ug/m3	9.0E-03	(ug/m3) ⁻¹	3.2E-11	2.5E-07	ug/m3	2.0E-02	ug/m3	1.2E-05
				Copper	4E+02	mg/kg	2.5E-07	ug/m3	N/A	N/A	N/A	1.7E-05	ug/m3	N/A	N/A	N/A
				Iron	3E+04	mg/kg	1.7E-05	ug/m3	N/A	N/A	N/A	1.2E-03	ug/m3	N/A	N/A	N/A
				Lead												
				Manganese (other media)	4E+02	mg/kg	2.3E-07	ug/m3	N/A	N/A	N/A	1.6E-05	ug/m3	5.0E-02	ug/m3	3.2E-04
				Mercury (other media)	1E+00	mg/kg	6.4E-10	ug/m3	N/A	N/A	N/A	4.5E-08	ug/m3	3.0E-02	ug/m3	1.5E-06
				Nickel	5E+01	mg/kg	2.9E-08	ug/m3	2.6E-04	(ug/m3) ⁻¹	7.6E-12	2.1E-06	ug/m3	2.0E-01	ug/m3	1.0E-05
				Thallium	2E-01	mg/kg	1.3E-10	ug/m3	N/A	N/A	N/A	9.1E-09	ug/m3	N/A	N/A	N/A
				Vanadium	2E+01	mg/kg	1.1E-08	ug/m3	N/A	N/A	N/A	7.5E-07	ug/m3	N/A	N/A	N/A
				Zinc	9E+02	mg/kg	5.6E-07	ug/m3	N/A	N/A	N/A	3.9E-05	ug/m3	N/A	N/A	N/A
			Exp. Route Total								1E-08					5E-04
		Exposure Point Total									2E-06					3E-01
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Leachate	Leachate	Unnamed Island	Dermal	4-Methylphenol	5E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	5.0E-03	mg/kg-day	N/A
				Acenaphthylene	3E-02	ug/L	1.9E-10	mg/kg-day	N/A	N/A	N/A	1.3E-08	mg/kg-day	6.0E-01	mg/kg-day	2.2E-08
				Atrazine	1E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(g,h,i)perylene	1E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	2.0E-08	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	2.9E-10	1.4E-06	mg/kg-day	2.0E-02	mg/kg-day	7.1E-05
				Chrysene	3E-02	ug/L	N/A	N/A	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Dibenzofuran	3E-01	ug/L	2.5E-09	mg/kg-day	N/A	N/A	N/A	1.8E-07	mg/kg-day	4.0E-03	mg/kg-day	4.4E-05
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Naphthalene	9E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-01	mg/kg-day	N/A
				N-Nitrosodiphenylamine	5E+00	ug/L	N/A	N/A	4.9E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7.4.CT
 CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 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		Hazard Quotient	
							Value	Units	Value	Units		Value	Units	Value	Units		
				Pentachlorophenol	ND	ug/L	N/A	N/A	1.2E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	3.0E-02	mg/kg-day	N/A
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A	
				1,4-Dichlorobenzene	2E+00	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A	
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.2E-02	mg/kg-day	N/A	
				Chlorobenzene	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A	
				Ethylbenzene	ND	ug/L	N/A	N/A	1.1E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.0E+00	mg/kg-day	N/A	
				Xylene (total)	1E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-01	mg/kg-day	N/A	
				Total PCBs	3E+00	ug/L	N/A	N/A	2.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A	
				4,4'-DDD	1E-02	ug/L	N/A	N/A	2.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				4,4'-DDE	1E-03	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A	
				4,4'-DDT	ND	ug/L	N/A	N/A	3.4E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A	
				alpha-BHC	1E-03	ug/L	N/A	N/A	6.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	8.0E-03	mg/kg-day	N/A	
				alpha-Chlordane	4E-03	ug/L	3.7E-11	mg/kg-day	3.5E-01	(mg/kg-day) ⁻¹	1.3E-11	2.6E-09	mg/kg-day	5.0E-04	mg/kg-day	5.1E-06	
				Dieldrin	2E-03	ug/L	N/A	N/A	1.6E+01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-05	mg/kg-day	N/A	
				Gamma-Chlordane	ND	ug/L	N/A	N/A	3.5E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	5.0E-04	mg/kg-day	N/A	
				Aluminum	1E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.0E-02	mg/kg-day	N/A	
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A	
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A	
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A	
				Beryllium	2E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-05	mg/kg-day	N/A	
				Cadmium (other media)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A	
				Chromium	5E+00	ug/L	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.3E-04	mg/kg-day	N/A	
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-03	mg/kg-day	N/A	
				Copper	2E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	4.0E-02	mg/kg-day	N/A	
				Cyanide	ND	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-02	mg/kg-day	N/A	
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A	
				Lead													
				Manganese (other media)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A	
				Mercury (water)	3E-02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.1E-04	mg/kg-day	N/A	
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A	
				Silver	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-04	mg/kg-day	N/A	
				Thallium	1E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
				Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A	
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A	
			Exp. Route Total							3E-10				1E-04			
			Exposure Point Total							3E-10				1E-04			
			Exposure Medium Total							N/A				N/A			
Medium Total									N/A				N/A				

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
Soil	Outdoor (Trench) Air	Unnamed Island	Inhalation	1,1'-Biphenyl	4E-02	ug/m ³	3.4E-05	ug/m3	N/A	N/A	N/A	2.4E-03	ug/m3	N/A	N/A	N/A
				2-Methylnaphthalene	5E-01	ug/m ³	3.6E-04	ug/m3	N/A	N/A	N/A	2.5E-02	ug/m3	3.0E+00	ug/m3	8.5E-03
				Acenaphthene	4E-02	ug/m ³	3.2E-05	ug/m3	N/A	N/A	N/A	2.2E-03	ug/m3	3.0E+00	ug/m3	7.5E-04
				Acenaphthylene	1E-01	ug/m ³	9.5E-05	ug/m3	N/A	N/A	N/A	6.7E-03	ug/m3	3.0E+00	ug/m3	2.2E-03
				Acetophenone	1E-01	ug/m ³	1.1E-04	ug/m3	N/A	N/A	N/A	8.0E-03	ug/m3	N/A	N/A	N/A
				Benzaldehyde	6E-01	ug/m ³	4.9E-04	ug/m3	N/A	N/A	N/A	3.4E-02	ug/m3	N/A	N/A	N/A
				Naphthalene	2E+00	ug/m ³	1.2E-03	ug/m3	3.4E-05	(ug/m3) ⁻¹	4.1E-08	8.5E-02	ug/m3	3.0E+00	ug/m3	2.8E-02
				Nitrobenzene	2E+00	ug/m ³	1.3E-03	ug/m3	4.0E-05	(ug/m3) ⁻¹	5.4E-08	9.4E-02	ug/m3	9.0E+00	ug/m3	1.0E-02
				Phenanthrene	1E-01	ug/m ³	1.0E-04	ug/m3	N/A	N/A	N/A	7.2E-03	ug/m3	3.0E+00	ug/m3	2.4E-03
				1,1-Dichloroethene	2E+01	ug/m ³	1.8E-02	ug/m3	N/A	N/A	N/A	1.3E+00	ug/m3	2.0E+02	ug/m3	6.3E-03
				1,4-Dichlorobenzene	3E+00	ug/m ³	2.5E-03	ug/m3	1.1E-05	(ug/m3) ⁻¹	2.7E-08	1.7E-01	ug/m3	2.4E+03	ug/m3	7.2E-05
				Benzene	4E+00	ug/m ³	3.2E-03	ug/m3	7.8E-06	(ug/m3) ⁻¹	2.5E-08	2.2E-01	ug/m3	9.0E+01	ug/m3	2.5E-03
				Carbon disulfide	3E+01	ug/m ³	2.6E-02	ug/m3	N/A	N/A	N/A	1.8E+00	ug/m3	7.0E+02	ug/m3	2.6E-03
				Carbon tetrachloride	4E+00	ug/m ³	3.6E-03	ug/m3	6.0E-06	(ug/m3) ⁻¹	2.1E-08	2.5E-01	ug/m3	1.0E+02	ug/m3	2.5E-03
				Chlorobenzene	4E+00	ug/m ³	2.9E-03	ug/m3	N/A	N/A	N/A	2.0E-01	ug/m3	5.0E+02	ug/m3	4.1E-04
				Cyclohexane, methyl-	1E+02	ug/m ³	8.7E-02	ug/m3	N/A	N/A	N/A	6.1E+00	ug/m3	3.0E+03	ug/m3	2.0E-03
				Dichlorodifluoromethane	1E+01	ug/m ³	9.6E-03	ug/m3	N/A	N/A	N/A	6.7E-01	ug/m3	2.0E+03	ug/m3	3.4E-04
				Methyl acetate	1E+01	ug/m ³	9.2E-03	ug/m3	N/A	N/A	N/A	6.5E-01	ug/m3	N/A	N/A	N/A
				Methylene chloride	6E+00	ug/m ³	5.2E-03	ug/m3	4.7E-07	(ug/m3) ⁻¹	2.5E-09	3.7E-01	ug/m3	1.0E+03	ug/m3	3.7E-04
				Tetrachloroethene	5E+00	ug/m ³	4.0E-03	ug/m3	5.9E-06	(ug/m3) ⁻¹	2.3E-08	2.8E-01	ug/m3	2.7E+02	ug/m3	1.0E-03
				Trichloroethene	3E+00	ug/m ³	2.1E-03	ug/m3	2.0E-06	(ug/m3) ⁻¹	4.3E-09	1.5E-01	ug/m3	1.0E+02	ug/m3	1.5E-03
				Xylene (Total)	3E+00	ug/m ³	2.2E-03	ug/m3	N/A	N/A	N/A	1.6E-01	ug/m3	3.0E+02	ug/m3	5.2E-04
			Exp. Route Total								2E-07					7E-02
		Exposure Point Total									2E-07					7E-02
	Exposure Medium Total										N/A					N/A
Medium Total											N/A					N/A
Groundwater	Groundwater	Shallow Groundwater	Ingestion	Atrazine	1E+00	ug/L	1.9E-09	mg/kg-day	2.3E-01	(mg/kg-day) ⁻¹	4.3E-10	1.3E-07	mg/kg-day	3.5E-02	mg/kg-day	3.7E-06
				Benzo(a)anthracene	4E-02	ug/L	7.7E-11	mg/kg-day	7.3E-01	(mg/kg-day) ⁻¹	5.7E-11	5.4E-09	mg/kg-day	N/A	N/A	N/A
				Benzo(a)pyrene	2E-02	ug/L	2.9E-11	mg/kg-day	7.3E+00	(mg/kg-day) ⁻¹	2.1E-10	2.0E-09	mg/kg-day	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	4.9E-09	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	6.8E-11	3.4E-07	mg/kg-day	2.0E-02	mg/kg-day	1.7E-05
				Dibenzofuran	3E-01	ug/L	4.9E-10	mg/kg-day	N/A	N/A	N/A	3.4E-08	mg/kg-day	4.0E-03	mg/kg-day	8.6E-06
				Naphthalene	9E-01	ug/L	1.6E-09	mg/kg-day	N/A	N/A	N/A	1.1E-07	mg/kg-day	2.0E-01	mg/kg-day	5.6E-07
				N-Nitrosodiphenylamine	5E+00	ug/L	8.1E-09	mg/kg-day	4.9E-03	(mg/kg-day) ⁻¹	4.0E-11	5.7E-07	mg/kg-day	N/A	N/A	N/A
				Phenanthrene	3E-01	ug/L	4.7E-10	mg/kg-day	N/A	N/A	N/A	3.3E-08	mg/kg-day	3.0E-01	mg/kg-day	1.1E-07
				1,4-Dichlorobenzene	2E+00	ug/L	3.2E-09	mg/kg-day	5.4E-03	(mg/kg-day) ⁻¹	1.7E-11	2.2E-07	mg/kg-day	7.0E-02	mg/kg-day	3.2E-06
				Benzene	4E+00	ug/L	6.7E-09	mg/kg-day	5.5E-02	(mg/kg-day) ⁻¹	3.7E-10	4.7E-07	mg/kg-day	1.2E-02	mg/kg-day	3.9E-05
				Chlorobenzene	1E+01	ug/L	2.1E-08	mg/kg-day	N/A	N/A	N/A	1.5E-06	mg/kg-day	7.0E-02	mg/kg-day	2.1E-05
				Aroclor-1242	7E-02	ug/L	1.2E-10	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	1.2E-10	8.7E-09	mg/kg-day	6.0E-05	mg/kg-day	1.5E-04

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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		Hazard Quotient
							Value	Units	Value	Units		Value	Units	Value	Units	
				Aroclor-1254	4E-01	ug/L	7.2E-10	mg/kg-day	1.0E+00	(mg/kg-day) ⁻¹	7.2E-10	5.0E-08	mg/kg-day	6.0E-05	mg/kg-day	8.4E-04
				Antimony	2E+00	ug/L	3.5E-09	mg/kg-day	N/A	N/A	N/A	2.5E-07	mg/kg-day	4.0E-04	mg/kg-day	6.2E-04
				Arsenic	4E+00	ug/L	7.2E-09	mg/kg-day	1.5E+00	(mg/kg-day) ⁻¹	1.1E-08	5.0E-07	mg/kg-day	3.0E-04	mg/kg-day	1.7E-03
				Barium	7E+02	ug/L	1.2E-06	mg/kg-day	N/A	N/A	N/A	8.1E-05	mg/kg-day	2.0E-01	mg/kg-day	4.0E-04
				Cadmium (drinking water)	8E+00	ug/L	1.4E-08	mg/kg-day	N/A	N/A	N/A	1.0E-06	mg/kg-day	5.0E-04	mg/kg-day	2.0E-03
				Chromium	5E+00	ug/L	8.9E-09	mg/kg-day	5.0E-01	(mg/kg-day) ⁻¹	4.4E-09	6.2E-07	mg/kg-day	9.0E-03	mg/kg-day	6.9E-05
				Cobalt	1E+01	ug/L	2.2E-08	mg/kg-day	N/A	N/A	N/A	1.5E-06	mg/kg-day	3.0E-03	mg/kg-day	5.1E-04
				Iron	4E+04	ug/L	7.4E-05	mg/kg-day	N/A	N/A	N/A	5.2E-03	mg/kg-day	7.0E-01	mg/kg-day	7.4E-03
				Lead												
				Manganese (drinking water)	1E+03	ug/L	1.9E-06	mg/kg-day	N/A	N/A	N/A	1.3E-04	mg/kg-day	2.4E-02	mg/kg-day	5.5E-03
				Nickel	4E+01	ug/L	7.1E-08	mg/kg-day	N/A	N/A	N/A	5.0E-06	mg/kg-day	2.0E-02	mg/kg-day	2.5E-04
				Thallium	1E+00	ug/L	1.9E-09	mg/kg-day	N/A	N/A	N/A	1.4E-07	mg/kg-day	N/A	N/A	N/A
				Vanadium	2E+00	ug/L	3.2E-09	mg/kg-day	N/A	N/A	N/A	2.2E-07	mg/kg-day	7.0E-03	mg/kg-day	3.2E-05
				Zinc	1E+03	ug/L	2.2E-06	mg/kg-day	N/A	N/A	N/A	1.5E-04	mg/kg-day	3.0E-01	mg/kg-day	5.1E-04
			Exp. Route Total								2E-08					2E-02
			Dermal	Atrazine	1E+00	ug/L	N/A	N/A	2.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.5E-02	mg/kg-day	N/A
				Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				bis(2-Ethylhexyl)phthalate	3E+00	ug/L	2.0E-08	mg/kg-day	1.4E-02	(mg/kg-day) ⁻¹	2.9E-10	1.4E-06	mg/kg-day	2.0E-02	mg/kg-day	7.1E-05
				Dibenzofuran	3E-01	ug/L	2.5E-09	mg/kg-day	N/A	N/A	N/A	1.8E-07	mg/kg-day	4.0E-03	mg/kg-day	4.4E-05
				Naphthalene	9E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.0E-01	mg/kg-day	N/A
				N-Nitrosodiphenylamine	5E+00	ug/L	N/A	N/A	4.9E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	N/A	N/A	N/A
				Phenanthrene	3E-01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A
				1,4-Dichlorobenzene	2E+00	ug/L	N/A	N/A	5.4E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Benzene	4E+00	ug/L	N/A	N/A	5.5E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	1.2E-02	mg/kg-day	N/A
				Chlorobenzene	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-02	mg/kg-day	N/A
				Aroclor-1242	7E-02	ug/L	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Aroclor-1254	4E-01	ug/L	N/A	N/A	1.0E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Antimony	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	6.0E-05	mg/kg-day	N/A
				Arsenic	4E+00	ug/L	N/A	N/A	1.5E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A	3.0E-04	mg/kg-day	N/A
				Barium	7E+02	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.4E-02	mg/kg-day	N/A
				Cadmium (drinking water)	8E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2.5E-05	mg/kg-day	N/A
				Chromium	5E+00	ug/L	N/A	N/A	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A	2.3E-04	mg/kg-day	N/A
				Cobalt	1E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-03	mg/kg-day	N/A
				Iron	4E+04	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7.0E-01	mg/kg-day	N/A
				Lead												
				Manganese (drinking water)	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	9.6E-04	mg/kg-day	N/A
				Nickel	4E+01	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.0E-04	mg/kg-day	N/A
				Thallium	1E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

TABLE 7.4.CT
CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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		Hazard Quotient							
							Value	Units	Value	Units		Value	Units	Value	Units								
				Vanadium	2E+00	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1.8E-04	mg/kg-day	N/A							
				Zinc	1E+03	ug/L	N/A	N/A	N/A	N/A	N/A	N/A	3.0E-01	mg/kg-day	N/A								
			Exp. Route Total						3E-10					1E-04									
			Exposure Point Total										2E-08					2E-02					
		Exposure Medium Total										N/A					N/A						
		Medium Total										N/A					N/A						
Total of Receptor Risks Across All Media											N/A	Total of Receptor Hazards Across All Media											N/A

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total			
Soil	Surface Soil	Unnamed Island	Benzo(a)anthracene	2E-07	--	1E-07	--	4E-07	N/A	N/A	--	N/A	N/A			
			Benzo(a)pyrene	2E-06	--	1E-06	--	3E-06	N/A	N/A	--	N/A	N/A			
			Benzo(b)fluoranthene	3E-07	--	2E-07	--	5E-07	N/A	N/A	--	N/A	N/A			
			Benzo(k)fluoranthene	1E-08	--	7E-09	--	2E-08	N/A	N/A	--	N/A	N/A			
			bis(2-Ethylhexyl)phthalate	4E-08	--	2E-08	--	6E-08	Liver	1E-03	--	4E-04	1E-03			
			Carbazole	4E-10	--	2E-10	--	6E-10	N/A	N/A	--	N/A	N/A			
			Dibenz(a,h)anthracene	4E-07	--	2E-07	--	6E-07	N/A	N/A	--	N/A	N/A			
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	3E-05	--	1E-05	4E-05			
			Indeno(1,2,3-cd)pyrene	1E-07	--	7E-08	--	2E-07	N/A	N/A	--	N/A	N/A			
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	4E-05	--	2E-05	6E-05			
			Aroclor-1242	4E-08	--	2E-08	--	6E-08	General Toxicity/Immune System	7E-03	--	4E-03	1E-02			
			Aroclor-1254	6E-08	--	4E-08	--	1E-07	General Toxicity/Immune System	1E-02	--	6E-03	2E-02			
			Aroclor-1260	8E-08	--	5E-08	--	1E-07	General Toxicity/Immune System	1E-02	--	9E-03	2E-02			
			Dieldrin	3E-07	--	1E-07	--	5E-07	Liver	3E-03	--	1E-03	4E-03			
			Dioxin TEQ	7E-07	--	8E-08	--	7E-07	Developmental	3E-02	--	4E-03	3E-02			
			Aluminum	N/A	--	N/A	--	N/A	Developmental	4E-03	--	N/A	4E-03			
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	1E-02	--	N/A	1E-02			
			Arsenic	1E-06	--	2E-07	--	2E-06	Skin	2E-02	--	3E-03	2E-02			
			Cadmium (other media)	N/A	--	N/A	--	N/A	Kidney	4E-03	--	7E-04	5E-03			
			Chromium	2E-05	--	N/A	--	2E-05	GI System	3E-02	--	N/A	3E-02			
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	1E-02	--	N/A	1E-02			
			Copper	N/A	--	N/A	--	N/A	GI System	5E-03	--	N/A	5E-03			
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	2E-02	--	N/A	2E-02			
			Lead													
			Manganese (other media)	N/A	--	N/A	--	N/A	CNS	3E-03	--	N/A	3E-03			
			Mercury (other media)	N/A	--	N/A	--	N/A	CNS	3E-03	--	N/A	3E-03			
			Nickel	N/A	--	N/A	--	N/A	General Toxicity	1E-03	--	N/A	1E-03			
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A			
			Vanadium	N/A	--	N/A	--	N/A	Kidney	1E-03	--	N/A	1E-03			
						Chemical Total	2E-05	--	2E-06	--	2E-05		2E-01	--	3E-02	2E-01
						Radionuclide Total										
					Exposure Point Total						2E-05					2E-01
		Exposure Medium Total								2E-05					2E-01	
Medium Total									2E-05					2E-01		
Leachate	Leachate	Unnamed Island	4-Methylphenol	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A			
			Acenaphthylene	--	--	N/A	--	N/A	Liver	--	--	1E-06	1E-06			

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Atrazine	--	--	N/A	--	N/A	General Toxicity/Cardiovascular	--	--	N/A	N/A
			Benzo(a)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(a)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(b)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(g,h,i)perylene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Benzo(k)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	--	--	1E-08	--	1E-08	Liver	--	--	3E-04	3E-04
			Chrysene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Dibenz(a,h)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Dibenzofuran	--	--	N/A	--	N/A	Kidney	--	--	2E-04	2E-04
			Indeno(1,2,3-cd)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Naphthalene	--	--	N/A	--	N/A	General Toxicity	--	--	5E-05	5E-05
			N-Nitrosodiphenylamine	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Pentachlorophenol	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Phenanthrene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			1,4-Dichlorobenzene	--	--	1E-09	--	1E-09	Liver	--	--	3E-05	3E-05
			Benzene	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Chlorobenzene	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Ethylbenzene	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Xylene (total)	--	--	N/A	--	N/A	General Toxicity	--	--	6E-06	6E-06
			Total PCBs	--	--	N/A	--	N/A	General Toxicity/Immune System	--	--	N/A	N/A
			4,4'-DDD	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDE	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDT	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			alpha-BHC	--	--	7E-10	--	7E-10	Liver	--	--	9E-08	9E-08
			alpha-Chlordane	--	--	6E-10	--	6E-10	Liver	--	--	2E-05	2E-05
			Dieldrin	--	--	4E-09	--	4E-09	Liver	--	--	4E-05	4E-05
			Gamma-Chlordane	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			Aluminum	--	--	N/A	--	N/A	Developmental	--	--	1E-04	1E-04
			Antimony	--	--	N/A	--	N/A	General Toxicity	--	--	N/A	N/A
			Arsenic	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A
			Barium	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Beryllium	--	--	N/A	--	N/A	GI System	--	--	1E-04	1E-04
			Cadmium (other media)	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Chromium	--	--	5E-10	--	5E-10	GI System	--	--	1E-03	1E-03
			Cobalt	--	--	N/A	--	N/A	Endocrine	--	--	N/A	N/A
			Copper	--	--	N/A	--	N/A	GI System	--	--	N/A	N/A
			Cyanide	--	--	N/A	--	N/A	Endocrine/CNS	--	--	N/A	N/A
			Iron	--	--	N/A	--	N/A	Liver/GI System	--	--	N/A	N/A

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total					
			Lead						CNS			N/A	N/A					
			Manganese (other media)	--	--	N/A	--	N/A						Immune System	--	--	N/A	N/A
			Mercury (water)	--	--	N/A	--	N/A						General Toxicity	--	--	N/A	N/A
			Nickel	--	--	N/A	--	N/A						Skin	--	--	N/A	N/A
			Silver	--	--	N/A	--	N/A						N/A	--	--	N/A	N/A
			Thallium	--	--	N/A	--	N/A						Kidney	--	--	N/A	N/A
			Vanadium	--	--	N/A	--	N/A						Blood	--	--	N/A	N/A
			Zinc	--	--	N/A	--	N/A										
			Chemical Total	--	--	2E-08	--	2E-08							--	--	2E-03	2E-03
		Radionuclide Total																
		Exposure Point Total						2E-08						2E-03				
	Exposure Medium Total								2E-08						2E-03			
Medium Total									2E-08						2E-03			
Surface Water	Surface Water	Unnamed Island	Benzo(a)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A					
			Benzo(a)pyrene	--	--	N/A	--	N/A	N/A	N/A	--	--	N/A	N/A				
			Benzo(b)fluoranthene	--	--	N/A	--	N/A	N/A	N/A	--	--	N/A	N/A				
			Benzo(g,h,i)perylene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A					
			Benzo(k)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A					
			bis(2-Ethylhexyl)phthalate	--	--	2E-08	--	2E-08	Liver	--	--	5E-04	5E-04					
			Chrysene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A					
			Indeno(1,2,3-cd)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A					
			Naphthalene	--	--	N/A	--	N/A	General Toxicity	--	--	2E-05	2E-05					
			Phenanthrene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A					
			1,4-Dichlorobenzene	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A					
			Benzene	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A					
			Bromodichloromethane	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A					
			Aroclor-1260	--	--	N/A	--	N/A	General Toxicity/Immune System	--	--	N/A	N/A					
			4,4'-DDD	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A					
			4,4'-DDE	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A					
			4,4'-DDT	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A					
			alpha-Chlordane	--	--	1E-09	--	1E-09	Liver	--	--	4E-05	4E-05					
			beta-BHC	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A					
			Dieldrin	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A					
			Gamma-Chlordane	--	--	1E-09	--	1E-09	Liver	--	--	5E-05	5E-05					
			Heptachlor Epoxide	--	--	3E-08	--	3E-08	Liver	--	--	2E-03	2E-03					
			Aluminum	--	--	N/A	--	N/A	Developmental	--	--	7E-03	7E-03					
			Arsenic	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A					

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Cadmium (other media)	--	--	N/A	--	N/A	Kidney	--	--	1E-03	1E-03
			Chromium	--	--	3E-09	--	3E-09	GI System	--	--	8E-03	8E-03
			Cobalt	--	--	N/A	--	N/A	Endocrine	--	--	N/A	N/A
			Copper	--	--	N/A	--	N/A	GI System	--	--	N/A	N/A
			Cyanide	--	--	N/A	--	N/A	Endocrine/CNS	--	--	N/A	N/A
			Iron	--	--	N/A	--	N/A	Liver/GI System	--	--	N/A	N/A
			Lead										
			Manganese (other media)	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A
			Mercury (water)	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Vanadium	--	--	N/A	--	N/A	Kidney	--	--	3E-04	3E-04
			Chemical Total	--	--	6E-08	--	6E-08		--	--	2E-02	2E-02
		Radionuclide Total											
		Exposure Point Total	6E-08					2E-02					
		Exposure Medium Total	6E-08					2E-02					
Medium Total				6E-08					2E-02				
Sediment	Sediment	Unnamed Island	Benzo(a)anthracene	2E-07	--	5E-07	--	7E-07	N/A	N/A	--	N/A	N/A
			Benzo(a)pyrene	2E-06	--	6E-06	--	7E-06	N/A	N/A	--	N/A	N/A
			Benzo(b)fluoranthene	1E-07	--	4E-07	--	5E-07	N/A	N/A	--	N/A	N/A
			Benzo(k)fluoranthene	1E-08	--	3E-08	--	4E-08	N/A	N/A	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	9E-09	--	2E-08	--	3E-08	Liver	2E-04	--	5E-04	7E-04
			Carbazole	1E-10	--	3E-10	--	4E-10	N/A	N/A	--	N/A	N/A
			Dibenz(a,h)anthracene	2E-07	--	6E-07	--	9E-07	N/A	N/A	--	N/A	N/A
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	6E-06	--	1E-05	2E-05
			Indeno(1,2,3-cd)pyrene	8E-08	--	2E-07	--	3E-07	N/A	N/A	--	N/A	N/A
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	1E-05	--	4E-05	5E-05
			Aroclor-1242	N/A	--	N/A	--	N/A	General Toxicity/Immune System	N/A	--	N/A	N/A
			Aroclor-1254	1E-08	--	4E-08	--	5E-08	General Toxicity/Immune System	2E-03	--	7E-03	1E-02
			Aroclor-1260	2E-08	--	6E-08	--	7E-08	General Toxicity/Immune System	3E-03	--	1E-02	1E-02
			Dieldrin	6E-09	--	1E-08	--	2E-08	Liver	5E-05	--	1E-04	2E-04
			Aluminum	N/A	--	N/A	--	N/A	Developmental	2E-03	--	N/A	2E-03
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	6E-03	--	N/A	6E-03
			Arsenic	7E-07	--	5E-07	--	1E-06	Skin	1E-02	--	8E-03	2E-02
			Cadmium (other media)	N/A	--	N/A	--	N/A	Kidney	4E-03	--	3E-03	7E-03
			Chromium	9E-06	--	N/A	--	9E-06	GI System	2E-02	--	N/A	2E-02
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	9E-03	--	N/A	9E-03
			Copper	N/A	--	N/A	--	N/A	GI System	2E-03	--	N/A	2E-03
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	8E-03	--	N/A	8E-03
			Lead										

TABLE 9.1.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Manganese (other media)	N/A	--	N/A	--	N/A	CNS	1E-03	--	N/A	1E-03
			Mercury (other media)	N/A	--	N/A	--	N/A	CNS	2E-03	--	N/A	2E-03
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A
			Vanadium	N/A	--	N/A	--	N/A	Kidney	8E-04	--	N/A	8E-04
			Chemical Total	1E-05	--	8E-06	--	2E-05		7E-02	--	3E-02	1E-01
		Radionuclide Total											
		Exposure Point Total			2E-05					1E-01			
	Exposure Medium Total			2E-05					1E-01				
	Medium Total			2E-05					1E-01				
Receptor Total			4E-05					3E-01					

-- = Not Evaluated

Total Risk Across All Media

4E-05

Total Hazard Across All Media

3E-01

N/A = Not Applicable

Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Blood HI =	N/A
Total Cardiovascular HI =	N/A
Total Reproductive HI =	N/A
Total General Toxicity HI =	9E-02
Total GI System HI =	9E-02
Total Immune System HI =	7E-02
Total Kidney HI =	2E-02
Total Liver HI =	4E-02
Total CNS HI =	8E-03
Total Skin HI =	4E-02
Total Spleen HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	5E-02
Total Endocrine HI =	2E-02

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCS
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total			
Soil	Surface Soil	Unnamed Island	Benzo(a)anthracene	6E-08	--	6E-08	--	1E-07	N/A	N/A	--	N/A	N/A			
			Benzo(a)pyrene	5E-07	--	6E-07	--	1E-06	N/A	N/A	--	N/A	N/A			
			Benzo(b)fluoranthene	8E-08	--	8E-08	--	2E-07	N/A	N/A	--	N/A	N/A			
			Benzo(k)fluoranthene	3E-09	--	4E-09	--	7E-09	N/A	N/A	--	N/A	N/A			
			bis(2-Ethylhexyl)phthalate	1E-08	--	9E-09	--	2E-08	Liver	3E-04	--	2E-04	5E-04			
			Carbazole	1E-10	--	1E-10	--	2E-10	N/A	N/A	--	N/A	N/A			
			Dibenz(a,h)anthracene	1E-07	--	1E-07	--	2E-07	N/A	N/A	--	N/A	N/A			
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	8E-06	--	6E-06	1E-05			
			Indeno(1,2,3-cd)pyrene	3E-08	--	3E-08	--	7E-08	N/A	N/A	--	N/A	N/A			
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	1E-05	--	1E-05	2E-05			
			Aroclor-1242	5E-10	--	6E-10	--	1E-09	General Toxicity/Immune System	2E-04	--	2E-04	4E-04			
			Aroclor-1254	8E-09	--	9E-09	--	2E-08	General Toxicity/Immune System	3E-03	--	3E-03	6E-03			
			Aroclor-1260	1E-08	--	1E-08	--	2E-08	General Toxicity/Immune System	4E-03	--	4E-03	8E-03			
			Dieldrin	8E-08	--	7E-08	--	2E-07	Liver	7E-04	--	6E-04	1E-03			
			Dioxin TEQ	2E-07	--	4E-08	--	2E-07	Developmental	7E-03	--	2E-03	9E-03			
			Aluminum	N/A	--	N/A	--	N/A	Developmental	9E-04	--	N/A	9E-04			
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	3E-03	--	N/A	3E-03			
			Arsenic	4E-07	--	9E-08	--	4E-07	Skin	5E-03	--	1E-03	7E-03			
			Cadmium (other media)	N/A	--	N/A	--	N/A	Kidney	1E-03	--	3E-04	1E-03			
			Chromium	4E-06	--	N/A	--	4E-06	GI System	7E-03	--	N/A	7E-03			
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	3E-03	--	N/A	3E-03			
			Copper	N/A	--	N/A	--	N/A	GI System	1E-03	--	N/A	1E-03			
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	5E-03	--	N/A	5E-03			
			Lead													
			Manganese (other media)	N/A	--	N/A	--	N/A	CNS	7E-04	--	N/A	7E-04			
			Mercury (other media)	N/A	--	N/A	--	N/A	CNS	8E-04	--	N/A	8E-04			
			Nickel	N/A	--	N/A	--	N/A	General Toxicity	3E-04	--	N/A	3E-04			
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A			
			Vanadium	N/A	--	N/A	--	N/A	Kidney	4E-04	--	N/A	4E-04			
						Chemical Total	5E-06	--	1E-06	--	6E-06		4E-02	--	1E-02	6E-02
					Radionuclide Total											
				Exposure Point Total					6E-06					6E-02		
	Exposure Medium Total							6E-06					6E-02			
Medium Total								6E-06					6E-02			
Leachate	Leachate	Unnamed Island	4-Methylphenol	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A			
			Acenaphthylene	--	--	N/A	--	N/A	Liver	--	--	5E-07	5E-07			

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Atrazine	--	--	N/A	--	N/A	General Toxicity/Cardiovascular	--	--	N/A	N/A
			Benzo(a)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(a)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(b)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(g,h,i)perylene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Benzo(k)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	--	--	7E-09	--	7E-09	Liver	--	--	2E-04	2E-04
			Chrysene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Dibenz(a,h)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Dibenzofuran	--	--	N/A	--	N/A	Kidney	--	--	1E-04	1E-04
			Indeno(1,2,3-cd)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Naphthalene	--	--	N/A	--	N/A	General Toxicity	--	--	2E-05	2E-05
			N-Nitrosodiphenylamine	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Pentachlorophenol	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Phenanthrene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			1,4-Dichlorobenzene	--	--	7E-10	--	7E-10	Liver	--	--	1E-05	1E-05
			Benzene	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Chlorobenzene	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Ethylbenzene	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Xylene (total)	--	--	N/A	--	N/A	General Toxicity	--	--	3E-06	3E-06
			Total PCBs	--	--	N/A	--	N/A	General Toxicity/Immune System	--	--	N/A	N/A
			4,4'-DDD	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDE	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDT	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			alpha-BHC	--	--	3E-10	--	3E-10	Liver	--	--	5E-08	5E-08
			alpha-Chlordane	--	--	3E-10	--	3E-10	Liver	--	--	1E-05	1E-05
			Dieldrin	--	--	2E-09	--	2E-09	Liver	--	--	2E-05	2E-05
			Gamma-Chlordane	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			Aluminum	--	--	N/A	--	N/A	Developmental	--	--	7E-05	7E-05
			Antimony	--	--	N/A	--	N/A	General Toxicity	--	--	N/A	N/A
			Arsenic	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A
			Barium	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Beryllium	--	--	N/A	--	N/A	GI System	--	--	6E-05	6E-05
			Cadmium (other media)	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Chromium	--	--	2E-10	--	2E-10	GI System	--	--	7E-04	7E-04
			Cobalt	--	--	N/A	--	N/A	Endocrine	--	--	N/A	N/A
			Copper	--	--	N/A	--	N/A	GI System	--	--	N/A	N/A
			Cyanide	--	--	N/A	--	N/A	Endocrine/CNS	--	--	N/A	N/A
			Iron	--	--	N/A	--	N/A	Liver/GI System	--	--	N/A	N/A

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Lead						CNS				
			Manganese (other media)	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Mercury (water)	--	--	N/A	--	N/A	General Toxicity	--	--	N/A	N/A
			Nickel	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A
			Silver	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Thallium	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Vanadium	--	--	N/A	--	N/A	Blood	--	--	N/A	N/A
			Zinc	--	--	N/A	--	N/A					
			Chemical Total	--	--	1E-08	--	1E-08		--	--	1E-03	1E-03
		Radionuclide Total											
		Exposure Point Total	1E-08					1E-03					
	Exposure Medium Total			1E-08					1E-03				
Medium Total				1E-08					1E-03				
Surface Water	Surface Water	Unnamed Island	Benzo(a)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(a)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(b)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(g,h,i)perylene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Benzo(k)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	--	--	9E-09	--	9E-09	Liver	--	--	2E-04	2E-04
			Chrysene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Indeno(1,2,3-cd)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Naphthalene	--	--	N/A	--	N/A	General Toxicity	--	--	3E-06	3E-06
			Phenanthrene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			1,4-Dichlorobenzene	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			Benzene	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Bromodichloromethane	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Aroclor-1260	--	--	N/A	--	N/A	General Toxicity/Immune System	--	--	N/A	N/A
			4,4'-DDD	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDE	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDT	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			alpha-Chlordane	--	--	2E-10	--	2E-10	Liver	--	--	9E-06	9E-06
			beta-BHC	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			Dieldrin	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			Gamma-Chlordane	--	--	7E-10	--	7E-10	Liver	--	--	3E-05	3E-05
			Heptachlor Epoxide	--	--	5E-09	--	5E-09	Liver	--	--	3E-04	3E-04
			Aluminum	--	--	N/A	--	N/A	Developmental	--	--	4E-03	4E-03
			Arsenic	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Cadmium (other media)	--	--	N/A	--	N/A	Kidney	--	--	6E-04	6E-04
			Chromium	--	--	1E-09	--	1E-09	GI System	--	--	4E-03	4E-03
			Cobalt	--	--	N/A	--	N/A	Endocrine	--	--	N/A	N/A
			Copper	--	--	N/A	--	N/A	GI System	--	--	N/A	N/A
			Cyanide	--	--	N/A	--	N/A	Endocrine/CNS	--	--	N/A	N/A
			Iron	--	--	N/A	--	N/A	Liver/GI System	--	--	N/A	N/A
			Lead										
			Manganese (other media)	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A
			Mercury (water)	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Vanadium	--	--	N/A	--	N/A	Kidney	--	--	2E-04	2E-04
			Chemical Total	--	--	2E-08	--	2E-08		--	--	9E-03	9E-03
		Radionuclide Total											
		Exposure Point Total	2E-08					9E-03					
		Exposure Medium Total	2E-08					9E-03					
		Medium Total	2E-08					9E-03					
Sediment	Sediment	Unnamed Island	Benzo(a)anthracene	4E-08	--	3E-07	--	3E-07	N/A	N/A	--	N/A	N/A
			Benzo(a)pyrene	5E-07	--	3E-06	--	3E-06	N/A	N/A	--	N/A	N/A
			Benzo(b)fluoranthene	3E-08	--	2E-07	--	2E-07	N/A	N/A	--	N/A	N/A
			Benzo(k)fluoranthene	3E-09	--	2E-08	--	2E-08	N/A	N/A	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	2E-09	--	1E-08	--	1E-08	Liver	6E-05	--	3E-04	3E-04
			Carbazole	3E-11	--	2E-10	--	2E-10	N/A	N/A	--	N/A	N/A
			Dibenz(a,h)anthracene	5E-08	--	3E-07	--	4E-07	N/A	N/A	--	N/A	N/A
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	2E-06	--	7E-06	9E-06
			Indeno(1,2,3-cd)pyrene	2E-08	--	1E-07	--	1E-07	N/A	N/A	--	N/A	N/A
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	3E-06	--	2E-05	2E-05
			Aroclor-1242	N/A	--	N/A	--	N/A	General Toxicity/Immune System	N/A	--	N/A	N/A
			Aroclor-1254	2E-09	--	1E-08	--	1E-08	General Toxicity/Immune System	6E-04	--	4E-03	4E-03
			Aroclor-1260	2E-09	--	1E-08	--	2E-08	General Toxicity/Immune System	8E-04	--	5E-03	6E-03
			Dieldrin	1E-09	--	7E-09	--	8E-09	Liver	1E-05	--	6E-05	7E-05
			Aluminum	N/A	--	N/A	--	N/A	Developmental	5E-04	--	N/A	5E-04
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	2E-03	--	N/A	2E-03
			Arsenic	2E-07	--	3E-07	--	4E-07	Skin	3E-03	--	4E-03	7E-03
			Cadmium (other media)	N/A	--	N/A	--	N/A	Kidney	9E-04	--	2E-03	3E-03
			Chromium	2E-06	--	N/A	--	2E-06	GI System	4E-03	--	N/A	4E-03
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	2E-03	--	N/A	2E-03
			Copper	N/A	--	N/A	--	N/A	GI System	6E-04	--	N/A	6E-04
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	2E-03	--	N/A	2E-03
			Lead										

TABLE 9.1.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
Receptor Population: 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	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Manganese (other media)	N/A	--	N/A	--	N/A	CNS	2E-04	--	N/A	2E-04
			Mercury (other media)	N/A	--	N/A	--	N/A	CNS	4E-04	--	N/A	4E-04
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A
			Vanadium	N/A	--	N/A	--	N/A	Kidney	2E-04	--	N/A	2E-04
			Chemical Total	3E-06	--	4E-06	--	7E-06		2E-02	--	1E-02	3E-02
			Radionuclide Total										
		Exposure Point Total		7E-06					3E-02				
	Exposure Medium Total		7E-06					3E-02					
	Medium Total			7E-06					3E-02				
Receptor Total			1E-05					1E-01					

-- = Not Evaluated

N/A = Not Applicable

Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media

1E-05

Total Hazard Across All Media

1E-01

Total Blood HI =	N/A
Total Cardiovascular HI =	N/A
Total Reproductive HI =	N/A
Total General Toxicity HI =	3E-02
Total GI System HI =	2E-02
Total Immune System HI =	2E-02
Total Kidney HI =	5E-03
Total Liver HI =	1E-02
Total CNS HI =	2E-03
Total Skin HI =	1E-02
Total Spleen HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	1E-02
Total Endocrine HI =	5E-03

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Older Child + Adult					Non-Carcinogenic Hazard Quotient Older Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	Unnamed Island	Benzo(a)anthracene	8E-07	--	7E-07	--	2E-06	N/A	N/A	--	N/A	N/A
			Benzo(a)pyrene	8E-06	--	7E-06	--	2E-05	N/A	N/A	--	N/A	N/A
			Benzo(b)fluoranthene	8E-07	--	7E-07	--	1E-06	N/A	N/A	--	N/A	N/A
			Benzo(g,h,i)perylene	N/A	--	N/A	--	N/A	Kidney	5E-05	--	5E-05	1E-04
			Benzo(k)fluoranthene	4E-08	--	4E-08	--	8E-08	N/A	N/A	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	4E-07	--	2E-07	--	7E-07	Liver	6E-03	--	5E-03	1E-02
			Carbazole	8E-10	--	6E-10	--	1E-09	N/A	N/A	--	N/A	N/A
			Dibenz(a,h)anthracene	1E-06	--	1E-06	--	2E-06	N/A	N/A	--	N/A	N/A
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	4E-05	--	4E-05	7E-05
			Indeno(1,2,3-cd)pyrene	4E-07	--	3E-07	--	7E-07	N/A	N/A	--	N/A	N/A
			Naphthalene	N/A	--	N/A	--	N/A	General Toxicity	3E-05	--	3E-05	7E-05
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	1E-04	--	1E-04	3E-04
			Aroclor-1242	7E-08	--	5E-08	--	1E-07	General Toxicity/Immune System	7E-03	--	8E-03	2E-02
			Aroclor-1254	2E-07	--	2E-07	--	4E-07	General Toxicity/Immune System	2E-02	--	3E-02	5E-02
			Aroclor-1260	3E-07	--	2E-07	--	5E-07	General Toxicity/Immune System	3E-02	--	4E-02	6E-02
			Dieldrin	5E-07	--	3E-07	--	8E-07	Liver	3E-03	--	2E-03	5E-03
			Dioxin TEQ	2E-06	--	3E-07	--	2E-06	Developmental	5E-02	--	1E-02	6E-02
			Aluminum	N/A	--	N/A	--	N/A	Developmental	6E-03	--	N/A	6E-03
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	9E-02	--	N/A	9E-02
			Arsenic	4E-06	--	7E-07	--	5E-06	Skin	4E-02	--	1E-02	5E-02
			Cadmium (other media)	N/A	--	N/A	--	N/A	Kidney	4E-03	--	2E-03	6E-03
			Chromium	4E-05	--	N/A	--	4E-05	GI System	6E-02	--	N/A	6E-02
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	2E-02	--	N/A	2E-02
			Copper	N/A	--	N/A	--	N/A	GI System	8E-03	--	N/A	8E-03
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	3E-02	--	N/A	3E-02
			Lead										
			Manganese (other media)	N/A	--	N/A	--	N/A	CNS	4E-03	--	N/A	4E-03
			Mercury (other media)	N/A	--	N/A	--	N/A	CNS	9E-03	--	N/A	9E-03
			Nickel	N/A	--	N/A	--	N/A	General Toxicity	2E-03	--	N/A	2E-03
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A
			Vanadium	N/A	--	N/A	--	N/A	Kidney	2E-03	--	N/A	2E-03
			Zinc	N/A	--	N/A	--	N/A	Blood	3E-03	--	N/A	3E-03
			Chemical Total	6E-05	--	1E-05	--	7E-05		4E-01	--	1E-01	5E-01
			Radionuclide Total										
		Exposure Point Total						7E-05					5E-01
	Exposure Medium Total							7E-05					5E-01
Medium Total								7E-05					5E-01

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Older Child + Adult					Non-Carcinogenic Hazard Quotient Older Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Leachate	Leachate	Unnamed Island	4-Methylphenol	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A
			Acenaphthylene	--	--	N/A	--	N/A	Liver	--	--	1E-06	1E-06
			Atrazine	--	--	N/A	--	N/A	General Toxicity/Cardiovascular	--	--	N/A	N/A
			Benzo(a)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(a)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(b)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(g,h,i)perylene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Benzo(k)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	--	--	4E-08	--	4E-08	Liver	--	--	3E-04	3E-04
			Chrysene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Dibenz(a,h)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Dibenzofuran	--	--	N/A	--	N/A	Kidney	--	--	2E-04	2E-04
			Indeno(1,2,3-cd)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Naphthalene	--	--	N/A	--	N/A	General Toxicity	--	--	5E-05	5E-05
			N-Nitrosodiphenylamine	--	--	3E-09	--	3E-09	N/A	--	--	N/A	N/A
			Pentachlorophenol	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Phenanthrene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			1,4-Dichlorobenzene	--	--	4E-09	--	4E-09	Liver	--	--	3E-05	3E-05
			Benzene	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Chlorobenzene	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Ethylbenzene	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Xylene (total)	--	--	N/A	--	N/A	General Toxicity	--	--	6E-06	6E-06
			Total PCBs	--	--	N/A	--	N/A	General Toxicity/Immune System	--	--	N/A	N/A
			4,4'-DDD	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDE	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDT	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			alpha-BHC	--	--	1E-09	--	1E-09	Liver	--	--	N/A	N/A
			alpha-Chlordane	--	--	2E-09	--	2E-09	Liver	--	--	2E-05	2E-05
			Dieldrin	--	--	1E-08	--	1E-08	Liver	--	--	4E-05	4E-05
			Gamma-Chlordane	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			Aluminum	--	--	N/A	--	N/A	Developmental	--	--	1E-04	1E-04
			Antimony	--	--	N/A	--	N/A	General Toxicity	--	--	N/A	N/A
			Arsenic	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A
			Barium	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Beryllium	--	--	N/A	--	N/A	GI System	--	--	1E-04	1E-04
			Cadmium (other media)	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Chromium	--	--	8E-10	--	8E-10	GI System	--	--	1E-03	1E-03

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Older Child + Adult					Non-Carcinogenic Hazard Quotient Older Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Cobalt	--	--	N/A	--	N/A	Endocrine	--	--	N/A	N/A
			Copper	--	--	N/A	--	N/A	GI System	--	--	N/A	N/A
			Cyanide	--	--	N/A	--	N/A	Endocrine/CNS	--	--	N/A	N/A
			Iron	--	--	N/A	--	N/A	Liver/GI System	--	--	N/A	N/A
			Lead										
			Manganese (other media)	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A
			Mercury (water)	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Nickel	--	--	N/A	--	N/A	General Toxicity	--	--	N/A	N/A
			Silver	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A
			Thallium	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Vanadium	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Zinc	--	--	N/A	--	N/A	Blood	--	--	N/A	N/A
			Chemical Total	--	--	6E-08	--	6E-08		--	--	2E-03	2E-03
Radionuclide Total													
Exposure Point Total			6E-08					2E-03					
Exposure Medium Total			6E-08					2E-03					
Medium Total			6E-08					2E-03					
Surface Water	Surface Water	Unnamed Island (wading)	Benzo(a)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(a)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(b)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(g,h,i)perylene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Benzo(k)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	--	--	4E-08	--	4E-08	Liver	--	--	4E-04	4E-04
			Chrysene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Indeno(1,2,3-cd)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Naphthalene	--	--	N/A	--	N/A	General Toxicity	--	--	2E-05	2E-05
			Phenanthrene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			1,4-Dichlorobenzene	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			Benzene	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Bromodichloromethane	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Aroclor-1260	--	--	N/A	--	N/A	General Toxicity/Immune System	--	--	N/A	N/A
			4,4'-DDD	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDE	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDT	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			alpha-Chlordane	--	--	2E-09	--	2E-09	Liver	--	--	3E-05	3E-05
beta-BHC	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A			
Dieldrin	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A			

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Older Child + Adult					Non-Carcinogenic Hazard Quotient Older Child					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total	
			Gamma-Chlordane	--	--	3E-09	--	3E-09	Liver	--	--	4E-05	4E-05	
			Heptachlor Epoxide	--	--	7E-08	--	7E-08	Liver	--	--	2E-03	2E-03	
			Aluminum	--	--	N/A	--	N/A	Developmental	--	--	6E-03	6E-03	
			Arsenic	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A	
			Cadmium (other media)	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A	
			Chromium	--	--	3E-09	--	3E-09	GI System	--	--	6E-03	6E-03	
			Cobalt	--	--	N/A	--	N/A	Endocrine	--	--	N/A	N/A	
			Copper	--	--	N/A	--	N/A	GI System	--	--	N/A	N/A	
			Cyanide	--	--	N/A	--	N/A	Endocrine/CNS	--	--	N/A	N/A	
			Iron	--	--	N/A	--	N/A	Liver/GI System	--	--	N/A	N/A	
			Lead											
			Manganese (other media)	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A	
			Mercury (water)	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A	
			Vanadium	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A	
			Chemical Total	--	--	1E-07	--	1E-07		--	--	1E-02	1E-02	
		Radionuclide Total												
		Exposure Point Total								1E-07				
		Exposure Medium Total								1E-07				
Medium Total								1E-07						
Sediment	Sediment	Unnamed Island	Benzo(a)anthracene	3E-07	--	6E-07	--	9E-07	N/A	N/A	--	N/A	N/A	
			Benzo(a)pyrene	3E-06	--	7E-06	--	1E-05	N/A	N/A	--	N/A	N/A	
			Benzo(b)fluoranthene	2E-07	--	5E-07	--	7E-07	N/A	N/A	--	N/A	N/A	
			Benzo(k)fluoranthene	2E-08	--	4E-08	--	6E-08	N/A	N/A	--	N/A	N/A	
			bis(2-Ethylhexyl)phthalate	2E-08	--	4E-08	--	7E-08	Liver	3E-04	--	4E-04	7E-04	
			Carbazole	3E-10	--	7E-10	--	1E-09	N/A	N/A	--	N/A	N/A	
			Dibenz(a,h)anthracene	4E-07	--	8E-07	--	1E-06	N/A	N/A	--	N/A	N/A	
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	9E-06	--	1E-05	2E-05	
			Indeno(1,2,3-cd)pyrene	1E-07	--	3E-07	--	4E-07	N/A	N/A	--	N/A	N/A	
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	2E-05	--	3E-05	5E-05	
			Aroclor-1242	N/A	--	N/A	--	N/A	General Toxicity/Immune System	N/A	--	N/A	N/A	
			Aroclor-1254	3E-08	--	9E-08	--	1E-07	General Toxicity/Immune System	3E-03	--	6E-03	9E-03	
			Aroclor-1260	5E-08	--	1E-07	--	2E-07	General Toxicity/Immune System	4E-03	--	8E-03	1E-02	
			Dieldrin	2E-08	--	3E-08	--	4E-08	Liver	7E-05	--	9E-05	2E-04	
			Aluminum	N/A	--	N/A	--	N/A	Developmental	3E-03	--	N/A	3E-03	
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	9E-03	--	N/A	9E-03	
			Arsenic	2E-06	--	1E-06	--	3E-06	Skin	2E-02	--	6E-03	2E-02	
Cadmium (other media)	N/A	--	N/A	--	N/A	Kidney	5E-03	--	3E-03	8E-03				

TABLE 9.2.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Older Child + Adult					Non-Carcinogenic Hazard Quotient Older Child							
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total			
			Chromium	1E-05	--	N/A	--	1E-05	GI System	2E-02	--	N/A	2E-02			
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	1E-02	--	N/A	1E-02			
			Copper	N/A	--	N/A	--	N/A	GI System	3E-03	--	N/A	3E-03			
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	1E-02	--	N/A	1E-02			
			Lead													
			Manganese (other media)	N/A	--	N/A	--	N/A	CNS	1E-03	--	N/A	1E-03			
			Mercury (other media)	N/A	--	N/A	--	N/A	CNS	2E-03	--	N/A	2E-03			
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A			
			Vanadium	N/A	--	N/A	--	N/A	Kidney	1E-03	--	N/A	1E-03			
			Chemical Total	2E-05	--	1E-05	--	3E-05		1E-01	--	2E-02	1E-01			
			Radionuclide Total													
			Exposure Point Total				3E-05					1E-01				
			Exposure Medium Total				3E-05					1E-01				
			Medium Total				3E-05					1E-01				
	Receptor Total				1E-04					6E-01						

-- = Not Evaluated

N/A = Not Applicable

Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media

1E-04

Total Hazard Across All Media

6E-01

Total Blood HI =	3E-03
Total Cardiovascular HI =	N/A
Total Reproductive HI =	N/A
Total General Toxicity HI =	2E-01
Total GI System HI =	1E-01
Total Immune System HI =	1E-01
Total Kidney HI =	2E-02
Total Liver HI =	6E-02
Total CNS HI =	2E-02
Total Skin HI =	7E-02
Total Spleen HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	8E-02
Total Endocrine HI =	3E-02

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Older Child + Adult					Non-Carcinogenic Hazard Quotient Older Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil	Surface/ Subsurface Soil	Unnamed Island	Benzo(a)anthracene	2E-07	--	4E-07	--	5E-07	N/A	N/A	--	N/A	N/A
			Benzo(a)pyrene	2E-06	--	3E-06	--	5E-06	N/A	N/A	--	N/A	N/A
			Benzo(b)fluoranthene	2E-07	--	3E-07	--	5E-07	N/A	N/A	--	N/A	N/A
			Benzo(g,h,i)perylene	N/A	--	N/A	--	N/A	Kidney	1E-05	--	3E-05	4E-05
			Benzo(k)fluoranthene	1E-08	--	2E-08	--	3E-08	N/A	N/A	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	1E-07	--	1E-07	--	2E-07	Liver	1E-03	--	3E-03	4E-03
			Carbazole	2E-10	--	3E-10	--	5E-10	N/A	N/A	--	N/A	N/A
			Dibenz(a,h)anthracene	3E-07	--	5E-07	--	8E-07	N/A	N/A	--	N/A	N/A
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	1E-05	--	2E-05	3E-05
			Indeno(1,2,3-cd)pyrene	8E-08	--	2E-07	--	2E-07	N/A	N/A	--	N/A	N/A
			Naphthalene	N/A	--	N/A	--	N/A	General Toxicity	8E-06	--	2E-05	2E-05
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	3E-05	--	7E-05	1E-04
			Aroclor-1242	8E-09	--	1E-08	--	2E-08	General Toxicity/Immune System	2E-03	--	4E-03	6E-03
			Aroclor-1254	2E-08	--	4E-08	--	6E-08	General Toxicity/Immune System	5E-03	--	1E-02	2E-02
			Aroclor-1260	3E-08	--	5E-08	--	9E-08	General Toxicity/Immune System	7E-03	--	2E-02	2E-02
			Dieldrin	1E-07	--	1E-07	--	2E-07	Liver	6E-04	--	1E-03	2E-03
			Dioxin TEQ	4E-07	--	2E-07	--	6E-07	Developmental	1E-02	--	7E-03	2E-02
			Aluminum	N/A	--	N/A	--	N/A	Developmental	1E-03	--	N/A	1E-03
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	2E-02	--	N/A	2E-02
			Arsenic	1E-06	--	3E-07	--	1E-06	Skin	9E-03	--	5E-03	1E-02
			Cadmium (other media)	N/A	--	N/A	--	N/A	Kidney	1E-03	--	8E-04	2E-03
			Chromium	9E-06	--	N/A	--	9E-06	GI System	1E-02	--	N/A	1E-02
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	4E-03	--	N/A	4E-03
			Copper	N/A	--	N/A	--	N/A	GI System	2E-03	--	N/A	2E-03
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	8E-03	--	N/A	8E-03
			Lead										
			Manganese (other media)	N/A	--	N/A	--	N/A	CNS	1E-03	--	N/A	1E-03
			Mercury (other media)	N/A	--	N/A	--	N/A	CNS	2E-03	--	N/A	2E-03
			Nickel	N/A	--	N/A	--	N/A	General Toxicity	5E-04	--	N/A	5E-04
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A
			Vanadium	N/A	--	N/A	--	N/A	Kidney	5E-04	--	N/A	5E-04
			Zinc	N/A	--	N/A	--	N/A	Blood	6E-04	--	N/A	6E-04
			Chemical Total	1E-05	--	6E-06	--	2E-05		1E-01	--	5E-02	1E-01
			Radionuclide Total										
		Exposure Point Total						2E-05					1E-01
	Exposure Medium Total							2E-05					1E-01
Medium Total								2E-05					1E-01

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Older Child + Adult					Non-Carcinogenic Hazard Quotient Older Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
Leachate	Leachate	Unnamed Island	4-Methylphenol	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A
			Acenaphthylene	--	--	N/A	--	N/A	Liver	--	--	5E-07	5E-07
			Atrazine	--	--	N/A	--	N/A	General Toxicity/Cardiovascular	--	--	N/A	N/A
			Benzo(a)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(a)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(b)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Benzo(g,h,i)perylene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Benzo(k)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	--	--	2E-08	--	2E-08	Liver	--	--	2E-04	2E-04
			Chrysene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Dibenz(a,h)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Dibenzofuran	--	--	N/A	--	N/A	Kidney	--	--	1E-04	1E-04
			Indeno(1,2,3-cd)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			Naphthalene	--	--	N/A	--	N/A	General Toxicity	--	--	2E-05	2E-05
			N-Nitrosodiphenylamine	--	--	1E-09	--	1E-09	N/A	--	--	N/A	N/A
			Pentachlorophenol	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Phenanthrene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			1,4-Dichlorobenzene	--	--	2E-09	--	2E-09	Liver	--	--	1E-05	1E-05
			Benzene	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Chlorobenzene	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Ethylbenzene	--	--	N/A	--	N/A	Liver/Kidney	--	--	N/A	N/A
			Xylene (total)	--	--	N/A	--	N/A	General Toxicity	--	--	3E-06	3E-06
			Total PCBs	--	--	N/A	--	N/A	General Toxicity/Immune System	--	--	N/A	N/A
			4,4'-DDD	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDE	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A
			4,4'-DDT	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			alpha-BHC	--	--	6E-10	--	6E-10	Liver	--	--	N/A	N/A
			alpha-Chlordane	--	--	7E-10	--	7E-10	Liver	--	--	1E-05	1E-05
			Dieldrin	--	--	5E-09	--	5E-09	Liver	--	--	2E-05	2E-05
			Gamma-Chlordane	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A
			Aluminum	--	--	N/A	--	N/A	Developmental	--	--	7E-05	7E-05
			Antimony	--	--	N/A	--	N/A	General Toxicity	--	--	N/A	N/A
			Arsenic	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A
			Barium	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Beryllium	--	--	N/A	--	N/A	GI System	--	--	6E-05	6E-05
			Cadmium (other media)	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Chromium	--	--	3E-10	--	3E-10	GI System	--	--	7E-04	7E-04
			Cobalt	--	--	N/A	--	N/A	Endocrine	--	--	N/A	N/A

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk					Non-Carcinogenic Hazard Quotient							
				Older Child + Adult					Older Child							
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total			
			Copper	--	--	N/A	--	N/A	GI System	--	--	N/A	N/A			
			Cyanide	--	--	N/A	--	N/A	Endocrine/CNS	--	--	N/A	N/A			
			Iron	--	--	N/A	--	N/A	Liver/GI System	--	--	N/A	N/A			
			Lead													
			Manganese (other media)	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A			
			Mercury (water)	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A			
			Nickel	--	--	N/A	--	N/A	General Toxicity	--	--	N/A	N/A			
			Silver	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A			
			Thallium	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A			
			Vanadium	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A			
			Zinc	--	--	N/A	--	N/A	Blood	--	--	N/A	N/A			
			Chemical Total	--	--	3E-08	--	3E-08		--	--	1E-03	1E-03			
		Radionuclide Total														
		Exposure Point Total									3E-08					1E-03
		Exposure Medium Total									3E-08					1E-03
Medium Total									3E-08					1E-03		
Surface Water	Surface Water	Unnamed Island (wading)	Benzo(a)anthracene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A			
			Benzo(a)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A			
			Benzo(b)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A			
			Benzo(g,h,i)perylene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A			
			Benzo(k)fluoranthene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A			
			bis(2-Ethylhexyl)phthalate	--	--	2E-08	--	2E-08	Liver	--	--	2E-04	2E-04			
			Chrysene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A			
			Indeno(1,2,3-cd)pyrene	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A			
			Naphthalene	--	--	N/A	--	N/A	General Toxicity	--	--	2E-06	2E-06			
			Phenanthrene	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A			
			1,4-Dichlorobenzene	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A			
			Benzene	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A			
			Bromodichloromethane	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A			
			Aroclor-1260	--	--	N/A	--	N/A	General Toxicity/Immune System	--	--	N/A	N/A			
			4,4'-DDD	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A			
			4,4'-DDE	--	--	N/A	--	N/A	N/A	--	--	N/A	N/A			
			4,4'-DDT	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A			
			alpha-Chlordane	--	--	4E-10	--	4E-10	Liver	--	--	7E-06	7E-06			
			beta-BHC	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A			
			Dieldrin	--	--	N/A	--	N/A	Liver	--	--	N/A	N/A			
			Gamma-Chlordane	--	--	1E-09	--	1E-09	Liver	--	--	2E-05	2E-05			
			Heptachlor Epoxide	--	--	9E-09	--	9E-09	Liver	--	--	2E-04	2E-04			

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Older Child + Adult					Non-Carcinogenic Hazard Quotient Older Child				
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Aluminum	--	--	N/A	--	N/A	Developmental	--	--	3E-03	3E-03
			Arsenic	--	--	N/A	--	N/A	Skin	--	--	N/A	N/A
			Cadmium (other media)	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Chromium	--	--	1E-09	--	1E-09	GI System	--	--	3E-03	3E-03
			Cobalt	--	--	N/A	--	N/A	Endocrine	--	--	N/A	N/A
			Copper	--	--	N/A	--	N/A	GI System	--	--	N/A	N/A
			Cyanide	--	--	N/A	--	N/A	Endocrine/CNS	--	--	N/A	N/A
			Iron	--	--	N/A	--	N/A	Liver/GI System	--	--	N/A	N/A
			Lead										
			Manganese (other media)	--	--	N/A	--	N/A	CNS	--	--	N/A	N/A
			Mercury (water)	--	--	N/A	--	N/A	Immune System	--	--	N/A	N/A
			Vanadium	--	--	N/A	--	N/A	Kidney	--	--	N/A	N/A
			Chemical Total	--	--	3E-08	--	3E-08		--	--	6E-03	6E-03
			Radionuclide Total										
Exposure Point Total			3E-08					6E-03					
Exposure Medium Total			3E-08					6E-03					
Medium Total			3E-08					6E-03					
Sediment	Sediment	Unnamed Island	Benzo(a)anthracene	7E-08	--	3E-07	--	4E-07	N/A	N/A	--	N/A	N/A
			Benzo(a)pyrene	7E-07	--	3E-06	--	4E-06	N/A	N/A	--	N/A	N/A
			Benzo(b)fluoranthene	5E-08	--	2E-07	--	3E-07	N/A	N/A	--	N/A	N/A
			Benzo(k)fluoranthene	4E-09	--	2E-08	--	2E-08	N/A	N/A	--	N/A	N/A
			bis(2-Ethylhexyl)phthalate	5E-09	--	2E-08	--	2E-08	Liver	8E-05	--	2E-04	3E-04
			Carbazole	6E-11	--	3E-10	--	4E-10	N/A	N/A	--	N/A	N/A
			Dibenz(a,h)anthracene	8E-08	--	3E-07	--	4E-07	N/A	N/A	--	N/A	N/A
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	2E-06	--	6E-06	8E-06
			Indeno(1,2,3-cd)pyrene	3E-08	--	1E-07	--	2E-07	N/A	N/A	--	N/A	N/A
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	5E-06	--	2E-05	2E-05
			Aroclor-1242	N/A	--	N/A	--	N/A	General Toxicity/Immune System	N/A	--	N/A	N/A
			Aroclor-1254	4E-09	--	2E-08	--	2E-08	General Toxicity/Immune System	8E-04	--	3E-03	4E-03
			Aroclor-1260	5E-09	--	3E-08	--	3E-08	General Toxicity/Immune System	1E-03	--	4E-03	5E-03
			Dieldrin	3E-09	--	1E-08	--	2E-08	Liver	2E-05	--	5E-05	6E-05
			Aluminum	N/A	--	N/A	--	N/A	Developmental	7E-04	--	N/A	7E-04
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	2E-03	--	N/A	2E-03
			Arsenic	4E-07	--	5E-07	--	9E-07	Skin	4E-03	--	3E-03	7E-03
			Cadmium (other media)	N/A	--	N/A	--	N/A	Kidney	1E-03	--	1E-03	3E-03
			Chromium	3E-06	--	N/A	--	3E-06	GI System	6E-03	--	N/A	6E-03
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	3E-03	--	N/A	3E-03

TABLE 9.2.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
Receptor Population: Recreational User
Receptor Age: Older Child/Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk Older Child + Adult					Non-Carcinogenic Hazard Quotient Older Child					
				Ingestion	Inhalation	Dermal	External (Radiation)	Exposure Routes Total	Primary Target Organ	Ingestion	Inhalation	Dermal	Exposure Routes Total	
			Copper	N/A	--	N/A	--	N/A	GI System	8E-04	--	N/A	8E-04	
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	3E-03	--	N/A	3E-03	
			Lead											
			Manganese (other media)	N/A	--	N/A	--	N/A	CNS	3E-04	--	N/A	3E-04	
			Mercury (other media)	N/A	--	N/A	--	N/A	CNS	5E-04	--	N/A	5E-04	
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A	
			Vanadium	N/A	--	N/A	--	N/A	Kidney	3E-04	--	N/A	3E-04	
			Chemical Total	5E-06	--	5E-06	--	9E-06		2E-02	--	1E-02	4E-02	
			Radionuclide Total											
		Exposure Point Total								9E-06				4E-02
		Exposure Medium Total								9E-06				4E-02
		Medium Total								9E-06				4E-02
		Receptor Total								3E-05				2E-01

-- = Not Evaluated

N/A = Not Applicable

Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media

3E-05

Total Hazard Across All Media

2E-01

Total Blood HI =	6E-04
Total Cardiovascular HI =	N/A
Total Reproductive HI =	N/A
Total General Toxicity HI =	8E-02
Total GI System HI =	4E-02
Total Immune System HI =	6E-02
Total Kidney HI =	6E-03
Total Liver HI =	2E-02
Total CNS HI =	4E-03
Total Skin HI =	2E-02
Total Spleen HI =	N/A
Total Respiratory HI =	N/A
Total Developmental HI =	2E-02
Total Endocrine HI =	7E-03

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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	Ingestion	Inhalation	Dermal	Exposure Routes Total		
Soil	Surface + Subsurface Soil	Unnamed Island	Benzo(a)anthracene	5E-08	4E-13	2E-08	--	7E-08	N/A	N/A	N/A	N/A	N/A		
			Benzo(a)pyrene	5E-07	4E-12	2E-07	--	7E-07	N/A	N/A	N/A	N/A	N/A		
			Benzo(b)fluoranthene	5E-08	4E-13	2E-08	--	7E-08	N/A	N/A	N/A	N/A	N/A		
			Benzo(g,h,i)perylene	N/A	N/A	N/A	--	N/A	Kidney	9E-06	5E-08	4E-06	1E-05		
			Benzo(k)fluoranthene	3E-09	2E-13	1E-09	--	4E-09	N/A	N/A	N/A	N/A	N/A		
			bis(2-Ethylhexyl)phthalate	5E-08	4E-13	1E-08	--	6E-08	Liver	1E-02	N/A	4E-03	2E-02		
			Carbazole	9E-11	N/A	4E-11	--	1E-10	N/A	N/A	N/A	N/A	N/A		
			Dibenz(a,h)anthracene	8E-08	6E-13	3E-08	--	1E-07	N/A	N/A	N/A	N/A	N/A		
			Dibenzofuran	N/A	N/A	N/A	--	N/A	Kidney	8E-05	N/A	2E-05	1E-04		
			Indeno(1,2,3-cd)pyrene	2E-08	2E-13	9E-09	--	3E-08	N/A	N/A	N/A	N/A	N/A		
			Naphthalene	N/A	3E-14	N/A	--	3E-14	General Toxicity	6E-06	2E-08	2E-06	8E-06		
			Phenanthrene	N/A	N/A	N/A	--	N/A	Kidney	2E-05	1E-07	1E-05	3E-05		
			Aroclor-1242	8E-09	1E-13	3E-09	--	1E-08	General Toxicity/Immune System	4E-03	N/A	2E-03	6E-03		
			Aroclor-1254	2E-08	3E-13	1E-08	--	3E-08	General Toxicity/Immune System	1E-02	N/A	6E-03	2E-02		
			Aroclor-1260	3E-08	5E-13	1E-08	--	5E-08	General Toxicity/Immune System	2E-02	N/A	8E-03	3E-02		
			Dieldrin	6E-08	9E-13	2E-08	--	7E-08	Liver	5E-03	N/A	2E-03	7E-03		
			Dioxin TEQ	2E-07	3E-12	2E-08	--	2E-07	Immune System	5E-03	1E-07	4E-04	5E-03		
			Aluminum	N/A	N/A	N/A	--	N/A	Developmental	1E-02	1E-04	N/A	1E-02		
			Antimony	N/A	N/A	N/A	--	N/A	General Toxicity	2E-01	N/A	N/A	2E-01		
			Arsenic	5E-07	7E-11	4E-08	--	5E-07	Skin	7E-02	8E-05	7E-03	8E-02		
			Cadmium (other media)	N/A	1E-11	N/A	--	1E-11	Kidney	9E-03	5E-05	1E-03	1E-02		
			Chromium	2E-06	2E-08	N/A	--	2E-06	GI System	4E-02	6E-05	N/A	4E-02		
			Cobalt	N/A	6E-11	N/A	--	6E-11	Endocrine	3E-03	3E-05	N/A	3E-03		
			Copper	N/A	N/A	N/A	--	N/A	GI System	2E-02	N/A	N/A	2E-02		
			Iron	N/A	N/A	N/A	--	N/A	Liver/GI System	7E-02	N/A	N/A	7E-02		
			Lead												
			Manganese (other media)	N/A	N/A	N/A	--	N/A	CNS	9E-03	6E-04	N/A	9E-03		
			Mercury (other media)	N/A	N/A	N/A	--	N/A	CNS	2E-02	3E-06	N/A	2E-02		
			Nickel	N/A	2E-11	N/A	--	2E-11	General Toxicity	4E-03	2E-05	N/A	4E-03		
			Thallium	N/A	N/A	N/A	--	N/A	N/A	N/A	N/A	N/A	N/A		
			Vanadium	N/A	N/A	N/A	--	N/A	Kidney	4E-03	N/A	N/A	4E-03		
			Zinc	N/A	N/A	N/A	--	N/A	Blood	5E-03	N/A	N/A	5E-03		
			Chemical Total			4E-06	2E-08	4E-07	--	5E-06		5E-01	1E-03	3E-02	5E-01
			Radionuclide Total												
		Exposure Point Total			5E-06					5E-01					
	Exposure Medium Total			5E-06					5E-01						

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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	Ingestion	Inhalation	Dermal	Exposure Routes Total	
	Outdoor (Trench) Air	Unnamed Island	1,1'-Biphenyl	--	N/A	--	--	N/A	N/A	--	N/A	--	N/A	
			2-Methylnaphthalene	--	N/A	--	--	N/A	Respiratory	--	2E-02	--	2E-02	
			Acenaphthene	--	N/A	--	--	N/A	Respiratory	--	2E-03	--	2E-03	
			Acenaphthylene	--	N/A	--	--	N/A	Respiratory	--	4E-03	--	4E-03	
			Acetophenone	--	N/A	--	--	N/A	N/A	--	N/A	--	N/A	
			Benzaldehyde	--	N/A	--	--	N/A	N/A	--	N/A	--	N/A	
			Naphthalene	--	8E-08	--	--	8E-08	Respiratory	--	6E-02	--	6E-02	
			Nitrobenzene	--	1E-07	--	--	1E-07	Respiratory	--	2E-02	--	2E-02	
			Phenanthrene	--	N/A	--	--	N/A	Respiratory	--	5E-03	--	5E-03	
			1,1-Dichloroethene	--	N/A	--	--	N/A	Liver	--	1E-02	--	1E-02	
			1,4-Dichlorobenzene	--	5E-08	--	--	5E-08	Liver	--	1E-04	--	1E-04	
			Benzene	--	5E-08	--	--	5E-08	Immune System	--	5E-03	--	5E-03	
			Carbon disulfide	--	N/A	--	--	N/A	CNS	--	5E-03	--	5E-03	
			Carbon tetrachloride	--	4E-08	--	--	4E-08	Liver	--	5E-03	--	5E-03	
			Chlorobenzene	--	N/A	--	--	N/A	Liver/Kidney	--	8E-04	--	8E-04	
			Cyclohexane, methyl-	--	N/A	--	--	N/A	Kidney	--	4E-03	--	4E-03	
			Dichlorodifluoromethane	--	N/A	--	--	N/A	Liver	--	7E-04	--	7E-04	
			Methyl acetate	--	N/A	--	--	N/A	N/A	--	N/A	--	N/A	
			Methylene chloride	--	5E-09	--	--	5E-09	Liver	--	7E-04	--	7E-04	
			Tetrachloroethene	--	5E-08	--	--	5E-08	CNS	--	2E-03	--	2E-03	
			Trichloroethene	--	9E-09	--	--	9E-09	CNS	--	3E-03	--	3E-03	
			Xylene (Total)	--	N/A	--	--	N/A	CNS	--	1E-03	--	1E-03	
			Chemical Total	--	4E-07	--	--	4E-07		--	1E-01	--	1E-01	
			Radionuclide Total											
			Exposure Point Total			4E-07					1E-01			
		Exposure Medium Total			4E-07					1E-01				
		Medium Total			5E-06					7E-01				
Groundwater	Groundwater	Shallow Monitoring Wells	Atrazine	3E-09	--	N/A	--	3E-09	General Toxicity/Cardiovascular	2E-05	--	N/A	2E-05	
			Benzo(a)anthracene	1E-10	--	N/A	--	1E-10	N/A	N/A	--	N/A	N/A	
			Benzo(a)pyrene	4E-10	--	N/A	--	4E-10	N/A	N/A	--	N/A	N/A	
			bis(2-Ethylhexyl)phthalate	1E-10	--	6E-10	--	7E-10	Liver	3E-05	--	1E-04	2E-04	
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	2E-05	--	9E-05	1E-04	
			Naphthalene	N/A	--	N/A	--	N/A	General Toxicity	1E-06	--	N/A	1E-06	
			N-Nitrosodiphenylamine	8E-11	--	N/A	--	8E-11	N/A	N/A	--	N/A	N/A	
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	2E-07	--	N/A	2E-07	
			1,4-Dichlorobenzene	3E-11	--	N/A	--	3E-11	Liver	6E-06	--	N/A	6E-06	
			Benzene	7E-10	--	N/A	--	7E-10	Immune System	8E-05	--	N/A	8E-05	
			Chlorobenzene	N/A	--	N/A	--	N/A	Liver/Kidney	4E-05	--	N/A	4E-05	

TABLE 9.3.RME
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
REASONABLE MAXIMUM EXPOSURE
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Aroclor-1242	2E-09	--	N/A	--	2E-09	General Toxicity/Immune System	1E-03	--	N/A	1E-03
			Aroclor-1254	3E-08	--	N/A	--	3E-08	General Toxicity/Immune System	2E-02	--	N/A	2E-02
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	1E-03	--	N/A	1E-03
			Arsenic	2E-08	--	N/A	--	2E-08	Skin	3E-03	--	N/A	3E-03
			Barium	N/A	--	N/A	--	N/A	Kidney	8E-04	--	N/A	8E-04
			Cadmium (drinking water)	N/A	--	N/A	--	N/A	Kidney	4E-03	--	N/A	4E-03
			Chromium	9E-09	--	N/A	--	9E-09	GI System	1E-04	--	N/A	1E-04
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	1E-03	--	N/A	1E-03
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	1E-02	--	N/A	1E-02
			Lead										
			Manganese (drinking water)	N/A	--	N/A	--	N/A	CNS	1E-02	--	N/A	1E-02
			Nickel	N/A	--	N/A	--	N/A	General Toxicity	5E-04	--	N/A	5E-04
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A
			Vanadium	N/A	--	N/A	--	N/A	Kidney	6E-05	--	N/A	6E-05
			Zinc	N/A	--	N/A	--	N/A	Blood	1E-03	--	N/A	1E-03
			Chemical Total	7E-08	--	6E-10	--	7E-08		6E-02	--	2E-04	6E-02
Radionuclide Total													
Exposure Point Total				7E-08				6E-02					
Exposure Medium Total				7E-08				6E-02					
Medium Total				7E-08				6E-02					
Receptor Total				5E-06				7E-01					

-- = Not Evaluated

N/A = Not Applicable

Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media

5E-06

Total Hazard Across All Media

7E-01

Total Blood HI =	6E-03
Total Cardiovascular HI =	2E-05
Total Reproductive HI =	N/A
Total General Toxicity HI =	2E-01
Total GI System HI =	1E-01
Total Immune System HI =	8E-02
Total Kidney HI =	2E-02
Total Liver HI =	1E-01
Total CNS HI =	5E-02
Total Skin HI =	8E-02
Total Spleen HI =	N/A
Total Respiratory HI =	1E-01
Total Developmental HI =	1E-02
Total Endocrine HI =	4E-03

TABLE 9.3.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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	Ingestion	Inhalation	Dermal	Exposure Routes Total		
Soil	Surface + Subsurface Soil	Unnamed Island	Benzo(a)anthracene	3E-08	2E-13	1E-08	--	4E-08	N/A	N/A	N/A	N/A	N/A		
			Benzo(a)pyrene	3E-07	2E-12	1E-07	--	4E-07	N/A	N/A	N/A	N/A	N/A		
			Benzo(b)fluoranthene	3E-08	2E-13	1E-08	--	4E-08	N/A	N/A	N/A	N/A	N/A		
			Benzo(g,h,i)perylene	N/A	N/A	N/A	--	N/A	Kidney	5E-06	2E-08	2E-06	6E-06		
			Benzo(k)fluoranthene	1E-09	1E-13	6E-10	--	2E-09	N/A	N/A	N/A	N/A	N/A		
			bis(2-Ethylhexyl)phthalate	2E-08	2E-13	7E-09	--	3E-08	Liver	6E-03	N/A	2E-03	8E-03		
			Carbazole	5E-11	N/A	2E-11	--	6E-11	N/A	N/A	N/A	N/A	N/A		
			Dibenz(a,h)anthracene	4E-08	3E-13	1E-08	--	5E-08	N/A	N/A	N/A	N/A	N/A		
			Dibenzofuran	N/A	N/A	N/A	--	N/A	Kidney	4E-05	N/A	1E-05	5E-05		
			Indeno(1,2,3-cd)pyrene	1E-08	9E-14	5E-09	--	2E-08	N/A	N/A	N/A	N/A	N/A		
			Naphthalene	N/A	2E-14	N/A	--	2E-14	General Toxicity	3E-06	1E-08	1E-06	4E-06		
			Phenanthrene	N/A	N/A	N/A	--	N/A	Kidney	1E-05	6E-08	5E-06	2E-05		
			Aroclor-1242	2E-09	6E-14	8E-10	--	3E-09	General Toxicity/Immune System	2E-03	N/A	9E-04	3E-03		
			Aroclor-1254	6E-09	2E-13	2E-09	--	8E-09	General Toxicity/Immune System	7E-03	N/A	3E-03	9E-03		
			Aroclor-1260	8E-09	2E-13	3E-09	--	1E-08	General Toxicity/Immune System	9E-03	N/A	4E-03	1E-02		
			Dieldrin	3E-08	4E-13	9E-09	--	4E-08	Liver	2E-03	N/A	7E-04	3E-03		
			Dioxin TEQ	1E-07	1E-12	1E-08	--	1E-07	Immune System	2E-03	6E-08	2E-04	3E-03		
			Aluminum	N/A	N/A	N/A	--	N/A	Developmental	5E-03	6E-05	N/A	6E-03		
			Antimony	N/A	N/A	N/A	--	N/A	General Toxicity	8E-02	N/A	N/A	8E-02		
			Arsenic	2E-07	4E-11	2E-08	--	3E-07	Skin	4E-02	4E-05	3E-03	4E-02		
			Cadmium (other media)	N/A	6E-12	N/A	--	6E-12	Kidney	4E-03	2E-05	5E-04	5E-03		
			Chromium	1E-06	1E-08	N/A	--	1E-06	GI System	2E-02	3E-05	N/A	2E-02		
			Cobalt	N/A	3E-11	N/A	--	3E-11	Endocrine	2E-03	1E-05	N/A	2E-03		
			Copper	N/A	N/A	N/A	--	N/A	GI System	8E-03	N/A	N/A	8E-03		
			Iron	N/A	N/A	N/A	--	N/A	Liver/GI System	3E-02	N/A	N/A	3E-02		
			Lead												
			Manganese (other media)	N/A	N/A	N/A	--	N/A	CNS	4E-03	3E-04	N/A	5E-03		
			Mercury (other media)	N/A	N/A	N/A	--	N/A	CNS	9E-03	1E-06	N/A	9E-03		
			Nickel	N/A	8E-12	N/A	--	8E-12	General Toxicity	2E-03	1E-05	N/A	2E-03		
			Thallium	N/A	N/A	N/A	--	N/A	N/A	N/A	N/A	N/A	N/A		
			Vanadium	N/A	N/A	N/A	--	N/A	Kidney	2E-03	N/A	N/A	2E-03		
			Zinc	N/A	N/A	N/A	--	N/A	Blood	3E-03	N/A	N/A	3E-03		
			Chemical Total			2E-06	1E-08	2E-07	--	2E-06		2E-01	5E-04	1E-02	3E-01
			Radionuclide Total												
		Exposure Point Total			2E-06					3E-01					
	Exposure Medium Total			2E-06					3E-01						

TABLE 9.3.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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	Ingestion	Inhalation	Dermal	Exposure Routes Total	
	Outdoor (Trench) Air	Unnamed Island	1,1'-Biphenyl	--	N/A	--	--	N/A	N/A	--	N/A	--	N/A	
			2-Methylnaphthalene	--	N/A	--	--	N/A	Respiratory	--	8E-03	--	8E-03	
			Acenaphthene	--	N/A	--	--	N/A	Respiratory	--	7E-04	--	7E-04	
			Acenaphthylene	--	N/A	--	--	N/A	Respiratory	--	2E-03	--	2E-03	
			Acetophenone	--	N/A	--	--	N/A	N/A	--	N/A	--	N/A	
			Benzaldehyde	--	N/A	--	--	N/A	N/A	--	N/A	--	N/A	
			Naphthalene	--	4E-08	--	--	4E-08	Respiratory	--	3E-02	--	3E-02	
			Nitrobenzene	--	5E-08	--	--	5E-08	Respiratory	--	1E-02	--	1E-02	
			Phenanthrene	--	N/A	--	--	N/A	Respiratory	--	2E-03	--	2E-03	
			1,1-Dichloroethene	--	N/A	--	--	N/A	Liver	--	6E-03	--	6E-03	
			1,4-Dichlorobenzene	--	3E-08	--	--	3E-08	Liver	--	7E-05	--	7E-05	
			Benzene	--	2E-08	--	--	2E-08	Immune System	--	2E-03	--	2E-03	
			Carbon disulfide	--	N/A	--	--	N/A	CNS	--	3E-03	--	3E-03	
			Carbon tetrachloride	--	2E-08	--	--	2E-08	Liver	--	2E-03	--	2E-03	
			Chlorobenzene	--	N/A	--	--	N/A	Liver/Kidney	--	4E-04	--	4E-04	
			Cyclohexane, methyl-	--	N/A	--	--	N/A	Kidney	--	2E-03	--	2E-03	
			Dichlorodifluoromethane	--	N/A	--	--	N/A	Liver	--	3E-04	--	3E-04	
			Methyl acetate	--	N/A	--	--	N/A	N/A	--	N/A	--	N/A	
			Methylene chloride	--	2E-09	--	--	2E-09	Liver	--	4E-04	--	4E-04	
			Tetrachloroethene	--	2E-08	--	--	2E-08	CNS	--	1E-03	--	1E-03	
			Trichloroethene	--	4E-09	--	--	4E-09	CNS	--	2E-03	--	2E-03	
			Xylene (Total)	--	N/A	--	--	N/A	CNS	--	5E-04	--	5E-04	
			Chemical Total	--	2E-07	--	--	2E-07		--	7E-02	--	7E-02	
			Radionuclide Total											
			Exposure Point Total			2E-07					7E-02			
		Exposure Medium Total			2E-07					7E-02				
		Medium Total			2E-06					3E-01				
Groundwater	Groundwater	Shallow Monitoring Wells	Atrazine	4E-10	--	N/A	--	4E-10	General Toxicity/Cardiovascular	4E-06	--	N/A	4E-06	
			Benzo(a)anthracene	6E-11	--	N/A	--	6E-11	N/A	N/A	--	N/A	N/A	
			Benzo(a)pyrene	2E-10	--	N/A	--	2E-10	N/A	N/A	--	N/A	N/A	
			bis(2-Ethylhexyl)phthalate	7E-11	--	3E-10	--	4E-10	Liver	2E-05	--	7E-05	9E-05	
			Dibenzofuran	N/A	--	N/A	--	N/A	Kidney	9E-06	--	4E-05	5E-05	
			Naphthalene	N/A	--	N/A	--	N/A	General Toxicity	6E-07	--	N/A	6E-07	
			N-Nitrosodiphenylamine	4E-11	--	N/A	--	4E-11	N/A	N/A	--	N/A	N/A	
			Phenanthrene	N/A	--	N/A	--	N/A	Kidney	1E-07	--	N/A	1E-07	
			1,4-Dichlorobenzene	2E-11	--	N/A	--	2E-11	Liver	3E-06	--	N/A	3E-06	
			Benzene	4E-10	--	N/A	--	4E-10	Immune System	4E-05	--	N/A	4E-05	
			Chlorobenzene	N/A	--	N/A	--	N/A	Liver/Kidney	2E-05	--	N/A	2E-05	

TABLE 9.3.CT
SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs
CENTRAL TENDENCY
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
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	Ingestion	Inhalation	Dermal	Exposure Routes Total
			Aroclor-1242	1E-10	--	N/A	--	1E-10	General Toxicity/Immune System	1E-04	--	N/A	1E-04
			Aroclor-1254	7E-10	--	N/A	--	7E-10	General Toxicity/Immune System	8E-04	--	N/A	8E-04
			Antimony	N/A	--	N/A	--	N/A	General Toxicity	6E-04	--	N/A	6E-04
			Arsenic	1E-08	--	N/A	--	1E-08	Skin	2E-03	--	N/A	2E-03
			Barium	N/A	--	N/A	--	N/A	Kidney	4E-04	--	N/A	4E-04
			Cadmium (drinking water)	N/A	--	N/A	--	N/A	Kidney	2E-03	--	N/A	2E-03
			Chromium	4E-09	--	N/A	--	4E-09	GI System	7E-05	--	N/A	7E-05
			Cobalt	N/A	--	N/A	--	N/A	Endocrine	5E-04	--	N/A	5E-04
			Iron	N/A	--	N/A	--	N/A	Liver/GI System	7E-03	--	N/A	7E-03
			Lead										
			Manganese (drinking water)	N/A	--	N/A	--	N/A	CNS	5E-03	--	N/A	5E-03
			Nickel	N/A	--	N/A	--	N/A	General Toxicity	3E-04	--	N/A	3E-04
			Thallium	N/A	--	N/A	--	N/A	N/A	N/A	--	N/A	N/A
			Vanadium	N/A	--	N/A	--	N/A	Kidney	3E-05	--	N/A	3E-05
			Zinc	N/A	--	N/A	--	N/A	Blood	5E-04	--	N/A	5E-04
			Chemical Total	2E-08	--	3E-10	--	2E-08		2E-02	--	1E-04	2E-02
			Radionuclide Total										
		Exposure Point Total						2E-08					2E-02
	Exposure Medium Total							2E-08					2E-02
Medium Total								2E-08					2E-02
Receptor Total								2E-06					4E-01

-- = Not Evaluated

N/A = Not Applicable

Note that if information provided in the Draft Dioxin Reassessment is applied, the risks for dioxin will be approximately 6 times higher than shown.

Total Risk Across All Media

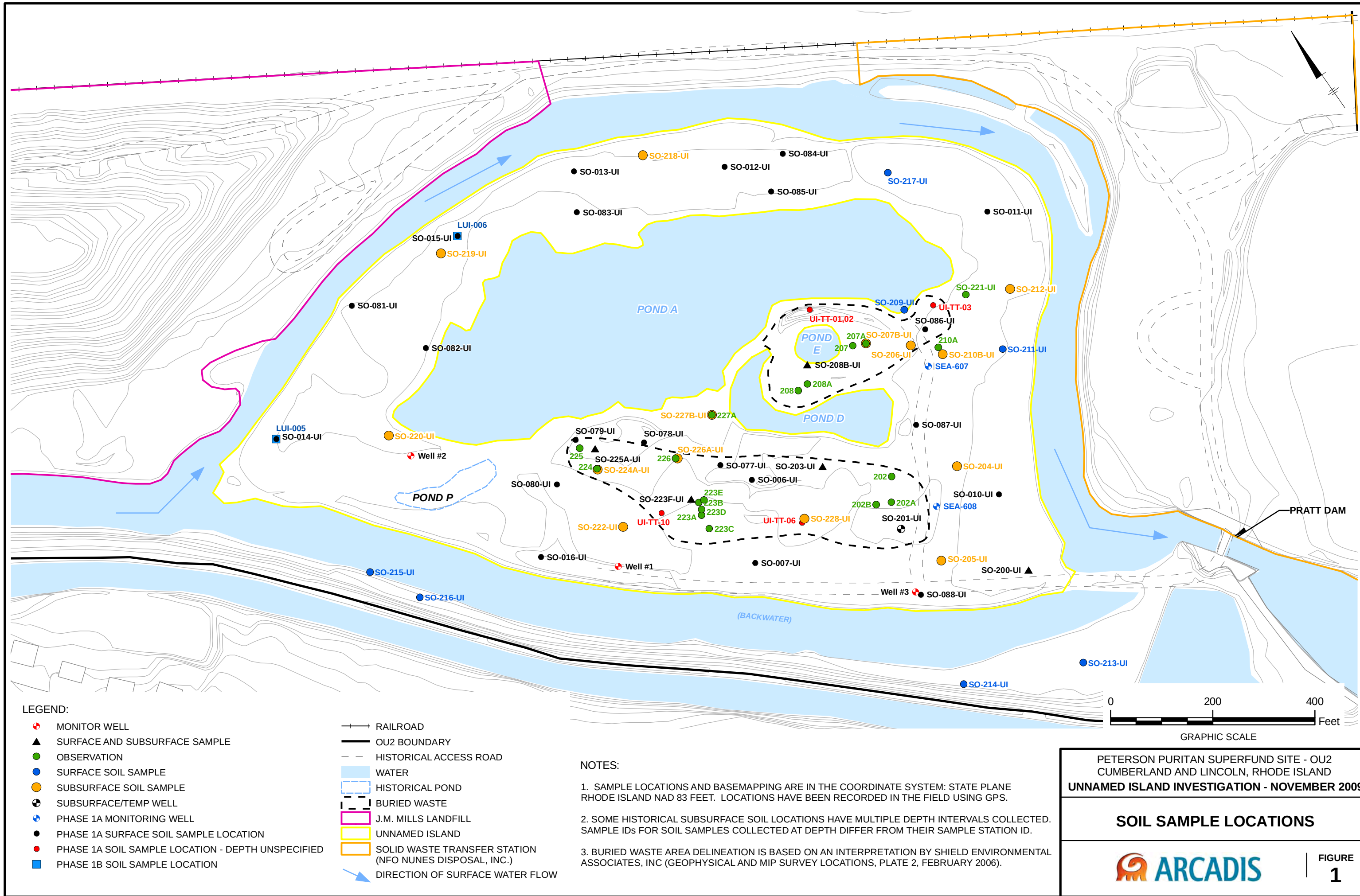
2E-06

Total Hazard Across All Media

4E-01

Total Blood HI =	3E-03
Total Cardiovascular HI =	4E-06
Total Reproductive HI =	N/A
Total General Toxicity HI =	1E-01
Total GI System HI =	7E-02
Total Immune System HI =	3E-02
Total Kidney HI =	1E-02
Total Liver HI =	6E-02
Total CNS HI =	2E-02
Total Skin HI =	4E-02
Total Spleen HI =	N/A
Total Respiratory HI =	5E-02
Total Developmental HI =	6E-03
Total Endocrine HI =	2E-03

CITY:CLE DIV/GROUP: AIT DB1.GREENE LD: PIC: PM: TM: TR:
Project (Project #)Peterson/Puritan 80037902.0000.00500
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APPENDIX A

SAMPLE GROUPINGS USED TO DEVELOP EXPOSURE POINT CONCENTRATIONS

**Peterson Puritan Superfund Site - Operable Unit 2
Summary of Surface Soil Samples**

Scenario Timeframe:	Current/Future
Exposure Area:	Unnamed Island
Exposure Medium:	Surface Soil
Receptor(s):	Trespasser, Recreational User, Construction Worker
Pathway(s):	Ingestion, dermal

Location ID Sample ID	Sample Depth	Date Collected
LUI-005		
LUI-005	NA	12/08/05
LUI-006		
LUI-006	NA	12/08/05
SO-006-UI		
SO-006-UI	0 - 1	08/19/03
SO-007-UI		
SO-007-UI	0 - 1	08/19/03
SO-010-UI		
SO-010-UI	0 - 1	08/20/03
SO-011-UI		
SO-011-UI	0 - 1	08/20/03
SO-012-UI		
SO-012-UI	0 - 1	08/20/03
SO-013-UI		
SO-013-UI	0 - 1	08/20/03
SO-014-UI		
SO-014-UI	0 - 1	08/20/03
SO-015-UI		
SO-015-UI	0 - 1	08/20/03
SO-016-UI		
SO-016-UI	0 - 1	08/20/03
SO-077-UI		
SO-077-UI	0 - 1	09/10/04
SO-078-UI		
SO-078-UI	0 - 1	09/10/04
SO-079-UI		
SO-079-UI	0 - 1	09/10/04
SO-080-UI		
SO-080-UI	0 - 1	09/10/04
SO-081-UI		
SO-081-UI	0 - 1	09/10/04
SO-082-UI		
SO-082-UI	0 - 1	09/10/04
SO-083-UI		
SO-083-UI	0 - 1	09/10/04
SO-084-UI		
SO-084-UI	0 - 1	09/09/04
SO-084-UI		
SO-089-UI	0 - 1	11/27/04
SO-085-UI		
SO-085-UI	0 - 1	09/09/04
SO-085-UI		
SO-090-UI	0 - 1	11/27/04
SO-085-UI		
SO-FD-20	0 - 1	11/27/04
SO-086-UI		
SO-086-UI	0 - 1	09/09/04
SO-087-UI		
SO-087-UI	0 - 1	09/09/04
SO-088-UI		
SO-088-UI	0 - 1	09/10/04
UI-TT-01,02		
SO-W03-UI	NA	08/20/03
UI-TT-03		
SO-W04-UI	NA	08/20/03
UI-TT-03		
SO-FD02	NA	08/20/03
UI-TT-06		
SO-W01-UI	NA	08/19/03
UI-TT-10		
SO-W02-UI	NA	08/19/03
SO-200-UI		
SO-200-UI (0-1')	0-1	11/18/09
SO-203-UI		
SO-203-UI-0-1'	0-1	11/18/09

Peterson Puritan Superfund Site - Operable Unit 2
Summary of Surface Soil Samples

Scenario Timeframe:	Current/Future
Exposure Area:	Unnamed Island
Exposure Medium:	Surface Soil
Receptor(s):	Trespasser, Recreational User, Construction Worker
Pathway(s):	Ingestion, dermal

Location ID Sample ID	Sample Depth	Date Collected
SO-208B-UI SO-208B-UI (0-1')	0-1	11/19/09
SO-209-UI SO-209-UI (0-1')	0-1	11/20/09
SO-211-UI SO-211-UI (0-1')	0-1	11/20/09
SO-213-UI SO-213-UI-0-1'	0-1	11/20/09
SO-214-UI SO-214-UI-0-1'	0-1	11/20/09
SO-215-UI SO-215-UI-0-1'	0-1	11/20/09
SO-216-UI SO-216-UI-0-1'	0-1	11/20/09
SO-217-UI SO-217-UI (0-1')	0-1	11/20/09
SO-223F-UI SO-223F-UI-0-1'	0-1	11/24/09
SO-225A-UI SO-225A-UI-0-1'	0-1	11/24/09
SO-225A-UI DUP-2	0-1	11/24/09

Notes:

Shaded samples collected for use as background and have not been quantitatively evaluated in this supplemental HHRA.

**Peterson Puritan Superfund Site - Operable Unit 2
Summary of Subsurface Soil Samples**

Scenario Timeframe:	Future
Exposure Area:	Unnamed Island
Exposure Medium:	Subsurface Soil
Receptor(s):	Recreational User, Construction Worker
Pathway(s):	Ingestion, dermal

Location ID Sample ID	Sample Depth	Date Collected
SO-200-UI		
SO-200-UI (5-6')	5-6	11/18/09
SO-201-UI		
SO-201-UI (4-6')	4-6	11/24/09
SO-203-UI		
SO-203-UI (5-7')	5-7	11/18/09
SO-204-UI		
SO-204-UI (2-4')	2-4	11/19/09
SO-205-UI		
SO-205-UI (2-4')	2-4	11/19/09
SO-205-UI		
SO-205-UI 1-3-4.5	3-4.5	11/19/09
SO-206-UI		
SO-206-UI (2-3')	2-3	11/19/09
SO-207B-UI		
SO-207B-UI (1-2')	1-2	11/19/09
SO-207B-UI		
SO-207B-UI (2-3')	2-3	11/19/09
SO-208B-UI		
SO-208B-UI (1-5')	1-5	11/19/09
SO-210B-UI		
SO-210B-UI (1.25-4')	1.25-4	11/20/09
SO-212-UI		
SO-212-UI (1-4.5')	1-4.5	11/20/09
SO-212-UI		
DUPLICATE	1-4.5	11/20/09
SO-218-UI		
SO-218-UI-1-5'	1-5	11/23/09
SO-219-UI		
SO-219-UI-1-5'	1-5	11/23/09
SO-219-UI		
DUPLICATE 3	1-5	11/23/09
SO-220-UI		
SO-220-UI-1-4.5'	1-4.5	11/23/09
SO-222-UI		
SO-222-UI-1-3'	1-3	11/23/09
SO-223F-UI		
SO-223F-UI-11-12'	11-12	11/23/09
SO-224A-UI		
SO-224A-UI-1-5'	1-5	11/23/09
SO-225A-UI		
SO-225A-UI-1.5-5'	1.5-5	11/24/09
SO-226A-UI		
SO-226A-UI-6-8'	6-8	11/24/09
SO-227B-UI		
SO-227B-UI-1-5'	1-5	11/24/09
SO-228-UI		
SO-228-UI-12-14'	12-14	11/24/09

**Peterson Puritan Superfund Site - Operable Unit 2
Summary of Sediment Samples**

Scenario Timeframe:	Current/Future
Exposure Area:	Unnamed Island Ponds (Ponds A, D, E, P, Excavator)
Exposure Medium:	Sediment
Receptor(s):	Trespasser, Recreational User
Pathway(s):	Ingestion, dermal

Location ID Sample ID	Sample Depth	Date Collected	Depth (ft) of Water at Collection
SE-001-UI SE-001-UI	0 - 1	08/28/03	2
SE-003-UI SE-003-UI	0 - 1	08/29/03	nearshore
SE-003-UI SE-FD01	0 - 1	08/29/03	2
SE-004-UI SE-004-UI	0 - 1	08/29/03	0
SE-005-UI SE-005-UI	0 - 1	08/29/03	2
SE-006-UI SE-006-UI	0 - 1	08/29/03	2
SE-007-UI SE-007-UI	0 - 1	09/02/03	2
SE-075-UI SE-075-UI	0 - 1	09/03/04	1
SE-076-UI SE-076-UI	0 - 1	09/03/04	0
SE-077-UI SE-077-UI	0 - 1	09/06/04	2
SE-078-UI SE-078-UI	0 - 1	09/06/04	2
SE-084-UI SE-084-UI	0 - 1	09/07/04	2
SE-085-UI SE-085-UI	0 - 1	09/07/04	2
SE-086-UI SE-086-UI	0 - 1	09/07/04	2
SE-087-UI SE-087-UI	0 - 1	09/07/04	2
T05PA-001 T05PA-001	0 - 0.5	06/21/05	nearshore
T05PA-003 T05PA-003	0 - 0.5	06/21/05	nearshore
T05PD-002 BD062105	0 - 0.5	06/21/05	shallow
T05PD-002 T05PD-002	0 - 0.5	06/21/05	shallow

Peterson Puritan Superfund Site - Operable Unit 2
Summary of Surface Water Samples

Scenario Timeframe:	Current/Future
Exposure Area:	Unnamed Island Ponds (Ponds A, D, E, P)
Exposure Medium:	Surface Water
Receptor(s):	Trespasser, Recreational User
Pathway(s):	Ingestion, dermal

Location ID Sample ID	Date Collected
SE-001-UI SW-001-UI	08/28/03
SE-002-UI SW-002-UI	08/28/03
SE-003-UI SW-003-UI	08/29/03
SE-003-UI SW-FD01	08/29/03
SE-005-UI SW-005-UI	08/29/03
SE-006-UI SW-006-UI	08/29/03
SE-007-UI SW-007-UI	09/02/03
SE-075-UI SW-075-UI	09/03/04
SE-077-UI SW-077-UI	09/06/04
SE-078-UI SW-078-UI	09/06/04
SE-079-UI SW-079-UI	09/07/04
SE-079-UI SW-FD-13	09/07/04
SE-080-UI SW-080-UI	09/07/04
SE-084-UI SW-084-UI	09/07/04
SE-085-UI SW-085-UI	09/07/04
SE-086-UI SW-086-UI	09/07/04
SE-087-UI SW-087-UI	09/07/04

Peterson Puritan Superfund Site - Operable Unit 2
Leachate Samples¹: Unnamed Island

Scenario Timeframe:	Current/Future
Exposure Area:	Unnamed Island
Exposure Medium:	Leachate
Receptor(s):	Trespasser, Recreational User, Construction Worker
Pathway(s):	Dermal

Location ID Sample ID	Date Collected
GUI-701 GUI-701	12/08/05
GUI-702 GUI-702	01/10/06
GUI-703 GUI-703	01/10/06
SEA-607 GW-025-UI	10/03/03
SEA-607 GW-072-UI	10/01/04
SEA-608 GW-026-UI	10/03/03
SEA-608 GW-FD03	10/03/03
SEA-608 GW-073-UI	10/01/04
SEA-608 SEA-608	01/10/06
GW-201-UI GW-201-UI	11/24/09
GW-201-UI DUPLICATE-3	11/24/09
GW-207B-UI GW-207B-UI	11/24/09
GW-208B-UI GW-208B-UI	11/24/09
GW-224A-UI GW-224A-UI	11/24/09

Note:

(1) Because there are no "true" leachate data for the site, as discussed, groundwater data will be used as a surrogate to evaluate potential leachate exposures to the receptors. Screening of leachate data using samples below was performed (see Table 2.4) and COPCs were used with the surrogate groundwater data to calculate EPCs.

Location ID Sample ID	Date Collected
UI-TT-06 GW-LE01-UI	08/19/03
UI-TT-06 GW-FD01	08/19/03
UI-TT-10 GW-LE02-UI	08/19/03
LF-TT-02 GW-LE3-LF	08/21/03
LF-TT-04 GW-LE4-LF	08/21/03
LF-TT-07 GW-LE5-LF	08/22/03
LF-TT-09 GW-LE6-LF	08/22/03

Peterson Puritan Superfund Site - Operable Unit 2
Shallow Groundwater Samples

Scenario Timeframe:	Future
Exposure Area:	Unnamed Island
Exposure Medium:	Shallow Groundwater
Receptor(s):	Construction Worker
Pathway(s):	Ingestion, dermal

Location ID Sample ID	Date Collected
GUI-701 GUI-701	12/08/05
GUI-702 GUI-702	01/10/06
GUI-703 GUI-703	01/10/06
SEA-607 GW-025-UI	10/03/03
SEA-607 GW-072-UI	10/01/04
SEA-608 GW-026-UI	10/03/03
SEA-608 GW-FD03	10/03/03
SEA-608 GW-073-UI	10/01/04
SEA-608 SEA-608	01/10/06
GW-201-UI GW-201-UI	11/24/09
GW-201-UI DUPLICATE-3	11/24/09
GW-207B-UI GW-207B-UI	11/24/09
GW-208B-UI GW-208B-UI	11/24/09
GW-224A-UI GW-224A-UI	11/24/09

APPENDIX B

**JOHNSON & ETTINGER ADVANCED SOIL AND GROUNDWATER
MODELS – OUTDOOR (TRENCH) AIR**

COPC Screening

Outdoor from Groundwater

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)		Chemical 1,1-Dichloroethane								
75343		8.30E-01										
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)			ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	152	52	50	50	C	S	S				
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054	
ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)					
10	40	244	91	244	91	2						
ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)							
70	30	30	350	1.0E-06	1							
Used to calculate risk-based groundwater concentration.												

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	7,450	2.88E-03	1.24E-01	1.75E-04	1.20E-02	1.20E-02	1.20E-02	4.81E-04	3.10E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack}^{eff} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	1.03E+02	91.00	-6.28E+01	1.20E-02	6.10E+04	4.24E-01	1.59E-04	1.64E-02	NA	5.0E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)		Chemical								
95501		3.00E-01		1,2-Dichlorobenzene								
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)			ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	152	52	50	50	C	S	S				
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054	
ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)					
10	40	244	91	244	91	2						
ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)							
70	30	30	350	1.0E-06	1							
Used to calculate risk-based groundwater concentration.												

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_e (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	11,687	6.67E-04	2.87E-02	1.75E-04	1.12E-02	1.12E-02	1.12E-02	4.62E-04	2.95E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RFC (mg/m ³)

10	8.61E+00	91.00	-6.28E+01	1.12E-02	6.10E+04	3.97E-01	1.52E-04	1.31E-03	NA	2.0E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)		Chemical							
106467		3.19E+00		1,4-Dichlorobenzene							
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)	
10	10	152	52	50	50	C	S	S			
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054
ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)				
10	40	244	91	244	91	2					
ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)						
70	30	30	350	1.0E-06	1						
Used to calculate risk-based groundwater concentration.											

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)
3.01E+03	2.22E+04	2.75E+00	10	11,243	8.76E-04	3.77E-02	1.75E-04	1.12E-02	1.12E-02	1.12E-02	4.57E-04	2.93E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^I)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RfC (mg/m ³)
10	1.20E+02	91.00	-6.28E+01	1.12E-02	6.10E+04	3.97E-01	1.50E-04	1.81E-02	NA	8.0E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)		Chemical							
91576		5.77E-01		2-Methylnaphthalene							
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)			ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	152	52	50	50	C	S	S			
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054
ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)				
10	40	244	91	244	91	2					
ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)						
70	30	30	350	1.0E-06	1						
Used to calculate risk-based groundwater concentration.											

