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Addendum 2
Phase 1 and Phase 2 Toxics Loadings Reports

Technical Memorandum
January 8, 2010

Herrera Environmental Consultants, Inc.

Memorandum

To	Mindy Roberts
cc	Jim Maroncelli, Greg Pelletier, Dale Norton, Rob Duff, Duane Weaver
From	John Lenth, Robin Kirschbaum, Joy Michaud, Jennifer Schmidt, Peter Steinberg
Date	January 8, 2010
Subject	Re-calculated Loading Rates by Land Use for All of Puget Sound and Each of the 14 Study Areas

This memorandum presents improved toxic chemical loading estimates for Puget Sound. These estimates are intended to replace previous estimates of toxic loadings to Puget Sound that were generated for the Washington State Department of Ecology's Phase 1 and Phase 2 studies of toxic chemical loadings to Puget Sound (Hart Crowser et al. 2007; EnviroVision et al. 2008). As described in detail below, the revised toxic chemical loading rates are based on an entirely different and improved methodology for estimating runoff volumes from various land uses in the Puget Sound Basin. The improved method was developed after a review of the methodology used for Phase 1 and 2 studies indicated it was fundamentally flawed in assuming a much higher average annual hydrologic yield from land uses and watersheds with more impervious area. In general, the improved hydrologic analysis method resulted in absolute toxic chemical loading estimates that are approximately 3 times lower than loading estimates provided in the Phase 2 study (EnviroVision et al. 2008). There were also differences in relative toxic loadings between land uses; most notably, loadings for residential areas generally decreased while those for forest/field/other areas increased.

This memorandum is organized to include background information on the Phase 1 and 2 toxic chemical loading estimates and the rationale for developing revised estimates using a new methodology. A detailed description of the new methodology is then provided. Finally, the recomputed loading estimates are summarized and briefly discussed. For brevity, this discussion only focuses on differences in toxic chemical loading estimates for oil and grease[1] between the Phase 1 and 2 studies and recalculated versions presented herein. Readers should also be aware that these re-calculated loading estimates are also temporary and will soon be revised and improved through the implementation of Ecology's Phase 3 study of toxic chemical loadings to Puget Sound (Herrera et al. 2009).

[1] Most data used in the Phase 1 and 2 loading analysis were for oil and grease; however, some measurements of total petroleum hydrocarbons were included. For more detail, see the addendum to the Phase 1 and 2 reports posted at: http://www.ecy.wa.gov/biblio/0810084addendum1.html.

Background

As a consequence of the Governor's Puget Sound Initiative, the Washington Department of Ecology (Ecology) and other interested parties are collaborating to advance toxic chemical controls as part of a multi-year effort to protect and restore the overall health of the Puget Sound ecosystem. In November 2007, Ecology completed a Phase 1 project in support of this goal, an Initial Estimate of Toxic Chemical Loadings to Puget Sound. The report for the Phase 1 project (Hart Crowser et al. 2007) reviewed readily available information to characterize and quantify the loadings to Puget Sound via multiple pathways, including surface runoff. In that report, loadings for the surface runoff pathway were specifically estimated as a function of the following land use categories: commercial/industrial, residential, agricultural, and forest/field/other. However, the report did not distinguish estimates of loadings from the stormwater that discharged from these categories and the various types of roadways within them. Since stormwater runoff from municipal and state roadways is a potential source of toxic chemicals to Puget Sound, the report for the Phase 1 project recommended that Ecology conduct further analyses to refine its understanding of this pollutant loading pathway.

In response to the recommendations of the Phase 1 toxics loading project, Ecology retained EnviroVision Corporation, who teamed with Herrera Environmental Consultants, Inc. (Herrera), to refine the initial toxic chemical loading estimates from the Phase 1 project and to incorporate information on toxic chemical loadings from roadways. As part of this Phase 2 effort, the project team recomputed toxic chemical loading estimates for the four land use categories targeted in the Phase 1 analysis. Where sufficient data were available for specific parameters, the project team also computed toxic loading estimates for highways. Similar to the Phase 1 project, the project team computed these loading estimates for the entire Puget Sound Basin and the 14 upland study areas that link to Ecology's Puget Sound Box Model. The study areas are shown in Figure 1. The results were summarized in a report (EnviroVision et al. 2008) that was prepared for the Phase 2 project.

The original goal of the Phase 2 analysis was to provide Ecology and its partners with a better understanding of the contribution of toxic chemicals from roadways to Puget Sound. However, based on the large variability in the available concentration data and the numerous assumptions required for making loading estimates over this spatial scale, the numerical loading values presented in the Phase 2 study provided only a rough guide of the actual quantities of the specific chemicals released from different land use and roadway areas. Given these considerations, the intent of this study was to provide a better understanding of the relative toxic chemical loading rates from the five land use categories (EnviroVision et al. 2008).

To ensure the respective results from the Phase 1 and Phase 2 analyses were consistent and comparable, the Phase 2 project team computed toxic chemical loadings using the same methodology that was used for Phase 1. This methodology distributed total annual runoff volumes for each of the 14 study areas across the different land uses by apportioning measured flows upstream using impervious cover. The project team subsequently multiplied the runoff volumes derived for each land use by representative toxic chemical concentrations to obtain loading estimates.

However, subsequent review of the Phase 2 project report by others indicated this methodology over predicted runoff volumes from residential areas relative to forest/field/other areas. Therefore, the previous method also overestimated loads from residential areas. Upon further evaluation, the project team determined that the methodology used in Phase 1 and Phase 2 for predicting runoff volumes contained a fundamental flaw in that it assumed too little runoff from forest land cover and too much runoff from developed land cover. While impervious areas have higher direct "storm" runoff, water balance studies at a number of watersheds in the Puget Sound region have shown little correlation between watershed effective impervious area and total annual runoff volume, when it is expressed as a percentage of annual precipitation (Dinicola 2009).

Given these considerations, the project team recomputed the toxic chemical loading estimates from the Phase 2 analyses using an entirely new and more accurate methodology for estimating runoff volumes. In general, this methodology calculates mean annual runoff volumes for each land use as the difference between mean annual precipitation and mean annual actual evapotranspiration. This subtraction was performed using Geographic Information System (GIS) analyses to generate a Puget Sound map of mean annual runoff volumes. Because the mean annual runoff volumes derived using this approach stem entirely from the precipitation and evapotranspiration estimates, they are not subject to the same deficiencies associated with the methodology used in the previous Phase 1 and Phase 2 analyses. However, it should be noted that the same representative toxic chemical concentrations used in the previous Phase 2 analyses were also used in this analysis (EnviroVision et al. 2008). Therefore, limitations associated with these concentration data also apply to the recomputed loading estimates. A more detailed description of the methodology used to generate the revised loading estimates is provided in the next section.

Methods

As described above, the project team recalculated toxic chemical loading estimates from the Phase 2 analyses using an improved methodology for estimating runoff volumes. This method calculates mean annual runoff volumes for each land use as the difference between mean annual precipitation and mean annual evapotranspiration. (Note groundwater does not appear explicitly in the water balance equation used in this case since the quantity of interest in this case is the long term average input of freshwater to Puget Sound.) This subtraction was completed in a spatially distributed form using GIS analyses to generate a Puget Sound map of mean annual runoff volumes. (A stepwise description of the GIS analyses is provided in Attachment A to this memorandum; a more general description of the analyses is provided herein.)

The precipitation map used in the GIS analysis is the Parameter-elevation Regressions on Independent Slopes Model (PRISM) annual average precipitation map for the Puget Sound region (Daly et al. 1994). Briefly, PRISM is a system for developing elevation-corrected gridded precipitation datasets based on annual or monthly time series of precipitation measured at points. In this study, the Oregon State University PRISM annual average precipitation map for 1971 to

2000 was used for the portion of the Puget Sound watershed that is in the United States (Oregon State University 2009). Note that the Oregon State PRISM precipitation map does not extend into Canada to cover portions of the Skagit and Nooksack watersheds. For these areas, the precipitation map from the Variable Infiltration Capacity (VIC) model (see description below) was used. Figure 2 shows the precipitation map that was derived from these data sources for use in this analysis.

The actual evapotranspiration (AET) map used in this analysis was derived from outputs of a hydrology model implementation developed by the University of Washington Climate Impacts Group (UW-CIG). The VIC model calculates three types of evaporation using the Penman-Monteith and similar equations: evaporation from the canopy layer, transpiration from vegetation, and evaporation from bare soil. Total evapotranspiration over the grid cell is computed as the sum of the canopy, vegetation, and bare soil components (Liang et al. 1994).

The VIC model (version 4.0.7) that is being run by the UW-CIG uses a 1/16 degree grid, which has grid cells approximately 7 km north-south by 5 km east-west. The input and output files from this model were obtained from the University of Washington (2009). The meteorological forcing data for the UW-CIG VIC model come from the current conditions scenario of an extensive Washington statewide climate change hydroclimatic study being completed under funding from House Bill 2860 (related to a Columbia River water management program). The model domain covers the Columbia River watershed and Washington coastal and Puget Sound drainages. The forcing data assimilate meteorological time series from hundreds of stations throughout the Pacific Northwest over a long period of record (1915 to 2006). Extensive quality assurance went into compiling the meteorological data, as it is the base case for over 70 climate change scenarios. Precipitation and other input series were originally at a daily time step. The final step in the VIC's gridding of the precipitation data was a pixel by pixel correction to force long-term monthly mean precipitation totals in the grid to match those of the PRISM map. After this correction, VIC disaggregated the daily inputs to more accurately simulate subdaily hydrologic processes like snowmelt.

VIC model domain did not cover some parts of the Puget Sound Basin, most notably islands within the Puget Sound. For these areas, a constant evapotranspiration rate of 432 millimeters (17 inches) per year was applied based on a median AET value calculated from representative AET data for Puget Sound lowland watersheds (see Table 4 in Vaccaro et al. 1998). Figure 3 shows the AET map that was derived using the VIC model output and this constant value.

The AET data presented in Figure 3 were subtracted from the precipitation data presented in Figure 2 to generate a Puget Sound map of mean annual runoff depths. Since runoff was calculated by subtracting AET (a positive quantity) from precipitation, there were no areas where the runoff value exceeded the precipitation value. However, there were several small areas with low precipitation where the constant AET value of 432 millimeters exceeded precipitation. In these areas, the mean annual runoff depth was set to zero. The final runoff raster computed based on these steps is shown in Figure 4. Within each individual study area, the mean annual runoff depths were then disaggregated by land use and converted to a runoff rate for each land use based on its area. These runoff rates are summarized in Table 1. The runoff rates were then

multiplied by representative probability of exceedance (POE) toxic chemical concentrations for each land use from the previous Phase 2 analyses (EnviroVision et al. 2008) to generate loading estimates. For reference, these POE toxic chemical concentrations are provided in Table 2.

Results

As shown in Table 1, the runoff rates generated using the methodology described in the previous section are substantially different than those from the Phase 2 study, both in terms of total flow to Puget Sound and in the division of the flow among the land uses. For example, the total annual runoff rate to Puget Sound from the Phase 2 study was 1,785 m^3/s; this value was reduced to 1,595 m^3/s using the new methodology for estimating runoff. Similarly, 69 percent of the flow to Puget Sound was from the forest/field/other land use category in the Phase 2 study; this percentage increased to 92 percent based on the recalculated runoff estimates, with concomitant decrease in the percentage of flow coming from commercial/industrial, residential, agriculture, and highway land uses.

In general, the revised estimates of runoff to Puget Sound largely agree with the findings of other Puget Sound hydrologic studies. For example, total annual runoff rate to Puget Sound calculated by Friebertshauser and Duxbury (1972) was 1,113 m^3/s for portions of the Puget Sound Basin that excludes the Strait of Juan de Fuca, Strait of Georgia, and San Juan Islands study areas. In the Phase 2 loading recalculation, the runoff rate from the same basin area is 1,281 m^3/s, which is 15 percent higher than the estimate of Friebertshauser and Duxbury (1972). Williams (1981) calculated a total annual runoff rate to Puget Sound of 1,488 m^3/s, which is 7 percent lower than the estimate from the Phase 2 loading recalculation.

As an independent assessment of the accuracy of the runoff estimates presented in Table 1, the data presented in Figure 4 were used to generate runoff estimates for basin areas with observed, long-term runoff data from USGS flow monitoring stations. The estimated and observed runoff rates for each basin area are subsequently compared in Table 3. These data generally show the runoff estimates from this analysis have a positive bias (i.e., the runoff estimates are consistently higher) relative to the observed runoff data. For example, the average percent error between observed and estimated runoff rates is 6.3 percent based on an area weighted average. Average percent error without area weighting is higher (17 percent) since the calculated flows were less accurate for smaller watersheds. Accounting for all flow diversions, as was done for the Nisqually River, could potentially reduce the reported bias. Finally, the root mean squared error for the estimated and observed runoff rates is 1.67 m^3/s.

Recomputed area normalized toxic chemical loading rates for the Puget Sound Basin from this analysis are provided in Table 4, and absolute loading rates by land use are provided in Attachment B for the Puget Sound Basin and the 14 study areas that link to the Puget Sound Box Model. As noted above, this document only discusses differences in toxic chemical loading estimates for oil and grease between the Phase 1 and Phase 2 studies and the Phase 2 loading recalculation. Figure 5 shows box plots that compare absolute toxic loading rates for oil and

grease for the entire Puget Sound from all three studies across all five land use categories. Each box plot specifically shows the range in loading estimates across the POE chemical concentrations shown in Table 2 as follows: upper and lower whiskers show loadings based on the 5 and 95 percent POE concentration, respectively; the upper and lower edges of each box show loadings based on the 25 and 75 percent POE concentrations, respectively; and the lines within each box show loadings based on the 50 percent POE concentrations. Finally, Figure 6 shows stacked bar charts that compare absolute toxic chemical loading rates for oil and grease for each study area and land use category based on the 50 percent POE concentrations.

In general, these data show the recalculated absolute loading rate estimates for oil and grease from this study are approximately 3 times lower than those from the Phase 2 study (EnviroVision et al. 2008) and nearly equivalent to those from the Phase 1 study (Hart Crowser et al. 2007). For example, as shown in Table 5, the absolute loading rate for oil and grease from Phase 1 and Phase 2 studies based on the 50 percent POE concentrations are 21,000 and 52,300 metric tonnes per year (MT/year), respectively; the absolute loading rate from the Phase 2 loading recalculation was 15,200 MT/year. Differences of similar magnitude were observed between studies for loading rates calculated based on the 75 and 25 percent POE values.

As shown in Table 6, there were also differences in relative toxic loading rates across the different land uses from the Phase 1 study, Phase 2 study, and Phase 2 loading recalculation. Some of these differences relate to the land cover datasets that were used for the respective studies. Specifically, analyses performed for the Phase 1 study were based on the 1992 national land cover dataset (MRLC 1992) whereas the analyses performed for the Phase 2 study and the Phase 2 loading recalculation were based on the 2001 national land cover dataset (MRLC 2001). In general, the percentage of residential area was larger in the 2001 dataset than the 1992 dataset, while the percentage of commercial/industrial, agricultural, and forest/field/other areas was smaller (EnviroVision et al. 2008). These differences in the land cover datasets are generally reflected in the higher percentage of loading coming from commercial/industrial areas versus residential areas for the Phase 1 study in comparison to the Phase 2 study and Phase 2 loading recalculation (Table 6).

There were also differences in the relative loadings that relate to the different methodologies that were used to estimate runoff volumes for the respective studies. As described above, runoff volumes (and loads) for residential areas were generally over predicted in the Phase 2 study relative to those for forest/field/other areas. With the improved method for estimating runoff volumes, this bias is generally not evident in the results from the Phase 2 loading recalculation. For example, based on the 50 percent POE concentration, 75 percent of the loading for oil and grease came from residential areas in the Phase 2 study while 7 percent came from forest/field/other areas (Table 6). In comparison, 58 percent of the loading for oil and grease came from residential areas in the Phase 2 loading recalculation while 30 percent came from forest/field/other areas. Loadings for commercial/industrial, agricultural, and highways were generally similar between the Phase 2 study and Phase 2 loading recalculation.

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Tables and Figures

Table 1. Runoff rates in cubic meters per second for each land use within the 14 major basins of Puget Sound (with percentages of total study area runoff).