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	16,241	1.21E-04	5.20E-03	1.75E-04	8.44E-03	8.44E-03	8.44E-03	4.44E-04	2.67E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack}^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	3.00E+00	91.00	-6.28E+01	8.44E-03	6.10E+04	2.95E-01	1.36E-04	4.10E-04	NA	7.0E-02

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)																					
83329		4.04E-01		Acenaphthene																			
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)		ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)		ENTER Depth below grade to water table, L_{WT} (cm)		ENTER Thickness of soil stratum A, h_A (cm)		ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)		ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)		ENTER Soil stratum directly above water table, (Enter A, B, or C)		ENTER SCS soil type directly above water table		ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)		OR		ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)			
10		10		152		52		50		50		C		S		S							
ENTER Stratum A SCS soil type Lookup Soil Parameters		ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)		ENTER Stratum A soil total porosity, n^A (unitless)		ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)		ENTER Stratum B SCS soil type Lookup Soil Parameters		ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)		ENTER Stratum B soil total porosity, n^B (unitless)		ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)		ENTER Stratum C SCS soil type Lookup Soil Parameters		ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)		ENTER Stratum C soil total porosity, n^C (unitless)		ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	
S		1.66		0.375		0.054		S		1.66		0.375		0.054		S		1.66		0.375		0.054	
ENTER Enclosed space floor thickness, L_{crack} (cm)		ENTER Soil-bldg. pressure differential, ΔP (g/cm^2)		ENTER Enclosed space floor length, L_B (cm)		ENTER Enclosed space floor width, W_B (cm)		ENTER Enclosed space height, H_B (cm)		ENTER Floor-wall seam crack width, w (cm)		ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)									
10		40		244		91		244		91		2											
ENTER Averaging time for carcinogens, AT_C (yrs)		ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)		ENTER Exposure duration, ED (yrs)		ENTER Exposure frequency, EF (days/yr)		ENTER Target risk for carcinogens, TR (unitless)		ENTER Target hazard quotient for noncarcinogens, THQ (unitless)													
70		30		30		350		1.0E-06		1													
END		Used to calculate risk-based groundwater concentration.																					

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_g (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	16,123	3.66E-05	1.57E-03	1.75E-04	6.81E-03	6.81E-03	6.81E-03	6.28E-04	3.12E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	6.36E-01	91.00	-6.28E+01	6.81E-03	6.10E+04	2.20E-01	1.58E-04	1.00E-04	NA	2.1E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

208968 3.65E-02

Chemical

Acenaphthylene

MORE
↓

ENTER
Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)

ENTER
Depth
below grade
to water table,
 L_{WT}
(cm)

ENTER **ENTER** **ENTER**
Totals must add up to value of L_{WT} (cell G28)
Thickness
of soil
stratum A,
 h_A
(cm) Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm) Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

ENTER
Soil
stratum
directly above
water table,
(Enter A, B, or C)

ENTER
SCS
soil type
directly above
water table

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10 10 152 52 50 50 C S S

MORE
↓

ENTER
Stratum A
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER
Stratum B
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER
Stratum C
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

S 1.66 0.375 0.054 S 1.66 0.375 0.054 S 1.66 0.375 0.054

MORE
↓

ENTER
Enclosed
space
floor
thickness,
 L_{crack}
(cm)

ENTER
Soil-bldg.
pressure
differential,
 ΔP
(g/cm-s^2)

ENTER
Enclosed
space
floor
length,
 L_B
(cm)

ENTER
Enclosed
space
floor
width,
 W_B
(cm)

ENTER
Enclosed
space
height,
 H_B
(cm)

ENTER
Floor-wall
seam crack
width,
 w
(cm)

ENTER
Indoor
air exchange
rate,
ER
(1/h)

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10 40 244 91 244 91 2

MORE
↓

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER
Exposure
duration,
ED
(yrs)

ENTER
Exposure
frequency,
EF
(days/yr)

ENTER
Target
risk for
carcinogens,
TR
(unitless)

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

70 30 30 350 1.0E-06 1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	NA	1.14E-04	4.90E-03	1.75E-04	7.26E-03	7.26E-03	7.26E-03	3.92E-04	2.34E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	1.79E-01	91.00	-6.28E+01	7.26E-03	6.10E+04	2.42E-01	1.19E-04	2.13E-05	NA	NA

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

98862 8.97E-01

Chemical

Acetophenone

MORE
↓

ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	152	52	50	50	C	S	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	14,718	2.86E-06	1.23E-04	1.75E-04	9.73E-03	9.73E-03	9.73E-03	5.59E-03	8.93E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	1.11E-01	91.00	-6.28E+01	9.73E-03	6.10E+04	3.47E-01	4.45E-04	4.92E-05	NA	3.5E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

120127 8.68E-02

Chemical

Anthracene

MORE
↓

ENTER
Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)

ENTER
Depth
below grade
to water table,
 L_{WT}
(cm)

ENTER **ENTER** **ENTER**
Totals must add up to value of L_{WT} (cell G28)
Thickness
of soil
stratum A,
 h_A
(cm) Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm) Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

ENTER
Soil
stratum
directly above
water table,
(Enter A, B, or C)

ENTER
SCS
soil type
directly above
water table

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10 10 152 52 50 50 C S S

MORE
↓

ENTER
Stratum A
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER
Stratum B
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER
Stratum C
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

S 1.66 0.375 0.054 S 1.66 0.375 0.054 S 1.66 0.375 0.054

MORE
↓

ENTER
Enclosed
space
floor
thickness,
 L_{crack}
(cm)

ENTER
Soil-bldg.
pressure
differential,
 ΔP
(g/cm-s^2)

ENTER
Enclosed
space
floor
length,
 L_B
(cm)

ENTER
Enclosed
space
floor
width,
 W_B
(cm)

ENTER
Enclosed
space
height,
 H_B
(cm)

ENTER
Floor-wall
seam crack
width,
 w
(cm)

ENTER
Indoor
air exchange
rate,
ER
(1/h)

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10 40 244 91 244 91 2

MORE
↓

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER
Exposure
duration,
ED
(yrs)

ENTER
Exposure
frequency,
EF
(days/yr)

ENTER
Target
risk for
carcinogens,
TR
(unitless)

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

70 30 30 350 1.0E-06 1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	18,353	1.26E-05	5.43E-04	1.75E-04	5.24E-03	5.24E-03	5.24E-03	1.25E-03	3.79E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	4.71E-02	91.00	-6.28E+01	5.24E-03	6.10E+04	1.40E-01	1.86E-04	8.77E-06	NA	NA

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)		Chemical								
71432		8.30E+00		Benzene								
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) Thickness of soil stratum A, h_A (cm)			ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	152	52	50	50	C	S	S				
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054	
ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)					
10	40	244	91	244	91	2						
ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)							
70	30	30	350	1.0E-06	1							
Used to calculate risk-based groundwater concentration.												

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)
3.01E+03	2.22E+04	2.75E+00	10	8,122	2.68E-03	1.15E-01	1.75E-04	1.42E-02	1.42E-02	1.42E-02	5.70E-04	3.67E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
10	9.57E+02	91.00	-6.28E+01	1.42E-02	6.10E+04	4.85E-01	1.89E-04	1.81E-01	7.8E-06	3.0E-02

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to
Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

108907

ENTER
Initial
groundwater
conc.,
C_w
(µg/L)

2.80E+01

Chemical

Chlorobenzene

MORE
↓

ENTER
Average
soil/
groundwater
temperature,
T_s
(°C)

10

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
L_F
(cm)

10

ENTER
Depth
below grade
to water table,
L_{WT}
(cm)

152

ENTER
Thickness
of soil
stratum A,
h_A
(cm)

52

ENTER
Thickness
of soil
stratum B,
(Enter value or 0)
h_B
(cm)

50

ENTER
Thickness
of soil
stratum C,
(Enter value or 0)
h_C
(cm)

50

ENTER
Soil
stratum
directly above
water table,
(Enter A, B, or C)

C

ENTER
SCS
soil type
directly above
water table

S

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

S

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
k_v
(cm²)

MORE
↓

ENTER
Stratum A
SCS
soil type

Lookup Soil
Parameters

S

ENTER
Stratum A
soil dry
bulk density,
ρ_b^A
(g/cm³)

1.66

ENTER
Stratum A
soil total
porosity,
n^A
(unitless)

0.375

ENTER
Stratum A
soil water-filled
porosity,
θ_w^A
(cm³/cm³)

0.054

ENTER
Stratum B
SCS
soil type

Lookup Soil
Parameters

S

ENTER
Stratum B
soil dry
bulk density,
ρ_b^B
(g/cm³)

1.66

ENTER
Stratum B
soil total
porosity,
n^B
(unitless)

0.375

ENTER
Stratum B
soil water-filled
porosity,
θ_w^B
(cm³/cm³)

0.054

ENTER
Stratum C
SCS
soil type

Lookup Soil
Parameters

S

ENTER
Stratum C
soil dry
bulk density,
ρ_b^C
(g/cm³)

1.66

ENTER
Stratum C
soil total
porosity,
n^C
(unitless)

0.375

ENTER
Stratum C
soil water-filled
porosity,
θ_w^C
(cm³/cm³)

0.054

MORE
↓

ENTER
Enclosed
space
floor
thickness,
L_{crack}
(cm)

10

ENTER
Soil-bldg.
pressure
differential,
ΔP
(g/cm-s²)

40

ENTER
Enclosed
space
floor
length,
L_B
(cm)

244

ENTER
Enclosed
space
floor
width,
W_B
(cm)

91

ENTER
Enclosed
space
height,
H_B
(cm)

244

ENTER
Floor-wall
seam crack
width,
w
(cm)

91

ENTER
Indoor
air exchange
rate,
ER
(1/h)

2

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
Q_{soil}
(L/m)

MORE
↓

ENTER
Averaging
time for
carcinogens,
AT_C
(yrs)

70

ENTER
Averaging
time for
noncarcinogens,
AT_{NC}
(yrs)

30

ENTER
Exposure
duration,
ED
(yrs)

30

ENTER
Exposure
frequency,
EF
(days/yr)

350

ENTER
Target
risk for
carcinogens,
TR
(unitless)

1.0E-06

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_g (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	9,803	1.54E-03	6.61E-02	1.75E-04	1.18E-02	1.18E-02	1.18E-02	4.77E-04	3.07E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	1.85E+03	91.00	-6.28E+01	1.18E-02	6.10E+04	4.18E-01	1.58E-04	2.92E-01	NA	6.0E-02

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)**ENTER**
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

75003

2.10E+00

Chemical

Chloroethane (ethyl chloride)

MORE
↓**ENTER**
Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)**ENTER**
Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)**ENTER**
Depth
below grade
to water table,
 L_{WT}
(cm)**ENTER**
Totals must add up to value of L_{WT} (cell G28)
ENTER
Thickness
of soil
stratum A,
 h_A
(cm)
ENTER
Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm)
ENTER
Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)**ENTER**
Soil
stratum
directly above
water table,
(Enter A, B, or C)**ENTER**
SCS
soil type
directly above
water table**ENTER**
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10

10

152

52

50

50

C

S

S

MORE
↓**ENTER**
Stratum A
SCS
soil type
Lookup Soil
Parameters**ENTER**
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)**ENTER**
Stratum A
soil total
porosity,
 n^A
(unitless)**ENTER**
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)**ENTER**
Stratum B
SCS
soil type
Lookup Soil
Parameters**ENTER**
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)**ENTER**
Stratum B
soil total
porosity,
 n^B
(unitless)**ENTER**
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)**ENTER**
Stratum C
SCS
soil type
Lookup Soil
Parameters**ENTER**
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)**ENTER**
Stratum C
soil total
porosity,
 n^C
(unitless)**ENTER**
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

S

1.66

0.375

0.054

S

1.66

0.375

0.054

S

1.66

0.375

0.054

MORE
↓**ENTER**
Enclosed
space
floor
thickness,
 L_{crack}
(cm)**ENTER**
Soil-bldg.
pressure
differential,
 ΔP
(g/cm-s^2)**ENTER**
Enclosed
space
floor
length,
 L_B
(cm)**ENTER**
Enclosed
space
floor
width,
 W_B
(cm)**ENTER**
Enclosed
space
height,
 H_B
(cm)**ENTER**
Floor-wall
seam crack
width,
 w
(cm)**ENTER**
Indoor
air exchange
rate,
 ER
(1/h)**ENTER**
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10

40

244

91

244

91

2

MORE
↓**ENTER**
Averaging
time for
carcinogens,
 AT_C
(yrs)**ENTER**
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)**ENTER**
Exposure
duration,
 ED
(yrs)**ENTER**
Exposure
frequency,
 EF
(days/yr)**ENTER**
Target
risk for
carcinogens,
 TR
(unitless)**ENTER**
Target hazard
quotient for
noncarcinogens,
 THQ
(unitless)

70

30

30

350

1.0E-06

1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{gq} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)
3.01E+03	2.22E+04	2.75E+00	10	5,904	5.19E-03	2.23E-01	1.75E-04	4.38E-02	4.38E-02	4.38E-02	1.74E-03	1.12E-02	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
10	4.69E+02	91.00	-6.28E+01	4.38E-02	6.10E+04	7.91E-01	5.78E-04	2.71E-01	8.3E-07	1.0E+01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)		Chemical								
156592		7.20E-01		cis-1,2-Dichloroethylene								
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to water table, L_{wt} (cm)	ENTER Totals must add up to value of L_{wt} (cell G28) Thickness of soil stratum A, h_A (cm)			ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	152	52	50	50	C	S	S				
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054	
ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)					
10	40	244	91	244	91	2						
ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)							
70	30	30	350	1.0E-06	1							
Used to calculate risk-based groundwater concentration.												

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	7,734	2.04E-03	8.77E-02	1.75E-04	1.19E-02	1.19E-02	1.19E-02	4.81E-04	3.09E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} ($\mu\text{g}/\text{m}^3$)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ ($\mu\text{g}/\text{m}^3$)	Unit risk factor, URF ($\mu\text{g}/\text{m}^3$) ⁻¹	Reference conc., RFC (mg/m ³)

10	6.32E+01	91.00	-6.28E+01	1.19E-02	6.10E+04	4.21E-01	1.59E-04	1.00E-02	NA	3.5E-02

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

110827 6.30E-01

Chemical

Cyclohexane

MORE
↓

ENTER
Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)

ENTER
Depth
below grade
to water table,
 L_{WT}
(cm)

ENTER **ENTER** **ENTER**
Totals must add up to value of L_{WT} (cell G28)
Thickness
of soil
stratum A,
 h_A
(cm) Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm) Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

ENTER
Soil
stratum
directly above
water table,
(Enter A, B, or C)

ENTER
SCS
soil type
directly above
water table

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10 10 152 52 50 50 C S S

MORE
↓

ENTER
Stratum A
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER
Stratum B
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER
Stratum C
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

S 1.66 0.375 0.054 S 1.66 0.375 0.054 S 1.66 0.375 0.054

MORE
↓

ENTER
Enclosed
space
floor
thickness,
 L_{crack}
(cm)

ENTER
Soil-bldg.
pressure
differential,
 ΔP
(g/cm-s^2)

ENTER
Enclosed
space
floor
length,
 L_B
(cm)

ENTER
Enclosed
space
floor
width,
 W_B
(cm)

ENTER
Enclosed
space
height,
 H_B
(cm)

ENTER
Floor-wall
seam crack
width,
 w
(cm)

ENTER
Indoor
air exchange
rate,
ER
(1/h)

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10 40 244 91 244 91 2

MORE
↓

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER
Exposure
duration,
ED
(yrs)

ENTER
Exposure
frequency,
EF
(days/yr)

ENTER
Target
risk for
carcinogens,
TR
(unitless)

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

70 30 30 350 1.0E-06 1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	NA	4.55E-02	1.96E+00	1.75E-04	1.35E-02	1.35E-02	1.35E-02	5.33E-04	3.44E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	1.23E+03	91.00	-6.28E+01	1.35E-02	6.10E+04	4.65E-01	1.77E-04	2.18E-01	NA	NA

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to
Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

86737	4.46E-01

Chemical

Fluorene

MORE
↓

ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)								
10	10	152	52	50	50	C	S	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_e (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	16,235	1.49E-05	6.39E-04	1.75E-04	5.87E-03	5.87E-03	5.87E-03	1.14E-03	3.92E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RFC (mg/m ³)

10	2.85E-01	91.00	-6.28E+01	5.87E-03	6.10E+04	1.73E-01	1.94E-04	5.54E-05	NA	1.4E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER

Chemical
CAS No.
(numbers only,
no dashes)

ENTER

Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

98828 5.20E+00

Chemical

Cumene

MORE
↓

ENTER

Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER

Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)

ENTER

Depth
below grade
to water table,
 L_{WT}
(cm)ENTER ENTER ENTER
Totals must add up to value of L_{WT} (cell G28)Thickness
of soil
stratum A,
 h_A
(cm)Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm)Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

ENTER

Soil
stratum
directly above
water table,
(Enter A, B, or C)

ENTER

SCS
soil type
directly above
water table

ENTER

Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER

User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10 10 152 52 50 50 C S S

MORE
↓

ENTER

Stratum A
SCS
soil type

Lookup Soil
Parameters

ENTER

Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

ENTER

Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER

Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER

Stratum B
SCS
soil type

Lookup Soil
Parameters

ENTER

Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

ENTER

Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER

Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER

Stratum C
SCS
soil type

Lookup Soil
Parameters

ENTER

Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

ENTER

Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER

Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

S 1.66 0.375 0.054 S 1.66 0.375 0.054 S 1.66 0.375 0.054

MORE
↓

ENTER

Enclosed
space
floor
thickness,
 L_{crack}
(cm)

ENTER

Soil-bldg.
pressure
differential,
 ΔP
(g/cm-s^2)

ENTER

Enclosed
space
floor
length,
 L_B
(cm)

ENTER

Enclosed
space
floor
width,
 W_B
(cm)

ENTER

Enclosed
space
height,
 H_B
(cm)

ENTER

Floor-wall
seam crack
width,
 w
(cm)

ENTER

Indoor
air exchange
rate,
 ER
(1/h)

ENTER

Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10 40 244 91 244 91 2

MORE
↓

ENTER

Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER

Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER

Exposure
duration,
 ED
(yrs)

ENTER

Exposure
frequency,
 EF
(days/yr)

ENTER

Target
risk for
carcinogens,
 TR
(unitless)

ENTER

Target hazard
quotient for
noncarcinogens,
 THQ
(unitless)

70 30 30 350 1.0E-06 1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	12,644	4.71E-03	2.03E-01	1.75E-04	1.05E-02	1.05E-02	1.05E-02	4.19E-04	2.70E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack}^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	1.05E+03	91.00	-6.28E+01	1.05E-02	6.10E+04	3.75E-01	1.39E-04	1.46E-01	NA	4.0E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to
Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

108872

1.34E+00

Chemical

Methylcyclohexane

MORE
↓

ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
			Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)					
10	10	152	52	50	50	C	S	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	8,584	4.77E-02	2.05E+00	1.75E-04	1.19E-02	1.19E-02	1.19E-02	4.71E-04	3.04E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	2.75E+03	91.00	-6.28E+01	1.19E-02	6.10E+04	4.20E-01	1.56E-04	4.30E-01	NA	3.0E+00

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

1634044 3.60E-01

Chemical

MTBE

MORE
↓

ENTER
Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)

ENTER
Depth
below grade
to water table,
 L_{WT}
(cm)

ENTER
Thickness
of soil
stratum A,
 h_A
(cm)

ENTER
Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm)

ENTER
Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

ENTER
Soil
stratum
directly above
water table,
(Enter A, B, or C)

ENTER
SCS
soil type
directly above
water table

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10 10 152 52 50 50 C S S

MORE
↓

ENTER
Stratum A
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum A
soil dry
bulk density,
 ρ_p^A
(g/cm^3)

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER
Stratum B
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum B
soil dry
bulk density,
 ρ_p^B
(g/cm^3)

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER
Stratum C
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum C
soil dry
bulk density,
 ρ_p^C
(g/cm^3)

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

S 1.66 0.375 0.054 S 1.66 0.375 0.054 S 1.66 0.375 0.054

MORE
↓

ENTER
Enclosed
space
floor
thickness,
 L_{crack}
(cm)

ENTER
Soil-bldg.
pressure
differential,
 ΔP
($\text{g/cm} \cdot \text{s}^2$)

ENTER
Enclosed
space
floor
length,
 L_B
(cm)

ENTER
Enclosed
space
floor
width,
 W_B
(cm)

ENTER
Enclosed
space
height,
 H_B
(cm)

ENTER
Floor-wall
seam crack
width,
 w
(cm)

ENTER
Indoor
air exchange
rate,
 ER
(1/h)

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10 40 244 91 244 91 2

MORE
↓

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER
Exposure
duration,
 ED
(yrs)

ENTER
Exposure
frequency,
 EF
(days/yr)

ENTER
Target
risk for
carcinogens,
 TR
(unitless)

ENTER
Target hazard
quotient for
noncarcinogens,
 THQ
(unitless)

70 30 30 350 1.0E-06 1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_e (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	7,294	3.25E-04	1.40E-02	1.75E-04	1.66E-02	1.66E-02	1.66E-02	7.11E-04	4.50E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RFC (mg/m ³)

10	5.03E+00	91.00	-6.28E+01	1.66E-02	6.10E+04	5.37E-01	2.32E-04	1.17E-03	NA	3.0E+00

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)		Chemical							
91203		3.53E+00		Naphthalene							
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) ENTER Thickness of soil stratum A, h_A (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)	
10	10	152	52	50	50	C	S	S			

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

MORE
↓

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)
3.01E+03	2.22E+04	2.75E+00	10	12,913	1.52E-04	6.54E-03	1.75E-04	9.54E-03	9.54E-03	9.54E-03	4.62E-04	2.84E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
10	2.31E+01	91.00	-6.28E+01	9.54E-03	6.10E+04	3.40E-01	1.46E-04	3.36E-03	NA	3.0E-03

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)		Chemical					
85018		9.20E-01		Phenanthrene					
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	152	52	50	50	C	S	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

MORE
↓

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

MORE
↓

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	NA	3.57E-05	1.54E-03	1.75E-04	6.06E-03	6.06E-03	6.06E-03	5.97E-04	2.89E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	1.41E+00	91.00	-6.28E+01	6.06E-03	6.10E+04	1.83E-01	1.45E-04	2.05E-04	NA	NA

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to
Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

106423 2.12E+00

Chemical

p-Xylene

MORE
↓

ENTER
Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)

ENTER
Depth
below grade
to water table,
 L_{WT}
(cm)

10 10 152

ENTER
Totals must add up to value of L_{WT} (cell G28)

ENTER
Thickness
of soil
stratum A,
 h_A
(cm)

ENTER
Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm)

ENTER
Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

52 50 50

ENTER
Soil
stratum
directly above
water table,
(Enter A, B, or C)

ENTER
SCS
soil type
directly above
water table

C S

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

S

MORE
↓

ENTER
Stratum A
SCS
soil type
Lookup Soil
Parameters

S

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

1.66

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

0.375

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

0.054

ENTER
Stratum B
SCS
soil type
Lookup Soil
Parameters

S

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

1.66

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

0.375

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

0.054

ENTER
Stratum C
SCS
soil type
Lookup Soil
Parameters

S

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

1.66

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

0.375

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

0.054

MORE
↓

ENTER
Enclosed
space
floor
pressure
thickness,
 L_{crack}
(cm)

10

ENTER
Soil-bldg.
pressure
differential,
 ΔP
(g/cm-s^2)

40

ENTER
Enclosed
space
floor
length,
 L_B
(cm)

244

ENTER
Enclosed
space
floor
width,
 W_B
(cm)

91

ENTER
Enclosed
space
height,
 H_B
(cm)

244

ENTER
Floor-wall
seam crack
width,
 w
(cm)

91

ENTER
Indoor
air exchange
rate,
ER
(1/h)

2

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

MORE
↓

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

70

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

30

ENTER
Exposure
duration,
ED
(yrs)

30

ENTER
Exposure
frequency,
EF
(days/yr)

350

ENTER
Target
risk for
carcinogens,
TR
(unitless)

1.0E-06

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)
3.01E+03	2.22E+04	2.75E+00	10	10,248	3.06E-03	1.32E-01	1.75E-04	1.24E-02	1.24E-02	1.24E-02	4.97E-04	3.20E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
10	2.79E+02	91.00	-6.28E+01	1.24E-02	6.10E+04	4.37E-01	1.65E-04	4.59E-02	NA	1.0E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

129000 2.21E-01

Chemical

Pyrene

MORE
↓

ENTER
Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)

ENTER
Depth
below grade
to water table,
 L_{WT}
(cm)

ENTER **ENTER** **ENTER**
Totals must add up to value of L_{WT} (cell G28)
Thickness
of soil
stratum A,
 h_A
(cm) Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm) Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

ENTER
Soil
stratum
directly above
water table,
(Enter A, B, or C)

ENTER
SCS
soil type
directly above
water table

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10 10 152 52 50 50 C S S

MORE
↓

ENTER
Stratum A
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER
Stratum B
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER
Stratum C
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

S 1.66 0.375 0.054 S 1.66 0.375 0.054 S 1.66 0.375 0.054

MORE
↓

ENTER
Enclosed
space
floor
thickness,
 L_{crack}
(cm)

ENTER
Soil-bldg.
pressure
differential,
 ΔP
(g/cm-s^2)

ENTER
Enclosed
space
floor
length,
 L_B
(cm)

ENTER
Enclosed
space
floor
width,
 W_B
(cm)

ENTER
Enclosed
space
height,
 H_B
(cm)

ENTER
Floor-wall
seam crack
width,
 w
(cm)

ENTER
Indoor
air exchange
rate,
ER
(1/h)

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10 40 244 91 244 91 2

MORE
↓

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER
Exposure
duration,
ED
(yrs)

ENTER
Exposure
frequency,
EF
(days/yr)

ENTER
Target
risk for
carcinogens,
TR
(unitless)

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

70 30 30 350 1.0E-06 1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{ie} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	20,700	1.72E-06	7.42E-05	1.75E-04	4.44E-03	4.44E-03	4.44E-03	7.34E-03	4.66E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	1.64E-02	91.00	-6.28E+01	4.44E-03	6.10E+04	9.84E-02	2.18E-04	3.58E-06	NA	1.1E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to
Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

108883 1.87E+01

Chemical

Toluene

MORE
↓

ENTER
Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)

ENTER
Depth
below grade
to water table,
 L_{WT}
(cm)

ENTER
Thickness
of soil
stratum A,
 h_A
(cm)

ENTER
Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm)

ENTER
Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

Totals must add up to value of L_{WT} (cell G28)

ENTER
Soil
stratum
directly above
water table,
(Enter A, B, or C)

ENTER
SCS
soil type
directly above
water table

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10 10 152 52 50 50 C S S

MORE
↓

ENTER
Stratum A
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER
Stratum B
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER
Stratum C
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

S 1.66 0.375 0.054 S 1.66 0.375 0.054 S 1.66 0.375 0.054

MORE
↓

ENTER
Enclosed
space
floor
pressure
thickness,
 L_{crack}
(cm)

ENTER
Soil-bldg.
pressure
differential,
 ΔP
(g/cm-s^2)

ENTER
Enclosed
space
floor
length,
 L_B
(cm)

ENTER
Enclosed
space
floor
width,
 W_B
(cm)

ENTER
Enclosed
space
height,
 H_B
(cm)

ENTER
Floor-wall
seam crack
width,
 w
(cm)

ENTER
Indoor
air exchange
rate,
ER
(1/h)

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10 40 244 91 244 91 2

MORE
↓

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER
Exposure
duration,
ED
(yrs)

ENTER
Exposure
frequency,
EF
(days/yr)

ENTER
Target
risk for
carcinogens,
TR
(unitless)

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

70 30 30 350 1.0E-06 1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)

9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_{A}^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_{B}^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_{C}^{eff} (cm ² /s)	Capillary zone effective diffusion coefficient, D_{cz}^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	9,154	2.92E-03	1.26E-01	1.75E-04	1.41E-02	1.41E-02	1.41E-02	5.62E-04	3.62E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	2.35E+03	91.00	-6.28E+01	1.41E-02	6.10E+04	4.81E-01	1.86E-04	4.38E-01	NA	4.0E-01

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

Reset to
Defaults

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial groundwater conc., C_w ($\mu\text{g/L}$)		Chemical Trichloroethylene									
79016	5.50E-01												
ENTER Average soil/ groundwater temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to water table, L_{WT} (cm)	ENTER Totals must add up to value of L_{WT} (cell G28) ENTER Thickness of soil stratum A, h_A (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)			ENTER Soil stratum directly above water table, (Enter A, B, or C)	ENTER SCS soil type directly above water table	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)			
10	10	152	52	50	50	C	S	S					
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)		
S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054		
ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)						
10	40	244	91	244	91	2							
ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)								
70	30	30	350	1.0E-06	1								
					Used to calculate risk-based groundwater concentration.								

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{gr} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	8,557	4.78E-03	2.06E-01	1.75E-04	1.28E-02	1.28E-02	1.28E-02	5.09E-04	3.28E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	1.13E+02	91.00	-6.28E+01	1.28E-02	6.10E+04	4.47E-01	1.69E-04	1.91E-02	1.1E-04	4.0E-02

END

DATA ENTRY SHEET

GW-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED GROUNDWATER CONCENTRATION (enter "X" in "YES" box)

YES

Reset to
Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL GROUNDWATER CONCENTRATION (enter "X" in "YES" box and initial groundwater conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
groundwater
conc.,
 C_w
($\mu\text{g/L}$)

106423	6.80E-01

Chemical

p-Xylene

MORE
↓

ENTER
Average
soil/
groundwater
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_F
(cm)

ENTER
Depth
below grade
to water table,
 L_{WT}
(cm)

ENTER **ENTER** **ENTER**
Totals must add up to value of L_{WT} (cell G28)
Thickness
of soil
stratum A,
 h_A
(cm)

Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm)

Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

ENTER
Soil
stratum
directly above
water table,
(Enter A, B, or C)

ENTER
SCS
soil type
directly above
water table

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10	10	152	52	50	50	C	S	S		

MORE
↓

ENTER
Stratum A
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER
Stratum B
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER
Stratum C
SCS
soil type
Lookup Soil
Parameters

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

S	1.66	0.375	0.054	S	1.66	0.375	0.054	S	1.66	0.375	0.054

MORE
↓

ENTER
Enclosed
space
floor
pressure
thickness,
 L_{crack}
(cm)

ENTER
Soil-bldg.
pressure
differential,
 ΔP
(g/cm-s^2)

ENTER
Enclosed
space
floor
length,
 L_B
(cm)

ENTER
Enclosed
space
floor
width,
 W_B
(cm)

ENTER
Enclosed
space
height,
 H_B
(cm)

ENTER
Floor-wall
seam crack
width,
 w
(cm)

ENTER
Indoor
air exchange
rate,
ER
(1/h)

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10	40	244	91	244	91	2

MORE
↓

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER
Exposure
duration,
ED
(yrs)

ENTER
Exposure
frequency,
EF
(days/yr)

ENTER
Target
risk for
carcinogens,
TR
(unitless)

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
groundwater concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{le} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Thickness of capillary zone, L_{cz} (cm)	Total porosity in capillary zone, n_{cz} (cm ³ /cm ³)	Air-filled porosity in capillary zone, $\theta_{a,cz}$ (cm ³ /cm ³)	Water-filled porosity in capillary zone, $\theta_{w,cz}$ (cm ³ /cm ³)	Floor-wall seam perimeter, X_{crack} (cm)
9.46E+08	142	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	17.05	0.375	0.122	0.253	670

Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)	Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. groundwater temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. groundwater temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. groundwater temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Capillary zone effective diffusion coefficient, D^{eff}_{cz} (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)

3.01E+03	2.22E+04	2.75E+00	10	10,248	3.06E-03	1.32E-01	1.75E-04	1.24E-02	1.24E-02	1.24E-02	4.97E-04	3.20E-03	142

Convection path length, L_p (cm)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

10	8.94E+01	91.00	-6.28E+01	1.24E-02	6.10E+04	4.37E-01	1.65E-04	1.47E-02	NA	1.0E-01

END

Outdoor from Soil

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

Reset to
Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial soil conc., C_R ($\mu\text{g/kg}$)		Chemical										
75354		5.00E+00		1,1-Dichloroethylene										
ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_a (cm)			ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)			
10	10	60	0	20	20	20	S							
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002
ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_s (cm)	ENTER Enclosed space floor width, W_s (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)							
10	40	244	91	244	91	2								
ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)	Used to calculate risk-based soil concentration.								
70	30	30	350	1.0E-06	1									

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)

9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.00E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)

2.22E+04	2.75E+00	10	6,392	1.47E-02	6.33E-01	1.75E-04	1.45E-02	1.45E-02	1.45E-02	1.45E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)

1.18E-01	1.16E+04	91.00	-6.28E+01	1.45E-02	6.10E+04	4.93E-01	1.93E-03	2.24E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	2.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

106467

1.25E+03

1,4-Dichlorobenzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_a (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_s (cm)	ENTER Enclosed space floor width, W_s (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.25E+03	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	11,243	8.76E-04	3.77E-02	1.75E-04	1.12E-02	1.12E-02	1.12E-02	1.12E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.23E+00	3.70E+04	91.00	-6.28E+01	1.12E-02	6.10E+04	3.97E-01	1.46E-03	5.42E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	8.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

78933

5.25E+02

Methylethylketone (2-butanone)

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.25E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	8,419	2.63E-05	1.13E-03	1.75E-04	1.31E-02	1.31E-02	1.31E-02	1.31E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, exp(Pe ¹) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
4.60E-03	1.59E+04	91.00	-6.28E+01	1.31E-02	6.10E+04	4.55E-01	1.73E-03	2.75E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	5.0E+00

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C _R (µg/kg)	Chemical													
91576	2.78E+03	2-Methylnaphthalene													
ENTER Average soil temperature, T _s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L _f (cm)	ENTER Depth below grade to top of contamination, L _t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L _b (cm)	ENTER Totals must add up to value of L _t (cell G28) Thickness of soil stratum A, h _A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h _B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h _C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k _v (cm ²)						
10	10	60	0	20	20	20	S								
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ _b ^A (g/cm ³)	ENTER Stratum A soil total porosity, n ^A (unitless)	ENTER Stratum A soil water-filled porosity, θ _w ^A (cm ³ /cm ³)	ENTER Stratum A soil organic carbon fraction, f _{oc} ^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ _b ^B (g/cm ³)	ENTER Stratum B soil total porosity, n ^B (unitless)	ENTER Stratum B soil water-filled porosity, θ _w ^B (cm ³ /cm ³)	ENTER Stratum B soil organic carbon fraction, f _{oc} ^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ _b ^C (g/cm ³)	ENTER Stratum C soil total porosity, n ^C (unitless)	ENTER Stratum C soil water-filled porosity, θ _w ^C (cm ³ /cm ³)	ENTER Stratum C soil organic carbon fraction, f _{oc} ^C (unitless)	
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	
ENTER Enclosed space floor thickness, L _{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s ²)	ENTER Enclosed space floor length, L _s (cm)	ENTER Enclosed space floor width, W _s (cm)	ENTER Enclosed space height, H _b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q _{soil} (L/m)								
10	40	244	91	244	91	2									
ENTER Averaging time for carcinogens, AT _C (yrs)	ENTER Averaging time for noncarcinogens, AT _{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)										
70	30	30	350	1.0E-06	1										
Used to calculate risk-based soil concentration.															

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.78E+03	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)

2.22E+04	2.75E+00	10	16,241	1.21E-04	5.20E-03	1.75E-04	8.44E-03	8.44E-03	8.44E-03	8.44E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)

5.62E+00	2.56E+03	91.00	-6.28E+01	8.44E-03	6.10E+04	2.95E-01	1.09E-03	2.78E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	7.0E-02

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

95501

5.50E+00

1,2-Dichlorobenzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.50E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	11,687	6.67E-04	2.87E-02	1.75E-04	1.12E-02	1.12E-02	1.12E-02	1.12E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.23E+00	1.24E+02	91.00	-6.28E+01	1.12E-02	6.10E+04	3.97E-01	1.46E-03	1.82E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	2.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

120821

1.10E+01

1,2,4-Trichlorobenzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Thickness of soil stratum A, h_a (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.10E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	13,230	4.34E-04	1.87E-02	1.75E-04	4.85E-03	4.85E-03	4.85E-03	4.85E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
3.56E+00	5.71E+01	91.00	-6.28E+01	4.85E-03	6.10E+04	1.20E-01	5.69E-04	3.25E-02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, <α> (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	4.0E-03

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

83329

2.01E+03

Acenaphthene

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER			ENTER	ENTER
Average soil temperature, T_s (°C)	Depth below grade to bottom of enclosed space floor, L_F (cm)	Depth below grade to top of contamination, L_I (cm)	Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	Totals must add up to value of L_I (cell G28)			Soil stratum A SCS soil type (used to estimate soil vapor permeability) OR	User-defined stratum A soil vapor permeability, k_v (cm ²)
				Thickness of soil stratum A, h_a (cm)	Thickness of soil stratum B, (Enter value or 0) h_b (cm)	Thickness of soil stratum C, (Enter value or 0) h_c (cm)		
10	10	60	0	20	20	20	S	

MORE
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ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.01E+03	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	16,123	3.66E-05	1.57E-03	1.75E-04	6.81E-03	6.81E-03	6.81E-03	6.81E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.42E+01	2.23E+02	91.00	-6.28E+01	6.81E-03	6.10E+04	2.20E-01	8.55E-04	1.91E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	2.1E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

208968

1.14E+03

Acenaphthylene

MORE
↓

ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.14E+03	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	NA	1.14E-04	4.90E-03	1.75E-04	7.26E-03	7.26E-03	7.26E-03	7.26E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.22E+01	4.55E+02	91.00	-6.28E+01	7.26E-03	6.10E+04	2.42E-01	9.19E-04	4.18E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (µg/m ³)	Finite source bldg. conc., $C_{building}$ (µg/m ³)	Final finite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	NA

NA	NA	NA	NA	NA	NA

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

67641

1.98E+03

Acetone

MORE
↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{le} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.98E+03	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)

2.22E+04	2.75E+00	10	7,559	1.97E-05	8.47E-04	1.75E-04	2.01E-02	2.01E-02	2.01E-02	2.01E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)

1.15E-03	4.96E+04	91.00	-6.28E+01	2.01E-02	6.10E+04	5.98E-01	2.69E-03	1.33E+02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	3.5E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)ENTER
Initial
soil
conc.,
 C_E
($\mu\text{g/kg}$)

Chemical

98862

8.60E+02

Acetophenone

MORE
↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm^2)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	8.60E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	14,718	2.86E-06	1.23E-04	1.75E-04	9.73E-03	9.73E-03	9.73E-03	9.73E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.15E-01	7.16E+02	91.00	-6.28E+01	9.73E-03	6.10E+04	3.47E-01	1.27E-03	9.07E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.5E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

120127

4.10E+03

Anthracene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
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ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
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ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.56E+03	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	18,353	1.26E-05	5.43E-04	1.75E-04	5.24E-03	5.24E-03	5.24E-03	5.24E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
5.90E+01	2.36E+01	91.00	-6.28E+01	5.24E-03	6.10E+04	1.40E-01	6.28E-04	1.48E-02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	NA

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

100527

3.30E+02

Benzaldehyde

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	3.30E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	14,135	6.71E-06	2.89E-04	1.75E-04	1.17E-02	1.17E-02	1.17E-02	1.17E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
9.18E-02	7.66E+02	91.00	-6.28E+01	1.17E-02	6.10E+04	4.14E-01	1.54E-03	1.18E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.5E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

71432

1.35E+01

Benzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
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ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.35E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	8,122	2.68E-03	1.15E-01	1.75E-04	1.42E-02	1.42E-02	1.42E-02	1.42E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.18E-01	9.01E+03	91.00	-6.28E+01	1.42E-02	6.10E+04	4.85E-01	1.89E-03	1.70E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $<\alpha>$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	7.8E-06	3.0E-02

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_E
($\mu\text{g/kg}$)

Chemical

92524

3.40E+02

Biphenyl

MORE
↓

ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)

9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	3.40E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)

2.22E+04	2.75E+00	10	14,028	8.54E-05	3.67E-03	1.75E-04	6.53E-03	6.53E-03	6.53E-03	6.53E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)

8.75E+00	1.42E+02	91.00	-6.28E+01	6.53E-03	6.10E+04	2.07E-01	8.15E-04	1.16E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $<\alpha>$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	1.8E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_E
($\mu\text{g/kg}$)

Chemical

75150

5.00E+01

Carbon disulfide

MORE
↓

ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.00E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	6,682	1.66E-02	7.16E-01	1.75E-04	1.68E-02	1.68E-02	1.68E-02	1.68E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
9.14E-02	1.36E+05	91.00	-6.28E+01	1.68E-02	6.10E+04	5.42E-01	2.24E-03	3.06E+02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	7.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

56235

5.00E+01

Carbon tetrachloride

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.00E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	7,859	1.50E-02	6.46E-01	1.75E-04	1.26E-02	1.26E-02	1.26E-02	1.26E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
3.48E-01	6.39E+04	91.00	-6.28E+01	1.26E-02	6.10E+04	4.42E-01	1.67E-03	1.06E+02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (µg/m ³)	Finite source bldg. conc., $C_{building}$ (µg/m ³)	Final finite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	1.5E-05	NA

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

108907

1.27E+02

Chlorobenzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.27E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	9,803	1.54E-03	6.61E-02	1.75E-04	1.18E-02	1.18E-02	1.18E-02	1.18E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
4.38E-01	1.74E+04	91.00	-6.28E+01	1.18E-02	6.10E+04	4.18E-01	1.55E-03	2.70E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	6.0E-02

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_b
($\mu\text{g}/\text{kg}$)

Chemical

156592

1.96E+00

cis-1,2-Dichloroethylene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.96E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	7,734	2.04E-03	8.77E-02	1.75E-04	1.19E-02	1.19E-02	1.19E-02	1.19E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
7.10E-02	1.43E+03	91.00	-6.28E+01	1.19E-02	6.10E+04	4.21E-01	1.57E-03	2.24E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (µg/m ³)	Finite source bldg. conc., $C_{building}$ (µg/m ³)	Final finite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.5E-02

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

110827

4.43E+01

Cyclohexane

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
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ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	4.43E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	NA	4.55E-02	1.96E+00	1.75E-04	1.35E-02	1.35E-02	1.35E-02	1.35E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
3.31E-01	1.17E+05	91.00	-6.28E+01	1.35E-02	6.10E+04	4.65E-01	1.78E-03	2.08E+02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	NA

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_b
($\mu\text{g}/\text{kg}$)

Chemical

75718

2.09E+01

Dichlorodifluoromethane

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.09E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	8,386	1.62E-01	6.96E+00	1.75E-04	1.08E-02	1.08E-02	1.08E-02	1.08E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
9.14E-01	6.34E+04	91.00	-6.28E+01	1.08E-02	6.10E+04	3.84E-01	1.41E-03	8.93E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	2.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_s
($\mu\text{g/kg}$)

Chemical

100414

2.60E+00

Ethylbenzene

MORE
↓

ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_i (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_i (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) OR User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.60E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_{eff}^A (cm ² /s)	Stratum B effective diffusion coefficient, D_{eff}^B (cm ² /s)	Stratum C effective diffusion coefficient, D_{eff}^C (cm ² /s)	Total overall effective diffusion coefficient, D_{eff}^T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	10,155	3.17E-03	1.36E-01	1.75E-04	1.21E-02	1.21E-02	1.21E-02	1.21E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
7.26E-01	4.52E+02	91.00	-6.28E+01	1.21E-02	6.10E+04	4.28E-01	1.60E-03	7.23E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $<\alpha>$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	1.0E+00

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

86737

2.40E+03

Fluorene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20		S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)

9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.40E+03	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)

2.22E+04	2.75E+00	10	16,235	1.49E-05	6.39E-04	1.75E-04	5.87E-03	5.87E-03	5.87E-03	5.87E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)

2.76E+01	5.55E+01	91.00	-6.28E+01	5.87E-03	6.10E+04	1.73E-01	7.20E-04	4.00E-02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	1.4E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

Reset to
Defaults

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

98828

6.46E+01

Cumene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_p (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{rock} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_g (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{le} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	6.46E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	12,644	4.71E-03	2.03E-01	1.75E-04	1.05E-02	1.05E-02	1.05E-02	1.05E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
9.77E-01	1.25E+04	91.00	-6.28E+01	1.05E-02	6.10E+04	3.75E-01	1.37E-03	1.72E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	4.0E-01

NA	NA	NA	NA	NA	4.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g}/\text{kg}$)

Chemical

79209

1.11E+03

Methyl acetate

MORE
↓

ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20		S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.11E+03	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	7,909	5.82E-05	2.50E-03	1.75E-04	1.68E-02	1.68E-02	1.68E-02	1.68E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, exp(Pe ¹) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
6.52E-03	7.03E+04	91.00	-6.28E+01	1.68E-02	6.10E+04	5.42E-01	2.24E-03	1.58E+02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.5E+00

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)	ENTER Initial soil conc., C _R (µg/kg)	Chemical													
108872	2.29E+02	Methylcyclohexane													
ENTER Average soil temperature, T _s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L _F (cm)	ENTER Depth below grade to top of contamination, L _t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L _b (cm)	ENTER Totals must add up to value of L _t (cell G28) Thickness of soil stratum A, h _A (cm)			ENTER Thickness of soil stratum B, (Enter value or 0) h _B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h _C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k _v (cm ²)				
10	10	60	0	20	20	20	S								
ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ _b ^A (g/cm ³)	ENTER Stratum A soil total porosity, n ^A (unitless)	ENTER Stratum A soil water-filled porosity, θ _w ^A (cm ³ /cm ³)	ENTER Stratum A soil organic carbon fraction, f _{oc} ^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ _b ^B (g/cm ³)	ENTER Stratum B soil total porosity, n ^B (unitless)	ENTER Stratum B soil water-filled porosity, θ _w ^B (cm ³ /cm ³)	ENTER Stratum B soil organic carbon fraction, f _{oc} ^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ _b ^C (g/cm ³)	ENTER Stratum C soil total porosity, n ^C (unitless)	ENTER Stratum C soil water-filled porosity, θ _w ^C (cm ³ /cm ³)	ENTER Stratum C soil organic carbon fraction, f _{oc} ^C (unitless)	
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	
ENTER Enclosed space floor thickness, L _{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s ²)	ENTER Enclosed space floor length, L _B (cm)	ENTER Enclosed space floor width, W _B (cm)	ENTER Enclosed space height, H _B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q _{soil} (L/m)								
10	40	244	91	244	91	2									
ENTER Averaging time for carcinogens, AT _C (yrs)	ENTER Averaging time for noncarcinogens, AT _{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)										
70	30	30	350	1.0E-06	1										
Used to calculate risk-based soil concentration.															

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.29E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	8,584	4.77E-02	2.05E+00	1.75E-04	1.19E-02	1.19E-02	1.19E-02	1.19E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.57E-01	8.02E+05	91.00	-6.28E+01	1.19E-02	6.10E+04	4.20E-01	1.57E-03	1.25E+03	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.0E+00

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

75092

4.00E+00

Methylene chloride

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	4.00E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	7,034	1.16E-03	5.01E-02	1.75E-04	1.63E-02	1.63E-02	1.63E-02	1.63E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
2.34E-02	3.06E+03	91.00	-6.28E+01	1.63E-02	6.10E+04	5.32E-01	2.18E-03	6.66E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	4.7E-07	3.0E+00

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_b
($\mu\text{g/kg}$)

Chemical

91203

5.30E+02

Naphthalene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_i (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
Totals must add up to value of L_i (cell G28)								
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.30E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	12,913	1.52E-04	6.54E-03	1.75E-04	9.54E-03	9.54E-03	9.54E-03	9.54E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
4.00E+00	8.59E+02	91.00	-6.28E+01	9.54E-03	6.10E+04	3.40E-01	1.24E-03	1.06E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.0E-03

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

98953

5.30E+02

Nitrobenzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) ENTER Thickness of soil stratum A, h_A (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_E (cm)	ENTER Enclosed space floor width, W_A (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.30E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	13,378	7.24E-06	3.12E-04	1.75E-04	1.23E-02	1.23E-02	1.23E-02	1.23E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.29E-01	1.02E+03	91.00	-6.28E+01	1.23E-02	6.10E+04	4.33E-01	1.62E-03	1.66E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	2.0E-03

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

85018

2.67E+04

Phenanthrene

MORE
↓

ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.67E+04	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	NA	3.57E-05	1.54E-03	1.75E-04	6.06E-03	6.06E-03	6.06E-03	6.06E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
4.17E+01	9.84E+02	91.00	-6.28E+01	6.06E-03	6.10E+04	1.83E-01	7.48E-04	7.36E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	NA

NA	NA	NA	NA	NA	NA

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

129000

3.95E+04

Pyrene

MORE
↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	3.95E+04	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	20,700	1.72E-06	7.42E-05	1.75E-04	4.44E-03	4.44E-03	4.44E-03	4.44E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
2.10E+02	1.40E+01	91.00	-6.28E+01	4.44E-03	6.10E+04	9.84E-02	5.06E-04	7.06E-03	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	1.1E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

100425

2.32E+00

Styrene

MORE
↓

ENTER
Average
soil
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_f
(cm)

ENTER
Depth below
grade to top
of contamination,
 L_t
(cm)

ENTER
Depth below
grade to bottom
of contamination,
(enter value of 0
if value is unknown)
 L_b
(cm)

ENTER
Thickness
of soil
stratum A,
 h_a
(cm)

ENTER
Thickness
of soil
stratum B,
(Enter value or 0)
 h_b
(cm)

ENTER
Thickness
of soil
stratum C,
(Enter value or 0)
 h_c
(cm)

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10

10

60

0

20

20

20

S

MORE
↓

ENTER
Stratum A
SCS
soil type

Lookup Soil
Parameters

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER
Stratum A
soil organic
carbon fraction,
 f_{oc}^A
(unitless)

ENTER
Stratum B
SCS
soil type

Lookup Soil
Parameters

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER
Stratum B
soil organic
carbon fraction,
 f_{oc}^B
(unitless)

ENTER
Stratum C
SCS
soil type

Lookup Soil
Parameters

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

ENTER
Stratum C
soil organic
carbon fraction,
 f_{oc}^C
(unitless)

S

1.66

0.375

0.054

0.002

S

1.66

0.375

0.054

0.002

S

1.66

0.375

0.054

0.002

MORE
↓

ENTER
Enclosed
space
floor
thickness,
 L_{crack}
(cm)

ENTER
Soil-bldg.
pressure
differential,
 ΔP
($\text{g/cm} \cdot \text{s}^2$)

ENTER
Enclosed
space
floor
length,
 L_e
(cm)

ENTER
Enclosed
space
floor
width,
 W_a
(cm)

ENTER
Enclosed
space
height,
 H_b
(cm)

ENTER
Floor-wall
seam crack
width,
 w
(cm)

ENTER
Indoor
air exchange
rate,
ER
(1/h)

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10

40

244

91

244

91

2

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER
Exposure
duration,
ED
(yrs)

ENTER
Exposure
frequency,
EF
(days/yr)

ENTER
Target
risk for
carcinogens,
TR
(unitless)

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

70

30

30

350

1.0E-06

1

Used to calculate risk-based
soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.32E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	10,450	1.08E-03	4.64E-02	1.75E-04	1.15E-02	1.15E-02	1.15E-02	1.15E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.55E+00	6.75E+01	91.00	-6.28E+01	1.15E-02	6.10E+04	4.08E-01	1.51E-03	1.02E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	1.0E+00

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g}/\text{kg}$)

Chemical

127184

2.50E+01

Tetrachloroethylene

MORE
↓

ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
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ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.50E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	9,553	7.81E-03	3.36E-01	1.75E-04	1.16E-02	1.16E-02	1.16E-02	1.16E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
3.10E-01	2.06E+04	91.00	-6.28E+01	1.16E-02	6.10E+04	4.13E-01	1.53E-03	3.16E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (µg/m ³)	Finite source bldg. conc., $C_{building}$ (µg/m ³)	Final finite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	5.9E-06	6.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_E
($\mu\text{g/kg}$)

Chemical

108883

6.08E+02

Toluene

MORE
↓

ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
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ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	6.08E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)

2.22E+04	2.75E+00	10	9,154	2.92E-03	1.26E-01	1.75E-04	1.41E-02	1.41E-02	1.41E-02	1.41E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)

3.64E-01	1.82E+05	91.00	-6.28E+01	1.41E-02	6.10E+04	4.81E-01	1.87E-03	3.39E+02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	4.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

79016

5.04E+00

Trichloroethylene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_1 (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_1 (cell G28) ENTER Thickness of soil stratum A, h_A (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
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ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm^2)	ENTER Enclosed space floor length, L_E (cm)	ENTER Enclosed space floor width, W_A (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.04E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	8,557	4.78E-03	2.06E-01	1.75E-04	1.28E-02	1.28E-02	1.28E-02	1.28E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
3.32E-01	2.56E+03	91.00	-6.28E+01	1.28E-02	6.10E+04	4.47E-01	1.69E-03	4.33E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	1.1E-04	4.0E-02

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

75694

5.60E+00

Trichlorofluoromethane

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Thickness of soil stratum A, h_a (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.60E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	6,158	5.58E-02	2.40E+00	1.75E-04	1.41E-02	1.41E-02	1.41E-02	1.41E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
9.93E-01	9.02E+03	91.00	-6.28E+01	1.41E-02	6.10E+04	4.81E-01	1.87E-03	1.68E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	7.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

106423

4.23E+01

p-Xylene

MORE
↓

ENTER
Average
soil
temperature,
 T_s
($^{\circ}\text{C}$)

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_f
(cm)

ENTER
Depth below
grade to top
of contamination,
 L_t
(cm)

ENTER
Depth below
grade to bottom
of contamination,
(enter value of 0
if value is unknown)
 L_b
(cm)

ENTER
Totals must add up to value of L_t (cell G28)

ENTER Thickness of soil stratum A, h_a (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)
20	20	20

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

OR

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

10

10

60

0

20

20

20

S

MORE
↓

ENTER
Stratum A
SCS
soil type

Lookup Soil
Parameters

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

ENTER
Stratum A
soil organic
carbon fraction,
 f_{oc}^A
(unitless)

ENTER
Stratum B
SCS
soil type

Lookup Soil
Parameters

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

ENTER
Stratum B
soil organic
carbon fraction,
 f_{oc}^B
(unitless)

ENTER
Stratum C
SCS
soil type

Lookup Soil
Parameters

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

ENTER
Stratum C
soil organic
carbon fraction,
 f_{oc}^C
(unitless)

S

1.66

0.375

0.054

0.002

S

1.66

0.375

0.054

0.002

S

1.66

0.375

0.054

0.002

MORE
↓

ENTER
Enclosed
space
floor
thickness,
 L_{crack}
(cm)

ENTER
Soil-bldg.
pressure
differential,
 ΔP
($\text{g/cm} \cdot \text{s}^2$)

ENTER
Enclosed
space
floor
length,
 L_e
(cm)

ENTER
Enclosed
space
floor
width,
 W_a
(cm)

ENTER
Enclosed
space
height,
 H_b
(cm)

ENTER
Floor-wall
seam crack
width,
 w
(cm)

ENTER
Indoor
air exchange
rate,
 ER
(1/h)

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

10

40

244

91

244

91

2

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

ENTER
Exposure
duration,
 ED
(yrs)

ENTER
Exposure
frequency,
 EF
(days/yr)

ENTER
Target
risk for
carcinogens,
 TR
(unitless)

ENTER
Target hazard
quotient for
noncarcinogens,
 THQ
(unitless)

70

30

30

350

1.0E-06

1

Used to calculate risk-based
soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	4.23E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	10,248	3.06E-03	1.32E-01	1.75E-04	1.24E-02	1.24E-02	1.24E-02	1.24E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
7.78E-01	6.66E+03	91.00	-6.28E+01	1.24E-02	6.10E+04	4.37E-01	1.64E-03	1.09E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	1.0E-01

END

EPC Calculation

Outdoor from Soil

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

Reset to
Defaults

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial soil conc., C_R ($\mu\text{g/kg}$)		Chemical																									
75354		5.00E+00		1,1-Dichloroethylene																									
ENTER Average soil temperature, T_s ($^{\circ}\text{C}$)		ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)		ENTER Depth below grade to top of contamination, L_t (cm)		ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)		ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_a (cm)			ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)			ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)		OR		ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)								
10		10		60		0		20			20			20			S												
ENTER Stratum A SCS soil type Lookup Soil Parameters		ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)		ENTER Stratum A soil total porosity, n^A (unitless)		ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)		ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)		ENTER Stratum B SCS soil type Lookup Soil Parameters		ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)		ENTER Stratum B soil total porosity, n^B (unitless)		ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)		ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)		ENTER Stratum C SCS soil type Lookup Soil Parameters		ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)		ENTER Stratum C soil total porosity, n^C (unitless)		ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)		ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)	
S		1.66		0.375		0.054		0.002		S		1.66		0.375		0.054		0.002		S		1.66		0.375		0.054		0.002	
ENTER Enclosed space floor thickness, L_{crack} (cm)		ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)		ENTER Enclosed space floor length, L_s (cm)		ENTER Enclosed space floor width, W_s (cm)		ENTER Enclosed space height, H_b (cm)		ENTER Floor-wall seam crack width, w (cm)		ENTER Indoor air exchange rate, ER (1/h)		ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)															
10		40		244		91		244		91		2																	
ENTER Averaging time for carcinogens, AT_C (yrs)		ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)		ENTER Exposure duration, ED (yrs)		ENTER Exposure frequency, EF (days/yr)		ENTER Target risk for carcinogens, TR (unitless)		ENTER Target hazard quotient for noncarcinogens, THQ (unitless)																			
70		30		30		350		1.0E-06		1																			
END		Used to calculate risk-based soil concentration.																											

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)

9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.00E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)

2.22E+04	2.75E+00	10	6,392	1.47E-02	6.33E-01	1.75E-04	1.45E-02	1.45E-02	1.45E-02	1.45E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)

1.18E-01	1.16E+04	91.00	-6.28E+01	1.45E-02	6.10E+04	4.93E-01	1.93E-03	2.24E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	2.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

106467

7.03E+01

1,4-Dichlorobenzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_S (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	7.03E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	11,243	8.76E-04	3.77E-02	1.75E-04	1.12E-02	1.12E-02	1.12E-02	1.12E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent Peclet number, $\exp(Pe')$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.23E+00	2.08E+03	91.00	-6.28E+01	1.12E-02	6.10E+04	3.97E-01	1.46E-03	3.05E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	8.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

91576

4.50E+02

2-Methylnaphthalene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) Thickness of soil stratum A, h_a (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_s (cm)	ENTER Enclosed space floor width, W_s (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	4.50E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)

2.22E+04	2.75E+00	10	16,241	1.21E-04	5.20E-03	1.75E-04	8.44E-03	8.44E-03	8.44E-03	8.44E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)

5.62E+00	4.14E+02	91.00	-6.28E+01	8.44E-03	6.10E+04	2.95E-01	1.09E-03	4.50E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	7.0E-02

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

83329

4.18E+02

Acenaphthene

MORE
↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) ENTER Thickness of soil stratum A, h_A (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	4.18E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	16,123	3.66E-05	1.57E-03	1.75E-04	6.81E-03	6.81E-03	6.81E-03	6.81E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.42E+01	4.64E+01	91.00	-6.28E+01	6.81E-03	6.10E+04	2.20E-01	8.55E-04	3.96E-02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	2.1E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

208968

3.21E+02

Acenaphthylene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	3.21E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	NA	1.14E-04	4.90E-03	1.75E-04	7.26E-03	7.26E-03	7.26E-03	7.26E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.22E+01	1.28E+02	91.00	-6.28E+01	7.26E-03	6.10E+04	2.42E-01	9.19E-04	1.18E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (µg/m ³)	Finite source bldg. conc., $C_{building}$ (µg/m ³)	Final finite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	NA

NA	NA	NA	NA	NA	NA

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_E
($\mu\text{g/kg}$)

Chemical

98862

1.35E+02

Acetophenone

MORE
↓

ENTER Average soil temperature, T_S (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.35E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	14,718	2.86E-06	1.23E-04	1.75E-04	9.73E-03	9.73E-03	9.73E-03	9.73E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.15E-01	1.12E+02	91.00	-6.28E+01	9.73E-03	6.10E+04	3.47E-01	1.27E-03	1.42E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.5E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g}/\text{kg}$)

Chemical

100527 1.69E+02

Benzaldehyde

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.69E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	14,135	6.71E-06	2.89E-04	1.75E-04	1.17E-02	1.17E-02	1.17E-02	1.17E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
9.18E-02	3.92E+02	91.00	-6.28E+01	1.17E-02	6.10E+04	4.14E-01	1.54E-03	6.02E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $<\alpha>$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.5E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

71432

3.11E+00

Benzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) ENTER Thickness of soil stratum A, h_A (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_E (cm)	ENTER Enclosed space floor width, W_A (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	3.11E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	8,122	2.68E-03	1.15E-01	1.75E-04	1.42E-02	1.42E-02	1.42E-02	1.42E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.18E-01	2.08E+03	91.00	-6.28E+01	1.42E-02	6.10E+04	4.85E-01	1.89E-03	3.92E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $<\alpha>$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	7.8E-06	3.0E-02

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_E
($\mu\text{g/kg}$)

Chemical

92524

1.25E+02

Biphenyl

MORE
↓

ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
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ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)

9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.25E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)

2.22E+04	2.75E+00	10	14,028	8.54E-05	3.67E-03	1.75E-04	6.53E-03	6.53E-03	6.53E-03	6.53E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)

8.75E+00	5.23E+01	91.00	-6.28E+01	6.53E-03	6.10E+04	2.07E-01	8.15E-04	4.26E-02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $<\alpha>$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	1.8E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_E
($\mu\text{g/kg}$)

Chemical

75150

5.19E+00

Carbon disulfide

MORE
↓

ENTER Average soil temperature, T_S ($^{\circ}\text{C}$)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.19E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	6,682	1.66E-02	7.16E-01	1.75E-04	1.68E-02	1.68E-02	1.68E-02	1.68E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
9.14E-02	1.42E+04	91.00	-6.28E+01	1.68E-02	6.10E+04	5.42E-01	2.24E-03	3.18E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (µg/m ³)	Finite source bldg. conc., $C_{building}$ (µg/m ³)	Final finite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	7.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

56235

2.07E+00

Carbon tetrachloride

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.07E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	7,859	1.50E-02	6.46E-01	1.75E-04	1.26E-02	1.26E-02	1.26E-02	1.26E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
3.48E-01	2.65E+03	91.00	-6.28E+01	1.26E-02	6.10E+04	4.42E-01	1.67E-03	4.41E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	1.5E-05	NA

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

108907

1.69E+01

Chlorobenzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.69E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	9,803	1.54E-03	6.61E-02	1.75E-04	1.18E-02	1.18E-02	1.18E-02	1.18E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
4.38E-01	2.31E+03	91.00	-6.28E+01	1.18E-02	6.10E+04	4.18E-01	1.55E-03	3.59E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	6.0E-02

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_b
($\mu\text{g}/\text{kg}$)

Chemical

75718

2.79E+00

Dichlorodifluoromethane

MORE
↓

ENTER
Average
soil
temperature,
 T_s
($^{\circ}\text{C}$)

10

ENTER
Depth
below grade
to bottom
of enclosed
space floor,
 L_f
(cm)

10

ENTER
Depth below
grade to top
of contamination,
 L_t
(cm)

60

ENTER
Depth below
grade to bottom
of contamination,
(enter value of 0
if value is unknown)
 L_b
(cm)

0

ENTER
Totals must add up to value of L_t (cell G28)
Thickness
of soil
stratum A,
 h_A
(cm)

20

ENTER
Thickness
of soil
stratum B,
(Enter value or 0)
 h_B
(cm)

20

ENTER
Thickness
of soil
stratum C,
(Enter value or 0)
 h_C
(cm)

20

ENTER
Soil
stratum A
SCS
soil type
(used to estimate
soil vapor
permeability)

S

ENTER
User-defined
stratum A
soil vapor
permeability,
 k_v
(cm^2)

MORE
↓

ENTER
Stratum A
SCS
soil type
Lookup Soil
Parameters

S

ENTER
Stratum A
soil dry
bulk density,
 ρ_b^A
(g/cm^3)

1.66

ENTER
Stratum A
soil total
porosity,
 n^A
(unitless)

0.375

ENTER
Stratum A
soil water-filled
porosity,
 θ_w^A
(cm^3/cm^3)

0.054

ENTER
Stratum A
soil organic
carbon fraction,
 f_{oc}^A
(unitless)

0.002

ENTER
Stratum B
SCS
soil type
Lookup Soil
Parameters

S

ENTER
Stratum B
soil dry
bulk density,
 ρ_b^B
(g/cm^3)

1.66

ENTER
Stratum B
soil total
porosity,
 n^B
(unitless)

0.375

ENTER
Stratum B
soil water-filled
porosity,
 θ_w^B
(cm^3/cm^3)

0.054

ENTER
Stratum B
soil organic
carbon fraction,
 f_{oc}^B
(unitless)

0.002

ENTER
Stratum C
SCS
soil type
Lookup Soil
Parameters

S

ENTER
Stratum C
soil dry
bulk density,
 ρ_b^C
(g/cm^3)

1.66

ENTER
Stratum C
soil total
porosity,
 n^C
(unitless)

0.375

ENTER
Stratum C
soil water-filled
porosity,
 θ_w^C
(cm^3/cm^3)

0.054

ENTER
Stratum C
soil organic
carbon fraction,
 f_{oc}^C
(unitless)

0.002

MORE
↓

ENTER
Enclosed
space
floor
thickness,
 L_{crack}
(cm)

10

ENTER
Soil-bldg.
pressure
differential,
 ΔP
($\text{g}/\text{cm}^2\text{-s}^2$)

40

ENTER
Enclosed
space
floor
length,
 L_B
(cm)

244

ENTER
Enclosed
space
floor
width,
 W_B
(cm)

91

ENTER
Enclosed
space
height,
 H_B
(cm)

244

ENTER
Floor-wall
seam crack
width,
 w
(cm)

91

ENTER
Indoor
air exchange
rate,
ER
(1/h)

2

ENTER
Average vapor
flow rate into bldg.
OR
Leave blank to calculate
 Q_{soil}
(L/m)

ENTER
Averaging
time for
carcinogens,
 AT_C
(yrs)

70

ENTER
Averaging
time for
noncarcinogens,
 AT_{NC}
(yrs)

30

ENTER
Exposure
duration,
ED
(yrs)

30

ENTER
Exposure
frequency,
EF
(days/yr)

350

ENTER
Target
risk for
carcinogens,
TR
(unitless)

1.0E-06

ENTER
Target hazard
quotient for
noncarcinogens,
THQ
(unitless)

1

Used to calculate risk-based
soil concentration.

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	2.79E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	8,386	1.62E-01	6.96E+00	1.75E-04	1.08E-02	1.08E-02	1.08E-02	1.08E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
9.14E-01	8.47E+03	91.00	-6.28E+01	1.08E-02	6.10E+04	3.84E-01	1.41E-03	1.19E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	2.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g}/\text{kg}$)

Chemical

79209

8.04E+01

Methyl acetate

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28)	ENTER Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20		S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g}/\text{cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μ g/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	8.04E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D^{eff}_A (cm ² /s)	Stratum B effective diffusion coefficient, D^{eff}_B (cm ² /s)	Stratum C effective diffusion coefficient, D^{eff}_C (cm ² /s)	Total overall effective diffusion coefficient, D^{eff}_T (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	7,909	5.82E-05	2.50E-03	1.75E-04	1.68E-02	1.68E-02	1.68E-02	1.68E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μ g/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D^{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, exp(Pe ¹) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μ g/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
6.52E-03	5.09E+03	91.00	-6.28E+01	1.68E-02	6.10E+04	5.42E-01	2.24E-03	1.14E+01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μ g/m ³)	Finite source bldg. conc., $C_{building}$ (μ g/m ³)	Final finite source bldg. conc., $C_{building}$ (μ g/m ³)	Unit risk factor, URF (μ g/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.5E+00

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER Chemical CAS No. (numbers only, no dashes)		ENTER Initial soil conc., C _R (µg/kg)		Chemical Methylcyclohexane					
108872		1.95E+01							

MORE ↓	ENTER Average soil temperature, T _s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L _F (cm)	ENTER Depth below grade to top of contamination, L _t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L _b (cm)	ENTER Totals must add up to value of L _t (cell G28) ENTER Thickness of soil stratum A, h _A (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h _B (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h _C (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) OR ENTER User-defined stratum A soil vapor permeability, k _v (cm ²)
	10	10	60	0	20	20	20	S

MORE ↓	ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ _b ^A (g/cm ³)	ENTER Stratum A soil total porosity, n ^A (unitless)	ENTER Stratum A soil water-filled porosity, θ _w ^A (cm ³ /cm ³)	ENTER Stratum A soil organic carbon fraction, f _{oc} ^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ _b ^B (g/cm ³)	ENTER Stratum B soil total porosity, n ^B (unitless)	ENTER Stratum B soil water-filled porosity, θ _w ^B (cm ³ /cm ³)	ENTER Stratum B soil organic carbon fraction, f _{oc} ^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ _b ^C (g/cm ³)	ENTER Stratum C soil total porosity, n ^C (unitless)	ENTER Stratum C soil water-filled porosity, θ _w ^C (cm ³ /cm ³)	ENTER Stratum C soil organic carbon fraction, f _{oc} ^C (unitless)	
	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	

MORE ↓	ENTER Enclosed space floor thickness, L _{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s ²)	ENTER Enclosed space floor length, L _B (cm)	ENTER Enclosed space floor width, W _B (cm)	ENTER Enclosed space height, H _B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q _{soil} (L/m)
	10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT _C (yrs)	ENTER Averaging time for noncarcinogens, AT _{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

Used to calculate risk-based soil concentration.				

END

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.95E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	8,584	4.77E-02	2.05E+00	1.75E-04	1.19E-02	1.19E-02	1.19E-02	1.19E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.57E-01	6.83E+04	91.00	-6.28E+01	1.19E-02	6.10E+04	4.20E-01	1.57E-03	1.07E+02	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (µg/m ³)	Finite source bldg. conc., $C_{building}$ (µg/m ³)	Final finite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.0E+00

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

75092

3.90E+00

Methylene chloride

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Thickness of soil stratum A, h_a (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	3.90E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	7,034	1.16E-03	5.01E-02	1.75E-04	1.63E-02	1.63E-02	1.63E-02	1.63E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
2.34E-02	2.98E+03	91.00	-6.28E+01	1.63E-02	6.10E+04	5.32E-01	2.18E-03	6.49E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	4.7E-07	3.0E+00

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_b
($\mu\text{g/kg}$)

Chemical

91203

7.45E+02

Naphthalene

MORE
↓

ENTER	ENTER	ENTER	ENTER	ENTER			ENTER	ENTER
Average soil temperature, T_s (°C)	Depth below grade to bottom of enclosed space floor, L_F (cm)	Depth below grade to top of contamination, L_i (cm)	Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	Totals must add up to value of L_i (cell G28)			Soil stratum A SCS soil type (used to estimate soil vapor permeability) OR User-defined stratum A soil vapor permeability, k_v (cm ²)	
				Thickness of soil stratum A, h_A (cm)	Thickness of soil stratum B, (Enter value or 0) h_B (cm)	Thickness of soil stratum C, (Enter value or 0) h_C (cm)		
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	7.45E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	12,913	1.52E-04	6.54E-03	1.75E-04	9.54E-03	9.54E-03	9.54E-03	9.54E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
4.00E+00	1.21E+03	91.00	-6.28E+01	9.54E-03	6.10E+04	3.40E-01	1.24E-03	1.50E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	3.0E-03

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

98953

5.30E+02

Nitrobenzene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	5.30E+02	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	13,378	7.24E-06	3.12E-04	1.75E-04	1.23E-02	1.23E-02	1.23E-02	1.23E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
1.29E-01	1.02E+03	91.00	-6.28E+01	1.23E-02	6.10E+04	4.33E-01	1.62E-03	1.66E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, < α > (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	2.0E-03

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

Chemical

85018

4.63E+03

Phenanthrene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_f (cm)	ENTER Depth below grade to top of contamination, L_t (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_t (cell G28) ENTER Thickness of soil stratum A, h_a (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_b (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_c (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP (g/cm-s^2)	ENTER Enclosed space floor length, L_e (cm)	ENTER Enclosed space floor width, W_a (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	4.63E+03	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	NA	3.57E-05	1.54E-03	1.75E-04	6.06E-03	6.06E-03	6.06E-03	6.06E-03	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
4.17E+01	1.71E+02	91.00	-6.28E+01	6.06E-03	6.10E+04	1.83E-01	7.48E-04	1.28E-01	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	NA	NA

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_0
($\mu\text{g/kg}$)

127184

3.87E+00

Chemical

Tetrachloroethylene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) Thickness of soil stratum A, h_A (cm)	ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm)	ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)	ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability) OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_B (cm)	ENTER Enclosed space floor width, W_B (cm)	ENTER Enclosed space height, H_B (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{fe} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (µg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	3.87E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	9,553	7.81E-03	3.36E-01	1.75E-04	1.16E-02	1.16E-02	1.16E-02	1.16E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (µg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (µg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
3.10E-01	3.19E+03	91.00	-6.28E+01	1.16E-02	6.10E+04	4.13E-01	1.53E-03	4.89E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (µg/m ³)	Finite source bldg. conc., $C_{building}$ (µg/m ³)	Final finite source bldg. conc., $C_{building}$ (µg/m ³)	Unit risk factor, URF (µg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)

NA	NA	NA	NA	5.9E-06	6.0E-01

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

79016

3.09E+00

Trichloroethylene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_I (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_I (cell G28) ENTER Thickness of soil stratum A, h_A (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S	

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm} \cdot \text{s}^2$)	ENTER Enclosed space floor length, L_E (cm)	ENTER Enclosed space floor width, W_A (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	3.09E+00	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	8,557	4.78E-03	2.06E-01	1.75E-04	1.28E-02	1.28E-02	1.28E-02	1.28E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
3.32E-01	1.57E+03	91.00	-6.28E+01	1.28E-02	6.10E+04	4.47E-01	1.69E-03	2.65E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	1.1E-04	4.0E-02

END

DATA ENTRY SHEET

SL-ADV
Version 3.1; 02/04Reset to
Defaults

CALCULATE RISK-BASED SOIL CONCENTRATION (enter "X" in "YES" box)

YES

OR

CALCULATE INCREMENTAL RISKS FROM ACTUAL SOIL CONCENTRATION (enter "X" in "YES" box and initial soil conc. below)

YES

X

ENTER
Chemical
CAS No.
(numbers only,
no dashes)

ENTER
Initial
soil
conc.,
 C_R
($\mu\text{g/kg}$)

Chemical

106423

1.06E+01

p-Xylene

MORE
↓

ENTER Average soil temperature, T_s (°C)	ENTER Depth below grade to bottom of enclosed space floor, L_F (cm)	ENTER Depth below grade to top of contamination, L_1 (cm)	ENTER Depth below grade to bottom of contamination, (enter value of 0 if value is unknown) L_b (cm)	ENTER Totals must add up to value of L_1 (cell G28) ENTER Thickness of soil stratum A, h_A (cm) ENTER Thickness of soil stratum B, (Enter value or 0) h_B (cm) ENTER Thickness of soil stratum C, (Enter value or 0) h_C (cm)			ENTER Soil stratum A SCS soil type (used to estimate soil vapor permeability)	OR	ENTER User-defined stratum A soil vapor permeability, k_v (cm^2)
10	10	60	0	20	20	20	S		

MORE
↓

ENTER Stratum A SCS soil type Lookup Soil Parameters	ENTER Stratum A soil dry bulk density, ρ_b^A (g/cm^3)	ENTER Stratum A soil total porosity, n^A (unitless)	ENTER Stratum A soil water-filled porosity, θ_w^A (cm^3/cm^3)	ENTER Stratum A soil organic carbon fraction, f_{oc}^A (unitless)	ENTER Stratum B SCS soil type Lookup Soil Parameters	ENTER Stratum B soil dry bulk density, ρ_b^B (g/cm^3)	ENTER Stratum B soil total porosity, n^B (unitless)	ENTER Stratum B soil water-filled porosity, θ_w^B (cm^3/cm^3)	ENTER Stratum B soil organic carbon fraction, f_{oc}^B (unitless)	ENTER Stratum C SCS soil type Lookup Soil Parameters	ENTER Stratum C soil dry bulk density, ρ_b^C (g/cm^3)	ENTER Stratum C soil total porosity, n^C (unitless)	ENTER Stratum C soil water-filled porosity, θ_w^C (cm^3/cm^3)	ENTER Stratum C soil organic carbon fraction, f_{oc}^C (unitless)
S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002	S	1.66	0.375	0.054	0.002

MORE
↓

ENTER Enclosed space floor thickness, L_{crack} (cm)	ENTER Soil-bldg. pressure differential, ΔP ($\text{g/cm}^2\text{-s}^2$)	ENTER Enclosed space floor length, L_E (cm)	ENTER Enclosed space floor width, W_A (cm)	ENTER Enclosed space height, H_b (cm)	ENTER Floor-wall seam crack width, w (cm)	ENTER Indoor air exchange rate, ER (1/h)	ENTER Average vapor flow rate into bldg. OR Leave blank to calculate Q_{soil} (L/m)
10	40	244	91	244	91	2	

ENTER Averaging time for carcinogens, AT_C (yrs)	ENTER Averaging time for noncarcinogens, AT_{NC} (yrs)	ENTER Exposure duration, ED (yrs)	ENTER Exposure frequency, EF (days/yr)	ENTER Target risk for carcinogens, TR (unitless)	ENTER Target hazard quotient for noncarcinogens, THQ (unitless)
70	30	30	350	1.0E-06	1

END

Used to calculate risk-based
soil concentration.

INTERMEDIATE CALCULATIONS SHEET

Exposure duration, τ (sec)	Source-building separation, L_T (cm)	Stratum A soil air-filled porosity, θ_a^A (cm ³ /cm ³)	Stratum B soil air-filled porosity, θ_a^B (cm ³ /cm ³)	Stratum C soil air-filled porosity, θ_a^C (cm ³ /cm ³)	Stratum A effective total fluid saturation, S_{te} (cm ³ /cm ³)	Stratum A soil intrinsic permeability, k_i (cm ²)	Stratum A soil relative air permeability, k_{rg} (cm ²)	Stratum A soil effective vapor permeability, k_v (cm ²)	Floor-wall seam perimeter, X_{crack} (cm)	Initial soil concentration used, C_R (μg/kg)	Bldg. ventilation rate, $Q_{building}$ (cm ³ /s)
9.46E+08	50	0.321	0.321	0.321	0.003	9.92E-08	0.998	9.91E-08	670	1.06E+01	3.01E+03

Area of enclosed space below grade, A_B (cm ²)	Crack-to-total area ratio, η (unitless)	Crack depth below grade, Z_{crack} (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{v,TS}$ (cal/mol)	Henry's law constant at ave. soil temperature, H_{TS} (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'_{TS} (unitless)	Vapor viscosity at ave. soil temperature, μ_{TS} (g/cm-s)	Stratum A effective diffusion coefficient, D_A^{eff} (cm ² /s)	Stratum B effective diffusion coefficient, D_B^{eff} (cm ² /s)	Stratum C effective diffusion coefficient, D_C^{eff} (cm ² /s)	Total overall effective diffusion coefficient, D_T^{eff} (cm ² /s)	Diffusion path length, L_d (cm)	Convection path length, L_p (cm)
2.22E+04	2.75E+00	10	10,248	3.06E-03	1.32E-01	1.75E-04	1.24E-02	1.24E-02	1.24E-02	1.24E-02	50	10

Soil-water partition coefficient, K_d (cm ³ /g)	Source vapor conc., C_{source} (μg/m ³)	Crack radius, r_{crack} (cm)	Average vapor flow rate into bldg., Q_{soil} (cm ³ /s)	Crack effective diffusion coefficient, D_{crack} (cm ² /s)	Area of crack, A_{crack} (cm ²)	Exponent of equivalent foundation Peclet number, $\exp(Pe^f)$ (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., $C_{building}$ (μg/m ³)	Finite source β term (unitless)	Finite source ψ term (sec) ⁻¹	Time for source depletion, τ_D (sec)	Exposure duration > time for source depletion (YES/NO)
7.78E-01	1.67E+03	91.00	-6.28E+01	1.24E-02	6.10E+04	4.37E-01	1.64E-03	2.74E+00	NA	NA	NA	NA

Finite source indoor attenuation coefficient, $\langle \alpha \rangle$ (unitless)	Mass limit bldg. conc., $C_{building}$ (μg/m ³)	Finite source bldg. conc., $C_{building}$ (μg/m ³)	Final finite source bldg. conc., $C_{building}$ (μg/m ³)	Unit risk factor, URF (μg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	NA	NA	NA	NA	1.0E-01

END

APPENDIX C
ProUCL OUTPUTS

Shallow Groundwater/Leachate

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2	User Selected Options											
3	From File			C:\aa_Projects\Peterson\Unnamed Island\UCLs\GW conc_Crosstab.xls.wst								
4	Full Precision			OFF								
5	Confidence Coefficient			95%								
6	Number of Bootstrap Operations			2000								
7												
8												
9	1,4-Dichlorobenzene											
10												
11	General Statistics											
12	Number of Valid Data					12	Number of Detected Data					5
13	Number of Distinct Detected Data					4	Number of Non-Detect Data					7
14							Percent Non-Detects					58.33%
15												
16	Raw Statistics						Log-transformed Statistics					
17	Minimum Detected					0.81	Minimum Detected					-0.211
18	Maximum Detected					3.19	Maximum Detected					1.16
19	Mean of Detected					2.074	Mean of Detected					0.641
20	SD of Detected					0.849	SD of Detected					0.51
21	Minimum Non-Detect					0.5	Minimum Non-Detect					-0.693
22	Maximum Non-Detect					2	Maximum Non-Detect					0.693
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					9
25	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					3
26	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					75.00%
27												
28	Warning: There are only 4 Distinct Detected Values in this data											
29	Note: It should be noted that even though bootstrap may be performed on this data set											
30	the resulting calculations may not be reliable enough to draw conclusions											
31												
32	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
33												
34												
35	UCL Statistics											
36	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
37	Shapiro Wilk Test Statistic					0.929	Shapiro Wilk Test Statistic					0.846
38	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762
39	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
40												
41	Assuming Normal Distribution						Assuming Lognormal Distribution					
42	DL/2 Substitution Method						DL/2 Substitution Method					
43	Mean					1.135	Mean					-0.311
44	SD					1.011	SD					1.024
45	95% DL/2 (t) UCL					1.659	95% H-Stat (DL/2) UCL					2.829
46												
47	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
48	Mean					2.652	Mean in Log Scale					-0.0714
49	SD					0.467	SD in Log Scale					0.758
50	95% MLE (t) UCL					2.894	Mean in Original Scale					1.212
51	95% MLE (Tiku) UCL					3.12	SD in Original Scale					0.931
52							95% Percentile Bootstrap UCL					1.663
53							95% BCA Bootstrap UCL					1.73

	A	B	C	D	E	F	G	H	I	J	K	L	
54													
55	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only						
56	k star (bias corrected)					2.455	Data appear Normal at 5% Significance Level						
57	Theta Star					0.845							
58	nu star					24.55							
59													
60	A-D Test Statistic					0.475	Nonparametric Statistics						
61	5% A-D Critical Value					0.68	Kaplan-Meier (KM) Method						
62	K-S Test Statistic					0.68	Mean					1.364	
63	5% K-S Critical Value					0.358	SD					0.794	
64	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.263	
65							95% KM (t) UCL					1.837	
66	Assuming Gamma Distribution						95% KM (z) UCL					1.798	
67	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					2.05	
68	Minimum					0.81	95% KM (bootstrap t) UCL					1.69	
69	Maximum					3.21	95% KM (BCA) UCL					2.365	
70	Mean					2.168	95% KM (Percentile Bootstrap) UCL					2.313	
71	Median					2.182	95% KM (Chebyshev) UCL					2.513	
72	SD					0.776	97.5% KM (Chebyshev) UCL					3.01	
73	k star					5.156	99% KM (Chebyshev) UCL					3.986	
74	Theta star					0.421							
75	Nu star					123.7	Potential UCLs to Use						
76	AppChi2					99.05	95% KM (t) UCL					1.837	
77	95% Gamma Approximate UCL					2.709	95% KM (Percentile Bootstrap) UCL					2.313	
78	95% Adjusted Gamma UCL					2.804							
79	Note: DL/2 is not a recommended method.												
80													
81													
82	4,4'-DDD												
83													
84	General Statistics												
85	Number of Valid Data					12	Number of Detected Data					2	
86	Number of Distinct Detected Data					2	Number of Non-Detect Data					10	
87							Percent Non-Detects					83.33%	
88													
89	Raw Statistics						Log-transformed Statistics						
90	Minimum Detected					0.00282	Minimum Detected					-5.871	
91	Maximum Detected					0.0119	Maximum Detected					-4.431	
92	Mean of Detected					0.00736	Mean of Detected					-5.151	
93	SD of Detected					0.00642	SD of Detected					1.018	
94	Minimum Non-Detect					0.000526	Minimum Non-Detect					-7.55	
95	Maximum Non-Detect					0.01	Maximum Non-Detect					-4.605	
96													
97	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					11	
98	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1	
99	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					91.67%	
100													
101	Warning: Data set has only 2 Distinct Detected Values.												
102	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.												
103	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
104													
105	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.												
106													

	A	B	C	D	E	F	G	H	I	J	K	L
107	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
108	Those methods will return a 'N/A' value on your output display!											
109												
110	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
111	However, results obtained using 4 to 9 distinct values may not be reliable.											
112	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
113												
114												
115	UCL Statistics											
116	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
117	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
118	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
119	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
120												
121	Assuming Normal Distribution						Assuming Lognormal Distribution					
122	DL/2 Substitution Method						DL/2 Substitution Method					
123	Mean					0.00359	Mean					-6.043
124	SD					0.00306	SD					1.127
125	95% DL/2 (t) UCL					0.00517	95% H-Stat (DL/2) UCL					0.00984
126												
127	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
128	MLE method failed to converge properly						Mean in Log Scale					N/A
129							SD in Log Scale					N/A
130							Mean in Original Scale					N/A
131							SD in Original Scale					N/A
132							95% Percentile Bootstrap UCL					N/A
133							95% BCA Bootstrap UCL					N/A
134												
135	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
136	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
137	Theta Star					N/A						
138	nu star					N/A						
139												
140	A-D Test Statistic					N/A	Nonparametric Statistics					
141	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
142	K-S Test Statistic					N/A	Mean					0.00358
143	5% K-S Critical Value					N/A	SD					0.00251
144	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.00102
145							95% KM (t) UCL					0.00542
146	Assuming Gamma Distribution						95% KM (z) UCL					0.00526
147	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00979
148	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
149	Maximum					N/A	95% KM (BCA) UCL					0.0119
150	Mean					N/A	95% KM (Percentile Bootstrap) UCL					N/A
151	Median					N/A	95% KM (Chebyshev) UCL					0.00804
152	SD					N/A	97.5% KM (Chebyshev) UCL					0.00997
153	k star					N/A	99% KM (Chebyshev) UCL					0.0138
154	Theta star					N/A						
155	Nu star					N/A	Potential UCLs to Use					
156	AppChi2					N/A	95% KM (BCA) UCL					0.0119
157	95% Gamma Approximate UCL					N/A						
158	95% Adjusted Gamma UCL					N/A						
159	Note: DL/2 is not a recommended method.											

	A	B	C	D	E	F	G	H	I	J	K	L
160												
161												
162	4,4'-DDE											
163												
164	General Statistics											
165	Number of Valid Data					12	Number of Detected Data					1
166	Number of Distinct Detected Data					1	Number of Non-Detect Data					11
167							Percent Non-Detects					91.67%
168												
169	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
170	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
171												
172	The data set for variable 4,4'-DDE was not processed!											
173												
174												
175												
176	4,4'-DDT											
177												
178	General Statistics											
179	Number of Valid Data					11	Number of Detected Data					0
180	Number of Distinct Detected Data					0	Number of Non-Detect Data					11
181							Percent Non-Detects					100.00%
182												
183	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
184	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
185	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
186												
187	The data set for variable 4,4'-DDT was not processed!											
188												
189												
190												
191	4-Methylphenol											
192												
193	General Statistics											
194	Number of Valid Data					12	Number of Detected Data					1
195	Number of Distinct Detected Data					1	Number of Non-Detect Data					11
196							Percent Non-Detects					91.67%
197												
198	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
199	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
200												
201	The data set for variable 4-Methylphenol was not processed!											
202												
203												
204												
205	Acenaphthylene											
206												
207	General Statistics											
208	Number of Valid Data					12	Number of Detected Data					3
209	Number of Distinct Detected Data					3	Number of Non-Detect Data					9
210							Percent Non-Detects					75.00%
211												
212	Raw Statistics						Log-transformed Statistics					

	A	B	C	D	E	F	G	H	I	J	K	L
213	Minimum Detected					0.0178	Minimum Detected					-4.029
214	Maximum Detected					0.032	Maximum Detected					-3.442
215	Mean of Detected					0.0229	Mean of Detected					-3.811
216	SD of Detected					0.00787	SD of Detected					0.321
217	Minimum Non-Detect					0.01	Minimum Non-Detect					-4.605
218	Maximum Non-Detect					11	Maximum Non-Detect					2.398
219												
220	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
221	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
222	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
223												
224	Warning: There are only 3 Distinct Detected Values in this data set											
225	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
226	Those methods will return a 'N/A' value on your output display!											
227												
228	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
229	However, results obtained using 4 to 9 distinct values may not be reliable.											
230	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
231												
232												
233	UCL Statistics											
234	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
235	Shapiro Wilk Test Statistic					0.813	Shapiro Wilk Test Statistic					0.832
236	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767
237	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
238												
239	Assuming Normal Distribution					Assuming Lognormal Distribution						
240	DL/2 Substitution Method						DL/2 Substitution Method					
241	Mean					1.315	Mean					-2.421
242	SD					2.326	SD					2.579
243	95% DL/2 (t) UCL					2.521	95% H-Stat (DL/2) UCL					2581
244												
245	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
246	MLE method failed to converge properly						Mean in Log Scale					-4.183
247							SD in Log Scale					0.435
248							Mean in Original Scale					0.0166
249							SD in Original Scale					0.00731
250							95% Percentile Bootstrap UCL					0.02
251							95% BCA Bootstrap UCL					0.0204
252												
253	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
254	k star (bias corrected)					N/A	Data appear Normal at 5% Significance Level					
255	Theta Star					N/A						
256	nu star					N/A						
257												
258	A-D Test Statistic					N/A	Nonparametric Statistics					
259	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
260	K-S Test Statistic					N/A	Mean					0.0209
261	5% K-S Critical Value					N/A	SD					0.00558
262	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.00306
263							95% KM (t) UCL					0.0264
264	Assuming Gamma Distribution						95% KM (z) UCL					0.0259
265	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.026

	A	B	C	D	E	F	G	H	I	J	K	L
266	Minimum					N/A	95% KM (bootstrap t) UCL					0.0562
267	Maximum					N/A	95% KM (BCA) UCL					0.032
268	Mean					N/A	95% KM (Percentile Bootstrap) UCL					N/A
269	Median					N/A	95% KM (Chebyshev) UCL					0.0342
270	SD					N/A	97.5% KM (Chebyshev) UCL					0.04
271	k star					N/A	99% KM (Chebyshev) UCL					0.0513
272	Theta star					N/A						
273	Nu star					N/A	Potential UCLs to Use					
274	AppChi2					N/A	95% KM (t) UCL					0.0264
275	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					N/A
276	95% Adjusted Gamma UCL					N/A						
277	Note: DL/2 is not a recommended method.											
278												
279												
280	alpha-BHC											
281												
282	General Statistics											
283	Number of Valid Data					12	Number of Detected Data					1
284	Number of Distinct Detected Data					1	Number of Non-Detect Data					11
285							Percent Non-Detects					91.67%
286												
287	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
288	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
289												
290	The data set for variable alpha-BHC was not processed!											
291												
292												
293												
294	alpha-Chlordane											
295												
296	General Statistics											
297	Number of Valid Data					12	Number of Detected Data					3
298	Number of Distinct Detected Data					3	Number of Non-Detect Data					9
299							Percent Non-Detects					75.00%
300												
301	Raw Statistics						Log-transformed Statistics					
302	Minimum Detected					0.000892	Minimum Detected					-7.022
303	Maximum Detected					0.0072	Maximum Detected					-4.934
304	Mean of Detected					0.00433	Mean of Detected					-5.757
305	SD of Detected					0.00319	SD of Detected					1.112
306	Minimum Non-Detect					0.000526	Minimum Non-Detect					-7.55
307	Maximum Non-Detect					0.01	Maximum Non-Detect					-4.605
308												
309	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
310	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
311	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
312												
313	Warning: There are only 3 Distinct Detected Values in this data set											
314	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
315	Those methods will return a 'N/A' value on your output display!											
316												
317	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
318	However, results obtained using 4 to 9 distinct values may not be reliable.											

	A	B	C	D	E	F	G	H	I	J	K	L
319	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
320												
321												
322	UCL Statistics											
323	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
324	Shapiro Wilk Test Statistic					0.976	Shapiro Wilk Test Statistic					0.882
325	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767
326	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
327												
328	Assuming Normal Distribution					Assuming Lognormal Distribution						
329	DL/2 Substitution Method						DL/2 Substitution Method					
330	Mean					0.00301	Mean					-6.169
331	SD					0.00229	SD					0.987
332	95% DL/2 (t) UCL					0.00419	95% H-Stat (DL/2) UCL					0.0125
333												
334	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
335	MLE method failed to converge properly						Mean in Log Scale					-7.069
336							SD in Log Scale					1.163
337							Mean in Original Scale					0.00164
338							SD in Original Scale					0.00219
339							95% Percentile Bootstrap UCL					0.00274
340							95% BCA Bootstrap UCL					0.00314
341												
342	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
343	k star (bias corrected)					N/A	Data appear Normal at 5% Significance Level					
344	Theta Star					N/A						
345	nu star					N/A						
346												
347	A-D Test Statistic					N/A	Nonparametric Statistics					
348	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
349	K-S Test Statistic					N/A	Mean					0.0021
350	5% K-S Critical Value					N/A	SD					0.00224
351	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0009359
352							95% KM (t) UCL					0.00378
353	Assuming Gamma Distribution						95% KM (z) UCL					0.00364
354	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00474
355	Minimum					N/A	95% KM (bootstrap t) UCL					0.00305
356	Maximum					N/A	95% KM (BCA) UCL					N/A
357	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.0072
358	Median					N/A	95% KM (Chebyshev) UCL					0.00618
359	SD					N/A	97.5% KM (Chebyshev) UCL					0.00795
360	k star					N/A	99% KM (Chebyshev) UCL					0.0114
361	Theta star					N/A						
362	Nu star					N/A	Potential UCLs to Use					
363	AppChi2					N/A	95% KM (t) UCL					0.00378
364	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					0.0072
365	95% Adjusted Gamma UCL					N/A						
366	Note: DL/2 is not a recommended method.											
367												
368												
369	Aluminum											
370												
371	General Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
372	Number of Valid Data					12	Number of Detected Data					9
373	Number of Distinct Detected Data					8	Number of Non-Detect Data					3
374							Percent Non-Detects					25.00%
375												
376	Raw Statistics						Log-transformed Statistics					
377	Minimum Detected					38	Minimum Detected					3.638
378	Maximum Detected					260	Maximum Detected					5.561
379	Mean of Detected					109.3	Mean of Detected					4.52
380	SD of Detected					70.16	SD of Detected					0.626
381	Minimum Non-Detect					16	Minimum Non-Detect					2.773
382	Maximum Non-Detect					200	Maximum Non-Detect					5.298
383												
384	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					11
385	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
386	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					91.67%
387												
388	Warning: There are only 9 Detected Values in this data											
389	Note: It should be noted that even though bootstrap may be performed on this data set											
390	the resulting calculations may not be reliable enough to draw conclusions											
391												
392	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
393												
394												
395	UCL Statistics											
396	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
397	Shapiro Wilk Test Statistic					0.889	Shapiro Wilk Test Statistic					0.973
398	5% Shapiro Wilk Critical Value					0.829	5% Shapiro Wilk Critical Value					0.829
399	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
400												
401	Assuming Normal Distribution						Assuming Lognormal Distribution					
402	DL/2 Substitution Method						DL/2 Substitution Method					
403	Mean					99.28	Mean					4.331
404	SD					66.48	SD					0.888
405	95% DL/2 (t) UCL					133.7	95% H-Stat (DL/2) UCL					248.7
406												
407	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
408	MLE method failed to converge properly						Mean in Log Scale					4.36
409							SD in Log Scale					0.685
410							Mean in Original Scale					96.24
411							SD in Original Scale					66.26
412							95% Percentile Bootstrap UCL					128.8
413							95% BCA Bootstrap UCL					133.7
414												
415	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
416	k star (bias corrected)					2.1	Data appear Normal at 5% Significance Level					
417	Theta Star					52.04						
418	nu star					37.79						
419												
420	A-D Test Statistic					0.204	Nonparametric Statistics					
421	5% A-D Critical Value					0.727	Kaplan-Meier (KM) Method					
422	K-S Test Statistic					0.727	Mean					99.22
423	5% K-S Critical Value					0.281	SD					63.3
424	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					20.25

	A	B	C	D	E	F	G	H	I	J	K	L		
425						95% KM (t) UCL							135.6	
426	Assuming Gamma Distribution					95% KM (z) UCL							132.5	
427	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL							135.2
428	Minimum					1E-09	95% KM (bootstrap t) UCL							150.8
429	Maximum					260	95% KM (BCA) UCL							135.7
430	Mean					101	95% KM (Percentile Bootstrap) UCL							134.4
431	Median					87.1	95% KM (Chebyshev) UCL							187.5
432	SD					69.19	97.5% KM (Chebyshev) UCL							225.7
433	k star					0.292	99% KM (Chebyshev) UCL							300.7
434	Theta star					346								
435	Nu star					7.009	Potential UCLs to Use							
436	AppChi2					2.176	95% KM (t) UCL							135.6
437	95% Gamma Approximate UCL					325.5	95% KM (Percentile Bootstrap) UCL							134.4
438	95% Adjusted Gamma UCL					395.9								
439	Note: DL/2 is not a recommended method.													
440														
441														
442	Antimony													
443														
444	General Statistics													
445	Number of Valid Data					12	Number of Detected Data					4		
446	Number of Distinct Detected Data					4	Number of Non-Detect Data					8		
447							Percent Non-Detects					66.67%		
448														
449	Raw Statistics						Log-transformed Statistics							
450	Minimum Detected					0.62	Minimum Detected					-0.478		
451	Maximum Detected					5.7	Maximum Detected					1.74		
452	Mean of Detected					2.293	Mean of Detected					0.405		
453	SD of Detected					2.388	SD of Detected					1.066		
454	Minimum Non-Detect					0.5	Minimum Non-Detect					-0.693		
455	Maximum Non-Detect					2	Maximum Non-Detect					0.693		
456														
457	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					10		
458	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					2		
459	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					83.33%		
460														
461	Warning: There are only 4 Distinct Detected Values in this data													
462	Note: It should be noted that even though bootstrap may be performed on this data set													
463	the resulting calculations may not be reliable enough to draw conclusions													
464														
465	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.													
466														
467														
468	UCL Statistics													
469	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only							
470	Shapiro Wilk Test Statistic					0.822	Shapiro Wilk Test Statistic					0.877		
471	5% Shapiro Wilk Critical Value					0.748	5% Shapiro Wilk Critical Value					0.748		
472	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level							
473														
474	Assuming Normal Distribution						Assuming Lognormal Distribution							
475	DL/2 Substitution Method						DL/2 Substitution Method							
476	Mean					1.202	Mean					-0.269		
477	SD					1.515	SD					0.926		

	A	B	C	D	E	F	G	H	I	J	K	L
478	95% DL/2 (t) UCL					1.987	95% H-Stat (DL/2) UCL					2.5
479												
480	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
481	MLE method failed to converge properly						Mean in Log Scale					-1.154
482							SD in Log Scale					1.467
483							Mean in Original Scale					0.901
484							SD in Original Scale					1.624
485							95% Percentile Bootstrap UCL					1.7
486							95% BCA Bootstrap UCL					2.227
487												
488	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
489	k star (bias corrected)					0.496	Data appear Normal at 5% Significance Level					
490	Theta Star					4.617						
491	nu star					3.972						
492												
493	A-D Test Statistic					0.413	Nonparametric Statistics					
494	5% A-D Critical Value					0.664	Kaplan-Meier (KM) Method					
495	K-S Test Statistic					0.664	Mean					1.18
496	5% K-S Critical Value					0.401	SD					1.43
497	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.477
498							95% KM (t) UCL					2.036
499	Assuming Gamma Distribution						95% KM (z) UCL					1.964
500	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.942
501	Minimum					0.321	95% KM (bootstrap t) UCL					2.632
502	Maximum					6.73	95% KM (BCA) UCL					2.783
503	Mean					2.343	95% KM (Percentile Bootstrap) UCL					2.783
504	Median					1.954	95% KM (Chebyshev) UCL					3.258
505	SD					2.095	97.5% KM (Chebyshev) UCL					4.157
506	k star					1.088	99% KM (Chebyshev) UCL					5.923
507	Theta star					2.154						
508	Nu star					26.11	Potential UCLs to Use					
509	AppChi2					15.47	95% KM (t) UCL					2.036
510	95% Gamma Approximate UCL					3.956	95% KM (Percentile Bootstrap) UCL					2.783
511	95% Adjusted Gamma UCL					N/A						
512	Note: DL/2 is not a recommended method.											
513												
514												
515	Aroclor-1242											
516												
517	General Statistics											
518	Number of Valid Data					12	Number of Detected Data					1
519	Number of Distinct Detected Data					1	Number of Non-Detect Data					11
520							Percent Non-Detects					91.67%
521												
522	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
523	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
524												
525	The data set for variable Aroclor-1242 was not processed!											
526												
527												
528												
529	Aroclor-1254											
530												

	A	B	C	D	E	F	G	H	I	J	K	L
531	General Statistics											
532	Number of Valid Data					12	Number of Detected Data					2
533	Number of Distinct Detected Data					2	Number of Non-Detect Data					10
534							Percent Non-Detects					83.33%
535												
536	Raw Statistics						Log-transformed Statistics					
537	Minimum Detected					0.132	Minimum Detected					-2.025
538	Maximum Detected					4.28	Maximum Detected					1.454
539	Mean of Detected					2.206	Mean of Detected					-0.286
540	SD of Detected					2.933	SD of Detected					2.46
541	Minimum Non-Detect					0.021	Minimum Non-Detect					-3.863
542	Maximum Non-Detect					0.22	Maximum Non-Detect					-1.514
543												
544	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					11
545	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
546	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					91.67%
547												
548	Warning: Data set has only 2 Distinct Detected Values.											
549	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.											
550	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
551												
552	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.											
553												
554	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
555	Those methods will return a 'N/A' value on your output display!											
556												
557	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
558	However, results obtained using 4 to 9 distinct values may not be reliable.											
559	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
560												
561												
562	UCL Statistics											
563	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
564	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
565	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
566	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
567												
568	Assuming Normal Distribution						Assuming Lognormal Distribution					
569	DL/2 Substitution Method						DL/2 Substitution Method					
570	Mean					0.413	Mean					-2.788
571	SD					1.219	SD					1.63
572	95% DL/2 (t) UCL					1.045	95% H-Stat (DL/2) UCL					1.223
573												
574	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
575	MLE method failed to converge properly						Mean in Log Scale					N/A
576							SD in Log Scale					N/A
577							Mean in Original Scale					N/A
578							SD in Original Scale					N/A
579							95% Percentile Bootstrap UCL					N/A
580							95% BCA Bootstrap UCL					N/A
581												
582	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
583	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					

	A	B	C	D	E	F	G	H	I	J	K	L
584	Theta Star					N/A						
585	nu star					N/A						
586												
587	A-D Test Statistic					N/A	Nonparametric Statistics					
588	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
589	K-S Test Statistic					N/A	Mean					0.478
590	5% K-S Critical Value					N/A	SD					1.146
591	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.468
592							95% KM (t) UCL					1.318
593	Assuming Gamma Distribution						95% KM (z) UCL					1.248
594	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					3.316
595	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
596	Maximum					N/A	95% KM (BCA) UCL					4.28
597	Mean					N/A	95% KM (Percentile Bootstrap) UCL					4.28
598	Median					N/A	95% KM (Chebyshev) UCL					2.518
599	SD					N/A	97.5% KM (Chebyshev) UCL					3.401
600	k star					N/A	99% KM (Chebyshev) UCL					5.135
601	Theta star					N/A						
602	Nu star					N/A	Potential UCLs to Use					
603	AppChi2					N/A	99% KM (Chebyshev) UCL					5.135
604	95% Gamma Approximate UCL					N/A						
605	95% Adjusted Gamma UCL					N/A						
606	Warning: Recommended UCL exceeds the maximum observation											
607	Note: DL/2 is not a recommended method.											
608												
609												
610	Arsenic											
611												
612	General Statistics											
613	Number of Valid Observations					12	Number of Distinct Observations					12
614												
615	Raw Statistics					Log-transformed Statistics						
616	Minimum					0.436	Minimum of Log Data					-0.83
617	Maximum					8.4	Maximum of Log Data					2.128
618	Mean					2.736	Mean of log Data					0.752
619	Median					2.2	SD of log Data					0.767
620	SD					2.14						
621	Coefficient of Variation					0.782						
622	Skewness					1.843						
623												
624	Relevant UCL Statistics											
625	Normal Distribution Test					Lognormal Distribution Test						
626	Shapiro Wilk Test Statistic					0.833	Shapiro Wilk Test Statistic					0.985
627	Shapiro Wilk Critical Value					0.859	Shapiro Wilk Critical Value					0.859
628	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
629												
630	Assuming Normal Distribution						Assuming Lognormal Distribution					
631	95% Student's-t UCL					3.845	95% H-UCL					5.092
632	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					5.556
633	95% Adjusted-CLT UCL					4.103	97.5% Chebyshev (MVUE) UCL					6.765
634	95% Modified-t UCL					3.9	99% Chebyshev (MVUE) UCL					9.14
635												
636	Gamma Distribution Test						Data Distribution					

	A	B	C	D	E	F	G	H	I	J	K	L	
637	k star (bias corrected)					1.644	Data appear Gamma Distributed at 5% Significance Level						
638	Theta Star					1.664							
639	MLE of Mean					2.736							
640	MLE of Standard Deviation					2.134							
641	nu star					39.45							
642	Approximate Chi Square Value (.05)					26.06	Nonparametric Statistics						
643	Adjusted Level of Significance					0.029	95% CLT UCL					3.752	
644	Adjusted Chi Square Value					24.41	95% Jackknife UCL					3.845	
645							95% Standard Bootstrap UCL					3.73	
646	Anderson-Darling Test Statistic					0.185	95% Bootstrap-t UCL					4.67	
647	Anderson-Darling 5% Critical Value					0.741	95% Hall's Bootstrap UCL					8.616	
648	Kolmogorov-Smirnov Test Statistic					0.104	95% Percentile Bootstrap UCL					3.853	
649	Kolmogorov-Smirnov 5% Critical Value					0.248	95% BCA Bootstrap UCL					4.1	
650	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					5.429	
651							97.5% Chebyshev(Mean, Sd) UCL					6.594	
652	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					8.883	
653	95% Approximate Gamma UCL					4.141							
654	95% Adjusted Gamma UCL					4.421							
655													
656	Potential UCL to Use						Use 95% Approximate Gamma UCL					4.141	
657													
658													
659	Atrazine												
660													
661	General Statistics												
662	Number of Valid Data					12	Number of Detected Data					1	
663	Number of Distinct Detected Data					1	Number of Non-Detect Data					11	
664							Percent Non-Detects					91.67%	
665													
666	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!												
667	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).												
668													
669	The data set for variable Atrazine was not processed!												
670													
671													
672													
673	Barium												
674													
675	General Statistics												
676	Number of Valid Data					12	Number of Detected Data					9	
677	Number of Distinct Detected Data					9	Number of Non-Detect Data					3	
678							Percent Non-Detects					25.00%	
679													
680	Raw Statistics						Log-transformed Statistics						
681	Minimum Detected					21	Minimum Detected					3.045	
682	Maximum Detected					870.6	Maximum Detected					6.769	
683	Mean of Detected					332.2	Mean of Detected					5.208	
684	SD of Detected					333.1	SD of Detected					1.292	
685	Minimum Non-Detect					200	Minimum Non-Detect					5.298	
686	Maximum Non-Detect					200	Maximum Non-Detect					5.298	
687													
688													
689	Warning: There are only 9 Detected Values in this data												

	A	B	C	D	E	F	G	H	I	J	K	L	
690	Note: It should be noted that even though bootstrap may be performed on this data set												
691	the resulting calculations may not be reliable enough to draw conclusions												
692													
693	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.												
694													
695													
696	UCL Statistics												
697	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
698	Shapiro Wilk Test Statistic					0.828	Shapiro Wilk Test Statistic					0.952	
699	5% Shapiro Wilk Critical Value					0.829	5% Shapiro Wilk Critical Value					0.829	
700	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
701													
702	Assuming Normal Distribution					Assuming Lognormal Distribution							
703	DL/2 Substitution Method						DL/2 Substitution Method						
704	Mean					274.1	Mean					5.057	
705	SD					302.9	SD					1.135	
706	95% DL/2 (t) UCL					431.1	95% H-Stat (DL/2) UCL					920.9	
707													
708	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
709	MLE yields a negative mean						Mean in Log Scale					4.978	
710							SD in Log Scale					1.212	
711							Mean in Original Scale					270.3	
712							SD in Original Scale					306.2	
713							95% Percentile Bootstrap UCL					413.6	
714							95% BCA Bootstrap UCL					443.3	
715													
716	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
717	k star (bias corrected)					0.72	Data appear Gamma Distributed at 5% Significance Level						
718	Theta Star					461.3							
719	nu star					12.96							
720													
721	A-D Test Statistic					0.236	Nonparametric Statistics						
722	5% A-D Critical Value					0.744	Kaplan-Meier (KM) Method						
723	K-S Test Statistic					0.744	Mean					273.4	
724	5% K-S Critical Value					0.287	SD					292.2	
725	Data appear Gamma Distributed at 5% Significance Level										SE of Mean	90.31	
726							95% KM (t) UCL					435.6	
727	Assuming Gamma Distribution										95% KM (z) UCL	421.9	
728	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					433.9	
729	Minimum					21	95% KM (bootstrap t) UCL					555.6	
730	Maximum					870.6	95% KM (BCA) UCL					410.1	
731	Mean					317.7	95% KM (Percentile Bootstrap) UCL					413.4	
732	Median					226.2	95% KM (Chebyshev) UCL					667	
733	SD					294.9	97.5% KM (Chebyshev) UCL					837.4	
734	k star					0.92	99% KM (Chebyshev) UCL					1172	
735	Theta star					345.5							
736	Nu star					22.07	Potential UCLs to Use						
737	AppChi2					12.39	95% KM (Chebyshev) UCL					667	
738	95% Gamma Approximate UCL					565.9							
739	95% Adjusted Gamma UCL					620.7							
740	Note: DL/2 is not a recommended method.												
741													
742													