Study Area	Commercial/ Industrial	Residential	Agriculture	Forest	Highway	Total Study Area Runoff
Main Basin	1.34 (2.39%)	18.5 (32.92%)	0.458 (0.81%)	35.7 (63.54%)	0.187 (0.33%)	56.2
Port Gardner	0.362 (0.13%)	12.9 (4.75%)	2.75 (1.01%)	256 (94.03%)	0.193 (0.07%)	272
Elliott Bay	1.03 (2.29%)	6.82 (15.12%)	1.06 (2.35%)	36.1 (80.07%)	0.0777 (0.17%)	45.1
Commencement Bay	0.576 (0.62%)	8.13 (8.75%)	1.28 (1.38%)	82.9 (89.15%)	0.0942 (0.1%)	92.9
South South (East)	0.517 (0.69%)	10.3 (13.74%)	2.07 (2.77%)	61.9 (82.65%)	0.118 (0.16%)	74.9
South Sound (West)	0.230 (0.55%)	6.01 (14.4%)	0.712 (1.71%)	34.7 (83.1%)	0.101 (0.24%)	41.7
Hood Canal (South)	0.0155 (0.01%)	3.70 (2.98%)	0.178 (0.14%)	120 (96.81%)	0.0644 (0.05%)	124
Hood Canal (North)	0.00873 (0.17%)	0.768 (14.66%)	0.0134 (0.26%)	4.44 (84.8%)	0.00614 (0.12%)	5.24
Sinclair/ Dyes Inlet	0.167 (2.13%)	3.04 (38.63%)	0.0436 (0.55%)	4.57 (58.03%)	0.0517 (0.66%)	7.87
Admiralty Inlet	0.00492 (0.24%)	0.301 (14.52%)	0.120 (5.81%)	1.64 (79.21%)	0.00462 (0.22%)	2.07
Strait of Juan de Fuca	0.0557 (0.04%)	1.80 (1.3%)	0.655 (0.47%)	136 (98.06%)	0.175 (0.13%)	138
Strait of Georgia	0.299 (0.18%)	7.15 (4.22%)	10.3 (6.08%)	151 (89.43%)	0.162 (0.1%)	169
Whidbey Basin	0.134 (0.02%)	12.6 (2.25%)	5.49 (0.98%)	541 (96.72%)	0.168 (0.03%)	559
San Juan Islands	0.0429 (0.72%)	0.742 (12.46%)	0.539 (9.05%)	4.63 (77.7%)	0.00442 (0.07%)	5.96
Puget Sound Total	**4.79 (0.3%)**	**93 (5.81%)**	**25.68 (1.61%)**	**1471 (92.19%)**	**1.41 (0.09%)**	**1,595**

Table 2. Probability of exceedance concentrations applied to major land use types and highways (µg/L).

	Residential					Commercial/industrial					Forest					Agriculture					Highways				
	5%	25%	50%	75%	95%	5%	25%	50%	75%	95%	5%	25%	50%	75%	95%	5%	25%	50%	75%	95%	5%	25%	50%	75%	95%
Arsenic	8.1	3.5	2.0	1.1	0.5	14.9	6.9	4.0	2.3	1.1	5.2	2.0	1.0	0.5	0.2	5.6	2.6	1.5	0.9	0.4	4.6	2.8	2.0	1.4	0.9
Cadmium	3.6	1.1	0.5	0.2	0.1	9.2	3.2	1.5	0.7	0.2	0.9	7.5E-02	1.3E-02	2.3E-03	1.8E-04	3.1	1.1	0.5	0.2	0.08	2.7	1.5	1.0	0.6	0.3
Copper	20.7	7.9	4.0	2.0	0.8	109.9	45.9	25.0	13.6	5.7	7.2	2.2	1.0	0.4	0.1	36.0	11.2	5.0	2.2	0.7	46.0	27.0	18.7	12.9	7.6
Lead	117.9	27.5	10.0	3.6	0.8	132.6	43.4	20.0	9.2	3.0	11.4	1.8	0.5	0.14	0.02	33.1	10.9	5.0	2.3	0.8	308.9	100.0	45.7	20.8	6.8
Zinc	155.4	58.9	30.0	15.3	5.8	527.3	220.2	120.0	65.4	27.3	14.4	4.5	2.0	0.89	0.28	72.0	22.5	10.0	4.5	1.4	286.3	151.7	97.5	62.7	33.2
Mercury	0.12	2.8E-02	1.0E-02	3.6E-03	8.5E-04	2.36	0.55	0.20	7.3E-02	1.7E-02	5.9E-02	1.4E-02	5.0E-03	1.8E-03	4.2E-04	0.19	2.7E-02	7.0E-03	1.8E-03	2.6E-04	0.39	0.12	5.1E-02	2.2E-02	6.8E-03
Total PCBs	5.4E-01	7.7E-02	2.0E-02	5.2E-03	7.5E-04	8.1E-01	1.2E-01	3.0E-02	7.8E-03	1.1E-03	6.1E-02	5.4E-03	1.0E-03	1.9E-04	1.6E-05	2.7E-01	3.9E-02	1.0E-02	2.6E-03	3.7E-04	No highway runoff studies available				
Total PBDEs	4.7E-04	1.1E-04	4.0E-05	1.5E-05	3.4E-06	5.4E-04	7.7E-05	2.0E-05	5.2E-06	7.5E-07	2.1E-04	3.1E-05	8.0E-06	2.1E-06	3.0E-07	8.1E-04	1.2E-04	3.0E-05	7.8E-06	1.1E-06	No highway runoff studies available				
Carcinogenic PAHs	1.8	0.4	0.2	5.5E-02	1.3E-02	11.8	2.8	1.0	0.4	8.5E-02	1.6E-01	2.3E-02	6.0E-03	1.6E-03	2.2E-04	1.8	0.4	0.2	5.5E-02	1.3E-02	3.3	1.5	0.8	0.5	0.20
Other high MW PAHs	1.2	0.3	0.1	3.6E-02	8.5E-03	9.4	2.2	0.8	0.3	6.8E-02	1.3E-01	1.9E-02	5.0E-03	1.3E-03	1.9E-04	1.2	0.3	0.1	3.6E-02	8.5E-03	2.2	0.8	0.4	0.2	0.08
Low MW PAHs	3.5	0.8	0.3	0.1	2.5E-02	35.4	8.3	3.0	1.1	0.3	0.4	5.8E-02	1.5E-02	3.9E-03	5.6E-04	3.5	0.8	0.3	0.1	2.5E-02	0.2	0.1	0.1	7.6E-02	5.1E-02
Bis(2)ethyl-hexyl-phthalate	268.4	38.5	10.0	2.6	0.4	268.4	38.5	10.0	2.6	0.4	6.1	0.5	0.1	1.9E-02	1.6E-03	268.4	38.5	10.0	2.6	0.4	18.9	11.0	7.6	5.2	3.04
Total dioxin TEQs	1.3E-04	1.9E-05	5.0E-06	1.3E-06	1.9E-07	2.7E-04	3.9E-05	1.0E-05	2.6E-06	3.7E-07	6.1E-06	5.4E-07	1.0E-07	1.9E-08	1.6E-09	1.3E-04	1.9E-05	5.0E-06	1.3E-06	1.9E-07	No highway runoff studies available				
Total DDT	2.7E-02	3.9E-03	1.0E-03	2.6E-04	3.7E-05	5.4E-03	7.7E-04	2.0E-04	5.2E-05	7.5E-06	8.1E-02	1.2E-02	3.0E-03	7.8E-04	1.1E-04	1.6E-01	2.3E-02	6.0E-03	1.6E-03	2.2E-04	No highway runoff studies available				
Triclopyr	0.81	0.12	3.0E-02	7.8E-03	1.1E-03	1.83	0.16	3.0E-02	5.6E-03	4.9E-04	1.1E-01	1.5E-02	4.0E-03	1.0E-03	1.5E-04	1.6	0.2	6.0E-02	1.6E-02	0.00	No highway runoff studies available				
Total 4-nonylphenol	8.1	1.2	0.3	7.8E-02	1.1E-02	107.3	15.4	4.0	1.0	0.1	1.8	0.2	3.0E-02	5.6E-03	4.9E-04	8.1	1.2	0.30	7.8E-02	1.1E-02	19.4	9.6	5.9	3.6	1.78
Oil and grease	21,594	6,740	3,000	1,335	417	26,367	11,010	6,000	3,270	1,365	2,684	385	100	26	3.7	11,790	2,750	1,000	364	85	7,375	3,663	2,252	1,384	687

Table 3. Comparison of estimated mean annual runoff estimates with observed data from USGS gauging stations.