	A	B	C	D	E	F	G	H	I	J	K	L	
743	Benzene												
744													
745	General Statistics												
746	Number of Valid Data					12	Number of Detected Data					4	
747	Number of Distinct Detected Data					4	Number of Non-Detect Data					8	
748							Percent Non-Detects					66.67%	
749													
750	Raw Statistics					Log-transformed Statistics							
751	Minimum Detected					0.72	Minimum Detected					-0.329	
752	Maximum Detected					7.9	Maximum Detected					2.067	
753	Mean of Detected					5.3	Mean of Detected					1.341	
754	SD of Detected					3.35	SD of Detected					1.135	
755	Minimum Non-Detect					0.5	Minimum Non-Detect					-0.693	
756	Maximum Non-Detect					2	Maximum Non-Detect					0.693	
757													
758	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				9		
759	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				3		
760	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				75.00%		
761													
762	Warning: There are only 4 Distinct Detected Values in this data												
763	Note: It should be noted that even though bootstrap may be performed on this data set												
764	the resulting calculations may not be reliable enough to draw conclusions												
765													
766	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.												
767													
768													
769	UCL Statistics												
770	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
771	Shapiro Wilk Test Statistic					0.868	Shapiro Wilk Test Statistic					0.768	
772	5% Shapiro Wilk Critical Value					0.748	5% Shapiro Wilk Critical Value					0.748	
773	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
774													
775	Assuming Normal Distribution					Assuming Lognormal Distribution							
776	DL/2 Substitution Method						DL/2 Substitution Method						
777	Mean					2.121	Mean					-0.131	
778	SD					2.944	SD					1.364	
779	95% DL/2 (t) UCL					3.647	95% H-Stat (DL/2) UCL					6.627	
780													
781	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
782	MLE yields a negative mean					Mean in Log Scale					-0.907		
783							SD in Log Scale					1.972	
784							Mean in Original Scale					1.905	
785							SD in Original Scale					3.061	
786							95% Percentile Bootstrap UCL					3.451	
787							95% BCA Bootstrap UCL					3.53	
788													
789	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
790	k star (bias corrected)					0.586	Data appear Normal at 5% Significance Level						
791	Theta Star					9.039							
792	nu star					4.691							
793													
794	A-D Test Statistic					0.557	Nonparametric Statistics						
795	5% A-D Critical Value					0.662	Kaplan-Meier (KM) Method						

	A	B	C	D	E	F	G	H	I	J	K	L
796	K-S Test Statistic					0.662	Mean					2.247
797	5% K-S Critical Value					0.399	SD					2.733
798	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.911
799							95% KM (t) UCL					3.883
800	Assuming Gamma Distribution						95% KM (z) UCL					3.745
801	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					4.903
802	Minimum					0.72	95% KM (bootstrap t) UCL					3.006
803	Maximum					14.11	95% KM (BCA) UCL					7.9
804	Mean					6.693	95% KM (Percentile Bootstrap) UCL					7.717
805	Median					6.911	95% KM (Chebyshev) UCL					6.217
806	SD					4.011	97.5% KM (Chebyshev) UCL					7.935
807	k star					1.758	99% KM (Chebyshev) UCL					11.31
808	Theta star					3.807						
809	Nu star					42.2	Potential UCLs to Use					
810	AppChi2					28.31	95% KM (t) UCL					3.883
811	95% Gamma Approximate UCL					9.977	95% KM (Percentile Bootstrap) UCL					7.717
812	95% Adjusted Gamma UCL					N/A						
813	Note: DL/2 is not a recommended method.											
814												
815												
816	Benzo(a)pyrene											
817												
818	General Statistics											
819	Number of Valid Data					12	Number of Detected Data					2
820	Number of Distinct Detected Data					2	Number of Non-Detect Data					10
821							Percent Non-Detects					83.33%
822												
823	Raw Statistics						Log-transformed Statistics					
824	Minimum Detected					0.00756	Minimum Detected					-4.885
825	Maximum Detected					0.019	Maximum Detected					-3.963
826	Mean of Detected					0.0133	Mean of Detected					-4.424
827	SD of Detected					0.00809	SD of Detected					0.652
828	Minimum Non-Detect					0.01	Minimum Non-Detect					-4.605
829	Maximum Non-Detect					11	Maximum Non-Detect					2.398
830												
831	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
832	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
833	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
834												
835	Warning: Data set has only 2 Distinct Detected Values.											
836	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.											
837	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
838												
839	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.											
840												
841	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
842	Those methods will return a 'N/A' value on your output display!											
843												
844	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
845	However, results obtained using 4 to 9 distinct values may not be reliable.											
846	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
847												
848												

	A	B	C	D	E	F	G	H	I	J	K	L
849	UCL Statistics											
850	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
851	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
852	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
853	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
854												
855	Assuming Normal Distribution						Assuming Lognormal Distribution					
856	DL/2 Substitution Method						DL/2 Substitution Method					
857	Mean					1.728	Mean					-2.071
858	SD					2.512	SD					2.867
859	95% DL/2 (t) UCL					3.03	95% H-Stat (DL/2) UCL					11304
860												
861	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
862	MLE method failed to converge properly						Mean in Log Scale					N/A
863							SD in Log Scale					N/A
864							Mean in Original Scale					N/A
865							SD in Original Scale					N/A
866							95% Percentile Bootstrap UCL					N/A
867							95% BCA Bootstrap UCL					N/A
868												
869	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
870	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
871	Theta Star					N/A						
872	nu star					N/A						
873												
874	A-D Test Statistic					N/A	Nonparametric Statistics					
875	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
876	K-S Test Statistic					N/A	Mean					0.0104
877	5% K-S Critical Value					N/A	SD					0.00495
878	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0035
879							95% KM (t) UCL					0.0167
880	Assuming Gamma Distribution						95% KM (z) UCL					0.0162
881	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0187
882	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
883	Maximum					N/A	95% KM (BCA) UCL					0.019
884	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.019
885	Median					N/A	95% KM (Chebyshev) UCL					0.0257
886	SD					N/A	97.5% KM (Chebyshev) UCL					0.0323
887	k star					N/A	99% KM (Chebyshev) UCL					0.0453
888	Theta star					N/A						
889	Nu star					N/A	Potential UCLs to Use					
890	AppChi2					N/A	95% KM (t) UCL					0.0167
891	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					0.019
892	95% Adjusted Gamma UCL					N/A						
893	Note: DL/2 is not a recommended method.											
894												
895												
896	Benzo(b)fluoranthene											
897												
898	General Statistics											
899	Number of Valid Data					12	Number of Detected Data					4
900	Number of Distinct Detected Data					4	Number of Non-Detect Data					8
901							Percent Non-Detects					66.67%

	A	B	C	D	E	F	G	H	I	J	K	L
902												
903	Raw Statistics						Log-transformed Statistics					
904	Minimum Detected				0.00867		Minimum Detected				-4.748	
905	Maximum Detected				0.0182		Maximum Detected				-4.006	
906	Mean of Detected				0.0125		Mean of Detected				-4.427	
907	SD of Detected				0.00448		SD of Detected				0.352	
908	Minimum Non-Detect				0.01		Minimum Non-Detect				-4.605	
909	Maximum Non-Detect				11		Maximum Non-Detect				2.398	
910												
911	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				12	
912	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				0	
913	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				100.00%	
914												
915	Warning: There are only 4 Distinct Detected Values in this data											
916	Note: It should be noted that even though bootstrap may be performed on this data set											
917	the resulting calculations may not be reliable enough to draw conclusions											
918												
919	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
920												
921												
922	UCL Statistics											
923	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
924	Shapiro Wilk Test Statistic				0.898		Shapiro Wilk Test Statistic				0.903	
925	5% Shapiro Wilk Critical Value				0.748		5% Shapiro Wilk Critical Value				0.748	
926	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
927												
928	Assuming Normal Distribution						Assuming Lognormal Distribution					
929	DL/2 Substitution Method						DL/2 Substitution Method					
930	Mean				1.313		Mean				-2.506	
931	SD				2.327		SD				2.62	
932	95% DL/2 (t) UCL				2.519		95% H-Stat (DL/2) UCL				1932	
933												
934	Maximum Likelihood Estimate(MLE) Method				N/A		Log ROS Method					
935	MLE method failed to converge properly						Mean in Log Scale				-4.486	
936							SD in Log Scale				0.257	
937							Mean in Original Scale				0.0116	
938							SD in Original Scale				0.00314	
939							95% Percentile Bootstrap UCL				0.0131	
940							95% BCA Bootstrap UCL				0.0132	
941												
942	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
943	k star (bias corrected)				2.862		Data appear Normal at 5% Significance Level					
944	Theta Star				0.00438							
945	nu star				22.89							
946												
947	A-D Test Statistic				0.367		Nonparametric Statistics					
948	5% A-D Critical Value				0.657		Kaplan-Meier (KM) Method					
949	K-S Test Statistic				0.657		Mean				0.0118	
950	5% K-S Critical Value				0.395		SD				0.00375	
951	Data appear Gamma Distributed at 5% Significance Level						SE of Mean				0.00194	
952							95% KM (t) UCL				0.0153	
953	Assuming Gamma Distribution						95% KM (z) UCL				0.015	
954	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL				0.0154	

	A	B	C	D	E	F	G	H	I	J	K	L
955	Minimum					0.00867	95% KM (bootstrap t) UCL					0.0172
956	Maximum					0.0182	95% KM (BCA) UCL					0.0161
957	Mean					0.0133	95% KM (Percentile Bootstrap) UCL					0.0161
958	Median					0.0134	95% KM (Chebyshev) UCL					0.0203
959	SD					0.00343	97.5% KM (Chebyshev) UCL					0.0239
960	k star					11.89	99% KM (Chebyshev) UCL					0.0311
961	Theta star					0.00111						
962	Nu star					285.4	Potential UCLs to Use					
963	AppChi2					247.3	95% KM (t) UCL					0.0153
964	95% Gamma Approximate UCL					0.0153	95% KM (Percentile Bootstrap) UCL					0.0161
965	95% Adjusted Gamma UCL					N/A						
966	Note: DL/2 is not a recommended method.											
967												
968												
969	Benzo(g,h,i)perylene											
970												
971	General Statistics											
972	Number of Valid Data					12	Number of Detected Data					2
973	Number of Distinct Detected Data					2	Number of Non-Detect Data					10
974							Percent Non-Detects					83.33%
975												
976	Raw Statistics						Log-transformed Statistics					
977	Minimum Detected					0.00826	Minimum Detected					-4.796
978	Maximum Detected					0.0141	Maximum Detected					-4.262
979	Mean of Detected					0.0112	Mean of Detected					-4.529
980	SD of Detected					0.00413	SD of Detected					0.378
981	Minimum Non-Detect					0.01	Minimum Non-Detect					-4.605
982	Maximum Non-Detect					11	Maximum Non-Detect					2.398
983												
984	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
985	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
986	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
987												
988	Warning: Data set has only 2 Distinct Detected Values.											
989	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.											
990	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
991												
992	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.											
993												
994	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
995	Those methods will return a 'N/A' value on your output display!											
996												
997	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
998	However, results obtained using 4 to 9 distinct values may not be reliable.											
999	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
1000												
1001												
1002	UCL Statistics											
1003	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1004	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
1005	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
1006	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1007												

	A	B	C	D	E	F	G	H	I	J	K	L
1008	Assuming Normal Distribution						Assuming Lognormal Distribution					
1009	DL/2 Substitution Method						DL/2 Substitution Method					
1010	Mean					1.728	Mean					-2.089
1011	SD					2.513	SD					2.878
1012	95% DL/2 (t) UCL					3.03	95% H-Stat (DL/2) UCL					12410
1013												
1014	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1015	MLE method failed to converge properly						Mean in Log Scale					N/A
1016							SD in Log Scale					N/A
1017							Mean in Original Scale					N/A
1018							SD in Original Scale					N/A
1019							95% Percentile Bootstrap UCL					N/A
1020							95% BCA Bootstrap UCL					N/A
1021												
1022	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1023	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
1024	Theta Star					N/A						
1025	nu star					N/A						
1026												
1027	A-D Test Statistic					N/A	Nonparametric Statistics					
1028	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
1029	K-S Test Statistic					N/A	Mean					0.00972
1030	5% K-S Critical Value					N/A	SD					0.00253
1031	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.00179
1032							95% KM (t) UCL					0.0129
1033	Assuming Gamma Distribution						95% KM (z) UCL					0.0127
1034	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0139
1035	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
1036	Maximum					N/A	95% KM (BCA) UCL					0.0141
1037	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.0141
1038	Median					N/A	95% KM (Chebyshev) UCL					0.0175
1039	SD					N/A	97.5% KM (Chebyshev) UCL					0.0209
1040	k star					N/A	99% KM (Chebyshev) UCL					0.0275
1041	Theta star					N/A						
1042	Nu star					N/A	Potential UCLs to Use					
1043	AppChi2					N/A	95% KM (t) UCL					0.0129
1044	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					0.0141
1045	95% Adjusted Gamma UCL					N/A						
1046	Note: DL/2 is not a recommended method.											
1047												
1048												
1049	Benzo(k)fluoranthene											
1050												
1051	General Statistics											
1052	Number of Valid Data					12	Number of Detected Data					3
1053	Number of Distinct Detected Data					3	Number of Non-Detect Data					9
1054							Percent Non-Detects					75.00%
1055												
1056	Raw Statistics						Log-transformed Statistics					
1057	Minimum Detected					0.00604	Minimum Detected					-5.109
1058	Maximum Detected					0.0192	Maximum Detected					-3.953
1059	Mean of Detected					0.011	Mean of Detected					-4.639
1060	SD of Detected					0.00715	SD of Detected					0.608

	A	B	C	D	E	F	G	H	I	J	K	L
1061	Minimum Non-Detect					0.01	Minimum Non-Detect					-4.605
1062	Maximum Non-Detect					11	Maximum Non-Detect					2.398
1063												
1064	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
1065	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1066	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1067												
1068	Warning: There are only 3 Distinct Detected Values in this data set											
1069	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
1070	Those methods will return a 'N/A' value on your output display!											
1071												
1072	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
1073	However, results obtained using 4 to 9 distinct values may not be reliable.											
1074	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
1075												
1076												
1077	UCL Statistics											
1078	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
1079	Shapiro Wilk Test Statistic					0.847	Shapiro Wilk Test Statistic					0.905
1080	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767
1081	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
1082												
1083	Assuming Normal Distribution					Assuming Lognormal Distribution						
1084	DL/2 Substitution Method						DL/2 Substitution Method					
1085	Mean					1.728	Mean					-2.056
1086	SD					2.512	SD					2.849
1087	95% DL/2 (t) UCL					3.031	95% H-Stat (DL/2) UCL					30990
1088												
1089	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1090	MLE method failed to converge properly						Mean in Log Scale					-4.734
1091							SD in Log Scale					0.41
1092							Mean in Original Scale					0.00954
1093							SD in Original Scale					0.0043
1094							95% Percentile Bootstrap UCL					0.0117
1095							95% BCA Bootstrap UCL					0.012
1096												
1097	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1098	k star (bias corrected)					N/A	Data appear Normal at 5% Significance Level					
1099	Theta Star					N/A						
1100	nu star					N/A						
1101												
1102	A-D Test Statistic					N/A	Nonparametric Statistics					
1103	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
1104	K-S Test Statistic					N/A	Mean					0.00998
1105	5% K-S Critical Value					N/A	SD					0.00537
1106	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.00331
1107							95% KM (t) UCL					0.0159
1108	Assuming Gamma Distribution						95% KM (z) UCL					0.0154
1109	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0162
1110	Minimum					N/A	95% KM (bootstrap t) UCL					0.0367
1111	Maximum					N/A	95% KM (BCA) UCL					0.0192
1112	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.0192
1113	Median					N/A	95% KM (Chebyshev) UCL					0.0244

	A	B	C	D	E	F	G	H	I	J	K	L
1114	SD					N/A	97.5% KM (Chebyshev) UCL					0.0306
1115	k star					N/A	99% KM (Chebyshev) UCL					0.0429
1116	Theta star					N/A						
1117	Nu star					N/A	Potential UCLs to Use					
1118	AppChi2					N/A	95% KM (t) UCL					0.0159
1119	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					0.0192
1120	95% Adjusted Gamma UCL					N/A						
1121	Note: DL/2 is not a recommended method.											
1122												
1123												
1124	Benzo_a_anthracene											
1125												
1126	General Statistics											
1127	Number of Valid Data					12	Number of Detected Data					7
1128	Number of Distinct Detected Data					7	Number of Non-Detect Data					5
1129							Percent Non-Detects					41.67%
1130												
1131	Raw Statistics						Log-transformed Statistics					
1132	Minimum Detected					0.0057	Minimum Detected					-5.167
1133	Maximum Detected					0.08	Maximum Detected					-2.526
1134	Mean of Detected					0.0265	Mean of Detected					-4.034
1135	SD of Detected					0.0268	SD of Detected					0.963
1136	Minimum Non-Detect					0.1	Minimum Non-Detect					-2.303
1137	Maximum Non-Detect					11	Maximum Non-Detect					2.398
1138												
1139	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
1140	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1141	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1142												
1143	Warning: There are only 7 Detected Values in this data											
1144	Note: It should be noted that even though bootstrap may be performed on this data set											
1145	the resulting calculations may not be reliable enough to draw conclusions											
1146												
1147	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1148												
1149												
1150	UCL Statistics											
1151	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1152	Shapiro Wilk Test Statistic					0.806	Shapiro Wilk Test Statistic					0.948
1153	5% Shapiro Wilk Critical Value					0.803	5% Shapiro Wilk Critical Value					0.803
1154	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1155												
1156	Assuming Normal Distribution						Assuming Lognormal Distribution					
1157	DL/2 Substitution Method						DL/2 Substitution Method					
1158	Mean					0.903	Mean					-2.826
1159	SD					2.033	SD					2.258
1160	95% DL/2 (t) UCL					1.957	95% H-Stat (DL/2) UCL					493
1161												
1162	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1163	MLE method failed to converge properly						Mean in Log Scale					-4.034
1164							SD in Log Scale					0.79
1165							Mean in Original Scale					0.0239
1166							SD in Original Scale					0.0212

	A	B	C	D	E	F	G	H	I	J	K	L		
1167						95% Percentile Bootstrap UCL							0.0344	
1168							95% BCA Bootstrap UCL							0.0361
1169														
1170	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only								
1171	k star (bias corrected)					0.882	Data appear Normal at 5% Significance Level							
1172	Theta Star					0.0301								
1173	nu star					12.35								
1174														
1175	A-D Test Statistic					0.347	Nonparametric Statistics							
1176	5% A-D Critical Value					0.723	Kaplan-Meier (KM) Method							
1177	K-S Test Statistic					0.723	Mean							0.0265
1178	5% K-S Critical Value					0.318	SD							0.0248
1179	Data appear Gamma Distributed at 5% Significance Level					SE of Mean							0.0101	
1180							95% KM (t) UCL							0.0447
1181	Assuming Gamma Distribution					95% KM (z) UCL							0.0432	
1182	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL							0.0453
1183	Minimum					0.00412	95% KM (bootstrap t) UCL							0.0706
1184	Maximum					0.08	95% KM (BCA) UCL							0.0438
1185	Mean					0.0263	95% KM (Percentile Bootstrap) UCL							0.0442
1186	Median					0.0256	95% KM (Chebyshev) UCL							0.0706
1187	SD					0.022	97.5% KM (Chebyshev) UCL							0.0897
1188	k star					1.266	99% KM (Chebyshev) UCL							0.127
1189	Theta star					0.0208								
1190	Nu star					30.39	Potential UCLs to Use							
1191	AppChi2					18.8	95% KM (t) UCL							0.0447
1192	95% Gamma Approximate UCL					0.0425	95% KM (Percentile Bootstrap) UCL							0.0442
1193	95% Adjusted Gamma UCL					0.0459								
1194	Note: DL/2 is not a recommended method.													
1195														
1196														
1197	Beryllium													
1198														
1199	General Statistics													
1200	Number of Valid Data					12	Number of Detected Data					1		
1201	Number of Distinct Detected Data					1	Number of Non-Detect Data					11		
1202							Percent Non-Detects					91.67%		
1203														
1204	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!													
1205	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).													
1206														
1207	The data set for variable Beryllium was not processed!													
1208														
1209														
1210														
1211	bis(2-Ethylhexyl)phthalate													
1212														
1213	General Statistics													
1214	Number of Valid Data					12	Number of Detected Data					4		
1215	Number of Distinct Detected Data					4	Number of Non-Detect Data					8		
1216							Percent Non-Detects					66.67%		
1217														
1218	Raw Statistics					Log-transformed Statistics								
1219	Minimum Detected					0.87	Minimum Detected					-0.139		

	A	B	C	D	E	F	G	H	I	J	K	L
1220	Maximum Detected					4.84	Maximum Detected					1.577
1221	Mean of Detected					2.745	Mean of Detected					0.841
1222	SD of Detected					1.643	SD of Detected					0.72
1223	Minimum Non-Detect					0.52	Minimum Non-Detect					-0.654
1224	Maximum Non-Detect					5	Maximum Non-Detect					1.609
1225												
1226	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
1227	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1228	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1229												
1230	Warning: There are only 4 Distinct Detected Values in this data											
1231	Note: It should be noted that even though bootstrap may be performed on this data set											
1232	the resulting calculations may not be reliable enough to draw conclusions											
1233												
1234	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1235												
1236												
1237	UCL Statistics											
1238	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
1239	Shapiro Wilk Test Statistic					0.986	Shapiro Wilk Test Statistic					0.951
1240	5% Shapiro Wilk Critical Value					0.748	5% Shapiro Wilk Critical Value					0.748
1241	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1242												
1243	Assuming Normal Distribution						Assuming Lognormal Distribution					
1244	DL/2 Substitution Method						DL/2 Substitution Method					
1245	Mean					1.836	Mean					0.139
1246	SD					1.448	SD					1.155
1247	95% DL/2 (t) UCL					2.587	95% H-Stat (DL/2) UCL					7.698
1248												
1249	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1250	MLE method failed to converge properly						Mean in Log Scale					-0.259
1251							SD in Log Scale					1.19
1252							Mean in Original Scale					1.396
1253							SD in Original Scale					1.493
1254							95% Percentile Bootstrap UCL					2.125
1255							95% BCA Bootstrap UCL					2.27
1256												
1257	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1258	k star (bias corrected)					0.945	Data appear Normal at 5% Significance Level					
1259	Theta Star					2.904						
1260	nu star					7.561						
1261												
1262	A-D Test Statistic					0.239	Nonparametric Statistics					
1263	5% A-D Critical Value					0.659	Kaplan-Meier (KM) Method					
1264	K-S Test Statistic					0.659	Mean					1.808
1265	5% K-S Critical Value					0.397	SD					1.375
1266	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.562
1267							95% KM (t) UCL					2.816
1268	Assuming Gamma Distribution						95% KM (z) UCL					2.731
1269	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					2.906
1270	Minimum					0.87	95% KM (bootstrap t) UCL					2.684
1271	Maximum					7.486	95% KM (BCA) UCL					4.84
1272	Mean					3.455	95% KM (Percentile Bootstrap) UCL					3.37

	A	B	C	D	E	F	G	H	I	J	K	L
1273	Median					2.833	95% KM (Chebyshev) UCL					4.255
1274	SD					1.834	97.5% KM (Chebyshev) UCL					5.314
1275	k star					2.92	99% KM (Chebyshev) UCL					7.394
1276	Theta star					1.183						
1277	Nu star					70.07	Potential UCLs to Use					
1278	AppChi2					51.8	95% KM (t) UCL					2.816
1279	95% Gamma Approximate UCL					4.673	95% KM (Percentile Bootstrap) UCL					3.37
1280	95% Adjusted Gamma UCL					N/A						
1281	Note: DL/2 is not a recommended method.											
1282												
1283												
1284	Cadmium											
1285												
1286	General Statistics											
1287	Number of Valid Data					12	Number of Detected Data					5
1288	Number of Distinct Detected Data					5	Number of Non-Detect Data					7
1289							Percent Non-Detects					58.33%
1290												
1291	Raw Statistics						Log-transformed Statistics					
1292	Minimum Detected					0.5	Minimum Detected					-0.693
1293	Maximum Detected					27	Maximum Detected					3.296
1294	Mean of Detected					8.694	Mean of Detected					1.212
1295	SD of Detected					11.08	SD of Detected					1.735
1296	Minimum Non-Detect					0.1	Minimum Non-Detect					-2.303
1297	Maximum Non-Detect					0.5	Maximum Non-Detect					-0.693
1298												
1299	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					7
1300	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					5
1301	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					58.33%
1302												
1303	Warning: There are only 5 Detected Values in this data											
1304	Note: It should be noted that even though bootstrap may be performed on this data set											
1305	the resulting calculations may not be reliable enough to draw conclusions											
1306												
1307	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1308												
1309												
1310	UCL Statistics											
1311	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1312	Shapiro Wilk Test Statistic					0.823	Shapiro Wilk Test Statistic					0.919
1313	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762
1314	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1315												
1316	Assuming Normal Distribution						Assuming Lognormal Distribution					
1317	DL/2 Substitution Method						DL/2 Substitution Method					
1318	Mean					3.706	Mean					-0.734
1319	SD					8.003	SD					2.072
1320	95% DL/2 (t) UCL					7.855	95% H-Stat (DL/2) UCL					23.92
1321												
1322	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1323	MLE yields a negative mean						Mean in Log Scale					-2.105
1324							SD in Log Scale					3.222
1325							Mean in Original Scale					3.633

	A	B	C	D	E	F	G	H	I	J	K	L
1326						SD in Original Scale						8.038
1327						95% Percentile Bootstrap UCL						8.04
1328						95% BCA Bootstrap UCL						9.466
1329												
1330	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1331	k star (bias corrected)					0.391	Data appear Normal at 5% Significance Level					
1332	Theta Star					22.26						
1333	nu star					3.906						
1334												
1335	A-D Test Statistic					0.288	Nonparametric Statistics					
1336	5% A-D Critical Value					0.704	Kaplan-Meier (KM) Method					
1337	K-S Test Statistic					0.704	Mean					3.914
1338	5% K-S Critical Value					0.369	SD					7.567
1339	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					2.442	
1340							95% KM (t) UCL					8.3
1341	Assuming Gamma Distribution					95% KM (z) UCL					7.931	
1342	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					7.94
1343	Minimum					0.5	95% KM (bootstrap t) UCL					18.21
1344	Maximum					27	95% KM (BCA) UCL					13.67
1345	Mean					8.73	95% KM (Percentile Bootstrap) UCL					9.758
1346	Median					6.234	95% KM (Chebyshev) UCL					14.56
1347	SD					7.395	97.5% KM (Chebyshev) UCL					19.17
1348	k star					0.972	99% KM (Chebyshev) UCL					28.21
1349	Theta star					8.98						
1350	Nu star					23.33	Potential UCLs to Use					
1351	AppChi2					13.34	95% KM (t) UCL					8.3
1352	95% Gamma Approximate UCL					15.27	95% KM (Percentile Bootstrap) UCL					9.758
1353	95% Adjusted Gamma UCL					16.69						
1354	Note: DL/2 is not a recommended method.											
1355												
1356												
1357	Chlorobenzene											
1358												
1359	General Statistics											
1360	Number of Valid Data					12	Number of Detected Data					5
1361	Number of Distinct Detected Data					5	Number of Non-Detect Data					7
1362							Percent Non-Detects					58.33%
1363												
1364	Raw Statistics					Log-transformed Statistics						
1365	Minimum Detected					2.46	Minimum Detected					0.9
1366	Maximum Detected					28	Maximum Detected					3.332
1367	Mean of Detected					13.43	Mean of Detected					2.22
1368	SD of Detected					11.68	SD of Detected					1.025
1369	Minimum Non-Detect					0.5	Minimum Non-Detect					-0.693
1370	Maximum Non-Detect					2	Maximum Non-Detect					0.693
1371												
1372	Note: Data have multiple DLs - Use of KM Method is recommended					Number treated as Non-Detect					7	
1373	For all methods (except KM, DL/2, and ROS Methods),					Number treated as Detected					5	
1374	Observations < Largest ND are treated as NDs					Single DL Non-Detect Percentage					58.33%	
1375												
1376	Warning: There are only 5 Detected Values in this data											
1377	Note: It should be noted that even though bootstrap may be performed on this data set											
1378	the resulting calculations may not be reliable enough to draw conclusions											

	A	B	C	D	E	F	G	H	I	J	K	L
1379												
1380	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1381												
1382												
1383	UCL Statistics											
1384	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
1385	Shapiro Wilk Test Statistic					0.839	Shapiro Wilk Test Statistic					0.917
1386	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762
1387	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
1388												
1389	Assuming Normal Distribution					Assuming Lognormal Distribution						
1390	DL/2 Substitution Method						DL/2 Substitution Method					
1391	Mean					5.868	Mean					0.347
1392	SD					9.708	SD					1.834
1393	95% DL/2 (t) UCL					10.9	95% H-Stat (DL/2) UCL					55.4
1394												
1395	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1396	MLE yields a negative mean						Mean in Log Scale					0.263
1397							SD in Log Scale					1.977
1398							Mean in Original Scale					5.868
1399							SD in Original Scale					9.709
1400							95% Percentile Bootstrap UCL					10.47
1401							95% BCA Bootstrap UCL					12.02
1402												
1403	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1404	k star (bias corrected)					0.72	Data appear Normal at 5% Significance Level					
1405	Theta Star					18.66						
1406	nu star					7.201						
1407												
1408	A-D Test Statistic					0.396	Nonparametric Statistics					
1409	5% A-D Critical Value					0.687	Kaplan-Meier (KM) Method					
1410	K-S Test Statistic					0.687	Mean					7.033
1411	5% K-S Critical Value					0.362	SD					8.644
1412	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					2.79
1413							95% KM (t) UCL					12.04
1414	Assuming Gamma Distribution						95% KM (z) UCL					11.62
1415	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					11.35
1416	Minimum					0.435	95% KM (bootstrap t) UCL					24.35
1417	Maximum					28.41	95% KM (BCA) UCL					24.33
1418	Mean					13.35	95% KM (Percentile Bootstrap) UCL					14
1419	Median					9.729	95% KM (Chebyshev) UCL					19.19
1420	SD					10.19	97.5% KM (Chebyshev) UCL					24.45
1421	k star					0.988	99% KM (Chebyshev) UCL					34.79
1422	Theta star					13.52						
1423	Nu star					23.71	Potential UCLs to Use					
1424	AppChi2					13.63	95% KM (t) UCL					12.04
1425	95% Gamma Approximate UCL					23.23	95% KM (Percentile Bootstrap) UCL					14
1426	95% Adjusted Gamma UCL					25.38						
1427	Note: DL/2 is not a recommended method.											
1428												
1429												
1430	Chromium											
1431												

	A	B	C	D	E	F	G	H	I	J	K	L
1432	General Statistics											
1433	Number of Valid Data					12	Number of Detected Data					10
1434	Number of Distinct Detected Data					9	Number of Non-Detect Data					2
1435							Percent Non-Detects					16.67%
1436												
1437	Raw Statistics						Log-transformed Statistics					
1438	Minimum Detected					0.58	Minimum Detected					-0.545
1439	Maximum Detected					8	Maximum Detected					2.079
1440	Mean of Detected					2.369	Mean of Detected					0.424
1441	SD of Detected					2.528	SD of Detected					0.947
1442	Minimum Non-Detect					0.6	Minimum Non-Detect					-0.511
1443	Maximum Non-Detect					0.6	Maximum Non-Detect					-0.511
1444												
1445												
1446	UCL Statistics											
1447	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1448	Shapiro Wilk Test Statistic					0.749	Shapiro Wilk Test Statistic					0.877
1449	5% Shapiro Wilk Critical Value					0.842	5% Shapiro Wilk Critical Value					0.842
1450	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1451												
1452	Assuming Normal Distribution						Assuming Lognormal Distribution					
1453	DL/2 Substitution Method						DL/2 Substitution Method					
1454	Mean					2.024	Mean					0.152
1455	SD					2.425	SD					1.065
1456	95% DL/2 (t) UCL					3.281	95% H-Stat (DL/2) UCL					5.271
1457												
1458	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1459	Mean					1.596	Mean in Log Scale					0.152
1460	SD					2.812	SD in Log Scale					1.07
1461	95% MLE (t) UCL					3.054	Mean in Original Scale					2.026
1462	95% MLE (Tiku) UCL					3.077	SD in Original Scale					2.424
1463							95% Percentile Bootstrap UCL					3.204
1464							95% BCA Bootstrap UCL					3.449
1465												
1466	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1467	k star (bias corrected)					0.963	Data Follow Appr. Gamma Distribution at 5% Significance Level					
1468	Theta Star					2.459						
1469	nu star					19.26						
1470												
1471	A-D Test Statistic					0.741	Nonparametric Statistics					
1472	5% A-D Critical Value					0.743	Kaplan-Meier (KM) Method					
1473	K-S Test Statistic					0.743	Mean					2.071
1474	5% K-S Critical Value					0.272	SD					2.289
1475	Data follow Appr. Gamma Distribution at 5% Significance Level						SE of Mean					0.696
1476							95% KM (t) UCL					3.322
1477	Assuming Gamma Distribution						95% KM (z) UCL					3.216
1478	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					3.308
1479	Minimum					1E-09	95% KM (bootstrap t) UCL					5.141
1480	Maximum					8	95% KM (BCA) UCL					3.345
1481	Mean					1.986	95% KM (Percentile Bootstrap) UCL					3.245
1482	Median					0.935	95% KM (Chebyshev) UCL					5.107
1483	SD					2.456	97.5% KM (Chebyshev) UCL					6.42
1484	k star					0.287	99% KM (Chebyshev) UCL					9.001

	A	B	C	D	E	F	G	H	I	J	K	L
1485	Theta star					6.913						
1486	Nu star					6.896	Potential UCLs to Use					
1487	AppChi2					2.113	95% KM (Chebyshev) UCL					5.107
1488	95% Gamma Approximate UCL					6.481						
1489	95% Adjusted Gamma UCL					7.901						
1490	Note: DL/2 is not a recommended method.											
1491												
1492												
1493	Chrysene											
1494												
1495	General Statistics											
1496	Number of Valid Data					12	Number of Detected Data					4
1497	Number of Distinct Detected Data					4	Number of Non-Detect Data					8
1498							Percent Non-Detects					66.67%
1499												
1500	Raw Statistics						Log-transformed Statistics					
1501	Minimum Detected					0.0062	Minimum Detected					-5.083
1502	Maximum Detected					0.048	Maximum Detected					-3.037
1503	Mean of Detected					0.0227	Mean of Detected					-4.029
1504	SD of Detected					0.0178	SD of Detected					0.837
1505	Minimum Non-Detect					0.0104	Minimum Non-Detect					-4.566
1506	Maximum Non-Detect					11	Maximum Non-Detect					2.398
1507												
1508	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
1509	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1510	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1511												
1512	Warning: There are only 4 Distinct Detected Values in this data											
1513	Note: It should be noted that even though bootstrap may be performed on this data set											
1514	the resulting calculations may not be reliable enough to draw conclusions											
1515												
1516	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1517												
1518												
1519	UCL Statistics											
1520	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1521	Shapiro Wilk Test Statistic					0.881	Shapiro Wilk Test Statistic					0.958
1522	5% Shapiro Wilk Critical Value					0.748	5% Shapiro Wilk Critical Value					0.748
1523	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1524												
1525	Assuming Normal Distribution						Assuming Lognormal Distribution					
1526	DL/2 Substitution Method						DL/2 Substitution Method					
1527	Mean					1.316	Mean					-2.37
1528	SD					2.325	SD					2.546
1529	95% DL/2 (t) UCL					2.522	95% H-Stat (DL/2) UCL					2409
1530												
1531	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1532	MLE method failed to converge properly						Mean in Log Scale					-4.246
1533							SD in Log Scale					0.679
1534							Mean in Original Scale					0.0177
1535							SD in Original Scale					0.0126
1536							95% Percentile Bootstrap UCL					0.0238
1537							95% BCA Bootstrap UCL					0.0247

	A	B	C	D	E	F	G	H	I	J	K	L
1538												
1539	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1540	k star (bias corrected)					0.715	Data appear Normal at 5% Significance Level					
1541	Theta Star					0.0318						
1542	nu star					5.719						
1543												
1544	A-D Test Statistic					0.303	Nonparametric Statistics					
1545	5% A-D Critical Value					0.66	Kaplan-Meier (KM) Method					
1546	K-S Test Statistic					0.66	Mean					0.0194
1547	5% K-S Critical Value					0.398	SD					0.0153
1548	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0079
1549							95% KM (t) UCL					0.0336
1550	Assuming Gamma Distribution						95% KM (z) UCL					0.0324
1551	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.034
1552	Minimum					0.0062	95% KM (bootstrap t) UCL					0.0482
1553	Maximum					0.0485	95% KM (BCA) UCL					0.0364
1554	Mean					0.0246	95% KM (Percentile Bootstrap) UCL					0.0341
1555	Median					0.0198	95% KM (Chebyshev) UCL					0.0538
1556	SD					0.0145	97.5% KM (Chebyshev) UCL					0.0687
1557	k star					2.267	99% KM (Chebyshev) UCL					0.098
1558	Theta star					0.0109						
1559	Nu star					54.41	Potential UCLs to Use					
1560	AppChi2					38.46	95% KM (t) UCL					0.0336
1561	95% Gamma Approximate UCL					0.0348	95% KM (Percentile Bootstrap) UCL					0.0341
1562	95% Adjusted Gamma UCL					N/A						
1563	Note: DL/2 is not a recommended method.											
1564												
1565												
1566	Cobalt											
1567												
1568	General Statistics											
1569	Number of Valid Data					12	Number of Detected Data					7
1570	Number of Distinct Detected Data					7	Number of Non-Detect Data					5
1571							Percent Non-Detects					41.67%
1572												
1573	Raw Statistics						Log-transformed Statistics					
1574	Minimum Detected					0.77	Minimum Detected					-0.261
1575	Maximum Detected					33	Maximum Detected					3.497
1576	Mean of Detected					8.067	Mean of Detected					1.226
1577	SD of Detected					11.68	SD of Detected					1.411
1578	Minimum Non-Detect					0.1	Minimum Non-Detect					-2.303
1579	Maximum Non-Detect					50	Maximum Non-Detect					3.912
1580												
1581	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
1582	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1583	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1584												
1585	Warning: There are only 7 Detected Values in this data											
1586	Note: It should be noted that even though bootstrap may be performed on this data set											
1587	the resulting calculations may not be reliable enough to draw conclusions											
1588												
1589	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1590												

	A	B	C	D	E	F	G	H	I	J	K	L
1591												
1592	UCL Statistics											
1593	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1594	Shapiro Wilk Test Statistic					0.7	Shapiro Wilk Test Statistic					0.885
1595	5% Shapiro Wilk Critical Value					0.803	5% Shapiro Wilk Critical Value					0.803
1596	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1597												
1598	Assuming Normal Distribution						Assuming Lognormal Distribution					
1599	DL/2 Substitution Method						DL/2 Substitution Method					
1600	Mean					10.97	Mean					1.079
1601	SD					12.45	SD					2.213
1602	95% DL/2 (t) UCL					17.42	95% H-Stat (DL/2) UCL					3776
1603												
1604	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1605	MLE method failed to converge properly						Mean in Log Scale					0.469
1606							SD in Log Scale					1.777
1607							Mean in Original Scale					5.492
1608							SD in Original Scale					9.376
1609							95% Percentile Bootstrap UCL					10.33
1610							95% BCA Bootstrap UCL					12.44
1611												
1612	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1613	k star (bias corrected)					0.496	Data appear Gamma Distributed at 5% Significance Level					
1614	Theta Star					16.26						
1615	nu star					6.945						
1616												
1617	A-D Test Statistic					0.583	Nonparametric Statistics					
1618	5% A-D Critical Value					0.739	Kaplan-Meier (KM) Method					
1619	K-S Test Statistic					0.739	Mean					6.446
1620	5% K-S Critical Value					0.324	SD					10.01
1621	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					3.603
1622							95% KM (t) UCL					12.92
1623	Assuming Gamma Distribution						95% KM (z) UCL					12.37
1624	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					12.84
1625	Minimum					1E-09	95% KM (bootstrap t) UCL					25.8
1626	Maximum					33	95% KM (BCA) UCL					12.58
1627	Mean					7.928	95% KM (Percentile Bootstrap) UCL					12.54
1628	Median					1.45	95% KM (Chebyshev) UCL					22.15
1629	SD					11.36	97.5% KM (Chebyshev) UCL					28.95
1630	k star					0.18	99% KM (Chebyshev) UCL					42.29
1631	Theta star					44.13						
1632	Nu star					4.311	Potential UCLs to Use					
1633	AppChi2					0.848	95% KM (BCA) UCL					12.58
1634	95% Gamma Approximate UCL					40.29						
1635	95% Adjusted Gamma UCL					53.05						
1636	Note: DL/2 is not a recommended method.											
1637												
1638												
1639	Copper											
1640												
1641	General Statistics											
1642	Number of Valid Data					12	Number of Detected Data					6
1643	Number of Distinct Detected Data					5	Number of Non-Detect Data					6

	A	B	C	D	E	F	G	H	I	J	K	L
1644						Percent Non-Detects						50.00%
1645												
1646	Raw Statistics					Log-transformed Statistics						
1647	Minimum Detected					1.8	Minimum Detected					0.588
1648	Maximum Detected					69	Maximum Detected					4.234
1649	Mean of Detected					14.63	Mean of Detected					1.632
1650	SD of Detected					26.77	SD of Detected					1.415
1651	Minimum Non-Detect					0.7	Minimum Non-Detect					-0.357
1652	Maximum Non-Detect					25	Maximum Non-Detect					3.219
1653												
1654	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					11
1655	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
1656	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					91.67%
1657												
1658	Warning: There are only 6 Detected Values in this data											
1659	Note: It should be noted that even though bootstrap may be performed on this data set											
1660	the resulting calculations may not be reliable enough to draw conclusions											
1661												
1662	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1663												
1664												
1665	UCL Statistics											
1666	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
1667	Shapiro Wilk Test Statistic					0.574	Shapiro Wilk Test Statistic					0.799
1668	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788
1669	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
1670												
1671	Assuming Normal Distribution					Assuming Lognormal Distribution						
1672	DL/2 Substitution Method						DL/2 Substitution Method					
1673	Mean					10.55	Mean					1.244
1674	SD					19.07	SD					1.613
1675	95% DL/2 (t) UCL					20.44	95% H-Stat (DL/2) UCL					129.7
1676												
1677	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1678	MLE method failed to converge properly						Mean in Log Scale					0.485
1679							SD in Log Scale					1.753
1680							Mean in Original Scale					7.858
1681							SD in Original Scale					19.42
1682							95% Percentile Bootstrap UCL					18.61
1683							95% BCA Bootstrap UCL					24.99
1684												
1685	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1686	k star (bias corrected)					0.406	Data Follow Appr. Gamma Distribution at 5% Significance Level					
1687	Theta Star					36.07						
1688	nu star					4.869						
1689												
1690	A-D Test Statistic					0.888	Nonparametric Statistics					
1691	5% A-D Critical Value					0.731	Kaplan-Meier (KM) Method					
1692	K-S Test Statistic					0.731	Mean					8.523
1693	5% K-S Critical Value					0.347	SD					18.37
1694	Data follow Appr. Gamma Distribution at 5% Significance Level						SE of Mean					5.827
1695							95% KM (t) UCL					18.99
1696	Assuming Gamma Distribution						95% KM (z) UCL					18.11

	A	B	C	D	E	F	G	H	I	J	K	L
1697	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					18.45
1698	Minimum					1E-09	95% KM (bootstrap t) UCL					136.5
1699	Maximum					69	95% KM (BCA) UCL					19.61
1700	Mean					14.17	95% KM (Percentile Bootstrap) UCL					19.13
1701	Median					2	95% KM (Chebyshev) UCL					33.92
1702	SD					24.83	97.5% KM (Chebyshev) UCL					44.91
1703	k star					0.13	99% KM (Chebyshev) UCL					66.5
1704	Theta star					108.7						
1705	Nu star					3.128	Potential UCLs to Use					
1706	AppChi2					0.411	95% KM (t) UCL					18.99
1707	95% Gamma Approximate UCL					107.8						
1708	95% Adjusted Gamma UCL					149.5						
1709	Note: DL/2 is not a recommended method.											
1710												
1711												
1712	Cyanide											
1713												
1714	General Statistics											
1715	Number of Valid Data					12	Number of Detected Data					0
1716	Number of Distinct Detected Data					0	Number of Non-Detect Data					12
1717							Percent Non-Detects					100.00%
1718												
1719	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
1720	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
1721	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1722												
1723	The data set for variable Cyanide was not processed!											
1724												
1725												
1726												
1727	Dibenz_a,h_anthracene											
1728												
1729	General Statistics											
1730	Number of Valid Data					12	Number of Detected Data					0
1731	Number of Distinct Detected Data					0	Number of Non-Detect Data					12
1732							Percent Non-Detects					100.00%
1733												
1734	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
1735	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
1736	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1737												
1738	The data set for variable Dibenz_a,h_anthracene was not processed!											
1739												
1740												
1741												
1742	Dibenzofuran											
1743												
1744	General Statistics											
1745	Number of Valid Data					12	Number of Detected Data					1
1746	Number of Distinct Detected Data					1	Number of Non-Detect Data					11
1747							Percent Non-Detects					91.67%
1748												
1749	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											

	A	B	C	D	E	F	G	H	I	J	K	L
1750	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
1751												
1752	The data set for variable Dibenzofuran was not processed!											
1753												
1754												
1755												
1756	Dieldrin											
1757												
1758	General Statistics											
1759	Number of Valid Data				12		Number of Detected Data				1	
1760	Number of Distinct Detected Data				1		Number of Non-Detect Data				11	
1761							Percent Non-Detects				91.67%	
1762												
1763	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
1764	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
1765												
1766	The data set for variable Dieldrin was not processed!											
1767												
1768												
1769												
1770	Ethylbenzene											
1771												
1772	General Statistics											
1773	Number of Valid Data				12		Number of Detected Data				0	
1774	Number of Distinct Detected Data				0		Number of Non-Detect Data				12	
1775							Percent Non-Detects				100.00%	
1776												
1777	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
1778	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
1779	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1780												
1781	The data set for variable Ethylbenzene was not processed!											
1782												
1783												
1784												
1785	Gamma-Chlordane											
1786												
1787	General Statistics											
1788	Number of Valid Data				12		Number of Detected Data				0	
1789	Number of Distinct Detected Data				0		Number of Non-Detect Data				12	
1790							Percent Non-Detects				100.00%	
1791												
1792	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
1793	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
1794	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1795												
1796	The data set for variable Gamma-Chlordane was not processed!											
1797												
1798												
1799												
1800	Indeno(1,2,3-cd)pyrene											
1801												
1802	General Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
1803	Number of Valid Data					12	Number of Detected Data					2
1804	Number of Distinct Detected Data					2	Number of Non-Detect Data					10
1805							Percent Non-Detects					83.33%
1806												
1807	Raw Statistics						Log-transformed Statistics					
1808	Minimum Detected					0.00718	Minimum Detected					-4.936
1809	Maximum Detected					0.0115	Maximum Detected					-4.465
1810	Mean of Detected					0.00934	Mean of Detected					-4.701
1811	SD of Detected					0.00305	SD of Detected					0.333
1812	Minimum Non-Detect					0.01	Minimum Non-Detect					-4.605
1813	Maximum Non-Detect					11	Maximum Non-Detect					2.398
1814												
1815	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12
1816	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1817	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1818												
1819	Warning: Data set has only 2 Distinct Detected Values.											
1820	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.											
1821	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1822												
1823	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.											
1824												
1825	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
1826	Those methods will return a 'N/A' value on your output display!											
1827												
1828	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
1829	However, results obtained using 4 to 9 distinct values may not be reliable.											
1830	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
1831												
1832												
1833	UCL Statistics											
1834	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1835	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
1836	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
1837	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1838												
1839	Assuming Normal Distribution						Assuming Lognormal Distribution					
1840	DL/2 Substitution Method						DL/2 Substitution Method					
1841	Mean					1.727	Mean					-2.117
1842	SD					2.513	SD					2.905
1843	95% DL/2 (t) UCL					3.03	95% H-Stat (DL/2) UCL					15291
1844												
1845	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1846	MLE method failed to converge properly						Mean in Log Scale					N/A
1847							SD in Log Scale					N/A
1848							Mean in Original Scale					N/A
1849							SD in Original Scale					N/A
1850							95% Percentile Bootstrap UCL					N/A
1851							95% BCA Bootstrap UCL					N/A
1852												
1853	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1854	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
1855	Theta Star					N/A						

	A	B	C	D	E	F	G	H	I	J	K	L
1856	nu star					N/A						
1857												
1858	A-D Test Statistic					N/A	Nonparametric Statistics					
1859	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
1860	K-S Test Statistic					N/A	Mean					0.00826
1861	5% K-S Critical Value					N/A	SD					0.00187
1862	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.00132
1863							95% KM (t) UCL					0.0106
1864	Assuming Gamma Distribution						95% KM (z) UCL					0.0104
1865	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0114
1866	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
1867	Maximum					N/A	95% KM (BCA) UCL					N/A
1868	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.0115
1869	Median					N/A	95% KM (Chebyshev) UCL					0.014
1870	SD					N/A	97.5% KM (Chebyshev) UCL					0.0165
1871	k star					N/A	99% KM (Chebyshev) UCL					0.0214
1872	Theta star					N/A						
1873	Nu star					N/A	Potential UCLs to Use					
1874	AppChi2					N/A	95% KM (t) UCL					0.0106
1875	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					0.0115
1876	95% Adjusted Gamma UCL					N/A						
1877	Note: DL/2 is not a recommended method.											
1878												
1879												
1880	Iron											
1881												
1882	General Statistics											
1883	Number of Valid Observations					12	Number of Distinct Observations					12
1884												
1885	Raw Statistics						Log-transformed Statistics					
1886	Minimum					1500	Minimum of Log Data					7.313
1887	Maximum					78000	Maximum of Log Data					11.26
1888	Mean					20398	Mean of log Data					9.109
1889	Median					7665	SD of log Data					1.429
1890	SD					24322						
1891	Coefficient of Variation					1.192						
1892	Skewness					1.414						
1893												
1894	Relevant UCL Statistics											
1895	Normal Distribution Test						Lognormal Distribution Test					
1896	Shapiro Wilk Test Statistic					0.801	Shapiro Wilk Test Statistic					0.914
1897	Shapiro Wilk Critical Value					0.859	Shapiro Wilk Critical Value					0.859
1898	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1899												
1900	Assuming Normal Distribution						Assuming Lognormal Distribution					
1901	95% Student's-t UCL					33007	95% H-UCL					126295
1902	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					64544
1903	95% Adjusted-CLT UCL					35009	97.5% Chebyshev (MVUE) UCL					83059
1904	95% Modified-t UCL					33485	99% Chebyshev (MVUE) UCL					119430
1905												
1906	Gamma Distribution Test						Data Distribution					
1907	k star (bias corrected)					0.609	Data appear Gamma Distributed at 5% Significance Level					
1908	Theta Star					33521						

	A	B	C	D	E	F	G	H	I	J	K	L	
1909	MLE of Mean					20398							
1910	MLE of Standard Deviation					26149							
1911	nu star					14.6							
1912	Approximate Chi Square Value (.05)					6.987	Nonparametric Statistics						
1913	Adjusted Level of Significance					0.029	95% CLT UCL					31947	
1914	Adjusted Chi Square Value					6.2	95% Jackknife UCL					33007	
1915							95% Standard Bootstrap UCL					31457	
1916	Anderson-Darling Test Statistic					0.505	95% Bootstrap-t UCL					39072	
1917	Anderson-Darling 5% Critical Value					0.767	95% Hall's Bootstrap UCL					36153	
1918	Kolmogorov-Smirnov Test Statistic					0.193	95% Percentile Bootstrap UCL					31999	
1919	Kolmogorov-Smirnov 5% Critical Value					0.255	95% BCA Bootstrap UCL					33850	
1920	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					51003	
1921							97.5% Chebyshev(Mean, Sd) UCL					64245	
1922	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					90257	
1923	95% Approximate Gamma UCL					42635							
1924	95% Adjusted Gamma UCL					48049							
1925													
1926	Potential UCL to Use						Use 95% Approximate Gamma UCL					42635	
1927													
1928													
1929	Lead												
1930													
1931	General Statistics												
1932	Number of Valid Data					12	Number of Detected Data					8	
1933	Number of Distinct Detected Data					7	Number of Non-Detect Data					4	
1934							Percent Non-Detects					33.33%	
1935													
1936	Raw Statistics						Log-transformed Statistics						
1937	Minimum Detected					0.2	Minimum Detected					-1.609	
1938	Maximum Detected					48	Maximum Detected					3.871	
1939	Mean of Detected					14.13	Mean of Detected					1.102	
1940	SD of Detected					18.22	SD of Detected					2.282	
1941	Minimum Non-Detect					0.7	Minimum Non-Detect					-0.357	
1942	Maximum Non-Detect					3	Maximum Non-Detect					1.099	
1943													
1944	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					8	
1945	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					4	
1946	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					66.67%	
1947													
1948	Warning: There are only 8 Detected Values in this data												
1949	Note: It should be noted that even though bootstrap may be performed on this data set												
1950	the resulting calculations may not be reliable enough to draw conclusions												
1951													
1952	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.												
1953													
1954													
1955	UCL Statistics												
1956	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
1957	Shapiro Wilk Test Statistic					0.789	Shapiro Wilk Test Statistic					0.867	
1958	5% Shapiro Wilk Critical Value					0.818	5% Shapiro Wilk Critical Value					0.818	
1959	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
1960													
1961	Assuming Normal Distribution						Assuming Lognormal Distribution						

	A	B	C	D	E	F	G	H	I	J	K	L
1962	DL/2 Substitution Method						DL/2 Substitution Method					
1963	Mean					9.73	Mean					0.627
1964	SD					15.93	SD					1.999
1965	95% DL/2 (t) UCL					17.99	95% H-Stat (DL/2) UCL					315.9
1966												
1967	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1968	MLE yields a negative mean						Mean in Log Scale					0.406
1969							SD in Log Scale					2.141
1970							Mean in Original Scale					9.586
1971							SD in Original Scale					16.02
1972							95% Percentile Bootstrap UCL					17.44
1973							95% BCA Bootstrap UCL					19.75
1974												
1975	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1976	k star (bias corrected)					0.347	Data appear Gamma Distributed at 5% Significance Level					
1977	Theta Star					40.73						
1978	nu star					5.552						
1979												
1980	A-D Test Statistic					0.543	Nonparametric Statistics					
1981	5% A-D Critical Value					0.776	Kaplan-Meier (KM) Method					
1982	K-S Test Statistic					0.776	Mean					9.543
1983	5% K-S Critical Value					0.312	SD					15.36
1984	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					4.74
1985							95% KM (t) UCL					18.06
1986	Assuming Gamma Distribution						95% KM (z) UCL					17.34
1987	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					17.86
1988	Minimum					0.2	95% KM (bootstrap t) UCL					22.2
1989	Maximum					48	95% KM (BCA) UCL					18.32
1990	Mean					13.33	95% KM (Percentile Bootstrap) UCL					17.46
1991	Median					8.099	95% KM (Chebyshev) UCL					30.2
1992	SD					14.78	97.5% KM (Chebyshev) UCL					39.14
1993	k star					0.497	99% KM (Chebyshev) UCL					56.71
1994	Theta star					26.84						
1995	Nu star					11.92	Potential UCLs to Use					
1996	AppChi2					5.175	95% KM (BCA) UCL					18.32
1997	95% Gamma Approximate UCL					30.71						
1998	95% Adjusted Gamma UCL					35.2						
1999	Note: DL/2 is not a recommended method.											
2000												
2001												
2002	Manganese											
2003												
2004	General Statistics											
2005	Number of Valid Observations					12	Number of Distinct Observations					12
2006												
2007	Raw Statistics						Log-transformed Statistics					
2008	Minimum					203	Minimum of Log Data					5.313
2009	Maximum					1700	Maximum of Log Data					7.438
2010	Mean					810.7	Mean of log Data					6.445
2011	Median					936.5	SD of log Data					0.801
2012	SD					520.4						
2013	Coefficient of Variation					0.642						
2014	Skewness					0.218						

	A	B	C	D	E	F	G	H	I	J	K	L
2015												
2016	Relevant UCL Statistics											
2017	Normal Distribution Test						Lognormal Distribution Test					
2018	Shapiro Wilk Test Statistic					0.906	Shapiro Wilk Test Statistic					0.865
2019	Shapiro Wilk Critical Value					0.859	Shapiro Wilk Critical Value					0.859
2020	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
2021												
2022	Assuming Normal Distribution						Assuming Lognormal Distribution					
2023	95% Student's-t UCL					1080	95% H-UCL					1615
2024	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					1729
2025	95% Adjusted-CLT UCL					1068	97.5% Chebyshev (MVUE) UCL					2114
2026	95% Modified-t UCL					1082	99% Chebyshev (MVUE) UCL					2871
2027												
2028	Gamma Distribution Test						Data Distribution					
2029	k star (bias corrected)					1.652	Data appear Normal at 5% Significance Level					
2030	Theta Star					490.7						
2031	MLE of Mean					810.7						
2032	MLE of Standard Deviation					630.7						
2033	nu star					39.65						
2034	Approximate Chi Square Value (.05)					26.23	Nonparametric Statistics					
2035	Adjusted Level of Significance					0.029	95% CLT UCL					1058
2036	Adjusted Chi Square Value					24.57	95% Jackknife UCL					1080
2037							95% Standard Bootstrap UCL					1043
2038	Anderson-Darling Test Statistic					0.651	95% Bootstrap-t UCL					1092
2039	Anderson-Darling 5% Critical Value					0.741	95% Hall's Bootstrap UCL					1053
2040	Kolmogorov-Smirnov Test Statistic					0.253	95% Percentile Bootstrap UCL					1049
2041	Kolmogorov-Smirnov 5% Critical Value					0.248	95% BCA Bootstrap UCL					1062
2042	Data follow Appr. Gamma Distribution at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					1465
2043							97.5% Chebyshev(Mean, Sd) UCL					1749
2044	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					2305
2045	95% Approximate Gamma UCL					1226						
2046	95% Adjusted Gamma UCL					1308						
2047												
2048	Potential UCL to Use						Use 95% Student's-t UCL					1080
2049												
2050												
2051	Mercury											
2052												
2053	General Statistics											
2054	Number of Valid Data					12	Number of Detected Data					1
2055	Number of Distinct Detected Data					1	Number of Non-Detect Data					11
2056							Percent Non-Detects					91.67%
2057												
2058	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
2059	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
2060												
2061	The data set for variable Mercury was not processed!											
2062												
2063												
2064												
2065	Naphthalene											
2066												
2067	General Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
2068	Number of Valid Data					12	Number of Detected Data					7
2069	Number of Distinct Detected Data					7	Number of Non-Detect Data					5
2070							Percent Non-Detects					41.67%
2071												
2072	Raw Statistics					Log-transformed Statistics						
2073	Minimum Detected					0.00914	Minimum Detected					-4.695
2074	Maximum Detected					3.3	Maximum Detected					1.194
2075	Mean of Detected					0.629	Mean of Detected					-2.679
2076	SD of Detected					1.23	SD of Detected					2.353
2077	Minimum Non-Detect					0.1	Minimum Non-Detect					-2.303
2078	Maximum Non-Detect					11	Maximum Non-Detect					2.398
2079												
2080	Note: Data have multiple DLs - Use of KM Method is recommended					Number treated as Non-Detect					12	
2081	For all methods (except KM, DL/2, and ROS Methods),					Number treated as Detected					0	
2082	Observations < Largest ND are treated as NDs					Single DL Non-Detect Percentage					100.00%	
2083												
2084	Warning: There are only 7 Detected Values in this data											
2085	Note: It should be noted that even though bootstrap may be performed on this data set											
2086	the resulting calculations may not be reliable enough to draw conclusions											
2087												
2088	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
2089												
2090												
2091	UCL Statistics											
2092	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
2093	Shapiro Wilk Test Statistic					0.609	Shapiro Wilk Test Statistic					0.827
2094	5% Shapiro Wilk Critical Value					0.803	5% Shapiro Wilk Critical Value					0.803
2095	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
2096												
2097	Assuming Normal Distribution					Assuming Lognormal Distribution						
2098	DL/2 Substitution Method						DL/2 Substitution Method					
2099	Mean					0.842	Mean					-2.419
2100	SD					1.748	SD					2.175
2101	95% DL/2 (t) UCL					1.748	95% H-Stat (DL/2) UCL					122.3
2102												
2103	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2104	MLE method failed to converge properly						Mean in Log Scale					-3.079
2105							SD in Log Scale					1.955
2106							Mean in Original Scale					0.385
2107							SD in Original Scale					0.957
2108							95% Percentile Bootstrap UCL					0.858
2109							95% BCA Bootstrap UCL					1.124
2110												
2111	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
2112	k star (bias corrected)					0.272	Data Follow Appr. Gamma Distribution at 5% Significance Level					
2113	Theta Star					2.309						
2114	nu star					3.811						
2115												
2116	A-D Test Statistic					0.835	Nonparametric Statistics					
2117	5% A-D Critical Value					0.783	Kaplan-Meier (KM) Method					
2118	K-S Test Statistic					0.783	Mean					0.409
2119	5% K-S Critical Value					0.335	SD					0.954
2120	Data follow Appr. Gamma Distribution at 5% Significance Level						SE of Mean					0.311

	A	B	C	D	E	F	G	H	I	J	K	L
2121							95% KM (t) UCL					0.967
2122	Assuming Gamma Distribution						95% KM (z) UCL					0.92
2123	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.953
2124	Minimum					0.00914	95% KM (bootstrap t) UCL					12.99
2125	Maximum					3.3	95% KM (BCA) UCL					0.923
2126	Mean					0.602	95% KM (Percentile Bootstrap) UCL					0.932
2127	Median					0.314	95% KM (Chebyshev) UCL					1.763
2128	SD					0.929	97.5% KM (Chebyshev) UCL					2.349
2129	k star					0.393	99% KM (Chebyshev) UCL					3.5
2130	Theta star					1.532						
2131	Nu star					9.437	Potential UCLs to Use					
2132	AppChi2					3.593	95% KM (BCA) UCL					0.923
2133	95% Gamma Approximate UCL					1.582						
2134	95% Adjusted Gamma UCL					1.856						
2135	Note: DL/2 is not a recommended method.											
2136												
2137												
2138	Nickel											
2139												
2140	General Statistics											
2141	Number of Valid Data					12	Number of Detected Data					7
2142	Number of Distinct Detected Data					7	Number of Non-Detect Data					5
2143							Percent Non-Detects					41.67%
2144												
2145	Raw Statistics						Log-transformed Statistics					
2146	Minimum Detected					2.1	Minimum Detected					0.742
2147	Maximum Detected					115.1	Maximum Detected					4.746
2148	Mean of Detected					34.21	Mean of Detected					2.567
2149	SD of Detected					44.85	SD of Detected					1.585
2150	Minimum Non-Detect					0.5	Minimum Non-Detect					-0.693
2151	Maximum Non-Detect					40	Maximum Non-Detect					3.689
2152												
2153	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					10
2154	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					2
2155	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					83.33%
2156												
2157	Warning: There are only 7 Detected Values in this data											
2158	Note: It should be noted that even though bootstrap may be performed on this data set											
2159	the resulting calculations may not be reliable enough to draw conclusions											
2160												
2161	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
2162												
2163												
2164	UCL Statistics											
2165	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
2166	Shapiro Wilk Test Statistic					0.77	Shapiro Wilk Test Statistic					0.902
2167	5% Shapiro Wilk Critical Value					0.803	5% Shapiro Wilk Critical Value					0.803
2168	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
2169												
2170	Assuming Normal Distribution						Assuming Lognormal Distribution					
2171	DL/2 Substitution Method						DL/2 Substitution Method					
2172	Mean					25	Mean					2.03
2173	SD					35.62	SD					1.954

	A	B	C	D	E	F	G	H	I	J	K	L
2174	95% DL/2 (t) UCL					43.47	95% H-Stat (DL/2) UCL					1305
2175												
2176	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2177	MLE method failed to converge properly						Mean in Log Scale					1.603
2178							SD in Log Scale					1.87
2179							Mean in Original Scale					21.13
2180							SD in Original Scale					36.93
2181							95% Percentile Bootstrap UCL					39.86
2182							95% BCA Bootstrap UCL					44.2
2183												
2184	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
2185	k star (bias corrected)					0.458	Data appear Gamma Distributed at 5% Significance Level					
2186	Theta Star					74.74						
2187	nu star					6.409						
2188												
2189	A-D Test Statistic					0.501	Nonparametric Statistics					
2190	5% A-D Critical Value					0.743	Kaplan-Meier (KM) Method					
2191	K-S Test Statistic					0.743	Mean					22.12
2192	5% K-S Critical Value					0.325	SD					35.13
2193	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					11.08
2194							95% KM (t) UCL					42.02
2195	Assuming Gamma Distribution						95% KM (z) UCL					40.34
2196	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					41.19
2197	Minimum					1E-09	95% KM (bootstrap t) UCL					70.73
2198	Maximum					115.1	95% KM (BCA) UCL					41.25
2199	Mean					27.6	95% KM (Percentile Bootstrap) UCL					42.14
2200	Median					5.8	95% KM (Chebyshev) UCL					70.42
2201	SD					38.69	97.5% KM (Chebyshev) UCL					91.32
2202	k star					0.148	99% KM (Chebyshev) UCL					132.4
2203	Theta star					186.1						
2204	Nu star					3.558	Potential UCLs to Use					
2205	AppChi2					0.555	95% KM (BCA) UCL					41.25
2206	95% Gamma Approximate UCL					176.8						
2207	95% Adjusted Gamma UCL					240.9						
2208	Note: DL/2 is not a recommended method.											
2209												
2210												
2211	N-Nitrosodiphenylamine											
2212												
2213	General Statistics											
2214	Number of Valid Data					12	Number of Detected Data					4
2215	Number of Distinct Detected Data					4	Number of Non-Detect Data					8
2216							Percent Non-Detects					66.67%
2217												
2218	Raw Statistics						Log-transformed Statistics					
2219	Minimum Detected					0.67	Minimum Detected					-0.4
2220	Maximum Detected					14.2	Maximum Detected					2.653
2221	Mean of Detected					5.493	Mean of Detected					1.169
2222	SD of Detected					6.035	SD of Detected					1.277
2223	Minimum Non-Detect					0.52	Minimum Non-Detect					-0.654
2224	Maximum Non-Detect					5	Maximum Non-Detect					1.609
2225												
2226	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					11

	A	B	C	D	E	F	G	H	I	J	K	L
2227	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
2228	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					91.67%
2229												
2230	Warning: There are only 4 Distinct Detected Values in this data											
2231	Note: It should be noted that even though bootstrap may be performed on this data set											
2232	the resulting calculations may not be reliable enough to draw conclusions											
2233												
2234	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
2235												
2236												
2237	UCL Statistics											
2238	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
2239	Shapiro Wilk Test Statistic					0.858	Shapiro Wilk Test Statistic					0.999
2240	5% Shapiro Wilk Critical Value					0.748	5% Shapiro Wilk Critical Value					0.748
2241	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
2242												
2243	Assuming Normal Distribution					Assuming Lognormal Distribution						
2244	DL/2 Substitution Method						DL/2 Substitution Method					
2245	Mean					2.381	Mean					-0.119
2246	SD					3.987	SD					1.426
2247	95% DL/2 (t) UCL					4.448	95% H-Stat (DL/2) UCL					7.535
2248												
2249	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2250	MLE method failed to converge properly						Mean in Log Scale					-0.943
2251							SD in Log Scale					1.827
2252							Mean in Original Scale					1.959
2253							SD in Original Scale					4.095
2254							95% Percentile Bootstrap UCL					4.049
2255							95% BCA Bootstrap UCL					5.291
2256												
2257	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
2258	k star (bias corrected)					0.435	Data appear Normal at 5% Significance Level					
2259	Theta Star					12.64						
2260	nu star					3.476						
2261												
2262	A-D Test Statistic					0.213	Nonparametric Statistics					
2263	5% A-D Critical Value					0.666	Kaplan-Meier (KM) Method					
2264	K-S Test Statistic					0.666	Mean					2.384
2265	5% K-S Critical Value					0.402	SD					3.778
2266	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					1.275
2267							95% KM (t) UCL					4.674
2268	Assuming Gamma Distribution						95% KM (z) UCL					4.481
2269	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					4.348
2270	Minimum					0.67	95% KM (bootstrap t) UCL					5.975
2271	Maximum					14.2	95% KM (BCA) UCL					14.2
2272	Mean					5.734	95% KM (Percentile Bootstrap) UCL					6.283
2273	Median					5.323	95% KM (Chebyshev) UCL					7.941
2274	SD					3.34	97.5% KM (Chebyshev) UCL					10.35
2275	k star					2.125	99% KM (Chebyshev) UCL					15.07
2276	Theta star					2.698						
2277	Nu star					51	Potential UCLs to Use					
2278	AppChi2					35.6	95% KM (t) UCL					4.674
2279	95% Gamma Approximate UCL					8.215	95% KM (Percentile Bootstrap) UCL					6.283

	A	B	C	D	E	F	G	H	I	J	K	L	
2280	95% Adjusted Gamma UCL					N/A							
2281	Note: DL/2 is not a recommended method.												
2282													
2283													
2284	Pentachlorophenol												
2285													
2286	General Statistics												
2287	Number of Valid Data				12	Number of Detected Data					0		
2288	Number of Distinct Detected Data				0	Number of Non-Detect Data					12		
2289						Percent Non-Detects					100.00%		
2290													
2291	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!												
2292	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!												
2293	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
2294													
2295	The data set for variable Pentachlorophenol was not processed!												
2296													
2297													
2298													
2299	Phenanthrene												
2300													
2301	General Statistics												
2302	Number of Valid Data				12	Number of Detected Data					7		
2303	Number of Distinct Detected Data				7	Number of Non-Detect Data					5		
2304						Percent Non-Detects					41.67%		
2305													
2306	Raw Statistics				Log-transformed Statistics								
2307	Minimum Detected				0.01	Minimum Detected					-4.605		
2308	Maximum Detected				0.89	Maximum Detected					-0.117		
2309	Mean of Detected				0.164	Mean of Detected					-3.166		
2310	SD of Detected				0.324	SD of Detected					1.645		
2311	Minimum Non-Detect				0.1	Minimum Non-Detect					-2.303		
2312	Maximum Non-Detect				11	Maximum Non-Detect					2.398		
2313													
2314	Note: Data have multiple DLs - Use of KM Method is recommended					Number treated as Non-Detect					12		
2315	For all methods (except KM, DL/2, and ROS Methods),					Number treated as Detected					0		
2316	Observations < Largest ND are treated as NDs					Single DL Non-Detect Percentage					100.00%		
2317													
2318	Warning: There are only 7 Detected Values in this data												
2319	Note: It should be noted that even though bootstrap may be performed on this data set												
2320	the resulting calculations may not be reliable enough to draw conclusions												
2321													
2322	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.												
2323													
2324													
2325	UCL Statistics												
2326	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
2327	Shapiro Wilk Test Statistic				0.561	Shapiro Wilk Test Statistic					0.859		
2328	5% Shapiro Wilk Critical Value				0.803	5% Shapiro Wilk Critical Value					0.803		
2329	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
2330													
2331	Assuming Normal Distribution					Assuming Lognormal Distribution							
2332	DL/2 Substitution Method					DL/2 Substitution Method							

	A	B	C	D	E	F	G	H	I	J	K	L
2333	Mean					0.57	Mean					-2.703
2334	SD					1.572	SD					1.847
2335	95% DL/2 (t) UCL					1.385	95% H-Stat (DL/2) UCL					19.72
2336												
2337	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2338	MLE method failed to converge properly						Mean in Log Scale					-3.444
2339							SD in Log Scale					1.365
2340							Mean in Original Scale					0.107
2341							SD in Original Scale					0.25
2342							95% Percentile Bootstrap UCL					0.247
2343							95% BCA Bootstrap UCL					0.332
2344												
2345	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
2346	k star (bias corrected)					0.365	Data Follow Appr. Gamma Distribution at 5% Significance Level					
2347	Theta Star					0.448						
2348	nu star					5.115						
2349												
2350	A-D Test Statistic					0.817	Nonparametric Statistics					
2351	5% A-D Critical Value					0.756	Kaplan-Meier (KM) Method					
2352	K-S Test Statistic					0.756	Mean					0.112
2353	5% K-S Critical Value					0.328	SD					0.249
2354	Data follow Appr. Gamma Distribution at 5% Significance Level						SE of Mean					0.0812
2355							95% KM (t) UCL					0.258
2356	Assuming Gamma Distribution						95% KM (z) UCL					0.246
2357	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.254
2358	Minimum					0.01	95% KM (bootstrap t) UCL					1.233
2359	Maximum					0.89	95% KM (BCA) UCL					0.274
2360	Mean					0.157	95% KM (Percentile Bootstrap) UCL					0.257
2361	Median					0.0964	95% KM (Chebyshev) UCL					0.466
2362	SD					0.242	97.5% KM (Chebyshev) UCL					0.619
2363	k star					0.598	99% KM (Chebyshev) UCL					0.92
2364	Theta star					0.263						
2365	Nu star					14.34	Potential UCLs to Use					
2366	AppChi2					6.808	95% KM (BCA) UCL					0.274
2367	95% Gamma Approximate UCL					0.331						
2368	95% Adjusted Gamma UCL					0.374						
2369	Note: DL/2 is not a recommended method.											
2370												
2371												
2372	Silver											
2373												
2374	General Statistics											
2375	Number of Valid Data					12	Number of Detected Data					1
2376	Number of Distinct Detected Data					1	Number of Non-Detect Data					11
2377							Percent Non-Detects					91.67%
2378												
2379	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
2380	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
2381												
2382	The data set for variable Silver was not processed!											
2383												
2384												
2385												

	A	B	C	D	E	F	G	H	I	J	K	L
2386	Thallium											
2387												
2388	General Statistics											
2389	Number of Valid Data					12	Number of Detected Data					2
2390	Number of Distinct Detected Data					2	Number of Non-Detect Data					10
2391							Percent Non-Detects					83.33%
2392												
2393	Raw Statistics					Log-transformed Statistics						
2394	Minimum Detected					0.15	Minimum Detected					-1.897
2395	Maximum Detected					5.8	Maximum Detected					1.758
2396	Mean of Detected					2.975	Mean of Detected					-0.0696
2397	SD of Detected					3.995	SD of Detected					2.584
2398	Minimum Non-Detect					0.1	Minimum Non-Detect					-2.303
2399	Maximum Non-Detect					10	Maximum Non-Detect					2.303
2400												
2401	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				12	
2402	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				0	
2403	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				100.00%	
2404												
2405	Warning: Data set has only 2 Distinct Detected Values.											
2406	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.											
2407	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
2408												
2409	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.											
2410												
2411	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
2412	Those methods will return a 'N/A' value on your output display!											
2413												
2414	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
2415	However, results obtained using 4 to 9 distinct values may not be reliable.											
2416	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
2417												
2418												
2419	UCL Statistics											
2420	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
2421	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
2422	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
2423	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level						
2424												
2425	Assuming Normal Distribution					Assuming Lognormal Distribution						
2426	DL/2 Substitution Method						DL/2 Substitution Method					
2427	Mean					1.125	Mean					-1.394
2428	SD					2.034	SD					1.761
2429	95% DL/2 (t) UCL					2.18	95% H-Stat (DL/2) UCL					6.978
2430												
2431	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2432	MLE method failed to converge properly					Mean in Log Scale					N/A	
2433							SD in Log Scale					N/A
2434							Mean in Original Scale					N/A
2435							SD in Original Scale					N/A
2436							95% Percentile Bootstrap UCL					N/A
2437							95% BCA Bootstrap UCL					N/A
2438												

	A	B	C	D	E	F	G	H	I	J	K	L	
2439	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only						
2440	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)						
2441	Theta Star					N/A							
2442	nu star					N/A							
2443													
2444	A-D Test Statistic					N/A	Nonparametric Statistics						
2445	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method						
2446	K-S Test Statistic					N/A	Mean					0.664	
2447	5% K-S Critical Value					N/A	SD					1.624	
2448	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.693	
2449							95% KM (t) UCL					1.907	
2450	Assuming Gamma Distribution						95% KM (z) UCL					1.803	
2451	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					4.516	
2452	Minimum					N/A	95% KM (bootstrap t) UCL					N/A	
2453	Maximum					N/A	95% KM (BCA) UCL					5.8	
2454	Mean					N/A	95% KM (Percentile Bootstrap) UCL					5.8	
2455	Median					N/A	95% KM (Chebyshev) UCL					3.683	
2456	SD					N/A	97.5% KM (Chebyshev) UCL					4.989	
2457	k star					N/A	99% KM (Chebyshev) UCL					7.555	
2458	Theta star					N/A							
2459	Nu star					N/A	Potential UCLs to Use						
2460	AppChi2					N/A	99% KM (Chebyshev) UCL					7.555	
2461	95% Gamma Approximate UCL					N/A							
2462	95% Adjusted Gamma UCL					N/A							
2463	Warning: Recommended UCL exceeds the maximum observation												
2464	Note: DL/2 is not a recommended method.												
2465													
2466													
2467	Total PCBs												
2468													
2469	General Statistics												
2470	Number of Valid Data					12	Number of Detected Data					2	
2471	Number of Distinct Detected Data					2	Number of Non-Detect Data					10	
2472							Percent Non-Detects					83.33%	
2473													
2474	Raw Statistics						Log-transformed Statistics						
2475	Minimum Detected					0.412	Minimum Detected					-0.887	
2476	Maximum Detected					4.28	Maximum Detected					1.454	
2477	Mean of Detected					2.346	Mean of Detected					0.284	
2478	SD of Detected					2.735	SD of Detected					1.655	
2479	Minimum Non-Detect					0.021	Minimum Non-Detect					-3.863	
2480	Maximum Non-Detect					0.22	Maximum Non-Detect					-1.514	
2481													
2482	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					10	
2483	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					2	
2484	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					83.33%	
2485													
2486	Warning: Data set has only 2 Distinct Detected Values.												
2487	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.												
2488	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
2489													
2490	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.												
2491													

	A	B	C	D	E	F	G	H	I	J	K	L
2492	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
2493	Those methods will return a 'N/A' value on your output display!											
2494												
2495	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
2496	However, results obtained using 4 to 9 distinct values may not be reliable.											
2497	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
2498												
2499												
2500	UCL Statistics											
2501	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
2502	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
2503	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
2504	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level						
2505												
2506	Assuming Normal Distribution					Assuming Lognormal Distribution						
2507	DL/2 Substitution Method						DL/2 Substitution Method					
2508	Mean					0.444	Mean					-2.462
2509	SD					1.213	SD					1.593
2510	95% DL/2 (t) UCL					1.073	95% H-Stat (DL/2) UCL					1.367
2511												
2512	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2513	MLE method failed to converge properly						Mean in Log Scale					N/A
2514							SD in Log Scale					N/A
2515							Mean in Original Scale					N/A
2516							SD in Original Scale					N/A
2517							95% Percentile Bootstrap UCL					N/A
2518							95% BCA Bootstrap UCL					N/A
2519												
2520	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
2521	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
2522	Theta Star					N/A						
2523	nu star					N/A						
2524												
2525	A-D Test Statistic					N/A	Nonparametric Statistics					
2526	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
2527	K-S Test Statistic					N/A	Mean					0.734
2528	5% K-S Critical Value					N/A	SD					1.069
2529	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.436
2530							95% KM (t) UCL					1.518
2531	Assuming Gamma Distribution						95% KM (z) UCL					1.452
2532	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					3.381
2533	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
2534	Maximum					N/A	95% KM (BCA) UCL					4.28
2535	Mean					N/A	95% KM (Percentile Bootstrap) UCL					4.28
2536	Median					N/A	95% KM (Chebyshev) UCL					2.637
2537	SD					N/A	97.5% KM (Chebyshev) UCL					3.46
2538	k star					N/A	99% KM (Chebyshev) UCL					5.077
2539	Theta star					N/A						
2540	Nu star					N/A	Potential UCLs to Use					
2541	AppChi2					N/A	97.5% KM (Chebyshev) UCL					3.46
2542	95% Gamma Approximate UCL					N/A						
2543	95% Adjusted Gamma UCL					N/A						
2544	Note: DL/2 is not a recommended method.											

	A	B	C	D	E	F	G	H	I	J	K	L	
2545													
2546													
2547	Vanadium												
2548													
2549	General Statistics												
2550	Number of Valid Data					12	Number of Detected Data					6	
2551	Number of Distinct Detected Data					6	Number of Non-Detect Data					6	
2552							Percent Non-Detects					50.00%	
2553													
2554	Raw Statistics					Log-transformed Statistics							
2555	Minimum Detected					0.89	Minimum Detected					-0.117	
2556	Maximum Detected					2.5	Maximum Detected					0.916	
2557	Mean of Detected					1.598	Mean of Detected					0.393	
2558	SD of Detected					0.668	SD of Detected					0.43	
2559	Minimum Non-Detect					0.4	Minimum Non-Detect					-0.916	
2560	Maximum Non-Detect					50	Maximum Non-Detect					3.912	
2561													
2562	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				12		
2563	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				0		
2564	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				100.00%		
2565													
2566	Warning: There are only 6 Detected Values in this data												
2567	Note: It should be noted that even though bootstrap may be performed on this data set												
2568	the resulting calculations may not be reliable enough to draw conclusions												
2569													
2570	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.												
2571													
2572													
2573	UCL Statistics												
2574	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
2575	Shapiro Wilk Test Statistic					0.908	Shapiro Wilk Test Statistic					0.915	
2576	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788	
2577	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
2578													
2579	Assuming Normal Distribution					Assuming Lognormal Distribution							
2580	DL/2 Substitution Method						DL/2 Substitution Method						
2581	Mean					3.545	Mean					0.444	
2582	SD					6.813	SD					1.239	
2583	95% DL/2 (t) UCL					7.077	95% H-Stat (DL/2) UCL					16.55	
2584													
2585	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
2586	MLE method failed to converge properly						Mean in Log Scale					0.125	
2587							SD in Log Scale					0.535	
2588							Mean in Original Scale					1.284	
2589							SD in Original Scale					0.656	
2590							95% Percentile Bootstrap UCL					1.588	
2591							95% BCA Bootstrap UCL					1.614	
2592													
2593	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
2594	k star (bias corrected)					3.486	Data appear Normal at 5% Significance Level						
2595	Theta Star					0.459							
2596	nu star					41.83							
2597													

	A	B	C	D	E	F	G	H	I	J	K	L	
2598	A-D Test Statistic					0.346	Nonparametric Statistics						
2599	5% A-D Critical Value					0.698	Kaplan-Meier (KM) Method						
2600	K-S Test Statistic					0.698	Mean						1.421
2601	5% K-S Critical Value					0.333	SD						0.611
2602	Data appear Gamma Distributed at 5% Significance Level						SE of Mean						0.237
2603							95% KM (t) UCL						1.846
2604	Assuming Gamma Distribution						95% KM (z) UCL						1.81
2605	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL						1.836
2606	Minimum					0.842	95% KM (bootstrap t) UCL						1.971
2607	Maximum					2.5	95% KM (BCA) UCL						1.92
2608	Mean					1.578	95% KM (Percentile Bootstrap) UCL						1.878
2609	Median					1.559	95% KM (Chebyshev) UCL						2.453
2610	SD					0.632	97.5% KM (Chebyshev) UCL						2.899
2611	k star					4.903	99% KM (Chebyshev) UCL						3.776
2612	Theta star					0.322							
2613	Nu star					117.7	Potential UCLs to Use						
2614	AppChi2					93.62	95% KM (t) UCL						1.846
2615	95% Gamma Approximate UCL					1.983	95% KM (Percentile Bootstrap) UCL						1.878
2616	95% Adjusted Gamma UCL					2.055							
2617	Note: DL/2 is not a recommended method.												
2618													
2619													
2620	Xylene (Total)												
2621													
2622	General Statistics												
2623	Number of Valid Data					12	Number of Detected Data					2	
2624	Number of Distinct Detected Data					2	Number of Non-Detect Data					10	
2625							Percent Non-Detects					83.33%	
2626													
2627	Raw Statistics						Log-transformed Statistics						
2628	Minimum Detected					0.68	Minimum Detected					-0.386	
2629	Maximum Detected					2.12	Maximum Detected					0.751	
2630	Mean of Detected					1.4	Mean of Detected					0.183	
2631	SD of Detected					1.018	SD of Detected					0.804	
2632	Minimum Non-Detect					0.5	Minimum Non-Detect					-0.693	
2633	Maximum Non-Detect					4	Maximum Non-Detect					1.386	
2634													
2635	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12	
2636	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0	
2637	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%	
2638													
2639	Warning: Data set has only 2 Distinct Detected Values.												
2640	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.												
2641	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
2642													
2643	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.												
2644													
2645	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.												
2646	Those methods will return a 'N/A' value on your output display!												
2647													
2648	It is necessary to have 4 or more Distinct Values for bootstrap methods.												
2649	However, results obtained using 4 to 9 distinct values may not be reliable.												
2650	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.												

	A	B	C	D	E	F	G	H	I	J	K	L
2651												
2652												
2653	UCL Statistics											
2654	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
2655	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
2656	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
2657	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
2658												
2659	Assuming Normal Distribution						Assuming Lognormal Distribution					
2660	DL/2 Substitution Method						DL/2 Substitution Method					
2661	Mean					1.004	Mean					-0.33
2662	SD					0.786	SD					0.893
2663	95% DL/2 (t) UCL					1.412	95% H-Stat (DL/2) UCL					3.227
2664												
2665	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
2666	MLE method failed to converge properly						Mean in Log Scale					N/A
2667							SD in Log Scale					N/A
2668							Mean in Original Scale					N/A
2669							SD in Original Scale					N/A
2670							95% Percentile Bootstrap UCL					N/A
2671							95% BCA Bootstrap UCL					N/A
2672												
2673	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
2674	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
2675	Theta Star					N/A						
2676	nu star					N/A						
2677												
2678	A-D Test Statistic					N/A	Nonparametric Statistics					
2679	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
2680	K-S Test Statistic					N/A	Mean					0.84
2681	5% K-S Critical Value					N/A	SD					0.453
2682	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.213
2683							95% KM (t) UCL					1.223
2684	Assuming Gamma Distribution						95% KM (z) UCL					1.191
2685	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.815
2686	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
2687	Maximum					N/A	95% KM (BCA) UCL					N/A
2688	Mean					N/A	95% KM (Percentile Bootstrap) UCL					N/A
2689	Median					N/A	95% KM (Chebyshev) UCL					1.77
2690	SD					N/A	97.5% KM (Chebyshev) UCL					2.172
2691	k star					N/A	99% KM (Chebyshev) UCL					2.963
2692	Theta star					N/A						
2693	Nu star					N/A	Potential UCLs to Use					
2694	AppChi2					N/A	95% KM (t) UCL					1.223
2695	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					N/A
2696	95% Adjusted Gamma UCL					N/A						
2697	Note: DL/2 is not a recommended method.											
2698												
2699												
2700	Zinc											
2701												
2702	General Statistics											
2703	Number of Valid Data					12	Number of Detected Data					7

	A	B	C	D	E	F	G	H	I	J	K	L	
2704	Number of Distinct Detected Data					7	Number of Non-Detect Data					5	
2705							Percent Non-Detects					41.67%	
2706													
2707	Raw Statistics						Log-transformed Statistics						
2708	Minimum Detected					29.4	Minimum Detected					3.381	
2709	Maximum Detected					4100	Maximum Detected					8.319	
2710	Mean of Detected					911.5	Mean of Detected					5.606	
2711	SD of Detected					1447	SD of Detected					1.868	
2712	Minimum Non-Detect					2	Minimum Non-Detect					0.693	
2713	Maximum Non-Detect					20	Maximum Non-Detect					2.996	
2714													
2715	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					5	
2716	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					7	
2717	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					41.67%	
2718													
2719	Warning: There are only 7 Detected Values in this data												
2720	Note: It should be noted that even though bootstrap may be performed on this data set												
2721	the resulting calculations may not be reliable enough to draw conclusions												
2722													
2723	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.												
2724													
2725													
2726	UCL Statistics												
2727	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
2728	Shapiro Wilk Test Statistic					0.652	Shapiro Wilk Test Statistic					0.896	
2729	5% Shapiro Wilk Critical Value					0.803	5% Shapiro Wilk Critical Value					0.803	
2730	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
2731													
2732	Assuming Normal Distribution						Assuming Lognormal Distribution						
2733	DL/2 Substitution Method						DL/2 Substitution Method						
2734	Mean					534.4	Mean					3.846	
2735	SD					1166	SD					2.686	
2736	95% DL/2 (t) UCL					1139	95% H-Stat (DL/2) UCL					97494	
2737													
2738	Maximum Likelihood Estimate(MLE) Method						Log ROS Method						
2739	Mean					0.357	Mean in Log Scale					3.516	
2740	SD					1614	SD in Log Scale					3.004	
2741	95% MLE (t) UCL					837.3	Mean in Original Scale					532.8	
2742	95% MLE (Tiku) UCL					955.2	SD in Original Scale					1166	
2743							95% Percentile Bootstrap UCL					1157	
2744							95% BCA Bootstrap UCL					1437	
2745													
2746	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only						
2747	k star (bias corrected)					0.393	Data appear Gamma Distributed at 5% Significance Level						
2748	Theta Star					2317							
2749	nu star					5.507							
2750													
2751	A-D Test Statistic					0.457	Nonparametric Statistics						
2752	5% A-D Critical Value					0.75	Kaplan-Meier (KM) Method						
2753	K-S Test Statistic					0.75	Mean					544	
2754	5% K-S Critical Value					0.327	SD					1112	
2755	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					346.6	
2756							95% KM (t) UCL					1166	

	A	B	C	D	E	F	G	H	I	J	K	L
2757	Assuming Gamma Distribution						95% KM (z) UCL					1114
2758	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1143
2759	Minimum					1E-09	95% KM (bootstrap t) UCL					2447
2760	Maximum					4100	95% KM (BCA) UCL					1270
2761	Mean					628.9	95% KM (Percentile Bootstrap) UCL					1160
2762	Median					278.6	95% KM (Chebyshev) UCL					2055
2763	SD					1136	97.5% KM (Chebyshev) UCL					2708
2764	k star					0.167	99% KM (Chebyshev) UCL					3992
2765	Theta star					3766						
2766	Nu star					4.008	Potential UCLs to Use					
2767	AppChi2					0.725	95% KM (BCA) UCL					1270
2768	95% Gamma Approximate UCL					3478						
2769	95% Adjusted Gamma UCL					4641						
2770	Note: DL/2 is not a recommended method.											
2771												

Sediment

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2	User Selected Options											
3	From File			C:\aa_Projects\Peterson\Unnamed Island\UCLs\SD conc_Crosstab.xls.wst								
4	Full Precision			OFF								
5	Confidence Coefficient			95%								
6	Number of Bootstrap Operations			2000								
7												
8												
9	Aluminum											
10												
11	General Statistics											
12	Number of Valid Observations					17	Number of Distinct Observations					17
13												
14	Raw Statistics						Log-transformed Statistics					
15	Minimum					2310	Minimum of Log Data					7.745
16	Maximum					12000	Maximum of Log Data					9.393
17	Mean					5916	Mean of log Data					8.541
18	Median					4950	SD of log Data					0.563
19	SD					3178						
20	Coefficient of Variation					0.537						
21	Skewness					0.493						
22												
23	Relevant UCL Statistics											
24	Normal Distribution Test						Lognormal Distribution Test					
25	Shapiro Wilk Test Statistic					0.895	Shapiro Wilk Test Statistic					0.907
26	Shapiro Wilk Critical Value					0.892	Shapiro Wilk Critical Value					0.892
27	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
28												
29	Assuming Normal Distribution						Assuming Lognormal Distribution					
30	95% Student's-t UCL					7262	95% H-UCL					8067
31	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					9620
32	95% Adjusted-CLT UCL					7283	97.5% Chebyshev (MVUE) UCL					11213
33	95% Modified-t UCL					7277	99% Chebyshev (MVUE) UCL					14343
34												
35	Gamma Distribution Test						Data Distribution					
36	k star (bias corrected)					3.018	Data appear Normal at 5% Significance Level					
37	Theta Star					1961						
38	MLE of Mean					5916						
39	MLE of Standard Deviation					3406						
40	nu star					102.6						
41	Approximate Chi Square Value (.05)					80.23	Nonparametric Statistics					
42	Adjusted Level of Significance					0.0346	95% CLT UCL					7184
43	Adjusted Chi Square Value					78.16	95% Jackknife UCL					7262
44							95% Standard Bootstrap UCL					7165
45	Anderson-Darling Test Statistic					0.661	95% Bootstrap-t UCL					7267
46	Anderson-Darling 5% Critical Value					0.744	95% Hall's Bootstrap UCL					7199
47	Kolmogorov-Smirnov Test Statistic					0.178	95% Percentile Bootstrap UCL					7178
48	Kolmogorov-Smirnov 5% Critical Value					0.21	95% BCA Bootstrap UCL					7266
49	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					9276
50							97.5% Chebyshev(Mean, Sd) UCL					10730
51	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					13586
52	95% Approximate Gamma UCL					7566						
53	95% Adjusted Gamma UCL					7766						

	A	B	C	D	E	F	G	H	I	J	K	L
54												
55	Potential UCL to Use						Use 95% Student's-t UCL					7262
56												
57												
58	Antimony											
59												
60	General Statistics											
61	Number of Valid Data					17	Number of Detected Data					12
62	Number of Distinct Detected Data					11	Number of Non-Detect Data					5
63							Percent Non-Detects					29.41%
64												
65	Raw Statistics						Log-transformed Statistics					
66	Minimum Detected					0.27	Minimum Detected					-1.309
67	Maximum Detected					18.9	Maximum Detected					2.939
68	Mean of Detected					3.028	Mean of Detected					0.378
69	SD of Detected					5.195	SD of Detected					1.128
70	Minimum Non-Detect					0.36	Minimum Non-Detect					-1.022
71	Maximum Non-Detect					0.56	Maximum Non-Detect					-0.58
72												
73	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					7
74	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					10
75	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					41.18%
76												
77	UCL Statistics											
78	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
79	Shapiro Wilk Test Statistic					0.532	Shapiro Wilk Test Statistic					0.942
80	5% Shapiro Wilk Critical Value					0.859	5% Shapiro Wilk Critical Value					0.859
81	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
82												
83	Assuming Normal Distribution						Assuming Lognormal Distribution					
84	DL/2 Substitution Method						DL/2 Substitution Method					
85	Mean					2.204	Mean					-0.172
86	SD					4.504	SD					1.286
87	95% DL/2 (t) UCL					4.111	95% H-Stat (DL/2) UCL					4.189
88												
89	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
90	Mean					0.256	Mean in Log Scale					-0.213
91	SD					6.156	SD in Log Scale					1.331
92	95% MLE (t) UCL					2.863	Mean in Original Scale					2.195
93	95% MLE (Tiku) UCL					3.223	SD in Original Scale					4.508
94							95% Percentile Bootstrap UCL					4.261
95							95% BCA Bootstrap UCL					5.5
96												
97	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
98	k star (bias corrected)					0.665	Data appear Lognormal at 5% Significance Level					
99	Theta Star					4.557						
100	nu star					15.95						
101												
102	A-D Test Statistic					0.957	Nonparametric Statistics					
103	5% A-D Critical Value					0.763	Kaplan-Meier (KM) Method					
104	K-S Test Statistic					0.763	Mean					2.221
105	5% K-S Critical Value					0.254	SD					4.361
106	Data not Gamma Distributed at 5% Significance Level						SE of Mean					1.105

	A	B	C	D	E	F	G	H	I	J	K	L		
107						95% KM (t) UCL							4.15	
108	Assuming Gamma Distribution					95% KM (z) UCL							4.039	
109	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL							4.086
110	Minimum					1E-09	95% KM (bootstrap t) UCL							11.58
111	Maximum					18.9	95% KM (BCA) UCL							4.469
112	Mean					2.16	95% KM (Percentile Bootstrap) UCL							4.189
113	Median					0.77	95% KM (Chebyshev) UCL							7.037
114	SD					4.525	97.5% KM (Chebyshev) UCL							9.121
115	k star					0.182	99% KM (Chebyshev) UCL							13.21
116	Theta star					11.9								
117	Nu star					6.171	Potential UCLs to Use							
118	AppChi2					1.728	97.5% KM (Chebyshev) UCL							9.121
119	95% Gamma Approximate UCL					7.713								
120	95% Adjusted Gamma UCL					8.921								
121	Note: DL/2 is not a recommended method.													
122														
123														
124	Aroclor-1242													
125														
126	General Statistics													
127	Number of Valid Data					17	Number of Detected Data					0		
128	Number of Distinct Detected Data					0	Number of Non-Detect Data					17		
129							Percent Non-Detects					100.00%		
130														
131	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!													
132	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!													
133	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).													
134														
135	The data set for variable Aroclor-1242 was not processed!													
136														
137														
138														
139	Aroclor-1254													
140														
141	General Statistics													
142	Number of Valid Data					17	Number of Detected Data					5		
143	Number of Distinct Detected Data					5	Number of Non-Detect Data					12		
144							Percent Non-Detects					70.59%		
145														
146	Raw Statistics					Log-transformed Statistics								
147	Minimum Detected					0.05	Minimum Detected					-2.996		
148	Maximum Detected					0.42	Maximum Detected					-0.868		
149	Mean of Detected					0.247	Mean of Detected					-1.602		
150	SD of Detected					0.139	SD of Detected					0.827		
151	Minimum Non-Detect					0.0071	Minimum Non-Detect					-4.948		
152	Maximum Non-Detect					0.011	Maximum Non-Detect					-4.51		
153														
154	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					12		
155	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					5		
156	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					70.59%		
157														
158	Warning: There are only 5 Detected Values in this data													
159	Note: It should be noted that even though bootstrap may be performed on this data set													

	A	B	C	D	E	F	G	H	I	J	K	L
160	the resulting calculations may not be reliable enough to draw conclusions											
161												
162	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
163												
164												
165	UCL Statistics											
166	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
167	Shapiro Wilk Test Statistic					0.979	Shapiro Wilk Test Statistic					0.846
168	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762
169	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
170												
171	Assuming Normal Distribution					Assuming Lognormal Distribution						
172	DL/2 Substitution Method						DL/2 Substitution Method					
173	Mean					0.0757	Mean					-4.353
174	SD					0.134	SD					1.88
175	95% DL/2 (t) UCL					0.132	95% H-Stat (DL/2) UCL					0.236
176												
177	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
178	MLE yields a negative mean						Mean in Log Scale					-3.537
179							SD in Log Scale					1.385
180							Mean in Original Scale					0.0825
181							SD in Original Scale					0.13
182							95% Percentile Bootstrap UCL					0.137
183							95% BCA Bootstrap UCL					0.144
184												
185	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
186	k star (bias corrected)					1.168	Data appear Normal at 5% Significance Level					
187	Theta Star					0.212						
188	nu star					11.68						
189												
190	A-D Test Statistic					0.377	Nonparametric Statistics					
191	5% A-D Critical Value					0.683	Kaplan-Meier (KM) Method					
192	K-S Test Statistic					0.683	Mean					0.108
193	5% K-S Critical Value					0.36	SD					0.112
194	Data appear Gamma Distributed at 5% Significance Level					SE of Mean						0.0304
195							95% KM (t) UCL					0.161
196	Assuming Gamma Distribution						95% KM (z) UCL					0.158
197	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.204
198	Minimum					0.05	95% KM (bootstrap t) UCL					0.15
199	Maximum					0.42	95% KM (BCA) UCL					0.327
200	Mean					0.247	95% KM (Percentile Bootstrap) UCL					0.264
201	Median					0.247	95% KM (Chebyshev) UCL					0.241
202	SD					0.0695	97.5% KM (Chebyshev) UCL					0.298
203	k star					6.962	99% KM (Chebyshev) UCL					0.411
204	Theta star					0.0355						
205	Nu star					236.7	Potential UCLs to Use					
206	AppChi2					202.1	95% KM (t) UCL					0.161
207	95% Gamma Approximate UCL					0.29	95% KM (Percentile Bootstrap) UCL					0.264
208	95% Adjusted Gamma UCL					0.295						
209	Note: DL/2 is not a recommended method.											
210												
211												
212	Aroclor-1260											

	A	B	C	D	E	F	G	H	I	J	K	L
213												
214	General Statistics											
215	Number of Valid Data					16	Number of Detected Data					10
216	Number of Distinct Detected Data					9	Number of Non-Detect Data					6
217							Percent Non-Detects					37.50%
218												
219	Raw Statistics					Log-transformed Statistics						
220	Minimum Detected					0.01	Minimum Detected					-4.605
221	Maximum Detected					0.55	Maximum Detected					-0.598
222	Mean of Detected					0.183	Mean of Detected					-2.143
223	SD of Detected					0.173	SD of Detected					1.117
224	Minimum Non-Detect					0.0075	Minimum Non-Detect					-4.893
225	Maximum Non-Detect					0.0097	Maximum Non-Detect					-4.636
226												
227	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					6
228	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					10
229	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					37.50%
230												
231	UCL Statistics											
232	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
233	Shapiro Wilk Test Statistic					0.805	Shapiro Wilk Test Statistic					0.904
234	5% Shapiro Wilk Critical Value					0.842	5% Shapiro Wilk Critical Value					0.842
235	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
236												
237	Assuming Normal Distribution					Assuming Lognormal Distribution						
238	DL/2 Substitution Method						DL/2 Substitution Method					
239	Mean					0.116	Mean					-3.389
240	SD					0.161	SD					1.874
241	95% DL/2 (t) UCL					0.187	95% H-Stat (DL/2) UCL					0.723
242												
243	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
244	Mean					0.0584	Mean in Log Scale					-3.121
245	SD					0.22	SD in Log Scale					1.572
246	95% MLE (t) UCL					0.155	Mean in Original Scale					0.118
247	95% MLE (Tiku) UCL					0.165	SD in Original Scale					0.16
248							95% Percentile Bootstrap UCL					0.187
249							95% BCA Bootstrap UCL					0.21
250												
251	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
252	k star (bias corrected)					0.951	Data appear Gamma Distributed at 5% Significance Level					
253	Theta Star					0.193						
254	nu star					19.02						
255												
256	A-D Test Statistic					0.448	Nonparametric Statistics					
257	5% A-D Critical Value					0.744	Kaplan-Meier (KM) Method					
258	K-S Test Statistic					0.744	Mean					0.118
259	5% K-S Critical Value					0.272	SD					0.154
260	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					0.0407	
261							95% KM (t) UCL					0.19
262	Assuming Gamma Distribution					95% KM (z) UCL					0.185	
263	Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL					0.182	
264	Minimum					0.01	95% KM (bootstrap t) UCL					0.243
265	Maximum					0.55	95% KM (BCA) UCL					0.219

	A	B	C	D	E	F	G	H	I	J	K	L
266	Mean					0.141	95% KM (Percentile Bootstrap) UCL					0.197
267	Median					0.099	95% KM (Chebyshev) UCL					0.296
268	SD					0.147	97.5% KM (Chebyshev) UCL					0.372
269	k star					1.118	99% KM (Chebyshev) UCL					0.523
270	Theta star					0.126						
271	Nu star					35.76	Potential UCLs to Use					
272	AppChi2					23.08	95% KM (BCA) UCL					0.219
273	95% Gamma Approximate UCL					0.218						
274	95% Adjusted Gamma UCL					0.23						
275	Note: DL/2 is not a recommended method.											
276												
277												
278	Arsenic											
279												
280	General Statistics											
281	Number of Valid Data					17	Number of Detected Data					16
282	Number of Distinct Detected Data					15	Number of Non-Detect Data					1
283							Percent Non-Detects					5.88%
284												
285	Raw Statistics						Log-transformed Statistics					
286	Minimum Detected					1.1	Minimum Detected					0.0953
287	Maximum Detected					21.5	Maximum Detected					3.068
288	Mean of Detected					9.763	Mean of Detected					1.981
289	SD of Detected					6.623	SD of Detected					0.894
290	Minimum Non-Detect					0.44	Minimum Non-Detect					-0.821
291	Maximum Non-Detect					0.44	Maximum Non-Detect					-0.821
292												
293												
294	UCL Statistics											
295	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
296	Shapiro Wilk Test Statistic					0.928	Shapiro Wilk Test Statistic					0.916
297	5% Shapiro Wilk Critical Value					0.887	5% Shapiro Wilk Critical Value					0.887
298	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
299												
300	Assuming Normal Distribution						Assuming Lognormal Distribution					
301	DL/2 Substitution Method						DL/2 Substitution Method					
302	Mean					9.201	Mean					1.776
303	SD					6.817	SD					1.212
304	95% DL/2 (t) UCL					12.09	95% H-Stat (DL/2) UCL					22.7
305												
306	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
307	Mean					9.018	Mean in Log Scale					1.857
308	SD					6.933	SD in Log Scale					1.007
309	95% MLE (t) UCL					11.95	Mean in Original Scale					9.239
310	95% MLE (Tiku) UCL					11.91	SD in Original Scale					6.766
311							95% Percentile Bootstrap UCL					11.88
312							95% BCA Bootstrap UCL					12.04
313												
314	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
315	k star (bias corrected)					1.53	Data appear Normal at 5% Significance Level					
316	Theta Star					6.382						
317	nu star					48.95						
318												

	A	B	C	D	E	F	G	H	I	J	K	L	
319	A-D Test Statistic					0.306	Nonparametric Statistics						
320	5% A-D Critical Value					0.752	Kaplan-Meier (KM) Method						
321	K-S Test Statistic					0.752	Mean						9.253
322	5% K-S Critical Value					0.218	SD						6.546
323	Data appear Gamma Distributed at 5% Significance Level						SE of Mean						1.64
324							95% KM (t) UCL						12.12
325	Assuming Gamma Distribution						95% KM (z) UCL						11.95
326	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL						12.09
327	Minimum					1E-09	95% KM (bootstrap t) UCL						12.39
328	Maximum					21.5	95% KM (BCA) UCL						12.15
329	Mean					9.188	95% KM (Percentile Bootstrap) UCL						11.93
330	Median					7.3	95% KM (Chebyshev) UCL						16.4
331	SD					6.836	97.5% KM (Chebyshev) UCL						19.49
332	k star					0.382	99% KM (Chebyshev) UCL						25.57
333	Theta star					24.07							
334	Nu star					12.98	Potential UCLs to Use						
335	AppChi2					5.879	95% KM (t) UCL						12.12
336	95% Gamma Approximate UCL					20.29	95% KM (Percentile Bootstrap) UCL						11.93
337	95% Adjusted Gamma UCL					22.15							
338	Note: DL/2 is not a recommended method.												
339													
340													
341	Benzo(a)pyrene												
342													
343	General Statistics												
344	Number of Valid Data					17	Number of Detected Data					16	
345	Number of Distinct Detected Data					15	Number of Non-Detect Data					1	
346							Percent Non-Detects					5.88%	
347													
348	Raw Statistics						Log-transformed Statistics						
349	Minimum Detected					0.315	Minimum Detected					-1.155	
350	Maximum Detected					3.95	Maximum Detected					1.374	
351	Mean of Detected					1.385	Mean of Detected					0.049	
352	SD of Detected					1.047	SD of Detected					0.789	
353	Minimum Non-Detect					0.0037	Minimum Non-Detect					-5.599	
354	Maximum Non-Detect					0.0037	Maximum Non-Detect					-5.599	
355													
356													
357	UCL Statistics												
358	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
359	Shapiro Wilk Test Statistic					0.883	Shapiro Wilk Test Statistic					0.949	
360	5% Shapiro Wilk Critical Value					0.887	5% Shapiro Wilk Critical Value					0.887	
361	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
362													
363	Assuming Normal Distribution						Assuming Lognormal Distribution						
364	DL/2 Substitution Method						DL/2 Substitution Method						
365	Mean					1.303	Mean					-0.324	
366	SD					1.067	SD					1.717	
367	95% DL/2 (t) UCL					1.755	95% H-Stat (DL/2) UCL					9.701	
368													
369	Maximum Likelihood Estimate(MLE) Method						Log ROS Method						
370	Mean					1.272	Mean in Log Scale					-0.0653	
371	SD					1.088	SD in Log Scale					0.898	