USGS Gage Number	River/Stream Name	Average Gaged Flow (m^3/s)	Area (mi^2)	PRISM 1971 - 2000 Mean Annual Precipitation (inches)	VIC 1971 - 2000 Actual Evapotranspiration (inches)	Hydrologic Yield (PRISM Precipitation Minus VIC Actual Evapotranspiration) (inches)	Hydrologic Yield (PRISM Precipitation Minus VIC Actual Evapotranspiration) (m^3/s)	Percent Error ([Modeled-Observed]/ Observed)
12080010	Deschutes	11.1	155.2	52.1	25.7	26.4	8.5	-22.9%
12043300	Hoko	10.1	51.2	109.0	29.5	79.5	8.5	-15.7%
12150800	Snohomish	262.7	1537.5	99.8	24.1	75.7	242.9	-7.5%
12069550	Big Beef	1.0	13.8	61.0	29.0	32.0	0.9	-6.9%
12054000	Duckabush	11.9	66.2	101.6	19.7	81.9	11.3	-5.2%
12167000	Stillaguamish	52.5	261.6	116.5	24.7	91.8	50.1	-4.6%
12113000	Green[b]	36.7	398.5	68.3	24.8	43.6	36.2	-1.3%
12101500	Puyallup	90.9	949.6	69.7	23.1	46.6	92.4	1.6%
12089500+ 12089208	Nisqually[a]	50.7	517.9	73.0	24.1	48.9	52.9	4.3%
12200500	Skagit	461.3	3100.2	94.9	19.6	75.3	486.9	5.5%
12213100	Nooksack	109.5	787.0	95.2	21.4	73.8	121.2	10.7%
12120000	Mercer	0.6	12.2	43.4	14.4	29.0	0.7	14.2%
12119000	Cedar[b]	18.1	185.6	78.3	24.8	53.5	20.7	14.7%
12073500	Huge	0.3	6.5	54.0	27.1	27.0	0.4	16.7%
12045500	Elwha	42.9	268.6	115.0	19.5	95.4	53.5	24.5%
12061500	Skokomish[b]	37.1	227.7	124.7	25.9	98.8	46.9	26.6%
12125200	Sammamish	8.2	158.3	58.1	25.5	32.6	10.8	31.8%
12121600	Issaquah	3.4	56.8	65.5	26.5	39.0	4.6	35.9%
12201500	Samish	6.5	86.9	73.7	24.9	48.8	8.9	36.9%
12076800	Goldsborough	4.5	59.8	81.5	28.7	52.8	6.6	46.3%
12048000	Dungeness	11.1	155.9	69.1	18.3	50.8	16.5	49.3%
12052210	Big Quilcene[b]	3.9	49.5	78.0	19.2	58.9	6.1	57.6%
12091500	Chambers	2.8	104.0	42.3	19.9	22.4	4.9	76.3%
Area Weighted Mean:								**6.3%**
Root Mean Square Error:								**1.67 m3/s**
Mean:								**16.9%**
Median:								**14.2%**
Mininum:								**-22.9%**
Maximum:								**76.3%**

[a] Nisqually listed gaged flow is the sum of the average flows at USGS gages 12089500 (1991 to 2008) and 12089208 (1991 to 2007). This correction was made because approximately one third of the river's flow is routed to the Centralia canal which bypasses gage 12089500.

[b] These rivers have significant flow diversions not included in estimates of average flow.

Table 4. Area-normalized loading rates for Puget Sound and the 14 study areas.

	POE	Main Basin	Port Gardner	Elliott Bay	Commencement Bay	South Sound (east)	South Sound (west)	Hood Canal (south)	Hood Canal (north)	Sinclair/Dyes Inlet	Admiralty Inlet	Strait of Juan de Fuca	Strait of Georgia	Whidbey Basin	San Juan Islands	Puget Sound
Arsenic (kg/km^2/year)																
	5	5.49E+00	9.63E+00	6.36E+00	6.00E+00	4.90E+00	4.74E+00	8.52E+00	2.69E+00	4.29E+00	1.25E+00	7.26E+00	7.87E+00	9.71E+00	1.60E+00	**2.53E+01**
	25	2.25E+00	3.70E+00	2.53E+00	2.33E+00	1.93E+00	1.87E+00	3.26E+00	1.06E+00	1.77E+00	4.98E-01	2.76E+00	3.06E+00	3.71E+00	6.36E-01	**9.77E+00**
	50	1.21E+00	1.91E+00	1.34E+00	1.21E+00	1.02E+00	9.80E-01	1.67E+00	5.53E-01	9.61E-01	2.63E-01	1.41E+00	1.59E+00	1.90E+00	3.37E-01	**5.05E+00**
	75	6.56E-01	9.85E-01	7.11E-01	6.33E-01	5.35E-01	5.16E-01	8.56E-01	2.90E-01	5.23E-01	1.39E-01	7.24E-01	8.27E-01	9.75E-01	1.79E-01	**2.62E+00**
	95	2.74E-01	3.81E-01	2.88E-01	2.49E-01	2.14E-01	2.06E-01	3.28E-01	1.15E-01	2.20E-01	5.61E-02	2.77E-01	3.25E-01	3.74E-01	7.24E-02	**1.02E+00**
Cadmium (kg/km^2/year)																
	5	1.75E+00	1.98E+00	1.72E+00	1.36E+00	1.23E+00	1.18E+00	1.65E+00	6.45E-01	1.42E+00	3.26E-01	1.37E+00	1.76E+00	1.88E+00	4.29E-01	**5.40E+00**
	25	4.36E-01	2.52E-01	3.58E-01	2.19E-01	2.33E-01	2.20E-01	1.76E-01	1.14E-01	3.69E-01	6.53E-02	1.34E-01	2.73E-01	2.02E-01	8.95E-02	**7.61E-01**
	50	1.86E-01	7.89E-02	1.45E-01	7.90E-02	9.10E-02	8.53E-02	4.67E-02	4.27E-02	1.59E-01	2.61E-02	3.26E-02	9.82E-02	5.43E-02	3.65E-02	**2.56E-01**
	75	8.25E-02	2.98E-02	6.35E-02	3.25E-02	3.89E-02	3.63E-02	1.55E-02	1.78E-02	7.11E-02	1.13E-02	1.02E-02	4.09E-02	1.83E-02	1.60E-02	**1.01E-01**
	95	2.64E-02	8.78E-03	2.04E-02	1.01E-02	1.23E-02	1.15E-02	4.16E-03	5.44E-03	2.29E-02	3.62E-03	2.77E-03	1.30E-02	4.99E-03	5.15E-03	**3.08E-02**
Copper (kg/km^2/year)																
	5	1.25E+01	1.50E+01	1.34E+01	1.03E+01	9.20E+00	8.62E+00	1.24E+01	4.54E+00	9.89E+00	2.48E+00	1.06E+01	1.43E+01	1.45E+01	3.46E+00	**4.13E+01**
	25	4.56E+00	4.84E+00	4.72E+00	3.44E+00	3.12E+00	2.93E+00	3.96E+00	1.53E+00	3.66E+00	8.30E-01	3.35E+00	4.61E+00	4.58E+00	1.15E+00	**1.35E+01**
	50	2.29E+00	2.22E+00	2.31E+00	1.62E+00	1.49E+00	1.40E+00	1.79E+00	7.24E-01	1.85E+00	3.92E-01	1.51E+00	2.11E+00	2.07E+00	5.43E-01	**6.23E+00**
	75	1.15E+00	1.02E+00	1.14E+00	7.67E-01	7.13E-01	6.76E-01	8.14E-01	3.45E-01	9.43E-01	1.86E-01	6.88E-01	9.66E-01	9.34E-01	2.57E-01	**2.90E+00**
	95	4.39E-01	3.38E-01	4.21E-01	2.66E-01	2.52E-01	2.41E-01	2.64E-01	1.20E-01	3.65E-01	6.50E-02	2.24E-01	3.19E-01	3.00E-01	8.85E-02	**9.76E-01**
Lead (kg/km^2/year)																
	5	4.35E+01	3.08E+01	3.40E+01	2.40E+01	2.42E+01	2.38E+01	2.39E+01	1.32E+01	3.77E+01	6.45E+00	1.85E+01	2.61E+01	2.61E+01	7.83E+00	**8.71E+01**
	25	1.00E+01	5.85E+00	7.63E+00	4.94E+00	5.22E+00	5.12E+00	4.27E+00	2.77E+00	8.77E+00	1.42E+00	3.22E+00	5.31E+00	4.63E+00	1.75E+00	**1.71E+01**
	50	3.69E+00	1.90E+00	2.79E+00	1.70E+00	1.85E+00	1.81E+00	1.32E+00	9.53E-01	3.23E+00	5.08E-01	9.86E-01	1.84E+00	1.43E+00	6.40E-01	**5.74E+00**
	75	1.37E+00	6.39E-01	1.04E+00	6.02E-01	6.71E-01	6.52E-01	4.17E-01	3.34E-01	1.21E+00	1.86E-01	3.12E-01	6.68E-01	4.57E-01	2.40E-01	**1.98E+00**
	95	3.39E-01	1.40E-01	2.65E-01	1.41E-01	1.62E-01	1.56E-01	8.33E-02	7.56E-02	2.98E-01	4.59E-02	6.38E-02	1.67E-01	9.33E-02	6.15E-02	**4.54E-01**
Zinc (kg/km^2/year)																
	5	6.41E+01	4.07E+01	5.35E+01	3.38E+01	3.41E+01	3.28E+01	3.06E+01	1.74E+01	5.39E+01	8.89E+00	2.37E+01	3.68E+01	3.39E+01	1.16E+01	**1.19E+02**
	25	2.43E+01	1.38E+01	1.99E+01	1.20E+01	1.23E+01	1.19E+01	1.01E+01	6.25E+00	2.05E+01	3.17E+00	7.73E+00	1.24E+01	1.11E+01	4.11E+00	**4.09E+01**
	50	1.24E+01	6.57E+00	1.01E+01	5.87E+00	6.09E+00	5.90E+00	4.71E+00	3.08E+00	1.05E+01	1.56E+00	3.57E+00	5.84E+00	5.11E+00	2.01E+00	**1.97E+01**
	75	6.38E+00	3.14E+00	5.14E+00	2.90E+00	3.04E+00	2.95E+00	2.21E+00	1.53E+00	5.43E+00	7.72E-01	1.67E+00	2.78E+00	2.37E+00	9.93E-01	**9.54E+00**
	95	2.46E+00	1.10E+00	1.97E+00	1.06E+00	1.13E+00	1.10E+00	7.51E-01	5.62E-01	2.11E+00	2.84E-01	5.66E-01	9.68E-01	7.93E-01	3.63E-01	**3.41E+00**
Mercury (g/km^2/year)																
	5	1.17E+02	1.20E+02	1.35E+02	8.77E+01	7.53E+01	6.95E+01	9.93E+01	3.46E+01	8.79E+01	1.80E+01	8.57E+01	1.08E+02	1.15E+02	2.68E+01	**3.36E+02**
	25	2.72E+01	2.77E+01	3.11E+01	2.02E+01	1.72E+01	1.60E+01	2.31E+01	8.06E+00	2.06E+01	4.00E+00	1.99E+01	2.38E+01	2.65E+01	5.82E+00	**7.73E+01**
	50	9.89E+00	1.00E+01	1.12E+01	7.33E+00	6.20E+00	5.81E+00	8.41E+00	2.93E+00	7.50E+00	1.42E+00	7.24E+00	8.43E+00	9.60E+00	2.04E+00	**2.79E+01**
	75	3.60E+00	3.64E+00	4.08E+00	2.66E+00	2.24E+00	2.11E+00	3.06E+00	1.07E+00	2.74E+00	5.10E-01	2.63E+00	3.00E+00	3.48E+00	7.26E-01	**1.01E+01**
	95	8.43E-01	8.47E-01	9.50E-01	6.19E-01	5.21E-01	4.93E-01	7.15E-01	2.50E-01	6.46E-01	1.18E-01	6.16E-01	6.88E-01	8.09E-01	1.65E-01	**2.35E+00**
Total PCBs (g/km^2/year)																
	5	2.04E+02	1.57E+02	1.68E+02	1.20E+02	1.19E+02	1.15E+02	1.22E+02	6.35E+01	1.72E+02	3.19E+01	9.52E+01	1.40E+02	1.37E+02	4.08E+01	**4.42E+02**
	25	2.75E+01	1.68E+01	2.12E+01	1.40E+01	1.46E+01	1.41E+01	1.23E+01	7.74E+00	2.34E+01	3.99E+00	9.07E+00	1.57E+01	1.36E+01	5.12E+00	**4.89E+01**
	50	6.91E+00	3.67E+00	5.16E+00	3.23E+00	3.51E+00	3.39E+00	2.56E+00	1.85E+00	5.93E+00	9.65E-01	1.81E+00	3.53E+00	2.81E+00	1.24E+00	**1.10E+01**
	75	1.75E+00	8.26E-01	1.27E+00	7.67E-01	8.59E-01	8.27E-01	5.48E-01	4.49E-01	1.51E+00	2.37E-01	3.68E-01	8.19E-01	5.97E-01	3.05E-01	**2.52E+00**
	95	2.46E-01	1.01E-01	1.74E-01	1.00E-01	1.16E-01	1.12E-01	6.27E-02	6.03E-02	2.13E-01	3.23E-02	3.89E-02	1.04E-01	6.75E-02	4.16E-02	**3.18E-01**
Total PBDEs (mg/km^2/year)																
	5	2.68E+02	4.21E+02	2.98E+02	2.69E+02	2.32E+02	2.20E+02	3.61E+02	1.22E+02	2.13E+02	6.36E+01	3.07E+02	3.86E+02	4.18E+02	8.53E+01	**1.13E+03**
	25	5.05E+01	6.41E+01	4.98E+01	4.27E+01	3.84E+01	3.67E+01	5.39E+01	2.04E+01	4.13E+01	1.05E+01	4.48E+01	5.80E+01	6.18E+01	1.37E+01	**1.73E+02**
	50	1.63E+01	1.76E+01	1.48E+01	1.22E+01	1.13E+01	1.09E+01	1.45E+01	6.11E+00	1.36E+01	3.09E+00	1.18E+01	1.58E+01	1.65E+01	3.97E+00	**4.81E+01**
	75	5.42E+00	4.93E+00	4.52E+00	3.56E+00	3.43E+00	3.33E+00	3.97E+00	1.88E+00	4.60E+00	9.37E-01	3.15E+00	4.35E+00	4.46E+00	1.18E+00	**1.36E+01**
	95	1.15E+00	8.19E-01	8.64E-01	6.35E-01	6.48E-01	6.35E-01	6.33E-01	3.61E-01	9.92E-01	1.77E-01	4.75E-01	7.06E-01	6.95E-01	2.15E-01	**2.31E+00**