	A	B	C	D	E	F	G	H	I	J	K	L
372	95% MLE (t) UCL					1.732	Mean in Original Scale					1.312
373	95% MLE (Tiku) UCL					1.723	SD in Original Scale					1.057
374							95% Percentile Bootstrap UCL					1.745
375							95% BCA Bootstrap UCL					1.768
376												
377	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
378	k star (bias corrected)					1.633	Data appear Gamma Distributed at 5% Significance Level					
379	Theta Star					0.848						
380	nu star					52.26						
381												
382	A-D Test Statistic					0.322	Nonparametric Statistics					
383	5% A-D Critical Value					0.751	Kaplan-Meier (KM) Method					
384	K-S Test Statistic					0.751	Mean					1.322
385	5% K-S Critical Value					0.218	SD					1.015
386	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.254
387							95% KM (t) UCL					1.766
388	Assuming Gamma Distribution						95% KM (z) UCL					1.74
389	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.762
390	Minimum					1E-09	95% KM (bootstrap t) UCL					1.874
391	Maximum					3.95	95% KM (BCA) UCL					1.738
392	Mean					1.303	95% KM (Percentile Bootstrap) UCL					1.726
393	Median					1.1	95% KM (Chebyshev) UCL					2.43
394	SD					1.068	97.5% KM (Chebyshev) UCL					2.909
395	k star					0.409	99% KM (Chebyshev) UCL					3.851
396	Theta star					3.185						
397	Nu star					13.91	Potential UCLs to Use					
398	AppChi2					6.512	95% KM (Chebyshev) UCL					2.43
399	95% Gamma Approximate UCL					2.784						
400	95% Adjusted Gamma UCL					3.028						
401	Note: DL/2 is not a recommended method.											
402												
403												
404	Benzo(b)fluoranthene											
405												
406	General Statistics											
407	Number of Valid Data					15	Number of Detected Data					14
408	Number of Distinct Detected Data					12	Number of Non-Detect Data					1
409							Percent Non-Detects					6.67%
410												
411	Raw Statistics						Log-transformed Statistics					
412	Minimum Detected					0.35	Minimum Detected					-1.05
413	Maximum Detected					3.2	Maximum Detected					1.163
414	Mean of Detected					1.403	Mean of Detected					0.0893
415	SD of Detected					0.951	SD of Detected					0.762
416	Minimum Non-Detect					0.0037	Minimum Non-Detect					-5.599
417	Maximum Non-Detect					0.0037	Maximum Non-Detect					-5.599
418												
419												
420	UCL Statistics											
421	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
422	Shapiro Wilk Test Statistic					0.88	Shapiro Wilk Test Statistic					0.901
423	5% Shapiro Wilk Critical Value					0.874	5% Shapiro Wilk Critical Value					0.874
424	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
425												
426	Assuming Normal Distribution						Assuming Lognormal Distribution					
427	DL/2 Substitution Method						DL/2 Substitution Method					
428	Mean					1.309	Mean					-0.336
429	SD					0.985	SD					1.804
430	95% DL/2 (t) UCL					1.757	95% H-Stat (DL/2) UCL					14
431												
432	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
433	Mean					1.278	Mean in Log Scale					-0.0329
434	SD					1.007	SD in Log Scale					0.874
435	95% MLE (t) UCL					1.736	Mean in Original Scale					1.321
436	95% MLE (Tiku) UCL					1.731	SD in Original Scale					0.969
437							95% Percentile Bootstrap UCL					1.725
438							95% BCA Bootstrap UCL					1.773
439												
440	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
441	k star (bias corrected)					1.743	Data appear Normal at 5% Significance Level					
442	Theta Star					0.805						
443	nu star					48.81						
444												
445	A-D Test Statistic					0.665	Nonparametric Statistics					
446	5% A-D Critical Value					0.745	Kaplan-Meier (KM) Method					
447	K-S Test Statistic					0.745	Mean					1.333
448	5% K-S Critical Value					0.231	SD					0.923
449	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.247
450							95% KM (t) UCL					1.768
451	Assuming Gamma Distribution						95% KM (z) UCL					1.739
452	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.764
453	Minimum					1E-09	95% KM (bootstrap t) UCL					1.803
454	Maximum					3.2	95% KM (BCA) UCL					1.755
455	Mean					1.309	95% KM (Percentile Bootstrap) UCL					1.753
456	Median					1.1	95% KM (Chebyshev) UCL					2.411
457	SD					0.985	97.5% KM (Chebyshev) UCL					2.877
458	k star					0.378	99% KM (Chebyshev) UCL					3.793
459	Theta star					3.464						
460	Nu star					11.34	Potential UCLs to Use					
461	AppChi2					4.796	95% KM (t) UCL					1.768
462	95% Gamma Approximate UCL					3.096	95% KM (Percentile Bootstrap) UCL					1.753
463	95% Adjusted Gamma UCL					3.467						
464	Note: DL/2 is not a recommended method.											
465												
466												
467	Benzo(k)fluoranthene											
468												
469	General Statistics											
470	Number of Valid Data					17	Number of Detected Data					16
471	Number of Distinct Detected Data					15	Number of Non-Detect Data					1
472							Percent Non-Detects					5.88%
473												
474	Raw Statistics						Log-transformed Statistics					
475	Minimum Detected					0.147	Minimum Detected					-1.917
476	Maximum Detected					2.245	Maximum Detected					0.809
477	Mean of Detected					0.78	Mean of Detected					-0.604

	A	B	C	D	E	F	G	H	I	J	K	L
478	SD of Detected					0.65	SD of Detected					0.902
479	Minimum Non-Detect					0.0037	Minimum Non-Detect					-5.599
480	Maximum Non-Detect					0.0037	Maximum Non-Detect					-5.599
481												
482												
483	UCL Statistics											
484	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
485	Shapiro Wilk Test Statistic					0.865	Shapiro Wilk Test Statistic					0.926
486	5% Shapiro Wilk Critical Value					0.887	5% Shapiro Wilk Critical Value					0.887
487	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
488												
489	Assuming Normal Distribution					Assuming Lognormal Distribution						
490	DL/2 Substitution Method						DL/2 Substitution Method					
491	Mean					0.734	Mean					-0.939
492	SD					0.657	SD					1.633
493	95% DL/2 (t) UCL					1.013	95% H-Stat (DL/2) UCL					4.167
494												
495	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
496	Mean					0.714	Mean in Log Scale					-0.734
497	SD					0.669	SD in Log Scale					1.024
498	95% MLE (t) UCL					0.998	Mean in Original Scale					0.738
499	95% MLE (Tiku) UCL					0.989	SD in Original Scale					0.653
500							95% Percentile Bootstrap UCL					0.986
501							95% BCA Bootstrap UCL					1.019
502												
503	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
504	k star (bias corrected)					1.301	Data appear Gamma Distributed at 5% Significance Level					
505	Theta Star					0.6						
506	nu star					41.62						
507												
508	A-D Test Statistic					0.512	Nonparametric Statistics					
509	5% A-D Critical Value					0.754	Kaplan-Meier (KM) Method					
510	K-S Test Statistic					0.754	Mean					0.743
511	5% K-S Critical Value					0.219	SD					0.629
512	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					0.157	
513							95% KM (t) UCL					1.018
514	Assuming Gamma Distribution					95% KM (z) UCL					1.002	
515	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.016
516	Minimum					1E-09	95% KM (bootstrap t) UCL					1.099
517	Maximum					2.245	95% KM (BCA) UCL					1.015
518	Mean					0.734	95% KM (Percentile Bootstrap) UCL					0.994
519	Median					0.48	95% KM (Chebyshev) UCL					1.429
520	SD					0.657	97.5% KM (Chebyshev) UCL					1.726
521	k star					0.4	99% KM (Chebyshev) UCL					2.31
522	Theta star					1.834						
523	Nu star					13.61	Potential UCLs to Use					
524	AppChi2					6.305	95% KM (Chebyshev) UCL					1.429
525	95% Gamma Approximate UCL					1.585						
526	95% Adjusted Gamma UCL					1.726						
527	Note: DL/2 is not a recommended method.											
528												
529												
530	Benzo_a_anthracene											

	A	B	C	D	E	F	G	H	I	J	K	L
531												
532	General Statistics											
533	Number of Valid Data					17	Number of Detected Data					16
534	Number of Distinct Detected Data					15	Number of Non-Detect Data					1
535							Percent Non-Detects					5.88%
536												
537	Raw Statistics					Log-transformed Statistics						
538	Minimum Detected					0.33	Minimum Detected					-1.109
539	Maximum Detected					4.035	Maximum Detected					1.395
540	Mean of Detected					1.275	Mean of Detected					-0.0471
541	SD of Detected					1.049	SD of Detected					0.784
542	Minimum Non-Detect					0.0037	Minimum Non-Detect					-5.599
543	Maximum Non-Detect					0.0037	Maximum Non-Detect					-5.599
544												
545												
546	UCL Statistics											
547	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
548	Shapiro Wilk Test Statistic					0.834	Shapiro Wilk Test Statistic					0.951
549	5% Shapiro Wilk Critical Value					0.887	5% Shapiro Wilk Critical Value					0.887
550	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
551												
552	Assuming Normal Distribution					Assuming Lognormal Distribution						
553	DL/2 Substitution Method						DL/2 Substitution Method					
554	Mean					1.2	Mean					-0.414
555	SD					1.061	SD					1.694
556	95% DL/2 (t) UCL					1.649	95% H-Stat (DL/2) UCL					8.231
557												
558	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
559	Mean					1.168	Mean in Log Scale					-0.161
560	SD					1.081	SD in Log Scale					0.893
561	95% MLE (t) UCL					1.625	Mean in Original Scale					1.208
562	95% MLE (Tiku) UCL					1.612	SD in Original Scale					1.052
563							95% Percentile Bootstrap UCL					1.621
564							95% BCA Bootstrap UCL					1.717
565												
566	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
567	k star (bias corrected)					1.565	Data appear Gamma Distributed at 5% Significance Level					
568	Theta Star					0.815						
569	nu star					50.08						
570												
571	A-D Test Statistic					0.376	Nonparametric Statistics					
572	5% A-D Critical Value					0.751	Kaplan-Meier (KM) Method					
573	K-S Test Statistic					0.751	Mean					1.219
574	5% K-S Critical Value					0.218	SD					1.01
575	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					0.253	
576							95% KM (t) UCL					1.661
577	Assuming Gamma Distribution					95% KM (z) UCL					1.635	
578	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.659
579	Minimum					1E-09	95% KM (bootstrap t) UCL					1.827
580	Maximum					4.035	95% KM (BCA) UCL					1.677
581	Mean					1.2	95% KM (Percentile Bootstrap) UCL					1.658
582	Median					0.84	95% KM (Chebyshev) UCL					2.322
583	SD					1.062	97.5% KM (Chebyshev) UCL					2.799

	A	B	C	D	E	F	G	H	I	J	K	L
584	k star					0.408	99% KM (Chebyshev) UCL					3.736
585	Theta star					2.944						
586	Nu star					13.86	Potential UCLs to Use					
587	AppChi2					6.472	95% KM (Chebyshev) UCL					2.322
588	95% Gamma Approximate UCL					2.568						
589	95% Adjusted Gamma UCL					2.794						
590	Note: DL/2 is not a recommended method.											
591												
592												
593	bis(2-Ethylhexyl)phthalate											
594												
595	General Statistics											
596	Number of Valid Data					17	Number of Detected Data					16
597	Number of Distinct Detected Data					15	Number of Non-Detect Data					1
598							Percent Non-Detects					5.88%
599												
600	Raw Statistics						Log-transformed Statistics					
601	Minimum Detected					0.06	Minimum Detected					-2.813
602	Maximum Detected					20	Maximum Detected					2.996
603	Mean of Detected					3.045	Mean of Detected					-0.441
604	SD of Detected					5.572	SD of Detected					1.852
605	Minimum Non-Detect					0.53	Minimum Non-Detect					-0.635
606	Maximum Non-Detect					0.53	Maximum Non-Detect					-0.635
607												
608												
609	UCL Statistics											
610	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
611	Shapiro Wilk Test Statistic					0.61	Shapiro Wilk Test Statistic					0.919
612	5% Shapiro Wilk Critical Value					0.887	5% Shapiro Wilk Critical Value					0.887
613	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
614												
615	Assuming Normal Distribution						Assuming Lognormal Distribution					
616	DL/2 Substitution Method						DL/2 Substitution Method					
617	Mean					2.882	Mean					-0.493
618	SD					5.437	SD					1.806
619	95% DL/2 (t) UCL					5.184	95% H-Stat (DL/2) UCL					20.65
620												
621	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
622	MLE yields a negative mean						Mean in Log Scale					-0.509
623							SD in Log Scale					1.815
624							Mean in Original Scale					2.878
625							SD in Original Scale					5.439
626							95% Percentile Bootstrap UCL					5.053
627							95% BCA Bootstrap UCL					6.022
628												
629	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
630	k star (bias corrected)					0.383	Data appear Lognormal at 5% Significance Level					
631	Theta Star					7.953						
632	nu star					12.25						
633												
634	A-D Test Statistic					1.08	Nonparametric Statistics					
635	5% A-D Critical Value					0.813	Kaplan-Meier (KM) Method					
636	K-S Test Statistic					0.813	Mean					2.877

	A	B	C	D	E	F	G	H	I	J	K	L
637	5% K-S Critical Value					0.229	SD					5.277
638	Data not Gamma Distributed at 5% Significance Level						SE of Mean					1.322
639							95% KM (t) UCL					5.185
640	Assuming Gamma Distribution						95% KM (z) UCL					5.052
641	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					5.181
642	Minimum					1E-09	95% KM (bootstrap t) UCL					7.642
643	Maximum					20	95% KM (BCA) UCL					5.157
644	Mean					2.866	95% KM (Percentile Bootstrap) UCL					5.167
645	Median					0.37	95% KM (Chebyshev) UCL					8.639
646	SD					5.446	97.5% KM (Chebyshev) UCL					11.13
647	k star					0.255	99% KM (Chebyshev) UCL					16.03
648	Theta star					11.23						
649	Nu star					8.677	Potential UCLs to Use					
650	AppChi2					3.133	99% KM (Chebyshev) UCL					16.03
651	95% Gamma Approximate UCL					7.937						
652	95% Adjusted Gamma UCL					8.902						
653	Note: DL/2 is not a recommended method.											
654												
655												
656	Cadmium											
657												
658	General Statistics											
659	Number of Valid Observations					17	Number of Distinct Observations					17
660												
661	Raw Statistics						Log-transformed Statistics					
662	Minimum					0.45	Minimum of Log Data					-0.799
663	Maximum					25	Maximum of Log Data					3.219
664	Mean					7.848	Mean of log Data					1.428
665	Median					4.3	SD of log Data					1.294
666	SD					7.602						
667	Coefficient of Variation					0.969						
668	Skewness					0.842						
669												
670	Relevant UCL Statistics											
671	Normal Distribution Test						Lognormal Distribution Test					
672	Shapiro Wilk Test Statistic					0.862	Shapiro Wilk Test Statistic					0.929
673	Shapiro Wilk Critical Value					0.892	Shapiro Wilk Critical Value					0.892
674	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
675												
676	Assuming Normal Distribution						Assuming Lognormal Distribution					
677	95% Student's-t UCL					11.07	95% H-UCL					26.56
678	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					22.81
679	95% Adjusted-CLT UCL					11.28	97.5% Chebyshev (MVUE) UCL					28.83
680	95% Modified-t UCL					11.13	99% Chebyshev (MVUE) UCL					40.66
681												
682	Gamma Distribution Test						Data Distribution					
683	k star (bias corrected)					0.799	Data appear Gamma Distributed at 5% Significance Level					
684	Theta Star					9.824						
685	MLE of Mean					7.848						
686	MLE of Standard Deviation					8.78						
687	nu star					27.16						
688	Approximate Chi Square Value (.05)					16.28	Nonparametric Statistics					
689	Adjusted Level of Significance					0.0346	95% CLT UCL					10.88

	A	B	C	D	E	F	G	H	I	J	K	L
690	Adjusted Chi Square Value					15.4	95% Jackknife UCL					11.07
691							95% Standard Bootstrap UCL					10.75
692	Anderson-Darling Test Statistic					0.514	95% Bootstrap-t UCL					11.59
693	Anderson-Darling 5% Critical Value					0.769	95% Hall's Bootstrap UCL					11.33
694	Kolmogorov-Smirnov Test Statistic					0.168	95% Percentile Bootstrap UCL					10.95
695	Kolmogorov-Smirnov 5% Critical Value					0.216	95% BCA Bootstrap UCL					11.25
696	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					15.88
697							97.5% Chebyshev(Mean, Sd) UCL					19.36
698	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					26.19
699	95% Approximate Gamma UCL					13.1						
700	95% Adjusted Gamma UCL					13.84						
701												
702	Potential UCL to Use						Use 95% Approximate Gamma UCL					13.1
703												
704												
705	Carbazole											
706												
707	General Statistics											
708	Number of Valid Data					17	Number of Detected Data					11
709	Number of Distinct Detected Data					11	Number of Non-Detect Data					6
710							Percent Non-Detects					35.29%
711												
712	Raw Statistics						Log-transformed Statistics					
713	Minimum Detected					0.045	Minimum Detected					-3.101
714	Maximum Detected					0.2	Maximum Detected					-1.609
715	Mean of Detected					0.117	Mean of Detected					-2.229
716	SD of Detected					0.0487	SD of Detected					0.446
717	Minimum Non-Detect					0.15	Minimum Non-Detect					-1.897
718	Maximum Non-Detect					0.49	Maximum Non-Detect					-0.713
719												
720	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					17
721	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
722	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
723												
724	UCL Statistics											
725	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
726	Shapiro Wilk Test Statistic					0.942	Shapiro Wilk Test Statistic					0.95
727	5% Shapiro Wilk Critical Value					0.85	5% Shapiro Wilk Critical Value					0.85
728	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
729												
730	Assuming Normal Distribution						Assuming Lognormal Distribution					
731	DL/2 Substitution Method						DL/2 Substitution Method					
732	Mean					0.141	Mean					-2.059
733	SD					0.0605	SD					0.487
734	95% DL/2 (t) UCL					0.167	95% H-Stat (DL/2) UCL					0.27
735												
736	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
737	MLE method failed to converge properly						Mean in Log Scale					-2.251
738							SD in Log Scale					0.357
739							Mean in Original Scale					0.112
740							SD in Original Scale					0.0395
741							95% Percentile Bootstrap UCL					0.127
742							95% BCA Bootstrap UCL					0.13

	A	B	C	D	E	F	G	H	I	J	K	L	
743													
744	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only						
745	k star (bias corrected)					4.458	Data appear Normal at 5% Significance Level						
746	Theta Star					0.0263							
747	nu star					98.07							
748													
749	A-D Test Statistic					0.303	Nonparametric Statistics						
750	5% A-D Critical Value					0.731	Kaplan-Meier (KM) Method						
751	K-S Test Statistic					0.731	Mean					0.115	
752	5% K-S Critical Value					0.256	SD					0.0457	
753	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.014	
754							95% KM (t) UCL					0.139	
755	Assuming Gamma Distribution						95% KM (z) UCL					0.138	
756	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.139	
757	Minimum					0.045	95% KM (bootstrap t) UCL					0.142	
758	Maximum					0.2	95% KM (BCA) UCL					0.136	
759	Mean					0.12	95% KM (Percentile Bootstrap) UCL					0.136	
760	Median					0.13	95% KM (Chebyshev) UCL					0.175	
761	SD					0.0392	97.5% KM (Chebyshev) UCL					0.202	
762	k star					7.431	99% KM (Chebyshev) UCL					0.253	
763	Theta star					0.0162							
764	Nu star					252.6	Potential UCLs to Use						
765	AppChi2					216.8	95% KM (t) UCL					0.139	
766	95% Gamma Approximate UCL					0.14	95% KM (Percentile Bootstrap) UCL					0.136	
767	95% Adjusted Gamma UCL					0.142							
768	Note: DL/2 is not a recommended method.												
769													
770													
771	Chromium												
772													
773	General Statistics												
774	Number of Valid Observations					17	Number of Distinct Observations					17	
775													
776	Raw Statistics						Log-transformed Statistics						
777	Minimum					4.8	Minimum of Log Data					1.569	
778	Maximum					354	Maximum of Log Data					5.869	
779	Mean					103.2	Mean of log Data					4.063	
780	Median					70.1	SD of log Data					1.25	
781	SD					100.1							
782	Coefficient of Variation					0.971							
783	Skewness					1.237							
784													
785	Relevant UCL Statistics												
786	Normal Distribution Test						Lognormal Distribution Test						
787	Shapiro Wilk Test Statistic					0.865	Shapiro Wilk Test Statistic					0.959	
788	Shapiro Wilk Critical Value					0.892	Shapiro Wilk Critical Value					0.892	
789	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
790													
791	Assuming Normal Distribution						Assuming Lognormal Distribution						
792	95% Student's-t UCL					145.6	95% H-UCL					330.5	
793	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					295.6	
794	95% Adjusted-CLT UCL					150.9	97.5% Chebyshev (MVUE) UCL					372.4	
795	95% Modified-t UCL					146.8	99% Chebyshev (MVUE) UCL					523.3	

	A	B	C	D	E	F	G	H	I	J	K	L
796												
797	Gamma Distribution Test						Data Distribution					
798	k star (bias corrected)					0.868	Data appear Gamma Distributed at 5% Significance Level					
799	Theta Star					118.9						
800	MLE of Mean					103.2						
801	MLE of Standard Deviation					110.8						
802	nu star					29.5						
803	Approximate Chi Square Value (.05)					18.1	Nonparametric Statistics					
804	Adjusted Level of Significance					0.0346	95% CLT UCL					143.1
805	Adjusted Chi Square Value					17.16	95% Jackknife UCL					145.6
806							95% Standard Bootstrap UCL					142.4
807	Anderson-Darling Test Statistic					0.161	95% Bootstrap-t UCL					162.9
808	Anderson-Darling 5% Critical Value					0.766	95% Hall's Bootstrap UCL					154.6
809	Kolmogorov-Smirnov Test Statistic					0.0971	95% Percentile Bootstrap UCL					144.7
810	Kolmogorov-Smirnov 5% Critical Value					0.215	95% BCA Bootstrap UCL					149
811	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					209.1
812							97.5% Chebyshev(Mean, Sd) UCL					254.9
813	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					344.9
814	95% Approximate Gamma UCL					168.2						
815	95% Adjusted Gamma UCL					177.3						
816												
817	Potential UCL to Use						Use 95% Approximate Gamma UCL					168.2
818												
819												
820	Cobalt											
821												
822	General Statistics											
823	Number of Valid Data					17	Number of Detected Data					3
824	Number of Distinct Detected Data					3	Number of Non-Detect Data					14
825							Percent Non-Detects					82.35%
826												
827	Raw Statistics						Log-transformed Statistics					
828	Minimum Detected					4.6	Minimum Detected					1.526
829	Maximum Detected					14	Maximum Detected					2.639
830	Mean of Detected					9.233	Mean of Detected					2.124
831	SD of Detected					4.701	SD of Detected					0.561
832	Minimum Non-Detect					8.9	Minimum Non-Detect					2.186
833	Maximum Non-Detect					14	Maximum Non-Detect					2.639
834												
835	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					16
836	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
837	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					94.12%
838												
839	Warning: There are only 3 Distinct Detected Values in this data set											
840	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
841	Those methods will return a 'N/A' value on your output display!											
842												
843	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
844	However, results obtained using 4 to 9 distinct values may not be reliable.											
845	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
846												
847												
848	UCL Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
849	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
850	Shapiro Wilk Test Statistic					0.999	Shapiro Wilk Test Statistic					0.983
851	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767
852	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
853												
854	Assuming Normal Distribution						Assuming Lognormal Distribution					
855	DL/2 Substitution Method						DL/2 Substitution Method					
856	Mean					6.453	Mean					1.822
857	SD					2.264	SD					0.28
858	95% DL/2 (t) UCL					7.411	95% H-Stat (DL/2) UCL					8.656
859												
860	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
861	MLE method failed to converge properly						Mean in Log Scale					1.798
862							SD in Log Scale					0.323
863							Mean in Original Scale					6.377
864							SD in Original Scale					2.448
865							95% Percentile Bootstrap UCL					7.378
866							95% BCA Bootstrap UCL					7.705
867												
868	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
869	k star (bias corrected)					N/A	Data appear Normal at 5% Significance Level					
870	Theta Star					N/A						
871	nu star					N/A						
872												
873	A-D Test Statistic					N/A	Nonparametric Statistics					
874	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
875	K-S Test Statistic					N/A	Mean					6.565
876	5% K-S Critical Value					N/A	SD					2.773
877	Data not Gamma Distributed at 5% Significance Level						SE of Mean					1.516
878							95% KM (t) UCL					9.211
879	Assuming Gamma Distribution						95% KM (z) UCL					9.058
880	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					10.06
881	Minimum					N/A	95% KM (bootstrap t) UCL					8.894
882	Maximum					N/A	95% KM (BCA) UCL					14
883	Mean					N/A	95% KM (Percentile Bootstrap) UCL					14
884	Median					N/A	95% KM (Chebyshev) UCL					13.17
885	SD					N/A	97.5% KM (Chebyshev) UCL					16.03
886	k star					N/A	99% KM (Chebyshev) UCL					21.65
887	Theta star					N/A						
888	Nu star					N/A	Potential UCLs to Use					
889	AppChi2					N/A	95% KM (t) UCL					9.211
890	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					14
891	95% Adjusted Gamma UCL					N/A						
892	Note: DL/2 is not a recommended method.											
893												
894												
895	Copper											
896												
897	General Statistics											
898	Number of Valid Data					17	Number of Detected Data					16
899	Number of Distinct Detected Data					16	Number of Non-Detect Data					1
900							Percent Non-Detects					5.88%
901												

	A	B	C	D	E	F	G	H	I	J	K	L
902	Raw Statistics						Log-transformed Statistics					
903	Minimum Detected					12.7	Minimum Detected					2.542
904	Maximum Detected					653	Maximum Detected					6.482
905	Mean of Detected					156.2	Mean of Detected					4.465
906	SD of Detected					174.9	SD of Detected					1.183
907	Minimum Non-Detect					5.5	Minimum Non-Detect					1.705
908	Maximum Non-Detect					5.5	Maximum Non-Detect					1.705
909												
910												
911	UCL Statistics											
912	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
913	Shapiro Wilk Test Statistic					0.781	Shapiro Wilk Test Statistic					0.969
914	5% Shapiro Wilk Critical Value					0.887	5% Shapiro Wilk Critical Value					0.887
915	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
916												
917	Assuming Normal Distribution					Assuming Lognormal Distribution						
918	DL/2 Substitution Method						DL/2 Substitution Method					
919	Mean					147.2	Mean					4.261
920	SD					173.4	SD					1.419
921	95% DL/2 (t) UCL					220.6	95% H-Stat (DL/2) UCL					469
922												
923	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
924	Mean					141.4	Mean in Log Scale					4.292
925	SD					175.8	SD in Log Scale					1.348
926	95% MLE (t) UCL					215.9	Mean in Original Scale					147.3
927	95% MLE (Tiku) UCL					211.7	SD in Original Scale					173.3
928							95% Percentile Bootstrap UCL					216.3
929							95% BCA Bootstrap UCL					238.6
930												
931	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
932	k star (bias corrected)					0.842	Data appear Gamma Distributed at 5% Significance Level					
933	Theta Star					185.5						
934	nu star					26.95						
935												
936	A-D Test Statistic					0.259	Nonparametric Statistics					
937	5% A-D Critical Value					0.764	Kaplan-Meier (KM) Method					
938	K-S Test Statistic					0.764	Mean					147.8
939	5% K-S Critical Value					0.221	SD					167.8
940	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					42.02	
941							95% KM (t) UCL					221.2
942	Assuming Gamma Distribution						95% KM (z) UCL					216.9
943	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					220.9
944	Minimum					1E-09	95% KM (bootstrap t) UCL					285.3
945	Maximum					653	95% KM (BCA) UCL					224.2
946	Mean					147.1	95% KM (Percentile Bootstrap) UCL					221
947	Median					71	95% KM (Chebyshev) UCL					331
948	SD					173.6	97.5% KM (Chebyshev) UCL					410.2
949	k star					0.317	99% KM (Chebyshev) UCL					565.9
950	Theta star					464.3						
951	Nu star					10.77	Potential UCLs to Use					
952	AppChi2					4.428	95% KM (Chebyshev) UCL					331
953	95% Gamma Approximate UCL					357.6						
954	95% Adjusted Gamma UCL					395						

	A	B	C	D	E	F	G	H	I	J	K	L	
955	Note: DL/2 is not a recommended method.												
956													
957													
958	Dibenz_a,h_anthracene												
959													
960	General Statistics												
961	Number of Valid Data					17	Number of Detected Data					13	
962	Number of Distinct Detected Data					11	Number of Non-Detect Data					4	
963							Percent Non-Detects					23.53%	
964													
965	Raw Statistics						Log-transformed Statistics						
966	Minimum Detected					0.042	Minimum Detected					-3.17	
967	Maximum Detected					0.58	Maximum Detected					-0.545	
968	Mean of Detected					0.227	Mean of Detected					-1.86	
969	SD of Detected					0.192	SD of Detected					0.936	
970	Minimum Non-Detect					0.0037	Minimum Non-Detect					-5.599	
971	Maximum Non-Detect					0.48	Maximum Non-Detect					-0.734	
972													
973	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					14	
974	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					3	
975	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					82.35%	
976													
977	UCL Statistics												
978	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
979	Shapiro Wilk Test Statistic					0.849	Shapiro Wilk Test Statistic					0.925	
980	5% Shapiro Wilk Critical Value					0.866	5% Shapiro Wilk Critical Value					0.866	
981	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
982													
983	Assuming Normal Distribution						Assuming Lognormal Distribution						
984	DL/2 Substitution Method						DL/2 Substitution Method						
985	Mean					0.212	Mean					-2.062	
986	SD					0.175	SD					1.366	
987	95% DL/2 (t) UCL					0.286	95% H-Stat (DL/2) UCL					1.364	
988													
989	Maximum Likelihood Estimate(MLE) Method						Log ROS Method						
990	Mean					0.536	Mean in Log Scale					-2.076	
991	SD					0.0424	SD in Log Scale					0.973	
992	95% MLE (t) UCL					0.554	Mean in Original Scale					0.191	
993	95% MLE (Tiku) UCL					0.578	SD in Original Scale					0.179	
994							95% Percentile Bootstrap UCL					0.263	
995							95% BCA Bootstrap UCL					0.276	
996													
997	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only						
998	k star (bias corrected)						1.188	Data appear Gamma Distributed at 5% Significance Level					
999	Theta Star						0.191						
1000	nu star						30.88						
1001													
1002	A-D Test Statistic					0.469	Nonparametric Statistics						
1003	5% A-D Critical Value					0.751	Kaplan-Meier (KM) Method						
1004	K-S Test Statistic					0.751	Mean					0.197	
1005	5% K-S Critical Value					0.241	SD					0.174	
1006	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0453	
1007							95% KM (t) UCL					0.276	

	A	B	C	D	E	F	G	H	I	J	K	L
1008	Assuming Gamma Distribution						95% KM (z) UCL					0.272
1009	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.276
1010	Minimum					0.0112	95% KM (bootstrap t) UCL					0.301
1011	Maximum					0.58	95% KM (BCA) UCL					0.279
1012	Mean					0.214	95% KM (Percentile Bootstrap) UCL					0.269
1013	Median					0.212	95% KM (Chebyshev) UCL					0.394
1014	SD					0.174	97.5% KM (Chebyshev) UCL					0.48
1015	k star					1.17	99% KM (Chebyshev) UCL					0.647
1016	Theta star					0.183						
1017	Nu star					39.78	Potential UCLs to Use					
1018	AppChi2					26.33	95% KM (BCA) UCL					0.279
1019	95% Gamma Approximate UCL					0.323						
1020	95% Adjusted Gamma UCL					0.337						
1021	Note: DL/2 is not a recommended method.											
1022												
1023												
1024	Dibenzofuran											
1025												
1026	General Statistics											
1027	Number of Valid Data					17	Number of Detected Data					6
1028	Number of Distinct Detected Data					6	Number of Non-Detect Data					11
1029							Percent Non-Detects					64.71%
1030												
1031	Raw Statistics						Log-transformed Statistics					
1032	Minimum Detected					0.045	Minimum Detected					-3.101
1033	Maximum Detected					0.1	Maximum Detected					-2.303
1034	Mean of Detected					0.0755	Mean of Detected					-2.619
1035	SD of Detected					0.0207	SD of Detected					0.299
1036	Minimum Non-Detect					0.15	Minimum Non-Detect					-1.897
1037	Maximum Non-Detect					0.53	Maximum Non-Detect					-0.635
1038												
1039	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					17
1040	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1041	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1042												
1043	Warning: There are only 6 Detected Values in this data											
1044	Note: It should be noted that even though bootstrap may be performed on this data set											
1045	the resulting calculations may not be reliable enough to draw conclusions											
1046												
1047	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1048												
1049												
1050	UCL Statistics											
1051	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1052	Shapiro Wilk Test Statistic					0.949	Shapiro Wilk Test Statistic					0.927
1053	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788
1054	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1055												
1056	Assuming Normal Distribution						Assuming Lognormal Distribution					
1057	DL/2 Substitution Method						DL/2 Substitution Method					
1058	Mean					0.15	Mean					-2.037
1059	SD					0.0756	SD					0.577
1060	95% DL/2 (t) UCL					0.182	95% H-Stat (DL/2) UCL					0.442

	A	B	C	D	E	F	G	H	I	J	K	L
1061												
1062	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1063	MLE method failed to converge properly						Mean in Log Scale					-2.619
1064							SD in Log Scale					0.167
1065							Mean in Original Scale					0.0738
1066							SD in Original Scale					0.0117
1067							95% Percentile Bootstrap UCL					0.0782
1068							95% BCA Bootstrap UCL					0.0785
1069												
1070	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1071	k star (bias corrected)					7.308	Data appear Normal at 5% Significance Level					
1072	Theta Star					0.0103						
1073	nu star					87.7						
1074												
1075	A-D Test Statistic					0.299	Nonparametric Statistics					
1076	5% A-D Critical Value					0.698	Kaplan-Meier (KM) Method					
1077	K-S Test Statistic					0.698	Mean					0.0755
1078	5% K-S Critical Value					0.332	SD					0.0189
1079	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.00846
1080							95% KM (t) UCL					0.0903
1081	Assuming Gamma Distribution						95% KM (z) UCL					0.0894
1082	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0912
1083	Minimum					0.045	95% KM (bootstrap t) UCL					0.0911
1084	Maximum					0.1	95% KM (BCA) UCL					0.0878
1085	Mean					0.0777	95% KM (Percentile Bootstrap) UCL					0.0892
1086	Median					0.0789	95% KM (Chebyshev) UCL					0.112
1087	SD					0.0117	97.5% KM (Chebyshev) UCL					0.128
1088	k star					32.79	99% KM (Chebyshev) UCL					0.16
1089	Theta star					0.00237						
1090	Nu star					1115	Potential UCLs to Use					
1091	AppChi2					1038	95% KM (t) UCL					0.0903
1092	95% Gamma Approximate UCL					0.0834	95% KM (Percentile Bootstrap) UCL					0.0892
1093	95% Adjusted Gamma UCL					0.0841						
1094	Note: DL/2 is not a recommended method.											
1095												
1096												
1097	Dieldrin											
1098												
1099	General Statistics											
1100	Number of Valid Data					14	Number of Detected Data					6
1101	Number of Distinct Detected Data					6	Number of Non-Detect Data					8
1102							Percent Non-Detects					57.14%
1103												
1104	Raw Statistics						Log-transformed Statistics					
1105	Minimum Detected					0.002	Minimum Detected					-6.215
1106	Maximum Detected					0.021	Maximum Detected					-3.863
1107	Mean of Detected					0.0105	Mean of Detected					-4.896
1108	SD of Detected					0.00828	SD of Detected					0.97
1109	Minimum Non-Detect					0.00072	Minimum Non-Detect					-7.236
1110	Maximum Non-Detect					0.0011	Maximum Non-Detect					-6.812
1111												
1112	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					8
1113	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					6

	A	B	C	D	E	F	G	H	I	J	K	L
1114	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					57.14%
1115												
1116	Warning: There are only 6 Detected Values in this data											
1117	Note: It should be noted that even though bootstrap may be performed on this data set											
1118	the resulting calculations may not be reliable enough to draw conclusions											
1119												
1120	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1121												
1122												
1123	UCL Statistics											
1124	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
1125	Shapiro Wilk Test Statistic					0.862	Shapiro Wilk Test Statistic					0.892
1126	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788
1127	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
1128												
1129	Assuming Normal Distribution					Assuming Lognormal Distribution						
1130	DL/2 Substitution Method						DL/2 Substitution Method					
1131	Mean					0.00475	Mean					-6.55
1132	SD					0.00731	SD					1.607
1133	95% DL/2 (t) UCL					0.00821	95% H-Stat (DL/2) UCL					0.0225
1134												
1135	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1136	MLE yields a negative mean						Mean in Log Scale					-6.56
1137							SD in Log Scale					1.611
1138							Mean in Original Scale					0.00475
1139							SD in Original Scale					0.00731
1140							95% Percentile Bootstrap UCL					0.008
1141							95% BCA Bootstrap UCL					0.00866
1142												
1143	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1144	k star (bias corrected)					0.913	Data appear Normal at 5% Significance Level					
1145	Theta Star					0.0115						
1146	nu star					10.95						
1147												
1148	A-D Test Statistic					0.442	Nonparametric Statistics					
1149	5% A-D Critical Value					0.707	Kaplan-Meier (KM) Method					
1150	K-S Test Statistic					0.707	Mean					0.00566
1151	5% K-S Critical Value					0.337	SD					0.00651
1152	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0019
1153							95% KM (t) UCL					0.00903
1154	Assuming Gamma Distribution						95% KM (z) UCL					0.00879
1155	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00855
1156	Minimum					0.002	95% KM (bootstrap t) UCL					0.00888
1157	Maximum					0.021	95% KM (BCA) UCL					0.014
1158	Mean					0.0105	95% KM (Percentile Bootstrap) UCL					0.0099
1159	Median					0.0105	95% KM (Chebyshev) UCL					0.014
1160	SD					0.00514	97.5% KM (Chebyshev) UCL					0.0176
1161	k star					2.843	99% KM (Chebyshev) UCL					0.0246
1162	Theta star					0.0037						
1163	Nu star					79.61	Potential UCLs to Use					
1164	AppChi2					60.05	95% KM (t) UCL					0.00903
1165	95% Gamma Approximate UCL					0.014	95% KM (Percentile Bootstrap) UCL					0.0099
1166	95% Adjusted Gamma UCL					0.0145						

	A	B	C	D	E	F	G	H	I	J	K	L
1167	Note: DL/2 is not a recommended method.											
1168												
1169												
1170	Indeno(1,2,3-cd)pyrene											
1171												
1172	General Statistics											
1173	Number of Valid Data					17	Number of Detected Data					16
1174	Number of Distinct Detected Data					13	Number of Non-Detect Data					1
1175							Percent Non-Detects					5.88%
1176												
1177	Raw Statistics						Log-transformed Statistics					
1178	Minimum Detected					0.13	Minimum Detected					-2.04
1179	Maximum Detected					1.4	Maximum Detected					0.336
1180	Mean of Detected					0.608	Mean of Detected					-0.774
1181	SD of Detected					0.448	SD of Detected					0.8
1182	Minimum Non-Detect					0.0037	Minimum Non-Detect					-5.599
1183	Maximum Non-Detect					0.0037	Maximum Non-Detect					-5.599
1184												
1185												
1186	UCL Statistics											
1187	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1188	Shapiro Wilk Test Statistic					0.847	Shapiro Wilk Test Statistic					0.93
1189	5% Shapiro Wilk Critical Value					0.887	5% Shapiro Wilk Critical Value					0.887
1190	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1191												
1192	Assuming Normal Distribution						Assuming Lognormal Distribution					
1193	DL/2 Substitution Method						DL/2 Substitution Method					
1194	Mean					0.573	Mean					-1.098
1195	SD					0.458	SD					1.547
1196	95% DL/2 (t) UCL					0.767	95% H-Stat (DL/2) UCL					2.758
1197												
1198	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1199	Mean					0.559	Mean in Log Scale					-0.889
1200	SD					0.466	SD in Log Scale					0.908
1201	95% MLE (t) UCL					0.757	Mean in Original Scale					0.577
1202	95% MLE (Tiku) UCL					0.753	SD in Original Scale					0.453
1203							95% Percentile Bootstrap UCL					0.758
1204							95% BCA Bootstrap UCL					0.785
1205												
1206	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1207	k star (bias corrected)					1.631	Data appear Gamma Distributed at 5% Significance Level					
1208	Theta Star					0.373						
1209	nu star					52.18						
1210												
1211	A-D Test Statistic					0.435	Nonparametric Statistics					
1212	5% A-D Critical Value					0.751	Kaplan-Meier (KM) Method					
1213	K-S Test Statistic					0.751	Mean					0.58
1214	5% K-S Critical Value					0.218	SD					0.435
1215	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.109
1216							95% KM (t) UCL					0.771
1217	Assuming Gamma Distribution						95% KM (z) UCL					0.76
1218	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.77
1219	Minimum					1E-09	95% KM (bootstrap t) UCL					0.833

	A	B	C	D	E	F	G	H	I	J	K	L	
1220	Maximum					1.4	95% KM (BCA) UCL					0.771	
1221	Mean					0.573	95% KM (Percentile Bootstrap) UCL					0.766	
1222	Median					0.46	95% KM (Chebyshev) UCL					1.055	
1223	SD					0.458	97.5% KM (Chebyshev) UCL					1.261	
1224	k star					0.42	99% KM (Chebyshev) UCL					1.665	
1225	Theta star					1.363							
1226	Nu star					14.29	Potential UCLs to Use						
1227	AppChi2					6.768	95% KM (Chebyshev) UCL					1.055	
1228	95% Gamma Approximate UCL					1.209							
1229	95% Adjusted Gamma UCL					1.313							
1230	Note: DL/2 is not a recommended method.												
1231													
1232													
1233	Iron												
1234													
1235	General Statistics												
1236	Number of Valid Observations					17	Number of Distinct Observations					17	
1237													
1238	Raw Statistics					Log-transformed Statistics							
1239	Minimum					4155	Minimum of Log Data					8.332	
1240	Maximum					49600	Maximum of Log Data					10.81	
1241	Mean					13591	Mean of log Data					9.288	
1242	Median					11700	SD of log Data					0.672	
1243	SD					11005							
1244	Coefficient of Variation					0.81							
1245	Skewness					2.376							
1246													
1247	Relevant UCL Statistics												
1248	Normal Distribution Test					Lognormal Distribution Test							
1249	Shapiro Wilk Test Statistic					0.753	Shapiro Wilk Test Statistic					0.964	
1250	Shapiro Wilk Critical Value					0.892	Shapiro Wilk Critical Value					0.892	
1251	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
1252													
1253	Assuming Normal Distribution					Assuming Lognormal Distribution							
1254	95% Student's-t UCL					18251	95% H-UCL					19696	
1255	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					23353		
1256	95% Adjusted-CLT UCL					19625	97.5% Chebyshev (MVUE) UCL					27685	
1257	95% Modified-t UCL					18508	99% Chebyshev (MVUE) UCL					36194	
1258													
1259	Gamma Distribution Test					Data Distribution							
1260	k star (bias corrected)					1.965	Data appear Gamma Distributed at 5% Significance Level						
1261	Theta Star					6918							
1262	MLE of Mean					13591							
1263	MLE of Standard Deviation					9696							
1264	nu star					66.8							
1265	Approximate Chi Square Value (.05)					48.99	Nonparametric Statistics						
1266	Adjusted Level of Significance					0.0346	95% CLT UCL					17982	
1267	Adjusted Chi Square Value					47.4	95% Jackknife UCL					18251	
1268							95% Standard Bootstrap UCL					17825	
1269	Anderson-Darling Test Statistic					0.369	95% Bootstrap-t UCL					22048	
1270	Anderson-Darling 5% Critical Value					0.748	95% Hall's Bootstrap UCL					38077	
1271	Kolmogorov-Smirnov Test Statistic					0.123	95% Percentile Bootstrap UCL					18386	
1272	Kolmogorov-Smirnov 5% Critical Value					0.211	95% BCA Bootstrap UCL					19221	

	A	B	C	D	E	F	G	H	I	J	K	L
1273	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					25225
1274							97.5% Chebyshev(Mean, Sd) UCL					30259
1275	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					40148
1276	95% Approximate Gamma UCL				18532							
1277	95% Adjusted Gamma UCL				19157							
1278												
1279	Potential UCL to Use						Use 95% Approximate Gamma UCL					18532
1280												
1281												
1282	Lead											
1283												
1284	General Statistics											
1285	Number of Valid Observations				17	Number of Distinct Observations					17	
1286												
1287	Raw Statistics					Log-transformed Statistics						
1288	Minimum				3	Minimum of Log Data					1.099	
1289	Maximum				1760	Maximum of Log Data					7.473	
1290	Mean				260.4	Mean of log Data					4.415	
1291	Median				95	SD of log Data					1.588	
1292	SD				488.2							
1293	Coefficient of Variation				1.875							
1294	Skewness				2.651							
1295												
1296	Relevant UCL Statistics											
1297	Normal Distribution Test					Lognormal Distribution Test						
1298	Shapiro Wilk Test Statistic				0.531	Shapiro Wilk Test Statistic					0.972	
1299	Shapiro Wilk Critical Value				0.892	Shapiro Wilk Critical Value					0.892	
1300	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1301												
1302	Assuming Normal Distribution						Assuming Lognormal Distribution					
1303	95% Student's-t UCL				467.2	95% H-UCL					1237	
1304	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					751.2
1305	95% Adjusted-CLT UCL				536.6	97.5% Chebyshev (MVUE) UCL					966.8	
1306	95% Modified-t UCL				479.9	99% Chebyshev (MVUE) UCL					1390	
1307												
1308	Gamma Distribution Test						Data Distribution					
1309	k star (bias corrected)				0.489	Data appear Lognormal at 5% Significance Level						
1310	Theta Star				532.7							
1311	MLE of Mean				260.4							
1312	MLE of Standard Deviation				372.5							
1313	nu star				16.62							
1314	Approximate Chi Square Value (.05)				8.404	Nonparametric Statistics						
1315	Adjusted Level of Significance				0.0346	95% CLT UCL					455.2	
1316	Adjusted Chi Square Value				7.797	95% Jackknife UCL					467.2	
1317							95% Standard Bootstrap UCL					447.4
1318	Anderson-Darling Test Statistic				0.94	95% Bootstrap-t UCL					1461	
1319	Anderson-Darling 5% Critical Value				0.794	95% Hall's Bootstrap UCL					1594	
1320	Kolmogorov-Smirnov Test Statistic				0.228	95% Percentile Bootstrap UCL					480.2	
1321	Kolmogorov-Smirnov 5% Critical Value				0.22	95% BCA Bootstrap UCL					545.3	
1322	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					776.6
1323							97.5% Chebyshev(Mean, Sd) UCL					999.9
1324	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					1439
1325	95% Approximate Gamma UCL				515.2							

	A	B	C	D	E	F	G	H	I	J	K	L	
1326	95% Adjusted Gamma UCL					555.3							
1327													
1328	Potential UCL to Use						Use 99% Chebyshev (Mean, Sd) UCL						1439
1329													
1330													
1331	Manganese												
1332													
1333	General Statistics												
1334	Number of Valid Observations					17	Number of Distinct Observations					16	
1335													
1336	Raw Statistics						Log-transformed Statistics						
1337	Minimum					63.3	Minimum of Log Data					4.148	
1338	Maximum					450	Maximum of Log Data					6.109	
1339	Mean					187.4	Mean of log Data					5.05	
1340	Median					150	SD of log Data					0.638	
1341	SD					113.4							
1342	Coefficient of Variation					0.605							
1343	Skewness					0.744							
1344													
1345	Relevant UCL Statistics												
1346	Normal Distribution Test						Lognormal Distribution Test						
1347	Shapiro Wilk Test Statistic					0.901	Shapiro Wilk Test Statistic					0.921	
1348	Shapiro Wilk Critical Value					0.892	Shapiro Wilk Critical Value					0.892	
1349	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
1350													
1351	Assuming Normal Distribution						Assuming Lognormal Distribution						
1352	95% Student's-t UCL					235.4	95% H-UCL					271.1	
1353	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					322.4	
1354	95% Adjusted-CLT UCL					237.9	97.5% Chebyshev (MVUE) UCL					380.3	
1355	95% Modified-t UCL					236.2	99% Chebyshev (MVUE) UCL					494.1	
1356													
1357	Gamma Distribution Test						Data Distribution						
1358	k star (bias corrected)					2.414	Data appear Normal at 5% Significance Level						
1359	Theta Star					77.62							
1360	MLE of Mean					187.4							
1361	MLE of Standard Deviation					120.6							
1362	nu star					82.08							
1363	Approximate Chi Square Value (.05)					62.2	Nonparametric Statistics						
1364	Adjusted Level of Significance					0.0346	95% CLT UCL					232.6	
1365	Adjusted Chi Square Value					60.39	95% Jackknife UCL					235.4	
1366							95% Standard Bootstrap UCL					231.1	
1367	Anderson-Darling Test Statistic					0.527	95% Bootstrap-t UCL					241.5	
1368	Anderson-Darling 5% Critical Value					0.746	95% Hall's Bootstrap UCL					240.8	
1369	Kolmogorov-Smirnov Test Statistic					0.164	95% Percentile Bootstrap UCL					233.1	
1370	Kolmogorov-Smirnov 5% Critical Value					0.211	95% BCA Bootstrap UCL					239.8	
1371	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					307.3	
1372							97.5% Chebyshev(Mean, Sd) UCL					359.2	
1373	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					461.1	
1374	95% Approximate Gamma UCL					247.3							
1375	95% Adjusted Gamma UCL					254.7							
1376													
1377	Potential UCL to Use						Use 95% Student's-t UCL					235.4	
1378													

	A	B	C	D	E	F	G	H	I	J	K	L
1379												
1380	Mercury											
1381												
1382	General Statistics											
1383	Number of Valid Data					17	Number of Detected Data					15
1384	Number of Distinct Detected Data					14	Number of Non-Detect Data					2
1385							Percent Non-Detects					11.76%
1386												
1387	Raw Statistics					Log-transformed Statistics						
1388	Minimum Detected					0.064	Minimum Detected					-2.749
1389	Maximum Detected					1.1	Maximum Detected					0.0953
1390	Mean of Detected					0.445	Mean of Detected					-1.094
1391	SD of Detected					0.294	SD of Detected					0.877
1392	Minimum Non-Detect					0.045	Minimum Non-Detect					-3.101
1393	Maximum Non-Detect					0.048	Maximum Non-Detect					-3.037
1394												
1395	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					2
1396	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					15
1397	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					11.76%
1398												
1399	UCL Statistics											
1400	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
1401	Shapiro Wilk Test Statistic					0.941	Shapiro Wilk Test Statistic					0.899
1402	5% Shapiro Wilk Critical Value					0.881	5% Shapiro Wilk Critical Value					0.881
1403	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
1404												
1405	Assuming Normal Distribution					Assuming Lognormal Distribution						
1406	DL/2 Substitution Method						DL/2 Substitution Method					
1407	Mean					0.395	Mean					-1.408
1408	SD					0.309	SD					1.208
1409	95% DL/2 (t) UCL					0.526	95% H-Stat (DL/2) UCL					0.846
1410												
1411	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1412	Mean					0.378	Mean in Log Scale					-1.324
1413	SD					0.327	SD in Log Scale					1.045
1414	95% MLE (t) UCL					0.517	Mean in Original Scale					0.398
1415	95% MLE (Tiku) UCL					0.516	SD in Original Scale					0.305
1416							95% Percentile Bootstrap UCL					0.523
1417							95% BCA Bootstrap UCL					0.526
1418												
1419	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1420	k star (bias corrected)					1.57	Data appear Normal at 5% Significance Level					
1421	Theta Star					0.283						
1422	nu star					47.1						
1423												
1424	A-D Test Statistic					0.436	Nonparametric Statistics					
1425	5% A-D Critical Value					0.748	Kaplan-Meier (KM) Method					
1426	K-S Test Statistic					0.748	Mean					0.4
1427	5% K-S Critical Value					0.225	SD					0.294
1428	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					0.0737	
1429							95% KM (t) UCL					0.529
1430	Assuming Gamma Distribution					95% KM (z) UCL					0.521	
1431	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.528

	A	B	C	D	E	F	G	H	I	J	K	L
1432	Minimum					1E-09	95% KM (bootstrap t) UCL					0.539
1433	Maximum					1.1	95% KM (BCA) UCL					0.525
1434	Mean					0.393	95% KM (Percentile Bootstrap) UCL					0.525
1435	Median					0.31	95% KM (Chebyshev) UCL					0.721
1436	SD					0.312	97.5% KM (Chebyshev) UCL					0.86
1437	k star					0.272	99% KM (Chebyshev) UCL					1.134
1438	Theta star					1.446						
1439	Nu star					9.233	Potential UCLs to Use					
1440	AppChi2					3.468	95% KM (t) UCL					0.529
1441	95% Gamma Approximate UCL					1.045	95% KM (Percentile Bootstrap) UCL					0.525
1442	95% Adjusted Gamma UCL					1.167						
1443	Note: DL/2 is not a recommended method.											
1444												
1445												
1446	Phenanthrene											
1447												
1448	General Statistics											
1449	Number of Valid Data					17	Number of Detected Data					16
1450	Number of Distinct Detected Data					15	Number of Non-Detect Data					1
1451							Percent Non-Detects					5.88%
1452												
1453	Raw Statistics						Log-transformed Statistics					
1454	Minimum Detected					0.093	Minimum Detected					-2.375
1455	Maximum Detected					2.775	Maximum Detected					1.021
1456	Mean of Detected					1.098	Mean of Detected					-0.209
1457	SD of Detected					0.789	SD of Detected					0.895
1458	Minimum Non-Detect					0.0037	Minimum Non-Detect					-5.599
1459	Maximum Non-Detect					0.0037	Maximum Non-Detect					-5.599
1460												
1461												
1462	UCL Statistics											
1463	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1464	Shapiro Wilk Test Statistic					0.921	Shapiro Wilk Test Statistic					0.949
1465	5% Shapiro Wilk Critical Value					0.887	5% Shapiro Wilk Critical Value					0.887
1466	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1467												
1468	Assuming Normal Distribution						Assuming Lognormal Distribution					
1469	DL/2 Substitution Method						DL/2 Substitution Method					
1470	Mean					1.034	Mean					-0.567
1471	SD					0.809	SD					1.711
1472	95% DL/2 (t) UCL					1.376	95% H-Stat (DL/2) UCL					7.571
1473												
1474	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1475	Mean					1.01	Mean in Log Scale					-0.335
1476	SD					0.824	SD in Log Scale					1.01
1477	95% MLE (t) UCL					1.359	Mean in Original Scale					1.039
1478	95% MLE (Tiku) UCL					1.353	SD in Original Scale					0.802
1479							95% Percentile Bootstrap UCL					1.374
1480							95% BCA Bootstrap UCL					1.403
1481												
1482	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1483	k star (bias corrected)					1.506	Data appear Normal at 5% Significance Level					
1484	Theta Star					0.729						

	A	B	C	D	E	F	G	H	I	J	K	L
1485	nu star					48.2						
1486												
1487	A-D Test Statistic					0.143	Nonparametric Statistics					
1488	5% A-D Critical Value					0.752	Kaplan-Meier (KM) Method					
1489	K-S Test Statistic					0.752	Mean					1.039
1490	5% K-S Critical Value					0.218	SD					0.778
1491	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.195
1492							95% KM (t) UCL					1.379
1493	Assuming Gamma Distribution						95% KM (z) UCL					1.359
1494	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.374
1495	Minimum					1E-09	95% KM (bootstrap t) UCL					1.459
1496	Maximum					2.775	95% KM (BCA) UCL					1.366
1497	Mean					1.033	95% KM (Percentile Bootstrap) UCL					1.351
1498	Median					0.92	95% KM (Chebyshev) UCL					1.888
1499	SD					0.809	97.5% KM (Chebyshev) UCL					2.256
1500	k star					0.407	99% KM (Chebyshev) UCL					2.978
1501	Theta star					2.54						
1502	Nu star					13.83	Potential UCLs to Use					
1503	AppChi2					6.457	95% KM (t) UCL					1.379
1504	95% Gamma Approximate UCL					2.214	95% KM (Percentile Bootstrap) UCL					1.351
1505	95% Adjusted Gamma UCL					2.409						
1506	Note: DL/2 is not a recommended method.											
1507												
1508												
1509	Thallium											
1510												
1511	General Statistics											
1512	Number of Valid Data					17	Number of Detected Data					5
1513	Number of Distinct Detected Data					5	Number of Non-Detect Data					12
1514							Percent Non-Detects					70.59%
1515												
1516	Raw Statistics						Log-transformed Statistics					
1517	Minimum Detected					0.094	Minimum Detected					-2.364
1518	Maximum Detected					0.96	Maximum Detected					-0.0408
1519	Mean of Detected					0.381	Mean of Detected					-1.297
1520	SD of Detected					0.351	SD of Detected					0.913
1521	Minimum Non-Detect					0.36	Minimum Non-Detect					-1.022
1522	Maximum Non-Detect					0.57	Maximum Non-Detect					-0.562
1523												
1524	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					16
1525	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
1526	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					94.12%
1527												
1528	Warning: There are only 5 Detected Values in this data											
1529	Note: It should be noted that even though bootstrap may be performed on this data set											
1530	the resulting calculations may not be reliable enough to draw conclusions											
1531												
1532	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1533												
1534												
1535	UCL Statistics											
1536	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1537	Shapiro Wilk Test Statistic					0.852	Shapiro Wilk Test Statistic					0.982

	A	B	C	D	E	F	G	H	I	J	K	L
1538	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762
1539	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1540												
1541	Assuming Normal Distribution						Assuming Lognormal Distribution					
1542	DL/2 Substitution Method						DL/2 Substitution Method					
1543	Mean				0.276		Mean				-1.42	
1544	SD				0.191		SD				0.483	
1545	95% DL/2 (t) UCL				0.357		95% H-Stat (DL/2) UCL				0.402	
1546												
1547	Maximum Likelihood Estimate(MLE) Method				N/A		Log ROS Method					
1548	MLE method failed to converge properly						Mean in Log Scale				-1.675	
1549							SD in Log Scale				0.559	
1550							Mean in Original Scale				0.228	
1551							SD in Original Scale				0.205	
1552							95% Percentile Bootstrap UCL				0.313	
1553							95% BCA Bootstrap UCL				0.362	
1554												
1555	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1556	k star (bias corrected)				0.795		Data appear Normal at 5% Significance Level					
1557	Theta Star				0.479							
1558	nu star				7.946							
1559												
1560	A-D Test Statistic				0.243		Nonparametric Statistics					
1561	5% A-D Critical Value				0.686		Kaplan-Meier (KM) Method					
1562	K-S Test Statistic				0.686		Mean				0.238	
1563	5% K-S Critical Value				0.361		SD				0.207	
1564	Data appear Gamma Distributed at 5% Significance Level						SE of Mean				0.0667	
1565							95% KM (t) UCL				0.355	
1566	Assuming Gamma Distribution						95% KM (z) UCL				0.348	
1567	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL				0.36	
1568	Minimum				0.094		95% KM (bootstrap t) UCL				0.402	
1569	Maximum				0.96		95% KM (BCA) UCL				0.431	
1570	Mean				0.364		95% KM (Percentile Bootstrap) UCL				0.394	
1571	Median				0.347		95% KM (Chebyshev) UCL				0.529	
1572	SD				0.182		97.5% KM (Chebyshev) UCL				0.655	
1573	k star				4.063		99% KM (Chebyshev) UCL				0.902	
1574	Theta star				0.0896							
1575	Nu star				138.2		Potential UCLs to Use					
1576	AppChi2				112		95% KM (t) UCL				0.355	
1577	95% Gamma Approximate UCL				0.449		95% KM (Percentile Bootstrap) UCL				0.394	
1578	95% Adjusted Gamma UCL				0.459							
1579	Note: DL/2 is not a recommended method.											
1580												
1581												
1582	Vanadium											
1583												
1584	General Statistics											
1585	Number of Valid Data				17		Number of Detected Data				12	
1586	Number of Distinct Detected Data				12		Number of Non-Detect Data				5	
1587							Percent Non-Detects				29.41%	
1588												
1589	Raw Statistics						Log-transformed Statistics					
1590	Minimum Detected				5.8		Minimum Detected				1.758	

	A	B	C	D	E	F	G	H	I	J	K	L
1591	Maximum Detected					34.3	Maximum Detected					3.535
1592	Mean of Detected					18.28	Mean of Detected					2.76
1593	SD of Detected					9.381	SD of Detected					0.597
1594	Minimum Non-Detect					8.9	Minimum Non-Detect					2.186
1595	Maximum Non-Detect					13	Maximum Non-Detect					2.565
1596												
1597	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					9
1598	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					8
1599	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					52.94%
1600												
1601	UCL Statistics											
1602	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
1603	Shapiro Wilk Test Statistic					0.949	Shapiro Wilk Test Statistic					0.924
1604	5% Shapiro Wilk Critical Value					0.859	5% Shapiro Wilk Critical Value					0.859
1605	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
1606												
1607	Assuming Normal Distribution					Assuming Lognormal Distribution						
1608	DL/2 Substitution Method						DL/2 Substitution Method					
1609	Mean					14.55	Mean					2.452
1610	SD					9.807	SD					0.702
1611	95% DL/2 (t) UCL					18.7	95% H-Stat (DL/2) UCL					18.53
1612												
1613	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1614	Mean					12.58	Mean in Log Scale					2.529
1615	SD					12.36	SD in Log Scale					0.623
1616	95% MLE (t) UCL					17.81	Mean in Original Scale					15.04
1617	95% MLE (Tiku) UCL					19.23	SD in Original Scale					9.358
1618							95% Percentile Bootstrap UCL					18.67
1619							95% BCA Bootstrap UCL					19.33
1620												
1621	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1622	k star (bias corrected)					2.75	Data appear Normal at 5% Significance Level					
1623	Theta Star					6.649						
1624	nu star					66						
1625												
1626	A-D Test Statistic					0.3	Nonparametric Statistics					
1627	5% A-D Critical Value					0.737	Kaplan-Meier (KM) Method					
1628	K-S Test Statistic					0.737	Mean					14.93
1629	5% K-S Critical Value					0.247	SD					9.211
1630	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					2.353
1631							95% KM (t) UCL					19.04
1632	Assuming Gamma Distribution						95% KM (z) UCL					18.8
1633	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					19
1634	Minimum					5.8	95% KM (bootstrap t) UCL					19.55
1635	Maximum					34.3	95% KM (BCA) UCL					19.24
1636	Mean					16.91	95% KM (Percentile Bootstrap) UCL					18.86
1637	Median					15.45	95% KM (Chebyshev) UCL					25.18
1638	SD					8.259	97.5% KM (Chebyshev) UCL					29.62
1639	k star					3.618	99% KM (Chebyshev) UCL					38.34
1640	Theta star					4.672						
1641	Nu star					123	Potential UCLs to Use					
1642	AppChi2					98.41	95% KM (t) UCL					19.04
1643	95% Gamma Approximate UCL					21.13	95% KM (Percentile Bootstrap) UCL					18.86

	A	B	C	D	E	F	G	H	I	J	K	L
1644	95% Adjusted Gamma UCL					21.64						
1645	Note: DL/2 is not a recommended method.											
1646												

Soil to Outdoor Air

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2	User Selected Options											
3	From File			C:\aa_Projects\Peterson\Unnamed Island\UCLs\soil to air conc_Crosstab.xls.wst								
4	Full Precision			OFF								
5	Confidence Coefficient			95%								
6	Number of Bootstrap Operations			2000								
7												
8												
9	1,1'-Biphenyl											
10												
11	General Statistics											
12	Number of Valid Data				53		Number of Detected Data				10	
13	Number of Distinct Detected Data				10		Number of Non-Detect Data				43	
14							Percent Non-Detects				81.13%	
15												
16	Raw Statistics					Log-transformed Statistics						
17	Minimum Detected				0.027		Minimum Detected				-3.612	
18	Maximum Detected				0.34		Maximum Detected				-1.079	
19	Mean of Detected				0.142		Mean of Detected				-2.3	
20	SD of Detected				0.119		SD of Detected				0.909	
21	Minimum Non-Detect				0.138		Minimum Non-Detect				-1.981	
22	Maximum Non-Detect				2.49		Maximum Non-Detect				0.912	
23												
24	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				53	
25	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				0	
26	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				100.00%	
27												
28	UCL Statistics											
29	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
30	Shapiro Wilk Test Statistic				0.842		Shapiro Wilk Test Statistic				0.943	
31	5% Shapiro Wilk Critical Value				0.842		5% Shapiro Wilk Critical Value				0.842	
32	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
33												
34	Assuming Normal Distribution					Assuming Lognormal Distribution						
35	DL/2 Substitution Method						DL/2 Substitution Method					
36	Mean				0.175		Mean				-2.033	
37	SD				0.193		SD				0.699	
38	95% DL/2 (t) UCL				0.219		95% H-Stat (DL/2) UCL				0.222	
39												
40	Maximum Likelihood Estimate(MLE) Method				N/A		Log ROS Method					
41	MLE method failed to converge properly					Mean in Log Scale				-2.642		
42							SD in Log Scale				0.49	
43							Mean in Original Scale				0.0826	
44							SD in Original Scale				0.0608	
45							95% Percentile Bootstrap UCL				0.0977	
46							95% BCA Bootstrap UCL				0.103	
47												
48	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
49	k star (bias corrected)				1.177		Data appear Normal at 5% Significance Level					
50	Theta Star				0.121							
51	nu star				23.54							
52												
53	A-D Test Statistic				0.316		Nonparametric Statistics					

	A	B	C	D	E	F	G	H	I	J	K	L
54	5% A-D Critical Value					0.739	Kaplan-Meier (KM) Method					
55	K-S Test Statistic					0.739	Mean					0.0937
56	5% K-S Critical Value					0.271	SD					0.0785
57	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0188
58							95% KM (t) UCL					0.125
59	Assuming Gamma Distribution						95% KM (z) UCL					0.125
60	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.126
61	Minimum					0.027	95% KM (bootstrap t) UCL					0.13
62	Maximum					0.34	95% KM (BCA) UCL					0.126
63	Mean					0.149	95% KM (Percentile Bootstrap) UCL					0.126
64	Median					0.144	95% KM (Chebyshev) UCL					0.175
65	SD					0.0626	97.5% KM (Chebyshev) UCL					0.211
66	k star					4.826	99% KM (Chebyshev) UCL					0.28
67	Theta star					0.0309						
68	Nu star					511.5	Potential UCLs to Use					
69	AppChi2					460.1	95% KM (t) UCL					0.125
70	95% Gamma Approximate UCL					0.166	95% KM (Percentile Bootstrap) UCL					0.126
71	95% Adjusted Gamma UCL					0.166						
72	Note: DL/2 is not a recommended method.											
73												
74												
75	1,1-Dichloroethene											
76												
77	General Statistics											
78	Number of Valid Data					53	Number of Detected Data					1
79	Number of Distinct Detected Data					1	Number of Non-Detect Data					52
80							Percent Non-Detects					98.11%
81												
82	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
83	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
84												
85	The data set for variable 1,1-Dichloroethene was not processed!											
86												
87												
88												
89	1,4-Dichlorobenzene											
90												
91	General Statistics											
92	Number of Valid Data					53	Number of Detected Data					5
93	Number of Distinct Detected Data					5	Number of Non-Detect Data					48
94							Percent Non-Detects					90.57%
95												
96	Raw Statistics						Log-transformed Statistics					
97	Minimum Detected					0.00125	Minimum Detected					-6.685
98	Maximum Detected					1.25	Maximum Detected					0.223
99	Mean of Detected					0.268	Mean of Detected					-3.893
100	SD of Detected					0.55	SD of Detected					2.766
101	Minimum Non-Detect					0.00154	Minimum Non-Detect					-6.476
102	Maximum Non-Detect					0.29	Maximum Non-Detect					-1.238
103												
104	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					52
105	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
106	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					98.11%

	A	B	C	D	E	F	G	H	I	J	K	L		
107														
108	Warning: There are only 5 Detected Values in this data													
109	Note: It should be noted that even though bootstrap may be performed on this data set													
110	the resulting calculations may not be reliable enough to draw conclusions													
111														
112	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.													
113														
114														
115	UCL Statistics													
116	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only							
117	Shapiro Wilk Test Statistic						0.594	Shapiro Wilk Test Statistic						0.941
118	5% Shapiro Wilk Critical Value						0.762	5% Shapiro Wilk Critical Value						0.762
119	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level							
120														
121	Assuming Normal Distribution						Assuming Lognormal Distribution							
122	DL/2 Substitution Method							DL/2 Substitution Method						
123	Mean						0.0329	Mean						-5.682
124	SD						0.172	SD						1.417
125	95% DL/2 (t) UCL						0.0726	95% H-Stat (DL/2) UCL						0.0165
126														
127	Maximum Likelihood Estimate(MLE) Method						N/A	Log ROS Method						
128	MLE method failed to converge properly							Mean in Log Scale						-7.269
129								SD in Log Scale						1.592
130								Mean in Original Scale						0.0259
131								SD in Original Scale						0.172
132								95% Percentile Bootstrap UCL						0.0723
133								95% BCA Bootstrap UCL						0.0982
134														
135	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only							
136	k star (bias corrected)						0.242	Data appear Gamma Distributed at 5% Significance Level						
137	Theta Star						1.106							
138	nu star						2.421							
139														
140	A-D Test Statistic						0.495	Nonparametric Statistics						
141	5% A-D Critical Value						0.749	Kaplan-Meier (KM) Method						
142	K-S Test Statistic						0.749	Mean						0.0265
143	5% K-S Critical Value						0.382	SD						0.17
144	Data appear Gamma Distributed at 5% Significance Level						SE of Mean						0.0261	
145								95% KM (t) UCL						0.0703
146	Assuming Gamma Distribution							95% KM (z) UCL						0.0695
147	Gamma ROS Statistics using Extrapolated Data							95% KM (jackknife) UCL						0.0646
148	Minimum						1E-09	95% KM (bootstrap t) UCL						1.777
149	Maximum						1.25	95% KM (BCA) UCL						0.164
150	Mean						0.24	95% KM (Percentile Bootstrap) UCL						0.0814
151	Median						0.268	95% KM (Chebyshev) UCL						0.14
152	SD						0.22	97.5% KM (Chebyshev) UCL						0.19
153	k star						0.184	99% KM (Chebyshev) UCL						0.286
154	Theta star						1.304							
155	Nu star						19.5	Potential UCLs to Use						
156	AppChi2						10.48	95% KM (t) UCL						0.0703
157	95% Gamma Approximate UCL						0.446							
158	95% Adjusted Gamma UCL						0.454							
159	Note: DL/2 is not a recommended method.													

	A	B	C	D	E	F	G	H	I	J	K	L	
160													
161													
162	2-Methylnaphthalene												
163													
164	General Statistics												
165	Number of Valid Data					53	Number of Detected Data					36	
166	Number of Distinct Detected Data					33	Number of Non-Detect Data					17	
167							Percent Non-Detects					32.08%	
168													
169	Raw Statistics					Log-transformed Statistics							
170	Minimum Detected					0.00308	Minimum Detected					-5.783	
171	Maximum Detected					2.78	Maximum Detected					1.022	
172	Mean of Detected					0.257	Mean of Detected					-2.325	
173	SD of Detected					0.49	SD of Detected					1.485	
174	Minimum Non-Detect					0.00788	Minimum Non-Detect					-4.843	
175	Maximum Non-Detect					0.4	Maximum Non-Detect					-0.916	
176													
177	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				47		
178	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				6		
179	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				88.68%		
180													
181	UCL Statistics												
182	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
183	Shapiro Wilk Test Statistic					0.495	Shapiro Wilk Test Statistic					0.968	
184	5% Shapiro Wilk Critical Value					0.935	5% Shapiro Wilk Critical Value					0.935	
185	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
186													
187	Assuming Normal Distribution					Assuming Lognormal Distribution							
188	DL/2 Substitution Method						DL/2 Substitution Method						
189	Mean					0.227	Mean					-2.266	
190	SD					0.406	SD					1.407	
191	95% DL/2 (t) UCL					0.32	95% H-Stat (DL/2) UCL					0.77	
192													
193	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
194	MLE yields a negative mean					Mean in Log Scale							-2.572
195							SD in Log Scale					1.366	
196							Mean in Original Scale					0.195	
197							SD in Original Scale					0.413	
198							95% Percentile Bootstrap UCL					0.299	
199							95% BCA Bootstrap UCL					0.357	
200													
201	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
202	k star (bias corrected)					0.6	Data appear Lognormal at 5% Significance Level						
203	Theta Star					0.428							
204	nu star					43.19							
205													
206	A-D Test Statistic					1.044	Nonparametric Statistics						
207	5% A-D Critical Value					0.799	Kaplan-Meier (KM) Method						
208	K-S Test Statistic					0.799	Mean					0.2	
209	5% K-S Critical Value					0.154	SD					0.409	
210	Data not Gamma Distributed at 5% Significance Level					SE of Mean					0.0573		
211							95% KM (t) UCL					0.296	
212	Assuming Gamma Distribution					95% KM (z) UCL					0.294		

	A	B	C	D	E	F	G	H	I	J	K	L
213	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.296
214	Minimum					0.00308	95% KM (bootstrap t) UCL					0.409
215	Maximum					2.78	95% KM (BCA) UCL					0.299
216	Mean					0.256	95% KM (Percentile Bootstrap) UCL					0.304
217	Median					0.18	95% KM (Chebyshev) UCL					0.45
218	SD					0.402	97.5% KM (Chebyshev) UCL					0.558
219	k star					0.853	99% KM (Chebyshev) UCL					0.77
220	Theta star					0.3						
221	Nu star					90.45	Potential UCLs to Use					
222	AppChi2					69.52	95% KM (Chebyshev) UCL					0.45
223	95% Gamma Approximate UCL					0.333						
224	95% Adjusted Gamma UCL					0.335						
225	Note: DL/2 is not a recommended method.											
226												
227												
228	Acenaphthene											
229												
230	General Statistics											
231	Number of Valid Data					53	Number of Detected Data					35
232	Number of Distinct Detected Data					35	Number of Non-Detect Data					18
233							Percent Non-Detects					33.96%
234												
235	Raw Statistics						Log-transformed Statistics					
236	Minimum Detected					0.00715	Minimum Detected					-4.941
237	Maximum Detected					2.01	Maximum Detected					0.698
238	Mean of Detected					0.265	Mean of Detected					-2.183
239	SD of Detected					0.413	SD of Detected					1.371
240	Minimum Non-Detect					0.00387	Minimum Non-Detect					-5.555
241	Maximum Non-Detect					0.41	Maximum Non-Detect					-0.892
242												
243	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					48
244	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					5
245	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					90.57%
246												
247	UCL Statistics											
248	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
249	Shapiro Wilk Test Statistic					0.615	Shapiro Wilk Test Statistic					0.978
250	5% Shapiro Wilk Critical Value					0.934	5% Shapiro Wilk Critical Value					0.934
251	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
252												
253	Assuming Normal Distribution						Assuming Lognormal Distribution					
254	DL/2 Substitution Method						DL/2 Substitution Method					
255	Mean					0.227	Mean					-2.245
256	SD					0.34	SD					1.427
257	95% DL/2 (t) UCL					0.306	95% H-Stat (DL/2) UCL					0.691
258												
259	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
260	Mean					1.26	Mean in Log Scale					-2.518
261	SD					0.511	SD in Log Scale					1.352
262	95% MLE (t) UCL					1.378	Mean in Original Scale					0.196
263	95% MLE (Tiku) UCL					1.635	SD in Original Scale					0.349
264							95% Percentile Bootstrap UCL					0.284
265							95% BCA Bootstrap UCL					0.316

	A	B	C	D	E	F	G	H	I	J	K	L
266												
267	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
268	k star (bias corrected)					0.665	Data appear Lognormal at 5% Significance Level					
269	Theta Star					0.398						
270	nu star					46.58						
271												
272	A-D Test Statistic					0.872	Nonparametric Statistics					
273	5% A-D Critical Value					0.792	Kaplan-Meier (KM) Method					
274	K-S Test Statistic					0.792	Mean					0.205
275	5% K-S Critical Value					0.155	SD					0.345
276	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0489
277							95% KM (t) UCL					0.287
278	Assuming Gamma Distribution						95% KM (z) UCL					0.285
279	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.286
280	Minimum					0.00715	95% KM (bootstrap t) UCL					0.337
281	Maximum					2.01	95% KM (BCA) UCL					0.287
282	Mean					0.255	95% KM (Percentile Bootstrap) UCL					0.293
283	Median					0.171	95% KM (Chebyshev) UCL					0.418
284	SD					0.337	97.5% KM (Chebyshev) UCL					0.51
285	k star					0.948	99% KM (Chebyshev) UCL					0.691
286	Theta star					0.269						
287	Nu star					100.5	Potential UCLs to Use					
288	AppChi2					78.34	95% KM (Chebyshev) UCL					0.418
289	95% Gamma Approximate UCL					0.327						
290	95% Adjusted Gamma UCL					0.33						
291	Note: DL/2 is not a recommended method.											
292												
293												
294	Acenaphthylene											
295												
296	General Statistics											
297	Number of Valid Data					53	Number of Detected Data					41
298	Number of Distinct Detected Data					39	Number of Non-Detect Data					12
299							Percent Non-Detects					22.64%
300												
301	Raw Statistics						Log-transformed Statistics					
302	Minimum Detected					0.00208	Minimum Detected					-6.175
303	Maximum Detected					1.14	Maximum Detected					0.131
304	Mean of Detected					0.209	Mean of Detected					-2.26
305	SD of Detected					0.253	SD of Detected					1.355
306	Minimum Non-Detect					0.00428	Minimum Non-Detect					-5.454
307	Maximum Non-Detect					0.4	Maximum Non-Detect					-0.916
308												
309	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					47
310	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					6
311	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					88.68%
312												
313	UCL Statistics											
314	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
315	Shapiro Wilk Test Statistic					0.732	Shapiro Wilk Test Statistic					0.939
316	5% Shapiro Wilk Critical Value					0.941	5% Shapiro Wilk Critical Value					0.941
317	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
318												

	A	B	C	D	E	F	G	H	I	J	K	L	
319	Assuming Normal Distribution						Assuming Lognormal Distribution						
320	DL/2 Substitution Method						DL/2 Substitution Method						
321	Mean					0.193	Mean					-2.36	
322	SD					0.227	SD					1.466	
323	95% DL/2 (t) UCL					0.245	95% H-Stat (DL/2) UCL					0.61	
324													
325	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
326	MLE yields a negative mean						Mean in Log Scale					-2.486	
327							SD in Log Scale					1.334	
328							Mean in Original Scale					0.173	
329							SD in Original Scale					0.232	
330							95% Percentile Bootstrap UCL					0.228	
331							95% BCA Bootstrap UCL					0.237	
332													
333	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only						
334	k star (bias corrected)					0.803	Data do not follow a Discernable Distribution (0.05)						
335	Theta Star					0.26							
336	nu star					65.83							
337													
338	A-D Test Statistic					0.788	Nonparametric Statistics						
339	5% A-D Critical Value					0.785	Kaplan-Meier (KM) Method						
340	K-S Test Statistic					0.785	Mean					0.179	
341	5% K-S Critical Value					0.143	SD					0.231	
342	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0326	
343							95% KM (t) UCL					0.233	
344	Assuming Gamma Distribution						95% KM (z) UCL					0.232	
345	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.233	
346	Minimum					0.00208	95% KM (bootstrap t) UCL					0.251	
347	Maximum					1.14	95% KM (BCA) UCL					0.236	
348	Mean					0.201	95% KM (Percentile Bootstrap) UCL					0.233	
349	Median					0.11	95% KM (Chebyshev) UCL					0.321	
350	SD					0.225	97.5% KM (Chebyshev) UCL					0.382	
351	k star					0.978	99% KM (Chebyshev) UCL					0.503	
352	Theta star					0.205							
353	Nu star					103.6	Potential UCLs to Use						
354	AppChi2					81.13	95% KM (Chebyshev) UCL					0.321	
355	95% Gamma Approximate UCL					0.256							
356	95% Adjusted Gamma UCL					0.258							
357	Note: DL/2 is not a recommended method.												
358													
359													
360	Acetophenone												
361													
362	General Statistics												
363	Number of Valid Data					53	Number of Detected Data					6	
364	Number of Distinct Detected Data					6	Number of Non-Detect Data					47	
365							Percent Non-Detects					88.68%	
366													
367	Raw Statistics						Log-transformed Statistics						
368	Minimum Detected					0.053	Minimum Detected					-2.937	
369	Maximum Detected					0.86	Maximum Detected					-0.151	
370	Mean of Detected					0.229	Mean of Detected					-1.993	
371	SD of Detected					0.312	SD of Detected					0.991	

	A	B	C	D	E	F	G	H	I	J	K	L
372	Minimum Non-Detect					0.138	Minimum Non-Detect					-1.981
373	Maximum Non-Detect					2.49	Maximum Non-Detect					0.912
374												
375	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53
376	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
377	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
378												
379	Warning: There are only 6 Detected Values in this data											
380	Note: It should be noted that even though bootstrap may be performed on this data set											
381	the resulting calculations may not be reliable enough to draw conclusions											
382												
383	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
384												
385												
386	UCL Statistics											
387	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
388	Shapiro Wilk Test Statistic					0.62	Shapiro Wilk Test Statistic					0.846
389	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788
390	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
391												
392	Assuming Normal Distribution						Assuming Lognormal Distribution					
393	DL/2 Substitution Method						DL/2 Substitution Method					
394	Mean					0.189	Mean					-1.942
395	SD					0.21	SD					0.652
396	95% DL/2 (t) UCL					0.238	95% H-Stat (DL/2) UCL					0.247
397												
398	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
399	MLE method failed to converge properly						Mean in Log Scale					-2.424
400							SD in Log Scale					0.43
401							Mean in Original Scale					0.103
402							SD in Original Scale					0.11
403							95% Percentile Bootstrap UCL					0.131
404							95% BCA Bootstrap UCL					0.152
405												
406	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
407	k star (bias corrected)					0.661	Data Follow Appr. Gamma Distribution at 5% Significance Level					
408	Theta Star					0.347						
409	nu star					7.931						
410												
411	A-D Test Statistic					0.791	Nonparametric Statistics					
412	5% A-D Critical Value					0.714	Kaplan-Meier (KM) Method					
413	K-S Test Statistic					0.714	Mean					0.102
414	5% K-S Critical Value					0.34	SD					0.112
415	Data follow Appr. Gamma Distribution at 5% Significance Level						SE of Mean					0.0199
416							95% KM (t) UCL					0.135
417	Assuming Gamma Distribution						95% KM (z) UCL					0.135
418	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.135
419	Minimum					0.053	95% KM (bootstrap t) UCL					0.161
420	Maximum					0.86	95% KM (BCA) UCL					0.139
421	Mean					0.229	95% KM (Percentile Bootstrap) UCL					0.139
422	Median					0.229	95% KM (Chebyshev) UCL					0.189
423	SD					0.0969	97.5% KM (Chebyshev) UCL					0.226
424	k star					8.19	99% KM (Chebyshev) UCL					0.3

	A	B	C	D	E	F	G	H	I	J	K	L
425	Theta star					0.028						
426	Nu star					868.2	Potential UCLs to Use					
427	AppChi2					800.8	95% KM (t) UCL					0.135
428	95% Gamma Approximate UCL					0.248						
429	95% Adjusted Gamma UCL					0.249						
430	Note: DL/2 is not a recommended method.											
431												
432												
433	Benzaldehyde											
434												
435	General Statistics											
436	Number of Valid Data					47	Number of Detected Data					25
437	Number of Distinct Detected Data					22	Number of Non-Detect Data					22
438							Percent Non-Detects					46.81%
439												
440	Raw Statistics						Log-transformed Statistics					
441	Minimum Detected					0.021	Minimum Detected					-3.863
442	Maximum Detected					0.33	Maximum Detected					-1.109
443	Mean of Detected					0.159	Mean of Detected					-1.949
444	SD of Detected					0.0632	SD of Detected					0.559
445	Minimum Non-Detect					0.138	Minimum Non-Detect					-1.981
446	Maximum Non-Detect					2.49	Maximum Non-Detect					0.912
447												
448	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					47
449	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
450	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
451												
452	UCL Statistics											
453	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
454	Shapiro Wilk Test Statistic					0.948	Shapiro Wilk Test Statistic					0.804
455	5% Shapiro Wilk Critical Value					0.918	5% Shapiro Wilk Critical Value					0.918
456	Data appear Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
457												
458	Assuming Normal Distribution						Assuming Lognormal Distribution					
459	DL/2 Substitution Method						DL/2 Substitution Method					
460	Mean					0.203	Mean					-1.828
461	SD					0.194	SD					0.651
462	95% DL/2 (t) UCL					0.25	95% H-Stat (DL/2) UCL					0.306
463												
464	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
465	MLE method failed to converge properly						Mean in Log Scale					-2.036
466							SD in Log Scale					0.441
467							Mean in Original Scale					0.141
468							SD in Original Scale					0.0529
469							95% Percentile Bootstrap UCL					0.155
470							95% BCA Bootstrap UCL					0.156
471												
472	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
473	k star (bias corrected)					4.104	Data appear Normal at 5% Significance Level					
474	Theta Star					0.0388						
475	nu star					205.2						
476												
477	A-D Test Statistic					1.249	Nonparametric Statistics					

	A	B	C	D	E	F	G	H	I	J	K	L
478	5% A-D Critical Value					0.748	Kaplan-Meier (KM) Method					
479	K-S Test Statistic					0.748	Mean					0.149
480	5% K-S Critical Value					0.175	SD					0.0631
481	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0123
482							95% KM (t) UCL					0.169
483	Assuming Gamma Distribution						95% KM (z) UCL					0.169
484	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.17
485	Minimum					0.021	95% KM (bootstrap t) UCL					0.169
486	Maximum					0.33	95% KM (BCA) UCL					0.168
487	Mean					0.166	95% KM (Percentile Bootstrap) UCL					0.168
488	Median					0.17	95% KM (Chebyshev) UCL					0.202
489	SD					0.0513	97.5% KM (Chebyshev) UCL					0.226
490	k star					6.922	99% KM (Chebyshev) UCL					0.271
491	Theta star					0.0239						
492	Nu star					650.7	Potential UCLs to Use					
493	AppChi2					592.5	95% KM (t) UCL					0.169
494	95% Gamma Approximate UCL					0.182	95% KM (Percentile Bootstrap) UCL					0.168
495	95% Adjusted Gamma UCL					0.182						
496	Note: DL/2 is not a recommended method.											
497												
498												
499	Benzene											
500												
501	General Statistics											
502	Number of Valid Data					53	Number of Detected Data					3
503	Number of Distinct Detected Data					3	Number of Non-Detect Data					50
504							Percent Non-Detects					94.34%
505												
506	Raw Statistics						Log-transformed Statistics					
507	Minimum Detected					0.002	Minimum Detected					-6.215
508	Maximum Detected					0.0135	Maximum Detected					-4.305
509	Mean of Detected					0.0095	Mean of Detected					-4.954
510	SD of Detected					0.0065	SD of Detected					1.092
511	Minimum Non-Detect					0.00154	Minimum Non-Detect					-6.476
512	Maximum Non-Detect					0.29	Maximum Non-Detect					-1.238
513												
514	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53
515	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
516	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
517												
518	Warning: There are only 3 Distinct Detected Values in this data set											
519	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
520	Those methods will return a 'N/A' value on your output display!											
521												
522	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
523	However, results obtained using 4 to 9 distinct values may not be reliable.											
524	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
525												
526												
527	UCL Statistics											
528	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
529	Shapiro Wilk Test Statistic					0.783	Shapiro Wilk Test Statistic					0.765
530	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767

	A	B	C	D	E	F	G	H	I	J	K	L
531	Data appear Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
532												
533	Assuming Normal Distribution						Assuming Lognormal Distribution					
534	DL/2 Substitution Method						DL/2 Substitution Method					
535	Mean				0.00829		Mean				-5.822	
536	SD				0.0248		SD				1.094	
537	95% DL/2 (t) UCL				0.014		95% H-Stat (DL/2) UCL				0.00848	
538												
539	Maximum Likelihood Estimate(MLE) Method				N/A		Log ROS Method					
540	MLE method failed to converge properly						Mean in Log Scale				-8.377	
541							SD in Log Scale				1.129	
542							Mean in Original Scale				0.0007712	
543							SD in Original Scale				0.00252	
544							95% Percentile Bootstrap UCL				0.00146	
545							95% BCA Bootstrap UCL				0.00175	
546												
547	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
548	k star (bias corrected)				N/A		Data appear Normal at 5% Significance Level					
549	Theta Star				N/A							
550	nu star				N/A							
551												
552	A-D Test Statistic				N/A		Nonparametric Statistics					
553	5% A-D Critical Value				N/A		Kaplan-Meier (KM) Method					
554	K-S Test Statistic				N/A		Mean				0.00246	
555	5% K-S Critical Value				N/A		SD				0.00223	
556	Data not Gamma Distributed at 5% Significance Level						SE of Mean				0.0003896	
557							95% KM (t) UCL				0.00311	
558	Assuming Gamma Distribution						95% KM (z) UCL				0.0031	
559	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL				0.00946	
560	Minimum				N/A		95% KM (bootstrap t) UCL				0.0028	
561	Maximum				N/A		95% KM (BCA) UCL				N/A	
562	Mean				N/A		95% KM (Percentile Bootstrap) UCL				N/A	
563	Median				N/A		95% KM (Chebyshev) UCL				0.00416	
564	SD				N/A		97.5% KM (Chebyshev) UCL				0.00489	
565	k star				N/A		99% KM (Chebyshev) UCL				0.00634	
566	Theta star				N/A							
567	Nu star				N/A		Potential UCLs to Use					
568	AppChi2				N/A		95% KM (t) UCL				0.00311	
569	95% Gamma Approximate UCL				N/A		95% KM (Percentile Bootstrap) UCL				N/A	
570	95% Adjusted Gamma UCL				N/A							
571	Note: DL/2 is not a recommended method.											
572												
573												
574	Carbon disulfide											
575												
576	General Statistics											
577	Number of Valid Data				53		Number of Detected Data				6	
578	Number of Distinct Detected Data				6		Number of Non-Detect Data				47	
579							Percent Non-Detects				88.68%	
580												
581	Raw Statistics						Log-transformed Statistics					
582	Minimum Detected				0.00124		Minimum Detected				-6.693	
583	Maximum Detected				0.05		Maximum Detected				-2.996	

	A	B	C	D	E	F	G	H	I	J	K	L
584	Mean of Detected					0.0161	Mean of Detected					-4.89
585	SD of Detected					0.0191	SD of Detected					1.475
586	Minimum Non-Detect					0.00156	Minimum Non-Detect					-6.463
587	Maximum Non-Detect					0.29	Maximum Non-Detect					-1.238
588												
589	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53
590	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
591	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
592												
593	Warning: There are only 6 Detected Values in this data											
594	Note: It should be noted that even though bootstrap may be performed on this data set											
595	the resulting calculations may not be reliable enough to draw conclusions											
596												
597	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
598												
599												
600	UCL Statistics											
601	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
602	Shapiro Wilk Test Statistic					0.833	Shapiro Wilk Test Statistic					0.947
603	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788
604	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
605												
606	Assuming Normal Distribution					Assuming Lognormal Distribution						
607	DL/2 Substitution Method						DL/2 Substitution Method					
608	Mean					0.00951	Mean					-5.715
609	SD					0.0256	SD					1.163
610	95% DL/2 (t) UCL					0.0154	95% H-Stat (DL/2) UCL					0.00954
611												
612	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
613	MLE method failed to converge properly						Mean in Log Scale					-6.617
614							SD in Log Scale					0.932
615							Mean in Original Scale					0.00293
616							SD in Original Scale					0.00762
617							95% Percentile Bootstrap UCL					0.00481
618							95% BCA Bootstrap UCL					0.00579
619												
620	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
621	k star (bias corrected)					0.502	Data appear Normal at 5% Significance Level					
622	Theta Star					0.0321						
623	nu star					6.019						
624												
625	A-D Test Statistic					0.253	Nonparametric Statistics					
626	5% A-D Critical Value					0.72	Kaplan-Meier (KM) Method					
627	K-S Test Statistic					0.72	Mean					0.0032
628	5% K-S Critical Value					0.343	SD					0.00764
629	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.00119
630							95% KM (t) UCL					0.00519
631	Assuming Gamma Distribution						95% KM (z) UCL					0.00515
632	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00483
633	Minimum					0.00124	95% KM (bootstrap t) UCL					0.00706
634	Maximum					0.05	95% KM (BCA) UCL					0.0268
635	Mean					0.0161	95% KM (Percentile Bootstrap) UCL					0.0088
636	Median					0.0159	95% KM (Chebyshev) UCL					0.00837

	A	B	C	D	E	F	G	H	I	J	K	L
637	SD					0.00607	97.5% KM (Chebyshev) UCL					0.0106
638	k star					5.425	99% KM (Chebyshev) UCL					0.015
639	Theta star					0.00298						
640	Nu star					575.1	Potential UCLs to Use					
641	AppChi2					520.4	95% KM (t) UCL					0.00519
642	95% Gamma Approximate UCL					0.0178	95% KM (Percentile Bootstrap) UCL					0.0088
643	95% Adjusted Gamma UCL					0.0179						
644	Note: DL/2 is not a recommended method.											
645												
646												
647	Carbon tetrachloride											
648												
649	General Statistics											
650	Number of Valid Data					53	Number of Detected Data					3
651	Number of Distinct Detected Data					3	Number of Non-Detect Data					50
652							Percent Non-Detects					94.34%
653												
654	Raw Statistics						Log-transformed Statistics					
655	Minimum Detected					0.00144	Minimum Detected					-6.543
656	Maximum Detected					0.00602	Maximum Detected					-5.113
657	Mean of Detected					0.00382	Mean of Detected					-5.726
658	SD of Detected					0.0023	SD of Detected					0.737
659	Minimum Non-Detect					0.00154	Minimum Non-Detect					-6.476
660	Maximum Non-Detect					0.29	Maximum Non-Detect					-1.238
661												
662	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53
663	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
664	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
665												
666	Warning: There are only 3 Distinct Detected Values in this data set											
667	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
668	Those methods will return a 'N/A' value on your output display!											
669												
670	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
671	However, results obtained using 4 to 9 distinct values may not be reliable.											
672	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
673												
674												
675	UCL Statistics											
676	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
677	Shapiro Wilk Test Statistic					0.995	Shapiro Wilk Test Statistic					0.942
678	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767
679	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
680												
681	Assuming Normal Distribution						Assuming Lognormal Distribution					
682	DL/2 Substitution Method						DL/2 Substitution Method					
683	Mean					0.00798	Mean					-5.86
684	SD					0.0248	SD					1.058
685	95% DL/2 (t) UCL					0.0137	95% H-Stat (DL/2) UCL					0.00797
686												
687	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
688	MLE method failed to converge properly						Mean in Log Scale					-6.48
689							SD in Log Scale					0.34

	A	B	C	D	E	F	G	H	I	J	K	L	
690						Mean in Original Scale						0.00164	
691							SD in Original Scale						0.0008055
692							95% Percentile Bootstrap UCL						0.00185
693							95% BCA Bootstrap UCL						0.00189
694													
695	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
696	k star (bias corrected)					N/A	Data appear Normal at 5% Significance Level						
697	Theta Star					N/A							
698	nu star					N/A							
699													
700	A-D Test Statistic					N/A	Nonparametric Statistics						
701	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method						
702	K-S Test Statistic					N/A	Mean					0.0017	
703	5% K-S Critical Value					N/A	SD					0.0009542	
704	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0002205	
705							95% KM (t) UCL					0.00207	
706	Assuming Gamma Distribution						95% KM (z) UCL					0.00206	
707	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00329	
708	Minimum					N/A	95% KM (bootstrap t) UCL					0.00186	
709	Maximum					N/A	95% KM (BCA) UCL					N/A	
710	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.00602	
711	Median					N/A	95% KM (Chebyshev) UCL					0.00266	
712	SD					N/A	97.5% KM (Chebyshev) UCL					0.00307	
713	k star					N/A	99% KM (Chebyshev) UCL					0.00389	
714	Theta star					N/A							
715	Nu star					N/A	Potential UCLs to Use						
716	AppChi2					N/A	95% KM (t) UCL					0.00207	
717	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					0.00602	
718	95% Adjusted Gamma UCL					N/A							
719	Note: DL/2 is not a recommended method.												
720													
721													
722	Chlorobenzene												
723													
724	General Statistics												
725	Number of Valid Data					53	Number of Detected Data					5	
726	Number of Distinct Detected Data					5	Number of Non-Detect Data					48	
727							Percent Non-Detects					90.57%	
728													
729	Raw Statistics					Log-transformed Statistics							
730	Minimum Detected					0.003	Minimum Detected					-5.809	
731	Maximum Detected					0.127	Maximum Detected					-2.064	
732	Mean of Detected					0.0301	Mean of Detected					-4.586	
733	SD of Detected					0.0542	SD of Detected					1.464	
734	Minimum Non-Detect					0.00154	Minimum Non-Detect					-6.476	
735	Maximum Non-Detect					0.29	Maximum Non-Detect					-1.238	
736													
737	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				53		
738	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				0		
739	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				100.00%		
740													
741	Warning: There are only 5 Detected Values in this data												
742	Note: It should be noted that even though bootstrap may be performed on this data set												

	A	B	C	D	E	F	G	H	I	J	K	L
743	the resulting calculations may not be reliable enough to draw conclusions											
744												
745	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
746												
747												
748	UCL Statistics											
749	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
750	Shapiro Wilk Test Statistic					0.59	Shapiro Wilk Test Statistic					0.803
751	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762
752	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
753												
754	Assuming Normal Distribution					Assuming Lognormal Distribution						
755	DL/2 Substitution Method						DL/2 Substitution Method					
756	Mean					0.0105	Mean					-5.748
757	SD					0.0297	SD					1.178
758	95% DL/2 (t) UCL					0.0173	95% H-Stat (DL/2) UCL					0.0101
759												
760	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
761	MLE method failed to converge properly						Mean in Log Scale					-8.904
762							SD in Log Scale					1.788
763							Mean in Original Scale					0.00299
764							SD in Original Scale					0.0174
765							95% Percentile Bootstrap UCL					0.00771
766							95% BCA Bootstrap UCL					0.0105
767												
768	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
769	k star (bias corrected)					0.363	Data appear Lognormal at 5% Significance Level					
770	Theta Star					0.0828						
771	nu star					3.632						
772												
773	A-D Test Statistic					0.862	Nonparametric Statistics					
774	5% A-D Critical Value					0.707	Kaplan-Meier (KM) Method					
775	K-S Test Statistic					0.707	Mean					0.0058
776	5% K-S Critical Value					0.37	SD					0.0172
777	Data not Gamma Distributed at 5% Significance Level					SE of Mean					0.00269	
778							95% KM (t) UCL					0.0103
779	Assuming Gamma Distribution					95% KM (z) UCL					0.0102	
780	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00913
781	Minimum					0.003	95% KM (bootstrap t) UCL					0.0365
782	Maximum					0.127	95% KM (BCA) UCL					0.0169
783	Mean					0.0301	95% KM (Percentile Bootstrap) UCL					0.012
784	Median					0.0301	95% KM (Chebyshev) UCL					0.0175
785	SD					0.015	97.5% KM (Chebyshev) UCL					0.0226
786	k star					4.785	99% KM (Chebyshev) UCL					0.0326
787	Theta star					0.00628						
788	Nu star					507.2	Potential UCLs to Use					
789	AppChi2					456	95% KM (BCA) UCL					0.0169
790	95% Gamma Approximate UCL					0.0334						
791	95% Adjusted Gamma UCL					0.0335						
792	Note: DL/2 is not a recommended method.											
793												
794												
795	Cyclohexane, methyl-											

	A	B	C	D	E	F	G	H	I	J	K	L	
796													
797	General Statistics												
798	Number of Valid Data					53	Number of Detected Data					3	
799	Number of Distinct Detected Data					3	Number of Non-Detect Data					50	
800							Percent Non-Detects					94.34%	
801													
802	Raw Statistics					Log-transformed Statistics							
803	Minimum Detected					0.004	Minimum Detected					-5.521	
804	Maximum Detected					0.229	Maximum Detected					-1.474	
805	Mean of Detected					0.106	Mean of Detected					-3.155	
806	SD of Detected					0.114	SD of Detected					2.109	
807	Minimum Non-Detect					0.00154	Minimum Non-Detect					-6.476	
808	Maximum Non-Detect					0.29	Maximum Non-Detect					-1.238	
809													
810	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53	
811	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0	
812	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%	
813													
814	Warning: There are only 3 Distinct Detected Values in this data set												
815	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.												
816	Those methods will return a 'N/A' value on your output display!												
817													
818	It is necessary to have 4 or more Distinct Values for bootstrap methods.												
819	However, results obtained using 4 to 9 distinct values may not be reliable.												
820	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.												
821													
822													
823	UCL Statistics												
824	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
825	Shapiro Wilk Test Statistic					0.974	Shapiro Wilk Test Statistic					0.921	
826	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767	
827	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
828													
829	Assuming Normal Distribution					Assuming Lognormal Distribution							
830	DL/2 Substitution Method						DL/2 Substitution Method						
831	Mean					0.0137	Mean					-5.729	
832	SD					0.0404	SD					1.303	
833	95% DL/2 (t) UCL					0.023	95% H-Stat (DL/2) UCL					0.012	
834													
835	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
836	MLE method failed to converge properly						Mean in Log Scale					-14.91	
837							SD in Log Scale					3.744	
838							Mean in Original Scale					0.006	
839							SD in Original Scale					0.0333	
840							95% Percentile Bootstrap UCL					0.0146	
841							95% BCA Bootstrap UCL					0.0206	
842													
843	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
844	k star (bias corrected)					N/A	Data appear Normal at 5% Significance Level						
845	Theta Star					N/A							
846	nu star					N/A							
847													
848	A-D Test Statistic					N/A	Nonparametric Statistics						

	A	B	C	D	E	F	G	H	I	J	K	L
849	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
850	K-S Test Statistic					N/A	Mean					0.00999
851	5% K-S Critical Value					N/A	SD					0.0329
852	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.00565
853							95% KM (t) UCL					0.0195
854	Assuming Gamma Distribution						95% KM (z) UCL					0.0193
855	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0617
856	Minimum					N/A	95% KM (bootstrap t) UCL					0.0166
857	Maximum					N/A	95% KM (BCA) UCL					0.229
858	Mean					N/A	95% KM (Percentile Bootstrap) UCL					N/A
859	Median					N/A	95% KM (Chebyshev) UCL					0.0346
860	SD					N/A	97.5% KM (Chebyshev) UCL					0.0453
861	k star					N/A	99% KM (Chebyshev) UCL					0.0662
862	Theta star					N/A						
863	Nu star					N/A	Potential UCLs to Use					
864	AppChi2					N/A	95% KM (t) UCL					0.0195
865	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					N/A
866	95% Adjusted Gamma UCL					N/A						
867	Note: DL/2 is not a recommended method.											
868												
869												
870	Dichlorodifluoromethane											
871												
872	General Statistics											
873	Number of Valid Data					53	Number of Detected Data					3
874	Number of Distinct Detected Data					3	Number of Non-Detect Data					50
875							Percent Non-Detects					94.34%
876												
877	Raw Statistics						Log-transformed Statistics					
878	Minimum Detected					0.00154	Minimum Detected					-6.476
879	Maximum Detected					0.0209	Maximum Detected					-3.868
880	Mean of Detected					0.00862	Mean of Detected					-5.34
881	SD of Detected					0.0107	SD of Detected					1.336
882	Minimum Non-Detect					0.00154	Minimum Non-Detect					-6.476
883	Maximum Non-Detect					0.29	Maximum Non-Detect					-1.238
884												
885	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53
886	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
887	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
888												
889	Warning: There are only 3 Distinct Detected Values in this data set											
890	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
891	Those methods will return a 'N/A' value on your output display!											
892												
893	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
894	However, results obtained using 4 to 9 distinct values may not be reliable.											
895	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
896												
897												
898	UCL Statistics											
899	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
900	Shapiro Wilk Test Statistic					0.822	Shapiro Wilk Test Statistic					0.953
901	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767

	A	B	C	D	E	F	G	H	I	J	K	L
902	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
903												
904	Assuming Normal Distribution						Assuming Lognormal Distribution					
905	DL/2 Substitution Method						DL/2 Substitution Method					
906	Mean					0.00834	Mean					-5.81
907	SD					0.0249	SD					1.087
908	95% DL/2 (t) UCL					0.0141	95% H-Stat (DL/2) UCL					0.00806
909												
910	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
911	MLE method failed to converge properly						Mean in Log Scale					-7.346
912							SD in Log Scale					0.774
913							Mean in Original Scale					0.00112
914							SD in Original Scale					0.00283
915							95% Percentile Bootstrap UCL					0.00185
916							95% BCA Bootstrap UCL					0.00234
917												
918	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
919	k star (bias corrected)					N/A	Data appear Normal at 5% Significance Level					
920	Theta Star					N/A						
921	nu star					N/A						
922												
923	A-D Test Statistic					N/A	Nonparametric Statistics					
924	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
925	K-S Test Statistic					N/A	Mean					0.002
926	5% K-S Critical Value					N/A	SD					0.0027
927	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0004693
928							95% KM (t) UCL					0.00279
929	Assuming Gamma Distribution						95% KM (z) UCL					0.00278
930	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00326
931	Minimum					N/A	95% KM (bootstrap t) UCL					0.00353
932	Maximum					N/A	95% KM (BCA) UCL					0.0209
933	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.0209
934	Median					N/A	95% KM (Chebyshev) UCL					0.00405
935	SD					N/A	97.5% KM (Chebyshev) UCL					0.00493
936	k star					N/A	99% KM (Chebyshev) UCL					0.00667
937	Theta star					N/A						
938	Nu star					N/A	Potential UCLs to Use					
939	AppChi2					N/A	95% KM (t) UCL					0.00279
940	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					0.0209
941	95% Adjusted Gamma UCL					N/A						
942	Note: DL/2 is not a recommended method.											
943												
944												
945	Methyl acetate											
946												
947	General Statistics											
948	Number of Valid Data					53	Number of Detected Data					8
949	Number of Distinct Detected Data					8	Number of Non-Detect Data					45
950							Percent Non-Detects					84.91%
951												
952	Raw Statistics						Log-transformed Statistics					
953	Minimum Detected					0.00158	Minimum Detected					-6.45
954	Maximum Detected					1.11	Maximum Detected					0.104

	A	B	C	D	E	F	G	H	I	J	K	L
955	Mean of Detected					0.247	Mean of Detected					-3.456
956	SD of Detected					0.397	SD of Detected					2.607
957	Minimum Non-Detect					0.00156	Minimum Non-Detect					-6.463
958	Maximum Non-Detect					0.234	Maximum Non-Detect					-1.452
959												
960	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					50
961	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					3
962	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					94.34%
963												
964	Warning: There are only 8 Detected Values in this data											
965	Note: It should be noted that even though bootstrap may be performed on this data set											
966	the resulting calculations may not be reliable enough to draw conclusions											
967												
968	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
969												
970												
971	UCL Statistics											
972	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
973	Shapiro Wilk Test Statistic					0.714	Shapiro Wilk Test Statistic					0.897
974	5% Shapiro Wilk Critical Value					0.818	5% Shapiro Wilk Critical Value					0.818
975	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
976												
977	Assuming Normal Distribution						Assuming Lognormal Distribution					
978	DL/2 Substitution Method						DL/2 Substitution Method					
979	Mean					0.0424	Mean					-5.482
980	SD					0.171	SD					1.544
981	95% DL/2 (t) UCL					0.0816	95% H-Stat (DL/2) UCL					0.0219
982												
983	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
984	MLE yields a negative mean						Mean in Log Scale					-8.571
985							SD in Log Scale					2.796
986							Mean in Original Scale					0.0376
987							SD in Original Scale					0.171
988							95% Percentile Bootstrap UCL					0.0786
989							95% BCA Bootstrap UCL					0.1
990												
991	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
992	k star (bias corrected)					0.289	Data appear Gamma Distributed at 5% Significance Level					
993	Theta Star					0.854						
994	nu star					4.632						
995												
996	A-D Test Statistic					0.464	Nonparametric Statistics					
997	5% A-D Critical Value					0.792	Kaplan-Meier (KM) Method					
998	K-S Test Statistic					0.792	Mean					0.0389
999	5% K-S Critical Value					0.316	SD					0.169
1000	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0248
1001							95% KM (t) UCL					0.0804
1002	Assuming Gamma Distribution						95% KM (z) UCL					0.0797
1003	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0776
1004	Minimum					1E-09	95% KM (bootstrap t) UCL					0.187
1005	Maximum					1.11	95% KM (BCA) UCL					0.0908
1006	Mean					0.217	95% KM (Percentile Bootstrap) UCL					0.0883
1007	Median					0.245	95% KM (Chebyshev) UCL					0.147

	A	B	C	D	E	F	G	H	I	J	K	L
1008	SD					0.174	97.5% KM (Chebyshev) UCL					0.194
1009	k star					0.32	99% KM (Chebyshev) UCL					0.286
1010	Theta star					0.68						
1011	Nu star					33.88	Potential UCLs to Use					
1012	AppChi2					21.57	95% KM (t) UCL					0.0804
1013	95% Gamma Approximate UCL					0.341						
1014	95% Adjusted Gamma UCL					0.346						
1015	Note: DL/2 is not a recommended method.											
1016												
1017												
1018	Methylene chloride											
1019												
1020	General Statistics											
1021	Number of Valid Data					53	Number of Detected Data					2
1022	Number of Distinct Detected Data					2	Number of Non-Detect Data					51
1023							Percent Non-Detects					96.23%
1024												
1025	Raw Statistics						Log-transformed Statistics					
1026	Minimum Detected					0.00373	Minimum Detected					-5.591
1027	Maximum Detected					0.004	Maximum Detected					-5.521
1028	Mean of Detected					0.00387	Mean of Detected					-5.556
1029	SD of Detected					0.0001909	SD of Detected					0.0494
1030	Minimum Non-Detect					0.00385	Minimum Non-Detect					-5.56
1031	Maximum Non-Detect					0.724	Maximum Non-Detect					-0.323
1032												
1033	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53
1034	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1035	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1036												
1037	Warning: Data set has only 2 Distinct Detected Values.											
1038	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.											
1039	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
1040												
1041	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.											
1042												
1043	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
1044	Those methods will return a 'N/A' value on your output display!											
1045												
1046	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
1047	However, results obtained using 4 to 9 distinct values may not be reliable.											
1048	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
1049												
1050												
1051	UCL Statistics											
1052	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1053	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
1054	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
1055	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1056												
1057	Assuming Normal Distribution						Assuming Lognormal Distribution					
1058	DL/2 Substitution Method						DL/2 Substitution Method					
1059	Mean					0.0168	Mean					-5.312
1060	SD					0.0624	SD					0.939