*Numbers in table should be interpreted with two significant figures.
POE: probability of exceedance
kg/km^2/year: kilograms per square kilometer per year
g/km^2/year: grams per square kilometer per year
mg/km^2/year: milligrams per square kilometer per year

Table 4 (continued). Area-nomalized loading rates for Puget Sound and the 14 study areas.

POE	Main Basin	Port Gardner	Elliott Bay	Commencement Bay	South Sound (east)	South Sound (west)	Hood Canal (south)	Hood Canal (north)	Sinclair/Dyes Inlet	Admiralty Inlet	Strait of Juan de Fuca	Strait of Georgia	Whidbey Basin	San Juan Islands	Puget Sound
Carcinogenic PAHs (kg/km^2/year)															
5	1.42E+02	3.55E+02	1.01E+02	1.99E+02	1.99E+02	1.10E+02	1.78E+02	2.27E+01	2.50E+01	2.19E+01	2.42E+02	3.20E+02	7.48E+02	5.53E+01	**1.49E+00**
25	3.20E+01	6.57E+01	2.20E+01	4.04E+01	4.21E+01	2.33E+01	3.02E+01	4.69E+00	5.73E+00	4.70E+00	4.03E+01	6.35E+01	1.27E+02	1.19E+01	**2.89E-01**
50	1.16E+01	2.12E+01	7.80E+00	1.38E+01	1.47E+01	8.18E+00	9.19E+00	1.62E+00	2.10E+00	1.65E+00	1.22E+01	2.14E+01	3.84E+01	4.17E+00	**9.57E-02**
75	4.23E+00	7.09E+00	2.81E+00	4.81E+00	5.26E+00	2.95E+00	2.91E+00	5.69E-01	7.79E-01	5.96E-01	3.95E+00	7.41E+00	1.21E+01	1.48E+00	**3.28E-02**
95	1.02E+00	1.57E+00	6.62E-01	1.11E+00	1.24E+00	7.14E-01	6.07E-01	1.32E-01	1.95E-01	1.43E-01	9.01E-01	1.70E+00	2.45E+00	3.43E-01	**7.44E-03**
Other High MW PAHs (kg/km^2/year)															
5	1.02E+02	2.72E+02	7.52E+01	1.50E+02	1.45E+02	8.00E+01	1.41E+02	1.65E+01	1.78E+01	1.57E+01	1.94E+02	2.38E+02	5.90E+02	3.99E+01	**6.17E+02**
25	2.29E+01	4.90E+01	1.63E+01	2.97E+01	3.02E+01	1.66E+01	2.32E+01	3.33E+00	4.03E+00	3.28E+00	3.14E+01	4.60E+01	9.77E+01	8.45E+00	**1.16E+02**
50	8.20E+00	1.55E+01	5.71E+00	9.97E+00	1.04E+01	5.73E+00	6.88E+00	1.13E+00	1.46E+00	1.14E+00	9.20E+00	1.52E+01	2.89E+01	2.94E+00	**3.78E+01**
75	2.96E+00	5.04E+00	2.03E+00	3.42E+00	3.66E+00	2.02E+00	2.11E+00	3.89E-01	5.32E-01	4.02E-01	2.81E+00	5.14E+00	8.85E+00	1.03E+00	**1.27E+01**
95	6.95E-01	1.06E+00	4.68E-01	7.62E-01	8.34E-01	4.66E-01	4.12E-01	8.74E-02	1.27E-01	9.27E-02	5.63E-01	1.13E+00	1.71E+00	2.35E-01	**2.75E+00**
Low MW PAHs (kg/km^2/year)															
5	1.98E+00	1.14E+00	1.90E+00	1.02E+00	1.01E+00	9.20E-01	8.17E-01	4.45E-01	1.56E+00	2.49E-01	6.56E-01	1.16E+00	9.47E-01	3.75E-01	**3.47E+00**
25	4.42E-01	2.04E-01	4.12E-01	2.03E-01	2.09E-01	1.90E-01	1.34E-01	8.91E-02	3.51E-01	5.18E-02	1.04E-01	2.23E-01	1.56E-01	7.96E-02	**6.54E-01**
50	1.57E-01	6.40E-02	1.45E-01	6.81E-02	7.17E-02	6.49E-02	3.93E-02	3.00E-02	1.26E-01	1.78E-02	2.97E-02	7.32E-02	4.61E-02	2.76E-02	**2.12E-01**
75	5.65E-02	2.07E-02	5.14E-02	2.33E-02	2.50E-02	2.26E-02	1.19E-02	1.03E-02	4.52E-02	6.22E-03	8.74E-03	2.46E-02	1.40E-02	9.71E-03	**7.05E-02**
95	1.31E-02	4.27E-03	1.17E-02	5.13E-03	5.63E-03	5.09E-03	2.26E-03	2.28E-03	1.06E-02	1.41E-03	1.62E-03	5.33E-03	2.66E-03	2.20E-03	**1.51E-02**
bis(2-Ethylhexyl)phthalate (kg/km^2/year)															
5	8.69E+01	3.90E+01	6.30E+01	3.74E+01	4.44E+01	4.17E+01	2.32E+01	2.19E+01	7.54E+01	1.33E+01	1.51E+01	4.95E+01	2.71E+01	1.82E+01	**1.24E+02**
25	1.23E+01	5.03E+00	8.76E+00	5.05E+00	6.14E+00	5.77E+00	2.81E+00	3.01E+00	1.07E+01	1.86E+00	1.73E+00	6.67E+00	3.29E+00	2.54E+00	**1.64E+01**
50	3.19E+00	1.24E+00	2.25E+00	1.28E+00	1.57E+00	1.48E+00	6.70E-01	7.67E-01	2.79E+00	4.78E-01	4.02E-01	1.69E+00	7.84E-01	6.51E-01	**4.09E+00**
75	8.33E-01	3.14E-01	5.83E-01	3.28E-01	4.07E-01	3.85E-01	1.65E-01	1.98E-01	7.36E-01	1.24E-01	9.99E-02	4.32E-01	1.92E-01	1.68E-01	**1.04E+00**
95	1.26E-01	4.64E-02	8.71E-02	4.86E-02	6.08E-02	5.93E-02	2.40E-02	2.93E-02	1.15E-01	1.88E-02	1.70E-02	6.40E-02	2.70E-02	2.44E-02	**1.55E-01**
Total Dioxin TEQs (mg/km^2/year)															
5	4.79E+01	2.50E+01	3.75E+01	2.26E+01	2.52E+01	2.36E+01	1.64E+01	1.23E+01	4.07E+01	7.27E+00	1.18E+01	2.91E+01	1.90E+01	1.00E+01	**7.70E+01**
25	6.69E+00	3.01E+00	5.09E+00	2.91E+00	3.37E+00	3.15E+00	1.83E+00	1.63E+00	5.72E+00	9.85E-01	1.23E+00	3.74E+00	2.13E+00	1.37E+00	**9.59E+00**
50	1.71E+00	7.14E-01	1.28E+00	7.17E-01	8.46E-01	7.89E-01	4.11E-01	4.06E-01	1.47E+00	2.48E-01	2.65E-01	9.16E-01	4.82E-01	3.46E-01	**2.32E+00**
75	4.41E-01	1.73E-01	3.27E-01	1.79E-01	2.14E-01	2.00E-01	9.51E-02	1.02E-01	3.78E-01	6.32E-02	5.87E-02	2.28E-01	1.12E-01	8.81E-02	**5.69E-01**
95	6.27E-02	2.31E-02	4.61E-02	2.47E-02	3.00E-02	2.80E-02	1.21E-02	1.43E-02	5.39E-02	8.89E-03	7.04E-03	3.14E-02	1.42E-02	1.24E-02	**7.73E-02**
Total DDT (g/km^2/year)															
5	5.29E+01	1.42E+02	7.87E+01	8.32E+01	6.47E+01	6.15E+01	1.28E+02	3.48E+01	3.83E+01	1.71E+01	1.11E+02	1.22E+02	1.48E+02	2.27E+01	**3.68E+02**
25	7.60E+00	2.04E+01	1.13E+01	1.20E+01	9.29E+00	8.84E+00	1.83E+01	5.00E+00	5.49E+00	2.46E+00	1.60E+01	1.75E+01	2.12E+01	3.26E+00	**5.28E+01**
50	1.97E+00	5.29E+00	2.93E+00	3.10E+00	2.41E+00	2.29E+00	4.76E+00	1.30E+00	1.43E+00	6.37E-01	4.15E+00	4.55E+00	5.51E+00	8.47E-01	**1.37E+01**
75	5.12E-01	1.37E+00	7.61E-01	8.05E-01	6.26E-01	5.95E-01	1.24E+00	3.36E-01	3.70E-01	1.65E-01	1.08E+00	1.18E+00	1.43E+00	2.20E-01	**3.56E+00**
95	7.35E-02	1.97E-01	1.09E-01	1.16E-01	8.99E-02	8.55E-02	1.77E-01	4.83E-02	5.31E-02	2.37E-02	1.54E-01	1.70E-01	2.05E-01	3.16E-02	**5.11E-01**
Triclopyr (g/km^2/year)															
5	3.36E+02	2.85E+02	3.12E+02	2.18E+02	2.22E+02	2.03E+02	2.11E+02	1.04E+02	2.77E+02	6.66E+01	1.72E+02	3.40E+02	2.55E+02	9.67E+01	**8.32E+02**
25	4.62E+01	4.07E+01	4.23E+01	3.06E+01	3.13E+01	2.87E+01	3.03E+01	1.48E+01	3.84E+01	9.50E+00	2.47E+01	4.86E+01	3.66E+01	1.37E+01	**1.18E+02**
50	1.17E+01	1.05E+01	1.07E+01	7.85E+00	8.05E+00	7.39E+00	7.86E+00	3.83E+00	9.80E+00	2.46E+00	6.40E+00	1.26E+01	9.50E+00	3.53E+00	**3.05E+01**
75	3.00E+00	2.73E+00	2.72E+00	2.02E+00	2.08E+00	1.91E+00	2.04E+00	9.92E-01	2.51E+00	6.37E-01	1.66E+00	3.26E+00	2.46E+00	9.11E-01	**7.87E+00**
95	4.25E-01	3.91E-01	3.83E-01	2.88E-01	2.96E-01	2.73E-01	2.93E-01	1.42E-01	3.56E-01	9.13E-02	2.38E-01	4.67E-01	3.54E-01	1.30E-01	**1.13E+00**
Nonylphenol (kg/km^2/year)															
5	5.61E+00	4.23E+00	5.83E+00	3.42E+00	3.13E+00	2.89E+00	3.31E+00	1.42E+00	4.37E+00	7.52E-01	2.79E+00	3.94E+00	3.81E+00	1.11E+00	**1.23E+01**
25	7.69E-01	4.45E-01	7.62E-01	4.00E-01	3.86E-01	3.59E-01	3.23E-01	1.66E-01	6.18E-01	9.35E-02	2.75E-01	4.42E-01	3.71E-01	1.39E-01	**1.36E+00**
50	2.03E-01	9.93E-02	1.94E-01	9.58E-02	9.63E-02	9.17E-02	6.79E-02	4.01E-02	1.70E-01	2.38E-02	6.08E-02	1.04E-01	7.66E-02	3.42E-02	**3.15E-01**
75	5.74E-02	2.47E-02	5.22E-02	2.50E-02	2.62E-02	2.65E-02	1.59E-02	1.07E-02	5.24E-02	6.82E-03	1.64E-02	2.69E-02	1.70E-02	8.81E-03	**8.07E-02**
95	1.17E-02	4.64E-03	9.60E-03	4.69E-03	5.28E-03	6.16E-03	2.86E-03	2.12E-03	1.29E-02	1.55E-03	4.16E-03	5.24E-03	2.60E-03	1.46E-03	**1.55E-02**
Oil and Grease (MT/km^2/year)															
5	8.24E+00	6.70E+00	6.85E+00	5.03E+00	4.94E+00	4.77E+00	5.28E+00	2.65E+00	6.97E+00	1.34E+00	4.15E+00	6.01E+00	5.92E+00	1.70E+00	**1.88E+01**
25	2.38E+00	1.31E+00	1.79E+00	1.14E+00	1.21E+00	1.18E+00	9.40E-01	6.44E-01	2.04E+00	3.28E-01	6.78E-01	1.21E+00	1.03E+00	4.15E-01	**3.89E+00**
50	1.04E+00	4.63E-01	7.59E-01	4.41E-01	4.91E-01	4.78E-01	3.07E-01	2.59E-01	8.99E-01	1.31E-01	2.04E-01	4.27E-01	3.25E-01	1.66E-01	**1.42E+00**
75	4.67E-01	1.75E-01	3.35E-01	1.82E-01	2.08E-01	2.02E-01	1.08E-01	1.08E-01	4.03E-01	5.47E-02	6.62E-02	1.60E-01	1.11E-01	6.89E-02	**5.56E-01**
95	1.51E-01	4.78E-02	1.09E-01	5.46E-02	6.34E-02	6.17E-02	2.70E-02	3.24E-02	1.30E-01	1.62E-02	1.51E-02	4.29E-02	2.65E-02	2.06E-02	**1.58E-01**

*Numbers in table should be interpreted with two significant figures.
POE: probability of exceedance
kg/km^2/year: kilograms per square kilometer per year
g/km^2/year: grams per square kilometer per year
mg/km^2/year: milligrams per square kilometer per year

Table 5. Summary of the interquartile range and median loadings (in metric tonnes/year) for oil and grease to the Puget Sound from the Phase 1 study, Phase 2 study, and the Phase 2 loading recalculation.

	Loading Based on 75 Percent POE Concentration	Loading Based on 50 Percent POE Concentration	Loading Based on 25 Percent POE Concentration
Phase 1 Study [a]	8,800	21,000	54,000
Phase 2 Study [b]	22,900	52,300	123,000
Phase 2 Loading Recalculation	5,960	15,200	41,700

[a] Source: Hart Crowser et al. (2007)
[b] Source: EnviroVision et al. (2008)

Table 6. Relative loadings for oil and grease to the Puget Sound from Phase 1 study, Phase 2 study, and the Phase 2 loading recalculation based on the 50 percent POE concentration.

	% of Total Loading for Land Use Category				
	Commercial / Industrial	Residential	Agricultural	Forest Field Other	Highways
Phase 1 Study [a]	28%	34%	15%	24%	NA [c]
Phase 2 Study [b]	10%	75%	6%	7%	1%
Phase 2 Loading Recalculation	6%	58%	5%	30%	1%

[a] Source: Hart Crowser et al. (2007)
[b] Source: EnviroVision et al. (2008)
[c] Loadings for highways were not calculated in the Phase 1 study (Hart Crowser et al. 2007).

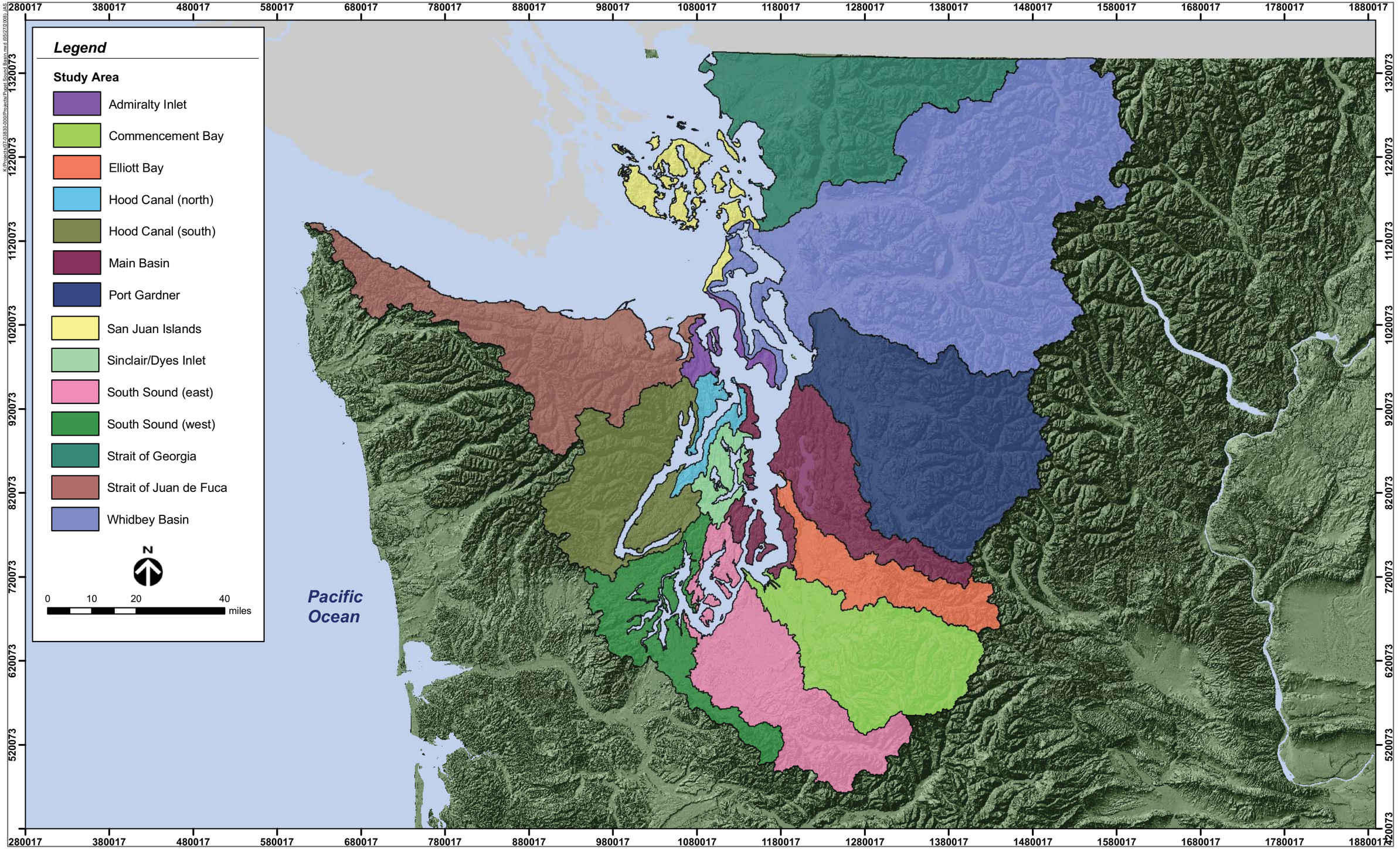


Figure 1. Study Areas in the Puget Sound Basin.

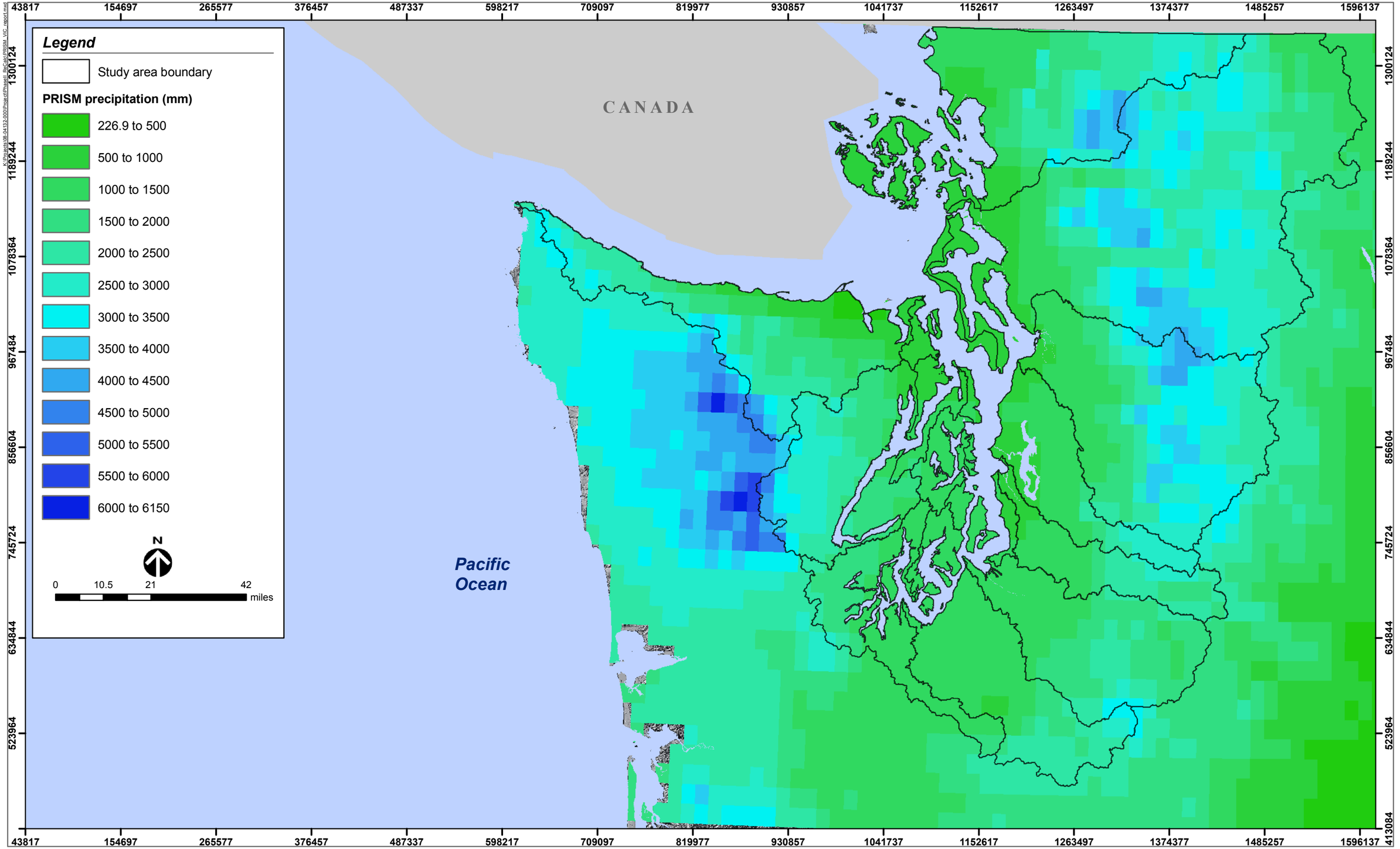


Figure 2. PRISM precipitation map.