	A	B	C	D	E	F	G	H	I	J	K	L
1061	95% DL/2 (t) UCL					0.0311	95% H-Stat (DL/2) UCL					0.0106
1062												
1063	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1064	MLE method failed to converge properly						Mean in Log Scale					N/A
1065							SD in Log Scale					N/A
1066							Mean in Original Scale					N/A
1067							SD in Original Scale					N/A
1068							95% Percentile Bootstrap UCL					N/A
1069							95% BCA Bootstrap UCL					N/A
1070												
1071	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1072	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
1073	Theta Star					N/A						
1074	nu star					N/A						
1075												
1076	A-D Test Statistic					N/A	Nonparametric Statistics					
1077	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
1078	K-S Test Statistic					N/A	Mean					0.00378
1079	5% K-S Critical Value					N/A	SD					0.000108
1080	Data not Gamma Distributed at 5% Significance Level						SE of Mean					6.831E-05
1081							95% KM (t) UCL					0.0039
1082	Assuming Gamma Distribution						95% KM (z) UCL					0.0039
1083	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00395
1084	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
1085	Maximum					N/A	95% KM (BCA) UCL					0.004
1086	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.004
1087	Median					N/A	95% KM (Chebyshev) UCL					0.00408
1088	SD					N/A	97.5% KM (Chebyshev) UCL					0.00421
1089	k star					N/A	99% KM (Chebyshev) UCL					0.00446
1090	Theta star					N/A						
1091	Nu star					N/A	Potential UCLs to Use					
1092	AppChi2					N/A	95% KM (t) UCL					0.0039
1093	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					0.004
1094	95% Adjusted Gamma UCL					N/A						
1095	Note: DL/2 is not a recommended method.											
1096												
1097												
1098	Naphthalene											
1099												
1100	General Statistics											
1101	Number of Valid Data					53	Number of Detected Data					34
1102	Number of Distinct Detected Data					32	Number of Non-Detect Data					19
1103							Percent Non-Detects					35.85%
1104												
1105	Raw Statistics						Log-transformed Statistics					
1106	Minimum Detected					0.04	Minimum Detected					-3.219
1107	Maximum Detected					4.75	Maximum Detected					1.558
1108	Mean of Detected					0.459	Mean of Detected					-1.5
1109	SD of Detected					0.839	SD of Detected					1.1
1110	Minimum Non-Detect					0.00418	Minimum Non-Detect					-5.477
1111	Maximum Non-Detect					0.4	Maximum Non-Detect					-0.916
1112												
1113	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					45

	A	B	C	D	E	F	G	H	I	J	K	L
1114	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					8
1115	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					84.91%
1116												
1117	UCL Statistics											
1118	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1119	Shapiro Wilk Test Statistic				0.481	Shapiro Wilk Test Statistic				0.944		
1120	5% Shapiro Wilk Critical Value				0.933	5% Shapiro Wilk Critical Value				0.933		
1121	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1122												
1123	Assuming Normal Distribution						Assuming Lognormal Distribution					
1124	DL/2 Substitution Method					DL/2 Substitution Method						
1125	Mean				0.331	Mean				-2.228		
1126	SD				0.693	SD				1.815		
1127	95% DL/2 (t) UCL				0.49	95% H-Stat (DL/2) UCL				1.085		
1128												
1129	Maximum Likelihood Estimate(MLE) Method					Log ROS Method						
1130	Mean				2.047	Mean in Log Scale				-2.053		
1131	SD				1.277	SD in Log Scale				1.251		
1132	95% MLE (t) UCL				2.34	Mean in Original Scale				0.318		
1133	95% MLE (Tiku) UCL				2.771	SD in Original Scale				0.696		
1134						95% Percentile Bootstrap UCL				0.495		
1135						95% BCA Bootstrap UCL				0.566		
1136												
1137	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1138	k star (bias corrected)				0.767	Data appear Lognormal at 5% Significance Level						
1139	Theta Star				0.599							
1140	nu star				52.14							
1141												
1142	A-D Test Statistic				1.967	Nonparametric Statistics						
1143	5% A-D Critical Value				0.784	Kaplan-Meier (KM) Method						
1144	K-S Test Statistic				0.784	Mean				0.326		
1145	5% K-S Critical Value				0.156	SD				0.687		
1146	Data not Gamma Distributed at 5% Significance Level						SE of Mean				0.096	
1147						95% KM (t) UCL				0.487		
1148	Assuming Gamma Distribution						95% KM (z) UCL				0.484	
1149	Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL				0.485		
1150	Minimum				1E-09	95% KM (bootstrap t) UCL				0.684		
1151	Maximum				4.75	95% KM (BCA) UCL				0.529		
1152	Mean				0.381	95% KM (Percentile Bootstrap) UCL				0.503		
1153	Median				0.18	95% KM (Chebyshev) UCL				0.745		
1154	SD				0.702	97.5% KM (Chebyshev) UCL				0.926		
1155	k star				0.2	99% KM (Chebyshev) UCL				1.281		
1156	Theta star				1.91							
1157	Nu star				21.17	Potential UCLs to Use						
1158	AppChi2				11.72	95% KM (Chebyshev) UCL				0.745		
1159	95% Gamma Approximate UCL				0.689							
1160	95% Adjusted Gamma UCL				0.701							
1161	Note: DL/2 is not a recommended method.											
1162												
1163												
1164	Nitrobenzene											
1165												
1166	General Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
1167	Number of Valid Data					53	Number of Detected Data					1
1168	Number of Distinct Detected Data					1	Number of Non-Detect Data					52
1169							Percent Non-Detects					98.11%
1170												
1171	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
1172	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
1173												
1174	The data set for variable Nitrobenzene was not processed!											
1175												
1176												
1177												
1178	Phenanthrene											
1179												
1180	General Statistics											
1181	Number of Valid Data					53	Number of Detected Data					51
1182	Number of Distinct Detected Data					46	Number of Non-Detect Data					2
1183							Percent Non-Detects					3.77%
1184												
1185	Raw Statistics						Log-transformed Statistics					
1186	Minimum Detected					0.00687	Minimum Detected					-4.981
1187	Maximum Detected					26.7	Maximum Detected					3.285
1188	Mean of Detected					2.243	Mean of Detected					-0.229
1189	SD of Detected					4.177	SD of Detected					1.629
1190	Minimum Non-Detect					0.00788	Minimum Non-Detect					-4.843
1191	Maximum Non-Detect					0.00864	Maximum Non-Detect					-4.751
1192												
1193	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3
1194	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50
1195	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%
1196												
1197	UCL Statistics											
1198	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1199	Lilliefors Test Statistic					0.296	Lilliefors Test Statistic					0.108
1200	5% Lilliefors Critical Value					0.124	5% Lilliefors Critical Value					0.124
1201	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1202												
1203	Assuming Normal Distribution						Assuming Lognormal Distribution					
1204	DL/2 Substitution Method						DL/2 Substitution Method					
1205	Mean					2.159	Mean					-0.427
1206	SD					4.119	SD					1.891
1207	95% DL/2 (t) UCL					3.106	95% H-Stat (DL/2) UCL					7.749
1208												
1209	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1210	Mean					2.003	Mean in Log Scale					-0.362
1211	SD					4.242	SD in Log Scale					1.737
1212	95% MLE (t) UCL					2.979	Mean in Original Scale					2.159
1213	95% MLE (Tiku) UCL					2.895	SD in Original Scale					4.118
1214							95% Percentile Bootstrap UCL					3.17
1215							95% BCA Bootstrap UCL					3.586
1216												
1217	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1218	k star (bias corrected)					0.575	Data appear Gamma Distributed at 5% Significance Level					
1219	Theta Star					3.904						

	A	B	C	D	E	F	G	H	I	J	K	L
1220	nu star					58.6						
1221												
1222	A-D Test Statistic					0.628	Nonparametric Statistics					
1223	5% A-D Critical Value					0.806	Kaplan-Meier (KM) Method					
1224	K-S Test Statistic					0.806	Mean					2.159
1225	5% K-S Critical Value					0.131	SD					4.08
1226	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.566
1227							95% KM (t) UCL					3.106
1228	Assuming Gamma Distribution						95% KM (z) UCL					3.09
1229	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					3.106
1230	Minimum					1E-09	95% KM (bootstrap t) UCL					4.165
1231	Maximum					26.7	95% KM (BCA) UCL					3.335
1232	Mean					2.158	95% KM (Percentile Bootstrap) UCL					3.101
1233	Median					0.814	95% KM (Chebyshev) UCL					4.626
1234	SD					4.119	97.5% KM (Chebyshev) UCL					5.693
1235	k star					0.367	99% KM (Chebyshev) UCL					7.79
1236	Theta star					5.887						
1237	Nu star					38.86	Potential UCLs to Use					
1238	AppChi2					25.58	95% KM (Chebyshev) UCL					4.626
1239	95% Gamma Approximate UCL					3.279						
1240	95% Adjusted Gamma UCL					3.318						
1241	Note: DL/2 is not a recommended method.											
1242												
1243												
1244	Tetrachloroethene											
1245												
1246	General Statistics											
1247	Number of Valid Data					53	Number of Detected Data					6
1248	Number of Distinct Detected Data					6	Number of Non-Detect Data					47
1249							Percent Non-Detects					88.68%
1250												
1251	Raw Statistics						Log-transformed Statistics					
1252	Minimum Detected					0.00212	Minimum Detected					-6.156
1253	Maximum Detected					0.025	Maximum Detected					-3.689
1254	Mean of Detected					0.00784	Mean of Detected					-5.22
1255	SD of Detected					0.00865	SD of Detected					0.875
1256	Minimum Non-Detect					0.00154	Minimum Non-Detect					-6.476
1257	Maximum Non-Detect					0.29	Maximum Non-Detect					-1.238
1258												
1259	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53
1260	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1261	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1262												
1263	Warning: There are only 6 Detected Values in this data											
1264	Note: It should be noted that even though bootstrap may be performed on this data set											
1265	the resulting calculations may not be reliable enough to draw conclusions											
1266												
1267	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1268												
1269												
1270	UCL Statistics											
1271	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1272	Shapiro Wilk Test Statistic					0.702	Shapiro Wilk Test Statistic					0.926

	A	B	C	D	E	F	G	H	I	J	K	L
1273	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788
1274	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1275												
1276	Assuming Normal Distribution						Assuming Lognormal Distribution					
1277	DL/2 Substitution Method						DL/2 Substitution Method					
1278	Mean					0.00847	Mean					-5.783
1279	SD					0.0249	SD					1.085
1280	95% DL/2 (t) UCL					0.0142	95% H-Stat (DL/2) UCL					0.00963
1281												
1282	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1283	MLE method failed to converge properly						Mean in Log Scale					-7.379
1284							SD in Log Scale					1.006
1285							Mean in Original Scale					0.00141
1286							SD in Original Scale					0.00357
1287							95% Percentile Bootstrap UCL					0.0023
1288							95% BCA Bootstrap UCL					0.00287
1289												
1290	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1291	k star (bias corrected)					0.856	Data appear Gamma Distributed at 5% Significance Level					
1292	Theta Star					0.00915						
1293	nu star					10.28						
1294												
1295	A-D Test Statistic					0.497	Nonparametric Statistics					
1296	5% A-D Critical Value					0.708	Kaplan-Meier (KM) Method					
1297	K-S Test Statistic					0.708	Mean					0.00297
1298	5% K-S Critical Value					0.338	SD					0.00333
1299	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.000535
1300							95% KM (t) UCL					0.00387
1301	Assuming Gamma Distribution						95% KM (z) UCL					0.00385
1302	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00375
1303	Minimum					1E-09	95% KM (bootstrap t) UCL					0.00468
1304	Maximum					0.025	95% KM (BCA) UCL					0.00794
1305	Mean					0.0008874	95% KM (Percentile Bootstrap) UCL					0.00516
1306	Median					1E-09	95% KM (Chebyshev) UCL					0.00531
1307	SD					0.00367	97.5% KM (Chebyshev) UCL					0.00632
1308	k star					0.0794	99% KM (Chebyshev) UCL					0.0083
1309	Theta star					0.0112						
1310	Nu star					8.414	Potential UCLs to Use					
1311	AppChi2					2.977	95% KM (t) UCL					0.00387
1312	95% Gamma Approximate UCL					0.00251						
1313	95% Adjusted Gamma UCL					0.00259						
1314	Note: DL/2 is not a recommended method.											
1315												
1316												
1317	Trichloroethene											
1318												
1319	General Statistics											
1320	Number of Valid Data					53	Number of Detected Data					2
1321	Number of Distinct Detected Data					2	Number of Non-Detect Data					51
1322							Percent Non-Detects					96.23%
1323												
1324	Raw Statistics						Log-transformed Statistics					
1325	Minimum Detected					0.00281	Minimum Detected					-5.875

	A	B	C	D	E	F	G	H	I	J	K	L	
1326	Maximum Detected					0.00504	Maximum Detected					-5.29	
1327	Mean of Detected					0.00393	Mean of Detected					-5.582	
1328	SD of Detected					0.00158	SD of Detected					0.413	
1329	Minimum Non-Detect					0.00154	Minimum Non-Detect					-6.476	
1330	Maximum Non-Detect					0.29	Maximum Non-Detect					-1.238	
1331													
1332	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53	
1333	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0	
1334	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%	
1335													
1336	Warning: Data set has only 2 Distinct Detected Values.												
1337	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.												
1338	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
1339													
1340	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.												
1341													
1342	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.												
1343	Those methods will return a 'N/A' value on your output display!												
1344													
1345	It is necessary to have 4 or more Distinct Values for bootstrap methods.												
1346	However, results obtained using 4 to 9 distinct values may not be reliable.												
1347	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.												
1348													
1349													
1350	UCL Statistics												
1351	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
1352	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A	
1353	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A	
1354	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level							
1355													
1356	Assuming Normal Distribution					Assuming Lognormal Distribution							
1357	DL/2 Substitution Method						DL/2 Substitution Method						
1358	Mean					0.00802	Mean					-5.847	
1359	SD					0.0248	SD					1.061	
1360	95% DL/2 (t) UCL					0.0137	95% H-Stat (DL/2) UCL					0.00735	
1361													
1362	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
1363	MLE method failed to converge properly					Mean in Log Scale					N/A		
1364							SD in Log Scale					N/A	
1365							Mean in Original Scale					N/A	
1366							SD in Original Scale					N/A	
1367							95% Percentile Bootstrap UCL					N/A	
1368							95% BCA Bootstrap UCL					N/A	
1369													
1370	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
1371	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)						
1372	Theta Star					N/A							
1373	nu star					N/A							
1374													
1375	A-D Test Statistic					N/A	Nonparametric Statistics						
1376	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method						
1377	K-S Test Statistic					N/A	Mean					0.0029	
1378	5% K-S Critical Value					N/A	SD					0.0004289	

	A	B	C	D	E	F	G	H	I	J	K	L	
1379	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0001189	
1380							95% KM (t) UCL					0.00309	
1381	Assuming Gamma Distribution						95% KM (z) UCL					0.00309	
1382	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00432	
1383	Minimum					N/A	95% KM (bootstrap t) UCL					N/A	
1384	Maximum					N/A	95% KM (BCA) UCL					N/A	
1385	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.00504	
1386	Median					N/A	95% KM (Chebyshev) UCL					0.00341	
1387	SD					N/A	97.5% KM (Chebyshev) UCL					0.00364	
1388	k star					N/A	99% KM (Chebyshev) UCL					0.00408	
1389	Theta star					N/A							
1390	Nu star					N/A	Potential UCLs to Use						
1391	AppChi2					N/A	95% KM (t) UCL					0.00309	
1392	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					0.00504	
1393	95% Adjusted Gamma UCL					N/A							
1394	Note: DL/2 is not a recommended method.												
1395													
1396													
1397	Xylene (Total)												
1398													
1399	General Statistics												
1400	Number of Valid Data					53	Number of Detected Data					4	
1401	Number of Distinct Detected Data					4	Number of Non-Detect Data					49	
1402							Percent Non-Detects					92.45%	
1403													
1404	Raw Statistics						Log-transformed Statistics						
1405	Minimum Detected					0.0085	Minimum Detected					-4.768	
1406	Maximum Detected					0.0423	Maximum Detected					-3.163	
1407	Mean of Detected					0.0193	Mean of Detected					-4.154	
1408	SD of Detected					0.0156	SD of Detected					0.7	
1409	Minimum Non-Detect					0.00462	Minimum Non-Detect					-5.377	
1410	Maximum Non-Detect					0.87	Maximum Non-Detect					-0.139	
1411													
1412	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53	
1413	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0	
1414	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%	
1415													
1416	Warning: There are only 4 Distinct Detected Values in this data												
1417	Note: It should be noted that even though bootstrap may be performed on this data set												
1418	the resulting calculations may not be reliable enough to draw conclusions												
1419													
1420	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.												
1421													
1422													
1423	UCL Statistics												
1424	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
1425	Shapiro Wilk Test Statistic					0.781	Shapiro Wilk Test Statistic					0.9	
1426	5% Shapiro Wilk Critical Value					0.748	5% Shapiro Wilk Critical Value					0.748	
1427	Data appear Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
1428													
1429	Assuming Normal Distribution						Assuming Lognormal Distribution						
1430	DL/2 Substitution Method						DL/2 Substitution Method						
1431	Mean					0.0201	Mean					-5.217	

	A	B	C	D	E	F	G	H	I	J	K	L
1432	SD					0.0752	SD					0.98
1433	95% DL/2 (t) UCL					0.0374	95% H-Stat (DL/2) UCL					0.0126
1434												
1435	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1436	MLE method failed to converge properly						Mean in Log Scale					-7.422
1437							SD in Log Scale					1.169
1438							Mean in Original Scale					0.00199
1439							SD in Original Scale					0.00625
1440							95% Percentile Bootstrap UCL					0.00347
1441							95% BCA Bootstrap UCL					0.00452
1442												
1443	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1444	k star (bias corrected)					0.816	Data appear Normal at 5% Significance Level					
1445	Theta Star					0.0236						
1446	nu star					6.526						
1447												
1448	A-D Test Statistic					0.451	Nonparametric Statistics					
1449	5% A-D Critical Value					0.66	Kaplan-Meier (KM) Method					
1450	K-S Test Statistic					0.66	Mean					0.00935
1451	5% K-S Critical Value					0.397	SD					0.00476
1452	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0007704
1453							95% KM (t) UCL					0.0106
1454	Assuming Gamma Distribution						95% KM (z) UCL					0.0106
1455	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.0112
1456	Minimum					1E-09	95% KM (bootstrap t) UCL					0.0126
1457	Maximum					0.0423	95% KM (BCA) UCL					0.0171
1458	Mean					0.00145	95% KM (Percentile Bootstrap) UCL					0.0167
1459	Median					1E-09	95% KM (Chebyshev) UCL					0.0127
1460	SD					0.00636	97.5% KM (Chebyshev) UCL					0.0142
1461	k star					0.0747	99% KM (Chebyshev) UCL					0.017
1462	Theta star					0.0195						
1463	Nu star					7.918	Potential UCLs to Use					
1464	AppChi2					2.688	95% KM (t) UCL					0.0106
1465	95% Gamma Approximate UCL					0.00428	95% KM (Percentile Bootstrap) UCL					0.0167
1466	95% Adjusted Gamma UCL					N/A						
1467	Note: DL/2 is not a recommended method.											
1468												

Soil (Surface + Subsurface)

	A	B	C	D	E	F	G	H	I	J	K	L	
1				General UCL Statistics for Data Sets with Non-Detects									
2	User Selected Options												
3	From File			C:\aa_Projects\Peterson\Unnamed Island\UCLs\soil conc_Crosstab.xls.wst									
4	Full Precision			OFF									
5	Confidence Coefficient			95%									
6	Number of Bootstrap Operations			2000									
7													
8													
9	Aluminum												
10													
11	General Statistics												
12	Number of Valid Observations					53		Number of Distinct Observations					50
13													
14	Raw Statistics						Log-transformed Statistics						
15	Minimum					2420		Minimum of Log Data					7.792
16	Maximum					11800		Maximum of Log Data					9.376
17	Mean					6245		Mean of log Data					8.667
18	Median					5610		SD of log Data					0.38
19	SD					2482							
20	Coefficient of Variation					0.398							
21	Skewness					0.914							
22													
23	Relevant UCL Statistics												
24	Normal Distribution Test						Lognormal Distribution Test						
25	Lilliefors Test Statistic					0.158		Lilliefors Test Statistic					0.0917
26	Lilliefors Critical Value					0.122		Lilliefors Critical Value					0.122
27	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
28													
29	Assuming Normal Distribution						Assuming Lognormal Distribution						
30	95% Student's-t UCL					6816		95% H-UCL					6860
31	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					7696	
32	95% Adjusted-CLT UCL					6851		97.5% Chebyshev (MVUE) UCL					8328
33	95% Modified-t UCL					6823		99% Chebyshev (MVUE) UCL					9569
34													
35	Gamma Distribution Test						Data Distribution						
36	k star (bias corrected)					6.707		Data Follow Appr. Gamma Distribution at 5% Significance Level					
37	Theta Star					931							
38	MLE of Mean					6245							
39	MLE of Standard Deviation					2411							
40	nu star					711							
41	Approximate Chi Square Value (.05)					650.1		Nonparametric Statistics					
42	Adjusted Level of Significance					0.0455		95% CLT UCL					6805
43	Adjusted Chi Square Value					648.5		95% Jackknife UCL					6816
44								95% Standard Bootstrap UCL					6806
45	Anderson-Darling Test Statistic					1.081		95% Bootstrap-t UCL					6856
46	Anderson-Darling 5% Critical Value					0.752		95% Hall's Bootstrap UCL					6846
47	Kolmogorov-Smirnov Test Statistic					0.109		95% Percentile Bootstrap UCL					6818
48	Kolmogorov-Smirnov 5% Critical Value					0.122		95% BCA Bootstrap UCL					6822
49	Data follow Appr. Gamma Distribution at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					7731	
50								97.5% Chebyshev(Mean, Sd) UCL					8374
51	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					9637	
52	95% Approximate Gamma UCL					6829							
53	95% Adjusted Gamma UCL					6846							

	A	B	C	D	E	F	G	H	I	J	K	L	
54													
55	Potential UCL to Use						Use 95% Approximate Gamma UCL					6829	
56													
57													
58	Antimony												
59													
60	General Statistics												
61	Number of Valid Data					53	Number of Detected Data					33	
62	Number of Distinct Detected Data					33	Number of Non-Detect Data					20	
63							Percent Non-Detects					37.74%	
64													
65	Raw Statistics					Log-transformed Statistics							
66	Minimum Detected					0.0272	Minimum Detected					-3.605	
67	Maximum Detected					159	Maximum Detected					5.069	
68	Mean of Detected					12.18	Mean of Detected					0.528	
69	SD of Detected					31.12	SD of Detected					2.024	
70	Minimum Non-Detect					0.95	Minimum Non-Detect					-0.0513	
71	Maximum Non-Detect					15	Maximum Non-Detect					2.708	
72													
73	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					48	
74	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					5	
75	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					90.57%	
76													
77	UCL Statistics												
78	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
79	Shapiro Wilk Test Statistic					0.442	Shapiro Wilk Test Statistic					0.974	
80	5% Shapiro Wilk Critical Value					0.931	5% Shapiro Wilk Critical Value					0.931	
81	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
82													
83	Assuming Normal Distribution					Assuming Lognormal Distribution							
84	DL/2 Substitution Method						DL/2 Substitution Method						
85	Mean					8.865	Mean					0.61	
86	SD					24.85	SD					1.716	
87	95% DL/2 (t) UCL					14.58	95% H-Stat (DL/2) UCL					40.55	
88													
89	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
90	MLE yields a negative mean						Mean in Log Scale					0.0996	
91							SD in Log Scale					1.766	
92							Mean in Original Scale					7.899	
93							SD in Original Scale					25.04	
94							95% Percentile Bootstrap UCL					14.15	
95							95% BCA Bootstrap UCL					16.62	
96													
97	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
98	k star (bias corrected)					0.331	Data appear Lognormal at 5% Significance Level						
99	Theta Star					36.78							
100	nu star					21.86							
101													
102	A-D Test Statistic					2.354	Nonparametric Statistics						
103	5% A-D Critical Value					0.846	Kaplan-Meier (KM) Method						
104	K-S Test Statistic					0.846	Mean					7.983	
105	5% K-S Critical Value					0.165	SD					24.79	
106	Data not Gamma Distributed at 5% Significance Level						SE of Mean					3.461	

	A	B	C	D	E	F	G	H	I	J	K	L		
107						95% KM (t) UCL							13.78	
108	Assuming Gamma Distribution					95% KM (z) UCL							13.68	
109	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL							13.75
110	Minimum					0.0272	95% KM (bootstrap t) UCL							20.96
111	Maximum					159	95% KM (BCA) UCL							14.83
112	Mean					11.95	95% KM (Percentile Bootstrap) UCL							13.98
113	Median					6.4	95% KM (Chebyshev) UCL							23.07
114	SD					24.57	97.5% KM (Chebyshev) UCL							29.6
115	k star					0.491	99% KM (Chebyshev) UCL							42.42
116	Theta star					24.34								
117	Nu star					52.03	Potential UCLs to Use							
118	AppChi2					36.46	99% KM (Chebyshev) UCL							42.42
119	95% Gamma Approximate UCL					17.05								
120	95% Adjusted Gamma UCL					17.22								
121	Note: DL/2 is not a recommended method.													
122														
123														
124	Aroclor-1242													
125														
126	General Statistics													
127	Number of Valid Data					53	Number of Detected Data					5		
128	Number of Distinct Detected Data					5	Number of Non-Detect Data					48		
129							Percent Non-Detects					90.57%		
130														
131	Raw Statistics					Log-transformed Statistics								
132	Minimum Detected					0.0306	Minimum Detected					-3.487		
133	Maximum Detected					2.44	Maximum Detected					0.892		
134	Mean of Detected					0.577	Mean of Detected					-1.851		
135	SD of Detected					1.045	SD of Detected					1.758		
136	Minimum Non-Detect					0.0127	Minimum Non-Detect					-4.366		
137	Maximum Non-Detect					0.0767	Maximum Non-Detect					-2.568		
138														
139	Note: Data have multiple DLs - Use of KM Method is recommended					Number treated as Non-Detect					50			
140	For all methods (except KM, DL/2, and ROS Methods),					Number treated as Detected					3			
141	Observations < Largest ND are treated as NDs					Single DL Non-Detect Percentage					94.34%			
142														
143	Warning: There are only 5 Detected Values in this data													
144	Note: It should be noted that even though bootstrap may be performed on this data set													
145	the resulting calculations may not be reliable enough to draw conclusions													
146														
147	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.													
148														
149														
150	UCL Statistics													
151	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only								
152	Shapiro Wilk Test Statistic					0.624	Shapiro Wilk Test Statistic					0.908		
153	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762		
154	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level								
155														
156	Assuming Normal Distribution					Assuming Lognormal Distribution								
157	DL/2 Substitution Method						DL/2 Substitution Method							
158	Mean					0.0701	Mean					-3.937		
159	SD					0.334	SD					0.941		

	A	B	C	D	E	F	G	H	I	J	K	L
160	95% DL/2 (t) UCL					0.147	95% H-Stat (DL/2) UCL					0.0361
161												
162	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
163	MLE yields a negative mean						Mean in Log Scale					-9.374
164							SD in Log Scale					2.917
165							Mean in Original Scale					0.0546
166							SD in Original Scale					0.336
167							95% Percentile Bootstrap UCL					0.144
168							95% BCA Bootstrap UCL					0.198
169												
170	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
171	k star (bias corrected)					0.329	Data appear Gamma Distributed at 5% Significance Level					
172	Theta Star					1.755						
173	nu star					3.291						
174												
175	A-D Test Statistic					0.547	Nonparametric Statistics					
176	5% A-D Critical Value					0.712	Kaplan-Meier (KM) Method					
177	K-S Test Statistic					0.712	Mean					0.0822
178	5% K-S Critical Value					0.372	SD					0.328
179	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0504
180							95% KM (t) UCL					0.167
181	Assuming Gamma Distribution						95% KM (z) UCL					0.165
182	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.153
183	Minimum					1E-09	95% KM (bootstrap t) UCL					0.818
184	Maximum					2.44	95% KM (BCA) UCL					N/A
185	Mean					0.0545	95% KM (Percentile Bootstrap) UCL					0.24
186	Median					1E-09	95% KM (Chebyshev) UCL					0.302
187	SD					0.336	97.5% KM (Chebyshev) UCL					0.397
188	k star					0.0637	99% KM (Chebyshev) UCL					0.584
189	Theta star					0.855						
190	Nu star					6.751	Potential UCLs to Use					
191	AppChi2					2.035	95% KM (t) UCL					0.167
192	95% Gamma Approximate UCL					0.181						
193	95% Adjusted Gamma UCL					0.187						
194	Note: DL/2 is not a recommended method.											
195												
196												
197	Aroclor-1248											
198												
199	General Statistics											
200	Number of Valid Data					53	Number of Detected Data					0
201	Number of Distinct Detected Data					0	Number of Non-Detect Data					53
202							Percent Non-Detects					100.00%
203												
204	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
205	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
206	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
207												
208	The data set for variable Aroclor-1248 was not processed!											
209												
210												
211												
212	Aroclor-1254											

	A	B	C	D	E	F	G	H	I	J	K	L
213												
214	General Statistics											
215	Number of Valid Data					53	Number of Detected Data					20
216	Number of Distinct Detected Data					20	Number of Non-Detect Data					33
217							Percent Non-Detects					62.26%
218												
219	Raw Statistics					Log-transformed Statistics						
220	Minimum Detected					0.0165	Minimum Detected					-4.104
221	Maximum Detected					5.33	Maximum Detected					1.673
222	Mean of Detected					0.783	Mean of Detected					-1.063
223	SD of Detected					1.214	SD of Detected					1.359
224	Minimum Non-Detect					0.0128	Minimum Non-Detect					-4.358
225	Maximum Non-Detect					0.0673	Maximum Non-Detect					-2.699
226												
227	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					34
228	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					19
229	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					64.15%
230												
231	UCL Statistics											
232	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
233	Shapiro Wilk Test Statistic					0.607	Shapiro Wilk Test Statistic					0.987
234	5% Shapiro Wilk Critical Value					0.905	5% Shapiro Wilk Critical Value					0.905
235	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
236												
237	Assuming Normal Distribution					Assuming Lognormal Distribution						
238	DL/2 Substitution Method						DL/2 Substitution Method					
239	Mean					0.307	Mean					-2.954
240	SD					0.824	SD					1.726
241	95% DL/2 (t) UCL					0.496	95% H-Stat (DL/2) UCL					0.298
242												
243	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
244	MLE yields a negative mean						Mean in Log Scale					-3.486
245							SD in Log Scale					2.141
246							Mean in Original Scale					0.301
247							SD in Original Scale					0.826
248							95% Percentile Bootstrap UCL					0.514
249							95% BCA Bootstrap UCL					0.601
250												
251	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
252	k star (bias corrected)					0.656	Data appear Gamma Distributed at 5% Significance Level					
253	Theta Star					1.193						
254	nu star					26.26						
255												
256	A-D Test Statistic					0.548	Nonparametric Statistics					
257	5% A-D Critical Value					0.781	Kaplan-Meier (KM) Method					
258	K-S Test Statistic					0.781	Mean					0.306
259	5% K-S Critical Value					0.202	SD					0.816
260	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					0.115	
261							95% KM (t) UCL					0.499
262	Assuming Gamma Distribution					95% KM (z) UCL					0.495	
263	Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL					0.472	
264	Minimum					0.0165	95% KM (bootstrap t) UCL					0.701
265	Maximum					5.33	95% KM (BCA) UCL					0.559

	A	B	C	D	E	F	G	H	I	J	K	L
266	Mean					0.775	95% KM (Percentile Bootstrap) UCL					0.526
267	Median					0.767	95% KM (Chebyshev) UCL					0.807
268	SD					0.755	97.5% KM (Chebyshev) UCL					1.024
269	k star					1.48	99% KM (Chebyshev) UCL					1.451
270	Theta star					0.524						
271	Nu star					156.9	Potential UCLs to Use					
272	AppChi2					129	95% KM (t) UCL					0.499
273	95% Gamma Approximate UCL					0.943						
274	95% Adjusted Gamma UCL					0.949						
275	Note: DL/2 is not a recommended method.											
276												
277												
278	Aroclor-1260											
279												
280	General Statistics											
281	Number of Valid Data					53	Number of Detected Data					37
282	Number of Distinct Detected Data					36	Number of Non-Detect Data					16
283							Percent Non-Detects					30.19%
284												
285	Raw Statistics						Log-transformed Statistics					
286	Minimum Detected					0.0418	Minimum Detected					-3.175
287	Maximum Detected					4.57	Maximum Detected					1.52
288	Mean of Detected					0.42	Mean of Detected					-1.535
289	SD of Detected					0.773	SD of Detected					1.051
290	Minimum Non-Detect					0.0111	Minimum Non-Detect					-4.501
291	Maximum Non-Detect					0.0568	Maximum Non-Detect					-2.868
292												
293	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					21
294	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					32
295	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					39.62%
296												
297	UCL Statistics											
298	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
299	Shapiro Wilk Test Statistic					0.464	Shapiro Wilk Test Statistic					0.956
300	5% Shapiro Wilk Critical Value					0.936	5% Shapiro Wilk Critical Value					0.936
301	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
302												
303	Assuming Normal Distribution						Assuming Lognormal Distribution					
304	DL/2 Substitution Method						DL/2 Substitution Method					
305	Mean					0.298	Mean					-2.378
306	SD					0.67	SD					1.586
307	95% DL/2 (t) UCL					0.452	95% H-Stat (DL/2) UCL					0.389
308												
309	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
310	Mean					0.0154	Mean in Log Scale					-2.254
311	SD					0.918	SD in Log Scale					1.414
312	95% MLE (t) UCL					0.226	Mean in Original Scale					0.3
313	95% MLE (Tiku) UCL					0.252	SD in Original Scale					0.669
314							95% Percentile Bootstrap UCL					0.46
315							95% BCA Bootstrap UCL					0.543
316												
317	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
318	k star (bias corrected)					0.825	Data appear Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
319	Theta Star					0.51						
320	nu star					61.02						
321												
322	A-D Test Statistic					1.816	Nonparametric Statistics					
323	5% A-D Critical Value					0.782	Kaplan-Meier (KM) Method					
324	K-S Test Statistic					0.782	Mean					0.306
325	5% K-S Critical Value					0.15	SD					0.66
326	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0919
327							95% KM (t) UCL					0.46
328	Assuming Gamma Distribution						95% KM (z) UCL					0.457
329	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.458
330	Minimum					1E-09	95% KM (bootstrap t) UCL					0.677
331	Maximum					4.57	95% KM (BCA) UCL					0.473
332	Mean					0.297	95% KM (Percentile Bootstrap) UCL					0.466
333	Median					0.13	95% KM (Chebyshev) UCL					0.707
334	SD					0.67	97.5% KM (Chebyshev) UCL					0.88
335	k star					0.163	99% KM (Chebyshev) UCL					1.221
336	Theta star					1.829						
337	Nu star					17.23	Potential UCLs to Use					
338	AppChi2					8.838	95% KM (Chebyshev) UCL					0.707
339	95% Gamma Approximate UCL					0.58						
340	95% Adjusted Gamma UCL					0.591						
341	Note: DL/2 is not a recommended method.											
342												
343												
344	Arsenic											
345												
346	General Statistics											
347	Number of Valid Observations					53	Number of Distinct Observations					48
348												
349	Raw Statistics					Log-transformed Statistics						
350	Minimum					1.44	Minimum of Log Data					0.365
351	Maximum					57.4	Maximum of Log Data					4.05
352	Mean					11.35	Mean of log Data					2.066
353	Median					7.5	SD of log Data					0.845
354	SD					11.31						
355	Coefficient of Variation					0.996						
356	Skewness					2.371						
357												
358	Relevant UCL Statistics											
359	Normal Distribution Test					Lognormal Distribution Test						
360	Lilliefors Test Statistic					0.208	Lilliefors Test Statistic					0.0659
361	Lilliefors Critical Value					0.122	Lilliefors Critical Value					0.122
362	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
363												
364	Assuming Normal Distribution					Assuming Lognormal Distribution						
365	95% Student's-t UCL					13.95	95% H-UCL					14.53
366	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					17.59	
367	95% Adjusted-CLT UCL					14.45	97.5% Chebyshev (MVUE) UCL					20.36
368	95% Modified-t UCL					14.04	99% Chebyshev (MVUE) UCL					25.81
369												
370	Gamma Distribution Test					Data Distribution						
371	k star (bias corrected)					1.448	Data Follow Appr. Gamma Distribution at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
372	Theta Star					7.842						
373	MLE of Mean					11.35						
374	MLE of Standard Deviation					9.436						
375	nu star					153.5						
376	Approximate Chi Square Value (.05)					125.8	Nonparametric Statistics					
377	Adjusted Level of Significance					0.0455	95% CLT UCL					13.91
378	Adjusted Chi Square Value					125.1	95% Jackknife UCL					13.95
379							95% Standard Bootstrap UCL					13.88
380	Anderson-Darling Test Statistic					0.943	95% Bootstrap-t UCL					14.9
381	Anderson-Darling 5% Critical Value					0.768	95% Hall's Bootstrap UCL					15.35
382	Kolmogorov-Smirnov Test Statistic					0.123	95% Percentile Bootstrap UCL					14.02
383	Kolmogorov-Smirnov 5% Critical Value					0.124	95% BCA Bootstrap UCL					14.54
384	Data follow Appr. Gamma Distribution at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					18.12
385							97.5% Chebyshev(Mean, Sd) UCL					21.05
386	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					26.81
387	95% Approximate Gamma UCL					13.85						
388	95% Adjusted Gamma UCL					13.92						
389												
390	Potential UCL to Use						Use 95% Approximate Gamma UCL					13.85
391												
392												
393	Benzo(a)pyrene											
394												
395	General Statistics											
396	Number of Valid Data					53	Number of Detected Data					51
397	Number of Distinct Detected Data					49	Number of Non-Detect Data					2
398							Percent Non-Detects					3.77%
399												
400	Raw Statistics					Log-transformed Statistics						
401	Minimum Detected					0.00635	Minimum Detected					-5.059
402	Maximum Detected					17.2	Maximum Detected					2.845
403	Mean of Detected					1.613	Mean of Detected					-0.347
404	SD of Detected					2.656	SD of Detected					1.458
405	Minimum Non-Detect					0.00788	Minimum Non-Detect					-4.843
406	Maximum Non-Detect					0.00864	Maximum Non-Detect					-4.751
407												
408	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3
409	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50
410	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%
411												
412	UCL Statistics											
413	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
414	Lilliefors Test Statistic					0.289	Lilliefors Test Statistic					0.0935
415	5% Lilliefors Critical Value					0.124	5% Lilliefors Critical Value					0.124
416	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
417												
418	Assuming Normal Distribution						Assuming Lognormal Distribution					
419	DL/2 Substitution Method						DL/2 Substitution Method					
420	Mean					1.553	Mean					-0.541
421	SD					2.623	SD					1.739
422	95% DL/2 (t) UCL					2.156	95% H-Stat (DL/2) UCL					4.713
423												
424	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					

	A	B	C	D	E	F	G	H	I	J	K	L
425	Mean					1.456	Mean in Log Scale					-0.465
426	SD					2.704	SD in Log Scale					1.551
427	95% MLE (t) UCL					2.078	Mean in Original Scale					1.554
428	95% MLE (Tiku) UCL					2.028	SD in Original Scale					2.622
429							95% Percentile Bootstrap UCL					2.176
430							95% BCA Bootstrap UCL					2.488
431												
432	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
433	k star (bias corrected)					0.698	Data Follow Appr. Gamma Distribution at 5% Significance Level					
434	Theta Star					2.31						
435	nu star					71.22						
436												
437	A-D Test Statistic					0.64	Nonparametric Statistics					
438	5% A-D Critical Value					0.795	Kaplan-Meier (KM) Method					
439	K-S Test Statistic					0.795	Mean					1.553
440	5% K-S Critical Value					0.129	SD					2.598
441	Data follow Appr. Gamma Distribution at 5% Significance Level						SE of Mean					0.36
442							95% KM (t) UCL					2.156
443	Assuming Gamma Distribution						95% KM (z) UCL					2.145
444	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					2.155
445	Minimum					1E-09	95% KM (bootstrap t) UCL					2.749
446	Maximum					17.2	95% KM (BCA) UCL					2.264
447	Mean					1.552	95% KM (Percentile Bootstrap) UCL					2.211
448	Median					0.685	95% KM (Chebyshev) UCL					3.123
449	SD					2.623	97.5% KM (Chebyshev) UCL					3.803
450	k star					0.408	99% KM (Chebyshev) UCL					5.138
451	Theta star					3.8						
452	Nu star					43.3	Potential UCLs to Use					
453	AppChi2					29.21	95% KM (Chebyshev) UCL					3.123
454	95% Gamma Approximate UCL					2.301						
455	95% Adjusted Gamma UCL					2.327						
456	Note: DL/2 is not a recommended method.											
457												
458												
459	Benzo(b)fluoranthene											
460												
461	General Statistics											
462	Number of Valid Data					50	Number of Detected Data					48
463	Number of Distinct Detected Data					45	Number of Non-Detect Data					2
464							Percent Non-Detects					4.00%
465												
466	Raw Statistics						Log-transformed Statistics					
467	Minimum Detected					0.01	Minimum Detected					-4.605
468	Maximum Detected					9.63	Maximum Detected					2.265
469	Mean of Detected					1.827	Mean of Detected					-0.148
470	SD of Detected					2.093	SD of Detected					1.487
471	Minimum Non-Detect					0.00788	Minimum Non-Detect					-4.843
472	Maximum Non-Detect					0.00864	Maximum Non-Detect					-4.751
473												
474	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					2
475	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					48
476	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					4.00%
477												

	A	B	C	D	E	F	G	H	I	J	K	L
478	UCL Statistics											
479	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
480	Shapiro Wilk Test Statistic					0.769	Shapiro Wilk Test Statistic					0.939
481	5% Shapiro Wilk Critical Value					0.947	5% Shapiro Wilk Critical Value					0.947
482	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
483												
484	Assuming Normal Distribution						Assuming Lognormal Distribution					
485	DL/2 Substitution Method						DL/2 Substitution Method					
486	Mean					1.754	Mean					-0.362
487	SD					2.081	SD					1.8
488	95% DL/2 (t) UCL					2.247	95% H-Stat (DL/2) UCL					6.567
489												
490	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
491	Mean					1.706	Mean in Log Scale					-0.287
492	SD					2.123	SD in Log Scale					1.61
493	95% MLE (t) UCL					2.209	Mean in Original Scale					1.755
494	95% MLE (Tiku) UCL					2.177	SD in Original Scale					2.08
495							95% Percentile Bootstrap UCL					2.25
496							95% BCA Bootstrap UCL					2.364
497												
498	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
499	k star (bias corrected)					0.756	Data appear Gamma Distributed at 5% Significance Level					
500	Theta Star					2.416						
501	nu star					72.6						
502												
503	A-D Test Statistic					0.26	Nonparametric Statistics					
504	5% A-D Critical Value					0.79	Kaplan-Meier (KM) Method					
505	K-S Test Statistic					0.79	Mean					1.754
506	5% K-S Critical Value					0.133	SD					2.06
507	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.294
508							95% KM (t) UCL					2.248
509	Assuming Gamma Distribution						95% KM (z) UCL					2.238
510	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					2.247
511	Minimum					1E-09	95% KM (bootstrap t) UCL					2.393
512	Maximum					9.63	95% KM (BCA) UCL					2.265
513	Mean					1.754	95% KM (Percentile Bootstrap) UCL					2.224
514	Median					1.15	95% KM (Chebyshev) UCL					3.037
515	SD					2.081	97.5% KM (Chebyshev) UCL					3.593
516	k star					0.413	99% KM (Chebyshev) UCL					4.683
517	Theta star					4.246						
518	Nu star					41.3	Potential UCLs to Use					
519	AppChi2					27.57	95% KM (Chebyshev) UCL					3.037
520	95% Gamma Approximate UCL					2.627						
521	95% Adjusted Gamma UCL					2.659						
522	Note: DL/2 is not a recommended method.											
523												
524												
525	Benzo(g,h,i)perylene											
526												
527	General Statistics											
528	Number of Valid Data					53	Number of Detected Data					51
529	Number of Distinct Detected Data					51	Number of Non-Detect Data					2
530							Percent Non-Detects					3.77%

	A	B	C	D	E	F	G	H	I	J	K	L
531												
532	Raw Statistics						Log-transformed Statistics					
533	Minimum Detected					0.00608	Minimum Detected					-5.103
534	Maximum Detected					8.44	Maximum Detected					2.133
535	Mean of Detected					0.986	Mean of Detected					-0.72
536	SD of Detected					1.322	SD of Detected					1.392
537	Minimum Non-Detect					0.00788	Minimum Non-Detect					-4.843
538	Maximum Non-Detect					0.00864	Maximum Non-Detect					-4.751
539												
540	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3
541	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50
542	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%
543												
544	UCL Statistics											
545	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
546	Lilliefors Test Statistic					0.229	Lilliefors Test Statistic					0.0783
547	5% Lilliefors Critical Value					0.124	5% Lilliefors Critical Value					0.124
548	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
549												
550	Assuming Normal Distribution						Assuming Lognormal Distribution					
551	DL/2 Substitution Method						DL/2 Substitution Method					
552	Mean					0.949	Mean					-0.9
553	SD					1.31	SD					1.645
554	95% DL/2 (t) UCL					1.251	95% H-Stat (DL/2) UCL					2.643
555												
556	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
557	Mean					0.904	Mean in Log Scale					-0.832
558	SD					1.353	SD in Log Scale					1.481
559	95% MLE (t) UCL					1.215	Mean in Original Scale					0.95
560	95% MLE (Tiku) UCL					1.194	SD in Original Scale					1.31
561							95% Percentile Bootstrap UCL					1.282
562							95% BCA Bootstrap UCL					1.392
563												
564	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
565	k star (bias corrected)					0.8	Data appear Gamma Distributed at 5% Significance Level					
566	Theta Star					1.234						
567	nu star					81.56						
568												
569	A-D Test Statistic					0.22	Nonparametric Statistics					
570	5% A-D Critical Value					0.789	Kaplan-Meier (KM) Method					
571	K-S Test Statistic					0.789	Mean					0.949
572	5% K-S Critical Value					0.129	SD					1.298
573	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.18
574							95% KM (t) UCL					1.251
575	Assuming Gamma Distribution						95% KM (z) UCL					1.246
576	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.251
577	Minimum					1E-09	95% KM (bootstrap t) UCL					1.428
578	Maximum					8.44	95% KM (BCA) UCL					1.289
579	Mean					0.949	95% KM (Percentile Bootstrap) UCL					1.257
580	Median					0.51	95% KM (Chebyshev) UCL					1.734
581	SD					1.311	97.5% KM (Chebyshev) UCL					2.074
582	k star					0.44	99% KM (Chebyshev) UCL					2.741
583	Theta star					2.156						

	A	B	C	D	E	F	G	H	I	J	K	L	
584	Nu star					46.68	Potential UCLs to Use						
585	AppChi2					32	95% KM (Chebyshev) UCL					1.734	
586	95% Gamma Approximate UCL					1.385							
587	95% Adjusted Gamma UCL					1.399							
588	Note: DL/2 is not a recommended method.												
589													
590													
591	Benzo(k)fluoranthene												
592													
593	General Statistics												
594	Number of Valid Data					53	Number of Detected Data					51	
595	Number of Distinct Detected Data					45	Number of Non-Detect Data					2	
596							Percent Non-Detects					3.77%	
597													
598	Raw Statistics						Log-transformed Statistics						
599	Minimum Detected					0.00506	Minimum Detected					-5.286	
600	Maximum Detected					6.18	Maximum Detected					1.821	
601	Mean of Detected					0.967	Mean of Detected					-0.865	
602	SD of Detected					1.314	SD of Detected					1.484	
603	Minimum Non-Detect					0.00788	Minimum Non-Detect					-4.843	
604	Maximum Non-Detect					0.00864	Maximum Non-Detect					-4.751	
605													
606	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3	
607	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50	
608	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%	
609													
610	UCL Statistics												
611	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
612	Lilliefors Test Statistic					0.237	Lilliefors Test Statistic					0.0825	
613	5% Lilliefors Critical Value					0.124	5% Lilliefors Critical Value					0.124	
614	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
615													
616	Assuming Normal Distribution						Assuming Lognormal Distribution						
617	DL/2 Substitution Method						DL/2 Substitution Method						
618	Mean					0.93	Mean					-1.04	
619	SD					1.301	SD					1.705	
620	95% DL/2 (t) UCL					1.23	95% H-Stat (DL/2) UCL					2.667	
621													
622	Maximum Likelihood Estimate(MLE) Method						Log ROS Method						
623	Mean					0.885	Mean in Log Scale					-0.987	
624	SD					1.344	SD in Log Scale					1.582	
625	95% MLE (t) UCL					1.194	Mean in Original Scale					0.931	
626	95% MLE (Tiku) UCL					1.173	SD in Original Scale					1.301	
627							95% Percentile Bootstrap UCL					1.256	
628							95% BCA Bootstrap UCL					1.315	
629													
630	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only						
631	k star (bias corrected)					0.694	Data appear Gamma Distributed at 5% Significance Level						
632	Theta Star					1.393							
633	nu star					70.81							
634													
635	A-D Test Statistic					0.412	Nonparametric Statistics						
636	5% A-D Critical Value					0.795	Kaplan-Meier (KM) Method						

	A	B	C	D	E	F	G	H	I	J	K	L
637	K-S Test Statistic					0.795	Mean					0.93
638	5% K-S Critical Value					0.129	SD					1.289
639	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.179
640							95% KM (t) UCL					1.23
641	Assuming Gamma Distribution						95% KM (z) UCL					1.225
642	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.23
643	Minimum					1E-09	95% KM (bootstrap t) UCL					1.353
644	Maximum					6.18	95% KM (BCA) UCL					1.279
645	Mean					0.93	95% KM (Percentile Bootstrap) UCL					1.253
646	Median					0.45	95% KM (Chebyshev) UCL					1.71
647	SD					1.302	97.5% KM (Chebyshev) UCL					2.047
648	k star					0.412	99% KM (Chebyshev) UCL					2.71
649	Theta star					2.26						
650	Nu star					43.62	Potential UCLs to Use					
651	AppChi2					29.48	95% KM (Chebyshev) UCL					1.71
652	95% Gamma Approximate UCL					1.377						
653	95% Adjusted Gamma UCL					1.392						
654	Note: DL/2 is not a recommended method.											
655												
656												
657	Benzo_a_anthracene											
658												
659	General Statistics											
660	Number of Valid Data					53	Number of Detected Data					51
661	Number of Distinct Detected Data					45	Number of Non-Detect Data					2
662							Percent Non-Detects					3.77%
663												
664	Raw Statistics						Log-transformed Statistics					
665	Minimum Detected					0.00807	Minimum Detected					-4.82
666	Maximum Detected					14.4	Maximum Detected					2.667
667	Mean of Detected					1.771	Mean of Detected					-0.232
668	SD of Detected					2.527	SD of Detected					1.464
669	Minimum Non-Detect					0.00788	Minimum Non-Detect					-4.843
670	Maximum Non-Detect					0.00864	Maximum Non-Detect					-4.751
671												
672	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3
673	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50
674	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%
675												
676	UCL Statistics											
677	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
678	Lilliefors Test Statistic					0.272	Lilliefors Test Statistic					0.118
679	5% Lilliefors Critical Value					0.124	5% Lilliefors Critical Value					0.124
680	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
681												
682	Assuming Normal Distribution						Assuming Lognormal Distribution					
683	DL/2 Substitution Method						DL/2 Substitution Method					
684	Mean					1.704	Mean					-0.431
685	SD					2.501	SD					1.756
686	95% DL/2 (t) UCL					2.279	95% H-Stat (DL/2) UCL					5.472
687												
688	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
689	Mean					1.615	Mean in Log Scale					-0.36

	A	B	C	D	E	F	G	H	I	J	K	L
690	SD					2.582	SD in Log Scale					1.578
691	95% MLE (t) UCL					2.209	Mean in Original Scale					1.705
692	95% MLE (Tiku) UCL					2.166	SD in Original Scale					2.5
693							95% Percentile Bootstrap UCL					2.341
694							95% BCA Bootstrap UCL					2.411
695												
696	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
697	k star (bias corrected)					0.715	Data appear Gamma Distributed at 5% Significance Level					
698	Theta Star					2.477						
699	nu star					72.91						
700												
701	A-D Test Statistic					0.589	Nonparametric Statistics					
702	5% A-D Critical Value					0.794	Kaplan-Meier (KM) Method					
703	K-S Test Statistic					0.794	Mean					1.704
704	5% K-S Critical Value					0.129	SD					2.477
705	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.344
706							95% KM (t) UCL					2.28
707	Assuming Gamma Distribution						95% KM (z) UCL					2.27
708	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					2.279
709	Minimum					1E-09	95% KM (bootstrap t) UCL					2.639
710	Maximum					14.4	95% KM (BCA) UCL					2.35
711	Mean					1.704	95% KM (Percentile Bootstrap) UCL					2.301
712	Median					0.751	95% KM (Chebyshev) UCL					3.202
713	SD					2.501	97.5% KM (Chebyshev) UCL					3.85
714	k star					0.412	99% KM (Chebyshev) UCL					5.124
715	Theta star					4.132						
716	Nu star					43.71	Potential UCLs to Use					
717	AppChi2					29.55	95% KM (Chebyshev) UCL					3.202
718	95% Gamma Approximate UCL					2.52						
719	95% Adjusted Gamma UCL					2.549						
720	Note: DL/2 is not a recommended method.											
721												
722												
723	bis(2-Ethylhexyl)phthalate											
724												
725	General Statistics											
726	Number of Valid Data					53	Number of Detected Data					29
727	Number of Distinct Detected Data					29	Number of Non-Detect Data					24
728							Percent Non-Detects					45.28%
729												
730	Raw Statistics						Log-transformed Statistics					
731	Minimum Detected					0.0846	Minimum Detected					-2.47
732	Maximum Detected					577	Maximum Detected					6.358
733	Mean of Detected					45.66	Mean of Detected					1.194
734	SD of Detected					117	SD of Detected					2.546
735	Minimum Non-Detect					0.139	Minimum Non-Detect					-1.973
736	Maximum Non-Detect					1.51	Maximum Non-Detect					0.412
737												
738	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					37
739	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					16
740	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					69.81%
741												
742	UCL Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L	
743	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
744	Shapiro Wilk Test Statistic					0.45	Shapiro Wilk Test Statistic					0.934	
745	5% Shapiro Wilk Critical Value					0.926	5% Shapiro Wilk Critical Value					0.926	
746	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
747													
748	Assuming Normal Distribution						Assuming Lognormal Distribution						
749	DL/2 Substitution Method						DL/2 Substitution Method						
750	Mean					25.07	Mean					-0.165	
751	SD					88.82	SD					2.435	
752	95% DL/2 (t) UCL					45.51	95% H-Stat (DL/2) UCL					44.57	
753													
754	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
755	MLE yields a negative mean						Mean in Log Scale					-0.722	
756							SD in Log Scale					2.882	
757							Mean in Original Scale					25.01	
758							SD in Original Scale					88.84	
759							95% Percentile Bootstrap UCL					47.94	
760							95% BCA Bootstrap UCL					55.23	
761													
762	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only						
763	k star (bias corrected)					0.263	Data appear Lognormal at 5% Significance Level						
764	Theta Star					173.8							
765	nu star					15.24							
766													
767	A-D Test Statistic					1.728	Nonparametric Statistics						
768	5% A-D Critical Value					0.87	Kaplan-Meier (KM) Method						
769	K-S Test Statistic					0.87	Mean					25.05	
770	5% K-S Critical Value					0.178	SD					87.98	
771	Data not Gamma Distributed at 5% Significance Level						SE of Mean					12.3	
772							95% KM (t) UCL					45.65	
773	Assuming Gamma Distribution						95% KM (z) UCL					45.28	
774	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					45.48	
775	Minimum					0.0846	95% KM (bootstrap t) UCL					88.11	
776	Maximum					577	95% KM (BCA) UCL					49.34	
777	Mean					43.57	95% KM (Percentile Bootstrap) UCL					48.51	
778	Median					38.81	95% KM (Chebyshev) UCL					78.66	
779	SD					85.88	97.5% KM (Chebyshev) UCL					101.9	
780	k star					0.436	99% KM (Chebyshev) UCL					147.4	
781	Theta star					99.95							
782	Nu star					46.21	Potential UCLs to Use						
783	AppChi2					31.61	99% KM (Chebyshev) UCL					147.4	
784	95% Gamma Approximate UCL					63.68							
785	95% Adjusted Gamma UCL					64.37							
786	Note: DL/2 is not a recommended method.												
787													
788													
789	Cadmium												
790													
791	General Statistics												
792	Number of Valid Data					53	Number of Detected Data					50	
793	Number of Distinct Detected Data					48	Number of Non-Detect Data					3	
794							Percent Non-Detects					5.66%	
795													

	A	B	C	D	E	F	G	H	I	J	K	L	
796	Raw Statistics						Log-transformed Statistics						
797	Minimum Detected					0.084	Minimum Detected					-2.477	
798	Maximum Detected					21.8	Maximum Detected					3.082	
799	Mean of Detected					3.344	Mean of Detected					0.615	
800	SD of Detected					3.86	SD of Detected					1.249	
801	Minimum Non-Detect					0.87	Minimum Non-Detect					-0.139	
802	Maximum Non-Detect					1.1	Maximum Non-Detect					0.0953	
803													
804	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					17	
805	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					36	
806	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					32.08%	
807													
808	UCL Statistics												
809	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
810	Shapiro Wilk Test Statistic					0.719	Shapiro Wilk Test Statistic					0.942	
811	5% Shapiro Wilk Critical Value					0.947	5% Shapiro Wilk Critical Value					0.947	
812	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level						
813													
814	Assuming Normal Distribution						Assuming Lognormal Distribution						
815	DL/2 Substitution Method						DL/2 Substitution Method						
816	Mean					3.182	Mean					0.539	
817	SD					3.806	SD					1.252	
818	95% DL/2 (t) UCL					4.058	95% H-Stat (DL/2) UCL					5.845	
819													
820	Maximum Likelihood Estimate(MLE) Method						Log ROS Method						
821	Mean					2.27	Mean in Log Scale					0.532	
822	SD					4.814	SD in Log Scale					1.26	
823	95% MLE (t) UCL					3.378	Mean in Original Scale					3.179	
824	95% MLE (Tiku) UCL					3.444	SD in Original Scale					3.809	
825							95% Percentile Bootstrap UCL					4.116	
826							95% BCA Bootstrap UCL					4.26	
827													
828	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only						
829	k star (bias corrected)					0.932	Data appear Gamma Distributed at 5% Significance Level						
830	Theta Star					3.59							
831	nu star					93.15							
832													
833	A-D Test Statistic					0.394	Nonparametric Statistics						
834	5% A-D Critical Value					0.781	Kaplan-Meier (KM) Method						
835	K-S Test Statistic					0.781	Mean					3.179	
836	5% K-S Critical Value					0.129	SD					3.773	
837	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.524	
838							95% KM (t) UCL					4.056	
839	Assuming Gamma Distribution						95% KM (z) UCL					4.041	
840	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					4.056	
841	Minimum					1E-09	95% KM (bootstrap t) UCL					4.399	
842	Maximum					21.8	95% KM (BCA) UCL					4.088	
843	Mean					3.155	95% KM (Percentile Bootstrap) UCL					4.081	
844	Median					2.3	95% KM (Chebyshev) UCL					5.462	
845	SD					3.828	97.5% KM (Chebyshev) UCL					6.449	
846	k star					0.372	99% KM (Chebyshev) UCL					8.389	
847	Theta star					8.485							
848	Nu star					39.41	Potential UCLs to Use						

	A	B	C	D	E	F	G	H	I	J	K	L
849	AppChi2					26.03	95% KM (Chebyshev) UCL					5.462
850	95% Gamma Approximate UCL					4.776						
851	95% Adjusted Gamma UCL					4.833						
852	Note: DL/2 is not a recommended method.											
853												
854												
855	Carbazole											
856												
857	General Statistics											
858	Number of Valid Data					53	Number of Detected Data					28
859	Number of Distinct Detected Data					25	Number of Non-Detect Data					25
860							Percent Non-Detects					47.17%
861												
862	Raw Statistics						Log-transformed Statistics					
863	Minimum Detected					0.024	Minimum Detected					-3.73
864	Maximum Detected					0.99	Maximum Detected					-0.0101
865	Mean of Detected					0.199	Mean of Detected					-1.902
866	SD of Detected					0.185	SD of Detected					0.768
867	Minimum Non-Detect					0.138	Minimum Non-Detect					-1.981
868	Maximum Non-Detect					2.49	Maximum Non-Detect					0.912
869												
870	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53
871	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
872	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
873												
874	UCL Statistics											
875	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
876	Shapiro Wilk Test Statistic					0.692	Shapiro Wilk Test Statistic					0.982
877	5% Shapiro Wilk Critical Value					0.924	5% Shapiro Wilk Critical Value					0.924
878	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
879												
880	Assuming Normal Distribution						Assuming Lognormal Distribution					
881	DL/2 Substitution Method						DL/2 Substitution Method					
882	Mean					0.208	Mean					-1.896
883	SD					0.223	SD					0.754
884	95% DL/2 (t) UCL					0.259	95% H-Stat (DL/2) UCL					0.292
885												
886	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
887	MLE method failed to converge properly						Mean in Log Scale					-2.065
888							SD in Log Scale					0.604
889							Mean in Original Scale					0.157
890							SD in Original Scale					0.142
891							95% Percentile Bootstrap UCL					0.19
892							95% BCA Bootstrap UCL					0.208
893												
894	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
895	k star (bias corrected)					1.706	Data appear Gamma Distributed at 5% Significance Level					
896	Theta Star					0.117						
897	nu star					95.56						
898												
899	A-D Test Statistic					0.485	Nonparametric Statistics					
900	5% A-D Critical Value					0.759	Kaplan-Meier (KM) Method					
901	K-S Test Statistic					0.759	Mean					0.164

	A	B	C	D	E	F	G	H	I	J	K	L
902	5% K-S Critical Value					0.168	SD					0.149
903	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0227
904							95% KM (t) UCL					0.201
905	Assuming Gamma Distribution						95% KM (z) UCL					0.201
906	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.201
907	Minimum					0.024	95% KM (bootstrap t) UCL					0.217
908	Maximum					0.99	95% KM (BCA) UCL					0.204
909	Mean					0.213	95% KM (Percentile Bootstrap) UCL					0.202
910	Median					0.188	95% KM (Chebyshev) UCL					0.262
911	SD					0.141	97.5% KM (Chebyshev) UCL					0.305
912	k star					2.918	99% KM (Chebyshev) UCL					0.389
913	Theta star					0.0729						
914	Nu star					309.3	Potential UCLs to Use					
915	AppChi2					269.6	95% KM (t) UCL					0.201
916	95% Gamma Approximate UCL					0.244						
917	95% Adjusted Gamma UCL					0.245						
918	Note: DL/2 is not a recommended method.											
919												
920												
921	Chromium											
922												
923	General Statistics											
924	Number of Valid Observations					53	Number of Distinct Observations					53
925												
926	Raw Statistics						Log-transformed Statistics					
927	Minimum					6.11	Minimum of Log Data					1.81
928	Maximum					776	Maximum of Log Data					6.654
929	Mean					142.3	Mean of log Data					4.356
930	Median					69.5	SD of log Data					1.122
931	SD					176.1						
932	Coefficient of Variation					1.238						
933	Skewness					2.166						
934												
935	Relevant UCL Statistics											
936	Normal Distribution Test						Lognormal Distribution Test					
937	Lilliefors Test Statistic					0.264	Lilliefors Test Statistic					0.096
938	Lilliefors Critical Value					0.122	Lilliefors Critical Value					0.122
939	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
940												
941	Assuming Normal Distribution						Assuming Lognormal Distribution					
942	95% Student's-t UCL					182.8	95% H-UCL					214.7
943	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					260.9
944	95% Adjusted-CLT UCL					189.7	97.5% Chebyshev (MVUE) UCL					311.6
945	95% Modified-t UCL					184	99% Chebyshev (MVUE) UCL					411.3
946												
947	Gamma Distribution Test						Data Distribution					
948	k star (bias corrected)					0.921	Data appear Lognormal at 5% Significance Level					
949	Theta Star					154.4						
950	MLE of Mean					142.3						
951	MLE of Standard Deviation					148.2						
952	nu star					97.66						
953	Approximate Chi Square Value (.05)					75.87	Nonparametric Statistics					
954	Adjusted Level of Significance					0.0455	95% CLT UCL					182

	A	B	C	D	E	F	G	H	I	J	K	L
955	Adjusted Chi Square Value					75.33	95% Jackknife UCL					182.8
956							95% Standard Bootstrap UCL					180.7
957	Anderson-Darling Test Statistic					1.437	95% Bootstrap-t UCL					196.2
958	Anderson-Darling 5% Critical Value					0.782	95% Hall's Bootstrap UCL					190
959	Kolmogorov-Smirnov Test Statistic					0.172	95% Percentile Bootstrap UCL					184.7
960	Kolmogorov-Smirnov 5% Critical Value					0.126	95% BCA Bootstrap UCL					190.6
961	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					247.7
962							97.5% Chebyshev(Mean, Sd) UCL					293.3
963	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					382.9
964	95% Approximate Gamma UCL					183.1						
965	95% Adjusted Gamma UCL					184.4						
966												
967	Potential UCL to Use						Use 95% H-UCL					214.7
968												
969												
970	Cobalt											
971												
972	General Statistics											
973	Number of Valid Data					53	Number of Detected Data					41
974	Number of Distinct Detected Data					38	Number of Non-Detect Data					12
975							Percent Non-Detects					22.64%
976												
977	Raw Statistics						Log-transformed Statistics					
978	Minimum Detected					1.76	Minimum Detected					0.565
979	Maximum Detected					18.7	Maximum Detected					2.929
980	Mean of Detected					5.342	Mean of Detected					1.484
981	SD of Detected					3.818	SD of Detected					0.597
982	Minimum Non-Detect					7.2	Minimum Non-Detect					1.974
983	Maximum Non-Detect					11	Maximum Non-Detect					2.398
984												
985	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					50
986	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					3
987	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					94.34%
988												
989	UCL Statistics											
990	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
991	Shapiro Wilk Test Statistic					0.789	Shapiro Wilk Test Statistic					0.939
992	5% Shapiro Wilk Critical Value					0.941	5% Shapiro Wilk Critical Value					0.941
993	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
994												
995	Assuming Normal Distribution						Assuming Lognormal Distribution					
996	DL/2 Substitution Method						DL/2 Substitution Method					
997	Mean					5.215	Mean					1.5
998	SD					3.374	SD					0.529
999	95% DL/2 (t) UCL					5.991	95% H-Stat (DL/2) UCL					7.725
1000												
1001	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1002	MLE yields a negative mean						Mean in Log Scale					1.454
1003							SD in Log Scale					0.541
1004							Mean in Original Scale					5.039
1005							SD in Original Scale					3.436
1006							95% Percentile Bootstrap UCL					5.879
1007							95% BCA Bootstrap UCL					6.051

	A	B	C	D	E	F	G	H	I	J	K	L
1008												
1009	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1010	k star (bias corrected)					2.58	Data do not follow a Discernable Distribution (0.05)					
1011	Theta Star					2.071						
1012	nu star					211.5						
1013												
1014	A-D Test Statistic					1.399	Nonparametric Statistics					
1015	5% A-D Critical Value					0.756	Kaplan-Meier (KM) Method					
1016	K-S Test Statistic					0.756	Mean					5.057
1017	5% K-S Critical Value					0.139	SD					3.489
1018	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.506
1019							95% KM (t) UCL					5.904
1020	Assuming Gamma Distribution						95% KM (z) UCL					5.889
1021	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					5.904
1022	Minimum					1.76	95% KM (bootstrap t) UCL					6.052
1023	Maximum					18.7	95% KM (BCA) UCL					5.97
1024	Mean					5.387	95% KM (Percentile Bootstrap) UCL					5.867
1025	Median					4.502	95% KM (Chebyshev) UCL					7.263
1026	SD					3.412	97.5% KM (Chebyshev) UCL					8.217
1027	k star					3.182	99% KM (Chebyshev) UCL					10.09
1028	Theta star					1.693						
1029	Nu star					337.3	Potential UCLs to Use					
1030	AppChi2					295.7	95% KM (BCA) UCL					5.97
1031	95% Gamma Approximate UCL					6.144						
1032	95% Adjusted Gamma UCL					6.167						
1033	Note: DL/2 is not a recommended method.											
1034												
1035												
1036	Copper											
1037												
1038	General Statistics											
1039	Number of Valid Observations					53	Number of Distinct Observations					53
1040												
1041	Raw Statistics						Log-transformed Statistics					
1042	Minimum					2.9	Minimum of Log Data					1.065
1043	Maximum					1650	Maximum of Log Data					7.409
1044	Mean					238.7	Mean of log Data					4.672
1045	Median					87.8	SD of log Data					1.311
1046	SD					350.2						
1047	Coefficient of Variation					1.467						
1048	Skewness					2.482						
1049												
1050	Relevant UCL Statistics											
1051	Normal Distribution Test						Lognormal Distribution Test					
1052	Lilliefors Test Statistic					0.259	Lilliefors Test Statistic					0.0755
1053	Lilliefors Critical Value					0.122	Lilliefors Critical Value					0.122
1054	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1055												
1056	Assuming Normal Distribution						Assuming Lognormal Distribution					
1057	95% Student's-t UCL					319.3	95% H-UCL					413.6
1058	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					490.6
1059	95% Adjusted-CLT UCL					335.4	97.5% Chebyshev (MVUE) UCL					596.7
1060	95% Modified-t UCL					322	99% Chebyshev (MVUE) UCL					805.2

	A	B	C	D	E	F	G	H	I	J	K	L
1061												
1062	Gamma Distribution Test						Data Distribution					
1063	k star (bias corrected)					0.716	Data appear Lognormal at 5% Significance Level					
1064	Theta Star					333.4						
1065	MLE of Mean					238.7						
1066	MLE of Standard Deviation					282.1						
1067	nu star					75.9						
1068	Approximate Chi Square Value (.05)					56.83	Nonparametric Statistics					
1069	Adjusted Level of Significance					0.0455	95% CLT UCL				317.8	
1070	Adjusted Chi Square Value					56.37	95% Jackknife UCL				319.3	
1071							95% Standard Bootstrap UCL				314.7	
1072	Anderson-Darling Test Statistic					1.544	95% Bootstrap-t UCL				346.2	
1073	Anderson-Darling 5% Critical Value					0.793	95% Hall's Bootstrap UCL				332.5	
1074	Kolmogorov-Smirnov Test Statistic					0.146	95% Percentile Bootstrap UCL				321.2	
1075	Kolmogorov-Smirnov 5% Critical Value					0.127	95% BCA Bootstrap UCL				330.9	
1076	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL				448.4	
1077							97.5% Chebyshev(Mean, Sd) UCL				539.1	
1078	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL				717.3	
1079	95% Approximate Gamma UCL					318.8						
1080	95% Adjusted Gamma UCL					321.4						
1081												
1082	Potential UCL to Use						Use 95% H-UCL				413.6	
1083												
1084												
1085	Dibenz_a,h_anthracene											
1086												
1087	General Statistics											
1088	Number of Valid Data					53	Number of Detected Data				44	
1089	Number of Distinct Detected Data					41	Number of Non-Detect Data				9	
1090							Percent Non-Detects				16.98%	
1091												
1092	Raw Statistics						Log-transformed Statistics					
1093	Minimum Detected					0.0032	Minimum Detected				-5.745	
1094	Maximum Detected					1.73	Maximum Detected				0.548	
1095	Mean of Detected					0.293	Mean of Detected				-1.802	
1096	SD of Detected					0.326	SD of Detected				1.233	
1097	Minimum Non-Detect					0.00428	Minimum Non-Detect				-5.454	
1098	Maximum Non-Detect					3.4	Maximum Non-Detect				1.224	
1099												
1100	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				53	
1101	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				0	
1102	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				100.00%	
1103												
1104	UCL Statistics											
1105	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1106	Shapiro Wilk Test Statistic					0.755	Shapiro Wilk Test Statistic				0.959	
1107	5% Shapiro Wilk Critical Value					0.944	5% Shapiro Wilk Critical Value				0.944	
1108	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1109												
1110	Assuming Normal Distribution						Assuming Lognormal Distribution					
1111	DL/2 Substitution Method						DL/2 Substitution Method					
1112	Mean					0.29	Mean				-2.004	
1113	SD					0.365	SD				1.502	

	A	B	C	D	E	F	G	H	I	J	K	L
1114	95% DL/2 (t) UCL					0.374	95% H-Stat (DL/2) UCL					0.752
1115												
1116	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1117	MLE method failed to converge properly						Mean in Log Scale					-2.04
1118							SD in Log Scale					1.299
1119							Mean in Original Scale					0.254
1120							SD in Original Scale					0.31
1121							95% Percentile Bootstrap UCL					0.326
1122							95% BCA Bootstrap UCL					0.341
1123												
1124	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1125	k star (bias corrected)					0.948	Data appear Gamma Distributed at 5% Significance Level					
1126	Theta Star					0.309						
1127	nu star					83.45						
1128												
1129	A-D Test Statistic					0.277	Nonparametric Statistics					
1130	5% A-D Critical Value					0.777	Kaplan-Meier (KM) Method					
1131	K-S Test Statistic					0.777	Mean					0.258
1132	5% K-S Critical Value					0.137	SD					0.31
1133	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0436
1134							95% KM (t) UCL					0.331
1135	Assuming Gamma Distribution						95% KM (z) UCL					0.33
1136	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.331
1137	Minimum					1E-09	95% KM (bootstrap t) UCL					0.357
1138	Maximum					1.73	95% KM (BCA) UCL					0.336
1139	Mean					0.268	95% KM (Percentile Bootstrap) UCL					0.332
1140	Median					0.182	95% KM (Chebyshev) UCL					0.448
1141	SD					0.308	97.5% KM (Chebyshev) UCL					0.531
1142	k star					0.349	99% KM (Chebyshev) UCL					0.692
1143	Theta star					0.768						
1144	Nu star					37.01	Potential UCLs to Use					
1145	AppChi2					24.08	95% KM (Chebyshev) UCL					0.448
1146	95% Gamma Approximate UCL					0.412						
1147	95% Adjusted Gamma UCL					0.417						
1148	Note: DL/2 is not a recommended method.											
1149												
1150												
1151	Dibenzofuran											
1152												
1153	General Statistics											
1154	Number of Valid Data					53	Number of Detected Data					21
1155	Number of Distinct Detected Data					20	Number of Non-Detect Data					32
1156							Percent Non-Detects					60.38%
1157												
1158	Raw Statistics						Log-transformed Statistics					
1159	Minimum Detected					0.061	Minimum Detected					-2.797
1160	Maximum Detected					1.1	Maximum Detected					0.0953
1161	Mean of Detected					0.216	Mean of Detected					-1.838
1162	SD of Detected					0.237	SD of Detected					0.704
1163	Minimum Non-Detect					0.138	Minimum Non-Detect					-1.981
1164	Maximum Non-Detect					2.49	Maximum Non-Detect					0.912
1165												
1166	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					53

	A	B	C	D	E	F	G	H	I	J	K	L
1167	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
1168	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
1169												
1170	UCL Statistics											
1171	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1172	Shapiro Wilk Test Statistic				0.59		Shapiro Wilk Test Statistic				0.886	
1173	5% Shapiro Wilk Critical Value				0.908		5% Shapiro Wilk Critical Value				0.908	
1174	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1175												
1176	Assuming Normal Distribution						Assuming Lognormal Distribution					
1177	DL/2 Substitution Method						DL/2 Substitution Method					
1178	Mean				0.207		Mean				-1.886	
1179	SD				0.234		SD				0.691	
1180	95% DL/2 (t) UCL				0.261		95% H-Stat (DL/2) UCL				0.287	
1181												
1182	Maximum Likelihood Estimate(MLE) Method				N/A		Log ROS Method					
1183	MLE method failed to converge properly						Mean in Log Scale				-2.033	
1184							SD in Log Scale				0.495	
1185							Mean in Original Scale				0.157	
1186							SD in Original Scale				0.157	
1187							95% Percentile Bootstrap UCL				0.195	
1188							95% BCA Bootstrap UCL				0.217	
1189												
1190	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1191	k star (bias corrected)				1.557		Data do not follow a Discernable Distribution (0.05)					
1192	Theta Star				0.139							
1193	nu star				65.39							
1194												
1195	A-D Test Statistic				1.61		Nonparametric Statistics					
1196	5% A-D Critical Value				0.756		Kaplan-Meier (KM) Method					
1197	K-S Test Statistic				0.756		Mean				0.157	
1198	5% K-S Critical Value				0.192		SD				0.16	
1199	Data not Gamma Distributed at 5% Significance Level						SE of Mean				0.0237	
1200							95% KM (t) UCL				0.196	
1201	Assuming Gamma Distribution						95% KM (z) UCL				0.196	
1202	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL				0.196	
1203	Minimum				0.061		95% KM (bootstrap t) UCL				0.237	
1204	Maximum				1.1		95% KM (BCA) UCL				0.196	
1205	Mean				0.224		95% KM (Percentile Bootstrap) UCL				0.197	
1206	Median				0.214		95% KM (Chebyshev) UCL				0.26	
1207	SD				0.15		97.5% KM (Chebyshev) UCL				0.305	
1208	k star				3.841		99% KM (Chebyshev) UCL				0.392	
1209	Theta star				0.0584							
1210	Nu star				407.2		Potential UCLs to Use					
1211	AppChi2				361.4		95% KM (t) UCL				0.196	
1212	95% Gamma Approximate UCL				0.253		95% KM (% Bootstrap) UCL				0.197	
1213	95% Adjusted Gamma UCL				0.254							
1214	Note: DL/2 is not a recommended method.											
1215												
1216												
1217	Dieldrin											
1218												
1219	General Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
1220	Number of Valid Data					53	Number of Detected Data					46
1221	Number of Distinct Detected Data					45	Number of Non-Detect Data					7
1222							Percent Non-Detects					13.21%
1223												
1224	Raw Statistics						Log-transformed Statistics					
1225	Minimum Detected					0.00071	Minimum Detected					-7.25
1226	Maximum Detected					0.81	Maximum Detected					-0.211
1227	Mean of Detected					0.0839	Mean of Detected					-3.687
1228	SD of Detected					0.144	SD of Detected					1.77
1229	Minimum Non-Detect					0.000284	Minimum Non-Detect					-8.167
1230	Maximum Non-Detect					0.0038	Maximum Non-Detect					-5.573
1231												
1232	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					16
1233	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					37
1234	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					30.19%
1235												
1236	UCL Statistics											
1237	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1238	Shapiro Wilk Test Statistic					0.601	Shapiro Wilk Test Statistic					0.965
1239	5% Shapiro Wilk Critical Value					0.945	5% Shapiro Wilk Critical Value					0.945
1240	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1241												
1242	Assuming Normal Distribution						Assuming Lognormal Distribution					
1243	DL/2 Substitution Method						DL/2 Substitution Method					
1244	Mean					0.073	Mean					-4.182
1245	SD					0.137	SD					2.125
1246	95% DL/2 (t) UCL					0.105	95% H-Stat (DL/2) UCL					0.314
1247												
1248	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1249	Mean					0.0351	Mean in Log Scale					-4.143
1250	SD					0.174	SD in Log Scale					2.044
1251	95% MLE (t) UCL					0.0751	Mean in Original Scale					0.073
1252	95% MLE (Tiku) UCL					0.0768	SD in Original Scale					0.137
1253							95% Percentile Bootstrap UCL					0.106
1254							95% BCA Bootstrap UCL					0.115
1255												
1256	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1257	k star (bias corrected)					0.502	Data appear Gamma Distributed at 5% Significance Level					
1258	Theta Star					0.167						
1259	nu star					46.2						
1260												
1261	A-D Test Statistic					0.691	Nonparametric Statistics					
1262	5% A-D Critical Value					0.812	Kaplan-Meier (KM) Method					
1263	K-S Test Statistic					0.812	Mean					0.073
1264	5% K-S Critical Value					0.138	SD					0.136
1265	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0189
1266							95% KM (t) UCL					0.105
1267	Assuming Gamma Distribution						95% KM (z) UCL					0.104
1268	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.105
1269	Minimum					1E-09	95% KM (bootstrap t) UCL					0.124
1270	Maximum					0.81	95% KM (BCA) UCL					0.106
1271	Mean					0.0729	95% KM (Percentile Bootstrap) UCL					0.105
1272	Median					0.023	95% KM (Chebyshev) UCL					0.155

	A	B	C	D	E	F	G	H	I	J	K	L
1273	SD					0.137	97.5% KM (Chebyshev) UCL					0.191
1274	k star					0.219	99% KM (Chebyshev) UCL					0.261
1275	Theta star					0.333						
1276	Nu star					23.2	Potential UCLs to Use					
1277	AppChi2					13.24	95% KM (Chebyshev) UCL					0.155
1278	95% Gamma Approximate UCL					0.128						
1279	95% Adjusted Gamma UCL					0.13						
1280	Note: DL/2 is not a recommended method.											
1281												
1282												
1283	Indeno(1,2,3-cd)pyrene											
1284												
1285	General Statistics											
1286	Number of Valid Data					53	Number of Detected Data					51
1287	Number of Distinct Detected Data					49	Number of Non-Detect Data					2
1288							Percent Non-Detects					3.77%
1289												
1290	Raw Statistics						Log-transformed Statistics					
1291	Minimum Detected					0.00454	Minimum Detected					-5.395
1292	Maximum Detected					6.21	Maximum Detected					1.826
1293	Mean of Detected					0.81	Mean of Detected					-0.939
1294	SD of Detected					1.031	SD of Detected					1.428
1295	Minimum Non-Detect					0.00788	Minimum Non-Detect					-4.843
1296	Maximum Non-Detect					0.00864	Maximum Non-Detect					-4.751
1297												
1298	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3
1299	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50
1300	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%
1301												
1302	UCL Statistics											
1303	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1304	Lilliefors Test Statistic					0.217	Lilliefors Test Statistic					0.0879
1305	5% Lilliefors Critical Value					0.124	5% Lilliefors Critical Value					0.124
1306	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1307												
1308	Assuming Normal Distribution						Assuming Lognormal Distribution					
1309	DL/2 Substitution Method						DL/2 Substitution Method					
1310	Mean					0.78	Mean					-1.111
1311	SD					1.023	SD					1.651
1312	95% DL/2 (t) UCL					1.015	95% H-Stat (DL/2) UCL					2.186
1313												
1314	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1315	Mean					0.744	Mean in Log Scale					-1.055
1316	SD					1.057	SD in Log Scale					1.519
1317	95% MLE (t) UCL					0.988	Mean in Original Scale					0.78
1318	95% MLE (Tiku) UCL					0.972	SD in Original Scale					1.023
1319							95% Percentile Bootstrap UCL					1.022
1320							95% BCA Bootstrap UCL					1.104
1321												
1322	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1323	k star (bias corrected)					0.778	Data appear Gamma Distributed at 5% Significance Level					
1324	Theta Star					1.041						
1325	nu star					79.35						

	A	B	C	D	E	F	G	H	I	J	K	L
1326												
1327	A-D Test Statistic					0.16	Nonparametric Statistics					
1328	5% A-D Critical Value					0.79	Kaplan-Meier (KM) Method					
1329	K-S Test Statistic					0.79	Mean					0.78
1330	5% K-S Critical Value					0.129	SD					1.013
1331	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.141
1332							95% KM (t) UCL					1.015
1333	Assuming Gamma Distribution						95% KM (z) UCL					1.011
1334	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.015
1335	Minimum					1E-09	95% KM (bootstrap t) UCL					1.144
1336	Maximum					6.21	95% KM (BCA) UCL					1.01
1337	Mean					0.779	95% KM (Percentile Bootstrap) UCL					1.021
1338	Median					0.399	95% KM (Chebyshev) UCL					1.392
1339	SD					1.023	97.5% KM (Chebyshev) UCL					1.658
1340	k star					0.437	99% KM (Chebyshev) UCL					2.178
1341	Theta star					1.785						
1342	Nu star					46.28	Potential UCLs to Use					
1343	AppChi2					31.67	95% KM (Chebyshev) UCL					1.392
1344	95% Gamma Approximate UCL					1.139						
1345	95% Adjusted Gamma UCL					1.151						
1346	Note: DL/2 is not a recommended method.											
1347												
1348												
1349	Iron											
1350												
1351	General Statistics											
1352	Number of Valid Observations					53	Number of Distinct Observations					49
1353												
1354	Raw Statistics						Log-transformed Statistics					
1355	Minimum					5400	Minimum of Log Data					8.594
1356	Maximum					92500	Maximum of Log Data					11.43
1357	Mean					18661	Mean of log Data					9.587
1358	Median					11900	SD of log Data					0.638
1359	SD					17647						
1360	Coefficient of Variation					0.946						
1361	Skewness					3.043						
1362												
1363	Relevant UCL Statistics											
1364	Normal Distribution Test						Lognormal Distribution Test					
1365	Lilliefors Test Statistic					0.228	Lilliefors Test Statistic					0.152
1366	Lilliefors Critical Value					0.122	Lilliefors Critical Value					0.122
1367	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1368												
1369	Assuming Normal Distribution						Assuming Lognormal Distribution					
1370	95% Student's-t UCL					22721	95% H-UCL					21279
1371	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					25117
1372	95% Adjusted-CLT UCL					23731	97.5% Chebyshev (MVUE) UCL					28290
1373	95% Modified-t UCL					22890	99% Chebyshev (MVUE) UCL					34523
1374												
1375	Gamma Distribution Test						Data Distribution					
1376	k star (bias corrected)					2.067	Data do not follow a Discernable Distribution (0.05)					
1377	Theta Star					9028						
1378	MLE of Mean					18661						

	A	B	C	D	E	F	G	H	I	J	K	L	
1379	MLE of Standard Deviation					12980							
1380	nu star					219.1							
1381	Approximate Chi Square Value (.05)					185.8	Nonparametric Statistics						
1382	Adjusted Level of Significance					0.0455	95% CLT UCL					22648	
1383	Adjusted Chi Square Value					185	95% Jackknife UCL					22721	
1384							95% Standard Bootstrap UCL					22683	
1385	Anderson-Darling Test Statistic					2.576	95% Bootstrap-t UCL					25198	
1386	Anderson-Darling 5% Critical Value					0.762	95% Hall's Bootstrap UCL					28086	
1387	Kolmogorov-Smirnov Test Statistic					0.191	95% Percentile Bootstrap UCL					22915	
1388	Kolmogorov-Smirnov 5% Critical Value					0.124	95% BCA Bootstrap UCL					23567	
1389	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					29227	
1390							97.5% Chebyshev(Mean, Sd) UCL					33799	
1391	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					42779	
1392	95% Approximate Gamma UCL					22001							
1393	95% Adjusted Gamma UCL					22102							
1394													
1395	Potential UCL to Use						Use 95% Chebyshev (Mean, Sd) UCL					29227	
1396													
1397													
1398	Lead												
1399													
1400	General Statistics												
1401	Number of Valid Observations					53	Number of Distinct Observations					52	
1402													
1403	Raw Statistics						Log-transformed Statistics						
1404	Minimum					2.49	Minimum of Log Data					0.912	
1405	Maximum					9640	Maximum of Log Data					9.174	
1406	Mean					536	Mean of log Data					4.907	
1407	Median					113	SD of log Data					1.703	
1408	SD					1395							
1409	Coefficient of Variation					2.602							
1410	Skewness					5.648							
1411													
1412	Relevant UCL Statistics												
1413	Normal Distribution Test						Lognormal Distribution Test						
1414	Lilliefors Test Statistic					0.357	Lilliefors Test Statistic					0.086	
1415	Lilliefors Critical Value					0.122	Lilliefors Critical Value					0.122	
1416	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
1417													
1418	Assuming Normal Distribution						Assuming Lognormal Distribution						
1419	95% Student's-t UCL					856.8	95% H-UCL					1232	
1420	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					1312	
1421	95% Adjusted-CLT UCL					1010	97.5% Chebyshev (MVUE) UCL					1646	
1422	95% Modified-t UCL					881.6	99% Chebyshev (MVUE) UCL					2300	
1423													
1424	Gamma Distribution Test						Data Distribution						
1425	k star (bias corrected)					0.452	Data appear Lognormal at 5% Significance Level						
1426	Theta Star					1185							
1427	MLE of Mean					536							
1428	MLE of Standard Deviation					796.8							
1429	nu star					47.96							
1430	Approximate Chi Square Value (.05)					33.06	Nonparametric Statistics						
1431	Adjusted Level of Significance					0.0455	95% CLT UCL					851.1	

	A	B	C	D	E	F	G	H	I	J	K	L
1432	Adjusted Chi Square Value					32.72	95% Jackknife UCL					856.8
1433							95% Standard Bootstrap UCL					850.7
1434	Anderson-Darling Test Statistic					2.317	95% Bootstrap-t UCL					1311
1435	Anderson-Darling 5% Critical Value					0.823	95% Hall's Bootstrap UCL					1958
1436	Kolmogorov-Smirnov Test Statistic					0.205	95% Percentile Bootstrap UCL					893.4
1437	Kolmogorov-Smirnov 5% Critical Value					0.13	95% BCA Bootstrap UCL					1069
1438	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					1371
1439							97.5% Chebyshev(Mean, Sd) UCL					1732
1440	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					2442
1441	95% Approximate Gamma UCL					777.4						
1442	95% Adjusted Gamma UCL					785.6						
1443												
1444	Potential UCL to Use						Use 95% H-UCL					1232
1445												
1446												
1447	Manganese											
1448												
1449	General Statistics											
1450	Number of Valid Observations					53	Number of Distinct Observations					50
1451												
1452	Raw Statistics						Log-transformed Statistics					
1453	Minimum					71.4	Minimum of Log Data					4.268
1454	Maximum					1680	Maximum of Log Data					7.427
1455	Mean					238.3	Mean of log Data					5.211
1456	Median					144	SD of log Data					0.665
1457	SD					242.3						
1458	Coefficient of Variation					1.016						
1459	Skewness					4.286						
1460												
1461	Relevant UCL Statistics											
1462	Normal Distribution Test						Lognormal Distribution Test					
1463	Lilliefors Test Statistic					0.245	Lilliefors Test Statistic					0.16
1464	Lilliefors Critical Value					0.122	Lilliefors Critical Value					0.122
1465	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1466												
1467	Assuming Normal Distribution						Assuming Lognormal Distribution					
1468	95% Student's-t UCL					294.1	95% H-UCL					274.9
1469	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					325.9
1470	95% Adjusted-CLT UCL					314	97.5% Chebyshev (MVUE) UCL					368.5
1471	95% Modified-t UCL					297.3	99% Chebyshev (MVUE) UCL					452.1
1472												
1473	Gamma Distribution Test						Data Distribution					
1474	k star (bias corrected)					1.952	Data do not follow a Discernable Distribution (0.05)					
1475	Theta Star					122.1						
1476	MLE of Mean					238.3						
1477	MLE of Standard Deviation					170.6						
1478	nu star					206.9						
1479	Approximate Chi Square Value (.05)					174.7	Nonparametric Statistics					
1480	Adjusted Level of Significance					0.0455	95% CLT UCL					293.1
1481	Adjusted Chi Square Value					173.8	95% Jackknife UCL					294.1
1482							95% Standard Bootstrap UCL					291.8
1483	Anderson-Darling Test Statistic					2.179	95% Bootstrap-t UCL					328.2
1484	Anderson-Darling 5% Critical Value					0.763	95% Hall's Bootstrap UCL					537.3

	A	B	C	D	E	F	G	H	I	J	K	L
1485	Kolmogorov-Smirnov Test Statistic					0.176	95% Percentile Bootstrap UCL					292.8
1486	Kolmogorov-Smirnov 5% Critical Value					0.124	95% BCA Bootstrap UCL					330.2
1487	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					383.4
1488							97.5% Chebyshev(Mean, Sd) UCL					446.2
1489	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					569.5
1490	95% Approximate Gamma UCL					282.4						
1491	95% Adjusted Gamma UCL					283.8						
1492												
1493	Potential UCL to Use						Use 95% Chebyshev (Mean, Sd) UCL					383.4
1494												
1495												
1496	Mercury											
1497												
1498	General Statistics											
1499	Number of Valid Data					53	Number of Detected Data					51
1500	Number of Distinct Detected Data					48	Number of Non-Detect Data					2
1501							Percent Non-Detects					3.77%
1502												
1503	Raw Statistics						Log-transformed Statistics					
1504	Minimum Detected					0.0069	Minimum Detected					-4.976
1505	Maximum Detected					3.43	Maximum Detected					1.233
1506	Mean of Detected					0.633	Mean of Detected					-1.152
1507	SD of Detected					0.78	SD of Detected					1.319
1508	Minimum Non-Detect					0.011	Minimum Non-Detect					-4.51
1509	Maximum Non-Detect					0.013	Maximum Non-Detect					-4.343
1510												
1511	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3
1512	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50
1513	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%
1514												
1515	UCL Statistics											
1516	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1517	Lilliefors Test Statistic					0.259	Lilliefors Test Statistic					0.0994
1518	5% Lilliefors Critical Value					0.124	5% Lilliefors Critical Value					0.124
1519	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1520												
1521	Assuming Normal Distribution						Assuming Lognormal Distribution					
1522	DL/2 Substitution Method						DL/2 Substitution Method					
1523	Mean					0.609	Mean					-1.302
1524	SD					0.775	SD					1.502
1525	95% DL/2 (t) UCL					0.787	95% H-Stat (DL/2) UCL					1.303
1526												
1527	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1528	Mean					0.583	Mean in Log Scale					-1.26
1529	SD					0.8	SD in Log Scale					1.405
1530	95% MLE (t) UCL					0.767	Mean in Original Scale					0.609
1531	95% MLE (Tiku) UCL					0.755	SD in Original Scale					0.774
1532							95% Percentile Bootstrap UCL					0.782
1533							95% BCA Bootstrap UCL					0.82
1534												
1535	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1536	k star (bias corrected)					0.812	Data Follow Appr. Gamma Distribution at 5% Significance Level					
1537	Theta Star					0.779						

	A	B	C	D	E	F	G	H	I	J	K	L
1538	nu star					82.8						
1539												
1540	A-D Test Statistic					0.82	Nonparametric Statistics					
1541	5% A-D Critical Value					0.788	Kaplan-Meier (KM) Method					
1542	K-S Test Statistic					0.788	Mean					0.609
1543	5% K-S Critical Value					0.129	SD					0.767
1544	Data follow Appr. Gamma Distribution at 5% Significance Level						SE of Mean					0.106
1545							95% KM (t) UCL					0.787
1546	Assuming Gamma Distribution						95% KM (z) UCL					0.784
1547	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.787
1548	Minimum					1E-09	95% KM (bootstrap t) UCL					0.842
1549	Maximum					3.43	95% KM (BCA) UCL					0.782
1550	Mean					0.609	95% KM (Percentile Bootstrap) UCL					0.79
1551	Median					0.3	95% KM (Chebyshev) UCL					1.073
1552	SD					0.775	97.5% KM (Chebyshev) UCL					1.274
1553	k star					0.448	99% KM (Chebyshev) UCL					1.668
1554	Theta star					1.359						
1555	Nu star					47.47	Potential UCLs to Use					
1556	AppChi2					32.66	95% KM (Chebyshev) UCL					1.073
1557	95% Gamma Approximate UCL					0.885						
1558	95% Adjusted Gamma UCL					0.894						
1559	Note: DL/2 is not a recommended method.											
1560												
1561												
1562	Naphthalene											
1563												
1564	General Statistics											
1565	Number of Valid Data					53	Number of Detected Data					34
1566	Number of Distinct Detected Data					32	Number of Non-Detect Data					19
1567							Percent Non-Detects					35.85%
1568												
1569	Raw Statistics						Log-transformed Statistics					
1570	Minimum Detected					0.04	Minimum Detected					-3.219
1571	Maximum Detected					4.75	Maximum Detected					1.558
1572	Mean of Detected					0.459	Mean of Detected					-1.5
1573	SD of Detected					0.839	SD of Detected					1.1
1574	Minimum Non-Detect					0.00418	Minimum Non-Detect					-5.477
1575	Maximum Non-Detect					0.4	Maximum Non-Detect					-0.916
1576												
1577	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					45
1578	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					8
1579	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					84.91%
1580												
1581	UCL Statistics											
1582	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1583	Shapiro Wilk Test Statistic					0.481	Shapiro Wilk Test Statistic					0.944
1584	5% Shapiro Wilk Critical Value					0.933	5% Shapiro Wilk Critical Value					0.933
1585	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1586												
1587	Assuming Normal Distribution						Assuming Lognormal Distribution					
1588	DL/2 Substitution Method						DL/2 Substitution Method					
1589	Mean					0.331	Mean					-2.228
1590	SD					0.693	SD					1.815

	A	B	C	D	E	F	G	H	I	J	K	L
1591	95% DL/2 (t) UCL					0.49	95% H-Stat (DL/2) UCL					1.085
1592												
1593	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1594	Mean					2.047	Mean in Log Scale					-2.053
1595	SD					1.277	SD in Log Scale					1.251
1596	95% MLE (t) UCL					2.34	Mean in Original Scale					0.318
1597	95% MLE (Tiku) UCL					2.771	SD in Original Scale					0.696
1598							95% Percentile Bootstrap UCL					0.497
1599							95% BCA Bootstrap UCL					0.603
1600												
1601	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1602	k star (bias corrected)					0.767	Data appear Lognormal at 5% Significance Level					
1603	Theta Star					0.599						
1604	nu star					52.14						
1605												
1606	A-D Test Statistic					1.967	Nonparametric Statistics					
1607	5% A-D Critical Value					0.784	Kaplan-Meier (KM) Method					
1608	K-S Test Statistic					0.784	Mean					0.326
1609	5% K-S Critical Value					0.156	SD					0.687
1610	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.096
1611							95% KM (t) UCL					0.487
1612	Assuming Gamma Distribution						95% KM (z) UCL					0.484
1613	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.485
1614	Minimum					1E-09	95% KM (bootstrap t) UCL					0.684
1615	Maximum					4.75	95% KM (BCA) UCL					0.499
1616	Mean					0.381	95% KM (Percentile Bootstrap) UCL					0.511
1617	Median					0.18	95% KM (Chebyshev) UCL					0.745
1618	SD					0.702	97.5% KM (Chebyshev) UCL					0.926
1619	k star					0.2	99% KM (Chebyshev) UCL					1.281
1620	Theta star					1.91						
1621	Nu star					21.17	Potential UCLs to Use					
1622	AppChi2					11.72	95% KM (Chebyshev) UCL					0.745
1623	95% Gamma Approximate UCL					0.689						
1624	95% Adjusted Gamma UCL					0.701						
1625	Note: DL/2 is not a recommended method.											
1626												
1627												
1628	Nickel											
1629												
1630	General Statistics											
1631	Number of Valid Data					53	Number of Detected Data					51
1632	Number of Distinct Detected Data					47	Number of Non-Detect Data					2
1633							Percent Non-Detects					3.77%
1634												
1635	Raw Statistics						Log-transformed Statistics					
1636	Minimum Detected					4.44	Minimum Detected					1.491
1637	Maximum Detected					248	Maximum Detected					5.513
1638	Mean of Detected					25.48	Mean of Detected					2.715
1639	SD of Detected					41.91	SD of Detected					0.862
1640	Minimum Non-Detect					7	Minimum Non-Detect					1.946
1641	Maximum Non-Detect					9	Maximum Non-Detect					2.197
1642												
1643	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					17

	A	B	C	D	E	F	G	H	I	J	K	L
1644	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					36
1645	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					32.08%
1646												
1647	UCL Statistics											
1648	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1649	Lilliefors Test Statistic				0.308		Lilliefors Test Statistic				0.166	
1650	5% Lilliefors Critical Value				0.124		5% Lilliefors Critical Value				0.124	
1651	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1652												
1653	Assuming Normal Distribution						Assuming Lognormal Distribution					
1654	DL/2 Substitution Method						DL/2 Substitution Method					
1655	Mean				24.67		Mean				2.665	
1656	SD				41.31		SD				0.884	
1657	95% DL/2 (t) UCL				34.17		95% H-Stat (DL/2) UCL				27.7	
1658												
1659	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1660	Mean				12.39		Mean in Log Scale				2.67	
1661	SD				52.35		SD in Log Scale				0.877	
1662	95% MLE (t) UCL				24.43		Mean in Original Scale				24.7	
1663	95% MLE (Tiku) UCL				25.1		SD in Original Scale				41.29	
1664												
1665												
1666												
1667	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1668	k star (bias corrected)				1.042		Data do not follow a Discernable Distribution (0.05)					
1669	Theta Star				24.46							
1670	nu star				106.2							
1671												
1672	A-D Test Statistic				4.27		Nonparametric Statistics					
1673	5% A-D Critical Value				0.778		Kaplan-Meier (KM) Method					
1674	K-S Test Statistic				0.778		Mean				24.75	
1675	5% K-S Critical Value				0.128		SD				40.88	
1676	Data not Gamma Distributed at 5% Significance Level						SE of Mean					
1677							95% KM (t) UCL				34.24	
1678	Assuming Gamma Distribution						95% KM (z) UCL					
1679	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL				34.24	
1680	Minimum				1E-09		95% KM (bootstrap t) UCL				43.26	
1681	Maximum				248		95% KM (BCA) UCL				34.59	
1682	Mean				24.52		95% KM (Percentile Bootstrap) UCL				34.74	
1683	Median				11.8		95% KM (Chebyshev) UCL				49.47	
1684	SD				41.39		97.5% KM (Chebyshev) UCL				60.16	
1685	k star				0.455		99% KM (Chebyshev) UCL				81.17	
1686	Theta star				53.91							
1687	Nu star				48.21		Potential UCLs to Use					
1688	AppChi2				33.27		95% KM (Chebyshev) UCL				49.47	
1689	95% Gamma Approximate UCL				35.53							
1690	95% Adjusted Gamma UCL				35.9							
1691	Note: DL/2 is not a recommended method.											
1692												
1693												
1694	Phenanthrene											
1695												
1696	General Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
1697	Number of Valid Data					53	Number of Detected Data					51
1698	Number of Distinct Detected Data					46	Number of Non-Detect Data					2
1699							Percent Non-Detects					3.77%
1700												
1701	Raw Statistics						Log-transformed Statistics					
1702	Minimum Detected					0.00687	Minimum Detected					-4.981
1703	Maximum Detected					26.7	Maximum Detected					3.285
1704	Mean of Detected					2.243	Mean of Detected					-0.229
1705	SD of Detected					4.177	SD of Detected					1.629
1706	Minimum Non-Detect					0.00788	Minimum Non-Detect					-4.843
1707	Maximum Non-Detect					0.00864	Maximum Non-Detect					-4.751
1708												
1709	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					3
1710	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					50
1711	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					5.66%
1712												
1713	UCL Statistics											
1714	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1715	Lilliefors Test Statistic					0.296	Lilliefors Test Statistic					0.108
1716	5% Lilliefors Critical Value					0.124	5% Lilliefors Critical Value					0.124
1717	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1718												
1719	Assuming Normal Distribution						Assuming Lognormal Distribution					
1720	DL/2 Substitution Method						DL/2 Substitution Method					
1721	Mean					2.159	Mean					-0.427
1722	SD					4.119	SD					1.891
1723	95% DL/2 (t) UCL					3.106	95% H-Stat (DL/2) UCL					7.749
1724												
1725	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1726	Mean					2.003	Mean in Log Scale					-0.362
1727	SD					4.242	SD in Log Scale					1.737
1728	95% MLE (t) UCL					2.979	Mean in Original Scale					2.159
1729	95% MLE (Tiku) UCL					2.895	SD in Original Scale					4.118
1730							95% Percentile Bootstrap UCL					3.205
1731							95% BCA Bootstrap UCL					3.631
1732												
1733	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1734	k star (bias corrected)					0.575	Data appear Gamma Distributed at 5% Significance Level					
1735	Theta Star					3.904						
1736	nu star					58.6						
1737												
1738	A-D Test Statistic					0.628	Nonparametric Statistics					
1739	5% A-D Critical Value					0.806	Kaplan-Meier (KM) Method					
1740	K-S Test Statistic					0.806	Mean					2.159
1741	5% K-S Critical Value					0.131	SD					4.08
1742	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.566
1743							95% KM (t) UCL					3.106
1744	Assuming Gamma Distribution						95% KM (z) UCL					3.09
1745	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					3.106
1746	Minimum					1E-09	95% KM (bootstrap t) UCL					4.233
1747	Maximum					26.7	95% KM (BCA) UCL					3.314
1748	Mean					2.158	95% KM (Percentile Bootstrap) UCL					3.18
1749	Median					0.814	95% KM (Chebyshev) UCL					4.626

	A	B	C	D	E	F	G	H	I	J	K	L	
1750	SD					4.119	97.5% KM (Chebyshev) UCL					5.693	
1751	k star					0.367	99% KM (Chebyshev) UCL					7.79	
1752	Theta star					5.887							
1753	Nu star					38.86	Potential UCLs to Use						
1754	AppChi2					25.58	95% KM (Chebyshev) UCL					4.626	
1755	95% Gamma Approximate UCL					3.279							
1756	95% Adjusted Gamma UCL					3.318							
1757	Note: DL/2 is not a recommended method.												
1758													
1759													
1760	TEQ - Total												
1761													
1762	General Statistics												
1763	Number of Valid Observations					17	Number of Distinct Observations					17	
1764													
1765	Raw Statistics					Log-transformed Statistics							
1766	Minimum					8.7E-08	Minimum of Log Data					-16.26	
1767	Maximum					0.00015	Maximum of Log Data					-8.805	
1768	Mean					3.439E-05	Mean of log Data					-11.11	
1769	Median					0.0000286	SD of log Data					1.887	
1770	SD					3.646E-05							
1771	Coefficient of Variation					N/A							
1772	Skewness					2.127							
1773													
1774	Relevant UCL Statistics												
1775	Normal Distribution Test					Lognormal Distribution Test							
1776	Shapiro Wilk Test Statistic					0.793	Shapiro Wilk Test Statistic					0.825	
1777	Shapiro Wilk Critical Value					0.892	Shapiro Wilk Critical Value					0.892	
1778	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level							
1779													
1780	Assuming Normal Distribution					Assuming Lognormal Distribution							
1781	95% Student's-t UCL					4.983E-05	95% H-UCL					0.0006372	
1782	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL							0.0002366
1783	95% Adjusted-CLT UCL					5.381E-05	97.5% Chebyshev (MVUE) UCL					0.0003085	
1784	95% Modified-t UCL					5.059E-05	99% Chebyshev (MVUE) UCL					0.0004499	
1785													
1786	Gamma Distribution Test					Data Distribution							
1787	k star (bias corrected)					0.635	Data appear Gamma Distributed at 5% Significance Level						
1788	Theta Star					5.419E-05							
1789	MLE of Mean					3.439E-05							
1790	MLE of Standard Deviation					4.317E-05							
1791	nu star					21.58							
1792	Approximate Chi Square Value (.05)					12.02	Nonparametric Statistics						
1793	Adjusted Level of Significance					0.0346	95% CLT UCL					4.894E-05	
1794	Adjusted Chi Square Value					11.28	95% Jackknife UCL					4.983E-05	
1795							95% Standard Bootstrap UCL					4.823E-05	
1796	Anderson-Darling Test Statistic					0.371	95% Bootstrap-t UCL					5.849E-05	
1797	Anderson-Darling 5% Critical Value					0.779	95% Hall's Bootstrap UCL					0.0001166	
1798	Kolmogorov-Smirnov Test Statistic					0.129	95% Percentile Bootstrap UCL					4.892E-05	
1799	Kolmogorov-Smirnov 5% Critical Value					0.218	95% BCA Bootstrap UCL					5.441E-05	
1800	Data appear Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL							7.293E-05
1801							97.5% Chebyshev(Mean, Sd) UCL					8.961E-05	
1802	Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL							0.0001224

	A	B	C	D	E	F	G	H	I	J	K	L
1803	95% Approximate Gamma UCL					6.173E-05						
1804	95% Adjusted Gamma UCL					6.579E-05						
1805												
1806	Potential UCL to Use						Use 95% Approximate Gamma UCL					6.173E-05
1807												
1808												
1809	Thallium											
1810												
1811	General Statistics											
1812	Number of Valid Data					53	Number of Detected Data					31
1813	Number of Distinct Detected Data					31	Number of Non-Detect Data					22
1814							Percent Non-Detects					41.51%
1815												
1816	Raw Statistics						Log-transformed Statistics					
1817	Minimum Detected					0.0298	Minimum Detected					-3.513
1818	Maximum Detected					1.2	Maximum Detected					0.182
1819	Mean of Detected					0.195	Mean of Detected					-2.145
1820	SD of Detected					0.277	SD of Detected					0.898
1821	Minimum Non-Detect					0.29	Minimum Non-Detect					-1.238
1822	Maximum Non-Detect					1.1	Maximum Non-Detect					0.0953
1823												
1824	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					52
1825	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
1826	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					98.11%
1827												
1828	UCL Statistics											
1829	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1830	Shapiro Wilk Test Statistic					0.546	Shapiro Wilk Test Statistic					0.904
1831	5% Shapiro Wilk Critical Value					0.929	5% Shapiro Wilk Critical Value					0.929
1832	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1833												
1834	Assuming Normal Distribution						Assuming Lognormal Distribution					
1835	DL/2 Substitution Method						DL/2 Substitution Method					
1836	Mean					0.258	Mean					-1.73
1837	SD					0.24	SD					0.892
1838	95% DL/2 (t) UCL					0.313	95% H-Stat (DL/2) UCL					0.74
1839												
1840	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1841	MLE method failed to converge properly						Mean in Log Scale					-2.199
1842							SD in Log Scale					0.696
1843							Mean in Original Scale					0.157
1844							SD in Original Scale					0.216
1845							95% Percentile Bootstrap UCL					0.21
1846							95% BCA Bootstrap UCL					0.229
1847												
1848	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1849	k star (bias corrected)					1.032	Data do not follow a Discernable Distribution (0.05)					
1850	Theta Star					0.189						
1851	nu star					63.98						
1852												
1853	A-D Test Statistic					2.444	Nonparametric Statistics					
1854	5% A-D Critical Value					0.773	Kaplan-Meier (KM) Method					
1855	K-S Test Statistic					0.773	Mean					0.163

	A	B	C	D	E	F	G	H	I	J	K	L
1856	5% K-S Critical Value					0.162	SD					0.222
1857	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0329
1858							95% KM (t) UCL					0.218
1859	Assuming Gamma Distribution						95% KM (z) UCL					0.217
1860	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.218
1861	Minimum				0.0298		95% KM (bootstrap t) UCL					0.259
1862	Maximum				1.2		95% KM (BCA) UCL					0.22
1863	Mean				0.195		95% KM (Percentile Bootstrap) UCL					0.217
1864	Median				0.165		95% KM (Chebyshev) UCL					0.306
1865	SD				0.211		97.5% KM (Chebyshev) UCL					0.368
1866	k star				1.726		99% KM (Chebyshev) UCL					0.49
1867	Theta star				0.113							
1868	Nu star				183		Potential UCLs to Use					
1869	AppChi2				152.7		95% KM (t) UCL					0.218
1870	95% Gamma Approximate UCL				0.234		95% KM (% Bootstrap) UCL					0.217
1871	95% Adjusted Gamma UCL				0.235							
1872	Note: DL/2 is not a recommended method.											
1873												
1874												
1875	Vanadium											
1876												
1877	General Statistics											
1878	Number of Valid Data				53		Number of Detected Data				52	
1879	Number of Distinct Detected Data				45		Number of Non-Detect Data				1	
1880							Percent Non-Detects				1.89%	
1881												
1882	Raw Statistics						Log-transformed Statistics					
1883	Minimum Detected				5.82		Minimum Detected				1.761	
1884	Maximum Detected				49.9		Maximum Detected				3.91	
1885	Mean of Detected				16.11		Mean of Detected				2.69	
1886	SD of Detected				7.63		SD of Detected				0.415	
1887	Minimum Non-Detect				12		Minimum Non-Detect				2.485	
1888	Maximum Non-Detect				12		Maximum Non-Detect				2.485	
1889												
1890												
1891	UCL Statistics											
1892	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1893	Lilliefors Test Statistic				0.136		Lilliefors Test Statistic				0.109	
1894	5% Lilliefors Critical Value				0.123		5% Lilliefors Critical Value				0.123	
1895	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1896												
1897	Assuming Normal Distribution						Assuming Lognormal Distribution					
1898	DL/2 Substitution Method						DL/2 Substitution Method					
1899	Mean				15.92		Mean				2.673	
1900	SD				7.683		SD				0.429	
1901	95% DL/2 (t) UCL				17.69		95% H-Stat (DL/2) UCL				17.39	
1902												
1903	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1904	Mean				13.91		Mean in Log Scale				2.683	
1905	SD				10.05		SD in Log Scale				0.414	
1906	95% MLE (t) UCL				16.22		Mean in Original Scale				16	
1907	95% MLE (Tiku) UCL				16.5		SD in Original Scale				7.6	
1908							95% Percentile Bootstrap UCL				17.74	

	A	B	C	D	E	F	G	H	I	J	K	L
1909							95% BCA Bootstrap UCL					18.01
1910												
1911	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1912	k star (bias corrected)					5.43	Data appear Gamma Distributed at 5% Significance Level					
1913	Theta Star					2.967						
1914	nu star					564.7						
1915												
1916	A-D Test Statistic					0.714	Nonparametric Statistics					
1917	5% A-D Critical Value					0.753	Kaplan-Meier (KM) Method					
1918	K-S Test Statistic					0.753	Mean					15.99
1919	5% K-S Critical Value					0.123	SD					7.534
1920	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					1.045
1921							95% KM (t) UCL					17.74
1922	Assuming Gamma Distribution						95% KM (z) UCL					17.71
1923	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					17.74
1924	Minimum					5.82	95% KM (bootstrap t) UCL					18.31
1925	Maximum					49.9	95% KM (BCA) UCL					17.92
1926	Mean					16.01	95% KM (Percentile Bootstrap) UCL					17.75
1927	Median					14.1	95% KM (Chebyshev) UCL					20.55
1928	SD					7.589	97.5% KM (Chebyshev) UCL					22.52
1929	k star					5.465	99% KM (Chebyshev) UCL					26.39
1930	Theta star					2.93						
1931	Nu star					579.3	Potential UCLs to Use					
1932	AppChi2					524.4	95% KM (BCA) UCL					17.92
1933	95% Gamma Approximate UCL					17.69						
1934	95% Adjusted Gamma UCL					17.73						
1935	Note: DL/2 is not a recommended method.											
1936												
1937												
1938	Zinc											
1939												
1940	General Statistics											
1941	Number of Valid Observations					53	Number of Distinct Observations					52
1942												
1943	Raw Statistics						Log-transformed Statistics					
1944	Minimum					25.9	Minimum of Log Data					3.254
1945	Maximum					2580	Maximum of Log Data					7.856
1946	Mean					405.7	Mean of log Data					5.05
1947	Median					89.3	SD of log Data					1.335
1948	SD					621.5						
1949	Coefficient of Variation					1.532						
1950	Skewness					2.066						
1951												
1952	Relevant UCL Statistics											
1953	Normal Distribution Test						Lognormal Distribution Test					
1954	Lilliefors Test Statistic					0.3	Lilliefors Test Statistic					0.198
1955	Lilliefors Critical Value					0.122	Lilliefors Critical Value					0.122
1956	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1957												
1958	Assuming Normal Distribution						Assuming Lognormal Distribution					
1959	95% Student's-t UCL					548.7	95% H-UCL					632.8
1960	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					747.4
1961	95% Adjusted-CLT UCL					572	97.5% Chebyshev (MVUE) UCL					911.1

	A	B	C	D	E	F	G	H	I	J	K	L
1962	95% Modified-t UCL					552.7	99% Chebyshev (MVUE) UCL					1233
1963												
1964	Gamma Distribution Test						Data Distribution					
1965	k star (bias corrected)					0.617	Data do not follow a Discernable Distribution (0.05)					
1966	Theta Star					657.7						
1967	MLE of Mean					405.7						
1968	MLE of Standard Deviation					516.5						
1969	nu star					65.38						
1970	Approximate Chi Square Value (.05)					47.78	Nonparametric Statistics					
1971	Adjusted Level of Significance					0.0455	95% CLT UCL					546.1
1972	Adjusted Chi Square Value					47.36	95% Jackknife UCL					548.7
1973							95% Standard Bootstrap UCL					542.9
1974	Anderson-Darling Test Statistic					4.003	95% Bootstrap-t UCL					586.2
1975	Anderson-Darling 5% Critical Value					0.803	95% Hall's Bootstrap UCL					572.8
1976	Kolmogorov-Smirnov Test Statistic					0.264	95% Percentile Bootstrap UCL					545.3
1977	Kolmogorov-Smirnov 5% Critical Value					0.128	95% BCA Bootstrap UCL					570.7
1978	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					777.8
1979							97.5% Chebyshev(Mean, Sd) UCL					938.8
1980	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					1255
1981	95% Approximate Gamma UCL					555.2						
1982	95% Adjusted Gamma UCL					560.1						
1983												
1984	Potential UCL to Use						Use 97.5% Chebyshev (Mean, Sd) UCL					938.8
1985												

Surface Soil

	A	B	C	D	E	F	G	H	I	J	K	L	
1				General UCL Statistics for Data Sets with Non-Detects									
2	User Selected Options												
3	From File			C:\aa_Projects\Peterson\Unnamed Island\UCLs\SS conc_Crosstab.xls.wst									
4	Full Precision			OFF									
5	Confidence Coefficient			95%									
6	Number of Bootstrap Operations			2000									
7													
8													
9	Aluminum												
10													
11	General Statistics												
12	Number of Valid Observations					32		Number of Distinct Observations					31
13													
14	Raw Statistics						Log-transformed Statistics						
15	Minimum					3370		Minimum of Log Data					8.123
16	Maximum					11400		Maximum of Log Data					9.341
17	Mean					5931		Mean of log Data					8.637
18	Median					5175		SD of log Data					0.312
19	SD					2113							
20	Coefficient of Variation					0.356							
21	Skewness					1.466							
22													
23	Relevant UCL Statistics												
24	Normal Distribution Test						Lognormal Distribution Test						
25	Shapiro Wilk Test Statistic					0.819		Shapiro Wilk Test Statistic					0.914
26	Shapiro Wilk Critical Value					0.93		Shapiro Wilk Critical Value					0.93
27	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level						
28													
29	Assuming Normal Distribution						Assuming Lognormal Distribution						
30	95% Student's-t UCL					6565		95% H-UCL					6545
31	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					7353	
32	95% Adjusted-CLT UCL					6649		97.5% Chebyshev (MVUE) UCL					7978
33	95% Modified-t UCL					6581		99% Chebyshev (MVUE) UCL					9207
34													
35	Gamma Distribution Test						Data Distribution						
36	k star (bias corrected)					9.027		Data do not follow a Discernable Distribution (0.05)					
37	Theta Star					657.1							
38	MLE of Mean					5931							
39	MLE of Standard Deviation					1974							
40	nu star					577.7							
41	Approximate Chi Square Value (.05)					523		Nonparametric Statistics					
42	Adjusted Level of Significance					0.0416		95% CLT UCL					6546
43	Adjusted Chi Square Value					520.2		95% Jackknife UCL					6565
44								95% Standard Bootstrap UCL					6550
45	Anderson-Darling Test Statistic					1.364		95% Bootstrap-t UCL					6779
46	Anderson-Darling 5% Critical Value					0.747		95% Hall's Bootstrap UCL					6648
47	Kolmogorov-Smirnov Test Statistic					0.159		95% Percentile Bootstrap UCL					6538
48	Kolmogorov-Smirnov 5% Critical Value					0.155		95% BCA Bootstrap UCL					6680
49	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					7559	
50								97.5% Chebyshev(Mean, Sd) UCL					8264
51	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					9648	
52	95% Approximate Gamma UCL					6552							
53	95% Adjusted Gamma UCL					6587							

	A	B	C	D	E	F	G	H	I	J	K	L
54												
55	Potential UCL to Use						Use 95% Student's-t UCL					6565
56							or 95% Modified-t UCL					6581
57												
58												
59	Antimony											
60												
61	General Statistics											
62	Number of Valid Data					32	Number of Detected Data					12
63	Number of Distinct Detected Data					12	Number of Non-Detect Data					20
64							Percent Non-Detects					62.50%
65												
66	Raw Statistics						Log-transformed Statistics					
67	Minimum Detected					0.392	Minimum Detected					-0.936
68	Maximum Detected					63.6	Maximum Detected					4.153
69	Mean of Detected					12.46	Mean of Detected					1.233
70	SD of Detected					19.81	SD of Detected					1.778
71	Minimum Non-Detect					0.95	Minimum Non-Detect					-0.0513
72	Maximum Non-Detect					15	Maximum Non-Detect					2.708
73												
74	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					29
75	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					3
76	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					90.63%
77												
78	UCL Statistics											
79	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
80	Shapiro Wilk Test Statistic					0.68	Shapiro Wilk Test Statistic					0.922
81	5% Shapiro Wilk Critical Value					0.859	5% Shapiro Wilk Critical Value					0.859
82	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
83												
84	Assuming Normal Distribution						Assuming Lognormal Distribution					
85	DL/2 Substitution Method						DL/2 Substitution Method					
86	Mean					6.79	Mean					0.928
87	SD					12.82	SD					1.367
88	95% DL/2 (t) UCL					10.63	95% H-Stat (DL/2) UCL					25.62
89												
90	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
91	Mean					45.75	Mean in Log Scale					0.37
92	SD					17.68	SD in Log Scale					1.383
93	95% MLE (t) UCL					51.05	Mean in Original Scale					5.38
94	95% MLE (Tiku) UCL					62.74	SD in Original Scale					13.07
95							95% Percentile Bootstrap UCL					9.611
96							95% BCA Bootstrap UCL					11.61
97												
98	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
99	k star (bias corrected)					0.426	Data appear Gamma Distributed at 5% Significance Level					
100	Theta Star					29.28						
101	nu star					10.21						
102												
103	A-D Test Statistic					0.606	Nonparametric Statistics					
104	5% A-D Critical Value					0.786	Kaplan-Meier (KM) Method					
105	K-S Test Statistic					0.786	Mean					5.411
106	5% K-S Critical Value					0.259	SD					12.9

	A	B	C	D	E	F	G	H	I	J	K	L
107	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					2.401
108							95% KM (t) UCL					9.482
109	Assuming Gamma Distribution						95% KM (z) UCL					9.36
110	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					9.375
111	Minimum				0.392		95% KM (bootstrap t) UCL					16.9
112	Maximum				63.6		95% KM (BCA) UCL					9.631
113	Mean				12.5		95% KM (Percentile Bootstrap) UCL					9.624
114	Median				11.98		95% KM (Chebyshev) UCL					15.88
115	SD				11.82		97.5% KM (Chebyshev) UCL					20.4
116	k star				1.081		99% KM (Chebyshev) UCL					29.3
117	Theta star				11.57							
118	Nu star				69.16		Potential UCLs to Use					
119	AppChi2				51.02		95% KM (t) UCL					9.482
120	95% Gamma Approximate UCL				16.95							
121	95% Adjusted Gamma UCL				17.23							
122	Note: DL/2 is not a recommended method.											
123												
124												
125	Aroclor-1242											
126												
127	General Statistics											
128	Number of Valid Data				32		Number of Detected Data				1	
129	Number of Distinct Detected Data				1		Number of Non-Detect Data				31	
130							Percent Non-Detects				96.88%	
131												
132	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
133	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
134												
135	The data set for variable Aroclor-1242 was not processed!											
136												
137												
138												
139	Aroclor-1254											
140												
141	General Statistics											
142	Number of Valid Data				32		Number of Detected Data				10	
143	Number of Distinct Detected Data				10		Number of Non-Detect Data				22	
144							Percent Non-Detects				68.75%	
145												
146	Raw Statistics					Log-transformed Statistics						
147	Minimum Detected				0.077		Minimum Detected				-2.564	
148	Maximum Detected				1.34		Maximum Detected				0.293	
149	Mean of Detected				0.64		Mean of Detected				-0.819	
150	SD of Detected				0.513		SD of Detected				0.982	
151	Minimum Non-Detect				0.034		Minimum Non-Detect				-3.381	
152	Maximum Non-Detect				0.0673		Maximum Non-Detect				-2.699	
153												
154	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				22	
155	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				10	
156	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				68.75%	
157												
158	UCL Statistics											
159	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					

	A	B	C	D	E	F	G	H	I	J	K	L
160	Shapiro Wilk Test Statistic					0.829	Shapiro Wilk Test Statistic					0.912
161	5% Shapiro Wilk Critical Value					0.842	5% Shapiro Wilk Critical Value					0.842
162	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
163												
164	Assuming Normal Distribution						Assuming Lognormal Distribution					
165	DL/2 Substitution Method						DL/2 Substitution Method					
166	Mean					0.214	Mean					-2.947
167	SD					0.402	SD					1.556
168	95% DL/2 (t) UCL					0.335	95% H-Stat (DL/2) UCL					0.251
169												
170	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
171	MLE yields a negative mean						Mean in Log Scale					-3.018
172							SD in Log Scale					1.691
173							Mean in Original Scale					0.215
174							SD in Original Scale					0.402
175							95% Percentile Bootstrap UCL					0.337
176							95% BCA Bootstrap UCL					0.371
177												
178	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
179	k star (bias corrected)					1.105	Data appear Gamma Distributed at 5% Significance Level					
180	Theta Star					0.58						
181	nu star					22.09						
182												
183	A-D Test Statistic					0.512	Nonparametric Statistics					
184	5% A-D Critical Value					0.74	Kaplan-Meier (KM) Method					
185	K-S Test Statistic					0.74	Mean					0.253
186	5% K-S Critical Value					0.271	SD					0.377
187	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0703
188							95% KM (t) UCL					0.372
189	Assuming Gamma Distribution						95% KM (z) UCL					0.369
190	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.355
191	Minimum					0.077	95% KM (bootstrap t) UCL					0.41
192	Maximum					1.34	95% KM (BCA) UCL					0.504
193	Mean					0.624	95% KM (Percentile Bootstrap) UCL					0.428
194	Median					0.615	95% KM (Chebyshev) UCL					0.559
195	SD					0.284	97.5% KM (Chebyshev) UCL					0.692
196	k star					3.885	99% KM (Chebyshev) UCL					0.952
197	Theta star					0.161						
198	Nu star					248.7	Potential UCLs to Use					
199	AppChi2					213.2	95% KM (t) UCL					0.372
200	95% Gamma Approximate UCL					0.728						
201	95% Adjusted Gamma UCL					0.734						
202	Note: DL/2 is not a recommended method.											
203												
204												
205	Aroclor-1260											
206												
207	General Statistics											
208	Number of Valid Data					32	Number of Detected Data					26
209	Number of Distinct Detected Data					25	Number of Non-Detect Data					6
210							Percent Non-Detects					18.75%
211												
212	Raw Statistics						Log-transformed Statistics					

	A	B	C	D	E	F	G	H	I	J	K	L
213	Minimum Detected					0.045	Minimum Detected					-3.101
214	Maximum Detected					1.47	Maximum Detected					0.385
215	Mean of Detected					0.304	Mean of Detected					-1.645
216	SD of Detected					0.358	SD of Detected					0.922
217	Minimum Non-Detect					0.035	Minimum Non-Detect					-3.352
218	Maximum Non-Detect					0.038	Maximum Non-Detect					-3.27
219												
220	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					6
221	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					26
222	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					18.75%
223												
224	UCL Statistics											
225	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
226	Shapiro Wilk Test Statistic					0.669	Shapiro Wilk Test Statistic					0.953
227	5% Shapiro Wilk Critical Value					0.92	5% Shapiro Wilk Critical Value					0.92
228	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
229												
230	Assuming Normal Distribution						Assuming Lognormal Distribution					
231	DL/2 Substitution Method						DL/2 Substitution Method					
232	Mean					0.251	Mean					-2.086
233	SD					0.341	SD					1.247
234	95% DL/2 (t) UCL					0.353	95% H-Stat (DL/2) UCL					0.383
235												
236	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
237	Mean					0.207	Mean in Log Scale					-2.04
238	SD					0.386	SD in Log Scale					1.182
239	95% MLE (t) UCL					0.322	Mean in Original Scale					0.252
240	95% MLE (Tiku) UCL					0.32	SD in Original Scale					0.34
241							95% Percentile Bootstrap UCL					0.356
242							95% BCA Bootstrap UCL					0.391
243												
244	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
245	k star (bias corrected)					1.122	Data appear Lognormal at 5% Significance Level					
246	Theta Star					0.271						
247	nu star					58.36						
248												
249	A-D Test Statistic					1.102	Nonparametric Statistics					
250	5% A-D Critical Value					0.768	Kaplan-Meier (KM) Method					
251	K-S Test Statistic					0.768	Mean					0.256
252	5% K-S Critical Value					0.175	SD					0.332
253	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0598
254							95% KM (t) UCL					0.357
255	Assuming Gamma Distribution						95% KM (z) UCL					0.354
256	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.356
257	Minimum					1E-09	95% KM (bootstrap t) UCL					0.441
258	Maximum					1.47	95% KM (BCA) UCL					0.375
259	Mean					0.247	95% KM (Percentile Bootstrap) UCL					0.363
260	Median					0.143	95% KM (Chebyshev) UCL					0.516
261	SD					0.343	97.5% KM (Chebyshev) UCL					0.629
262	k star					0.196	99% KM (Chebyshev) UCL					0.851
263	Theta star					1.26						
264	Nu star					12.55	Potential UCLs to Use					
265	AppChi2					5.593	95% KM (Chebyshev) UCL					0.516

	A	B	C	D	E	F	G	H	I	J	K	L
266	95% Gamma Approximate UCL					0.555						
267	95% Adjusted Gamma UCL					0.58						
268	Note: DL/2 is not a recommended method.											
269												
270												
271	Arsenic											
272												
273	General Statistics											
274	Number of Valid Observations					32	Number of Distinct Observations					28
275												
276	Raw Statistics					Log-transformed Statistics						
277	Minimum					2	Minimum of Log Data					0.693
278	Maximum					26.1	Maximum of Log Data					3.262
279	Mean					9.298	Mean of log Data					1.983
280	Median					7.1	SD of log Data					0.713
281	SD					6.866						
282	Coefficient of Variation					0.738						
283	Skewness					1.192						
284												
285	Relevant UCL Statistics											
286	Normal Distribution Test					Lognormal Distribution Test						
287	Shapiro Wilk Test Statistic					0.843	Shapiro Wilk Test Statistic					0.96
288	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93
289	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
290												
291	Assuming Normal Distribution					Assuming Lognormal Distribution						
292	95% Student's-t UCL					11.36	95% H-UCL					12.29
293	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					14.81	
294	95% Adjusted-CLT UCL					11.57	97.5% Chebyshev (MVUE) UCL					17.21
295	95% Modified-t UCL					11.4	99% Chebyshev (MVUE) UCL					21.91
296												
297	Gamma Distribution Test					Data Distribution						
298	k star (bias corrected)					1.996	Data appear Gamma Distributed at 5% Significance Level					
299	Theta Star					4.658						
300	MLE of Mean					9.298						
301	MLE of Standard Deviation					6.581						
302	nu star					127.8						
303	Approximate Chi Square Value (.05)					102.7	Nonparametric Statistics					
304	Adjusted Level of Significance					0.0416	95% CLT UCL					11.29
305	Adjusted Chi Square Value					101.5	95% Jackknife UCL					11.36
306							95% Standard Bootstrap UCL					11.2
307	Anderson-Darling Test Statistic					0.655	95% Bootstrap-t UCL					11.6
308	Anderson-Darling 5% Critical Value					0.758	95% Hall's Bootstrap UCL					11.54
309	Kolmogorov-Smirnov Test Statistic					0.142	95% Percentile Bootstrap UCL					11.34
310	Kolmogorov-Smirnov 5% Critical Value					0.157	95% BCA Bootstrap UCL					11.61
311	Data appear Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL					14.59	
312							97.5% Chebyshev(Mean, Sd) UCL					16.88
313	Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL					21.37	
314	95% Approximate Gamma UCL					11.57						
315	95% Adjusted Gamma UCL					11.71						
316												
317	Potential UCL to Use					Use 95% Approximate Gamma UCL					11.57	
318												

	A	B	C	D	E	F	G	H	I	J	K	L	
319													
320	Benzo(a)pyrene												
321													
322	General Statistics												
323	Number of Valid Observations					32	Number of Distinct Observations					31	
324													
325	Raw Statistics					Log-transformed Statistics							
326	Minimum					0.085	Minimum of Log Data					-2.465	
327	Maximum					4	Maximum of Log Data					1.386	
328	Mean					1.027	Mean of log Data					-0.356	
329	Median					0.655	SD of log Data					0.942	
330	SD					0.904							
331	Coefficient of Variation					0.88							
332	Skewness					1.552							
333													
334	Relevant UCL Statistics												
335	Normal Distribution Test					Lognormal Distribution Test							
336	Shapiro Wilk Test Statistic					0.849	Shapiro Wilk Test Statistic					0.979	
337	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93	
338	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
339													
340	Assuming Normal Distribution					Assuming Lognormal Distribution							
341	95% Student's-t UCL					1.298	95% H-UCL					1.629	
342	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					1.957		
343	95% Adjusted-CLT UCL					1.337	97.5% Chebyshev (MVUE) UCL					2.34	
344	95% Modified-t UCL					1.305	99% Chebyshev (MVUE) UCL					3.093	
345													
346	Gamma Distribution Test					Data Distribution							
347	k star (bias corrected)					1.335	Data appear Gamma Distributed at 5% Significance Level						
348	Theta Star					0.77							
349	MLE of Mean					1.027							
350	MLE of Standard Deviation					0.889							
351	nu star					85.43							
352	Approximate Chi Square Value (.05)					65.13	Nonparametric Statistics						
353	Adjusted Level of Significance					0.0416	95% CLT UCL					1.29	
354	Adjusted Chi Square Value					64.18	95% Jackknife UCL					1.298	
355							95% Standard Bootstrap UCL					1.28	
356	Anderson-Darling Test Statistic					0.229	95% Bootstrap-t UCL					1.35	
357	Anderson-Darling 5% Critical Value					0.766	95% Hall's Bootstrap UCL					1.419	
358	Kolmogorov-Smirnov Test Statistic					0.108	95% Percentile Bootstrap UCL					1.289	
359	Kolmogorov-Smirnov 5% Critical Value					0.158	95% BCA Bootstrap UCL					1.331	
360	Data appear Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL					1.724		
361							97.5% Chebyshev(Mean, Sd) UCL					2.025	
362	Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL					2.617		
363	95% Approximate Gamma UCL					1.348							
364	95% Adjusted Gamma UCL					1.367							
365													
366	Potential UCL to Use					Use 95% Approximate Gamma UCL					1.348		
367													
368													
369	Benzo(b)fluoranthene												
370													
371	General Statistics												

	A	B	C	D	E	F	G	H	I	J	K	L
372	Number of Valid Observations					29	Number of Distinct Observations					27
373												
374	Raw Statistics						Log-transformed Statistics					
375					Minimum	0.12					Minimum of Log Data	-2.12
376					Maximum	6.4					Maximum of Log Data	1.856
377					Mean	1.481					Mean of log Data	-0.0784
378					Median	1.1					SD of log Data	1.071
379					SD	1.397						
380					Coefficient of Variation	0.943						
381					Skewness	1.718						
382												
383	Relevant UCL Statistics											
384	Normal Distribution Test						Lognormal Distribution Test					
385	Shapiro Wilk Test Statistic					0.836	Shapiro Wilk Test Statistic					0.956
386	Shapiro Wilk Critical Value					0.926	Shapiro Wilk Critical Value					0.926
387	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
388												
389	Assuming Normal Distribution						Assuming Lognormal Distribution					
390					95% Student's-t UCL	1.923					95% H-UCL	2.751
391	95% UCLs (Adjusted for Skewness)										95% Chebyshev (MVUE) UCL	3.197
392					95% Adjusted-CLT UCL	1.997					97.5% Chebyshev (MVUE) UCL	3.892
393					95% Modified-t UCL	1.937					99% Chebyshev (MVUE) UCL	5.256
394												
395	Gamma Distribution Test						Data Distribution					
396					k star (bias corrected)	1.099	Data appear Gamma Distributed at 5% Significance Level					
397					Theta Star	1.348						
398					MLE of Mean	1.481						
399					MLE of Standard Deviation	1.413						
400					nu star	63.73						
401	Approximate Chi Square Value (.05)					46.36	Nonparametric Statistics					
402	Adjusted Level of Significance					0.0407					95% CLT UCL	1.908
403	Adjusted Chi Square Value					45.48					95% Jackknife UCL	1.923
404											95% Standard Bootstrap UCL	1.897
405					Anderson-Darling Test Statistic	0.318					95% Bootstrap-t UCL	2.067
406					Anderson-Darling 5% Critical Value	0.77					95% Hall's Bootstrap UCL	2.127
407					Kolmogorov-Smirnov Test Statistic	0.101					95% Percentile Bootstrap UCL	1.928
408					Kolmogorov-Smirnov 5% Critical Value	0.167					95% BCA Bootstrap UCL	1.954
409	Data appear Gamma Distributed at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL	2.612
410											97.5% Chebyshev(Mean, Sd) UCL	3.101
411	Assuming Gamma Distribution										99% Chebyshev(Mean, Sd) UCL	4.062
412					95% Approximate Gamma UCL	2.036						
413					95% Adjusted Gamma UCL	2.076						
414												
415	Potential UCL to Use										Use 95% Approximate Gamma UCL	2.036
416												
417												
418	Benzo(k)fluoranthene											
419												
420	General Statistics											
421	Number of Valid Observations					32	Number of Distinct Observations					27
422												
423	Raw Statistics						Log-transformed Statistics					
424					Minimum	0.036					Minimum of Log Data	-3.324

	A	B	C	D	E	F	G	H	I	J	K	L
425	Maximum					2.41	Maximum of Log Data					0.88
426	Mean					0.637	Mean of log Data					-0.958
427	Median					0.413	SD of log Data					1.08
428	SD					0.646						
429	Coefficient of Variation					1.015						
430	Skewness					1.543						
431												
432	Relevant UCL Statistics											
433	Normal Distribution Test						Lognormal Distribution Test					
434	Shapiro Wilk Test Statistic					0.798	Shapiro Wilk Test Statistic					0.975
435	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93
436	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
437												
438	Assuming Normal Distribution						Assuming Lognormal Distribution					
439	95% Student's-t UCL					0.831	95% H-UCL					1.122
440	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					1.321
441	95% Adjusted-CLT UCL					0.858	97.5% Chebyshev (MVUE) UCL					1.603
442	95% Modified-t UCL					0.836	99% Chebyshev (MVUE) UCL					2.158
443												
444	Gamma Distribution Test						Data Distribution					
445	k star (bias corrected)					1.04	Data appear Gamma Distributed at 5% Significance Level					
446	Theta Star					0.613						
447	MLE of Mean					0.637						
448	MLE of Standard Deviation					0.625						
449	nu star					66.54						
450	Approximate Chi Square Value (.05)					48.76	Nonparametric Statistics					
451	Adjusted Level of Significance					0.0416	95% CLT UCL					0.825
452	Adjusted Chi Square Value					47.95	95% Jackknife UCL					0.831
453							95% Standard Bootstrap UCL					0.816
454	Anderson-Darling Test Statistic					0.432	95% Bootstrap-t UCL					0.871
455	Anderson-Darling 5% Critical Value					0.773	95% Hall's Bootstrap UCL					0.852
456	Kolmogorov-Smirnov Test Statistic					0.126	95% Percentile Bootstrap UCL					0.833
457	Kolmogorov-Smirnov 5% Critical Value					0.16	95% BCA Bootstrap UCL					0.87
458	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					1.135
459							97.5% Chebyshev(Mean, Sd) UCL					1.35
460	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					1.774
461	95% Approximate Gamma UCL					0.869						
462	95% Adjusted Gamma UCL					0.884						
463												
464	Potential UCL to Use						Use 95% Approximate Gamma UCL					0.869
465												
466												
467	Benzo_a_anthracene											
468												
469	General Statistics											
470	Number of Valid Observations					32	Number of Distinct Observations					28
471												
472	Raw Statistics						Log-transformed Statistics					
473	Minimum					0.08	Minimum of Log Data					-2.526
474	Maximum					4.5	Maximum of Log Data					1.504
475	Mean					1.132	Mean of log Data					-0.318
476	Median					0.71	SD of log Data					1.026
477	SD					1.043						

	A	B	C	D	E	F	G	H	I	J	K	L	
478	Coefficient of Variation					0.921							
479	Skewness					1.554							
480													
481	Relevant UCL Statistics												
482	Normal Distribution Test					Lognormal Distribution Test							
483	Shapiro Wilk Test Statistic					0.839	Shapiro Wilk Test Statistic					0.965	
484	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93	
485	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
486													
487	Assuming Normal Distribution					Assuming Lognormal Distribution							
488	95% Student's-t UCL					1.445	95% H-UCL					1.937	
489	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					2.303		
490	95% Adjusted-CLT UCL					1.49	97.5% Chebyshev (MVUE) UCL					2.779	
491	95% Modified-t UCL					1.453	99% Chebyshev (MVUE) UCL					3.715	
492													
493	Gamma Distribution Test					Data Distribution							
494	k star (bias corrected)					1.173	Data appear Gamma Distributed at 5% Significance Level						
495	Theta Star					0.965							
496	MLE of Mean					1.132							
497	MLE of Standard Deviation					1.046							
498	nu star					75.06							
499	Approximate Chi Square Value (.05)					56.11	Nonparametric Statistics						
500	Adjusted Level of Significance					0.0416	95% CLT UCL					1.436	
501	Adjusted Chi Square Value					55.23	95% Jackknife UCL					1.445	
502							95% Standard Bootstrap UCL					1.429	
503	Anderson-Darling Test Statistic					0.398	95% Bootstrap-t UCL					1.532	
504	Anderson-Darling 5% Critical Value					0.77	95% Hall's Bootstrap UCL					1.545	
505	Kolmogorov-Smirnov Test Statistic					0.113	95% Percentile Bootstrap UCL					1.448	
506	Kolmogorov-Smirnov 5% Critical Value					0.159	95% BCA Bootstrap UCL					1.45	
507	Data appear Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL					1.936		
508							97.5% Chebyshev(Mean, Sd) UCL					2.283	
509	Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL					2.966		
510	95% Approximate Gamma UCL					1.515							
511	95% Adjusted Gamma UCL					1.539							
512													
513	Potential UCL to Use					Use 95% Approximate Gamma UCL					1.515		
514													
515													
516	bis(2-Ethylhexyl)phthalate												
517													
518	General Statistics												
519	Number of Valid Data					32	Number of Detected Data					19	
520	Number of Distinct Detected Data					19	Number of Non-Detect Data					13	
521							Percent Non-Detects					40.63%	
522													
523	Raw Statistics					Log-transformed Statistics							
524	Minimum Detected					0.13	Minimum Detected					-2.04	
525	Maximum Detected					260	Maximum Detected					5.561	
526	Mean of Detected					29.23	Mean of Detected					1.284	
527	SD of Detected					64.03	SD of Detected					2.272	
528	Minimum Non-Detect					0.34	Minimum Non-Detect					-1.079	
529	Maximum Non-Detect					0.64	Maximum Non-Detect					-0.446	
530													

	A	B	C	D	E	F	G	H	I	J	K	L
531	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					19
532	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					13
533	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					59.38%
534												
535	UCL Statistics											
536	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
537	Shapiro Wilk Test Statistic					0.52	Shapiro Wilk Test Statistic					0.95
538	5% Shapiro Wilk Critical Value					0.901	5% Shapiro Wilk Critical Value					0.901
539	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
540												
541	Assuming Normal Distribution						Assuming Lognormal Distribution					
542	DL/2 Substitution Method						DL/2 Substitution Method					
543	Mean					17.44	Mean					0.119
544	SD					50.9	SD					2.25
545	95% DL/2 (t) UCL					32.7	95% H-Stat (DL/2) UCL					61.8
546												
547	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
548	MLE yields a negative mean						Mean in Log Scale					-0.229
549							SD in Log Scale					2.577
550							Mean in Original Scale					17.4
551							SD in Original Scale					50.91
552							95% Percentile Bootstrap UCL					33.64
553							95% BCA Bootstrap UCL					41.53
554												
555	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
556	k star (bias corrected)					0.309	Data Follow Appr. Gamma Distribution at 5% Significance Level					
557	Theta Star					94.57						
558	nu star					11.75						
559												
560	A-D Test Statistic					0.976	Nonparametric Statistics					
561	5% A-D Critical Value					0.838	Kaplan-Meier (KM) Method					
562	K-S Test Statistic					0.838	Mean					17.44
563	5% K-S Critical Value					0.214	SD					50.1
564	Data follow Appr. Gamma Distribution at 5% Significance Level						SE of Mean					9.098
565							95% KM (t) UCL					32.87
566	Assuming Gamma Distribution						95% KM (z) UCL					32.4
567	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					32.69
568	Minimum					0.13	95% KM (bootstrap t) UCL					74.37
569	Maximum					260	95% KM (BCA) UCL					36.64
570	Mean					26.28	95% KM (Percentile Bootstrap) UCL					33.38
571	Median					18.5	95% KM (Chebyshev) UCL					57.1
572	SD					48.97	97.5% KM (Chebyshev) UCL					74.26
573	k star					0.479	99% KM (Chebyshev) UCL					108
574	Theta star					54.92						
575	Nu star					30.63	Potential UCLs to Use					
576	AppChi2					18.99	95% KM (BCA) UCL					36.64
577	95% Gamma Approximate UCL					42.4						
578	95% Adjusted Gamma UCL					43.52						
579	Note: DL/2 is not a recommended method.											
580												
581												
582	Cadmium											
583												

	A	B	C	D	E	F	G	H	I	J	K	L	
584	General Statistics												
585	Number of Valid Data					32	Number of Detected Data					29	
586	Number of Distinct Detected Data					27	Number of Non-Detect Data					3	
587							Percent Non-Detects					9.38%	
588													
589	Raw Statistics					Log-transformed Statistics							
590	Minimum Detected					0.31	Minimum Detected					-1.171	
591	Maximum Detected					21.8	Maximum Detected					3.082	
592	Mean of Detected					3.961	Mean of Detected					0.987	
593	SD of Detected					4.348	SD of Detected					0.894	
594	Minimum Non-Detect					0.87	Minimum Non-Detect					-0.139	
595	Maximum Non-Detect					1.1	Maximum Non-Detect					0.0953	
596													
597	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					7	
598	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					25	
599	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					21.88%	
600													
601	UCL Statistics												
602	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
603	Shapiro Wilk Test Statistic					0.666	Shapiro Wilk Test Statistic					0.966	
604	5% Shapiro Wilk Critical Value					0.926	5% Shapiro Wilk Critical Value					0.926	
605	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
606													
607	Assuming Normal Distribution					Assuming Lognormal Distribution							
608	DL/2 Substitution Method						DL/2 Substitution Method						
609	Mean					3.635	Mean					0.828	
610	SD					4.258	SD					0.989	
611	95% DL/2 (t) UCL					4.912	95% H-Stat (DL/2) UCL					5.14	
612													
613	Maximum Likelihood Estimate(MLE) Method						Log ROS Method						
614	Mean					3.026	Mean in Log Scale					0.844	
615	SD					4.909	SD in Log Scale					0.964	
616	95% MLE (t) UCL					4.497	Mean in Original Scale					3.644	
617	95% MLE (Tiku) UCL					4.494	SD in Original Scale					4.252	
618							95% Percentile Bootstrap UCL					4.892	
619							95% BCA Bootstrap UCL					5.382	
620													
621	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
622	k star (bias corrected)					1.304	Data Follow Appr. Gamma Distribution at 5% Significance Level						
623	Theta Star					3.037							
624	nu star					75.65							
625													
626	A-D Test Statistic					0.892	Nonparametric Statistics						
627	5% A-D Critical Value					0.764	Kaplan-Meier (KM) Method						
628	K-S Test Statistic					0.764	Mean					3.635	
629	5% K-S Critical Value					0.166	SD					4.192	
630	Data follow Appr. Gamma Distribution at 5% Significance Level					SE of Mean					0.754		
631							95% KM (t) UCL					4.914	
632	Assuming Gamma Distribution					95% KM (z) UCL					4.876		
633	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					4.912	
634	Minimum					1E-09	95% KM (bootstrap t) UCL					5.825	
635	Maximum					21.8	95% KM (BCA) UCL					5.069	
636	Mean					3.589	95% KM (Percentile Bootstrap) UCL					4.918	

	A	B	C	D	E	F	G	H	I	J	K	L
637	Median					2.42	95% KM (Chebyshev) UCL					6.923
638	SD					4.296	97.5% KM (Chebyshev) UCL					8.346
639	k star					0.29	99% KM (Chebyshev) UCL					11.14
640	Theta star					12.38						
641	Nu star					18.56	Potential UCLs to Use					
642	AppChi2					9.795	95% KM (Chebyshev) UCL					6.923
643	95% Gamma Approximate UCL					6.8						
644	95% Adjusted Gamma UCL					7.046						
645	Note: DL/2 is not a recommended method.											
646												
647												
648	Carbazole											
649												
650	General Statistics											
651	Number of Valid Data					32	Number of Detected Data					18
652	Number of Distinct Detected Data					17	Number of Non-Detect Data					14
653							Percent Non-Detects					43.75%
654												
655	Raw Statistics						Log-transformed Statistics					
656	Minimum Detected					0.024	Minimum Detected					-3.73
657	Maximum Detected					0.99	Maximum Detected					-0.0101
658	Mean of Detected					0.218	Mean of Detected					-1.896
659	SD of Detected					0.221	SD of Detected					0.904
660	Minimum Non-Detect					0.148	Minimum Non-Detect					-1.911
661	Maximum Non-Detect					0.4	Maximum Non-Detect					-0.916
662												
663	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					31
664	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
665	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					96.88%
666												
667	UCL Statistics											
668	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
669	Shapiro Wilk Test Statistic					0.708	Shapiro Wilk Test Statistic					0.983
670	5% Shapiro Wilk Critical Value					0.897	5% Shapiro Wilk Critical Value					0.897
671	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
672												
673	Assuming Normal Distribution						Assuming Lognormal Distribution					
674	DL/2 Substitution Method						DL/2 Substitution Method					
675	Mean					0.193	Mean					-1.888
676	SD					0.168	SD					0.708
677	95% DL/2 (t) UCL					0.243	95% H-Stat (DL/2) UCL					0.298
678												
679	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
680	MLE method failed to converge properly						Mean in Log Scale					-2.047
681							SD in Log Scale					0.736
682							Mean in Original Scale					0.173
683							SD in Original Scale					0.174
684							95% Percentile Bootstrap UCL					0.228
685							95% BCA Bootstrap UCL					0.257
686												
687	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
688	k star (bias corrected)					1.276	Data appear Gamma Distributed at 5% Significance Level					
689	Theta Star					0.171						

	A	B	C	D	E	F	G	H	I	J	K	L
690	nu star					45.95						
691												
692	A-D Test Statistic					0.276	Nonparametric Statistics					
693	5% A-D Critical Value					0.757	Kaplan-Meier (KM) Method					
694	K-S Test Statistic					0.757	Mean					0.182
695	5% K-S Critical Value					0.207	SD					0.177
696	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0348
697							95% KM (t) UCL					0.241
698	Assuming Gamma Distribution						95% KM (z) UCL					0.239
699	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.24
700	Minimum					0.024	95% KM (bootstrap t) UCL					0.274
701	Maximum					0.99	95% KM (BCA) UCL					0.241
702	Mean					0.221	95% KM (Percentile Bootstrap) UCL					0.24
703	Median					0.18	95% KM (Chebyshev) UCL					0.333
704	SD					0.169	97.5% KM (Chebyshev) UCL					0.399
705	k star					2.143	99% KM (Chebyshev) UCL					0.528
706	Theta star					0.103						
707	Nu star					137.2	Potential UCLs to Use					
708	AppChi2					111.1	95% KM (t) UCL					0.241
709	95% Gamma Approximate UCL					0.273						
710	95% Adjusted Gamma UCL					0.276						
711	Note: DL/2 is not a recommended method.											
712												
713												
714	Chromium											
715												
716	General Statistics											
717	Number of Valid Observations					32	Number of Distinct Observations					32
718												
719	Raw Statistics						Log-transformed Statistics					
720	Minimum					21.4	Minimum of Log Data					3.063
721	Maximum					471	Maximum of Log Data					6.155
722	Mean					107.9	Mean of log Data					4.349
723	Median					69.3	SD of log Data					0.785
724	SD					107.1						
725	Coefficient of Variation					0.992						
726	Skewness					2.193						
727												
728	Relevant UCL Statistics											
729	Normal Distribution Test						Lognormal Distribution Test					
730	Shapiro Wilk Test Statistic					0.706	Shapiro Wilk Test Statistic					0.954
731	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93
732	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
733												
734	Assuming Normal Distribution						Assuming Lognormal Distribution					
735	95% Student's-t UCL					140	95% H-UCL					143.3
736	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					173.2
737	95% Adjusted-CLT UCL					146.9	97.5% Chebyshev (MVUE) UCL					203.2
738	95% Modified-t UCL					141.3	99% Chebyshev (MVUE) UCL					262.1
739												
740	Gamma Distribution Test						Data Distribution					
741	k star (bias corrected)					1.515	Data appear Lognormal at 5% Significance Level					
742	Theta Star					71.25						

	A	B	C	D	E	F	G	H	I	J	K	L	
743	MLE of Mean					107.9							
744	MLE of Standard Deviation					87.7							
745	nu star					96.96							
746	Approximate Chi Square Value (.05)					75.24	Nonparametric Statistics						
747	Adjusted Level of Significance					0.0416	95% CLT UCL					139.1	
748	Adjusted Chi Square Value					74.22	95% Jackknife UCL					140	
749							95% Standard Bootstrap UCL					138.1	
750	Anderson-Darling Test Statistic					1.205	95% Bootstrap-t UCL					153.2	
751	Anderson-Darling 5% Critical Value					0.763	95% Hall's Bootstrap UCL					147.2	
752	Kolmogorov-Smirnov Test Statistic					0.179	95% Percentile Bootstrap UCL					139	
753	Kolmogorov-Smirnov 5% Critical Value					0.158	95% BCA Bootstrap UCL					149.2	
754	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					190.5	
755							97.5% Chebyshev(Mean, Sd) UCL					226.2	
756	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					296.3	
757	95% Approximate Gamma UCL					139.1							
758	95% Adjusted Gamma UCL					141							
759													
760	Potential UCL to Use						Use 95% H-UCL					143.3	
761													
762													
763	Cobalt												
764													
765	General Statistics												
766	Number of Valid Data					32	Number of Detected Data					20	
767	Number of Distinct Detected Data					18	Number of Non-Detect Data					12	
768							Percent Non-Detects					37.50%	
769													
770	Raw Statistics						Log-transformed Statistics						
771	Minimum Detected					2	Minimum Detected					0.693	
772	Maximum Detected					12.8	Maximum Detected					2.549	
773	Mean of Detected					5.011	Mean of Detected					1.5	
774	SD of Detected					2.729	SD of Detected					0.464	
775	Minimum Non-Detect					7.2	Minimum Non-Detect					1.974	
776	Maximum Non-Detect					11	Maximum Non-Detect					2.398	
777													
778	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					31	
779	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1	
780	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					96.88%	
781													
782	UCL Statistics												
783	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
784	Shapiro Wilk Test Statistic					0.808	Shapiro Wilk Test Statistic					0.959	
785	5% Shapiro Wilk Critical Value					0.905	5% Shapiro Wilk Critical Value					0.905	
786	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
787													
788	Assuming Normal Distribution						Assuming Lognormal Distribution						
789	DL/2 Substitution Method						DL/2 Substitution Method						
790	Mean					4.924	Mean					1.52	
791	SD					2.183	SD					0.376	
792	95% DL/2 (t) UCL					5.578	95% H-Stat (DL/2) UCL					7.078	
793													
794	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
795	MLE method failed to converge properly						Mean in Log Scale					1.471	

	A	B	C	D	E	F	G	H	I	J	K	L
796							SD in Log Scale					0.387
797							Mean in Original Scale					4.719
798							SD in Original Scale					2.242
799							95% Percentile Bootstrap UCL					5.392
800							95% BCA Bootstrap UCL					5.509
801												
802	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
803	k star (bias corrected)					3.989	Data appear Gamma Distributed at 5% Significance Level					
804	Theta Star					1.256						
805	nu star					159.5						
806												
807	A-D Test Statistic					0.593	Nonparametric Statistics					
808	5% A-D Critical Value					0.745	Kaplan-Meier (KM) Method					
809	K-S Test Statistic					0.745	Mean					4.746
810	5% K-S Critical Value					0.195	SD					2.34
811	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.475
812							95% KM (t) UCL					5.551
813	Assuming Gamma Distribution						95% KM (z) UCL					5.527
814	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					5.552
815	Minimum					2	95% KM (bootstrap t) UCL					5.831
816	Maximum					12.8	95% KM (BCA) UCL					5.479
817	Mean					5.094	95% KM (Percentile Bootstrap) UCL					5.571
818	Median					5.093	95% KM (Chebyshev) UCL					6.816
819	SD					2.223	97.5% KM (Chebyshev) UCL					7.712
820	k star					6.043	99% KM (Chebyshev) UCL					9.472
821	Theta star					0.843						
822	Nu star					386.8	Potential UCLs to Use					
823	AppChi2					342.2	95% KM (Percentile Bootstrap) UCL					5.571
824	95% Gamma Approximate UCL					5.757						
825	95% Adjusted Gamma UCL					5.795						
826	Note: DL/2 is not a recommended method.											
827												
828												
829	Copper											
830												
831	General Statistics											
832	Number of Valid Observations					32	Number of Distinct Observations					32
833												
834	Raw Statistics						Log-transformed Statistics					
835	Minimum					15.7	Minimum of Log Data					2.754
836	Maximum					1310	Maximum of Log Data					7.178
837	Mean					203.6	Mean of log Data					4.643
838	Median					80.1	SD of log Data					1.119
839	SD					291.7						
840	Coefficient of Variation					1.433						
841	Skewness					2.567						
842												
843	Relevant UCL Statistics											
844	Normal Distribution Test						Lognormal Distribution Test					
845	Shapiro Wilk Test Statistic					0.637	Shapiro Wilk Test Statistic					0.957
846	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93
847	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
848												

	A	B	C	D	E	F	G	H	I	J	K	L
849	Assuming Normal Distribution						Assuming Lognormal Distribution					
850	95% Student's-t UCL					291.1	95% H-UCL					325.8
851	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					380.4
852	95% Adjusted-CLT UCL					313.5	97.5% Chebyshev (MVUE) UCL					463.5
853	95% Modified-t UCL					295	99% Chebyshev (MVUE) UCL					626.6
854												
855	Gamma Distribution Test						Data Distribution					
856	k star (bias corrected)					0.811	Data appear Lognormal at 5% Significance Level					
857	Theta Star					251.1						
858	MLE of Mean					203.6						
859	MLE of Standard Deviation					226.1						
860	nu star					51.91						
861	Approximate Chi Square Value (.05)					36.36	Nonparametric Statistics					
862	Adjusted Level of Significance					0.0416	95% CLT UCL					288.5
863	Adjusted Chi Square Value					35.67	95% Jackknife UCL					291.1
864							95% Standard Bootstrap UCL					287.4
865	Anderson-Darling Test Statistic					1.505	95% Bootstrap-t UCL					343.7
866	Anderson-Darling 5% Critical Value					0.782	95% Hall's Bootstrap UCL					343
867	Kolmogorov-Smirnov Test Statistic					0.203	95% Percentile Bootstrap UCL					289.4
868	Kolmogorov-Smirnov 5% Critical Value					0.161	95% BCA Bootstrap UCL					326.8
869	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					428.4
870							97.5% Chebyshev(Mean, Sd) UCL					525.7
871	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					716.8
872	95% Approximate Gamma UCL					290.7						
873	95% Adjusted Gamma UCL					296.4						
874												
875	Potential UCL to Use						Use 95% H-UCL					325.8
876												
877												
878	Dibenz_a,h_anthracene											
879												
880	General Statistics											
881	Number of Valid Data					32	Number of Detected Data					27
882	Number of Distinct Detected Data					26	Number of Non-Detect Data					5
883							Percent Non-Detects					15.63%
884												
885	Raw Statistics						Log-transformed Statistics					
886	Minimum Detected					0.041	Minimum Detected					-3.194
887	Maximum Detected					0.75	Maximum Detected					-0.288
888	Mean of Detected					0.217	Mean of Detected					-1.841
889	SD of Detected					0.182	SD of Detected					0.808
890	Minimum Non-Detect					0.35	Minimum Non-Detect					-1.05
891	Maximum Non-Detect					3.4	Maximum Non-Detect					1.224
892												
893	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					32
894	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					0
895	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					100.00%
896												
897	UCL Statistics											
898	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
899	Shapiro Wilk Test Statistic					0.826	Shapiro Wilk Test Statistic					0.961
900	5% Shapiro Wilk Critical Value					0.923	5% Shapiro Wilk Critical Value					0.923
901	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					

	A	B	C	D	E	F	G	H	I	J	K	L
902												
903	Assuming Normal Distribution						Assuming Lognormal Distribution					
904	DL/2 Substitution Method						DL/2 Substitution Method					
905	Mean					0.259	Mean					-1.752
906	SD					0.311	SD					0.85
907	95% DL/2 (t) UCL					0.352	95% H-Stat (DL/2) UCL					0.449
908												
909	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
910	MLE method failed to converge properly						Mean in Log Scale					-1.875
911							SD in Log Scale					0.749
912							Mean in Original Scale					0.203
913							SD in Original Scale					0.17
914							95% Percentile Bootstrap UCL					0.254
915							95% BCA Bootstrap UCL					0.262
916												
917	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
918	k star (bias corrected)					1.579	Data appear Gamma Distributed at 5% Significance Level					
919	Theta Star					0.137						
920	nu star					85.28						
921												
922	A-D Test Statistic					0.66	Nonparametric Statistics					
923	5% A-D Critical Value					0.76	Kaplan-Meier (KM) Method					
924	K-S Test Statistic					0.76	Mean					0.206
925	5% K-S Critical Value					0.171	SD					0.171
926	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					0.0317
927							95% KM (t) UCL					0.26
928	Assuming Gamma Distribution						95% KM (z) UCL					0.258
929	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.26
930	Minimum					0.041	95% KM (bootstrap t) UCL					0.274
931	Maximum					0.75	95% KM (BCA) UCL					0.261
932	Mean					0.217	95% KM (Percentile Bootstrap) UCL					0.259
933	Median					0.183	95% KM (Chebyshev) UCL					0.344
934	SD					0.167	97.5% KM (Chebyshev) UCL					0.404
935	k star					1.855	99% KM (Chebyshev) UCL					0.521
936	Theta star					0.117						
937	Nu star					118.7	Potential UCLs to Use					
938	AppChi2					94.59	95% KM (BCA) UCL					0.261
939	95% Gamma Approximate UCL					0.273						
940	95% Adjusted Gamma UCL					0.276						
941	Note: DL/2 is not a recommended method.											
942												
943												
944	Dibenzofuran											
945												
946	General Statistics											
947	Number of Valid Data					32	Number of Detected Data					14
948	Number of Distinct Detected Data					13	Number of Non-Detect Data					18
949							Percent Non-Detects					56.25%
950												
951	Raw Statistics						Log-transformed Statistics					
952	Minimum Detected					0.061	Minimum Detected					-2.797
953	Maximum Detected					1.1	Maximum Detected					0.0953
954	Mean of Detected					0.202	Mean of Detected					-1.942

	A	B	C	D	E	F	G	H	I	J	K	L
955	SD of Detected					0.264	SD of Detected					0.716
956	Minimum Non-Detect					0.148	Minimum Non-Detect					-1.911
957	Maximum Non-Detect					0.4	Maximum Non-Detect					-0.916
958												
959	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					31
960	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
961	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					96.88%
962												
963	UCL Statistics											
964	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
965	Shapiro Wilk Test Statistic					0.485	Shapiro Wilk Test Statistic					0.836
966	5% Shapiro Wilk Critical Value					0.874	5% Shapiro Wilk Critical Value					0.874
967	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
968												
969	Assuming Normal Distribution						Assuming Lognormal Distribution					
970	DL/2 Substitution Method						DL/2 Substitution Method					
971	Mean					0.182	Mean					-1.88
972	SD					0.175	SD					0.524
973	95% DL/2 (t) UCL					0.235	95% H-Stat (DL/2) UCL					0.277
974												
975	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
976	MLE method failed to converge properly						Mean in Log Scale					-2.044
977							SD in Log Scale					0.523
978							Mean in Original Scale					0.159
979							SD in Original Scale					0.178
980							95% Percentile Bootstrap UCL					0.22
981							95% BCA Bootstrap UCL					0.247
982												
983	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
984	k star (bias corrected)					1.301	Data do not follow a Discernable Distribution (0.05)					
985	Theta Star					0.156						
986	nu star					36.44						
987												
988	A-D Test Statistic					1.481	Nonparametric Statistics					
989	5% A-D Critical Value					0.75	Kaplan-Meier (KM) Method					
990	K-S Test Statistic					0.75	Mean					0.158
991	5% K-S Critical Value					0.233	SD					0.177
992	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0339
993							95% KM (t) UCL					0.215
994	Assuming Gamma Distribution						95% KM (z) UCL					0.214
995	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.215
996	Minimum					0.0347	95% KM (bootstrap t) UCL					0.298
997	Maximum					1.1	95% KM (BCA) UCL					0.22
998	Mean					0.221	95% KM (Percentile Bootstrap) UCL					0.218
999	Median					0.174	95% KM (Chebyshev) UCL					0.306
1000	SD					0.194	97.5% KM (Chebyshev) UCL					0.37
1001	k star					1.968	99% KM (Chebyshev) UCL					0.495
1002	Theta star					0.112						
1003	Nu star					125.9	Potential UCLs to Use					
1004	AppChi2					101	95% KM (t) UCL					0.215
1005	95% Gamma Approximate UCL					0.275	95% KM (% Bootstrap) UCL					0.218
1006	95% Adjusted Gamma UCL					0.279						
1007	Note: DL/2 is not a recommended method.											

	A	B	C	D	E	F	G	H	I	J	K	L	
1008													
1009													
1010	Dieldrin												
1011													
1012	General Statistics												
1013	Number of Valid Data					32	Number of Detected Data					29	
1014	Number of Distinct Detected Data					28	Number of Non-Detect Data					3	
1015							Percent Non-Detects					9.38%	
1016													
1017	Raw Statistics					Log-transformed Statistics							
1018	Minimum Detected					0.0031	Minimum Detected					-5.776	
1019	Maximum Detected					0.81	Maximum Detected					-0.211	
1020	Mean of Detected					0.0973	Mean of Detected					-3.171	
1021	SD of Detected					0.161	SD of Detected					1.311	
1022	Minimum Non-Detect					0.0035	Minimum Non-Detect					-5.655	
1023	Maximum Non-Detect					0.0038	Maximum Non-Detect					-5.573	
1024													
1025	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect				4		
1026	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected				28		
1027	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage				12.50%		
1028													
1029	UCL Statistics												
1030	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
1031	Shapiro Wilk Test Statistic					0.572	Shapiro Wilk Test Statistic					0.979	
1032	5% Shapiro Wilk Critical Value					0.926	5% Shapiro Wilk Critical Value					0.926	
1033	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
1034													
1035	Assuming Normal Distribution					Assuming Lognormal Distribution							
1036	DL/2 Substitution Method						DL/2 Substitution Method						
1037	Mean					0.0883	Mean					-3.463	
1038	SD					0.155	SD					1.552	
1039	95% DL/2 (t) UCL					0.135	95% H-Stat (DL/2) UCL					0.198	
1040													
1041	Maximum Likelihood Estimate(MLE) Method						Log ROS Method						
1042	Mean					0.0747	Mean in Log Scale					-3.424	
1043	SD					0.167	SD in Log Scale					1.483	
1044	95% MLE (t) UCL					0.125	Mean in Original Scale					0.0884	
1045	95% MLE (Tiku) UCL					0.122	SD in Original Scale					0.155	
1046							95% Percentile Bootstrap UCL					0.133	
1047							95% BCA Bootstrap UCL					0.157	
1048													
1049	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
1050	k star (bias corrected)					0.665	Data appear Lognormal at 5% Significance Level						
1051	Theta Star					0.146							
1052	nu star					38.6							
1053													
1054	A-D Test Statistic					1.094	Nonparametric Statistics						
1055	5% A-D Critical Value					0.787	Kaplan-Meier (KM) Method						
1056	K-S Test Statistic					0.787	Mean					0.0885	
1057	5% K-S Critical Value					0.169	SD					0.153	
1058	Data not Gamma Distributed at 5% Significance Level					SE of Mean					0.0275		
1059							95% KM (t) UCL					0.135	
1060	Assuming Gamma Distribution					95% KM (z) UCL					0.134		

	A	B	C	D	E	F	G	H	I	J	K	L
1061	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.135
1062	Minimum					1E-09	95% KM (bootstrap t) UCL					0.177
1063	Maximum					0.81	95% KM (BCA) UCL					0.138
1064	Mean					0.0882	95% KM (Percentile Bootstrap) UCL					0.138
1065	Median					0.033	95% KM (Chebyshev) UCL					0.208
1066	SD					0.155	97.5% KM (Chebyshev) UCL					0.26
1067	k star					0.284	99% KM (Chebyshev) UCL					0.362
1068	Theta star					0.311						
1069	Nu star					18.17	Potential UCLs to Use					
1070	AppChi2					9.516	97.5% KM (Chebyshev) UCL					0.26
1071	95% Gamma Approximate UCL					0.168						
1072	95% Adjusted Gamma UCL					0.175						
1073	Note: DL/2 is not a recommended method.											
1074												
1075												
1076	Indeno(1,2,3-cd)pyrene											
1077												
1078	General Statistics											
1079	Number of Valid Observations					32	Number of Distinct Observations					30
1080												
1081	Raw Statistics						Log-transformed Statistics					
1082	Minimum					0.052	Minimum of Log Data					-2.957
1083	Maximum					2.4	Maximum of Log Data					0.875
1084	Mean					0.611	Mean of log Data					-0.916
1085	Median					0.395	SD of log Data					1.002
1086	SD					0.552						
1087	Coefficient of Variation					0.904						
1088	Skewness					1.451						
1089												
1090	Relevant UCL Statistics											
1091	Normal Distribution Test						Lognormal Distribution Test					
1092	Shapiro Wilk Test Statistic					0.846	Shapiro Wilk Test Statistic					0.968
1093	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93
1094	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1095												
1096	Assuming Normal Distribution						Assuming Lognormal Distribution					
1097	95% Student's-t UCL					0.776	95% H-UCL					1.023
1098	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					1.221
1099	95% Adjusted-CLT UCL					0.798	97.5% Chebyshev (MVUE) UCL					1.469
1100	95% Modified-t UCL					0.78	99% Chebyshev (MVUE) UCL					1.958
1101												
1102	Gamma Distribution Test						Data Distribution					
1103	k star (bias corrected)					1.221	Data appear Gamma Distributed at 5% Significance Level					
1104	Theta Star					0.5						
1105	MLE of Mean					0.611						
1106	MLE of Standard Deviation					0.553						
1107	nu star					78.11						
1108	Approximate Chi Square Value (.05)					58.75	Nonparametric Statistics					
1109	Adjusted Level of Significance					0.0416	95% CLT UCL					0.771
1110	Adjusted Chi Square Value					57.85	95% Jackknife UCL					0.776
1111							95% Standard Bootstrap UCL					0.766
1112	Anderson-Darling Test Statistic					0.283	95% Bootstrap-t UCL					0.813
1113	Anderson-Darling 5% Critical Value					0.768	95% Hall's Bootstrap UCL					0.828

	A	B	C	D	E	F	G	H	I	J	K	L
1114	Kolmogorov-Smirnov Test Statistic					0.0933	95% Percentile Bootstrap UCL					0.777
1115	Kolmogorov-Smirnov 5% Critical Value					0.159	95% BCA Bootstrap UCL					0.788
1116	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					1.036
1117							97.5% Chebyshev(Mean, Sd) UCL					1.22
1118	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					1.582
1119	95% Approximate Gamma UCL					0.812						
1120	95% Adjusted Gamma UCL					0.825						
1121												
1122	Potential UCL to Use						Use 95% Approximate Gamma UCL					0.812
1123												
1124												
1125	Iron											
1126												
1127	General Statistics											
1128	Number of Valid Observations					32	Number of Distinct Observations					29
1129												
1130	Raw Statistics						Log-transformed Statistics					
1131	Minimum					6130	Minimum of Log Data					8.721
1132	Maximum					55750	Maximum of Log Data					10.93
1133	Mean					15723	Mean of log Data					9.489
1134	Median					11250	SD of log Data					0.556
1135	SD					11121						
1136	Coefficient of Variation					0.707						
1137	Skewness					2.031						
1138												
1139	Relevant UCL Statistics											
1140	Normal Distribution Test						Lognormal Distribution Test					
1141	Shapiro Wilk Test Statistic					0.741	Shapiro Wilk Test Statistic					0.883
1142	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93
1143	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1144												
1145	Assuming Normal Distribution						Assuming Lognormal Distribution					
1146	95% Student's-t UCL					19056	95% H-UCL					18805
1147	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					22290
1148	95% Adjusted-CLT UCL					19711	97.5% Chebyshev (MVUE) UCL					25294
1149	95% Modified-t UCL					19174	99% Chebyshev (MVUE) UCL					31195
1150												
1151	Gamma Distribution Test						Data Distribution					
1152	k star (bias corrected)					2.776	Data do not follow a Discernable Distribution (0.05)					
1153	Theta Star					5664						
1154	MLE of Mean					15723						
1155	MLE of Standard Deviation					9437						
1156	nu star					177.7						
1157	Approximate Chi Square Value (.05)					147.8	Nonparametric Statistics					
1158	Adjusted Level of Significance					0.0416	95% CLT UCL					18957
1159	Adjusted Chi Square Value					146.4	95% Jackknife UCL					19056
1160							95% Standard Bootstrap UCL					18879
1161	Anderson-Darling Test Statistic					2.017	95% Bootstrap-t UCL					20267
1162	Anderson-Darling 5% Critical Value					0.753	95% Hall's Bootstrap UCL					20216
1163	Kolmogorov-Smirnov Test Statistic					0.262	95% Percentile Bootstrap UCL					18953
1164	Kolmogorov-Smirnov 5% Critical Value					0.157	95% BCA Bootstrap UCL					19739
1165	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					24292
1166							97.5% Chebyshev(Mean, Sd) UCL					28000

	A	B	C	D	E	F	G	H	I	J	K	L
1167	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					35284
1168	95% Approximate Gamma UCL					18895						
1169	95% Adjusted Gamma UCL					19083						
1170												
1171	Potential UCL to Use						Use 95% Chebyshev (Mean, Sd) UCL					24292
1172												
1173												
1174	Lead											
1175												
1176	General Statistics											
1177	Number of Valid Observations					32	Number of Distinct Observations					32
1178												
1179	Raw Statistics						Log-transformed Statistics					
1180	Minimum					19.1	Minimum of Log Data					2.95
1181	Maximum					2230	Maximum of Log Data					7.71
1182	Mean					357.9	Mean of log Data					4.991
1183	Median					107	SD of log Data					1.265
1184	SD					573.3						
1185	Coefficient of Variation					1.602						
1186	Skewness					2.234						
1187												
1188	Relevant UCL Statistics											
1189	Normal Distribution Test						Lognormal Distribution Test					
1190	Shapiro Wilk Test Statistic					0.605	Shapiro Wilk Test Statistic					0.92
1191	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93
1192	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1193												
1194	Assuming Normal Distribution						Assuming Lognormal Distribution					
1195	95% Student's-t UCL					529.7	95% H-UCL					613.6
1196	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					685.9
1197	95% Adjusted-CLT UCL					567.4	97.5% Chebyshev (MVUE) UCL					847
1198	95% Modified-t UCL					536.4	99% Chebyshev (MVUE) UCL					1163
1199												
1200	Gamma Distribution Test						Data Distribution					
1201	k star (bias corrected)					0.639	Data do not follow a Discernable Distribution (0.05)					
1202	Theta Star					560.2						
1203	MLE of Mean					357.9						
1204	MLE of Standard Deviation					447.8						
1205	nu star					40.89						
1206	Approximate Chi Square Value (.05)					27.23	Nonparametric Statistics					
1207	Adjusted Level of Significance					0.0416	95% CLT UCL					524.6
1208	Adjusted Chi Square Value					26.64	95% Jackknife UCL					529.7
1209							95% Standard Bootstrap UCL					523.3
1210	Anderson-Darling Test Statistic					2.336	95% Bootstrap-t UCL					615.1
1211	Anderson-Darling 5% Critical Value					0.794	95% Hall's Bootstrap UCL					530.7
1212	Kolmogorov-Smirnov Test Statistic					0.238	95% Percentile Bootstrap UCL					531.9
1213	Kolmogorov-Smirnov 5% Critical Value					0.162	95% BCA Bootstrap UCL					581.4
1214	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					799.7
1215							97.5% Chebyshev(Mean, Sd) UCL					990.8
1216	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					1366
1217	95% Approximate Gamma UCL					537.3						
1218	95% Adjusted Gamma UCL					549.4						
1219												

	A	B	C	D	E	F	G	H	I	J	K	L
1220	Potential UCL to Use						Use 99% Chebyshev (Mean, Sd) UCL					1366
1221												
1222												
1223	Manganese											
1224												
1225	General Statistics											
1226	Number of Valid Observations				32		Number of Distinct Observations				30	
1227												
1228	Raw Statistics						Log-transformed Statistics					
1229					Minimum	86.1					Minimum of Log Data	4.456
1230					Maximum	1680					Maximum of Log Data	7.427
1231					Mean	272.4					Mean of log Data	5.337
1232					Median	191					SD of log Data	0.67
1233					SD	288						
1234					Coefficient of Variation	1.057						
1235					Skewness	3.999						
1236												
1237	Relevant UCL Statistics											
1238	Normal Distribution Test						Lognormal Distribution Test					
1239					Shapiro Wilk Test Statistic	0.566					Shapiro Wilk Test Statistic	0.913
1240					Shapiro Wilk Critical Value	0.93					Shapiro Wilk Critical Value	0.93
1241	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1242												
1243	Assuming Normal Distribution						Assuming Lognormal Distribution					
1244					95% Student's-t UCL	358.7					95% H-UCL	334.1
1245	95% UCLs (Adjusted for Skewness)										95% Chebyshev (MVUE) UCL	401.5
1246					95% Adjusted-CLT UCL	394.6					97.5% Chebyshev (MVUE) UCL	463.5
1247					95% Modified-t UCL	364.7					99% Chebyshev (MVUE) UCL	585.4
1248												
1249	Gamma Distribution Test						Data Distribution					
1250					k star (bias corrected)	1.837	Data Follow Appr. Gamma Distribution at 5% Significance Level					
1251					Theta Star	148.3						
1252					MLE of Mean	272.4						
1253					MLE of Standard Deviation	201						
1254					nu star	117.5						
1255					Approximate Chi Square Value (.05)	93.51	Nonparametric Statistics					
1256					Adjusted Level of Significance	0.0416					95% CLT UCL	356.1
1257					Adjusted Chi Square Value	92.36					95% Jackknife UCL	358.7
1258											95% Standard Bootstrap UCL	354.3
1259					Anderson-Darling Test Statistic	1.322					95% Bootstrap-t UCL	453.3
1260					Anderson-Darling 5% Critical Value	0.759					95% Hall's Bootstrap UCL	699
1261					Kolmogorov-Smirnov Test Statistic	0.149					95% Percentile Bootstrap UCL	363.8
1262					Kolmogorov-Smirnov 5% Critical Value	0.158					95% BCA Bootstrap UCL	416.3
1263	Data follow Appr. Gamma Distribution at 5% Significance Level										95% Chebyshev(Mean, Sd) UCL	494.3
1264											97.5% Chebyshev(Mean, Sd) UCL	590.3
1265	Assuming Gamma Distribution										99% Chebyshev(Mean, Sd) UCL	778.9
1266					95% Approximate Gamma UCL	342.4						
1267					95% Adjusted Gamma UCL	346.7						
1268												
1269	Potential UCL to Use						Use 95% Approximate Gamma UCL				342.4	
1270												
1271												
1272	Mercury											

	A	B	C	D	E	F	G	H	I	J	K	L
1273												
1274	General Statistics											
1275	Number of Valid Observations					32	Number of Distinct Observations					29
1276												
1277	Raw Statistics						Log-transformed Statistics					
1278	Minimum					0.037	Minimum of Log Data					-3.297
1279	Maximum					1.8	Maximum of Log Data					0.588
1280	Mean					0.421	Mean of log Data					-1.225
1281	Median					0.285	SD of log Data					0.879
1282	SD					0.397						
1283	Coefficient of Variation					0.943						
1284	Skewness					2.037						
1285												
1286	Relevant UCL Statistics											
1287	Normal Distribution Test						Lognormal Distribution Test					
1288	Shapiro Wilk Test Statistic					0.775	Shapiro Wilk Test Statistic					0.986
1289	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93
1290	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1291												
1292	Assuming Normal Distribution						Assuming Lognormal Distribution					
1293	95% Student's-t UCL					0.54	95% H-UCL					0.621
1294	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL					0.749
1295	95% Adjusted-CLT UCL					0.564	97.5% Chebyshev (MVUE) UCL					0.889
1296	95% Modified-t UCL					0.544	99% Chebyshev (MVUE) UCL					1.164
1297												
1298	Gamma Distribution Test						Data Distribution					
1299	k star (bias corrected)					1.409	Data appear Gamma Distributed at 5% Significance Level					
1300	Theta Star					0.299						
1301	MLE of Mean					0.421						
1302	MLE of Standard Deviation					0.355						
1303	nu star					90.21						
1304	Approximate Chi Square Value (.05)					69.31	Nonparametric Statistics					
1305	Adjusted Level of Significance					0.0416	95% CLT UCL					0.537
1306	Adjusted Chi Square Value					68.33	95% Jackknife UCL					0.54
1307							95% Standard Bootstrap UCL					0.538
1308	Anderson-Darling Test Statistic					0.473	95% Bootstrap-t UCL					0.574
1309	Anderson-Darling 5% Critical Value					0.764	95% Hall's Bootstrap UCL					0.572
1310	Kolmogorov-Smirnov Test Statistic					0.127	95% Percentile Bootstrap UCL					0.543
1311	Kolmogorov-Smirnov 5% Critical Value					0.158	95% BCA Bootstrap UCL					0.57
1312	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					0.727
1313							97.5% Chebyshev(Mean, Sd) UCL					0.86
1314	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					1.12
1315	95% Approximate Gamma UCL					0.548						
1316	95% Adjusted Gamma UCL					0.556						
1317												
1318	Potential UCL to Use						Use 95% Approximate Gamma UCL					0.548
1319												
1320												
1321	Nickel											
1322												
1323	General Statistics											
1324	Number of Valid Data					32	Number of Detected Data					30
1325	Number of Distinct Detected Data					28	Number of Non-Detect Data					2

	A	B	C	D	E	F	G	H	I	J	K	L
1326						Percent Non-Detects						6.25%
1327												
1328	Raw Statistics					Log-transformed Statistics						
1329	Minimum Detected					4.6	Minimum Detected					1.526
1330	Maximum Detected					158	Maximum Detected					5.063
1331	Mean of Detected					21.49	Mean of Detected					2.693
1332	SD of Detected					28.68	SD of Detected					0.758
1333	Minimum Non-Detect					7	Minimum Non-Detect					1.946
1334	Maximum Non-Detect					9	Maximum Non-Detect					2.197
1335												
1336	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					9
1337	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					23
1338	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					28.13%
1339												
1340	UCL Statistics											
1341	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
1342	Shapiro Wilk Test Statistic					0.516	Shapiro Wilk Test Statistic					0.904
1343	5% Shapiro Wilk Critical Value					0.927	5% Shapiro Wilk Critical Value					0.927
1344	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level						
1345												
1346	Assuming Normal Distribution					Assuming Lognormal Distribution						
1347	DL/2 Substitution Method						DL/2 Substitution Method					
1348	Mean					20.4	Mean					2.61
1349	SD					28.07	SD					0.802
1350	95% DL/2 (t) UCL					28.81	95% H-Stat (DL/2) UCL					25.21
1351												
1352	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1353	Mean					13.97	Mean in Log Scale					2.621
1354	SD					33.99	SD in Log Scale					0.787
1355	95% MLE (t) UCL					24.16	Mean in Original Scale					20.45
1356	95% MLE (Tiku) UCL					24.43	SD in Original Scale					28.04
1357							95% Percentile Bootstrap UCL					29.08
1358							95% BCA Bootstrap UCL					35.1
1359												
1360	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1361	k star (bias corrected)					1.352	Data do not follow a Discernable Distribution (0.05)					
1362	Theta Star					15.89						
1363	nu star					81.14						
1364												
1365	A-D Test Statistic					2.03	Nonparametric Statistics					
1366	5% A-D Critical Value					0.764	Kaplan-Meier (KM) Method					
1367	K-S Test Statistic					0.764	Mean					20.54
1368	5% K-S Critical Value					0.163	SD					27.56
1369	Data not Gamma Distributed at 5% Significance Level						SE of Mean					4.955
1370							95% KM (t) UCL					28.94
1371	Assuming Gamma Distribution						95% KM (z) UCL					28.69
1372	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					28.93
1373	Minimum					1E-09	95% KM (bootstrap t) UCL					40.19
1374	Maximum					158	95% KM (BCA) UCL					30.42
1375	Mean					20.17	95% KM (Percentile Bootstrap) UCL					29.57
1376	Median					11.4	95% KM (Chebyshev) UCL					42.13
1377	SD					28.23	97.5% KM (Chebyshev) UCL					51.48
1378	k star					0.518	99% KM (Chebyshev) UCL					69.84

	A	B	C	D	E	F	G	H	I	J	K	L
1379	Theta star					38.91						
1380	Nu star					33.17	Potential UCLs to Use					
1381	AppChi2					21	95% KM (Chebyshev) UCL					42.13
1382	95% Gamma Approximate UCL					31.85						
1383	95% Adjusted Gamma UCL					32.66						
1384	Note: DL/2 is not a recommended method.											
1385												
1386												
1387	Phenanthrene											
1388												
1389	General Statistics											
1390	Number of Valid Observations					32	Number of Distinct Observations					28
1391												
1392	Raw Statistics					Log-transformed Statistics						
1393	Minimum					0.061	Minimum of Log Data					-2.797
1394	Maximum					13	Maximum of Log Data					2.565
1395	Mean					1.519	Mean of log Data					-0.345
1396	Median					0.643	SD of log Data					1.277
1397	SD					2.387						
1398	Coefficient of Variation					1.572						
1399	Skewness					3.858						
1400												
1401	Relevant UCL Statistics											
1402	Normal Distribution Test					Lognormal Distribution Test						
1403	Shapiro Wilk Test Statistic					0.57	Shapiro Wilk Test Statistic					0.977
1404	Shapiro Wilk Critical Value					0.93	Shapiro Wilk Critical Value					0.93
1405	Data not Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
1406												
1407	Assuming Normal Distribution					Assuming Lognormal Distribution						
1408	95% Student's-t UCL					2.234	95% H-UCL					3.03
1409	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					3.373	
1410	95% Adjusted-CLT UCL					2.52	97.5% Chebyshev (MVUE) UCL					4.169
1411	95% Modified-t UCL					2.282	99% Chebyshev (MVUE) UCL					5.733
1412												
1413	Gamma Distribution Test					Data Distribution						
1414	k star (bias corrected)					0.728	Data appear Gamma Distributed at 5% Significance Level					
1415	Theta Star					2.085						
1416	MLE of Mean					1.519						
1417	MLE of Standard Deviation					1.78						
1418	nu star					46.62						
1419	Approximate Chi Square Value (.05)					31.95	Nonparametric Statistics					
1420	Adjusted Level of Significance					0.0416	95% CLT UCL					2.213
1421	Adjusted Chi Square Value					31.3	95% Jackknife UCL					2.234
1422							95% Standard Bootstrap UCL					2.209
1423	Anderson-Darling Test Statistic					0.689	95% Bootstrap-t UCL					2.995
1424	Anderson-Darling 5% Critical Value					0.786	95% Hall's Bootstrap UCL					5.04
1425	Kolmogorov-Smirnov Test Statistic					0.135	95% Percentile Bootstrap UCL					2.29
1426	Kolmogorov-Smirnov 5% Critical Value					0.161	95% BCA Bootstrap UCL					2.565
1427	Data appear Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL					3.358	
1428							97.5% Chebyshev(Mean, Sd) UCL					4.154
1429	Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL					5.717	
1430	95% Approximate Gamma UCL					2.216						
1431	95% Adjusted Gamma UCL					2.262						

	A	B	C	D	E	F	G	H	I	J	K	L	
1432													
1433	Potential UCL to Use					Use 95% Approximate Gamma UCL							2.216
1434													
1435													
1436	TEQ - Total												
1437													
1438	General Statistics												
1439	Number of Valid Observations				6	Number of Distinct Observations						6	
1440													
1441	Raw Statistics					Log-transformed Statistics							
1442	Minimum				0.0000088	Minimum of Log Data						-11.64	
1443	Maximum				0.0000671	Maximum of Log Data						-9.609	
1444	Mean				3.502E-05	Mean of log Data						-10.43	
1445	Median				3.315E-05	SD of log Data						0.691	
1446	SD				1.975E-05								
1447	Coefficient of Variation				N/A								
1448	Skewness				0.555								
1449													
1450													
1451	Warning: A sample size of 'n' = 6 may not adequate enough to compute meaningful and reliable test statistics and estimates!												
1452													
1453	It is suggested to collect at least 8 to 10 observations using these statistical methods!												
1454	If possible compute and collect Data Quality Objectives (DQO) based sample size and analytical results.												
1455													
1456													
1457	Warning: There are only 6 Values in this data												
1458	Note: It should be noted that even though bootstrap methods may be performed on this data set,												
1459	the resulting calculations may not be reliable enough to draw conclusions												
1460													
1461	The literature suggests to use bootstrap methods on data sets having more than 10-15 observations.												
1462													
1463	Relevant UCL Statistics												
1464	Normal Distribution Test					Lognormal Distribution Test							
1465	Shapiro Wilk Test Statistic				0.978	Shapiro Wilk Test Statistic						0.935	
1466	Shapiro Wilk Critical Value				0.788	Shapiro Wilk Critical Value						0.788	
1467	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
1468													
1469	Assuming Normal Distribution					Assuming Lognormal Distribution							
1470	95% Student's-t UCL				5.127E-05	95% H-UCL						9.952E-05	
1471	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL						7.998E-05	
1472	95% Adjusted-CLT UCL				5.023E-05	97.5% Chebyshev (MVUE) UCL						9.904E-05	
1473	95% Modified-t UCL				5.157E-05	99% Chebyshev (MVUE) UCL						0.0001365	
1474													
1475	Gamma Distribution Test					Data Distribution							
1476	k star (bias corrected)				1.682	Data appear Normal at 5% Significance Level							
1477	Theta Star				2.081E-05								
1478	MLE of Mean				3.502E-05								
1479	MLE of Standard Deviation				2.7E-05								
1480	nu star				20.19								
1481	Approximate Chi Square Value (.05)				10.99	Nonparametric Statistics							
1482	Adjusted Level of Significance				0.0122	95% CLT UCL						4.828E-05	
1483	Adjusted Chi Square Value				8.648	95% Jackknife UCL						5.127E-05	
1484						95% Standard Bootstrap UCL						4.73E-05	

	A	B	C	D	E	F	G	H	I	J	K	L
1485	Anderson-Darling Test Statistic					0.213	95% Bootstrap-t UCL					5.372E-05
1486	Anderson-Darling 5% Critical Value					0.701	95% Hall's Bootstrap UCL					6.698E-05
1487	Kolmogorov-Smirnov Test Statistic					0.165	95% Percentile Bootstrap UCL					4.727E-05
1488	Kolmogorov-Smirnov 5% Critical Value					0.334	95% BCA Bootstrap UCL					4.878E-05
1489	Data appear Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					7.017E-05
1490							97.5% Chebyshev(Mean, Sd) UCL					8.538E-05
1491	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					0.0001153
1492	95% Approximate Gamma UCL					6.432E-05						
1493	95% Adjusted Gamma UCL					8.175E-05						
1494												
1495	Potential UCL to Use						Use 95% Student's-t UCL					5.127E-05
1496												
1497												
1498	Thallium											
1499												
1500	General Statistics											
1501	Number of Valid Data					32	Number of Detected Data					10
1502	Number of Distinct Detected Data					10	Number of Non-Detect Data					22
1503							Percent Non-Detects					68.75%
1504												
1505	Raw Statistics						Log-transformed Statistics					
1506	Minimum Detected					0.067	Minimum Detected					-2.703
1507	Maximum Detected					1.2	Maximum Detected					0.182
1508	Mean of Detected					0.374	Mean of Detected					-1.603
1509	SD of Detected					0.439	SD of Detected					1.134
1510	Minimum Non-Detect					0.29	Minimum Non-Detect					-1.238
1511	Maximum Non-Detect					1.1	Maximum Non-Detect					0.0953
1512												
1513	Note: Data have multiple DLs - Use of KM Method is recommended						Number treated as Non-Detect					31
1514	For all methods (except KM, DL/2, and ROS Methods),						Number treated as Detected					1
1515	Observations < Largest ND are treated as NDs						Single DL Non-Detect Percentage					96.88%
1516												
1517	UCL Statistics											
1518	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1519	Shapiro Wilk Test Statistic					0.702	Shapiro Wilk Test Statistic					0.803
1520	5% Shapiro Wilk Critical Value					0.842	5% Shapiro Wilk Critical Value					0.842
1521	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1522												
1523	Assuming Normal Distribution						Assuming Lognormal Distribution					
1524	DL/2 Substitution Method						DL/2 Substitution Method					
1525	Mean					0.356	Mean					-1.288
1526	SD					0.262	SD					0.747
1527	95% DL/2 (t) UCL					0.434	95% H-Stat (DL/2) UCL					0.84
1528												
1529	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1530	MLE method failed to converge properly						Mean in Log Scale					-1.945
1531							SD in Log Scale					0.677
1532							Mean in Original Scale					0.203
1533							SD in Original Scale					0.265
1534							95% Percentile Bootstrap UCL					0.284
1535							95% BCA Bootstrap UCL					0.309
1536												
1537	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					

	A	B	C	D	E	F	G	H	I	J	K	L	
1538	k star (bias corrected)					0.724	Data do not follow a Discernable Distribution (0.05)						
1539	Theta Star					0.516							
1540	nu star					14.48							
1541													
1542	A-D Test Statistic					1.198	Nonparametric Statistics						
1543	5% A-D Critical Value					0.75	Kaplan-Meier (KM) Method						
1544	K-S Test Statistic					0.75	Mean					0.202	
1545	5% K-S Critical Value					0.274	SD					0.278	
1546	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0562	
1547							95% KM (t) UCL					0.297	
1548	Assuming Gamma Distribution						95% KM (z) UCL					0.295	
1549	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.295	
1550	Minimum					0.067	95% KM (bootstrap t) UCL					0.343	
1551	Maximum					1.2	95% KM (BCA) UCL					0.299	
1552	Mean					0.374	95% KM (Percentile Bootstrap) UCL					0.294	
1553	Median					0.373	95% KM (Chebyshev) UCL					0.447	
1554	SD					0.236	97.5% KM (Chebyshev) UCL					0.553	
1555	k star					2.503	99% KM (Chebyshev) UCL					0.762	
1556	Theta star					0.149							
1557	Nu star					160.2	Potential UCLs to Use						
1558	AppChi2					132	95% KM (BCA) UCL					0.299	
1559	95% Gamma Approximate UCL					0.454							
1560	95% Adjusted Gamma UCL					0.459							
1561	Note: DL/2 is not a recommended method.												
1562													
1563													
1564	Vanadium												
1565													
1566	General Statistics												
1567	Number of Valid Data					32	Number of Detected Data					31	
1568	Number of Distinct Detected Data					28	Number of Non-Detect Data					1	
1569							Percent Non-Detects					3.13%	
1570													
1571	Raw Statistics						Log-transformed Statistics						
1572	Minimum Detected					8	Minimum Detected					2.079	
1573	Maximum Detected					33.3	Maximum Detected					3.506	
1574	Mean of Detected					15.8	Mean of Detected					2.702	
1575	SD of Detected					5.738	SD of Detected					0.342	
1576	Minimum Non-Detect					12	Minimum Non-Detect					2.485	
1577	Maximum Non-Detect					12	Maximum Non-Detect					2.485	
1578													
1579													
1580	UCL Statistics												
1581	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only						
1582	Shapiro Wilk Test Statistic					0.913	Shapiro Wilk Test Statistic					0.972	
1583	5% Shapiro Wilk Critical Value					0.929	5% Shapiro Wilk Critical Value					0.929	
1584	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level						
1585													
1586	Assuming Normal Distribution						Assuming Lognormal Distribution						
1587	DL/2 Substitution Method						DL/2 Substitution Method						
1588	Mean					15.49	Mean					2.673	
1589	SD					5.905	SD					0.373	
1590	95% DL/2 (t) UCL					17.26	95% H-Stat (DL/2) UCL					17.1	

	A	B	C	D	E	F	G	H	I	J	K	L
1591												
1592	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1593	Mean					14.52	Mean in Log Scale					2.691
1594	SD					7.1	SD in Log Scale					0.343
1595	95% MLE (t) UCL					16.65	Mean in Original Scale					15.63
1596	95% MLE (Tiku) UCL					16.83	SD in Original Scale					5.724
1597							95% Percentile Bootstrap UCL					17.24
1598							95% BCA Bootstrap UCL					17.44
1599												
1600	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1601	k star (bias corrected)					7.911	Data appear Gamma Distributed at 5% Significance Level					
1602	Theta Star					1.997						
1603	nu star					490.5						
1604												
1605	A-D Test Statistic					0.455	Nonparametric Statistics					
1606	5% A-D Critical Value					0.746	Kaplan-Meier (KM) Method					
1607	K-S Test Statistic					0.746	Mean					15.63
1608	5% K-S Critical Value					0.158	SD					5.639
1609	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					1.014	
1610							95% KM (t) UCL					17.35
1611	Assuming Gamma Distribution					95% KM (z) UCL					17.3	
1612	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					17.35
1613	Minimum					8	95% KM (bootstrap t) UCL					17.61
1614	Maximum					33.3	95% KM (BCA) UCL					17.49
1615	Mean					15.65	95% KM (Percentile Bootstrap) UCL					17.32
1616	Median					14.35	95% KM (Chebyshev) UCL					20.05
1617	SD					5.712	97.5% KM (Chebyshev) UCL					21.96
1618	k star					7.927	99% KM (Chebyshev) UCL					25.72
1619	Theta star					1.974						
1620	Nu star					507.4	Potential UCLs to Use					
1621	AppChi2					456.1	95% KM (BCA) UCL					17.49
1622	95% Gamma Approximate UCL					17.4						
1623	95% Adjusted Gamma UCL					17.5						
1624	Note: DL/2 is not a recommended method.											
1625												

Surface Water

	A	B	C	D	E	F	G	H	I	J	K	L
1				General UCL Statistics for Data Sets with Non-Detects								
2	User Selected Options											
3	From File			C:\aa_Projects\Peterson\Unnamed Island\UCLs\SW conc_Crosstab.xls.wst								
4	Full Precision			OFF								
5	Confidence Coefficient			95%								
6	Number of Bootstrap Operations			2000								
7												
8												
9	1,4-Dichlorobenzene											
10												
11	General Statistics											
12	Number of Valid Data			15	Number of Detected Data			0				
13	Number of Distinct Detected Data			0	Number of Non-Detect Data			15				
14					Percent Non-Detects			100.00%				
15												
16	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
17	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
18	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
19												
20	The data set for variable 1,4-Dichlorobenzene was not processed!											
21												
22												
23												
24	4,4'-DDD											
25												
26	General Statistics											
27	Number of Valid Data			15	Number of Detected Data			1				
28	Number of Distinct Detected Data			1	Number of Non-Detect Data			14				
29					Percent Non-Detects			93.33%				
30												
31	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
32	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
33												
34	The data set for variable 4,4'-DDD was not processed!											
35												
36												
37												
38	4,4'-DDE											
39												
40	General Statistics											
41	Number of Valid Data			15	Number of Detected Data			0				
42	Number of Distinct Detected Data			0	Number of Non-Detect Data			15				
43					Percent Non-Detects			100.00%				
44												
45	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
46	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
47	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
48												
49	The data set for variable 4,4'-DDE was not processed!											
50												
51												
52												
53	4,4'-DDT											

	A	B	C	D	E	F	G	H	I	J	K	L
54												
55	General Statistics											
56	Number of Valid Data					15	Number of Detected Data					1
57	Number of Distinct Detected Data					1	Number of Non-Detect Data					14
58							Percent Non-Detects					93.33%
59												
60	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
61	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
62												
63	The data set for variable 4,4'-DDT was not processed!											
64												
65												
66												
67	alpha-Chlordane											
68												
69	General Statistics											
70	Number of Valid Data					15	Number of Detected Data					1
71	Number of Distinct Detected Data					1	Number of Non-Detect Data					14
72							Percent Non-Detects					93.33%
73												
74	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
75	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
76												
77	The data set for variable alpha-Chlordane was not processed!											
78												
79												
80												
81	Aluminum											
82												
83	General Statistics											
84	Number of Valid Data					15	Number of Detected Data					11
85	Number of Distinct Detected Data					11	Number of Non-Detect Data					4
86							Percent Non-Detects					26.67%
87												
88	Raw Statistics					Log-transformed Statistics						
89	Minimum Detected					24	Minimum Detected					3.178
90	Maximum Detected					4250	Maximum Detected					8.355
91	Mean of Detected					554.7	Mean of Detected					4.626
92	SD of Detected					1263	SD of Detected					1.73
93	Minimum Non-Detect					200	Minimum Non-Detect					5.298
94	Maximum Non-Detect					200	Maximum Non-Detect					5.298
95												
96												
97	UCL Statistics											
98	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
99	Shapiro Wilk Test Statistic					0.492	Shapiro Wilk Test Statistic					0.773
100	5% Shapiro Wilk Critical Value					0.85	5% Shapiro Wilk Critical Value					0.85
101	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level						
102												
103	Assuming Normal Distribution					Assuming Lognormal Distribution						
104	DL/2 Substitution Method						DL/2 Substitution Method					
105	Mean					433.4	Mean					4.62
106	SD					1088	SD					1.462

	A	B	C	D	E	F	G	H	I	J	K	L
107	95% DL/2 (t) UCL					928.1	95% H-Stat (DL/2) UCL					2588
108												
109	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
110	MLE yields a negative mean						Mean in Log Scale					4.439
111							SD in Log Scale					1.561
112							Mean in Original Scale					425.1
113							SD in Original Scale					1091
114							95% Percentile Bootstrap UCL					934.8
115							95% BCA Bootstrap UCL					1293
116												
117	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
118	k star (bias corrected)					0.344	Data do not follow a Discernable Distribution (0.05)					
119	Theta Star					1610						
120	nu star					7.578						
121												
122	A-D Test Statistic					1.636	Nonparametric Statistics					
123	5% A-D Critical Value					0.802	Kaplan-Meier (KM) Method					
124	K-S Test Statistic					0.802	Mean					417.7
125	5% K-S Critical Value					0.273	SD					1056
126	Data not Gamma Distributed at 5% Significance Level						SE of Mean					286
127							95% KM (t) UCL					921.5
128	Assuming Gamma Distribution						95% KM (z) UCL					888.2
129	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					914.9
130	Minimum					24	95% KM (bootstrap t) UCL					3395
131	Maximum					4250	95% KM (BCA) UCL					926.3
132	Mean					554.3	95% KM (Percentile Bootstrap) UCL					946.4
133	Median					57.2	95% KM (Chebyshev) UCL					1664
134	SD					1068	97.5% KM (Chebyshev) UCL					2204
135	k star					0.453	99% KM (Chebyshev) UCL					3264
136	Theta star					1225						
137	Nu star					13.58	Potential UCLs to Use					
138	AppChi2					6.282	99% KM (Chebyshev) UCL					3264
139	95% Gamma Approximate UCL					1198						
140	95% Adjusted Gamma UCL					1325						
141	Note: DL/2 is not a recommended method.											
142												
143												
144	Aroclor-1260											
145												
146	General Statistics											
147	Number of Valid Data					15	Number of Detected Data					0
148	Number of Distinct Detected Data					0	Number of Non-Detect Data					15
149							Percent Non-Detects					100.00%
150												
151	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
152	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
153	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
154												
155	The data set for variable Aroclor-1260 was not processed!											
156												
157												
158												
159	Arsenic											

	A	B	C	D	E	F	G	H	I	J	K	L	
160													
161	General Statistics												
162	Number of Valid Observations					15	Number of Distinct Observations					13	
163													
164	Raw Statistics					Log-transformed Statistics							
165	Minimum					0.446	Minimum of Log Data					-0.807	
166	Maximum					5.09	Maximum of Log Data					1.627	
167	Mean					2.023	Mean of log Data					0.568	
168	Median					1.88	SD of log Data					0.587	
169	SD					1.045							
170	Coefficient of Variation					0.516							
171	Skewness					1.561							
172													
173	Relevant UCL Statistics												
174	Normal Distribution Test					Lognormal Distribution Test							
175	Shapiro Wilk Test Statistic					0.801	Shapiro Wilk Test Statistic					0.824	
176	Shapiro Wilk Critical Value					0.881	Shapiro Wilk Critical Value					0.881	
177	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level							
178													
179	Assuming Normal Distribution					Assuming Lognormal Distribution							
180	95% Student's-t UCL					2.498	95% H-UCL					2.946	
181	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					3.493		
182	95% Adjusted-CLT UCL					2.583	97.5% Chebyshev (MVUE) UCL					4.108	
183	95% Modified-t UCL					2.516	99% Chebyshev (MVUE) UCL					5.318	
184													
185	Gamma Distribution Test					Data Distribution							
186	k star (bias corrected)					3.104	Data do not follow a Discernable Distribution (0.05)						
187	Theta Star					0.652							
188	MLE of Mean					2.023							
189	MLE of Standard Deviation					1.148							
190	nu star					93.11							
191	Approximate Chi Square Value (.05)					71.86	Nonparametric Statistics						
192	Adjusted Level of Significance					0.0324	95% CLT UCL					2.467	
193	Adjusted Chi Square Value					69.56	95% Jackknife UCL					2.498	
194							95% Standard Bootstrap UCL					2.449	
195	Anderson-Darling Test Statistic					1.087	95% Bootstrap-t UCL					2.607	
196	Anderson-Darling 5% Critical Value					0.741	95% Hall's Bootstrap UCL					4.962	
197	Kolmogorov-Smirnov Test Statistic					0.255	95% Percentile Bootstrap UCL					2.478	
198	Kolmogorov-Smirnov 5% Critical Value					0.223	95% BCA Bootstrap UCL					2.578	
199	Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL					3.199		
200							97.5% Chebyshev(Mean, Sd) UCL					3.708	
201	Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL					4.707		
202	95% Approximate Gamma UCL					2.622							
203	95% Adjusted Gamma UCL					2.708							
204													
205	Potential UCL to Use					Use 95% Chebyshev (Mean, Sd) UCL					3.199		
206													
207													
208	Benzene												
209													
210	General Statistics												
211	Number of Valid Data					15	Number of Detected Data					0	
212	Number of Distinct Detected Data					0	Number of Non-Detect Data					15	

	A	B	C	D	E	F	G	H	I	J	K	L
213						Percent Non-Detects						100.00%
214												
215	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
216	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
217	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
218												
219	The data set for variable Benzene was not processed!											
220												
221												
222												
223	Benzo(a)pyrene											
224												
225	General Statistics											
226	Number of Valid Data					15	Number of Detected Data					3
227	Number of Distinct Detected Data					3	Number of Non-Detect Data					12
228							Percent Non-Detects					80.00%
229												
230	Raw Statistics					Log-transformed Statistics						
231	Minimum Detected					0.11	Minimum Detected					-2.207
232	Maximum Detected					0.15	Maximum Detected					-1.897
233	Mean of Detected					0.127	Mean of Detected					-2.075
234	SD of Detected					0.0208	SD of Detected					0.16
235	Minimum Non-Detect					0.1	Minimum Non-Detect					-2.303
236	Maximum Non-Detect					0.1	Maximum Non-Detect					-2.303
237												
238												
239	Warning: There are only 3 Distinct Detected Values in this data set											
240	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
241	Those methods will return a 'N/A' value on your output display!											
242												
243	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
244	However, results obtained using 4 to 9 distinct values may not be reliable.											
245	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
246												
247												
248	UCL Statistics											
249	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
250	Shapiro Wilk Test Statistic					0.923	Shapiro Wilk Test Statistic					0.94
251	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767
252	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
253												
254	Assuming Normal Distribution					Assuming Lognormal Distribution						
255	DL/2 Substitution Method						DL/2 Substitution Method					
256	Mean					0.0653	Mean					-2.812
257	SD					0.0327	SD					0.386
258	95% DL/2 (t) UCL					0.0802	95% H-Stat (DL/2) UCL					0.0783
259												
260	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
261	Mean					0.13	Mean in Log Scale					-2.753
262	SD					0.017	SD in Log Scale					0.47
263	95% MLE (t) UCL					0.137	Mean in Original Scale					0.0707
264	95% MLE (Tiku) UCL					0.147	SD in Original Scale					0.0342
265							95% Percentile Bootstrap UCL					0.0849

	A	B	C	D	E	F	G	H	I	J	K	L
266							95% BCA Bootstrap UCL					0.0869
267												
268	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
269	k star (bias corrected)					N/A	Data appear Normal at 5% Significance Level					
270	Theta Star					N/A						
271	nu star					N/A						
272												
273	A-D Test Statistic					N/A	Nonparametric Statistics					
274	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
275	K-S Test Statistic					N/A	Mean					0.113
276	5% K-S Critical Value					N/A	SD					0.0101
277	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0032
278							95% KM (t) UCL					0.119
279	Assuming Gamma Distribution						95% KM (z) UCL					0.119
280	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.121
281	Minimum					N/A	95% KM (bootstrap t) UCL					0.12
282	Maximum					N/A	95% KM (BCA) UCL					0.15
283	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.15
284	Median					N/A	95% KM (Chebyshev) UCL					0.127
285	SD					N/A	97.5% KM (Chebyshev) UCL					0.133
286	k star					N/A	99% KM (Chebyshev) UCL					0.145
287	Theta star					N/A						
288	Nu star					N/A	Potential UCLs to Use					
289	AppChi2					N/A	95% KM (t) UCL					0.119
290	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					0.15
291	95% Adjusted Gamma UCL					N/A						
292	Note: DL/2 is not a recommended method.											
293												
294												
295	Benzo(b)fluoranthene											
296												
297	General Statistics											
298	Number of Valid Data					15	Number of Detected Data					1
299	Number of Distinct Detected Data					1	Number of Non-Detect Data					14
300							Percent Non-Detects					93.33%
301												
302	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
303	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
304												
305	The data set for variable Benzo(b)fluoranthene was not processed!											
306												
307												
308												
309	Benzo(g,h,i)perylene											
310												
311	General Statistics											
312	Number of Valid Data					15	Number of Detected Data					1
313	Number of Distinct Detected Data					1	Number of Non-Detect Data					14
314							Percent Non-Detects					93.33%
315												
316	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
317	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
318												

	A	B	C	D	E	F	G	H	I	J	K	L
319	The data set for variable Benzo(g,h,i)perylene was not processed!											
320												
321												
322												
323	Benzo(k)fluoranthene											
324												
325	General Statistics											
326	Number of Valid Data				15		Number of Detected Data				0	
327	Number of Distinct Detected Data				0		Number of Non-Detect Data				15	
328							Percent Non-Detects				100.00%	
329												
330	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
331	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
332	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
333												
334	The data set for variable Benzo(k)fluoranthene was not processed!											
335												
336												
337												
338	Benzo_a_anthracene											
339												
340	General Statistics											
341	Number of Valid Data				15		Number of Detected Data				2	
342	Number of Distinct Detected Data				2		Number of Non-Detect Data				13	
343							Percent Non-Detects				86.67%	
344												
345	Raw Statistics					Log-transformed Statistics						
346	Minimum Detected				0.12		Minimum Detected				-2.12	
347	Maximum Detected				0.14		Maximum Detected				-1.966	
348	Mean of Detected				0.13		Mean of Detected				-2.043	
349	SD of Detected				0.0141		SD of Detected				0.109	
350	Minimum Non-Detect				0.1		Minimum Non-Detect				-2.303	
351	Maximum Non-Detect				0.1		Maximum Non-Detect				-2.303	
352												
353												
354	Warning: Data set has only 2 Distinct Detected Values.											
355	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.											
356	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
357												
358	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.											
359												
360	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
361	Those methods will return a 'N/A' value on your output display!											
362												
363	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
364	However, results obtained using 4 to 9 distinct values may not be reliable.											
365	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
366												
367												
368	UCL Statistics											
369	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
370	Shapiro Wilk Test Statistic				N/A		Shapiro Wilk Test Statistic				N/A	
371	5% Shapiro Wilk Critical Value				N/A		5% Shapiro Wilk Critical Value				N/A	

	A	B	C	D	E	F	G	H	I	J	K	L
372	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
373												
374	Assuming Normal Distribution						Assuming Lognormal Distribution					
375	DL/2 Substitution Method						DL/2 Substitution Method					
376	Mean					0.0607	Mean					-2.869
377	SD					0.0284	SD					0.336
378	95% DL/2 (t) UCL					0.0736	95% H-Stat (DL/2) UCL					0.0662
379												
380	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
381	MLE method failed to converge properly						Mean in Log Scale					N/A
382							SD in Log Scale					N/A
383							Mean in Original Scale					N/A
384							SD in Original Scale					N/A
385							95% Percentile Bootstrap UCL					N/A
386							95% BCA Bootstrap UCL					N/A
387												
388	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
389	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
390	Theta Star					N/A						
391	nu star					N/A						
392												
393	A-D Test Statistic					N/A	Nonparametric Statistics					
394	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
395	K-S Test Statistic					N/A	Mean					0.121
396	5% K-S Critical Value					N/A	SD					0.00499
397	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.00182
398							95% KM (t) UCL					0.125
399	Assuming Gamma Distribution						95% KM (z) UCL					0.124
400	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					N/A
401	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
402	Maximum					N/A	95% KM (BCA) UCL					N/A
403	Mean					N/A	95% KM (Percentile Bootstrap) UCL					N/A
404	Median					N/A	95% KM (Chebyshev) UCL					0.129
405	SD					N/A	97.5% KM (Chebyshev) UCL					0.133
406	k star					N/A	99% KM (Chebyshev) UCL					0.139
407	Theta star					N/A						
408	Nu star					N/A	Potential UCLs to Use					
409	AppChi2					N/A	95% KM (t) UCL					0.125
410	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					N/A
411	95% Adjusted Gamma UCL					N/A						
412	Note: DL/2 is not a recommended method.											
413												
414												
415	beta-BHC											
416												
417	General Statistics											
418	Number of Valid Data					14	Number of Detected Data					0
419	Number of Distinct Detected Data					0	Number of Non-Detect Data					14
420							Percent Non-Detects					100.00%
421												
422	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
423	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
424	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											

	A	B	C	D	E	F	G	H	I	J	K	L
425												
426	The data set for variable beta-BHC was not processed!											
427												
428												
429												
430	bis(2-Ethylhexyl)phthalate											
431												
432	General Statistics											
433	Number of Valid Data					15	Number of Detected Data					2
434	Number of Distinct Detected Data					2	Number of Non-Detect Data					13
435							Percent Non-Detects					86.67%
436												
437	Raw Statistics					Log-transformed Statistics						
438	Minimum Detected					1.3	Minimum Detected					0.262
439	Maximum Detected					1.9	Maximum Detected					0.642
440	Mean of Detected					1.6	Mean of Detected					0.452
441	SD of Detected					0.424	SD of Detected					0.268
442	Minimum Non-Detect					5	Minimum Non-Detect					1.609
443	Maximum Non-Detect					5	Maximum Non-Detect					1.609
444												
445												
446	Warning: Data set has only 2 Distinct Detected Values.											
447	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.											
448	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
449												
450	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.											
451												
452	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
453	Those methods will return a 'N/A' value on your output display!											
454												
455	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
456	However, results obtained using 4 to 9 distinct values may not be reliable.											
457	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
458												
459												
460	UCL Statistics											
461	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
462	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
463	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
464	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level						
465												
466	Assuming Normal Distribution					Assuming Lognormal Distribution						
467	DL/2 Substitution Method						DL/2 Substitution Method					
468	Mean					2.38	Mean					0.854
469	SD					0.336	SD					0.178
470	95% DL/2 (t) UCL					2.533	95% H-Stat (DL/2) UCL					3.557
471												
472	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
473	MLE method failed to converge properly					Mean in Log Scale					N/A	
474							SD in Log Scale					N/A
475							Mean in Original Scale					N/A
476							SD in Original Scale					N/A
477							95% Percentile Bootstrap UCL					N/A

	A	B	C	D	E	F	G	H	I	J	K	L
478						95% BCA Bootstrap UCL						N/A
479												
480	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
481	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
482	Theta Star					N/A						
483	nu star					N/A						
484												
485	A-D Test Statistic					N/A	Nonparametric Statistics					
486	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
487	K-S Test Statistic					N/A	Mean					1.6
488	5% K-S Critical Value					N/A	SD					0.3
489	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.3
490							95% KM (t) UCL					2.128
491	Assuming Gamma Distribution						95% KM (z) UCL					2.093
492	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					N/A
493	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
494	Maximum					N/A	95% KM (BCA) UCL					N/A
495	Mean					N/A	95% KM (Percentile Bootstrap) UCL					N/A
496	Median					N/A	95% KM (Chebyshev) UCL					2.908
497	SD					N/A	97.5% KM (Chebyshev) UCL					3.473
498	k star					N/A	99% KM (Chebyshev) UCL					4.585
499	Theta star					N/A						
500	Nu star					N/A	Potential UCLs to Use					
501	AppChi2					N/A	95% KM (t) UCL					2.128
502	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					N/A
503	95% Adjusted Gamma UCL					N/A						
504	Warning: Recommended UCL exceeds the maximum observation											
505	Note: DL/2 is not a recommended method.											
506												
507												
508	Bromodichloromethane											
509												
510	General Statistics											
511	Number of Valid Data					15	Number of Detected Data					0
512	Number of Distinct Detected Data					0	Number of Non-Detect Data					15
513							Percent Non-Detects					100.00%
514												
515	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
516	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
517	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
518												
519	The data set for variable Bromodichloromethane was not processed!											
520												
521												
522												
523	Cadmium											
524												
525	General Statistics											
526	Number of Valid Data					15	Number of Detected Data					5
527	Number of Distinct Detected Data					5	Number of Non-Detect Data					10
528							Percent Non-Detects					66.67%
529												
530	Raw Statistics					Log-transformed Statistics						

	A	B	C	D	E	F	G	H	I	J	K	L	
531	Minimum Detected					0.37	Minimum Detected					-0.994	
532	Maximum Detected					4.7	Maximum Detected					1.548	
533	Mean of Detected					1.802	Mean of Detected					0.198	
534	SD of Detected					1.764	SD of Detected					1.002	
535	Minimum Non-Detect					0.2	Minimum Non-Detect					-1.609	
536	Maximum Non-Detect					0.2	Maximum Non-Detect					-1.609	
537													
538													
539	Warning: There are only 5 Detected Values in this data												
540	Note: It should be noted that even though bootstrap may be performed on this data set												
541	the resulting calculations may not be reliable enough to draw conclusions												
542													
543	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.												
544													
545													
546	UCL Statistics												
547	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
548	Shapiro Wilk Test Statistic					0.851	Shapiro Wilk Test Statistic					0.983	
549	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762	
550	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level							
551													
552	Assuming Normal Distribution					Assuming Lognormal Distribution							
553	DL/2 Substitution Method						DL/2 Substitution Method						
554	Mean					0.667	Mean					-1.469	
555	SD					1.257	SD					1.333	
556	95% DL/2 (t) UCL					1.239	95% H-Stat (DL/2) UCL					0.695	
557													
558	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
559	MLE yields a negative mean						Mean in Log Scale					-2.387	
560							SD in Log Scale					2.295	
561							Mean in Original Scale					0.636	
562							SD in Original Scale					1.273	
563							95% Percentile Bootstrap UCL					1.243	
564							95% BCA Bootstrap UCL					1.517	
565													
566	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
567	k star (bias corrected)					0.703	Data appear Normal at 5% Significance Level						
568	Theta Star					2.565							
569	nu star					7.027							
570													
571	A-D Test Statistic					0.239	Nonparametric Statistics						
572	5% A-D Critical Value					0.687	Kaplan-Meier (KM) Method						
573	K-S Test Statistic					0.687	Mean					0.847	
574	5% K-S Critical Value					0.362	SD					1.134	
575	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					0.327		
576							95% KM (t) UCL					1.424	
577	Assuming Gamma Distribution					95% KM (z) UCL					1.386		
578	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					1.318	
579	Minimum					1E-09	95% KM (bootstrap t) UCL					2.069	
580	Maximum					11.94	95% KM (BCA) UCL					2.367	
581	Mean					4.078	95% KM (Percentile Bootstrap) UCL					1.8	
582	Median					2.786	95% KM (Chebyshev) UCL					2.274	
583	SD					3.809	97.5% KM (Chebyshev) UCL					2.891	

	A	B	C	D	E	F	G	H	I	J	K	L
584	k star					0.334	99% KM (Chebyshev) UCL					4.104
585	Theta star					12.22						
586	Nu star					10.01	Potential UCLs to Use					
587	AppChi2					3.95	95% KM (t) UCL					1.424
588	95% Gamma Approximate UCL					10.34	95% KM (Percentile Bootstrap) UCL					1.8
589	95% Adjusted Gamma UCL					11.69						
590	Note: DL/2 is not a recommended method.											
591												
592												
593	Chromium											
594												
595	General Statistics											
596	Number of Valid Data					15	Number of Detected Data					6
597	Number of Distinct Detected Data					6	Number of Non-Detect Data					9
598							Percent Non-Detects					60.00%
599												
600	Raw Statistics						Log-transformed Statistics					
601	Minimum Detected					1.6	Minimum Detected					0.47
602	Maximum Detected					58.7	Maximum Detected					4.072
603	Mean of Detected					13.68	Mean of Detected					1.74
604	SD of Detected					22.37	SD of Detected					1.341
605	Minimum Non-Detect					0.4	Minimum Non-Detect					-0.916
606	Maximum Non-Detect					0.4	Maximum Non-Detect					-0.916
607												
608												
609	Warning: There are only 6 Detected Values in this data											
610	Note: It should be noted that even though bootstrap may be performed on this data set											
611	the resulting calculations may not be reliable enough to draw conclusions											
612												
613	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
614												
615												
616	UCL Statistics											
617	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
618	Shapiro Wilk Test Statistic					0.627	Shapiro Wilk Test Statistic					0.894
619	5% Shapiro Wilk Critical Value					0.788	5% Shapiro Wilk Critical Value					0.788
620	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
621												
622	Assuming Normal Distribution						Assuming Lognormal Distribution					
623	DL/2 Substitution Method						DL/2 Substitution Method					
624	Mean					5.593	Mean					-0.27
625	SD					15.02	SD					1.878
626	95% DL/2 (t) UCL					12.42	95% H-Stat (DL/2) UCL					7.252
627												
628	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
629	MLE yields a negative mean						Mean in Log Scale					-1.01
630							SD in Log Scale					2.759
631							Mean in Original Scale					5.558
632							SD in Original Scale					15.03
633							95% Percentile Bootstrap UCL					13.13
634							95% BCA Bootstrap UCL					17.53
635												
636	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					

	A	B	C	D	E	F	G	H	I	J	K	L	
637	k star (bias corrected)					0.457	Data appear Gamma Distributed at 5% Significance Level						
638	Theta Star					29.96							
639	nu star					5.48							
640													
641	A-D Test Statistic					0.633	Nonparametric Statistics						
642	5% A-D Critical Value					0.724	Kaplan-Meier (KM) Method						
643	K-S Test Statistic					0.724	Mean					6.433	
644	5% K-S Critical Value					0.345	SD					14.21	
645	Data appear Gamma Distributed at 5% Significance Level						SE of Mean					4.019	
646							95% KM (t) UCL					13.51	
647	Assuming Gamma Distribution						95% KM (z) UCL					13.04	
648	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					12.85	
649	Minimum					1E-09	95% KM (bootstrap t) UCL					77.27	
650	Maximum					118.5	95% KM (BCA) UCL					14.78	
651	Mean					29.77	95% KM (Percentile Bootstrap) UCL					13.88	
652	Median					11.9	95% KM (Chebyshev) UCL					23.95	
653	SD					37.53	97.5% KM (Chebyshev) UCL					31.53	
654	k star					0.199	99% KM (Chebyshev) UCL					46.42	
655	Theta star					149.2							
656	Nu star					5.984	Potential UCLs to Use						
657	AppChi2					1.632	95% KM (t) UCL					13.51	
658	95% Gamma Approximate UCL					109.2							
659	95% Adjusted Gamma UCL					130.1							
660	Note: DL/2 is not a recommended method.												
661													
662													
663	Chrysene												
664													
665	General Statistics												
666	Number of Valid Data					15	Number of Detected Data					2	
667	Number of Distinct Detected Data					2	Number of Non-Detect Data					13	
668							Percent Non-Detects					86.67%	
669													
670	Raw Statistics						Log-transformed Statistics						
671	Minimum Detected					0.13	Minimum Detected					-2.04	
672	Maximum Detected					0.16	Maximum Detected					-1.833	
673	Mean of Detected					0.145	Mean of Detected					-1.936	
674	SD of Detected					0.0212	SD of Detected					0.147	
675	Minimum Non-Detect					0.1	Minimum Non-Detect					-2.303	
676	Maximum Non-Detect					0.1	Maximum Non-Detect					-2.303	
677													
678													
679	Warning: Data set has only 2 Distinct Detected Values.												
680	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.												
681	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
682													
683	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.												
684													
685	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.												
686	Those methods will return a 'N/A' value on your output display!												
687													
688	It is necessary to have 4 or more Distinct Values for bootstrap methods.												
689	However, results obtained using 4 to 9 distinct values may not be reliable.												

	A	B	C	D	E	F	G	H	I	J	K	L
690	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
691												
692												
693	UCL Statistics											
694	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
695	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A
696	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A
697	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
698												
699	Assuming Normal Distribution						Assuming Lognormal Distribution					
700	DL/2 Substitution Method						DL/2 Substitution Method					
701	Mean					0.0627	Mean					-2.854
702	SD					0.0339	SD					0.375
703	95% DL/2 (t) UCL					0.0781	95% H-Stat (DL/2) UCL					0.0678
704												
705	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
706	MLE method failed to converge properly						Mean in Log Scale					N/A
707							SD in Log Scale					N/A
708							Mean in Original Scale					N/A
709							SD in Original Scale					N/A
710							95% Percentile Bootstrap UCL					N/A
711							95% BCA Bootstrap UCL					N/A
712												
713	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
714	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)					
715	Theta Star					N/A						
716	nu star					N/A						
717												
718	A-D Test Statistic					N/A	Nonparametric Statistics					
719	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
720	K-S Test Statistic					N/A	Mean					0.132
721	5% K-S Critical Value					N/A	SD					0.00748
722	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.00273
723							95% KM (t) UCL					0.137
724	Assuming Gamma Distribution						95% KM (z) UCL					0.136
725	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					N/A
726	Minimum					N/A	95% KM (bootstrap t) UCL					N/A
727	Maximum					N/A	95% KM (BCA) UCL					N/A
728	Mean					N/A	95% KM (Percentile Bootstrap) UCL					N/A
729	Median					N/A	95% KM (Chebyshev) UCL					0.144
730	SD					N/A	97.5% KM (Chebyshev) UCL					0.149
731	k star					N/A	99% KM (Chebyshev) UCL					0.159
732	Theta star					N/A						
733	Nu star					N/A	Potential UCLs to Use					
734	AppChi2					N/A	95% KM (t) UCL					0.137
735	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					N/A
736	95% Adjusted Gamma UCL					N/A						
737	Note: DL/2 is not a recommended method.											
738												
739												
740	Cobalt											
741												
742	General Statistics											

	A	B	C	D	E	F	G	H	I	J	K	L
743	Number of Valid Data					15	Number of Detected Data					0
744	Number of Distinct Detected Data					0	Number of Non-Detect Data					15
745							Percent Non-Detects					100.00%
746												
747	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
748	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
749	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
750												
751	The data set for variable Cobalt was not processed!											
752												
753												
754												
755	Copper											
756												
757	General Statistics											
758	Number of Valid Data					15	Number of Detected Data					1
759	Number of Distinct Detected Data					1	Number of Non-Detect Data					14
760							Percent Non-Detects					93.33%
761												
762	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
763	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
764												
765	The data set for variable Copper was not processed!											
766												
767												
768												
769	Cyanide											
770												
771	General Statistics											
772	Number of Valid Data					15	Number of Detected Data					2
773	Number of Distinct Detected Data					2	Number of Non-Detect Data					13
774							Percent Non-Detects					86.67%
775												
776	Raw Statistics					Log-transformed Statistics						
777	Minimum Detected					3.2	Minimum Detected					1.163
778	Maximum Detected					4.8	Maximum Detected					1.569
779	Mean of Detected					4	Mean of Detected					1.366
780	SD of Detected					1.131	SD of Detected					0.287
781	Minimum Non-Detect					3	Minimum Non-Detect					1.099
782	Maximum Non-Detect					4	Maximum Non-Detect					1.386
783												
784	Note: Data have multiple DLs - Use of KM Method is recommended					Number treated as Non-Detect					14	
785	For all methods (except KM, DL/2, and ROS Methods),					Number treated as Detected					1	
786	Observations < Largest ND are treated as NDs					Single DL Non-Detect Percentage					93.33%	
787												
788	Warning: Data set has only 2 Distinct Detected Values.											
789	This may not be adequate enough to compute meaningful and reliable test statistics and estimates.											
790	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
791												
792	Unless Data Quality Objectives (DQOs) have been met, it is suggested to collect additional observations.											
793												
794	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
795	Those methods will return a 'N/A' value on your output display!											

	A	B	C	D	E	F	G	H	I	J	K	L	
796													
797	It is necessary to have 4 or more Distinct Values for bootstrap methods.												
798	However, results obtained using 4 to 9 distinct values may not be reliable.												
799	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.												
800													
801													
802	UCL Statistics												
803	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only							
804	Shapiro Wilk Test Statistic					N/A	Shapiro Wilk Test Statistic					N/A	
805	5% Shapiro Wilk Critical Value					N/A	5% Shapiro Wilk Critical Value					N/A	
806	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level							
807													
808	Assuming Normal Distribution					Assuming Lognormal Distribution							
809	DL/2 Substitution Method						DL/2 Substitution Method						
810	Mean					2.033	Mean					0.649	
811	SD					0.887	SD					0.331	
812	95% DL/2 (t) UCL					2.437	95% H-Stat (DL/2) UCL					2.393	
813													
814	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method						
815	MLE method failed to converge properly						Mean in Log Scale					N/A	
816							SD in Log Scale					N/A	
817							Mean in Original Scale					N/A	
818							SD in Original Scale					N/A	
819							95% Percentile Bootstrap UCL					N/A	
820							95% BCA Bootstrap UCL					N/A	
821													
822	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only							
823	k star (bias corrected)					N/A	Data do not follow a Discernable Distribution (0.05)						
824	Theta Star					N/A							
825	nu star					N/A							
826													
827	A-D Test Statistic					N/A	Nonparametric Statistics						
828	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method						
829	K-S Test Statistic					N/A	Mean					3.307	
830	5% K-S Critical Value					N/A	SD					0.399	
831	Data not Gamma Distributed at 5% Significance Level					SE of Mean					0.146		
832							95% KM (t) UCL					3.563	
833	Assuming Gamma Distribution					95% KM (z) UCL					3.546		
834	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					4.383	
835	Minimum					N/A	95% KM (bootstrap t) UCL					N/A	
836	Maximum					N/A	95% KM (BCA) UCL					N/A	
837	Mean					N/A	95% KM (Percentile Bootstrap) UCL					N/A	
838	Median					N/A	95% KM (Chebyshev) UCL					3.942	
839	SD					N/A	97.5% KM (Chebyshev) UCL					4.217	
840	k star					N/A	99% KM (Chebyshev) UCL					4.757	
841	Theta star					N/A							
842	Nu star					N/A	Potential UCLs to Use						
843	AppChi2					N/A	95% KM (t) UCL					3.563	
844	95% Gamma Approximate UCL					N/A	95% KM (% Bootstrap) UCL					N/A	
845	95% Adjusted Gamma UCL					N/A							
846	Note: DL/2 is not a recommended method.												
847													
848													

	A	B	C	D	E	F	G	H	I	J	K	L
849	Dieldrin											
850												
851	General Statistics											
852	Number of Valid Data					15	Number of Detected Data					0
853	Number of Distinct Detected Data					0	Number of Non-Detect Data					15
854							Percent Non-Detects					100.00%
855												
856	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!											
857	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!											
858	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).											
859												
860	The data set for variable Dieldrin was not processed!											
861												
862												
863												
864	Gamma-Chlordane											
865												
866	General Statistics											
867	Number of Valid Data					15	Number of Detected Data					3
868	Number of Distinct Detected Data					3	Number of Non-Detect Data					12
869							Percent Non-Detects					80.00%
870												
871	Raw Statistics					Log-transformed Statistics						
872	Minimum Detected					0.0027	Minimum Detected					-5.915
873	Maximum Detected					0.0094	Maximum Detected					-4.667
874	Mean of Detected					0.0056	Mean of Detected					-5.314
875	SD of Detected					0.00344	SD of Detected					0.625
876	Minimum Non-Detect					0.0025	Minimum Non-Detect					-5.991
877	Maximum Non-Detect					0.0025	Maximum Non-Detect					-5.991
878												
879												
880	Warning: There are only 3 Distinct Detected Values in this data set											
881	The number of detected data may not be adequate enough to perform GOF tests, bootstrap, and ROS methods.											
882	Those methods will return a 'N/A' value on your output display!											
883												
884	It is necessary to have 4 or more Distinct Values for bootstrap methods.											
885	However, results obtained using 4 to 9 distinct values may not be reliable.											
886	It is recommended to have 10 to 15 or more observations for accurate and meaningful results and estimates.											
887												
888												
889	UCL Statistics											
890	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
891	Shapiro Wilk Test Statistic					0.949	Shapiro Wilk Test Statistic					0.996
892	5% Shapiro Wilk Critical Value					0.767	5% Shapiro Wilk Critical Value					0.767
893	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
894												
895	Assuming Normal Distribution					Assuming Lognormal Distribution						
896	DL/2 Substitution Method						DL/2 Substitution Method					
897	Mean					0.00212	Mean					-6.41
898	SD					0.00222	SD					0.615
899	95% DL/2 (t) UCL					0.00313	95% H-Stat (DL/2) UCL					0.00225
900												
901	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					

	A	B	C	D	E	F	G	H	I	J	K	L
902	MLE yields a negative mean						Mean in Log Scale					-7.984
903							SD in Log Scale					1.852
904							Mean in Original Scale					0.0014
905							SD in Original Scale					0.00256
906							95% Percentile Bootstrap UCL					0.00255
907							95% BCA Bootstrap UCL					0.00304
908												
909	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
910	k star (bias corrected)					N/A	Data appear Normal at 5% Significance Level					
911	Theta Star					N/A						
912	nu star					N/A						
913												
914	A-D Test Statistic					N/A	Nonparametric Statistics					
915	5% A-D Critical Value					N/A	Kaplan-Meier (KM) Method					
916	K-S Test Statistic					N/A	Mean					0.00328
917	5% K-S Critical Value					N/A	SD					0.00171
918	Data not Gamma Distributed at 5% Significance Level						SE of Mean					0.0005406
919							95% KM (t) UCL					0.00423
920	Assuming Gamma Distribution						95% KM (z) UCL					0.00417
921	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL					0.00468
922	Minimum					N/A	95% KM (bootstrap t) UCL					0.00414
923	Maximum					N/A	95% KM (BCA) UCL					0.0094
924	Mean					N/A	95% KM (Percentile Bootstrap) UCL					0.0094
925	Median					N/A	95% KM (Chebyshev) UCL					0.00564
926	SD					N/A	97.5% KM (Chebyshev) UCL					0.00666
927	k star					N/A	99% KM (Chebyshev) UCL					0.00866
928	Theta star					N/A						
929	Nu star					N/A	Potential UCLs to Use					
930	AppChi2					N/A	95% KM (t) UCL					0.00423
931	95% Gamma Approximate UCL					N/A	95% KM (Percentile Bootstrap) UCL					0.0094
932	95% Adjusted Gamma UCL					N/A						
933	Note: DL/2 is not a recommended method.											
934												
935												
936	Heptachlor Epoxide											
937												
938	General Statistics											
939	Number of Valid Data					15	Number of Detected Data					1
940	Number of Distinct Detected Data					1	Number of Non-Detect Data					14
941							Percent Non-Detects					93.33%
942												
943	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!											
944	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).											
945												
946	The data set for variable Heptachlor Epoxide was not processed!											
947												
948												
949												
950	Indeno(1,2,3-cd)pyrene											
951												
952	General Statistics											
953	Number of Valid Data					15	Number of Detected Data					1
954	Number of Distinct Detected Data					1	Number of Non-Detect Data					14

	A	B	C	D	E	F	G	H	I	J	K	L	
955						Percent Non-Detects							93.33%
956													
957	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!												
958	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).												
959													
960	The data set for variable Indeno(1,2,3-cd)pyrene was not processed!												
961													
962													
963													
964	Iron												
965													
966	General Statistics												
967	Number of Valid Observations					15	Number of Distinct Observations					15	
968													
969	Raw Statistics					Log-transformed Statistics							
970	Minimum					866	Minimum of Log Data					6.764	
971	Maximum					21200	Maximum of Log Data					9.962	
972	Mean					4318	Mean of log Data					7.86	
973	Median					1460	SD of log Data					0.976	
974	SD					5391							
975	Coefficient of Variation					1.249							
976	Skewness					2.481							
977													
978	Relevant UCL Statistics												
979	Normal Distribution Test					Lognormal Distribution Test							
980	Shapiro Wilk Test Statistic					0.661	Shapiro Wilk Test Statistic					0.865	
981	Shapiro Wilk Critical Value					0.881	Shapiro Wilk Critical Value					0.881	
982	Data not Normal at 5% Significance Level					Data not Lognormal at 5% Significance Level							
983													
984	Assuming Normal Distribution					Assuming Lognormal Distribution							
985	95% Student's-t UCL					6770	95% H-UCL					8460	
986	95% UCLs (Adjusted for Skewness)					95% Chebyshev (MVUE) UCL					8784		
987	95% Adjusted-CLT UCL					7561	97.5% Chebyshev (MVUE) UCL					10855	
988	95% Modified-t UCL					6919	99% Chebyshev (MVUE) UCL					14924	
989													
990	Gamma Distribution Test					Data Distribution							
991	k star (bias corrected)					0.938	Data do not follow a Discernable Distribution (0.05)						
992	Theta Star					4605							
993	MLE of Mean					4318							
994	MLE of Standard Deviation					4459							
995	nu star					28.13							
996	Approximate Chi Square Value (.05)					17.03	Nonparametric Statistics						
997	Adjusted Level of Significance					0.0324	95% CLT UCL					6608	
998	Adjusted Chi Square Value					15.97	95% Jackknife UCL					6770	
999							95% Standard Bootstrap UCL					6529	
1000	Anderson-Darling Test Statistic					1.185	95% Bootstrap-t UCL					9422	
1001	Anderson-Darling 5% Critical Value					0.761	95% Hall's Bootstrap UCL					15306	
1002	Kolmogorov-Smirnov Test Statistic					0.294	95% Percentile Bootstrap UCL					6840	
1003	Kolmogorov-Smirnov 5% Critical Value					0.227	95% BCA Bootstrap UCL					7795	
1004	Data not Gamma Distributed at 5% Significance Level					95% Chebyshev(Mean, Sd) UCL					10386		
1005							97.5% Chebyshev(Mean, Sd) UCL					13011	
1006	Assuming Gamma Distribution					99% Chebyshev(Mean, Sd) UCL					18169		
1007	95% Approximate Gamma UCL					7133							

	A	B	C	D	E	F	G	H	I	J	K	L
1008	95% Adjusted Gamma UCL					7605						
1009												
1010	Potential UCL to Use						Use 95% Chebyshev (Mean, Sd) UCL					10386
1011												
1012												
1013	Lead											
1014												
1015	General Statistics											
1016	Number of Valid Data					15	Number of Detected Data					8
1017	Number of Distinct Detected Data					8	Number of Non-Detect Data					7
1018							Percent Non-Detects					46.67%
1019												
1020	Raw Statistics						Log-transformed Statistics					
1021	Minimum Detected					1.5	Minimum Detected					0.405
1022	Maximum Detected					82.6	Maximum Detected					4.414
1023	Mean of Detected					18.08	Mean of Detected					2.133
1024	SD of Detected					26.9	SD of Detected					1.307
1025	Minimum Non-Detect					2	Minimum Non-Detect					0.693
1026	Maximum Non-Detect					2	Maximum Non-Detect					0.693
1027												
1028												
1029	Warning: There are only 8 Detected Values in this data											
1030	Note: It should be noted that even though bootstrap may be performed on this data set											
1031	the resulting calculations may not be reliable enough to draw conclusions											
1032												
1033	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1034												
1035												
1036	UCL Statistics											
1037	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1038	Shapiro Wilk Test Statistic					0.638	Shapiro Wilk Test Statistic					0.957
1039	5% Shapiro Wilk Critical Value					0.818	5% Shapiro Wilk Critical Value					0.818
1040	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1041												
1042	Assuming Normal Distribution						Assuming Lognormal Distribution					
1043	DL/2 Substitution Method						DL/2 Substitution Method					
1044	Mean					10.11	Mean					1.137
1045	SD					20.97	SD					1.438
1046	95% DL/2 (t) UCL					19.64	95% H-Stat (DL/2) UCL					9.827
1047												
1048	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1049	MLE yields a negative mean						Mean in Log Scale					0.997
1050							SD in Log Scale					1.674
1051							Mean in Original Scale					10.11
1052							SD in Original Scale					20.97
1053							95% Percentile Bootstrap UCL					20.22
1054							95% BCA Bootstrap UCL					25.95
1055												
1056	Gamma Distribution Test with Detected Values Only						Data Distribution Test with Detected Values Only					
1057	k star (bias corrected)					0.572	Data appear Gamma Distributed at 5% Significance Level					
1058	Theta Star					31.61						
1059	nu star					9.148						
1060												

	A	B	C	D	E	F	G	H	I	J	K	L
1061	A-D Test Statistic					0.438	Nonparametric Statistics					
1062	5% A-D Critical Value					0.744	Kaplan-Meier (KM) Method					
1063	K-S Test Statistic					0.744	Mean				10.34	
1064	5% K-S Critical Value					0.304	SD				20.15	
1065	Data appear Gamma Distributed at 5% Significance Level						SE of Mean				5.563	
1066							95% KM (t) UCL				20.14	
1067	Assuming Gamma Distribution						95% KM (z) UCL				19.49	
1068	Gamma ROS Statistics using Extrapolated Data						95% KM (jackknife) UCL				19.49	
1069	Minimum					1E-09	95% KM (bootstrap t) UCL				39.64	
1070	Maximum					82.6	95% KM (BCA) UCL				20.92	
1071	Mean					19.13	95% KM (Percentile Bootstrap) UCL				20.41	
1072	Median					14.3	95% KM (Chebyshev) UCL				34.59	
1073	SD					23.85	97.5% KM (Chebyshev) UCL				45.08	
1074	k star					0.209	99% KM (Chebyshev) UCL				65.69	
1075	Theta star					91.63						
1076	Nu star					6.264	Potential UCLs to Use					
1077	AppChi2					1.776	95% KM (BCA) UCL				20.92	
1078	95% Gamma Approximate UCL					67.47						
1079	95% Adjusted Gamma UCL					79.96						
1080	Note: DL/2 is not a recommended method.											
1081												
1082												
1083	Manganese											
1084												
1085	General Statistics											
1086	Number of Valid Observations					15	Number of Distinct Observations					15
1087												
1088	Raw Statistics						Log-transformed Statistics					
1089	Minimum					267	Minimum of Log Data				5.587	
1090	Maximum					1160	Maximum of Log Data				7.056	
1091	Mean					466.9	Mean of log Data				6.064	
1092	Median					385	SD of log Data				0.386	
1093	SD					233.2						
1094	Coefficient of Variation					0.499						
1095	Skewness					2.299						
1096												
1097	Relevant UCL Statistics											
1098	Normal Distribution Test						Lognormal Distribution Test					
1099	Shapiro Wilk Test Statistic					0.712	Shapiro Wilk Test Statistic				0.863	
1100	Shapiro Wilk Critical Value					0.881	Shapiro Wilk Critical Value				0.881	
1101	Data not Normal at 5% Significance Level						Data not Lognormal at 5% Significance Level					
1102												
1103	Assuming Normal Distribution						Assuming Lognormal Distribution					
1104	95% Student's-t UCL					573	95% H-UCL				567	
1105	95% UCLs (Adjusted for Skewness)						95% Chebyshev (MVUE) UCL				665	
1106	95% Adjusted-CLT UCL					604.2	97.5% Chebyshev (MVUE) UCL				753.2	
1107	95% Modified-t UCL					578.9	99% Chebyshev (MVUE) UCL				926.5	
1108												
1109	Gamma Distribution Test						Data Distribution					
1110	k star (bias corrected)					5.07	Data do not follow a Discernable Distribution (0.05)					
1111	Theta Star					92.11						
1112	MLE of Mean					466.9						
1113	MLE of Standard Deviation					207.4						

	A	B	C	D	E	F	G	H	I	J	K	L	
1114	nu star					152.1							
1115	Approximate Chi Square Value (.05)					124.6	Nonparametric Statistics						
1116	Adjusted Level of Significance					0.0324	95% CLT UCL					566	
1117	Adjusted Chi Square Value					121.5	95% Jackknife UCL					573	
1118							95% Standard Bootstrap UCL					561.5	
1119	Anderson-Darling Test Statistic					1.104	95% Bootstrap-t UCL					734.1	
1120	Anderson-Darling 5% Critical Value					0.738	95% Hall's Bootstrap UCL					1055	
1121	Kolmogorov-Smirnov Test Statistic					0.236	95% Percentile Bootstrap UCL					566.7	
1122	Kolmogorov-Smirnov 5% Critical Value					0.222	95% BCA Bootstrap UCL					613.7	
1123	Data not Gamma Distributed at 5% Significance Level						95% Chebyshev(Mean, Sd) UCL					729.4	
1124							97.5% Chebyshev(Mean, Sd) UCL					842.9	
1125	Assuming Gamma Distribution						99% Chebyshev(Mean, Sd) UCL					1066	
1126	95% Approximate Gamma UCL					570							
1127	95% Adjusted Gamma UCL					584.4							
1128													
1129	Potential UCL to Use						Use 95% Student's-t UCL					573	
1130							or 95% Modified-t UCL					578.9	
1131													
1132													
1133	Mercury												
1134													
1135	General Statistics												
1136	Number of Valid Data					15	Number of Detected Data					0	
1137	Number of Distinct Detected Data					0	Number of Non-Detect Data					15	
1138							Percent Non-Detects					100.00%	
1139													
1140	Warning: All observations are Non-Detects (NDs), therefore all statistics and estimates should also be NDs!												
1141	Specifically, sample mean, UCLs, UPLs, and other statistics are also NDs lying below the largest detection limit!												
1142	The Project Team may decide to use alternative site specific values to estimate environmental parameters (e.g., EPC, BTV).												
1143													
1144	The data set for variable Mercury was not processed!												
1145													
1146													
1147													
1148	Naphthalene												
1149													
1150	General Statistics												
1151	Number of Valid Data					15	Number of Detected Data					1	
1152	Number of Distinct Detected Data					1	Number of Non-Detect Data					14	
1153							Percent Non-Detects					93.33%	
1154													
1155	Warning: Only one distinct data value was detected! ProUCL (or any other software) should not be used on such a data set!												
1156	It is suggested to use alternative site specific values determined by the Project Team to estimate environmental parameters (e.g., EPC, BTV).												
1157													
1158	The data set for variable Naphthalene was not processed!												
1159													
1160													
1161													
1162	Phenanthrene												
1163													
1164	General Statistics												
1165	Number of Valid Data					15	Number of Detected Data					5	
1166	Number of Distinct Detected Data					4	Number of Non-Detect Data					10	

	A	B	C	D	E	F	G	H	I	J	K	L
1167						Percent Non-Detects						66.67%
1168												
1169	Raw Statistics					Log-transformed Statistics						
1170	Minimum Detected					0.11	Minimum Detected					-2.207
1171	Maximum Detected					0.21	Maximum Detected					-1.561
1172	Mean of Detected					0.16	Mean of Detected					-1.862
1173	SD of Detected					0.043	SD of Detected					0.272
1174	Minimum Non-Detect					0.1	Minimum Non-Detect					-2.303
1175	Maximum Non-Detect					0.1	Maximum Non-Detect					-2.303
1176												
1177												
1178	Warning: There are only 4 Distinct Detected Values in this data											
1179	Note: It should be noted that even though bootstrap may be performed on this data set											
1180	the resulting calculations may not be reliable enough to draw conclusions											
1181												
1182	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1183												
1184												
1185	UCL Statistics											
1186	Normal Distribution Test with Detected Values Only					Lognormal Distribution Test with Detected Values Only						
1187	Shapiro Wilk Test Statistic					0.885	Shapiro Wilk Test Statistic					0.9
1188	5% Shapiro Wilk Critical Value					0.762	5% Shapiro Wilk Critical Value					0.762
1189	Data appear Normal at 5% Significance Level					Data appear Lognormal at 5% Significance Level						
1190												
1191	Assuming Normal Distribution					Assuming Lognormal Distribution						
1192	DL/2 Substitution Method						DL/2 Substitution Method					
1193	Mean					0.0867	Mean					-2.618
1194	SD					0.0584	SD					0.572
1195	95% DL/2 (t) UCL					0.113	95% H-Stat (DL/2) UCL					0.0998
1196												
1197	Maximum Likelihood Estimate(MLE) Method						Log ROS Method					
1198	Mean					0.0656	Mean in Log Scale					-2.525
1199	SD					0.0845	SD in Log Scale					0.591
1200	95% MLE (t) UCL					0.104	Mean in Original Scale					0.094
1201	95% MLE (Tiku) UCL					0.127	SD in Original Scale					0.0562
1202							95% Percentile Bootstrap UCL					0.118
1203							95% BCA Bootstrap UCL					0.121
1204												
1205	Gamma Distribution Test with Detected Values Only					Data Distribution Test with Detected Values Only						
1206	k star (bias corrected)					7.017	Data appear Normal at 5% Significance Level					
1207	Theta Star					0.0228						
1208	nu star					70.17						
1209												
1210	A-D Test Statistic					0.417	Nonparametric Statistics					
1211	5% A-D Critical Value					0.679	Kaplan-Meier (KM) Method					
1212	K-S Test Statistic					0.679	Mean					0.127
1213	5% K-S Critical Value					0.357	SD					0.0324
1214	Data appear Gamma Distributed at 5% Significance Level					SE of Mean					0.00935	
1215							95% KM (t) UCL					0.143
1216	Assuming Gamma Distribution					95% KM (z) UCL					0.142	
1217	Gamma ROS Statistics using Extrapolated Data					95% KM (jackknife) UCL					0.147	
1218	Minimum					0.102	95% KM (bootstrap t) UCL					0.148
1219	Maximum					0.265	95% KM (BCA) UCL					0.165

	A	B	C	D	E	F	G	H	I	J	K	L
1220	Mean					0.188	95% KM (Percentile Bootstrap) UCL					0.158
1221	Median					0.2	95% KM (Chebyshev) UCL					0.167
1222	SD					0.052	97.5% KM (Chebyshev) UCL					0.185
1223	k star					10.18	99% KM (Chebyshev) UCL					0.22
1224	Theta star					0.0184						
1225	Nu star					305.4	Potential UCLs to Use					
1226	AppChi2					265.9	95% KM (t) UCL					0.143
1227	95% Gamma Approximate UCL					0.215	95% KM (Percentile Bootstrap) UCL					0.158
1228	95% Adjusted Gamma UCL					0.219						
1229	Note: DL/2 is not a recommended method.											
1230												
1231												
1232	Vanadium											
1233												
1234	General Statistics											
1235	Number of Valid Data					15	Number of Detected Data					8
1236	Number of Distinct Detected Data					8	Number of Non-Detect Data					7
1237							Percent Non-Detects					46.67%
1238												
1239	Raw Statistics						Log-transformed Statistics					
1240	Minimum Detected					0.31	Minimum Detected					-1.171
1241	Maximum Detected					9.8	Maximum Detected					2.282
1242	Mean of Detected					2.075	Mean of Detected					0.0751
1243	SD of Detected					3.191	SD of Detected					1.097
1244	Minimum Non-Detect					0.7	Minimum Non-Detect					-0.357
1245	Maximum Non-Detect					0.7	Maximum Non-Detect					-0.357
1246												
1247												
1248	Warning: There are only 8 Detected Values in this data											
1249	Note: It should be noted that even though bootstrap may be performed on this data set											
1250	the resulting calculations may not be reliable enough to draw conclusions											
1251												
1252	It is recommended to have 10-15 or more distinct observations for accurate and meaningful results.											
1253												
1254												
1255	UCL Statistics											
1256	Normal Distribution Test with Detected Values Only						Lognormal Distribution Test with Detected Values Only					
1257	Shapiro Wilk Test Statistic					0.593	Shapiro Wilk Test Statistic					0.908
1258	5% Shapiro Wilk Critical Value					0.818	5% Shapiro Wilk Critical Value					0.818
1259	Data not Normal at 5% Significance Level						Data appear Lognormal at 5% Significance Level					
1260												
1261	Assuming Normal Distribution						Assuming Lognormal Distribution					
1262	DL/2 Substitution Method						DL/2 Substitution Method					
1263	Mean					1.27	Mean					-0.45
1264	SD					2.426	SD					0.969
1265	95% DL/2 (t) UCL					2.373	95% H-Stat (DL/2) UCL					1.218
1266												
1267	Maximum Likelihood Estimate(MLE) Method					N/A	Log ROS Method					
1268	MLE yields a negative mean						Mean in Log Scale					-0.428
1269							SD in Log Scale					1.039
1270							Mean in Original Scale					1.306
1271							SD in Original Scale					2.416
1272							95% Percentile Bootstrap UCL					2.444

APPENDIX D
LEAD EVALUATION

1.0 Introduction

This technical memorandum presents an evaluation of potential risks associated with exposure of human receptors to lead in surface soil, subsurface soil, sediment, and groundwater at the Unnamed Island portion of the Peterson Puritan Operable Unit 2 (OU2) Superfund Site located in Cumberland and Lincoln, Rhode Island. This technical memorandum is included as Appendix D to the Supplemental Baseline Human Health Risk Assessment (HHRA) for the Unnamed Island. The Baseline HHRA for the remainder of the site was finalized in April 2009 (ARCADIS, 2009).

The lead evaluation consists of a separate evaluation for each medium and each exposure scenario applicable to the Unnamed Island. Although lead was identified as a contaminant of potential concern (COPC) in leachate and surface water, these exposure pathways are not quantitatively evaluated because uncertainty in assigning a dermal absorption fraction for lead precludes quantification of potential risks associated with the dermal exposure route (USEPA, 2003a; 2004; 2007).

2.0 Methodology

Risks associated with exposure to lead in various site-related media were evaluated using USEPA's Adult Lead Model (ALM). Specifically, the ALM was used to evaluate potential lead risks for non-residential scenarios (i.e., recreational users and construction workers). Parameter values used in the ALM are largely based on the USEPA's recommended default values. The dose equations and modeling approaches are consistent with USEPA guidance (2003a; 2007; 2009).

Incidental ingestion of lead in soil is generally the primary exposure pathway of concern for risk assessments. However, the models can also quantify cumulative doses and risk attributed to other sources of exposure, such as the ingestion of shallow groundwater during excavation activities. Because lead is ubiquitous in the environment, predicted blood lead levels (PbB) associated with exposure to site-related sources of lead are added to an assumed age-specific baseline PbB that reflects exposure to non-site-related sources of lead. Four different exposure scenarios (current and future) were evaluated using the ALM, including exposure of recreational users (adults and older children, age 6 to 12 years), construction workers, and adolescent trespassers (age 9 to 18 years).

In the ALM, potential health risks associated with lead exposure are evaluated by comparing the estimated PbB to the target PbB of 10 micrograms per deciliter ($\mu\text{g}/\text{dL}$) (Centers for Disease Control [CDC], 1991). The target PbB is based on potentially adverse neurological effects in children (CDC, 1991). Therefore, lead risk is evaluated based on the probability that PbB among a receptor population will exceed 10 $\mu\text{g}/\text{dL}$. This is sometimes referred to as the "P10 statistic." Consistent with USEPA guidance (USEPA, 2003b), this lead evaluation focuses on determining if P10 equals or exceeds 5 percent, which is equivalent to calculating the 95th percentile of the probability distribution of PbB among a receptor population.

Due to recent scientific evidence that has demonstrated adverse health effects at blood lead concentrations below 10 $\mu\text{g}/\text{dL}$ down to 5 $\mu\text{g}/\text{dL}$ and possibly below, an additional assessment has been performed using a target PbB of 5 $\mu\text{g}/\text{dL}$ (EPA, 2009) and determining whether the "P5 statistic" equals or exceeds 5 percent. The Office of Superfund Remediation and Technology Innovation (OSRTI) is developing a new soil lead policy to address this new information. Until that soil lead policy is finalized, EPA Region 1 is assessing lead exposures using both 10 $\mu\text{g}/\text{dL}$ and 5 $\mu\text{g}/\text{dL}$ as target PbB values.

The USEPA employs a simplifying assumption to estimate the probability distribution of PbBs. The model first generates a point estimate of the central tendency of the PbB distribution, and it is assumed that the value represents the geometric mean PbB among a receptor population that is exposed to the same levels of lead in the environment. Epidemiological data on PbBs among various populations suggests that the distribution is roughly lognormal in shape (USEPA, 2003a). USEPA applies the assumption of lognormality using the following equation:

$$PbB_{0.95} = PbB_{GM} \times GSD^{1.645}$$

$PbB_{0.95}$ = 95th percentile of the distribution of PbBs ($\mu\text{g/dL}$)
 PbB_{GM} = geometric mean (or 50th percentile) of the lognormal distribution of PbBs ($\mu\text{g/dL}$)
 GSD = geometric standard deviation of the lognormal distribution of PbBs (unitless)

3.0 Adult Lead Model for Non-Residential Receptor Populations

The USEPA's ALM is used to evaluate risks to non-residential receptor populations (USEPA, 2007). The following equation is used in the ALM to estimate quasi-steady state PbBs:

$$PbB_{GM} = PbB_0 + \frac{PbS \times BKSF \times IR \times AF \times EF}{AT}$$

PbB_{GM} = geometric mean (or 50th percentile) of the lognormal distribution of PbBs in adult workers ($\mu\text{g/dL}$)
 PbB_0 = baseline PbB due to exposure to non-site-related sources of lead ($\mu\text{g/dL}$)
 PbS = soil lead concentration (milligrams per kilogram [mg/kg])
 $BKSF$ = biokinetic slope factor ($\mu\text{g/dL}$ per micrograms per day)
 IR = soil ingestion rate (grams per day [g/day])
 AF = gastrointestinal absorption fraction for lead in soil (unitless)
 EF = exposure frequency (days per year or days per week)
 AT = averaging time (years)

The receptor of concern in the ALM is the fetus of an adult worker. The USEPA assumes a linear relationship between PbB in the adult woman and the fetus. Therefore, the geometric mean PbB in the fetus is equal to PbB_{GM} multiplied by a constant, R. USEPA guidance (2003b) indicates that the ALM may also be used to assess older children and adolescents with appropriate adjustments. A time-weighted approach was used to evaluate potential risks for recreational users and trespassers consistent with USEPA guidance (2003b).

3.1 Adult Lead Model Parameter Values

Table 1a presents the central tendency parameter values used to evaluate lead risks for the following receptors based on a target PbB of 10 $\mu\text{g/dL}$:

- Future construction worker (risks presented in Table 1b)
- Future adult recreational user (risks presented in Table 1c)
- Future older child recreational user (risks presented in Table 1d)
- Current adolescent trespasser (risks presented in Table 1e)

Tables 1f through 1i present the receptor-specific evaluations using a PbB of 5 $\mu\text{g}/\text{dL}$ for the construction worker, adult recreational user, older child recreational user and current adolescent trespasser, respectively.

Baseline Blood Lead Concentration (PbB_0)

The baseline PbB is intended to represent the best estimate of a reasonable central value of PbB in women of child-bearing age who are not exposed to lead-contaminated non-residential soil or dust at the site. The USEPA (2009) recommends a default baseline concentration of 1.0 $\mu\text{g}/\text{dL}$ based on national survey data gathered between 1999 and 2004 for women 17 to 45 years of age.

Geometric Standard Deviation

The USEPA recommends a default geometric standard deviation (GSD) of 1.8 that has been used in the ALM Model (USEPA, 2009).

Biokinetic Slope Factor

The Biokinetic Slope Factor (BKSF) represents the increase in typical adult PbB due to average daily lead uptake. The USEPA (2003b) recommends a default value of 0.4 μg lead/dL blood per μg lead absorbed per day for the BKSF. This value is based on empirical data on the relationship between tap-water lead concentrations and PbBs for a sample group of adult males. This default value was used for all exposure pathways in this evaluation.

Soil Ingestion Rate (IR_s)

Consistent with USEPA guidance (2003a; 2007), a soil ingestion rate of 50 mg/day was used to evaluate potential risks for the adult recreational user, older child recreational user, and adolescent trespasser. This value represents the central tendency ingestion rate for soil non-contact-intensive activities (including soil-derived indoor dust) (USEPA, 2007). A soil ingestion rate of 330 mg/day was used to evaluate potential lead exposures for the construction worker.

Exposure Frequency and Averaging Time

Exposure frequencies used in this lead evaluation were consistent with values used in the supplemental HHRA. Consistent with USEPA guidance (2003b), a time-weighted average approach was used to evaluate potential risks for recreational users and trespassers.

Lead Absorption Fraction

This evaluation used a lead absorption fraction of 0.12, which is the default value recommended by the USEPA (2003b). This value is based on experimental studies of the bioavailability of ingested lead in adults with considerations for the following three major sources of variability: 1) effect of food on lead bioavailability, 2) nonlinearity in PbB, and 3) effect of lead form and particle size on bioavailability. The value assumes a relative bioavailability of 0.6 for lead in site-related media as compared to soluble lead, and also assumes an absorption fraction (AF) of 0.2 for soluble lead. Thus, the final AF is 0.12 (i.e., $\text{AF} = 0.6 \times 0.2 = 0.12$).

Fetal/Maternal Blood Lead Concentration ($\text{R}_{\text{fetal/maternal}}$)

This evaluation used a fetal/maternal blood lead ratio of 0.9 for adult receptors, which is the default value recommended by the USEPA (2003b) based on studies that have explored the relationship between umbilical cord and maternal PbBs. Because the older child recreational user and adolescent trespasser are not of child-bearing age, the fetal/maternal PbB ratio for these receptors was set equal to 1.

3.2 Exposure Point Concentrations

The exposure point concentrations (EPCs) used in the lead evaluation are arithmetic means based on site-related data. Media were evaluated separately (i.e., medium-specific arithmetic means were used as the EPCs). One-half the laboratory detection limit was used as a surrogate for non-detects in calculating arithmetic mean lead concentrations. Appendix A presents the sample groupings used to calculate EPCs for each exposure scenario evaluated using the ALM.

3.3 Adult Lead Model Results

Tables 1b and 1f present the modeling results for the construction worker. Exposure of construction workers to shallow groundwater (incidental ingestion during intrusive activities) results in a P10 and a P5 of less than 1 percent, which are well below the threshold of 5 percent. However, exposure of construction workers to soils results in a P10 of 23.8 percent and a P5 of 68 percent, which are both above the 5 percent threshold.

Tables 1c and 1g present the modeling results for the adult recreational user. Exposure of adult recreational users to soils and sediment results in P10s and P5s of less than 5 percent.

Table 1d and 1h present the modeling results for the older child recreational user. Because this receptor is not of child-bearing age, the ALM was only used to estimate the geometric mean of PbB for the exposed individual. Exposure of older child recreational users to soil and sediment results in PbBs of less than 10 µg/dL and 5 µg/dL.

Table 1e and 1i present the modeling results for the adolescent trespasser. Similar to the older child recreational user, the ALM was only used to estimate the geometric mean of PbB for the exposed individual. Exposure of the adolescent trespasser to soil and sediment results in PbBs of less than 10 µg/dL and 5 µg/dL.

4.0 Summary and Conclusions

The lead evaluation identified the construction worker scenario as having estimated lead risks above the USEPA target. Estimated lead risks for future recreational users and current trespassers were less than the USEPA targets.

References:

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USEPA. 2009. Update of the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameters. OSWER 9200.2-82. June 2009. Available at: <http://www.epa.gov/superfund/health/contaminants/lead/products.htm#almupdate>.

**Table 1a. Summary of Parameter Values Used in the Adult Lead Model (ALM) for Evaluation of Non-Residential Lead Risks Associated with Site-Related Soil, Sediment, and Groundwater Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

Exposure Variable	Description	Units	Receptor Scenarios			
			Construction Worker ^[1]	Adult Recreational User ^[2]	Older Child Recreational User ^[2,3]	Adolescent Trespasser ^[2,4]
PbS	Lead concentration in medium of interest	ppm	Table 1b	Table 1c	Table 1d	Table 1e
			Site-specific	Site-specific	Site-specific	Site-specific
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9 [a]	0.9 [a]	1.0 [b]	1.0 [b]
BKSF _S	Biokinetic Slope Factor (soil, sediment, and food)	µg/dL per µg/day	0.4 [a]	0.4 [a]	0.4 [a]	0.4 [a]
BKSF _W	Biokinetic Slope Factor (groundwater)	µg/dL per µg/day	0.4 [a]	NA	NA	NA
GSD _i	Geometric standard deviation PbB	--	1.8 [c]	1.8 [c]	1.8 [c]	1.8 [c]
PbB ₀	Baseline PbB	µg/dL	1.0 [c]	1.0 [c]	1.0 [c]	1.0 [c]
IR _S	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.33 [o]	0.05 [d]	0.05 [d]	0.05 [d]
IR _f	Food ingestion rate (fish)	g/day	NA	NA	NA	NA
IR _w	Shallow groundwater ingestion rate	L/day	0.05 [m]	NA	NA	NA
AF _{S, D, W}	Absorption fraction, Pb in soil, dust, sediment, and groundwater	--	0.12 [a]	0.12 [a]	0.12 [a]	0.12 [a]
AF _f	Absorption fraction, Pb in food	--	NA	NA	NA	NA
EF _{S, D, W}	Exposure frequency, Pb pathway	days/yr	62 [h]	2 [g]	2 [g]	2 [g]
AT _{S, D, W}	Averaging time, Pb pathway	days/yr	84 [j]	7 [n]	7 [n]	7 [n]

Notes:

[1] Lead exposures for these receptors were evaluated individually for each applicable subarea. Consistent with the ALM guidance (USEPA, 2003a; 2007), the arithmetic mean of lead concentrations

[2] A time-weighted approach was used to evaluate potential lead risks for these receptors in the ALM, consistent with Example 6 in Appendix A in USEPA (2003b).

[3] Older child = 6 - 12 years of age

[4] Adolescent = 9 - 18 years of age

[5] Consistent with USEPA (2003a; 2004; 2007) guidance, dermal exposures to lead in aqueous and non-aqueous media were not quantitatively evaluated with the ALM due to the uncertainty in

[a] Default value (USEPA, 2003a).

[b] Fetal/maternal PbB ratio does not apply because receptor is assumed to be an older child (6-12 years) or adolescent (9-18 years); risks to fetus of pregnant women are evaluated in adult receptor

[c] Updated default value for women 17-45 years of age (USEPA, 2009).

[d] Default CTE value for soil ingestion (USEPA, 2003a; 2007). Value for commercial worker assumes non-contact-intensive activities.

[e] CTE fish ingestion rate based on the 50th percentile for Maine anglers (Ebert et al., 1993. Estimating Consumption of Freshwater Fish among Maine Anglers. *North American Journal of Fisheries Management* 13:737-745.). Assumes 100% of fish consumed are from on-site sources.

**Table 1a. Summary of Parameter Values Used in the Adult Lead Model (ALM) for Evaluation of Non-Residential Lead Risks Associated with Site-Related Soil, Sediment, and Groundwater Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island**

Notes (continued):

[f] Value considered protective for bioavailable fraction of lead in fish (USEPA, 2007).

[g] Reflects the same CTE value used in baseline human health risk assessment (2 days per week for approximately 6 months). Applying the time-weighted approach consistent with note [2] above, the resulting exposure frequency is set equal to 2 days/week.

[h] Same CTE value used in baseline human health risk assessment (5 days per week for approximately 12 weeks).

[i] Default central tendency estimate of exposure frequency for commercial/industrial workers from USEPA (2007).

[j] Fish ingestion rate reflects a longterm average daily intake assuming 100% of fish are obtained from the site; therefore, EF is 365 days/year.

[k] Averaging time appropriate for chronic exposure scenario (USEPA, 2003a; 2007).

[l] Averaging time is based on EF to avoid diluting exposures over the entire year (7 days per week x 12 weeks/year = 84 days/year).

[m] Default surface water contact rate for recreational swimmers (USEPA, 1989). Assumed to provide a conservative estimate of incidental ingestion by construction workers exposed to shallow groundwater.

[n] Applying the time-weighted approach consistent with note [2] above, the resulting averaging time is set equal to 7 days/week.

[o] Same CTE value used in baseline human health risk assessment.

µg/dL = micrograms per deciliter

g/day = grams per day

L/day = liters per day

NA = not applicable

References:

USEPA, 2009. Update of the Adult Lead Methodology's Default Baseline Blood Lead Concentration and Geometric Standard Deviation Parameter. OSWER Dir #9200.2-82. June 2009.

USEPA. 2007. Frequent Questions from Risk Assessors on the ALM. Accessed on-line 4/23/08 at <http://www.epa.gov/superfund/health/contaminants/lead/almfaq.htm>. Updated August 2, 2007.

USEPA. 2004. Risk Assessment Guidance for Superfund, Part E, Supplemental Guidance for Dermal Risk Assessment. EPA/540/R/99/005. July 2004.

USEPA. 2003a. Recommendations of the Technical Review Workgroup for Lead for an Approach to Assessing Risks Associated with Adult Exposures to Lead in Soil. EPA-540-R-03-001. January 2003.

USEPA. 2003b. Assessing Intermittent or Variable Exposures at Lead Sites. OSWER Directive #9285.7-76. EPA-540-R-03-008. November 2003.

USEPA. 2002. Blood Lead Concentrations of U.S. Adult Females: Summary Statistics From Phases 1 and 2 of the National Health and Nutrition Evaluation Survey (NHANES III). OSWER #9285.7-52. March 2002.

USEPA. 1989. Risk Assessment Guidance for Superfund, Part A, Interim Final. EPA/540/1-89/002. December 1989.

Table 1b. Adult Lead Model (ALM) for Evaluation of Lead Risks for Construction Workers Exposed to Site-Related Soil and Shallow Groundwater
Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Construction Workers	
			Site-Wide Shallow Groundwater ^[1]	Unnamed Island Surface and Subsurface Soil ^[1]
PbS	Lead concentration in medium of interest (arithmetic mean) ^[a]	ppm	0.0097	540
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.8
PbB ₀	Baseline PbB	µg/dL	1.0	1.0
IR _{S,w}	Ingestion rate (soil, groundwater)	g/day	0.050	0.330
AF	Absorption fraction (Pb in soil, dust, and groundwater)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/yr	62	62
AT	Averaging time, Pb pathway	days/yr	84	84
PbB_{adult}	PbB of adult worker, geometric mean	µg/dL	1.0	7.3
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	µg/dL	2.4	17.3
PbB _t	Target PbB level of concern	µg/dL	10.0	10.0
P(PbB_{fetal} > PbB_t)	Probability that fetal PbB > PbB_t, assuming lognormal distribution	%	0.0021%	23.8%

Notes:

ALM Version date 5/19/05

[1] Future scenario, as indicated in Table 1 of the baseline HHRA.

[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

Table 1c. Adult Lead Model (ALM) for Evaluation of Lead Risks for Adult Recreational Users Exposed to Site-Related Soil and Sediment
Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adult Recreational Users	
			Unnamed Island Surface and Subsurface Soil ^[1]	Unnamed Island Sediment ^[1,2]
PbS	Lead concentration in media of interest (arithmetic mean) ^[a]	mg/kg or ppm	540	260
$R_{\text{fetal/maternal}}$	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	$\mu\text{g/dL per } \mu\text{g/day}$	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	1.8
PbB_0	Baseline PbB	$\mu\text{g/dL}$	1.0	1.0
IR_s	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/week	2	2
AT	Averaging time, Pb pathway	days/week	7	7
$\text{PbB}_{\text{adult}}$	PbB of adult recreational user, geometric mean	$\mu\text{g/dL}$	1.4	1.2
$\text{PbB}_{\text{fetal}, 0.95}$	95th percentile PbB among fetuses of adults	$\mu\text{g/dL}$	3.2	2.8
PbB_t	Target PbB level of concern	$\mu\text{g/dL}$	10.0	10.0
$P(\text{PbB}_{\text{fetal}} > \text{PbB}_t)$	Probability that fetal PbB > PbB_t , assuming lognormal distribution	%	0.018%	0.0067%

Notes:

ALM Version date 5/19/05

[1] Future scenario, as indicated in Table 1 of the baseline HHRA.

[2] Sediment data represent those collected from the Unnamed Island ponds.

[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

Table 1d. Adult Lead Model (ALM) for Evaluation of Lead Risks for Older Child Recreational Users Exposed to Site-Related Soil and Sediment
Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Older Child Recreational Users	
			Unnamed Island Surface and Subsurface Soil ^[1]	Unnamed Island Sediment ^[1,2]
PbS	Lead concentration in media of interest (arithmetic mean) ^[a]	mg/kg or ppm	540	260
$R_{\text{fetal/maternal}}$	Fetal/maternal PbB ratio	--	1.0	1.0
BKSF	Biokinetic Slope Factor	$\mu\text{g/dL per } \mu\text{g/day}$	0.4	0.4
GSD_i	Geometric standard deviation PbB	--	1.8	1.8
PbB_0	Baseline PbB	$\mu\text{g/dL}$	1.0	1.0
IR_s	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/week	2	2
AT	Averaging time, Pb pathway	days/week	7	7
$\text{PbB}_{\text{adult}}$	PbB of older child recreational user, geometric mean	$\mu\text{g/dL}$	1.4	1.2
$\text{PbB}_{\text{fetal}, 0.95}$	95th percentile PbB among fetuses of adults	$\mu\text{g/dL}$	--	--
PbB_t	Target PbB level of concern	$\mu\text{g/dL}$	10.0	10.0
$P(\text{PbB}_{\text{fetal}} > \text{PbB}_t)$	Probability that fetal PbB > PbB_t , assuming lognormal distribution	%	--	--

Notes:

ALM Version date 5/19/05

[1] Future scenario, as indicated in Table 1 of the baseline HHRA.

[2] Sediment data represent those collected from the Unnamed Island ponds.

[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

Table 1e. Adult Lead Model (ALM) for Evaluation of Lead Risks for Adolescent Trespassers Exposed to Site-Related Soil and Sediment
Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adolescent Trespassers	
			Unnamed Island Surface Soil ^[1]	Unnamed Island Sediment ^[1,2]
PbS	Lead concentration in media of interest (arithmetic mean) ^[a]	mg/kg or ppm	360	260
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	1.0	1.0
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.8
PbB ₀	Baseline PbB	µg/dL	1.0	1.0
IR _s	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/week	2	2
AT	Averaging time, Pb pathway	days/week	7	7
PbB_{adult}	PbB of adolescent trespasser, geometric mean	µg/dL	1.2	1.2
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adults	µg/dL	--	--
PbB _t	Target PbB level of concern	µg/dL	10.0	10.0
P(PbB_{fetal} > PbB_t)	Probability that fetal PbB > PbB_t, assuming lognormal distribution	%	--	--

Notes:

ALM Version date 5/19/05

[1] Current scenario, as indicated in Table 1 of the baseline HHRA.

[2] Sediment data represent those collected from the Unnamed Island ponds.

[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

Table 1f. Adult Lead Model (ALM) for Evaluation of Lead Risks for Construction Workers Exposed to Site-Related Soil and Shallow Groundwater (PbB of 5 ug/dL)
Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Construction Workers	
			Site-Wide Shallow Groundwater ^[1]	Unnamed Island Surface and Subsurface Soil ^[1]
PbS	Lead concentration in medium of interest (arithmetic mean) ^[a]	ppm	0.0097	540
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.8
PbB ₀	Baseline PbB	µg/dL	1.0	1.0
IR _{s,w}	Ingestion rate (soil, groundwater)	g/day	0.050	0.330
AF	Absorption fraction (Pb in soil, dust, and groundwater)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/yr	62	62
AT	Averaging time, Pb pathway	days/yr	84	84
PbB_{adult}	PbB of adult worker, geometric mean	µg/dL	1.0	7.3
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adult workers	µg/dL	2.4	17.3
PbB _t	Target PbB level of concern	µg/dL	5.0	5.0
P(PbB_{fetal} > PbB_t)	Probability that fetal PbB > PbB_t, assuming lognormal distribution	%	0.1765%	68.0%

Notes:

ALM Version date 5/19/05

[1] Future scenario, as indicated in Table 1 of the baseline HHRA.

[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

Table 1g. Adult Lead Model (ALM) for Evaluation of Lead Risks for Adult Recreational Users Exposed to Site-Related Soil and Sediment (PbB of 5 ug/dL)
Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adult Recreational Users	
			Unnamed Island Surface and Subsurface Soil ^[1]	Unnamed Island Sediment ^[1,2]
PbS	Lead concentration in media of interest (arithmetic mean) ^[a]	mg/kg or ppm	540	260
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	0.9	0.9
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.8
PbB ₀	Baseline PbB	µg/dL	1.0	1.0
IR _s	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/week	2	2
AT	Averaging time, Pb pathway	days/week	7	7
PbB_{adult}	PbB of adult recreational user, geometric mean	µg/dL	1.4	1.2
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adults	µg/dL	3.2	2.8
PbB _t	Target PbB level of concern	µg/dL	5.0	5.0
P(PbB_{fetal} > PbB_t)	Probability that fetal PbB > PbB_t, assuming lognormal distribution	%	0.862%	0.4167%

Notes:

ALM Version date 5/19/05

[1] Future scenario, as indicated in Table 1 of the baseline HHRA.

[2] Sediment data represent those collected from the Unnamed Island ponds.

[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

Table 1h. Adult Lead Model (ALM) for Evaluation of Lead Risks for Older Child Recreational Users Exposed to Site-Related Soil and Sediment (PbB of 5 ug/dL)
Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Older Child Recreational Users	
			Unnamed Island Surface and Subsurface Soil ^[1]	Unnamed Island Sediment ^[1,2]
PbS	Lead concentration in media of interest (arithmetic mean) ^[a]	mg/kg or ppm	540	260
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	1.0	1.0
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.8
PbB ₀	Baseline PbB	µg/dL	1.0	1.0
IR _s	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/week	2	2
AT	Averaging time, Pb pathway	days/week	7	7
PbB_{adult}	PbB of older child recreational user, geometric mean	µg/dL	1.4	1.2
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adults	µg/dL	--	--
PbB _t	Target PbB level of concern	µg/dL	5.0	5.0
P(PbB_{fetal} > PbB_t)	Probability that fetal PbB > PbB_t, assuming lognormal distribution	%	--	--

Notes:

ALM Version date 5/19/05

[1] Future scenario, as indicated in Table 1 of the baseline HHRA.

[2] Sediment data represent those collected from the Unnamed Island ponds.

[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

Table 1i. Adult Lead Model (ALM) for Evaluation of Lead Risks for Adolescent Trespassers Exposed to Site-Related Soil and Sediment (PbB of 5 ug/dL)
Baseline Human Health Risk Assessment
Peterson Puritan (OU2), Cumberland and Lincoln, Rhode Island

Calculations of Blood Lead Concentrations (PbBs)

Exposure Variable	Description	Units	Adolescent Trespassers	
			Unnamed Island Surface Soil ^[1]	Unnamed Island Sediment ^[1,2]
PbS	Lead concentration in media of interest (arithmetic mean) ^[a]	mg/kg or ppm	360	260
R _{fetal/maternal}	Fetal/maternal PbB ratio	--	1.0	1.0
BKSF	Biokinetic Slope Factor	µg/dL per µg/day	0.4	0.4
GSD _i	Geometric standard deviation PbB	--	1.8	1.8
PbB ₀	Baseline PbB	µg/dL	1.0	1.0
IR _s	Soil/sediment ingestion rate (including soil-derived indoor dust)	g/day	0.050	0.050
AF	Absorption fraction (Pb in soil, dust, and sediment)	--	0.12	0.12
EF	Exposure frequency, Pb pathway	days/week	2	2
AT	Averaging time, Pb pathway	days/week	7	7
PbB_{adult}	PbB of adolescent trespasser, geometric mean	µg/dL	1.2	1.2
PbB _{fetal, 0.95}	95th percentile PbB among fetuses of adults	µg/dL	--	--
PbB _t	Target PbB level of concern	µg/dL	5.0	5.0
P(PbB_{fetal} > PbB_t)	Probability that fetal PbB > PbB_t, assuming lognormal distribution	%	--	--

Notes:

ALM Version date 5/19/05

[1] Current scenario, as indicated in Table 1 of the baseline HHRA.

[2] Sediment data represent those collected from the Unnamed Island ponds.

[a] Arithmetic means were calculated using one-half the laboratory detection limit for non-detects.

APPENDIX E
DERMAL CALCULATIONS

TABLE 1. DERMAL SCREENING - GROUNDWATER INORGANICS
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	Kp (cm/hr)	Isc cm	IR cm ³ /day	ABSGI	A cm ²	t_event hr/event	EV event/day	DA_event mg/cm2-evt	Derm/Drink Kp	Chem Assess
Future	Const. Worker - Adult	Unnamed Island Shallow Groundwater	Antimony	2.0E+00	2.0E-06	1.0E-03	1.0E-03	2000	0.15	2100	0.2	1	4.1E-10	0%	N
			Arsenic	4.1E+00	4.1E-06	1.0E-03	1.0E-03	2000	0.95	2100	0.2	1	8.3E-10	0%	N
			Barium	6.7E+02	6.7E-04	1.0E-03	1.0E-03	2000	0.07	2100	0.2	1	1.3E-07	0%	N
			Cadmium	8.3E+00	8.3E-06	1.0E-03	1.0E-03	2000	0.025	2100	0.2	1	1.7E-09	1%	N
			Chromium	5.1E+00	5.1E-06	2.0E-03	1.0E-03	2000	0.025	2100	0.2	1	2.0E-09	2%	N
			Cobalt	1.3E+01	1.3E-05	4.0E-04	1.0E-03	2000	0.97	2100	0.2	1	1.0E-09	0%	N
			Iron	4.3E+04	4.3E-02	1.0E-03	1.0E-03	2000	0.5	2100	0.2	1	8.5E-06	0%	N
			Lead	N/A	N/A	1.0E-04	1.0E-03	2000	0.5	2100	0.2	1	N/A	N/A	N/A
			Manganese	1.1E+03	1.1E-03	1.0E-03	1.0E-03	2000	0.06	2100	0.2	1	2.2E-07	0%	N
			Nickel	4.1E+01	4.1E-05	2.0E-04	1.0E-03	2000	0.04	2100	0.2	1	1.7E-09	0%	N
			Thallium	5.8E+00	5.8E-06	1.0E-03	1.0E-03	2000	1	2100	0.2	1	1.2E-09	0%	N
			Vanadium	1.8E+00	1.8E-06	1.0E-03	1.0E-03	2000	0.026	2100	0.2	1	3.7E-10	1%	N
			Zinc	1.3E+03	1.3E-03	6.0E-04	1.0E-03	2000	0.5	2100	0.2	1	1.5E-07	0%	N

DERMAL ABSORPTION CALCULATION EXAMPLE

Note: This EPA spreadsheet utilized as basis for Appendix E calculations.

FOR INORGANIC CHEMICALS IN WATER (latest version 04/01)

Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media

Enter the Following Exposure Conditions: for site specific conditions, change values for A through AT (Given are default values from Table 8-6)

Concentration (mg/L * L/1000 cm ³):	Conc =	0.001 mg/cm ³ (default value for purpose of illustration)
Input site specific concentrations in Column marked "Conc"	= 1 mg/L (1 ppm)	= 1 ug/cm ³ = 1000 ppb
Area exposed (cm ²):	SA =	18000 cm ²
Event time (hr/event):	t _{event} =	0.58 hr/event (35 minutes/event)
Event frequency (events/day):	EV =	1 event/day
Exposure frequency (days/year):	EF =	350 days/yr
Exposure duration (years):	ED =	30 years
Body weight (kg):	BW =	70 kg
Averaging time (days):	AT =	25550 days
for carcinogenic effects, AT=70 years (25,550 days)		
for noncarcinogenic effects, AT=ED (in days)		

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

$$\text{Dermal (mg/day)} = \text{DA}_{\text{event}} * A * \text{EV}$$

$$\text{Drinking (mg/day)} = \text{Conc} * \text{IR} * \text{ABSIG}$$

IR: Ingestion rate of drinking water

IR =

2000 (cm³/day = L/day * 1000 cm³/L)

ABSIG: Absorption fraction in GI tract

Chemical specific

Condition for screening: "Y" when Dermal is 10% of Drinking

Compare Dermal to Total dose exposed during adult showering assuming 5 gal/min of water flow rate

$$\text{Total dose (mg/day)} = Q * T_{\text{event}} * \text{EV}$$

Q: Shower flow rate (5-15 gal/min; here using 5 gal/min)

Q =

1135500 (cm³/hr = gal/min * 3.785 gal/l * 60 min/hr * 1000 cm³/hr)

Refer to Appendix A for equations to evaluate DA_{event} and DAD

CHEMICAL	Kp (cm/hr)	Source of Kp (exp or default)	Conc (mg/cm ³)	DA _{event} (mg/cm ² -event)	DAD (mg/kg-day)	ABSGI (chemical specific)	Screening	Chemicals to be assessed	Derm/ Total Dose
Antimony	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	15%	3.50%	N	0.00%

TABLE 2.RME. DERMALLY ABSORBED DOSE CALCULATIONS - GROUNDWATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	Isc cm	IR cm ³ /day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/lsc)	Dsc/lsc	Dsc	b	c	t_star1 B>0.6	t_star3 B<=0.6
Future	Const. Worker - Adult	Unnamed Island Shallow Groundwater	Atrazine	3.2E+00	3.2E-06	1912249	215.7	2.61	5.2E-03	1.0E-03	2000	1	0.030	1.70	1.0	-4.01E+00	9.82E-05	9.82E-08	3.2E-01	3.5E-01	N/A	4.07
			Benzo(a)anthracene	4.5E-02	4.5E-08	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
			bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05
			Dibenzofuran	2.8E-01	2.8E-07	132649	222.3	4.39	7.3E-02	1.0E-03	2000	1	0.420	1.85	1.0	-4.04E+00	9.02E-05	9.02E-08	6.3E-01	6.6E-01	N/A	4.44
			Naphthalene	9.2E-01	9.2E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			N-Nitrosodiphenylamine	4.7E+00	4.7E-06	86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25
			Phenanthrene	2.7E-01	2.7E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	1.8E+00	1.8E-06	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	3.9E+00	3.9E-06	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Chlorobenzene	1.2E+01	1.2E-05	108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08
			Aroclor-1242	2.8E-01	2.8E-07	#####	327.0	6.03	NA	1.0E-03	2000	1	N/A	7.13	1.0	-4.63E+00	2.34E-05	2.34E-08	N/A	N/A	N/A	17.11
			Aroclor-1254	4.3E+00	4.3E-06	#####	327.0	6.03	NA	1.0E-03	2000	1	N/A	7.13	1.0	-4.63E+00	2.34E-05	2.34E-08	N/A	N/A	N/A	17.11

TABLE 2.RME. DERMALLY ABSORBED DOSE CALCULATIONS - GROUNDWATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_{star} (hr)	A cm^2	t_{event} hr/event	EV event/day	DA_event mg/cm2-evt	Derm/Drink Kp	Chem Assess
Future	Const. Worker - Adult	Unnamed Island Shallow Groundwater	Atrazine	4.07	2100	0.2	1	2.7E-08	1%	N
			Benzo(a)anthracene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	2100	0.2	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	2100	0.2	1	2.8E-07	10%	Y
			Dibenzofuran	4.44	2100	0.2	1	3.5E-08	13%	Y
			Naphthalene	1.32	2100	0.2	1	3.9E-08	4%	N
			N-Nitrosodiphenylamine	3.25	2100	0.2	1	9.8E-08	2%	N
			Phenanthrene	N/A	2100	0.2	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	2100	0.2	1	8.0E-08	5%	N
			Benzene	0.69	2100	0.2	1	3.8E-08	1%	N
			Chlorobenzene	1.08	2100	0.2	1	2.8E-07	2%	N
			Aroclor-1242	N/A	2100	0.2	1	N/A	N/A	N/A
			Aroclor-1254	N/A	2100	0.2	1	N/A	N/A	N/A

TABLE 2.CT. DERMALLY ABSORBED DOSE CALCULATIONS - GROUNDWATER
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	Isc cm	IR cm ³ /day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/lsc)	Dsc/lsc	Dsc	b	c	t_star1 B>0.6	t_star3 B<=0.6
Future	Const. Worker - Adult	Unnamed Island Shallow Groundwater	Atrazine	1.1E+00	1.1E-06	1912249	215.7	2.61	5.2E-03	1.0E-03	2000	1	0.030	1.70	1.0	-4.01E+00	9.82E-05	9.82E-08	3.2E-01	3.5E-01	N/A	4.07
			Benzo(a)anthracene	4.5E-02	4.5E-08	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
			bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05
			Dibenzofuran	2.8E-01	2.8E-07	132649	222.3	4.39	7.3E-02	1.0E-03	2000	1	0.420	1.85	1.0	-4.04E+00	9.02E-05	9.02E-08	6.3E-01	6.6E-01	N/A	4.44
			Naphthalene	9.2E-01	9.2E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			N-Nitrosodiphenylamine	4.7E+00	4.7E-06	86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25
			Phenanthrene	2.7E-01	2.7E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	1.8E+00	1.8E-06	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	3.9E+00	3.9E-06	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Chlorobenzene	1.2E+01	1.2E-05	108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08
			Aroclor-1242	7.2E-02	7.2E-08	#####	327.0	6.03	NA	1.0E-03	2000	1	N/A	7.13	1.0	-4.63E+00	2.34E-05	2.34E-08	N/A	N/A	N/A	17.11
			Aroclor-1254	4.1E-01	4.1E-07	#####	327.0	6.03	NA	1.0E-03	2000	1	N/A	7.13	1.0	-4.63E+00	2.34E-05	2.34E-08	N/A	N/A	N/A	17.11

TABLE 2.CT. DERMALLY ABSORBED DOSE CALCULATIONS - GROUNDWATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_{star} (hr)	A cm^2	t_{event} hr/event	EV event/day	DA_event mg/cm ² -evt	Derm/Drink Kp	Chem Assess
Future	Const. Worker - Adult	Unnamed Island Shallow Groundwater	Atrazine	4.07	2100	0.2	1	9.0E-09	1%	N
			Benzo(a)anthracene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	2100	0.2	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	2100	0.2	1	2.8E-07	10%	Y
			Dibenzofuran	4.44	2100	0.2	1	3.5E-08	13%	Y
			Naphthalene	1.32	2100	0.2	1	3.9E-08	4%	N
			N-Nitrosodiphenylamine	3.25	2100	0.2	1	9.8E-08	2%	N
			Phenanthrene	N/A	2100	0.2	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	2100	0.2	1	8.0E-08	5%	N
			Benzene	0.69	2100	0.2	1	3.8E-08	1%	N
			Chlorobenzene	1.08	2100	0.2	1	2.8E-07	2%	N
			Aroclor-1242	N/A	2100	0.2	1	N/A	N/A	N/A
			Aroclor-1254	N/A	2100	0.2	1	N/A	N/A	N/A

DERMAL ABSORPTION CALCULATION EXAMPLE

Note: This EPA spreadsheet utilized as basis for Appendix E calculations.

FOR ORGANIC CHEMICALS IN WATER (updated on 11/99)

Worksheet to Calculate Dermal Absorption of Organic Chemicals from Aqueous Media (updated 11/99)

Enter the Following Exposure Conditions: for site specific conditions, change values in Cells G5-G18

Concentration (mg/L*L/1000 cm3):	Conc =	1.0E-03 mg/cm3 (default value for purpose of illustration)
Input site specific concentrations in Column marked "Conc"		= 1 mg/L (1 ppm) = 1 ug/cm3 = 1000 ppb
Area exposed (cm2):	A =	5672.0 cm2
Event time (hr/event):	t_event =	0.5 hr/event (35 minutes/event)
Event frequency (events/day):	EV =	1.0 event/day
Exposure frequency (days/year):	EF =	26.0 days/yr
Exposure duration (years):	ED =	7.0 years
Body weight (kg):	BW =	70.0 kg
Averaging time (days):	AT =	2555.0 days
for carcinogenic effects, AT=70 years (25,550 days)		
for noncarcinogenic effects, AT=ED (in days)		
Skin thickness (assumed to be 10 um):	lsc =	1.0E-03 cm

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

Dermal (mg/day) = DA_event * A * EV	IR =	2000.0 (cm3/day = L/day * 1000 cm3/L)
Drinking (mg/day) = Conc * IR * ABSIG	ABSGI =	1.0 (assumed 100% GI absorption)

IR: Ingestion rate of drinking water
 ABSIG: Absorption fraction in GI tract

Refer to Appendix A for equations to evaluate DA_event and DAD

(*): outside of the Effective Prediction Domain (EPD) determined by the Flynn's measured Kp data

95% LCI and UCI are evaluated by Dr. Paul Pinsky in NCEA using SAS

CHEMICAL	CAS No.	MWT	logKow	Kp 95% LCI	Kp (cm/hr) predicted	Kp (cm/hr) measured	Kp 95% UCI	Chemicals outside EPD (*)	Derm/ Drink Kp	Chem Assess	B	tau (hr)	t_star (hr)
118 Heptachlor	76448	373.5	4.27	3.4E-04	8.6E-03		2.2E-01		14%	Y	0.1	12.99	31.16
	FA for tau>3	Conc (mg/cm3)	DA_event (mg/cm2-evt)	DAD (mg/kg-day)		log(Ds/lsc)	Dsc/lsc	Dsc		b	c	t_star1 B>0.6	t_star3 B<=0.6
	0.8	1.4E-09	6.8E-11	3.9E-10		-4.89E+00	1.28E-05	1.28E-08		3.4E-01	3.8E-01	#NUM!	31.16

Table 3.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - GROUNDWATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
Future	Const. Worker - Adult	Unnamed Island Shallow Groundwater													
			Atrazine	Groundwater	--	1	5.2E-03	cm/hr	0.2	hr/event	1.70	hr	4.07	hr	0.0296
			Benzo(a)anthracene	Groundwater	--	1	NA	cm/hr	0.2	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Groundwater	--	1	NA	cm/hr	0.2	hr/event	2.64	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Groundwater	--	0.8	2.5E-02	cm/hr	0.2	hr/event	16.27	hr	39.05	hr	0.1896
			Dibenzofuran	Groundwater	--	1	7.3E-02	cm/hr	0.2	hr/event	1.85	hr	4.44	hr	0.4204
			Naphthalene	Groundwater	--	1	4.7E-02	cm/hr	0.2	hr/event	0.55	hr	1.32	hr	0.2031
			N-Nitrosodiphenylamine	Groundwater	--	1	1.5E-02	cm/hr	0.2	hr/event	1.35	hr	3.25	hr	0.0788
			Phenanthrene	Groundwater	--	1	NA	cm/hr	0.2	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Groundwater	--	1	4.2E-02	cm/hr	0.2	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Groundwater	--	1	1.5E-02	cm/hr	0.2	hr/event	0.29	hr	0.69	hr	0.0505
			Chlorobenzene	Groundwater	--	1	2.8E-02	cm/hr	0.2	hr/event	0.45	hr	1.08	hr	0.1152
			Aroclor-1242	Groundwater	--	1	NA	cm/hr	0.2	hr/event	7.13	hr	N/A	hr	N/A
			Aroclor-1254	Groundwater	--	1	NA	cm/hr	0.2	hr/event	7.13	hr	N/A	hr	N/A

FA = Fraction Absorbed Water
Kp = Dermal Permeability Coefficient of Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis

Table 3.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - GROUNDWATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
Future	Const. Worker - Adult	Unnamed Island Shallow Groundwater													
			Atrazine	Groundwater	--	1	5.2E-03	cm/hr	0.2	hr/event	1.70	hr	4.07	hr	0.0296
			Benzo(a)anthracene	Groundwater	--	1	NA	cm/hr	0.2	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Groundwater	--	1	NA	cm/hr	0.2	hr/event	2.64	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Groundwater	--	0.8	2.5E-02	cm/hr	0.2	hr/event	16.27	hr	39.05	hr	0.1896
			Dibenzofuran	Groundwater	--	1	7.3E-02	cm/hr	0.2	hr/event	1.85	hr	4.44	hr	0.4204
			Naphthalene	Groundwater	--	1	4.7E-02	cm/hr	0.2	hr/event	0.55	hr	1.32	hr	0.2031
			N-Nitrosodiphenylamine	Groundwater	--	1	1.5E-02	cm/hr	0.2	hr/event	1.35	hr	3.25	hr	0.0788
			Phenanthrene	Groundwater	--	1	NA	cm/hr	0.2	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Groundwater	--	1	4.2E-02	cm/hr	0.2	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Groundwater	--	1	1.5E-02	cm/hr	0.2	hr/event	0.29	hr	0.69	hr	0.0505
			Chlorobenzene	Groundwater	--	1	2.8E-02	cm/hr	0.2	hr/event	0.45	hr	1.08	hr	0.1152
			Aroclor-1242	Groundwater	--	1	NA	cm/hr	0.2	hr/event	7.13	hr	N/A	hr	N/A
			Aroclor-1254	Groundwater	--	1	NA	cm/hr	0.2	hr/event	7.13	hr	N/A	hr	N/A

FA = Fraction Absorbed Water
Kp = Dermal PeCTability Coefficient of Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the PeCTability Coefficient of a Compound Through the Stratum Corneum Relative to its PeCTability Coefficient Across the Viable Epidermis

TABLE 4. DERMAL SCREENING - SURFACE WATER INORGANICS
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	Kp (cm/hr)	IsC cm	IR cm ³ /day	ABSGI	A cm ²	t _{event} hr/event	EV event/day	DA _{event} mg/cm2-evt	Derm/Drink Kp	Chem Assess
Current	Trespasser - Adolescent wader	Leachate - Unnamed Island	Aluminum	1.4E+02	1.4E-04	1.0E-03	1.0E-03	2000	0.01	3700	1	1	1.4E-07	19%	Y
			Antimony	2.0E+00	2.0E-06	1.0E-03	1.0E-03	2000	0.15	3700	1	1	2.0E-09	1%	N
			Arsenic	4.1E+00	4.1E-06	1.0E-03	1.0E-03	2000	0.95	3700	1	1	4.1E-09	0%	N
			Barium	6.7E+02	6.7E-04	1.0E-03	1.0E-03	2000	0.07	3700	1	1	6.7E-07	3%	N
			Beryllium	1.8E-01	1.8E-07	1.0E-03	1.0E-03	2000	0.007	3700	1	1	1.8E-10	26%	Y
			Cadmium	8.3E+00	8.3E-06	1.0E-03	1.0E-03	2000	0.025	3700	1	1	8.3E-09	7%	N
			Chromium	5.1E+00	5.1E-06	2.0E-03	1.0E-03	2000	0.025	3700	1	1	1.0E-08	15%	Y
			Cobalt	1.3E+01	1.3E-05	4.0E-04	1.0E-03	2000	0.97	3700	1	1	5.0E-09	0%	N
			Copper	1.9E+01	1.9E-05	1.0E-03	1.0E-03	2000	0.57	3700	1	1	1.9E-08	0%	N
			Cyanide	ND	N/A	1.0E-03	1.0E-03	2000	0.47	3700	1	1	N/A	N/A	N/A
			Iron	4.3E+04	4.3E-02	1.0E-03	1.0E-03	2000	0.5	3700	1	1	4.3E-05	0%	N
			Lead	N/A	N/A	1.0E-04	1.0E-03	2000	0.5	3700	1	1	N/A	N/A	N/A
			Manganese	1.1E+03	1.1E-03	1.0E-03	1.0E-03	2000	0.06	3700	1	1	1.1E-06	3%	N
			Mercury	3.2E-02	3.2E-08	1.0E-03	1.0E-03	2000	0.07	3700	1	1	3.2E-11	3%	N
			Nickel	4.1E+01	4.1E-05	2.0E-04	1.0E-03	2000	0.04	3700	1	1	8.3E-09	1%	N
			Silver	1.5E+00	1.5E-06	6.0E-04	1.0E-03	2000	0.04	3700	1	1	9.0E-10	3%	N
			Thallium	5.8E+00	5.8E-06	1.0E-03	1.0E-03	2000	1	3700	1	1	5.8E-09	0%	N
			Vanadium	1.8E+00	1.8E-06	1.0E-03	1.0E-03	2000	0.026	3700	1	1	1.8E-09	7%	N
			Zinc	1.3E+03	1.3E-03	6.0E-04	1.0E-03	2000	0.5	3700	1	1	7.6E-07	0%	N
Current	Trespasser - Adolescent wader	Unnamed Island Ponds	Aluminum	3.3E+03	3.3E-03	1.0E-03	1.0E-03	2000	0.01	7600	1	1	3.3E-06	38%	Y
			Arsenic	3.2E+00	3.2E-06	1.0E-03	1.0E-03	2000	0.95	7600	1	1	3.2E-09	0%	N
			Cadmium	1.4E+00	1.4E-06	1.0E-03	1.0E-03	2000	0.025	7600	1	1	1.4E-09	15%	Y
			Chromium	1.4E+01	1.4E-05	2.0E-03	1.0E-03	2000	0.025	7600	1	1	2.7E-08	30%	Y
			Cobalt	ND	N/A	4.0E-04	1.0E-03	2000	0.97	7600	1	1	N/A	N/A	N/A
			Copper	7.0E+01	7.0E-05	1.0E-03	1.0E-03	2000	0.57	7600	1	1	7.0E-08	1%	N
			Cyanide	3.6E+00	3.6E-06	1.0E-03	1.0E-03	2000	0.47	7600	1	1	3.6E-09	1%	N
			Iron	1.0E+04	1.0E-02	1.0E-03	1.0E-03	2000	0.5	7600	1	1	1.0E-05	1%	N
			Lead	N/A	N/A	1.0E-04	1.0E-03	2000	0.5	7600	1	1	N/A	N/A	N/A
			Manganese	5.8E+02	5.8E-04	1.0E-03	1.0E-03	2000	0.06	7600	1	1	5.8E-07	6%	N
			Mercury	ND	N/A	1.0E-03	1.0E-03	2000	0.07	7600	1	1	N/A	N/A	N/A
			Vanadium	2.6E+00	2.6E-06	1.0E-03	1.0E-03	2000	0.026	7600	1	1	2.6E-09	15%	Y
Future	Trespasser - Adult wader	Leachate - Unnamed Island	Aluminum	1.4E+02	1.4E-04	1.0E-03	1.0E-03	2000	0.01	4500	1	1	1.4E-07	23%	Y
			Antimony	2.0E+00	2.0E-06	1.0E-03	1.0E-03	2000	0.15	4500	1	1	2.0E-09	2%	N
			Arsenic	4.1E+00	4.1E-06	1.0E-03	1.0E-03	2000	0.95	4500	1	1	4.1E-09	0%	N
			Barium	6.7E+02	6.7E-04	1.0E-03	1.0E-03	2000	0.07	4500	1	1	6.7E-07	3%	N
			Beryllium	1.8E-01	1.8E-07	1.0E-03	1.0E-03	2000	0.007	4500	1	1	1.8E-10	32%	Y
			Cadmium	8.3E+00	8.3E-06	1.0E-03	1.0E-03	2000	0.025	4500	1	1	8.3E-09	9%	N
			Chromium	5.1E+00	5.1E-06	2.0E-03	1.0E-03	2000	0.025	4500	1	1	1.0E-08	18%	Y
			Cobalt	1.3E+01	1.3E-05	4.0E-04	1.0E-03	2000	0.97	4500	1	1	5.0E-09	0%	N
			Copper	1.9E+01	1.9E-05	1.0E-03	1.0E-03	2000	0.57	4500	1	1	1.9E-08	0%	N
			Cyanide	ND	N/A	1.0E-03	1.0E-03	2000	0.47	4500	1	1	N/A	N/A	N/A
			Iron	4.3E+04	4.3E-02	1.0E-03	1.0E-03	2000	0.5	4500	1	1	4.3E-05	0%	N
			Lead	N/A	N/A	1.0E-04	1.0E-03	2000	0.5	4500	1	1	N/A	N/A	N/A
			Manganese	1.1E+03	1.1E-03	1.0E-03	1.0E-03	2000	0.06	4500	1	1	1.1E-06	4%	N
			Mercury	3.2E-02	3.2E-08	1.0E-03	1.0E-03	2000	0.07	4500	1	1	3.2E-11	3%	N
			Nickel	4.1E+01	4.1E-05	2.0E-04	1.0E-03	2000	0.04	4500	1	1	8.3E-09	1%	N
			Silver	1.5E+00	1.5E-06	6.0E-04	1.0E-03	2000	0.04	4500	1	1	9.0E-10	3%	N
			Thallium	5.8E+00	5.8E-06	1.0E-03	1.0E-03	2000	1	4500	1	1	5.8E-09	0%	N
			Vanadium	1.8E+00	1.8E-06	1.0E-03	1.0E-03	2000	0.026	4500	1	1	1.8E-09	9%	N
			Zinc	1.3E+03	1.3E-03	6.0E-04	1.0E-03	2000	0.5	4500	1	1	7.6E-07	0%	N
Future	Trespasser - Older Child wader	Leachate - Unnamed Island	Aluminum	1.4E+02	1.4E-04	1.0E-03	1.0E-03	2000	0.01	2700	1	1	1.4E-07	14%	Y
			Antimony	2.0E+00	2.0E-06	1.0E-03	1.0E-03	2000	0.15	2700	1	1	2.0E-09	1%	N
			Arsenic	4.1E+00	4.1E-06	1.0E-03	1.0E-03	2000	0.95	2700	1	1	4.1E-09	0%	N
			Barium	6.7E+02	6.7E-04	1.0E-03	1.0E-03	2000	0.07	2700	1	1	6.7E-07	2%	N
			Beryllium	1.8E-01	1.8E-07	1.0E-03	1.0E-03	2000	0.007	2700	1	1	1.8E-10	19%	Y
			Cadmium	8.3E+00	8.3E-06	1.0E-03	1.0E-03	2000	0.025	2700	1	1	8.3E-09	5%	N
			Chromium	5.1E+00	5.1E-06	2.0E-03	1.0E-03	2000	0.025	2700	1	1	1.0E-08	11%	Y
			Cobalt	1.3E+01	1.3E-05	4.0E-04	1.0E-03	2000	0.97	2700	1	1	5.0E-09	0%	N
			Copper	1.9E+01	1.9E-05	1.0E-03	1.0E-03	2000	0.57	2700	1	1	1.9E-08	0%	N
			Cyanide	ND	N/A	1.0E-03	1.0E-03	2000	0.47	2700	1	1	N/A	N/A	N/A

TABLE 4. DERMAL SCREENING - SURFACE WATER INORGANICS
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	Kp (cm/hr)	Isc cm	IR cm ³ /day	ABSGI	A cm ²	t _{event} hr/event	EV event/day	DA _{event} mg/cm2-evt	Derm/Drink Kp	Chem Assess
			Iron	4.3E+04	4.3E-02	1.0E-03	1.0E-03	2000	0.5	2700	1	1	4.3E-05	0%	N
			Lead	N/A	N/A	1.0E-04	1.0E-03	2000	0.5	2700	1	1	N/A	N/A	N/A
			Manganese	1.1E+03	1.1E-03	1.0E-03	1.0E-03	2000	0.06	2700	1	1	1.1E-06	2%	N
			Mercury	3.2E-02	3.2E-08	1.0E-03	1.0E-03	2000	0.07	2700	1	1	3.2E-11	2%	N
			Nickel	4.1E+01	4.1E-05	2.0E-04	1.0E-03	2000	0.04	2700	1	1	8.3E-09	1%	N
			Silver	1.5E+00	1.5E-06	6.0E-04	1.0E-03	2000	0.04	2700	1	1	9.0E-10	2%	N
			Thallium	5.8E+00	5.8E-06	1.0E-03	1.0E-03	2000	1	2700	1	1	5.8E-09	0%	N
			Vanadium	1.8E+00	1.8E-06	1.0E-03	1.0E-03	2000	0.026	2700	1	1	1.8E-09	5%	N
			Zinc	1.3E+03	1.3E-03	6.0E-04	1.0E-03	2000	0.5	2700	1	1	7.6E-07	0%	N
Future	Rec. User - Adult wader	Unnamed Island Ponds	Aluminum	3.3E+03	3.3E-03	1.0E-03	1.0E-03	2000	0.01	7310	1	1	3.3E-06	37%	Y
			Arsenic	3.2E+00	3.2E-06	1.0E-03	1.0E-03	2000	0.95	7310	1	1	3.2E-09	0%	N
			Cadmium	1.4E+00	1.4E-06	1.0E-03	1.0E-03	2000	0.025	7310	1	1	1.4E-09	15%	Y
			Chromium	1.4E+01	1.4E-05	2.0E-03	1.0E-03	2000	0.025	7310	1	1	2.7E-08	29%	Y
			Cobalt	ND	N/A	4.0E-04	1.0E-03	2000	0.97	7310	1	1	N/A	N/A	N/A
			Copper	7.0E+01	7.0E-05	1.0E-03	1.0E-03	2000	0.57	7310	1	1	7.0E-08	1%	N
			Cyanide	3.6E+00	3.6E-06	1.0E-03	1.0E-03	2000	0.47	7310	1	1	3.6E-09	1%	N
			Iron	1.0E+04	1.0E-02	1.0E-03	1.0E-03	2000	0.5	7310	1	1	1.0E-05	1%	N
			Lead	N/A	N/A	1.0E-04	1.0E-03	2000	0.5	7310	1	1	N/A	N/A	N/A
			Manganese	5.8E+02	5.8E-04	1.0E-03	1.0E-03	2000	0.06	7310	1	1	5.8E-07	6%	N
			Mercury	ND	N/A	1.0E-03	1.0E-03	2000	0.07	7310	1	1	N/A	N/A	N/A
			Vanadium	2.6E+00	2.6E-06	1.0E-03	1.0E-03	2000	0.026	7310	1	1	2.6E-09	14%	Y
Future	Rec. User - Older Child wader	Unnamed Island Ponds	Aluminum	3.3E+03	3.3E-03	1.0E-03	1.0E-03	2000	0.01	4170	1	1	3.3E-06	21%	Y
			Arsenic	3.2E+00	3.2E-06	1.0E-03	1.0E-03	2000	0.95	4170	1	1	3.2E-09	0%	N
			Cadmium	1.4E+00	1.4E-06	1.0E-03	1.0E-03	2000	0.025	4170	1	1	1.4E-09	8%	N
			Chromium	1.4E+01	1.4E-05	2.0E-03	1.0E-03	2000	0.025	4170	1	1	2.7E-08	17%	Y
			Cobalt	ND	N/A	4.0E-04	1.0E-03	2000	0.97	4170	1	1	N/A	N/A	N/A
			Copper	7.0E+01	7.0E-05	1.0E-03	1.0E-03	2000	0.57	4170	1	1	7.0E-08	0%	N
			Cyanide	3.6E+00	3.6E-06	1.0E-03	1.0E-03	2000	0.47	4170	1	1	3.6E-09	0%	N
			Iron	1.0E+04	1.0E-02	1.0E-03	1.0E-03	2000	0.5	4170	1	1	1.0E-05	0%	N
			Lead	N/A	N/A	1.0E-04	1.0E-03	2000	0.5	4170	1	1	N/A	N/A	N/A
			Manganese	5.8E+02	5.8E-04	1.0E-03	1.0E-03	2000	0.06	4170	1	1	5.8E-07	3%	N
			Mercury	ND	N/A	1.0E-03	1.0E-03	2000	0.07	4170	1	1	N/A	N/A	N/A
			Vanadium	2.6E+00	2.6E-06	1.0E-03	1.0E-03	2000	0.026	4170	1	1	2.6E-09	8%	N
Future	Construction Worker - Adult	Leachate - Unnamed Island	Aluminum	1.4E+02	1.4E-04	1.0E-03	1.0E-03	2000	0.01	2100	0.2	1	2.7E-08	2%	N
			Antimony	2.0E+00	2.0E-06	1.0E-03	1.0E-03	2000	0.15	2100	0.2	1	4.1E-10	0%	N
			Arsenic	4.1E+00	4.1E-06	1.0E-03	1.0E-03	2000	0.95	2100	0.2	1	8.3E-10	0%	N
			Barium	6.7E+02	6.7E-04	1.0E-03	1.0E-03	2000	0.07	2100	0.2	1	1.3E-07	0%	N
			Beryllium	1.8E-01	1.8E-07	1.0E-03	1.0E-03	2000	0.007	2100	0.2	1	3.6E-11	3%	N
			Cadmium	8.3E+00	8.3E-06	1.0E-03	1.0E-03	2000	0.025	2100	0.2	1	1.7E-09	1%	N
			Chromium	5.1E+00	5.1E-06	2.0E-03	1.0E-03	2000	0.025	2100	0.2	1	2.0E-09	2%	N
			Cobalt	1.3E+01	1.3E-05	4.0E-04	1.0E-03	2000	0.97	2100	0.2	1	1.0E-09	0%	N
			Copper	1.9E+01	1.9E-05	1.0E-03	1.0E-03	2000	0.57	2100	0.2	1	3.8E-09	0%	N
			Cyanide	ND	N/A	1.0E-03	1.0E-03	2000	0.47	2100	0.2	1	N/A	N/A	N/A
			Iron	4.3E+04	4.3E-02	1.0E-03	1.0E-03	2000	0.5	2100	0.2	1	8.5E-06	0%	N
			Lead	N/A	N/A	1.0E-04	1.0E-03	2000	0.5	2100	0.2	1	N/A	N/A	N/A
			Manganese	1.1E+03	1.1E-03	1.0E-03	1.0E-03	2000	0.06	2100	0.2	1	2.2E-07	0%	N
			Mercury	3.2E-02	3.2E-08	1.0E-03	1.0E-03	2000	0.07	2100	0.2	1	6.4E-12	0%	N
			Nickel	4.1E+01	4.1E-05	2.0E-04	1.0E-03	2000	0.04	2100	0.2	1	1.7E-09	0%	N
			Silver	1.5E+00	1.5E-06	6.0E-04	1.0E-03	2000	0.04	2100	0.2	1	1.8E-10	0%	N
			Thallium	5.8E+00	5.8E-06	1.0E-03	1.0E-03	2000	1	2100	0.2	1	1.2E-09	0%	N
			Vanadium	1.8E+00	1.8E-06	1.0E-03	1.0E-03	2000	0.026	2100	0.2	1	3.7E-10	1%	N
			Zinc	1.3E+03	1.3E-03	6.0E-04	1.0E-03	2000	0.5	2100	0.2	1	1.5E-07	0%	N

DERMAL ABSORPTION CALCULATION EXAMPLE

Note: This EPA spreadsheet utilized as basis for Appendix E calculations.

FOR INORGANIC CHEMICALS IN WATER (latest version 04/01)

Worksheet to Calculate Dermal Absorption of Inorganic Chemicals from Aqueous Media

Enter the Following Exposure Conditions: for site specific conditions, change values for A through AT (Given are default values from Table 8-6)

Concentration (mg/L * L/1000 cm ³):	Conc =	0.001 mg/cm ³ (default value for purpose of illustration)
Input site specific concentrations in Column marked "Conc"	= 1 mg/L (1 ppm)	= 1 ug/cm ³ = 1000 ppb
Area exposed (cm ²):	SA =	18000 cm ²
Event time (hr/event):	t _{event} =	0.58 hr/event (35 minutes/event)
Event frequency (events/day):	EV =	1 event/day
Exposure frequency (days/year):	EF =	350 days/yr
Exposure duration (years):	ED =	30 years
Body weight (kg):	BW =	70 kg
Averaging time (days):	AT =	25550 days
for carcinogenic effects, AT=70 years (25,550 days)		
for noncarcinogenic effects, AT=ED (in days)		

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

$$\text{Dermal (mg/day)} = \text{DA}_{\text{event}} * A * \text{EV}$$

$$\text{Drinking (mg/day)} = \text{Conc} * \text{IR} * \text{ABSIG}$$

IR: Ingestion rate of drinking water

IR =

2000 (cm³/day = L/day * 1000 cm³/L)

ABSIG: Absorption fraction in GI tract

Chemical specific

Condition for screening: "Y" when Dermal is 10% of Drinking

Compare Dermal to Total dose exposed during adult showering assuming 5 gal/min of water flow rate

$$\text{Total dose (mg/day)} = Q * T_{\text{event}} * \text{EV}$$

Q: Shower flow rate (5-15 gal/min; here using 5 gal/min)

Q =

1135500 (cm³/hr = gal/min * 3.785 gal/l * 60 min/hr * 1000 cm³/hr)

Refer to Appendix A for equations to evaluate DA_{event} and DAD

CHEMICAL	Kp (cm/hr)	Source of Kp (exp or default)	Conc (mg/cm ³)	DA _{event} (mg/cm ² -event)	DAD (mg/kg-day)	ABSGI (chemical specific)	Screening	Chemicals to be assessed	Derm/ Total Dose
Antimony	1.0E-03	default	1.0E-03	5.8E-07	6.2E-05	15%	3.50%	N	0.00%

TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	Isc cm	IR cm ³ /day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/lsc)	Dsc/lsc	Dsc	b	c	τ_star1 B>0.6	τ_star3 B<=0.6
Current	Trespasser - Adolescent wader	Leachate - Unnamed Island	4-Methylphenol	4.5E-01	4.5E-07	106445	108.1	1.95	7.7E-03	1.0E-03	2000	1	0.031	0.42	1.0	-3.41E+00	3.93E-04	3.93E-07	3.2E-01	3.5E-01	N/A	1.02
			Acenaphthylene	2.6E-02	2.6E-08	208968	152.2	3.94	9.1E-02	1.0E-03	2000	1	0.432	0.75	1.0	-3.65E+00	2.23E-04	2.23E-07	6.4E-01	6.6E-01	N/A	1.80
			Atrazine	3.2E+00	3.2E-06	1912249	215.7	2.61	5.2E-03	1.0E-03	2000	1	0.030	1.70	1.0	-4.01E+00	9.82E-05	9.82E-08	3.2E-01	3.5E-01	N/A	4.07
			Benzo(a)anthracene	4.5E-02	4.5E-08	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
			Benzo(b)fluoranthene	1.5E-02	1.5E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			Benzo(g,h,i)perylene	1.3E-02	1.3E-08	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Benzo(k)fluoranthene	1.6E-02	1.6E-08	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05
			Chrysene	3.4E-02	3.4E-08	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Dibenz(a,h)anthracene	ND	N/A	53703	278.4	6.84	NA	1.0E-03	2000	1	N/A	3.81	0.6	-4.36E+00	4.37E-05	4.37E-08	N/A	N/A	N/A	9.14
			Dibenzofuran	2.8E-01	2.8E-07	132649	222.3	4.39	7.3E-02	1.0E-03	2000	1	0.420	1.85	1.0	-4.04E+00	9.02E-05	9.02E-08	6.3E-01	6.6E-01	N/A	4.44
			Indeno(1,2,3-cd)pyrene	1.1E-02	1.1E-08	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Naphthalene	9.2E-01	9.2E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			N-Nitrosodiphenylamine	4.7E+00	4.7E-06	86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25
			Pentachlorophenol	ND	N/A	87865	266.4	5.86	NA	1.0E-03	2000	1	N/A	3.26	0.9	-4.29E+00	5.11E-05	5.11E-08	N/A	N/A	N/A	7.83
			Phenanthrene	2.7E-01	2.7E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	1.8E+00	1.8E-06	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	3.9E+00	3.9E-06	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Chlorobenzene	1.2E+01	1.2E-05	108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08
			Ethylbenzene	ND	N/A	100414	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99
			Xylene (total)	1.2E+00	1.2E-06	1330207	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99
			Total PCBs	3.5E+00	3.5E-06	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90
			4,4'-DDD	1.2E-02	1.2E-08	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63
			4,4'-DDE	1.4E-03	1.4E-09	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24
			4,4'-DDT	ND	N/A	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55
			alpha-BHC	9.9E-04	9.9E-10	319846	290.8	3.81	1.2E-02	1.0E-03	2000	1	0.082	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73
			alpha-Chlordane	3.8E-03	3.8E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			Dieldrin	1.8E-03	1.8E-09	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33
			Gamma-Chlordane	ND	N/A	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
Current	Trespasser - Adolescent wader	Unnamed Island Ponds	Benzo(a)anthracene	1.3E-01	1.3E-07	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Benzo(a)pyrene	1.2E-01	1.2E-07	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
			Benzo(b)fluoranthene	2.5E-01	2.5E-07	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			Benzo(g,h,i)perylene	1.1E-01	1.1E-07	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Benzo(k)fluoranthene	ND	N/A	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			bis(2-Ethylhexyl)phthalat	1.9E+00	1.9E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05
			Chrysene	1.4E-01	1.4E-07	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Indeno(1,2,3-cd)pyrene	1.1E-01	1.1E-07	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Naphthalene	1.9E-01	1.9E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			Phenanthrene	1.4E-01	1.4E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	ND	N/A	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	ND	N/A	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Bromodichloromethane	ND	N/A	75274	163.8	2.09	4.6E-03	1.0E-03	2000	1	0.023	0.87	1.0	-3.72E+00	1.92E-04	1.92E-07	3.2E-01	3.5E-01	N/A	2.09
			Aroclor-1260	ND	N/A	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90
			4,4'-DDD	1.2E-02	1.2E-08	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63
			4,4'-DDE	ND	N/A	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24
			4,4'-DDT	9.2E-03	9.2E-09	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55
			alpha-Chlordane	3.3E-03	3.3E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			beta-BHC	ND	N/A	319857	290.8	3.80	1.2E-02	1.0E-03	2000	1	0.080	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73
			Dieldrin	ND	N/A	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33
			Gamma-Chlordane	4.2E-03	4.2E-09	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			Heptachlor Epoxide	5.1E-03	5.1E-09	1024573	389.3	4.98	2.1E-02	1.0E-03	2000	1	0.158	15.92	1.0	-4.98E+00	1.05E-05	1.05E-08	4.1E-01	4.5E-01	N/A	38.21
Future	Rec. User - Adult wader	Leachate - Unnamed Island	4-Methylphenol	4.5E-01	4.5E-07	106445	108.1	1.95	7.7E-03	1.0E-03	2000	1	0.031	0.42	1.0	-3.41E+00	3.93E-04	3.93E-07	3.2E-01	3.5E-01	N/A	1.02
			Acenaphthylene																			

TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_star (hr)	A cm ²	t_event hr/event	EV event/day	DA_event mg/cm2-evt	Derm/Drink Kp	Chem Assess
Current	Trespasser - Adolescent wader	Leachate - Unnamed Island	4-Methylphenol	1.02	3700	1	1	6.2E-09	3%	N
			Acenaphthylene	1.80	3700	1	1	5.7E-09	40%	Y
			Atrazine	4.07	3700	1	1	6.0E-08	3%	N
			Benzo(a)anthracene	N/A	3700	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	3700	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	3700	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	3700	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	3700	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	3700	1	1	6.3E-07	41%	Y
			Chrysene	N/A	3700	1	1	N/A	N/A	N/A
			Dibenz(a,h)anthracene	N/A	3700	1	1	N/A	N/A	N/A
			Dibenzofuran	4.44	3700	1	1	7.8E-08	51%	Y
			Indeno(1,2,3-cd)pyrene	N/A	3700	1	1	N/A	N/A	N/A
			Naphthalene	1.32	3700	1	1	8.8E-08	18%	Y
			N-Nitrosodiphenylamine	3.25	3700	1	1	2.2E-07	9%	N
			Pentachlorophenol	N/A	3700	1	1	N/A	N/A	N/A
			Phenanthrene	N/A	3700	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	3700	1	1	1.8E-07	18%	Y
			Benzene	0.69	3700	1	1	9.0E-08	4%	N
			Chlorobenzene	1.08	3700	1	1	6.3E-07	10%	N
			Ethylbenzene	0.99	3700	1	1	N/A	N/A	N/A
			Xylene (total)	0.99	3700	1	1	1.1E-07	17%	Y
			Total PCBs	N/A	3700	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	3700	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	3700	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	3700	1	1	N/A	N/A	N/A
			alpha-BHC	10.73	3700	1	1	7.2E-11	13%	Y
			alpha-Chlordane	49.90	3700	1	1	1.1E-09	55%	Y
			Dieldrin	34.33	3700	1	1	1.8E-10	19%	Y
			Gamma-Chlordane	49.90	3700	1	1	N/A	N/A	N/A
Current	Trespasser - Adolescent wader	Unnamed Island Ponds	Benzo(a)anthracene	N/A	7600	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	7600	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	7600	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	7600	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	7600	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	7600	1	1	4.2E-07	85%	Y
			Chrysene	N/A	7600	1	1	N/A	N/A	N/A
			Indeno(1,2,3-cd)pyrene	N/A	7600	1	1	N/A	N/A	N/A
			Naphthalene	1.32	7600	1	1	1.8E-08	36%	Y
			Phenanthrene	N/A	7600	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	7600	1	1	N/A	N/A	N/A
			Benzene	0.69	7600	1	1	N/A	N/A	N/A
			Bromodichloromethane	2.09	7600	1	1	N/A	N/A	N/A
			Aroclor-1260	N/A	7600	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	7600	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	7600	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	7600	1	1	N/A	N/A	N/A
			alpha-Chlordane	49.90	7600	1	1	9.9E-10	113%	Y
			beta-BHC	10.73	7600	1	1	N/A	N/A	N/A
			Dieldrin	34.33	7600	1	1	N/A	N/A	N/A
Future	Rec. User - Adult wader	Leachate - Unnamed Island	Gamma-Chlordane	49.90	7600	1	1	1.3E-09	113%	Y
			Heptachlor Epoxide	38.21	7600	1	1	1.2E-09	88%	Y
			4-Methylphenol	1.02	4500	1	1	6.2E-09	3%	N
			Acenaphthylene	1.80	4500	1	1	5.7E-09	49%	Y
			Atrazine	4.07	4500	1	1	6.0E-08	4%	N
			Benzo(a)anthracene	N/A	4500	1	1	N/A	N/A	N/A

TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	lsc cm	IR cm³/day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/lsc)	Dsc/lsc	Dsc	b	c	t_star1 B>0.6	t_star3 B<=0.6			
			Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34			
			Benzo(b)fluoranthene	1.5E-02	1.5E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53			
			Benzo(g,h,i)perylene	1.3E-02	1.3E-08	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90			
			Benzo(k)fluoranthene	1.6E-02	1.6E-08	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53			
			bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05			
			Chrysene	3.4E-02	3.4E-08	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79			
			Dibenz(a,h)anthracene	ND	N/A	53703	278.4	6.84	NA	1.0E-03	2000	1	N/A	3.81	0.6	-4.36E+00	4.37E-05	4.37E-08	N/A	N/A	N/A	9.14			
			Dibenzofuran	2.8E-01	2.8E-07	132649	222.3	4.39	7.3E-02	1.0E-03	2000	1	0.420	1.85	1.0	-4.04E+00	9.02E-05	9.02E-08	6.3E-01	6.6E-01	N/A	4.44			
			Indeno(1,2,3-cd)pyrene	1.1E-02	1.1E-08	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90			
			Naphthalene	9.2E-01	9.2E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32			
			N-Nitrosodiphenylamine	4.7E+00	4.7E-06	86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25			
			Pentachlorophenol	ND	N/A	87865	266.4	5.86	NA	1.0E-03	2000	1	N/A	3.26	0.9	-4.29E+00	5.11E-05	5.11E-08	N/A	N/A	N/A	7.83			
			Phenanthrene	2.7E-01	2.7E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51			
			1,4-Dichlorobenzene	1.8E+00	1.8E-06	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68			
			Benzene	3.9E+00	3.9E-06	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69			
			Chlorobenzene	1.2E+01	1.2E-05	108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08			
			Ethylbenzene	ND	N/A	100414	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99			
			Xylene (total)	1.2E+00	1.2E-06	1330207	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99			
			Total PCBs	3.5E+00	3.5E-06	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90			
			4,4'-DDD	1.2E-02	1.2E-08	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63			
			4,4'-DDE	1.4E-03	1.4E-09	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24			
			4,4'-DDT	ND	N/A	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55			
			alpha-BHC	9.9E-04	9.9E-10	319846	290.8	3.81	1.2E-02	1.0E-03	2000	1	0.082	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73			
			alpha-Chlordane	3.8E-03	3.8E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90			
			Dieldrin	1.8E-03	1.8E-09	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33			
			Gamma-Chlordane	ND	N/A	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90			
			Future	Rec. User - Older Child wader	Leachate - Unnamed Island	4-Methylphenol	4.5E-01	4.5E-07	106445	108.1	1.95	7.7E-03	1.0E-03	2000	1	0.031	0.42	1.0	-3.41E+00	3.93E-04	3.93E-07	3.2E-01	3.5E-01	N/A	1.02
						Acenaphthylene	2.6E-02	2.6E-08	208968	152.2	3.94	9.1E-02	1.0E-03	2000	1	0.432	0.75	1.0	-3.65E+00	2.23E-04	2.23E-07	6.4E-01	6.6E-01	N/A	1.80
						Atrazine	3.2E+00	3.2E-06	1912249	215.7	2.61	5.2E-03	1.0E-03	2000	1	0.030	1.70	1.0	-4.01E+00	9.82E-05	9.82E-08	3.2E-01	3.5E-01	N/A	4.07
						Benzo(a)anthracene	4.5E-02	4.5E-08	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
						Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
						Benzo(b)fluoranthene	1.5E-02	1.5E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
Benzo(g,h,i)perylene	1.3E-02	1.3E-08				191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90			
Benzo(k)fluoranthene	1.6E-02	1.6E-08				207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53			
bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06				117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05			
Chrysene	3.4E-02	3.4E-08				218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79			
Dibenz(a,h)anthracene	ND	N/A				53703	278.4	6.84	NA	1.0E-03	2000	1	N/A	3.81	0.6	-4.36E+00	4.37E-05	4.37E-08	N/A	N/A	N/A	9.14			
Dibenzofuran	2.8E-01	2.8E-07				132649	222.3	4.39	7.3E-02	1.0E-03	2000	1	0.420	1.85	1.0	-4.04E+00	9.02E-05	9.02E-08	6.3E-01	6.6E-01	N/A	4.44			
Indeno(1,2,3-cd)pyrene	1.1E-02	1.1E-08				193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90			
Naphthalene	9.2E-01	9.2E-07				91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32			
N-Nitrosodiphenylamine	4.7E+00	4.7E-06				86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25			
Pentachlorophenol	ND	N/A				87865	266.4	5.86	NA	1.0E-03	2000	1	N/A	3.26	0.9	-4.29E+00	5.11E-05	5.11E-08	N/A	N/A	N/A	7.83			
Phenanthrene	2.7E-01	2.7E-07				85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51			
1,4-Dichlorobenzene	1.8E+00	1.8E-06				106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68			
Benzene	3.9E+00	3.9E-06				71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69			
Chlorobenzene	1.2E+01	1.2E-05				108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08			
Ethylbenzene	ND	N/A				100414	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99			
Xylene (total)	1.2E+00	1.2E-06				1330207	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99			
Total PCBs	3.5E+00	3.5E-06				#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90			
4,4'-DDD	1.2E-02	1.2E-08				72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63			
4,4'-DDE	1.4E-03	1.4E-09				72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24			
4,4'-DDT	ND	N/A				50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55			
alpha-BHC	9.9E-04	9.9E-10				319846	290.8	3.81	1.2E-02	1.0E-03	2000	1	0.082	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73			
alpha-Chlordane	3.8E-03	3.8E-09				5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.			

TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_star (hr)	A cm ²	t_event hr/event	EV event/day	DA_event mg/cm2-evt	Derm/Drink Kp	Chem Assess
			Benzo(a)pyrene	N/A	4500	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	4500	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	4500	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	4500	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	4500	1	1	6.3E-07	50%	Y
			Chrysene	N/A	4500	1	1	N/A	N/A	N/A
			Dibenz(a,h)anthracene	N/A	4500	1	1	N/A	N/A	N/A
			Dibenzofuran	4.44	4500	1	1	7.8E-08	62%	Y
			Indeno(1,2,3-cd)pyrene	N/A	4500	1	1	N/A	N/A	N/A
			Naphthalene	1.32	4500	1	1	8.8E-08	21%	Y
			N-Nitrosodiphenylamine	3.25	4500	1	1	2.2E-07	11%	Y
			Pentachlorophenol	N/A	4500	1	1	N/A	N/A	N/A
			Phenanthrene	N/A	4500	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	4500	1	1	1.8E-07	22%	Y
			Benzene	0.69	4500	1	1	9.0E-08	5%	N
			Chlorobenzene	1.08	4500	1	1	6.3E-07	12%	Y
			Ethylbenzene	0.99	4500	1	1	N/A	N/A	N/A
			Xylene (total)	0.99	4500	1	1	1.1E-07	20%	Y
			Total PCBs	N/A	4500	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	4500	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	4500	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	4500	1	1	N/A	N/A	N/A
			alpha-BHC	10.73	4500	1	1	7.2E-11	16%	Y
			alpha-Chlordane	49.90	4500	1	1	1.1E-09	67%	Y
			Dieldrin	34.33	4500	1	1	1.8E-10	23%	Y
			Gamma-Chlordane	49.90	4500	1	1	N/A	N/A	N/A
Future	Rec. User - Older Child wader	Leachate - Unnamed Island								
			4-Methylphenol	1.02	2700	1	1	6.2E-09	2%	N
			Acenaphthylene	1.80	2700	1	1	5.7E-09	29%	Y
			Atrazine	4.07	2700	1	1	6.0E-08	3%	N
			Benzo(a)anthracene	N/A	2700	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	2700	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	2700	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	2700	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	2700	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	2700	1	1	6.3E-07	30%	Y
			Chrysene	N/A	2700	1	1	N/A	N/A	N/A
			Dibenz(a,h)anthracene	N/A	2700	1	1	N/A	N/A	N/A
			Dibenzofuran	4.44	2700	1	1	7.8E-08	37%	Y
			Indeno(1,2,3-cd)pyrene	N/A	2700	1	1	N/A	N/A	N/A
			Naphthalene	1.32	2700	1	1	8.8E-08	13%	Y
			N-Nitrosodiphenylamine	3.25	2700	1	1	2.2E-07	6%	N
			Pentachlorophenol	N/A	2700	1	1	N/A	N/A	N/A
			Phenanthrene	N/A	2700	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	2700	1	1	1.8E-07	13%	Y
			Benzene	0.69	2700	1	1	9.0E-08	3%	N
			Chlorobenzene	1.08	2700	1	1	6.3E-07	7%	N
			Ethylbenzene	0.99	2700	1	1	N/A	N/A	N/A
			Xylene (total)	0.99	2700	1	1	1.1E-07	12%	Y
			Total PCBs	N/A	2700	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	2700	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	2700	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	2700	1	1	N/A	N/A	N/A
			alpha-BHC	10.73	2700	1	1	7.2E-11	10%	N
			alpha-Chlordane	49.90	2700	1	1	1.1E-09	40%	Y
			Dieldrin	34.33	2700	1	1	1.8E-10	14%	Y
			Gamma-Chlordane	49.90	2700	1	1	N/A	N/A	N/A

TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	Isc cm	IR cm ³ /day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/Isc)	Dsc/Isc	Dsc	b	c	τ_star1 B>0.6	τ_star3 B<=0.6
Future	Rec. User - Adult wader	Unnamed Island Ponds	Benzo(a)anthracene	1.3E-01	1.3E-07	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Benzo(a)pyrene	1.2E-01	1.2E-07	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
			Benzo(b)fluoranthene	2.5E-01	2.5E-07	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			Benzo(g,h,i)perylene	1.1E-01	1.1E-07	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Benzo(k)fluoranthene	ND	N/A	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			bis(2-Ethylhexyl)phthalat	1.9E+00	1.9E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05
			Chrysene	1.4E-01	1.4E-07	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Indeno(1,2,3-cd)pyrene	1.1E-01	1.1E-07	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Naphthalene	1.9E-01	1.9E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			Phenanthrene	1.4E-01	1.4E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	ND	N/A	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	ND	N/A	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Bromodichloromethane	ND	N/A	75274	163.8	2.09	4.6E-03	1.0E-03	2000	1	0.023	0.87	1.0	-3.72E+00	1.92E-04	1.92E-07	3.2E-01	3.5E-01	N/A	2.09
			Aroclor-1260	ND	N/A	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90
			4,4'-DDD	1.2E-02	1.2E-08	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63
			4,4'-DDE	ND	N/A	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24
			4,4'-DDT	9.2E-03	9.2E-09	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55
			alpha-Chlordane	3.3E-03	3.3E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			beta-BHC	ND	N/A	319857	290.8	3.80	1.2E-02	1.0E-03	2000	1	0.080	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73
			Dieldrin	ND	N/A	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33
			Gamma-Chlordane	4.2E-03	4.2E-09	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			Heptachlor Epoxide	5.1E-03	5.1E-09	1024573	389.3	4.98	2.1E-02	1.0E-03	2000	1	0.158	15.92	1.0	-4.98E+00	1.05E-05	1.05E-08	4.1E-01	4.5E-01	N/A	38.21
Future	Rec. User - Older Child wader	Unnamed Island Ponds	Benzo(a)anthracene	1.3E-01	1.3E-07	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Benzo(a)pyrene	1.2E-01	1.2E-07	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
			Benzo(b)fluoranthene	2.5E-01	2.5E-07	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			Benzo(g,h,i)perylene	1.1E-01	1.1E-07	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Benzo(k)fluoranthene	ND	N/A	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			bis(2-Ethylhexyl)phthalat	1.9E+00	1.9E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05
			Chrysene	1.4E-01	1.4E-07	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Indeno(1,2,3-cd)pyrene	1.1E-01	1.1E-07	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Naphthalene	1.9E-01	1.9E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			Phenanthrene	1.4E-01	1.4E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	ND	N/A	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	ND	N/A	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Bromodichloromethane	ND	N/A	75274	163.8	2.09	4.6E-03	1.0E-03	2000	1	0.023	0.87	1.0	-3.72E+00	1.92E-04	1.92E-07	3.2E-01	3.5E-01	N/A	2.09
			Aroclor-1260	ND	N/A	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90
			4,4'-DDD	1.2E-02	1.2E-08	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63
			4,4'-DDE	ND	N/A	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24
			4,4'-DDT	9.2E-03	9.2E-09	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55
			alpha-Chlordane	3.3E-03	3.3E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			beta-BHC	ND	N/A	319857	290.8	3.80	1.2E-02	1.0E-03	2000	1	0.080	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73
			Dieldrin	ND	N/A	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33
			Gamma-Chlordane	4.2E-03	4.2E-09	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			Heptachlor Epoxide	5.1E-03	5.1E-09	1024573	389.3	4.98	2.1E-02	1.0E-03	2000	1	0.158	15.92	1.0	-4.98E+00	1.05E-05	1.05E-08	4.1E-01	4.5E-01	N/A	38.21
Future	Construction Worker - Adult	Leachate - Unnamed Island	4-Methylphenol	4.5E-01	4.5E-07	106445	108.1	1.95	7.7E-03	1.0E-03	2000	1	0.031	0.42	1.0	-3.41E+00	3.93E-04	3.93E-07	3.2E-01	3.5E-01	N/A	1.02
			Acenaphthylene	2.6E-02	2.6E-08	208968	152.2	3.94	9.1E-02	1.0E-03	2000	1	0.432	0.75	1.0	-3.65E+00	2.23E-04	2.23E-07	6.4E-01	6.6E-01	N/A	1.80
			Atrazine	3.2E+00	3.2E-06	1912249	215.7	2.61	5.2E-03	1.0E-03	2000	1	0.030	1.70	1.0	-4.01E+00	9.82E-05	9.82E-08	3.2E-01	3.5E-01	N/A	4.07
			Benzo(a)anthracene	4.5E-02	4.5E-08	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
			Benzo(b)fluoranthene	1.5E-02	1.5E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			Benzo(g,h,i)perylene	1.3E-02	1.3E-08	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Benzo(k)fluoranthene	1.6E-02	1.6E-08	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06																	

TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_{star} (hr)	A cm^2	t_{event} hr/event	EV event/day	DA_event mg/cm2-evt	Derm/Drink Kp	Chem Assess
Future	Rec. User - Adult wader	Unnamed Island Ponds	Benzo(a)anthracene	N/A	7310	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	7310	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	7310	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	7310	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	7310	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	7310	1	1	4.2E-07	81%	Y
			Chrysene	N/A	7310	1	1	N/A	N/A	N/A
			Indeno(1,2,3-cd)pyrene	N/A	7310	1	1	N/A	N/A	N/A
			Naphthalene	1.32	7310	1	1	1.8E-08	35%	Y
			Phenanthrene	N/A	7310	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	7310	1	1	N/A	N/A	N/A
			Benzene	0.69	7310	1	1	N/A	N/A	N/A
			Bromodichloromethane	2.09	7310	1	1	N/A	N/A	N/A
			Aroclor-1260	N/A	7310	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	7310	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	7310	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	7310	1	1	N/A	N/A	N/A
			alpha-Chlordane	49.90	7310	1	1	9.9E-10	109%	Y
			beta-BHC	10.73	7310	1	1	N/A	N/A	N/A
			Dieldrin	34.33	7310	1	1	N/A	N/A	N/A
			Gamma-Chlordane	49.90	7310	1	1	1.3E-09	109%	Y
			Heptachlor Epoxide	38.21	7310	1	1	1.2E-09	84%	Y
Future	Rec. User - Older Child wader	Unnamed Island Ponds	Benzo(a)anthracene	N/A	4170	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	4170	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	4170	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	4170	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	4170	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	4170	1	1	4.2E-07	46%	Y
			Chrysene	N/A	4170	1	1	N/A	N/A	N/A
			Indeno(1,2,3-cd)pyrene	N/A	4170	1	1	N/A	N/A	N/A
			Naphthalene	1.32	4170	1	1	1.8E-08	20%	Y
			Phenanthrene	N/A	4170	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	4170	1	1	N/A	N/A	N/A
			Benzene	0.69	4170	1	1	N/A	N/A	N/A
			Bromodichloromethane	2.09	4170	1	1	N/A	N/A	N/A
			Aroclor-1260	N/A	4170	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	4170	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	4170	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	4170	1	1	N/A	N/A	N/A
			alpha-Chlordane	49.90	4170	1	1	9.9E-10	62%	Y
			beta-BHC	10.73	4170	1	1	N/A	N/A	N/A
			Dieldrin	34.33	4170	1	1	N/A	N/A	N/A
			Gamma-Chlordane	49.90	4170	1	1	1.3E-09	62%	Y
			Heptachlor Epoxide	38.21	4170	1	1	1.2E-09	48%	Y
Future	Construction Worker - Adult	Leachate - Unnamed Island	4-Methylphenol	1.02	2100	0.2	1	2.8E-09	1%	N
			Acenaphthylene	1.80	2100	0.2	1	2.6E-09	10%	Y
			Atrazine	4.07	2100	0.2	1	2.7E-08	1%	N
			Benzo(a)anthracene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	2100	0.2	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	2100	0.2	1	2.8E-07	10%	Y
			Chrysene	N/A	2100	0.2	1	N/A	N/A	N/A
			Dibenz(a,h)anthracene	N/A	2100	0.2	1	N/A	N/A	N/A
			Dibenzofuran	4.44	2100	0.2	1	3.5E-08	13%	Y
			Indeno(1,2,3-cd)pyrene	N/A	2100	0.2	1	N/A	N/A	N/A

TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	Isc cm	IR cm ³ /day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/lsc)	Dsc/lsc	Dsc	b	c	t_star1 B>0.6	t_star3 B<=0.6
			Naphthalene	9.2E-01	9.2E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			N-Nitrosodiphenylamine	4.7E+00	4.7E-06	86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25
			Pentachlorophenol	ND	N/A	87865	266.4	5.86	NA	1.0E-03	2000	1	N/A	3.26	0.9	-4.29E+00	5.11E-05	5.11E-08	N/A	N/A	N/A	7.83
			Phenanthrene	2.7E-01	2.7E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	1.8E+00	1.8E-06	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	3.9E+00	3.9E-06	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Chlorobenzene	1.2E+01	1.2E-05	108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08
			Ethylbenzene	ND	N/A	100414	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99
			Xylene (total)	1.2E+00	1.2E-06	1330207	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99
			Total PCBs	3.5E+00	3.5E-06	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90
			4,4'-DDD	1.2E-02	1.2E-08	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63
			4,4'-DDE	1.4E-03	1.4E-09	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24
			4,4'-DDT	ND	N/A	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55
			alpha-BHC	9.9E-04	9.9E-10	319846	290.8	3.81	1.2E-02	1.0E-03	2000	1	0.082	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73
			alpha-Chlordane	3.8E-03	3.8E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			Dieldrin	1.8E-03	1.8E-09	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33
			Gamma-Chlordane	ND	N/A	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90

TABLE 5.RME. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_{star} (hr)	A cm^2	t_{event} hr/event	EV event/day	DA_event mg/cm ² -evt	Derm/Drink Kp	Chem Assess
			Naphthalene	1.32	2100	0.2	1	3.9E-08	4%	N
			N-Nitrosodiphenylamine	3.25	2100	0.2	1	9.8E-08	2%	N
			Pentachlorophenol	N/A	2100	0.2	1	N/A	N/A	N/A
			Phenanthrene	N/A	2100	0.2	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	2100	0.2	1	8.0E-08	5%	N
			Benzene	0.69	2100	0.2	1	3.8E-08	1%	N
			Chlorobenzene	1.08	2100	0.2	1	2.8E-07	2%	N
			Ethylbenzene	0.99	2100	0.2	1	N/A	N/A	N/A
			Xylene (total)	0.99	2100	0.2	1	4.8E-08	4%	N
			Total PCBs	N/A	2100	0.2	1	N/A	N/A	N/A
			4,4'-DDD	N/A	2100	0.2	1	N/A	N/A	N/A
			4,4'-DDE	N/A	2100	0.2	1	N/A	N/A	N/A
			4,4'-DDT	N/A	2100	0.2	1	N/A	N/A	N/A
			alpha-BHC	10.73	2100	0.2	1	3.2E-11	3%	N
			alpha-Chlordane	49.90	2100	0.2	1	5.0E-10	14%	Y
			Dieldrin	34.33	2100	0.2	1	8.1E-11	5%	N
			Gamma-Chlordane	49.90	2100	0.2	1	N/A	N/A	N/A

TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	lsc cm	IR cm³/day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/lsc)	Dsc/lsc	Dsc	b	c	t_star1 B>0.6	t_star3 B<=0.6
Current	Trespasser - Adolescent wader	Leachate - Unnamed Island	4-Methylphenol	4.5E-01	4.5E-07	106445	108.1	1.95	7.7E-03	1.0E-03	2000	1	0.031	0.42	1.0	-3.41E+00	3.93E-04	3.93E-07	3.2E-01	3.5E-01	N/A	1.02
			Acenaphthylene	2.6E-02	2.6E-08	208968	152.2	3.94	9.1E-02	1.0E-03	2000	1	0.432	0.75	1.0	-3.65E+00	2.23E-04	2.23E-07	6.4E-01	6.6E-01	N/A	1.80
			Atrazine	1.1E+00	1.1E-06	1912249	215.7	2.61	5.2E-03	1.0E-03	2000	1	0.030	1.70	1.0	-4.01E+00	9.82E-05	9.82E-08	3.2E-01	3.5E-01	N/A	4.07
			Benzo(a)anthracene	4.5E-02	4.5E-08	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
			Benzo(b)fluoranthene	1.5E-02	1.5E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			Benzo(g,h,i)perylene	1.3E-02	1.3E-08	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Benzo(k)fluoranthene	1.6E-02	1.6E-08	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05
			Chrysene	3.4E-02	3.4E-08	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Dibenz(a,h)anthracene	ND	N/A	53703	278.4	6.84	NA	1.0E-03	2000	1	N/A	3.81	0.6	-4.36E+00	4.37E-05	4.37E-08	N/A	N/A	N/A	9.14
			Dibenzofuran	2.8E-01	2.8E-07	132649	222.3	4.39	7.3E-02	1.0E-03	2000	1	0.420	1.85	1.0	-4.04E+00	9.02E-05	9.02E-08	6.3E-01	6.6E-01	N/A	4.44
			Indeno(1,2,3-cd)pyrene	1.1E-02	1.1E-08	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Naphthalene	9.2E-01	9.2E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			N-Nitrosodiphenylamine	4.7E+00	4.7E-06	86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25
			Pentachlorophenol	ND	N/A	87865	266.4	5.86	NA	1.0E-03	2000	1	N/A	3.26	0.9	-4.29E+00	5.11E-05	5.11E-08	N/A	N/A	N/A	7.83
			Phenanthrene	2.7E-01	2.7E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	1.8E+00	1.8E-06	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	3.9E+00	3.9E-06	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Chlorobenzene	1.2E+01	1.2E-05	108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08
			Ethylbenzene	ND	N/A	100414	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99
			Xylene (total)	1.2E+00	1.2E-06	1330207	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99
			Total PCBs	3.5E+00	3.5E-06	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90
			4,4'-DDD	1.2E-02	1.2E-08	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63
			4,4'-DDE	1.4E-03	1.4E-09	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24
			4,4'-DDT	ND	N/A	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55
			alpha-BHC	9.9E-04	9.9E-10	319846	290.8	3.81	1.2E-02	1.0E-03	2000	1	0.082	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73
			alpha-Chlordane	3.8E-03	3.8E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			Dieldrin	1.8E-03	1.8E-09	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33
			Gamma-Chlordane	ND	N/A	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
Current	Trespasser - Adolescent wader	Unnamed Island Ponds	Benzo(a)anthracene	1.3E-01	1.3E-07	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Benzo(a)pyrene	1.2E-01	1.2E-07	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
			Benzo(b)fluoranthene	6.3E-02	6.3E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			Benzo(g,h,i)perylene	5.4E-02	5.4E-08	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Benzo(k)fluoranthene	ND	N/A	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
			bis(2-Ethylhexyl)phthalat	1.9E+00	1.9E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05
			Chrysene	1.4E-01	1.4E-07	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
			Indeno(1,2,3-cd)pyrene	5.4E-02	5.4E-08	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90
			Naphthalene	5.9E-02	5.9E-08	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			Phenanthrene	1.4E-01	1.4E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	ND	N/A	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	ND	N/A	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Bromodichloromethane	ND	N/A	75274	163.8	2.09	4.6E-03	1.0E-03	2000	1	0.023	0.87	1.0	-3.72E+00	1.92E-04	1.92E-07	3.2E-01	3.5E-01	N/A	2.09
			Aroclor-1260	ND	N/A	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90
			4,4'-DDD	3.1E-03	3.1E-09	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63
			4,4'-DDE	ND	N/A	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24
			4,4'-DDT	3.0E-03	3.0E-09	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55
			alpha-Chlordane	1.4E-03	1.4E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			beta-BHC	ND	N/A	319857	290.8	3.80	1.2E-02	1.0E-03	2000	1	0.080	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73
			Dieldrin	ND	N/A	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33
			Gamma-Chlordane	4.2E-03	4.2E-09	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			Heptachlor Epoxide	1.5E-03	1.5E-09	1024573	389.3	4.98	2.1E-02	1.0E-03	2000	1	0.158	15.92	1.0	-4.98E+00	1.05E-05	1.05E-08	4.1E-01	4.5E-01	N/A	38.21
Future	Rec. User - Adult wader	Leachate - Unnamed Island	4-Methylphenol	4.5E-01	4.5E-07	106445	108.1	1.95	7.7E-03	1.0E-03	2000	1	0.031	0.42	1.0	-3.41E+00	3.93E-04	3.93E-07	3.2E-01	3.5E-01	N/A	1.02
			Acenaphthylene	2.6E-02	2.6E-08																	

TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_{star} (hr)	A cm^2	t_{event} hr/event	EV event/day	DA_event mg/cm2-evt	Derm/Drink Kp	Chem Assess
Current	Trespasser - Adolescent wader	Leachate - Unnamed Island	4-Methylphenol	1.02	3700	1	1	6.2E-09	3%	N
			Acenaphthylene	1.80	3700	1	1	5.7E-09	40%	Y
			Atrazine	4.07	3700	1	1	2.0E-08	3%	N
			Benzo(a)anthracene	N/A	3700	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	3700	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	3700	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	3700	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	3700	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	3700	1	1	6.3E-07	41%	Y
			Chrysene	N/A	3700	1	1	N/A	N/A	N/A
			Dibenz(a,h)anthracene	N/A	3700	1	1	N/A	N/A	N/A
			Dibenzofuran	4.44	3700	1	1	7.8E-08	51%	Y
			Indeno(1,2,3-cd)pyrene	N/A	3700	1	1	N/A	N/A	N/A
			Naphthalene	1.32	3700	1	1	8.8E-08	18%	Y
			N-Nitrosodiphenylamine	3.25	3700	1	1	2.2E-07	9%	N
			Pentachlorophenol	N/A	3700	1	1	N/A	N/A	N/A
			Phenanthrene	N/A	3700	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	3700	1	1	1.8E-07	18%	Y
			Benzene	0.69	3700	1	1	9.0E-08	4%	N
			Chlorobenzene	1.08	3700	1	1	6.3E-07	10%	N
			Ethylbenzene	0.99	3700	1	1	N/A	N/A	N/A
			Xylene (total)	0.99	3700	1	1	1.1E-07	17%	Y
			Total PCBs	N/A	3700	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	3700	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	3700	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	3700	1	1	N/A	N/A	N/A
			alpha-BHC	10.73	3700	1	1	7.2E-11	13%	Y
			alpha-Chlordane	49.90	3700	1	1	1.1E-09	55%	Y
			Dieldrin	34.33	3700	1	1	1.8E-10	19%	Y
			Gamma-Chlordane	49.90	3700	1	1	N/A	N/A	N/A
Current	Trespasser - Adolescent wader	Unnamed Island Ponds	Benzo(a)anthracene	N/A	7600	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	7600	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	7600	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	7600	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	7600	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	7600	1	1	4.2E-07	85%	Y
			Chrysene	N/A	7600	1	1	N/A	N/A	N/A
			Indeno(1,2,3-cd)pyrene	N/A	7600	1	1	N/A	N/A	N/A
			Naphthalene	1.32	7600	1	1	5.6E-09	36%	Y
			Phenanthrene	N/A	7600	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	7600	1	1	N/A	N/A	N/A
			Benzene	0.69	7600	1	1	N/A	N/A	N/A
			Bromodichloromethane	2.09	7600	1	1	N/A	N/A	N/A
			Aroclor-1260	N/A	7600	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	7600	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	7600	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	7600	1	1	N/A	N/A	N/A
			alpha-Chlordane	49.90	7600	1	1	4.2E-10	113%	Y
			beta-BHC	10.73	7600	1	1	N/A	N/A	N/A
			Dieldrin	34.33	7600	1	1	N/A	N/A	N/A
Future	Rec. User - Adult wader	Leachate - Unnamed Island	Gamma-Chlordane	49.90	7600	1	1	1.3E-09	113%	Y
			Heptachlor Epoxide	38.21	7600	1	1	3.5E-10	88%	Y
			4-Methylphenol	1.02	4500	1	1	6.2E-09	3%	N
			Acenaphthylene	1.80	4500	1	1	5.7E-09	49%	Y
			Atrazine	4.07	4500	1	1	2.0E-08	4%	N
			Benzo(a)anthracene	N/A	4500	1	1	N/A	N/A	N/A

TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	Isc cm	IR cm ³ /day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/lsc)	Dsc/lsc	Dsc	b	c	t_star1 B>0.6	t_star3 B<=0.6			
			Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34			
			Benzo(b)fluoranthene	1.5E-02	1.5E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53			
			Benzo(g,h,i)perylene	1.3E-02	1.3E-08	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90			
			Benzo(k)fluoranthene	1.6E-02	1.6E-08	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53			
			bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05			
			Chrysene	3.4E-02	3.4E-08	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79			
			Dibenz(a,h)anthracene	ND	N/A	53703	278.4	6.84	NA	1.0E-03	2000	1	N/A	3.81	0.6	-4.36E+00	4.37E-05	4.37E-08	N/A	N/A	N/A	9.14			
			Dibenzofuran	2.8E-01	2.8E-07	132649	222.3	4.39	7.3E-02	1.0E-03	2000	1	0.420	1.85	1.0	-4.04E+00	9.02E-05	9.02E-08	6.3E-01	6.6E-01	N/A	4.44			
			Indeno(1,2,3-cd)pyrene	1.1E-02	1.1E-08	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90			
			Naphthalene	9.2E-01	9.2E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32			
			N-Nitrosodiphenylamine	4.7E+00	4.7E-06	86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25			
			Pentachlorophenol	ND	N/A	87865	266.4	5.86	NA	1.0E-03	2000	1	N/A	3.26	0.9	-4.29E+00	5.11E-05	5.11E-08	N/A	N/A	N/A	7.83			
			Phenanthrene	2.7E-01	2.7E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51			
			1,4-Dichlorobenzene	1.8E+00	1.8E-06	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68			
			Benzene	3.9E+00	3.9E-06	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69			
			Chlorobenzene	1.2E+01	1.2E-05	108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08			
			Ethylbenzene	ND	N/A	100414	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99			
			Xylene (total)	1.2E+00	1.2E-06	1330207	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99			
			Total PCBs	3.5E+00	3.5E-06	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90			
			4,4'-DDD	1.2E-02	1.2E-08	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63			
			4,4'-DDE	1.4E-03	1.4E-09	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24			
			4,4'-DDT	ND	N/A	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55			
			alpha-BHC	9.9E-04	9.9E-10	319846	290.8	3.81	1.2E-02	1.0E-03	2000	1	0.082	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73			
			alpha-Chlordane	3.8E-03	3.8E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90			
			Dieldrin	1.8E-03	1.8E-09	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33			
			Gamma-Chlordane	ND	N/A	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90			
			Future	Rec. User - Older Child wader	Leachate - Unnamed Island	4-Methylphenol	4.5E-01	4.5E-07	106445	108.1	1.95	7.7E-03	1.0E-03	2000	1	0.031	0.42	1.0	-3.41E+00	3.93E-04	3.93E-07	3.2E-01	3.5E-01	N/A	1.02
						Acenaphthylene	2.6E-02	2.6E-08	208968	152.2	3.94	9.1E-02	1.0E-03	2000	1	0.432	0.75	1.0	-3.65E+00	2.23E-04	2.23E-07	6.4E-01	6.6E-01	N/A	1.80
						Atrazine	1.1E+00	1.1E-06	1912249	215.7	2.61	5.2E-03	1.0E-03	2000	1	0.030	1.70	1.0	-4.01E+00	9.82E-05	9.82E-08	3.2E-01	3.5E-01	N/A	4.07
						Benzo(a)anthracene	4.5E-02	4.5E-08	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79
						Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34
						Benzo(b)fluoranthene	1.5E-02	1.5E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53
Benzo(g,h,i)perylene	1.3E-02	1.3E-08				191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90			
Benzo(k)fluoranthene	1.6E-02	1.6E-08				207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53			
bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06				117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05			
Chrysene	3.4E-02	3.4E-08				218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79			
Dibenz(a,h)anthracene	ND	N/A				53703	278.4	6.84	NA	1.0E-03	2000	1	N/A	3.81	0.6	-4.36E+00	4.37E-05	4.37E-08	N/A	N/A	N/A	9.14			
Dibenzofuran	2.8E-01	2.8E-07				132649	222.3	4.39	7.3E-02	1.0E-03	2000	1	0.420	1.85	1.0	-4.04E+00	9.02E-05	9.02E-08	6.3E-01	6.6E-01	N/A	4.44			
Indeno(1,2,3-cd)pyrene	1.1E-02	1.1E-08				193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90			
Naphthalene	9.2E-01	9.2E-07				91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32			
N-Nitrosodiphenylamine	4.7E+00	4.7E-06				86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25			
Pentachlorophenol	ND	N/A				87865	266.4	5.86	NA	1.0E-03	2000	1	N/A	3.26	0.9	-4.29E+00	5.11E-05	5.11E-08	N/A	N/A	N/A	7.83			
Phenanthrene	2.7E-01	2.7E-07				85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51			
1,4-Dichlorobenzene	1.8E+00	1.8E-06				106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68			
Benzene	3.9E+00	3.9E-06				71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69			
Chlorobenzene	1.2E+01	1.2E-05				108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08			
Ethylbenzene	ND	N/A				100414	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99			
Xylene (total)	1.2E+00	1.2E-06				1330207	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99			
Total PCBs	3.5E+00	3.5E-06				#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90			
4,4'-DDD	1.2E-02	1.2E-08				72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63			
4,4'-DDE	1.4E-03	1.4E-09				72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24			
4,4'-DDT	ND	N/A				50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55			
alpha-BHC	9.9E-04	9.9E-10				319846	290.8	3.81	1.2E-02	1.0E-03	2000	1	0.082	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73			
alpha-Chlordane	3.8E-03	3.8E-09				5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.9			

TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_star (hr)	A cm ²	t_event hr/event	EV event/day	DA_event mg/cm2-evt	Derm/Drink Kp	Chem Assess
			Benzo(a)pyrene	N/A	4500	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	4500	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	4500	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	4500	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	4500	1	1	6.3E-07	50%	Y
			Chrysene	N/A	4500	1	1	N/A	N/A	N/A
			Dibenz(a,h)anthracene	N/A	4500	1	1	N/A	N/A	N/A
			Dibenzofuran	4.44	4500	1	1	7.8E-08	62%	Y
			Indeno(1,2,3-cd)pyrene	N/A	4500	1	1	N/A	N/A	N/A
			Naphthalene	1.32	4500	1	1	8.8E-08	21%	Y
			N-Nitrosodiphenylamine	3.25	4500	1	1	2.2E-07	11%	Y
			Pentachlorophenol	N/A	4500	1	1	N/A	N/A	N/A
			Phenanthrene	N/A	4500	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	4500	1	1	1.8E-07	22%	Y
			Benzene	0.69	4500	1	1	9.0E-08	5%	N
			Chlorobenzene	1.08	4500	1	1	6.3E-07	12%	Y
			Ethylbenzene	0.99	4500	1	1	N/A	N/A	N/A
			Xylene (total)	0.99	4500	1	1	1.1E-07	20%	Y
			Total PCBs	N/A	4500	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	4500	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	4500	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	4500	1	1	N/A	N/A	N/A
			alpha-BHC	10.73	4500	1	1	7.2E-11	16%	Y
			alpha-Chlordane	49.90	4500	1	1	1.1E-09	67%	Y
			Dieldrin	34.33	4500	1	1	1.8E-10	23%	Y
			Gamma-Chlordane	49.90	4500	1	1	N/A	N/A	N/A
Future	Rec. User - Older Child wader	Leachate - Unnamed Island								
			4-Methylphenol	1.02	2700	1	1	6.2E-09	2%	N
			Acenaphthylene	1.80	2700	1	1	5.7E-09	29%	Y
			Atrazine	4.07	2700	1	1	2.0E-08	3%	N
			Benzo(a)anthracene	N/A	2700	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	2700	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	2700	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	2700	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	2700	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	2700	1	1	6.3E-07	30%	Y
			Chrysene	N/A	2700	1	1	N/A	N/A	N/A
			Dibenz(a,h)anthracene	N/A	2700	1	1	N/A	N/A	N/A
			Dibenzofuran	4.44	2700	1	1	7.8E-08	37%	Y
			Indeno(1,2,3-cd)pyrene	N/A	2700	1	1	N/A	N/A	N/A
			Naphthalene	1.32	2700	1	1	8.8E-08	13%	Y
			N-Nitrosodiphenylamine	3.25	2700	1	1	2.2E-07	6%	N
			Pentachlorophenol	N/A	2700	1	1	N/A	N/A	N/A
			Phenanthrene	N/A	2700	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	2700	1	1	1.8E-07	13%	Y
			Benzene	0.69	2700	1	1	9.0E-08	3%	N
			Chlorobenzene	1.08	2700	1	1	6.3E-07	7%	N
			Ethylbenzene	0.99	2700	1	1	N/A	N/A	N/A
			Xylene (total)	0.99	2700	1	1	1.1E-07	12%	Y
			Total PCBs	N/A	2700	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	2700	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	2700	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	2700	1	1	N/A	N/A	N/A
			alpha-BHC	10.73	2700	1	1	7.2E-11	10%	N
			alpha-Chlordane	49.90	2700	1	1	1.1E-09	40%	Y
			Dieldrin	34.33	2700	1	1	1.8E-10	14%	Y
			Gamma-Chlordane	49.90	2700	1	1	N/A	N/A	N/A

TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	Isc cm	IR cm³/day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/lsc)	Dsc/lsc	Dsc	b	c	t_star1 B>0.6	t_star3 B<=0.6	
Future	Rec. User - Adult wader	Unnamed Island Ponds	Benzo(a)anthracene	1.3E-01	1.3E-07	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79	
			Benzo(a)pyrene	1.2E-01	1.2E-07	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34	
			Benzo(b)fluoranthene	6.3E-02	6.3E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53	
			Benzo(g,h,i)perylene	5.4E-02	5.4E-08	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90	
			Benzo(k)fluoranthene	ND	N/A	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53	
			bis(2-Ethylhexyl)phthalat	1.9E+00	1.9E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05	
			Chrysene	1.4E-01	1.4E-07	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79	
			Indeno(1,2,3-cd)pyrene	5.4E-02	5.4E-08	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90	
			Naphthalene	5.9E-02	5.9E-08	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32	
			Phenanthrene	1.4E-01	1.4E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51	
			1,4-Dichlorobenzene	ND	N/A	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68	
			Benzene	ND	N/A	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69	
			Bromodichloromethane	ND	N/A	75274	163.8	2.09	4.6E-03	1.0E-03	2000	1	0.023	0.87	1.0	-3.72E+00	1.92E-04	1.92E-07	3.2E-01	3.5E-01	N/A	2.09	
			Aroclor-1260	ND	N/A	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90	
			4,4'-DDD	3.1E-03	3.1E-09	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63	
			4,4'-DDE	ND	N/A	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24	
			4,4'-DDT	3.0E-03	3.0E-09	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55	
			alpha-Chlordane	1.4E-03	1.4E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90	
			beta-BHC	ND	N/A	319857	290.8	3.80	1.2E-02	1.0E-03	2000	1	0.080	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73	
			Dieldrin	ND	N/A	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33	
			Gamma-Chlordane	4.2E-03	4.2E-09	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90	
			Heptachlor Epoxide	1.5E-03	1.5E-09	1024573	389.3	4.98	2.1E-02	1.0E-03	2000	1	0.158	15.92	1.0	-4.98E+00	1.05E-05	1.05E-08	4.1E-01	4.5E-01	N/A	38.21	
Future	Rec. User - Older Child wader	Unnamed Island Ponds	Benzo(a)anthracene	1.3E-01	1.3E-07	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79	
			Benzo(a)pyrene	1.2E-01	1.2E-07	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34	
			Benzo(b)fluoranthene	6.3E-02	6.3E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53	
			Benzo(g,h,i)perylene	5.4E-02	5.4E-08	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90	
			Benzo(k)fluoranthene	ND	N/A	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53	
			bis(2-Ethylhexyl)phthalat	1.9E+00	1.9E-06	117817	391.0	5.11	2.5E-02	1.0E-03	2000	1	0.190	16.27	0.8	-4.99E+00	1.02E-05	1.02E-08	4.3E-01	4.7E-01	N/A	39.05	
			Chrysene	1.4E-01	1.4E-07	218019	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79	
			Indeno(1,2,3-cd)pyrene	5.4E-02	5.4E-08	193395	276.3	6.58	NA	1.0E-03	2000	1	N/A	3.71	0.6	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90	
			Naphthalene	5.9E-02	5.9E-08	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32	
			Phenanthrene	1.4E-01	1.4E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51	
			1,4-Dichlorobenzene	ND	N/A	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68	
			Benzene	ND	N/A	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69	
			Bromodichloromethane	ND	N/A	75274	163.8	2.09	4.6E-03	1.0E-03	2000	1	0.023	0.87	1.0	-3.72E+00	1.92E-04	1.92E-07	3.2E-01	3.5E-01	N/A	2.09	
			Aroclor-1260	ND	N/A	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90	
			4,4'-DDD	3.1E-03	3.1E-09	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63	
			4,4'-DDE	ND	N/A	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24	
			4,4'-DDT	3.0E-03	3.0E-09	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55	
			alpha-Chlordane	1.4E-03	1.4E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90	
			beta-BHC	ND	N/A	319857	290.8	3.80	1.2E-02	1.0E-03	2000	1	0.080	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73	
			Dieldrin	ND	N/A	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33	
			Gamma-Chlordane	4.2E-03	4.2E-09	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90	
			Heptachlor Epoxide	1.5E-03	1.5E-09	1024573	389.3	4.98	2.1E-02	1.0E-03	2000	1	0.158	15.92	1.0	-4.98E+00	1.05E-05	1.05E-08	4.1E-01	4.5E-01	N/A	38.21	
Future	Construction Worker - Adult	Leachate - Unnamed Island	4-Methylphenol	4.5E-01	4.5E-07	106445	108.1	1.95	7.7E-03	1.0E-03	2000	1	0.031	0.42	1.0	-3.41E+00	3.93E-04	3.93E-07	3.2E-01	3.5E-01	N/A	1.02	
			Acenaphthylene	2.6E-02	2.6E-08	208968	152.2	3.94	9.1E-02	1.0E-03	2000	1	0.432	0.75	1.0	-3.65E+00	2.23E-04	2.23E-07	6.4E-01	6.6E-01	N/A	1.80	
			Atrazine	1.1E+00	1.1E-06	1912249	215.7	2.61	5.2E-03	1.0E-03	2000	1	0.030	1.70	1.0	-4.01E+00	9.82E-05	9.82E-08	3.2E-01	3.5E-01	N/A	4.07	
			Benzo(a)anthracene	4.5E-02	4.5E-08	56553	228.3	5.66	NA	1.0E-03	2000	1	N/A	2.00	1.0	-4.08E+00	8.35E-05	8.35E-08	N/A	N/A	N/A	4.79	
			Benzo(a)pyrene	1.7E-02	1.7E-08	50328	250.0	6.10	NA	1.0E-03	2000	1	N/A	2.64	1.0	-4.20E+00	6.31E-05	6.31E-08	N/A	N/A	N/A	6.34	
			Benzo(b)fluoranthene	1.5E-02	1.5E-08	205992	252.3	6.12	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53	
			Benzo(g,h,i)perylene	1.3E-02	1.3E-08	191242	276.3	7.23	NA	1.0E-03	2000	1	N/A	3.71	1.0	-4.35E+00	4.49E-05	4.49E-08	N/A	N/A	N/A	8.90	
			Benzo(k)fluoranthene	1.6E-02	1.6E-08	207089	252.3	6.11	NA	1.0E-03	2000	1	N/A	2.72	1.0	-4.21E+00	6.13E-05	6.13E-08	N/A	N/A	N/A	6.53	
			bis(2-Ethylhexyl)phthalat	2.8E+00	2.8E-06	117817	391.0																

TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_{star} (hr)	A cm^2	t_{event} hr/event	EV event/day	DA_event mg/cm2-evt	Derm/Drink Kp	Chem Assess
Future	Rec. User - Adult wader	Unnamed Island Ponds	Benzo(a)anthracene	N/A	7310	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	7310	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	7310	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	7310	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	7310	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	7310	1	1	4.2E-07	81%	Y
			Chrysene	N/A	7310	1	1	N/A	N/A	N/A
			Indeno(1,2,3-cd)pyrene	N/A	7310	1	1	N/A	N/A	N/A
			Naphthalene	1.32	7310	1	1	5.6E-09	35%	Y
			Phenanthrene	N/A	7310	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	7310	1	1	N/A	N/A	N/A
			Benzene	0.69	7310	1	1	N/A	N/A	N/A
			Bromodichloromethane	2.09	7310	1	1	N/A	N/A	N/A
			Aroclor-1260	N/A	7310	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	7310	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	7310	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	7310	1	1	N/A	N/A	N/A
			alpha-Chlordane	49.90	7310	1	1	4.2E-10	109%	Y
			beta-BHC	10.73	7310	1	1	N/A	N/A	N/A
			Dieldrin	34.33	7310	1	1	N/A	N/A	N/A
			Gamma-Chlordane	49.90	7310	1	1	1.3E-09	109%	Y
			Heptachlor Epoxide	38.21	7310	1	1	3.5E-10	84%	Y
Future	Rec. User - Older Child wader	Unnamed Island Ponds	Benzo(a)anthracene	N/A	4170	1	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	4170	1	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	4170	1	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	4170	1	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	4170	1	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	4170	1	1	4.2E-07	46%	Y
			Chrysene	N/A	4170	1	1	N/A	N/A	N/A
			Indeno(1,2,3-cd)pyrene	N/A	4170	1	1	N/A	N/A	N/A
			Naphthalene	1.32	4170	1	1	5.6E-09	20%	Y
			Phenanthrene	N/A	4170	1	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	4170	1	1	N/A	N/A	N/A
			Benzene	0.69	4170	1	1	N/A	N/A	N/A
			Bromodichloromethane	2.09	4170	1	1	N/A	N/A	N/A
			Aroclor-1260	N/A	4170	1	1	N/A	N/A	N/A
			4,4'-DDD	N/A	4170	1	1	N/A	N/A	N/A
			4,4'-DDE	N/A	4170	1	1	N/A	N/A	N/A
			4,4'-DDT	N/A	4170	1	1	N/A	N/A	N/A
			alpha-Chlordane	49.90	4170	1	1	4.2E-10	62%	Y
			beta-BHC	10.73	4170	1	1	N/A	N/A	N/A
			Dieldrin	34.33	4170	1	1	N/A	N/A	N/A
			Gamma-Chlordane	49.90	4170	1	1	1.3E-09	62%	Y
			Heptachlor Epoxide	38.21	4170	1	1	3.5E-10	48%	Y
Future	Construction Worker - Adult	Leachate - Unnamed Island	4-Methylphenol	1.02	2100	0.2	1	2.8E-09	1%	N
			Acenaphthylene	1.80	2100	0.2	1	2.6E-09	10%	Y
			Atrazine	4.07	2100	0.2	1	9.0E-09	1%	N
			Benzo(a)anthracene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(a)pyrene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(b)fluoranthene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(g,h,i)perylene	N/A	2100	0.2	1	N/A	N/A	N/A
			Benzo(k)fluoranthene	N/A	2100	0.2	1	N/A	N/A	N/A
			bis(2-Ethylhexyl)phthalat	39.05	2100	0.2	1	2.8E-07	10%	Y
			Chrysene	N/A	2100	0.2	1	N/A	N/A	N/A
			Dibenz(a,h)anthracene	N/A	2100	0.2	1	N/A	N/A	N/A
			Dibenzofuran	4.44	2100	0.2	1	3.5E-08	13%	Y
			Indeno(1,2,3-cd)pyrene	N/A	2100	0.2	1	N/A	N/A	N/A

TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER
(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	Conc ug/L	Conc mg/cm3	CAS No.	MWT	logKow	Kp (cm/hr) predicted	lsc cm	IR cm ³ /day	ABSGI	B	tau (hr)	FA for tau>3	log(Ds/lsc)	Dsc/lsc	Dsc	b	c	t_star1 B>0.6	t_star3 B<=0.6
			Naphthalene	9.2E-01	9.2E-07	91203	128.2	3.30	4.7E-02	1.0E-03	2000	1	0.203	0.55	1.0	-3.52E+00	3.03E-04	3.03E-07	4.4E-01	4.8E-01	N/A	1.32
			N-Nitrosodiphenylamine	4.7E+00	4.7E-06	86306	198.2	3.13	1.5E-02	1.0E-03	2000	1	0.079	1.35	1.0	-3.91E+00	1.23E-04	1.23E-07	3.5E-01	3.9E-01	N/A	3.25
			Pentachlorophenol	ND	N/A	87865	266.4	5.86	NA	1.0E-03	2000	1	N/A	3.26	0.9	-4.29E+00	5.11E-05	5.11E-08	N/A	N/A	N/A	7.83
			Phenanthrene	2.7E-01	2.7E-07	85018	178.2	4.46	NA	1.0E-03	2000	1	N/A	1.05	1.0	-3.80E+00	1.59E-04	1.59E-07	N/A	N/A	N/A	2.51
			1,4-Dichlorobenzene	1.8E+00	1.8E-06	106467	147.0	3.39	4.2E-02	1.0E-03	2000	1	0.196	0.70	1.0	-3.62E+00	2.38E-04	2.38E-07	4.4E-01	4.7E-01	N/A	1.68
			Benzene	3.9E+00	3.9E-06	71432	78.1	2.13	1.5E-02	1.0E-03	2000	1	0.051	0.29	1.0	-3.24E+00	5.79E-04	5.79E-07	3.3E-01	3.7E-01	N/A	0.69
			Chlorobenzene	1.2E+01	1.2E-05	108907	112.6	2.84	2.8E-02	1.0E-03	2000	1	0.115	0.45	1.0	-3.43E+00	3.71E-04	3.71E-07	3.8E-01	4.1E-01	N/A	1.08
			Ethylbenzene	ND	N/A	100414	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99
			Xylene (total)	1.2E+00	1.2E-06	1330207	106.2	3.15	4.9E-02	1.0E-03	2000	1	0.195	0.41	1.0	-3.39E+00	4.03E-04	4.03E-07	4.4E-01	4.7E-01	N/A	0.99
			Total PCBs	3.5E+00	3.5E-06	#####	292.0	6.03	NA	1.0E-03	2000	1	N/A	4.54	1.0	-4.44E+00	3.67E-05	3.67E-08	N/A	N/A	N/A	10.90
			4,4'-DDD	1.2E-02	1.2E-08	72548	320.0	5.80	NA	1.0E-03	2000	1	N/A	6.51	0.8	-4.59E+00	2.56E-05	2.56E-08	N/A	N/A	N/A	15.63
			4,4'-DDE	1.4E-03	1.4E-09	72559	318.0	5.69	NA	1.0E-03	2000	1	N/A	6.35	0.8	-4.58E+00	2.63E-05	2.63E-08	N/A	N/A	N/A	15.24
			4,4'-DDT	ND	N/A	50293	355.0	6.36	NA	1.0E-03	2000	1	N/A	10.23	0.7	-4.79E+00	1.63E-05	1.63E-08	N/A	N/A	N/A	24.55
			alpha-BHC	9.9E-04	9.9E-10	319846	290.8	3.81	1.2E-02	1.0E-03	2000	1	0.082	4.47	1.0	-4.43E+00	3.73E-05	3.73E-08	3.5E-01	3.9E-01	N/A	10.73
			alpha-Chlordane	3.8E-03	3.8E-09	5103719	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90
			Dieldrin	1.8E-03	1.8E-09	60571	381.0	4.56	1.2E-02	1.0E-03	2000	1	0.092	14.30	0.8	-4.93E+00	1.17E-05	1.17E-08	3.6E-01	4.0E-01	N/A	34.33
			Gamma-Chlordane	ND	N/A	5103742	410.0	5.47	3.4E-02	1.0E-03	2000	1	0.264	20.79	0.7	-5.10E+00	8.02E-06	8.02E-09	4.9E-01	5.3E-01	N/A	49.90

TABLE 5.CT. DERMALLY ABSORBED DOSE CALCULATIONS - SURFACE WATER

(Variable Definitions follow Table)

Timeframe	Receptor	Exposure Point	Chemical	t_{star} (hr)	A cm^2	t_{event} hr/event	EV event/day	DA_event mg/cm ² -evt	Derm/Drink Kp	Chem Assess
			Naphthalene	1.32	2100	0.2	1	3.9E-08	4%	N
			N-Nitrosodiphenylamine	3.25	2100	0.2	1	9.8E-08	2%	N
			Pentachlorophenol	N/A	2100	0.2	1	N/A	N/A	N/A
			Phenanthrene	N/A	2100	0.2	1	N/A	N/A	N/A
			1,4-Dichlorobenzene	1.68	2100	0.2	1	8.0E-08	5%	N
			Benzene	0.69	2100	0.2	1	3.8E-08	1%	N
			Chlorobenzene	1.08	2100	0.2	1	2.8E-07	2%	N
			Ethylbenzene	0.99	2100	0.2	1	N/A	N/A	N/A
			Xylene (total)	0.99	2100	0.2	1	4.8E-08	4%	N
			Total PCBs	N/A	2100	0.2	1	N/A	N/A	N/A
			4,4'-DDD	N/A	2100	0.2	1	N/A	N/A	N/A
			4,4'-DDE	N/A	2100	0.2	1	N/A	N/A	N/A
			4,4'-DDT	N/A	2100	0.2	1	N/A	N/A	N/A
			alpha-BHC	10.73	2100	0.2	1	3.2E-11	3%	N
			alpha-Chlordane	49.90	2100	0.2	1	5.0E-10	14%	Y
			Dieldrin	34.33	2100	0.2	1	8.1E-11	5%	N
			Gamma-Chlordane	49.90	2100	0.2	1	N/A	N/A	N/A

DERMAL ABSORPTION CALCULATION EXAMPLE

Note: This EPA spreadsheet utilized as basis for Appendix E calculations.

FOR ORGANIC CHEMICALS IN WATER (updated on 11/99)

Worksheet to Calculate Dermal Absorption of Organic Chemicals from Aqueous Media (updated 11/99)

Enter the Following Exposure Conditions: for site specific conditions, change values in Cells G5-G18

Concentration (mg/L*L/1000 cm3):	Conc =	1.0E-03 mg/cm3 (default value for purpose of illustration)
Input site specific concentrations in Column marked "Conc"		= 1 mg/L (1 ppm) = 1 ug/cm3 = 1000 ppb
Area exposed (cm2):	A =	5672.0 cm2
Event time (hr/event):	t_event =	0.5 hr/event (35 minutes/event)
Event frequency (events/day):	EV =	1.0 event/day
Exposure frequency (days/year):	EF =	26.0 days/yr
Exposure duration (years):	ED =	7.0 years
Body weight (kg):	BW =	70.0 kg
Averaging time (days):	AT =	2555.0 days
for carcinogenic effects, AT=70 years (25,550 days)		
for noncarcinogenic effects, AT=ED (in days)		
Skin thickness (assumed to be 10 um):	lsc =	1.0E-03 cm

Default conditions for screening purposes:

Compare Dermal to Drinking: Adults showering for 35 minutes/day, compared to drinking 2L water/day

Dermal (mg/day) = DA_event * A * EV	IR =	2000.0 (cm3/day = L/day * 1000 cm3/L)
Drinking (mg/day) = Conc * IR * ABSIG	ABSGI =	1.0 (assumed 100% GI absorption)

IR: Ingestion rate of drinking water
 ABSIG: Absorption fraction in GI tract

Refer to Appendix A for equations to evaluate DA_event and DAD

(*): outside of the Effective Prediction Domain (EPD) determined by the Flynn's measured Kp data

95% LCI and UCI are evaluated by Dr. Paul Pinsky in NCEA using SAS

CHEMICAL	CAS No.	MWT	logKow	Kp 95% LCI	Kp (cm/hr) predicted	Kp (cm/hr) measured	Kp 95% UCI	Chemicals outside EPD (*)	Derm/ Drink Kp	Chem Assess	B	tau (hr)	t_star (hr)
118 Heptachlor	76448	373.5	4.27	3.4E-04	8.6E-03		2.2E-01		14%	Y	0.1	12.99	31.16
	FA for tau>3	Conc (mg/cm3)	DA_event (mg/cm2-evt)	DAD (mg/kg-day)		log(Ds/lsc)	Dsc/lsc	Dsc		b	c	t_star1 B>0.6	t_star3 B<=0.6
	0.8	1.4E-09	6.8E-11	3.9E-10		-4.89E+00	1.28E-05	1.28E-08		3.4E-01	3.8E-01	#NUM!	31.16

Table 6.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
Current	Trespasser - Adolescent wader	Leachate - Unnamed Island													
			4-Methylphenol	Surface Water	--	1	7.7E-03	cm/hr	1	hr/event	0.42	hr	1.02	hr	0.0306
			Acenaphthylene	Surface Water	--	1	9.1E-02	cm/hr	1	hr/event	0.75	hr	1.80	hr	0.4320
			Atrazine	Surface Water	--	1	5.2E-03	cm/hr	1	hr/event	1.70	hr	4.07	hr	0.0296
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Dibenz(a,h)anthracene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.81	hr	N/A	hr	N/A
			Dibenzofuran	Surface Water	--	1	7.3E-02	cm/hr	1	hr/event	1.85	hr	4.44	hr	0.4204
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031
			N-Nitrosodiphenylamine	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	1.35	hr	3.25	hr	0.0788
			Pentachlorophenol	Surface Water	--	0.9	NA	cm/hr	1	hr/event	3.26	hr	N/A	hr	N/A
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505
			Chlorobenzene	Surface Water	--	1	2.8E-02	cm/hr	1	hr/event	0.45	hr	1.08	hr	0.1152
			Ethylbenzene	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1952
			Xylene (total)	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1953
			Total PCBs	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A
			alpha-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0816
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1	hr/event	14.30	hr	34.33	hr	0.0918
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635
Current	Trespasser - Adolescent wader	Unnamed Island Ponds													
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505
			Bromodichloromethane	Surface Water	--	1	4.6E-03	cm/hr	1	hr/event	0.87	hr	2.09	hr	0.0227
			Aroclor-1260	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A

Table 6.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA			Kp			T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Units	Value	Units	Value	Units	Value	Units	
Future	Rec. User - Adult wader	Leachate - Unnamed Island	alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635			
			beta-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0804			
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1	hr/event	14.30	hr	34.33	hr	0.0918			
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635			
			Heptachlor Epoxide	Surface Water	--	1	2.1E-02	cm/hr	1	hr/event	15.92	hr	38.21	hr	0.1585			
			4-Methylphenol	Surface Water	--	1	7.7E-03	cm/hr	1	hr/event	0.42	hr	1.02	hr	0.0306			
			Acenaphthylene	Surface Water	--	1	9.1E-02	cm/hr	1	hr/event	0.75	hr	1.80	hr	0.4320			
			Atrazine	Surface Water	--	1	5.2E-03	cm/hr	1	hr/event	1.70	hr	4.07	hr	0.0296			
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A			
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A			
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A			
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A			
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A			
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896			
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A			
			Dibenz(a,h)anthracene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.81	hr	N/A	hr	N/A			
			Dibenzofuran	Surface Water	--	1	7.3E-02	cm/hr	1	hr/event	1.85	hr	4.44	hr	0.4204			
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A			
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031			
			N-Nitrosodiphenylamine	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	1.35	hr	3.25	hr	0.0788			
			Pentachlorophenol	Surface Water	--	0.9	NA	cm/hr	1	hr/event	3.26	hr	N/A	hr	N/A			
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A			
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957			
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505			
			Chlorobenzene	Surface Water	--	1	2.8E-02	cm/hr	1	hr/event	0.45	hr	1.08	hr	0.1152			
			Ethylbenzene	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1952			
			Xylene (total)	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1953			
			Total PCBs	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A			
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A			
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A			
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A			
			alpha-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0816			
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635			
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1	hr/event	14.30	hr	34.33	hr	0.0918			
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635			
Future	Rec. User - Older Child wader	Leachate - Unnamed Island	4-Methylphenol	Surface Water	--	1	7.7E-03	cm/hr	1	hr/event	0.42	hr	1.02	hr	0.0306			
			Acenaphthylene	Surface Water	--	1	9.1E-02	cm/hr	1	hr/event	0.75	hr	1.80	hr	0.4320			
			Atrazine	Surface Water	--	1	5.2E-03	cm/hr	1	hr/event	1.70	hr	4.07	hr	0.0296			
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A			
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A			
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A			
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A			
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A			
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896			
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A			
			Dibenz(a,h)anthracene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.81	hr	N/A	hr	N/A			
			Dibenzofuran	Surface Water	--	1	7.3E-02	cm/hr	1	hr/event	1.85	hr	4.44	hr	0.4204			
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A			
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031			

Table 6.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
			N-Nitrosodiphenylamine	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	1.35	hr	3.25	hr	0.0788
			Pentachlorophenol	Surface Water	--	0.9	NA	cm/hr	1	hr/event	3.26	hr	N/A	hr	N/A
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505
			Chlorobenzene	Surface Water	--	1	2.8E-02	cm/hr	1	hr/event	0.45	hr	1.08	hr	0.1152
			Ethylbenzene	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1952
			Xylene (total)	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1953
			Total PCBs	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A
			alpha-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0816
Future	Rec. User - Adult wader	Unnamed Island Ponds													
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505
			Bromodichloromethane	Surface Water	--	1	4.6E-03	cm/hr	1	hr/event	0.87	hr	2.09	hr	0.0227
			Aroclor-1260	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635
			beta-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0804
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1	hr/event	14.30	hr	34.33	hr	0.0918
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635
			Heptachlor Epoxide	Surface Water	--	1	2.1E-02	cm/hr	1	hr/event	15.92	hr	38.21	hr	0.1585
Future	Rec. User - Older Child wader	Unnamed Island Ponds													
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031

Table 6.RME. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA			Kp			T(event)		Tau		T*		B
						Value	Value	Units	Value	Value	Units	Value	Units	Value	Units	Value	Units	
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1		hr/event	1.05	hr	N/A	hr			N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1		hr/event	0.70	hr	1.68	hr			0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1		hr/event	0.29	hr	0.69	hr			0.0505
			Bromodichloromethane	Surface Water	--	1	4.6E-03	cm/hr	1		hr/event	0.87	hr	2.09	hr			0.0227
			Aroclor-1260	Surface Water	--	1	NA	cm/hr	1		hr/event	4.54	hr	N/A	hr			N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1		hr/event	6.51	hr	N/A	hr			N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1		hr/event	6.35	hr	N/A	hr			N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1		hr/event	10.23	hr	N/A	hr			N/A
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1		hr/event	20.79	hr	49.90	hr			0.2635
			beta-BHC	Surface Water	--	1	1.2E-02	cm/hr	1		hr/event	4.47	hr	10.73	hr			0.0804
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1		hr/event	14.30	hr	34.33	hr			0.0918
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1		hr/event	20.79	hr	49.90	hr			0.2635
			Heptachlor Epoxide	Surface Water	--	1	2.1E-02	cm/hr	1		hr/event	15.92	hr	38.21	hr			0.1585
Future	Rec. User - Adult wader	Leachate - Unnamed Island	4-Methylphenol	Surface Water	--	1	7.7E-03	cm/hr	0.2		hr/event	0.42	hr	1.02	hr			0.0306
			Acenaphthylene	Surface Water	--	1	9.1E-02	cm/hr	0.2		hr/event	0.75	hr	1.80	hr			0.4320
			Atrazine	Surface Water	--	1	5.2E-03	cm/hr	0.2		hr/event	1.70	hr	4.07	hr			0.0296
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.00	hr	N/A	hr			N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.64	hr	N/A	hr			N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.72	hr	N/A	hr			N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	3.71	hr	N/A	hr			N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.72	hr	N/A	hr			N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	0.2		hr/event	16.27	hr	39.05	hr			0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.00	hr	N/A	hr			N/A
			Dibenz(a,h)anthracene	Surface Water	--	0.6	NA	cm/hr	0.2		hr/event	3.81	hr	N/A	hr			N/A
			Dibenzofuran	Surface Water	--	1	7.3E-02	cm/hr	0.2		hr/event	1.85	hr	4.44	hr			0.4204
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	0.2		hr/event	3.71	hr	N/A	hr			N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	0.2		hr/event	0.55	hr	1.32	hr			0.2031
			N-Nitrosodiphenylamine	Surface Water	--	1	1.5E-02	cm/hr	0.2		hr/event	1.35	hr	3.25	hr			0.0788
			Pentachlorophenol	Surface Water	--	0.9	NA	cm/hr	0.2		hr/event	3.26	hr	N/A	hr			N/A
			Phenanthrene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	1.05	hr	N/A	hr			N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	0.2		hr/event	0.70	hr	1.68	hr			0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	0.2		hr/event	0.29	hr	0.69	hr			0.0505
			Chlorobenzene	Surface Water	--	1	2.8E-02	cm/hr	0.2		hr/event	0.45	hr	1.08	hr			0.1152
			Ethylbenzene	Surface Water	--	1	4.9E-02	cm/hr	0.2		hr/event	0.41	hr	0.99	hr			0.1952
			Xylene (total)	Surface Water	--	1	4.9E-02	cm/hr	0.2		hr/event	0.41	hr	0.99	hr			0.1953
			Total PCBs	Surface Water	--	1	NA	cm/hr	0.2		hr/event	4.54	hr	N/A	hr			N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	0.2		hr/event	6.51	hr	N/A	hr			N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	0.2		hr/event	6.35	hr	N/A	hr			N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	0.2		hr/event	10.23	hr	N/A	hr			N/A
			alpha-BHC	Surface Water	--	1	1.2E-02	cm/hr	0.2		hr/event	4.47	hr	10.73	hr			0.0816
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	0.2		hr/event	20.79	hr	49.90	hr			0.2635
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	0.2		hr/event	14.30	hr	34.33	hr			0.0918
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	0.2		hr/event	20.79	hr	49.90	hr			0.2635

FA = Fraction Absorbed Water
Kp = Dermal Permeability Coefficient of Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis

Table 6.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
Current	Trespasser - Adolescent wader	Leachate - Unnamed Island													
			4-Methylphenol	Surface Water	--	1	7.7E-03	cm/hr	1	hr/event	0.42	hr	1.02	hr	0.0306
			Acenaphthylene	Surface Water	--	1	9.1E-02	cm/hr	1	hr/event	0.75	hr	1.80	hr	0.4320
			Atrazine	Surface Water	--	1	5.2E-03	cm/hr	1	hr/event	1.70	hr	4.07	hr	0.0296
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Dibenz(a,h)anthracene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.81	hr	N/A	hr	N/A
			Dibenzofuran	Surface Water	--	1	7.3E-02	cm/hr	1	hr/event	1.85	hr	4.44	hr	0.4204
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031
			N-Nitrosodiphenylamine	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	1.35	hr	3.25	hr	0.0788
			Pentachlorophenol	Surface Water	--	0.9	NA	cm/hr	1	hr/event	3.26	hr	N/A	hr	N/A
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505
			Chlorobenzene	Surface Water	--	1	2.8E-02	cm/hr	1	hr/event	0.45	hr	1.08	hr	0.1152
			Ethylbenzene	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1952
			Xylene (total)	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1953
			Total PCBs	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A
			alpha-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0816
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1	hr/event	14.30	hr	34.33	hr	0.0918
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635
Current	Trespasser - Adolescent wader	Unnamed Island Ponds													
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505
			Bromodichloromethane	Surface Water	--	1	4.6E-03	cm/hr	1	hr/event	0.87	hr	2.09	hr	0.0227
			Aroclor-1260	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A

Table 6.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA			Kp			T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Units	Value	Units	Value	Units	Value	Units	Value
Future	Rec. User - Adult wader	Leachate - Unnamed Island	alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635			
			beta-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0804			
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1	hr/event	14.30	hr	34.33	hr	0.0918			
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635			
			Heptachlor Epoxide	Surface Water	--	1	2.1E-02	cm/hr	1	hr/event	15.92	hr	38.21	hr	0.1585			
			4-Methylphenol	Surface Water	--	1	7.7E-03	cm/hr	1	hr/event	0.42	hr	1.02	hr	0.0306			
			Acenaphthylene	Surface Water	--	1	9.1E-02	cm/hr	1	hr/event	0.75	hr	1.80	hr	0.4320			
			Atrazine	Surface Water	--	1	5.2E-03	cm/hr	1	hr/event	1.70	hr	4.07	hr	0.0296			
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A			
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A			
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A			
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A			
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A			
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896			
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A			
			Dibenz(a,h)anthracene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.81	hr	N/A	hr	N/A			
			Dibenzofuran	Surface Water	--	1	7.3E-02	cm/hr	1	hr/event	1.85	hr	4.44	hr	0.4204			
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A			
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031			
			N-Nitrosodiphenylamine	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	1.35	hr	3.25	hr	0.0788			
			Pentachlorophenol	Surface Water	--	0.9	NA	cm/hr	1	hr/event	3.26	hr	N/A	hr	N/A			
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A			
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957			
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505			
			Chlorobenzene	Surface Water	--	1	2.8E-02	cm/hr	1	hr/event	0.45	hr	1.08	hr	0.1152			
			Ethylbenzene	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1952			
			Xylene (total)	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1953			
			Total PCBs	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A			
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A			
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A			
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A			
			alpha-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0816			
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635			
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1	hr/event	14.30	hr	34.33	hr	0.0918			
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635			
Future	Rec. User - Older Child wader	Leachate - Unnamed Island	4-Methylphenol	Surface Water	--	1	7.7E-03	cm/hr	1	hr/event	0.42	hr	1.02	hr	0.0306			
			Acenaphthylene	Surface Water	--	1	9.1E-02	cm/hr	1	hr/event	0.75	hr	1.80	hr	0.4320			
			Atrazine	Surface Water	--	1	5.2E-03	cm/hr	1	hr/event	1.70	hr	4.07	hr	0.0296			
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A			
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A			
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A			
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A			
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A			
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896			
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A			
			Dibenz(a,h)anthracene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.81	hr	N/A	hr	N/A			
			Dibenzofuran	Surface Water	--	1	7.3E-02	cm/hr	1	hr/event	1.85	hr	4.44	hr	0.4204			
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A			
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031			

Table 6.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
			N-Nitrosodiphenylamine	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	1.35	hr	3.25	hr	0.0788
			Pentachlorophenol	Surface Water	--	0.9	NA	cm/hr	1	hr/event	3.26	hr	N/A	hr	N/A
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505
			Chlorobenzene	Surface Water	--	1	2.8E-02	cm/hr	1	hr/event	0.45	hr	1.08	hr	0.1152
			Ethylbenzene	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1952
			Xylene (total)	Surface Water	--	1	4.9E-02	cm/hr	1	hr/event	0.41	hr	0.99	hr	0.1953
			Total PCBs	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A
			alpha-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0816
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635
Future	Rec. User - Adult wader	Unnamed Island Ponds													
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1	hr/event	1.05	hr	N/A	hr	N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1	hr/event	0.70	hr	1.68	hr	0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1	hr/event	0.29	hr	0.69	hr	0.0505
			Bromodichloromethane	Surface Water	--	1	4.6E-03	cm/hr	1	hr/event	0.87	hr	2.09	hr	0.0227
			Aroclor-1260	Surface Water	--	1	NA	cm/hr	1	hr/event	4.54	hr	N/A	hr	N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.51	hr	N/A	hr	N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1	hr/event	6.35	hr	N/A	hr	N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1	hr/event	10.23	hr	N/A	hr	N/A
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635
			beta-BHC	Surface Water	--	1	1.2E-02	cm/hr	1	hr/event	4.47	hr	10.73	hr	0.0804
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1	hr/event	14.30	hr	34.33	hr	0.0918
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1	hr/event	20.79	hr	49.90	hr	0.2635
			Heptachlor Epoxide	Surface Water	--	1	2.1E-02	cm/hr	1	hr/event	15.92	hr	38.21	hr	0.1585
Future	Rec. User - Older Child wader	Unnamed Island Ponds													
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.64	hr	N/A	hr	N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.72	hr	N/A	hr	N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	1	hr/event	16.27	hr	39.05	hr	0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	1	hr/event	2.00	hr	N/A	hr	N/A
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	1	hr/event	3.71	hr	N/A	hr	N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	1	hr/event	0.55	hr	1.32	hr	0.2031

Table 6.CT. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SURFACE WATER

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA			Kp			T(event)		Tau		T*		B
						Value	Value	Units	Value	Value	Units	Value	Units	Value	Units	Value	Units	
			Phenanthrene	Surface Water	--	1	NA	cm/hr	1		hr/event	1.05	hr	N/A	hr			N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	1		hr/event	0.70	hr	1.68	hr			0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	1		hr/event	0.29	hr	0.69	hr			0.0505
			Bromodichloromethane	Surface Water	--	1	4.6E-03	cm/hr	1		hr/event	0.87	hr	2.09	hr			0.0227
			Aroclor-1260	Surface Water	--	1	NA	cm/hr	1		hr/event	4.54	hr	N/A	hr			N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	1		hr/event	6.51	hr	N/A	hr			N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	1		hr/event	6.35	hr	N/A	hr			N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	1		hr/event	10.23	hr	N/A	hr			N/A
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1		hr/event	20.79	hr	49.90	hr			0.2635
			beta-BHC	Surface Water	--	1	1.2E-02	cm/hr	1		hr/event	4.47	hr	10.73	hr			0.0804
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	1		hr/event	14.30	hr	34.33	hr			0.0918
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	1		hr/event	20.79	hr	49.90	hr			0.2635
			Heptachlor Epoxide	Surface Water	--	1	2.1E-02	cm/hr	1		hr/event	15.92	hr	38.21	hr			0.1585
Future	Rec. User - Adult wader	Leachate - Unnamed Island	4-Methylphenol	Surface Water	--	1	7.7E-03	cm/hr	0.2		hr/event	0.42	hr	1.02	hr			0.0306
			Acenaphthylene	Surface Water	--	1	9.1E-02	cm/hr	0.2		hr/event	0.75	hr	1.80	hr			0.4320
			Atrazine	Surface Water	--	1	5.2E-03	cm/hr	0.2		hr/event	1.70	hr	4.07	hr			0.0296
			Benzo(a)anthracene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.00	hr	N/A	hr			N/A
			Benzo(a)pyrene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.64	hr	N/A	hr			N/A
			Benzo(b)fluoranthene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.72	hr	N/A	hr			N/A
			Benzo(g,h,i)perylene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	3.71	hr	N/A	hr			N/A
			Benzo(k)fluoranthene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.72	hr	N/A	hr			N/A
			bis(2-Ethylhexyl)phthalate	Surface Water	--	0.8	2.5E-02	cm/hr	0.2		hr/event	16.27	hr	39.05	hr			0.1896
			Chrysene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	2.00	hr	N/A	hr			N/A
			Dibenz(a,h)anthracene	Surface Water	--	0.6	NA	cm/hr	0.2		hr/event	3.81	hr	N/A	hr			N/A
			Dibenzofuran	Surface Water	--	1	7.3E-02	cm/hr	0.2		hr/event	1.85	hr	4.44	hr			0.4204
			Indeno(1,2,3-cd)pyrene	Surface Water	--	0.6	NA	cm/hr	0.2		hr/event	3.71	hr	N/A	hr			N/A
			Naphthalene	Surface Water	--	1	4.7E-02	cm/hr	0.2		hr/event	0.55	hr	1.32	hr			0.2031
			N-Nitrosodiphenylamine	Surface Water	--	1	1.5E-02	cm/hr	0.2		hr/event	1.35	hr	3.25	hr			0.0788
			Pentachlorophenol	Surface Water	--	0.9	NA	cm/hr	0.2		hr/event	3.26	hr	N/A	hr			N/A
			Phenanthrene	Surface Water	--	1	NA	cm/hr	0.2		hr/event	1.05	hr	N/A	hr			N/A
			1,4-Dichlorobenzene	Surface Water	--	1	4.2E-02	cm/hr	0.2		hr/event	0.70	hr	1.68	hr			0.1957
			Benzene	Surface Water	--	1	1.5E-02	cm/hr	0.2		hr/event	0.29	hr	0.69	hr			0.0505
			Chlorobenzene	Surface Water	--	1	2.8E-02	cm/hr	0.2		hr/event	0.45	hr	1.08	hr			0.1152
			Ethylbenzene	Surface Water	--	1	4.9E-02	cm/hr	0.2		hr/event	0.41	hr	0.99	hr			0.1952
			Xylene (total)	Surface Water	--	1	4.9E-02	cm/hr	0.2		hr/event	0.41	hr	0.99	hr			0.1953
			Total PCBs	Surface Water	--	1	NA	cm/hr	0.2		hr/event	4.54	hr	N/A	hr			N/A
			4,4'-DDD	Surface Water	--	0.8	NA	cm/hr	0.2		hr/event	6.51	hr	N/A	hr			N/A
			4,4'-DDE	Surface Water	--	0.8	NA	cm/hr	0.2		hr/event	6.35	hr	N/A	hr			N/A
			4,4'-DDT	Surface Water	--	0.7	NA	cm/hr	0.2		hr/event	10.23	hr	N/A	hr			N/A
			alpha-BHC	Surface Water	--	1	1.2E-02	cm/hr	0.2		hr/event	4.47	hr	10.73	hr			0.0816
			alpha-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	0.2		hr/event	20.79	hr	49.90	hr			0.2635
			Dieldrin	Surface Water	--	0.8	1.2E-02	cm/hr	0.2		hr/event	14.30	hr	34.33	hr			0.0918
			Gamma-Chlordane	Surface Water	--	0.7	3.4E-02	cm/hr	0.2		hr/event	20.79	hr	49.90	hr			0.2635

FA = Fraction Absorbed Water
Kp = Dermal Permeability Coefficient of Compound in Water

T(event) = Event Duration
Tau = Lag Time

T* = Time to Reach Steady-State
B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis

Table 7. Dermal Worksheet
Intermediate Variables for Calculating DA(event)
PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2 - SOIL/SEDIMENT

Timeframe	Receptor	Exposure Point	Chemical of Potential Concern	Media	Dermal Absorption Fraction (soil)	FA	Kp		T(event)		Tau		T*		B
						Value	Value	Units	Value	Units	Value	Units	Value	Units	Value
All	All	Unnamed Island													
			Benzo(a)anthracene	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Benzo(a)pyrene	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Benzo(b)fluoranthene	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Benzo(g,h,i)perylene	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Benzo(k)fluoranthene	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Bis(2-ethylhexyl)phthalate	Sediment/Soil	0.1	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Carbazole	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Dibenz(a,h)anthracene	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Dibenzofuran	Sediment/Soil	0.1	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Indeno(1,2,3-cd)pyrene	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Naphthalene	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Phenanthrene	Sediment/Soil	0.13	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Aroclor-1242	Sediment/Soil	0.14	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Aroclor-1254	Sediment/Soil	0.14	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Aroclor-1260	Sediment/Soil	0.14	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Dieldrin	Sediment/Soil	0.1	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Dioxin TEQ	Sediment/Soil	0.03	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Arsenic	Sediment/Soil	0.03	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data
			Cadmium	Sediment/Soil	0.001	No data	No data	No data	No data	No data	No data	No data	No data	No data	No data

FA = Fraction Absorbed Water

Kp = Dermal Permeability Coefficient of Compound in Water

T(event) = Event Duration

Tau = Lag Time

T* = Time to Reach Steady-State

B = Dimensionless Ratio of the Permeability Coefficient of a Compound Through the Stratum Corneum Relative to its Permeability Coefficient Across the Viable Epidermis

APPENDIX F
EARLY LIFE EXPOSURE CALCULATIONS

APPENDIX F TABLE 7.1.RME
 CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
 Receptor Population: Trespasser
 Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations												
					Value	Units	Intake/Exposure Concentration		Age-Dependent Intake/Exposure Concentration [1]		Age-Dependent Adjustment Factor (ADAF) [2]		CSF/Unit Risk		Cancer Risk Ages 9-16 [3]	Cancer Risk Ages 17-18 [3]	Cumulative Cancer Risk Ages 9-18 [4]		
							Value	Units	Ages 9-16	Ages 17-18	Ages 9-16	Ages 17-18	Value	Units					
Soil	Surface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	1.2E-07	mg/kg-day	9.9E-08	2.5E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.2E-07	1.8E-08	2.3E-07		
				Benzo(a)pyrene	1E+00	mg/kg	1.1E-07	mg/kg-day	8.8E-08	2.2E-08	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	1.9E-06	1.6E-07	2.1E-06		
				Benzo(b)fluoranthene	2E+00	mg/kg	1.7E-07	mg/kg-day	1.3E-07	3.3E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.9E-07	2.4E-08	3.1E-07		
				Benzo(k)fluoranthene	9E-01	mg/kg	7.1E-08	mg/kg-day	5.7E-08	1.4E-08	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	1.2E-08	1.0E-09	1.3E-08		
				Dibenz(a,h)anthracene	3E-01	mg/kg	2.1E-08	mg/kg-day	1.7E-08	4.2E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	3.7E-07	3.1E-08	4.0E-07		
				Indeno(1,2,3-cd)pyrene	8E-01	mg/kg	6.6E-08	mg/kg-day	5.3E-08	1.3E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07	9.7E-09	1.3E-07		
				Chromium	1E+02	mg/kg	1.2E-05	mg/kg-day	9.3E-06	2.3E-06	3.0E+00	1.0E+00	5.0E-01	(mg/kg-day) ⁻¹	1.4E-05	1.2E-06	1.5E-05		
				Exp. Route Total												N/A		N/A	
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	6.6E-08	mg/kg-day	5.3E-08	1.3E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07	9.7E-09	1.3E-07		
				Benzo(a)pyrene	1E+00	mg/kg	5.9E-08	mg/kg-day	4.7E-08	1.2E-08	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	1.0E-06	8.6E-08	1.1E-06		
				Benzo(b)fluoranthene	2E+00	mg/kg	8.9E-08	mg/kg-day	7.1E-08	1.8E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.6E-07	1.3E-08	1.7E-07		
				Benzo(k)fluoranthene	9E-01	mg/kg	3.8E-08	mg/kg-day	3.0E-08	7.6E-09	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	6.7E-09	5.5E-10	7.2E-09		
				Dibenz(a,h)anthracene	3E-01	mg/kg	1.1E-08	mg/kg-day	9.1E-09	2.3E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	2.0E-07	1.7E-08	2.2E-07		
				Indeno(1,2,3-cd)pyrene	8E-01	mg/kg	3.5E-08	mg/kg-day	2.8E-08	7.1E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	6.2E-08	5.2E-09	6.7E-08		
			Chromium	1E+02	mg/kg	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A			
			Exp. Route Total												N/A		N/A		
					Exposure Point Total												N/A		N/A
					Exposure Medium Total												N/A		N/A
Medium Total															N/A		N/A		
Leachate	Leachate	Unnamed Island	Dermal	Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A		
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A		
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A		
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A		
				Chrysene	3E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A		
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A		
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A		
				Chromium	5E+00	ug/L	1.5E-08	mg/kg-day	1.2E-08	3.1E-09	3.0E+00	1.0E+00	1.3E-02	(mg/kg-day) ⁻¹	4.6E-10	3.8E-11	5.0E-10		
			Exp. Route Total												N/A		N/A		
					Exposure Point Total												N/A		N/A
		Exposure Medium Total												N/A		N/A			
Medium Total															N/A		N/A		

APPENDIX F TABLE 7.1.RME
 CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
 Receptor Population: Trespasser
 Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations																
					Value	Units	Intake/Exposure Concentration		Age-Dependent Intake/Exposure Concentration [1]		Age-Dependent Adjustment Factor (ADAF) [2]		CSF/Unit Risk		Cancer Risk Ages 9-16 [3]	Cancer Risk Ages 17-18 [3]	Cumulative Cancer Risk Ages 9-18 [4]						
							Value	Units	Ages 9-16	Ages 17-18	Ages 9-16	Ages 17-18	Value	Units									
Surface Water	Surface Water	Unnamed Island	Dermal	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A						
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A						
				Benzo(b)fluoranthene	3E-01	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A						
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A						
				Chrysene	1E-01	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A						
				Indeno(1,2,3-cd)pyrene	1E-01	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A						
			Chromium	1E+01	ug/L	8.4E-08	mg/kg-day	6.7E-08	1.7E-08	3.0E+00	1.0E+00	1.3E-02	(mg/kg-day) ⁻¹	2.5E-09	2.1E-10	2.7E-09							
			Exp. Route Total												N/A		N/A						
		Exposure Point Total																N/A		N/A			
	Exposure Medium Total																	N/A		N/A			
Medium Total																		N/A		N/A			
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	9.5E-08	mg/kg-day	7.6E-08	1.9E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.7E-07	1.4E-08	1.8E-07						
				Benzo(a)pyrene	2E+00	mg/kg	9.9E-08	mg/kg-day	7.9E-08	2.0E-08	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	1.7E-06	1.4E-07	1.9E-06						
				Benzo(b)fluoranthene	2E+00	mg/kg	7.2E-08	mg/kg-day	5.8E-08	1.4E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.3E-07	1.1E-08	1.4E-07						
				Benzo(k)fluoranthene	1E+00	mg/kg	5.8E-08	mg/kg-day	4.7E-08	1.2E-08	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	1.0E-08	8.5E-10	1.1E-08						
				Dibenz(a,h)anthracene	3E-01	mg/kg	1.1E-08	mg/kg-day	9.1E-09	2.3E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	2.0E-07	1.7E-08	2.2E-07						
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	4.3E-08	mg/kg-day	3.4E-08	8.6E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	7.5E-08	6.3E-09	8.2E-08						
				Chromium	2E+02	mg/kg	6.8E-06	mg/kg-day	5.5E-06	1.4E-06	3.0E+00	1.0E+00	5.0E-01	(mg/kg-day) ⁻¹	8.2E-06	6.8E-07	8.9E-06						
				Exp. Route Total												N/A		N/A					
				Dermal	Benzo(a)anthracene	2E+00	mg/kg	2.8E-07	mg/kg-day	2.2E-07	5.6E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	4.9E-07	4.1E-08	5.3E-07					
			Benzo(a)pyrene		2E+00	mg/kg	2.9E-07	mg/kg-day	2.3E-07	5.9E-08	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	5.1E-06	4.3E-07	5.6E-06						
			Benzo(b)fluoranthene		2E+00	mg/kg	2.1E-07	mg/kg-day	1.7E-07	4.3E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	3.7E-07	3.1E-08	4.0E-07						
			Benzo(k)fluoranthene		1E+00	mg/kg	1.7E-07	mg/kg-day	1.4E-07	3.4E-08	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	3.0E-08	2.5E-09	3.3E-08						
			Dibenz(a,h)anthracene		3E-01	mg/kg	3.4E-08	mg/kg-day	2.7E-08	6.7E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	5.9E-07	4.9E-08	6.4E-07						
			Indeno(1,2,3-cd)pyrene		1E+00	mg/kg	1.3E-07	mg/kg-day	1.0E-07	2.5E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.2E-07	1.9E-08	2.4E-07						
			Chromium		2E+02	mg/kg	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A						
			Exp. Route Total												N/A		N/A						
					Exposure Point Total																N/A		N/A
				Exposure Medium Total																	N/A		N/A
Medium Total																		N/A		N/A			
Total of Receptor Risks Across All Media														N/A		N/A							

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the age-dependent intake/exposure concentration by the appropriate default age-dependent adjustment factor (ADAF) and the appropriate cancer slope factor (CSF) according to the following formula:

$$\text{Cancer Risk} = \text{Intake (mg/kg-day)} \times \text{CSF (mg/kg-day)}^{-1} \times \text{ADAF}$$

[1] Age-dependent intake/exposure concentration determined by multiplying the intake/exposure concentration by the fraction of years related to default ADAFs: 8/10 of the value for ages 9-16 and 2/10 of the value for ages 17-18

[2] ADAFs: 3 for ages 9-16 and 1 for ages 17-18

[3] Age-dependent cancer risk calculated by multiplying the age-dependent intake/exposure concentration by the appropriate ADAF and cancer slope factor.

[4] Cumulative cancer risk calculated by adding the age-dependent cancer risk results together.

APPENDIX F TABLE 7.1.CT
 CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
 Receptor Population: Trespasser
 Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations										
					Value	Units	Intake/Exposure Concentration		Age-Dependent Intake/Exposure Concentration [1]		Age-Dependent Adjustment Factor (ADAF) [2]		CSF/Unit Risk		Cancer Risk Ages 9-16 [3]	Cancer Risk Ages 17-18 [3]	Cumulative Cancer Risk Ages 9-18 [4]
							Value	Units	Ages 9-16	Ages 17-18	Ages 9-16	Ages 17-18	Value	Units			
Soil	Surface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	3.1E-08	mg/kg-day	2.5E-08	6.2E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	5.4E-08	4.5E-09	5.9E-08
				Benzo(a)pyrene	1E+00	mg/kg	2.7E-08	mg/kg-day	2.2E-08	5.5E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	4.8E-07	4.0E-08	5.2E-07
				Benzo(b)fluoranthene	2E+00	mg/kg	4.1E-08	mg/kg-day	3.3E-08	8.3E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	7.3E-08	6.0E-09	7.9E-08
				Benzo(k)fluoranthene	9E-01	mg/kg	1.8E-08	mg/kg-day	1.4E-08	3.5E-09	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	3.1E-09	2.6E-10	3.4E-09
				Dibenz(a,h)anthracene	3E-01	mg/kg	5.3E-09	mg/kg-day	4.2E-09	1.1E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	9.3E-08	7.8E-09	1.0E-07
				Indeno(1,2,3-cd)pyrene	8E-01	mg/kg	1.7E-08	mg/kg-day	1.3E-08	3.3E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.9E-08	2.4E-09	3.1E-08
				Chromium	1E+02	mg/kg	2.9E-06	mg/kg-day	2.3E-06	5.8E-07	3.0E+00	1.0E+00	5.0E-01	(mg/kg-day) ⁻¹	3.5E-06	2.9E-07	3.8E-06
			Exp. Route Total												N/A		N/A
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	3.3E-08	mg/kg-day	2.6E-08	6.6E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	5.8E-08	4.8E-09	6.3E-08
				Benzo(a)pyrene	1E+00	mg/kg	2.9E-08	mg/kg-day	2.4E-08	5.9E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	5.2E-07	4.3E-08	5.6E-07
				Benzo(b)fluoranthene	2E+00	mg/kg	4.4E-08	mg/kg-day	3.6E-08	8.9E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	7.8E-08	6.5E-09	8.4E-08
				Benzo(k)fluoranthene	9E-01	mg/kg	1.9E-08	mg/kg-day	1.5E-08	3.8E-09	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	3.3E-09	2.8E-10	3.6E-09
				Dibenz(a,h)anthracene	3E-01	mg/kg	5.7E-09	mg/kg-day	4.6E-09	1.1E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	1.0E-07	8.3E-09	1.1E-07
				Indeno(1,2,3-cd)pyrene	8E-01	mg/kg	1.8E-08	mg/kg-day	1.4E-08	3.5E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	3.1E-08	2.6E-09	3.4E-08
				Chromium	1E+02	mg/kg	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A
			Exp. Route Total												N/A		N/A
			Exposure Point Total													N/A	
		Exposure Medium Total													N/A		N/A
Medium Total													N/A		N/A		
Leachate	Leachate	Unnamed Island	Dermal	Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A
				Chrysene	3E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A
				Chromium	5E+00	ug/L	7.7E-09	mg/kg-day	6.2E-09	1.5E-09	3.0E+00	1.0E+00	1.3E-02	(mg/kg-day) ⁻¹	2.3E-10	1.9E-11	2.5E-10
				Exp. Route Total												N/A	
		Exposure Point Total													N/A		N/A
Exposure Medium Total													N/A		N/A		
Medium Total													N/A		N/A		

APPENDIX F TABLE 7.1.CT
 CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Current
 Receptor Population: Trespasser
 Receptor Age: Adolescent

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations													
					Value	Units	Intake/Exposure Concentration		Age-Dependent Intake/Exposure Concentration [1]		Age-Dependent Adjustment Factor (ADAF) [2]		CSF/Unit Risk		Cancer Risk Ages 9-16 [3]	Cancer Risk Ages 17-18 [3]	Cumulative Cancer Risk Ages 9-18 [4]			
							Value	Units	Ages 9-16	Ages 17-18	Ages 9-16	Ages 17-18	Value	Units						
Surface Water	Surface Water	Unnamed Island	Dermal	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A			
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A	N/A	N/A			
				Benzo(b)fluoranthene	6E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A			
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A			
				Chrysene	1E-01	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-03	(mg/kg-day) ⁻¹	N/A	N/A	N/A			
				Indeno(1,2,3-cd)pyrene	5E-02	ug/L	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	N/A	N/A			
	Chromium	1E+01	ug/L	4.2E-08	mg/kg-day	3.3E-08	8.4E-09	3.0E+00	1.0E+00	1.3E-02	(mg/kg-day) ⁻¹	1.3E-09	1.0E-10	1.4E-09						
			Exp. Route Total												N/A		N/A			
			Exposure Point Total											N/A		N/A				
			Exposure Medium Total											N/A		N/A				
Medium Total																		N/A		N/A
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	2.4E-08	mg/kg-day	1.9E-08	4.7E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	4.1E-08	3.4E-09	4.5E-08			
				Benzo(a)pyrene	2E+00	mg/kg	2.5E-08	mg/kg-day	2.0E-08	4.9E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	4.3E-07	3.6E-08	4.7E-07			
				Benzo(b)fluoranthene	2E+00	mg/kg	1.8E-08	mg/kg-day	1.4E-08	3.6E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	3.2E-08	2.6E-09	3.4E-08			
				Benzo(k)fluoranthene	1E+00	mg/kg	1.5E-08	mg/kg-day	1.2E-08	2.9E-09	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	2.5E-09	2.1E-10	2.8E-09			
				Dibenz(a,h)anthracene	3E-01	mg/kg	2.8E-09	mg/kg-day	2.3E-09	5.7E-10	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	5.0E-08	4.1E-09	5.4E-08			
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.1E-08	mg/kg-day	8.6E-09	2.1E-09	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.9E-08	1.6E-09	2.0E-08			
				Chromium	2E+02	mg/kg	1.7E-06	mg/kg-day	1.4E-06	3.4E-07	3.0E+00	1.0E+00	5.0E-01	(mg/kg-day) ⁻¹	2.1E-06	1.7E-07	2.2E-06			
						Exp. Route Total												N/A		N/A
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	1.4E-07	mg/kg-day	1.1E-07	2.8E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.5E-07	2.0E-08	2.7E-07			
				Benzo(a)pyrene	2E+00	mg/kg	1.5E-07	mg/kg-day	1.2E-07	2.9E-08	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	2.6E-06	2.1E-07	2.8E-06			
				Benzo(b)fluoranthene	2E+00	mg/kg	1.1E-07	mg/kg-day	8.5E-08	2.1E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.9E-07	1.6E-08	2.0E-07			
				Benzo(k)fluoranthene	1E+00	mg/kg	8.6E-08	mg/kg-day	6.9E-08	1.7E-08	3.0E+00	1.0E+00	7.3E-02	(mg/kg-day) ⁻¹	1.5E-08	1.3E-09	1.6E-08			
				Dibenz(a,h)anthracene	3E-01	mg/kg	1.7E-08	mg/kg-day	1.3E-08	3.4E-09	3.0E+00	1.0E+00	7.3E+00	(mg/kg-day) ⁻¹	2.9E-07	2.5E-08	3.2E-07			
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	6.4E-08	mg/kg-day	5.1E-08	1.3E-08	3.0E+00	1.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.1E-07	9.3E-09	1.2E-07			
	Chromium	2E+02		mg/kg	N/A	N/A	N/A	N/A	3.0E+00	1.0E+00	1.3E-02	(mg/kg-day) ⁻¹	N/A	N/A	N/A					
			Exp. Route Total												N/A		N/A			
			Exposure Point Total											N/A		N/A				
			Exposure Medium Total											N/A		N/A				
Medium Total																		N/A		N/A
							Total of Receptor Risks Across All Media											N/A		N/A

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the age-dependent intake/exposure concentration by the appropriate default age-dependent adjustment factor (ADAF) and the appropriate cancer slope factor (CSF) according to the following formula:

$$\text{Cancer Risk} = \text{Intake (mg/kg-day)} \times \text{CSF (mg/kg-day)}^{-1} \times \text{ADAF}$$

[1] Age-dependent intake/exposure concentration determined by multiplying the intake/exposure concentration by the fraction of years related to default ADAFs: 8/10 of the value for ages 9-16 and 2/10 of the value for ages 17-18

[2] ADAFs: 3 for ages 9-16 and 1 for ages 17-18

[3] Age-dependent cancer risk calculated by multiplying the age-dependent intake/exposure concentration by the appropriate ADAF and cancer slope factor.

[4] Cumulative cancer risk calculated by adding the age-dependent cancer risk results together.

APPENDIX F TABLE 7.3.RME
 CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future Receptor Population: Recreational User Receptor Age: Older Child (wading)													
Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						
					Value	Units	Intake/Exposure Concentration		Age-Dependent Adjustment Factor (ADAF) [1]	CSF/Unit Risk		Cancer Risk Ages 6-12 [2]	
							Value	Units		Value	Units		
Soil	Surface/Subsurface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	3E+00	mg/kg	2.2E-07	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	4.9E-07	
				Benzo(a)pyrene	3E+00	mg/kg	2.2E-07	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	4.8E-06	
				Benzo(b)fluoranthene	3E+00	mg/kg	2.1E-07	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	4.6E-07	
				Benzo(g,h,i)perylene	2E+00	mg/kg	1.2E-07	mg/kg-day	3.0E+00	N/A	N/A	N/A	
				Benzo(k)fluoranthene	2E+00	mg/kg	1.2E-07	mg/kg-day	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	2.6E-08	
				Dibenz(a,h)anthracene	4E-01	mg/kg	3.1E-08	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	6.8E-07	
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	9.7E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.1E-07	
				Chromium	2E+02	mg/kg	1.5E-05	mg/kg-day	3.0E+00	5.0E-01	(mg/kg-day) ⁻¹	2.2E-05	
			Exp. Route Total									N/A	
			Dermal	Benzo(a)anthracene	3E+00	mg/kg	2.6E-07	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	5.6E-07	
				Benzo(a)pyrene	3E+00	mg/kg	2.5E-07	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	5.5E-06	
				Benzo(b)fluoranthene	3E+00	mg/kg	2.4E-07	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	5.3E-07	
				Benzo(g,h,i)perylene	2E+00	mg/kg	1.4E-07	mg/kg-day	3.0E+00	N/A	N/A	N/A	
				Benzo(k)fluoranthene	2E+00	mg/kg	1.4E-07	mg/kg-day	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	3.0E-08	
				Dibenz(a,h)anthracene	4E-01	mg/kg	3.6E-08	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	7.8E-07	
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	1.1E-07	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.4E-07	
				Chromium	2E+02	mg/kg	N/A	N/A	3.0E+00	1.3E-02	(mg/kg-day) ⁻¹	N/A	
			Exp. Route Total									N/A	
			Exposure Point Total										N/A
			Exposure Medium Total										N/A
Medium Total										N/A			
Leachate	Leachate	Unnamed Island	Dermal	Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A	
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	N/A	
				Chrysene	3E-02	ug/L	N/A	N/A	3.0E+00	7.3E-03	(mg/kg-day) ⁻¹	N/A	
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A	
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	
				Chromium	5E+00	ug/L	9.6E-09	mg/kg-day	3.0E+00	1.3E-02	(mg/kg-day) ⁻¹	3.6E-10	
			Exp. Route Total									N/A	
			Exposure Point Total										N/A
			Exposure Medium Total										N/A
Medium Total										N/A			

APPENDIX F TABLE 7.3.RME
 CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION
 REASONABLE MAXIMUM EXPOSURE
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future Receptor Population: Recreational User Receptor Age: Older Child (wading)															
Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations								
					Value	Units	Intake/Exposure Concentration		Age-Dependent Adjustment Factor (ADAF) [1]	CSF/Unit Risk		Cancer Risk Ages 6-12 [2]			
							Value	Units		Value	Units				
Surface Water	Surface Water	Unnamed Island	Dermal (wading)	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A			
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A			
				Benzo(b)fluoranthene	3E-01	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A			
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	N/A			
				Chrysene	1E-01	ug/L	N/A	N/A	3.0E+00	7.3E-03	(mg/kg-day) ⁻¹	N/A			
				Indeno(1,2,3-cd)pyrene	1E-01	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A			
						Chromium	1E+01	ug/L	3.9E-08	mg/kg-day	3.0E+00	1.3E-02	(mg/kg-day) ⁻¹	1.5E-09	
						Exp. Route Total									N/A
						Exposure Point Total									N/A
						Exposure Medium Total									N/A
Medium Total												N/A			
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	8.1E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.8E-07			
				Benzo(a)pyrene	2E+00	mg/kg	8.5E-08	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	1.9E-06			
				Benzo(b)fluoranthene	2E+00	mg/kg	6.2E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.4E-07			
				Benzo(k)fluoranthene	1E+00	mg/kg	5.0E-08	mg/kg-day	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	1.1E-08			
				Dibenz(a,h)anthracene	3E-01	mg/kg	9.7E-09	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	2.1E-07			
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	3.7E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	8.1E-08			
				Chromium	2E+02	mg/kg	5.9E-06	mg/kg-day	3.0E+00	5.0E-01	(mg/kg-day) ⁻¹	8.8E-06			
						Exp. Route Total									N/A
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	1.3E-07	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.9E-07			
				Benzo(a)pyrene	2E+00	mg/kg	1.4E-07	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	3.0E-06			
				Benzo(b)fluoranthene	2E+00	mg/kg	1.0E-07	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.2E-07			
				Benzo(k)fluoranthene	1E+00	mg/kg	8.1E-08	mg/kg-day	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	1.8E-08			
				Dibenz(a,h)anthracene	3E-01	mg/kg	1.6E-08	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	3.5E-07			
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	6.0E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.3E-07			
				Chromium	2E+02	mg/kg	N/A	N/A	3.0E+00	1.3E-02	(mg/kg-day) ⁻¹	N/A			
						Exp. Route Total									N/A
						Exposure Point Total									N/A
						Exposure Medium Total									N/A
Medium Total												N/A			
												N/A			
												N/A			
							Total of Receptor Risks Across All Media					N/A			

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the age-dependent intake/exposure concentration by the appropriate default age-dependent adjustment factor (ADAF) and the appropriate cancer slope factor (CSF) according to the following formula:

$$\text{Cancer Risk} = \text{Intake (mg/kg-day)} \times \text{CSF (mg/kg-day)}^{-1} \times \text{ADAF}$$

[1] ADAF: 3 for ages 6-12

[2] Age-dependent cancer risk calculated by multiplying the intake/exposure concentration by the ADAF and cancer slope factor.

APPENDIX F TABLE 7.3.CT
 CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future Receptor Population: Recreational User Receptor Age: Older Child (wading)												
Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					
					Value	Units	Intake/Exposure Concentration		Age-Dependent Adjustment Factor (ADAF) [1]	CSF/Unit Risk		Cancer Risk Ages 6-12 [2]
							Value	Units		Value	Units	
Soil	Surface/Subsurface Soil	Unnamed Island	Ingestion	Benzo(a)anthracene	3E+00	mg/kg	5.6E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07
				Benzo(a)pyrene	3E+00	mg/kg	5.4E-08	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	1.2E-06
				Benzo(b)fluoranthene	3E+00	mg/kg	5.3E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07
				Benzo(g,h,i)perylene	2E+00	mg/kg	3.0E-08	mg/kg-day	3.0E+00	N/A	N/A	N/A
				Benzo(k)fluoranthene	2E+00	mg/kg	3.0E-08	mg/kg-day	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	6.5E-09
				Dibenz(a,h)anthracene	4E-01	mg/kg	7.8E-09	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	1.7E-07
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	2.4E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	5.3E-08
				Chromium	2E+02	mg/kg	3.7E-06	mg/kg-day	3.0E+00	5.0E-01	(mg/kg-day) ⁻¹	5.6E-06
			Exp. Route Total									N/A
			Dermal	Benzo(a)anthracene	3E+00	mg/kg	1.3E-07	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.8E-07
				Benzo(a)pyrene	3E+00	mg/kg	1.2E-07	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	2.7E-06
				Benzo(b)fluoranthene	3E+00	mg/kg	1.2E-07	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.7E-07
				Benzo(g,h,i)perylene	2E+00	mg/kg	6.9E-08	mg/kg-day	3.0E+00	N/A	N/A	N/A
				Benzo(k)fluoranthene	2E+00	mg/kg	6.8E-08	mg/kg-day	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	1.5E-08
				Dibenz(a,h)anthracene	4E-01	mg/kg	1.8E-08	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	3.9E-07
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	5.6E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.2E-07
				Chromium	2E+02	mg/kg	N/A	N/A	3.0E+00	1.3E-02	(mg/kg-day) ⁻¹	N/A
			Exp. Route Total									N/A
		Exposure Point Total										N/A
	Exposure Medium Total										N/A	
Medium Total										N/A		
Leachate	Leachate	Unnamed Island	Dermal	Benzo(a)anthracene	4E-02	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A
				Benzo(a)pyrene	2E-02	ug/L	N/A	N/A	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A
				Benzo(b)fluoranthene	2E-02	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A
				Benzo(k)fluoranthene	2E-02	ug/L	N/A	N/A	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	N/A
				Chrysene	3E-02	ug/L	N/A	N/A	3.0E+00	7.3E-03	(mg/kg-day) ⁻¹	N/A
				Dibenz(a,h)anthracene	ND	ug/L	N/A	N/A	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A
				Indeno(1,2,3-cd)pyrene	1E-02	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A
				Chromium	5E+00	ug/L	4.8E-09	mg/kg-day	3.0E+00	1.3E-02	(mg/kg-day) ⁻¹	1.8E-10
				Exp. Route Total								
		Exposure Point Total										N/A
	Exposure Medium Total										N/A	
Medium Total										N/A		

APPENDIX F TABLE 7.3.CT
 CALCULATION OF CANCER RISK FOR CHEMICALS WITH A MUTAGENIC MODE OF ACTION
 CENTRAL TENDENCY
 PETERSON PURITAN SUPERFUND SITE - OPERABLE UNIT 2

Scenario Timeframe: Future
 Receptor Population: Recreational User
 Receptor Age: Older Child (wading)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						
					Value	Units	Intake/Exposure Concentration		Age-Dependent Adjustment Factor (ADAF) [1]	CSF/Unit Risk		Cancer Risk Ages 6-12 [2]	
							Value	Units		Ages 6-12	Value		Units
Surface Water	Surface Water	Unnamed Island	Dermal (wading)	Benzo(a)anthracene	1E-01	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	
				Benzo(a)pyrene	1E-01	ug/L	N/A	N/A	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	N/A	
				Benzo(b)fluoranthene	6E-02	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	
				Benzo(k)fluoranthene	ND	ug/L	N/A	N/A	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	N/A	
				Chrysene	1E-01	ug/L	N/A	N/A	3.0E+00	7.3E-03	(mg/kg-day) ⁻¹	N/A	
				Indeno(1,2,3-cd)pyrene	5E-02	ug/L	N/A	N/A	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	N/A	
				Chromium	1E+01	ug/L	2.0E-08	mg/kg-day	3.0E+00	1.3E-02	(mg/kg-day) ⁻¹	7.4E-10	
				Exp. Route Total									N/A
		Exposure Point Total									N/A		
		Exposure Medium Total									N/A		
Medium Total												N/A	
Sediment	Sediment	Unnamed Island	Ingestion	Benzo(a)anthracene	2E+00	mg/kg	2.0E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	4.4E-08	
				Benzo(a)pyrene	2E+00	mg/kg	2.1E-08	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	4.6E-07	
				Benzo(b)fluoranthene	2E+00	mg/kg	1.5E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	3.4E-08	
				Benzo(k)fluoranthene	1E+00	mg/kg	1.2E-08	mg/kg-day	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	2.7E-09	
				Dibenz(a,h)anthracene	3E-01	mg/kg	2.4E-09	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	5.3E-08	
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	9.2E-09	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	2.0E-08	
				Chromium	2E+02	mg/kg	1.5E-06	mg/kg-day	3.0E+00	5.0E-01	(mg/kg-day) ⁻¹	2.2E-06	
				Exp. Route Total									N/A
			Dermal	Benzo(a)anthracene	2E+00	mg/kg	6.6E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.4E-07	
				Benzo(a)pyrene	2E+00	mg/kg	6.9E-08	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	1.5E-06	
				Benzo(b)fluoranthene	2E+00	mg/kg	5.0E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	1.1E-07	
				Benzo(k)fluoranthene	1E+00	mg/kg	4.1E-08	mg/kg-day	3.0E+00	7.3E-02	(mg/kg-day) ⁻¹	8.9E-09	
				Dibenz(a,h)anthracene	3E-01	mg/kg	7.9E-09	mg/kg-day	3.0E+00	7.3E+00	(mg/kg-day) ⁻¹	1.7E-07	
				Indeno(1,2,3-cd)pyrene	1E+00	mg/kg	3.0E-08	mg/kg-day	3.0E+00	7.3E-01	(mg/kg-day) ⁻¹	6.6E-08	
				Chromium	2E+02	mg/kg	N/A	N/A	3.0E+00	1.3E-02	(mg/kg-day) ⁻¹	N/A	
				Exp. Route Total									N/A
		Exposure Point Total									N/A		
		Exposure Medium Total									N/A		
Medium Total												N/A	
Total of Receptor Risks Across All Media													N/A

Notes

Early-life cancer risk calculations for carcinogenic PAHs and chromium calculated by multiplying the age-dependent intake/exposure concentration by the appropriate default age-dependent adjustment factor (ADAF) and the appropriate cancer slope factor (CSF) according to the following formula:

$$\text{Cancer Risk} = \text{Intake (mg/kg-day)} \times \text{CSF (mg/kg-day)}^{-1} \times \text{ADAF}$$

[1] ADAF: 3 for ages 6-12

[2] Age-dependent cancer risk calculated by multiplying the intake/exposure concentration by the ADAF and cancer slope factor.