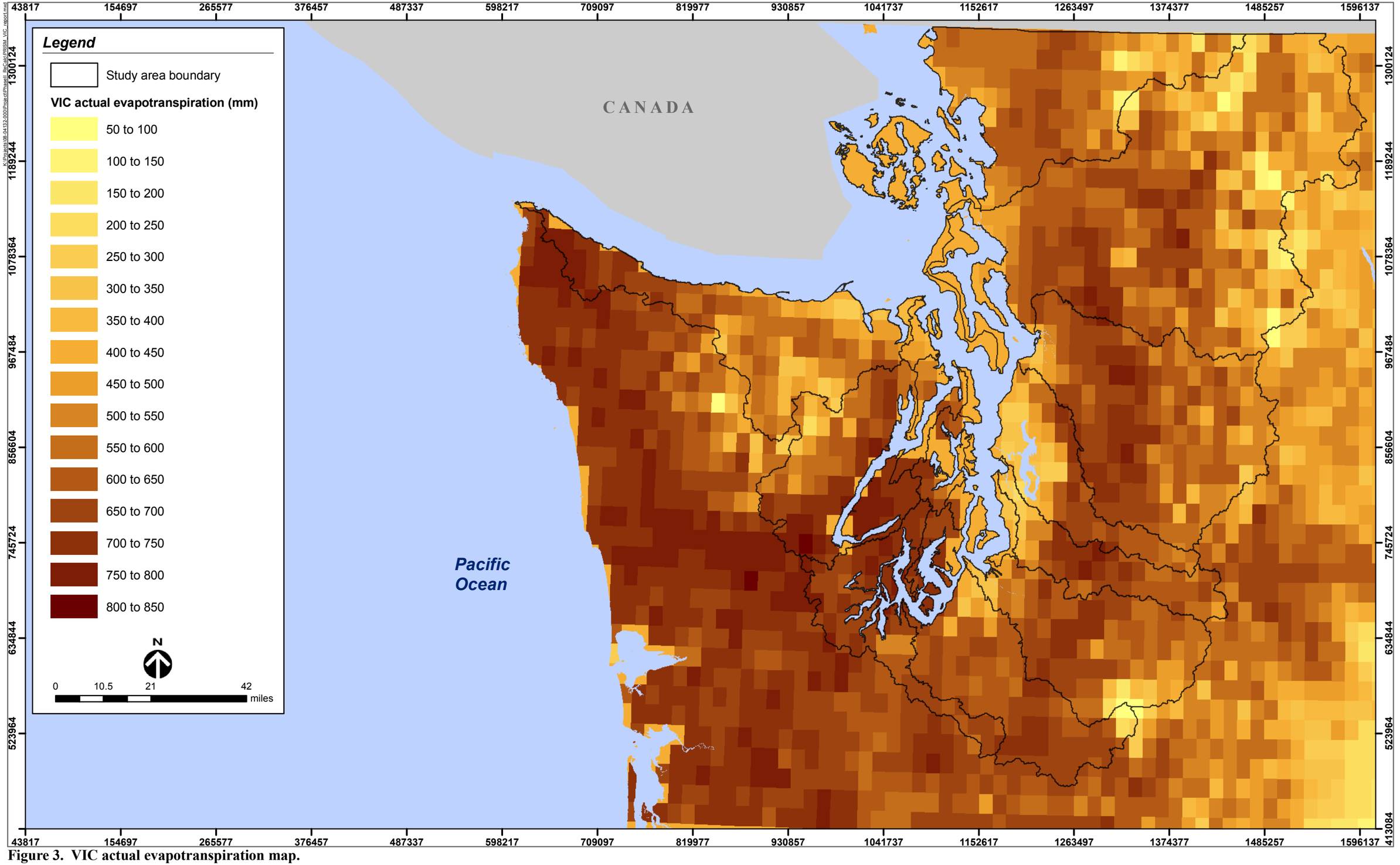


Figure 3. VIC actual evapotranspiration map.

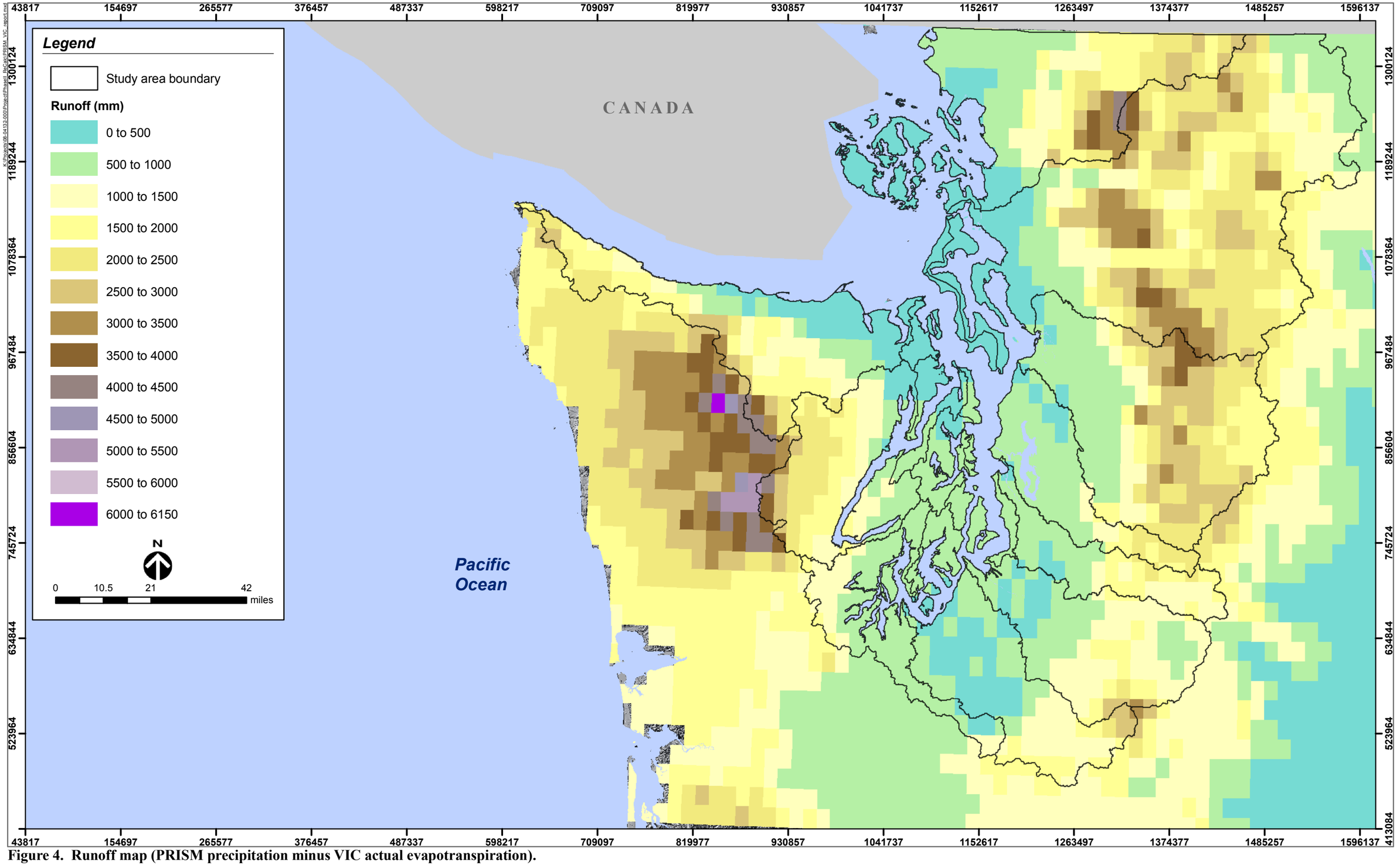


Figure 4. Runoff map (PRISM precipitation minus VIC actual evapotranspiration).

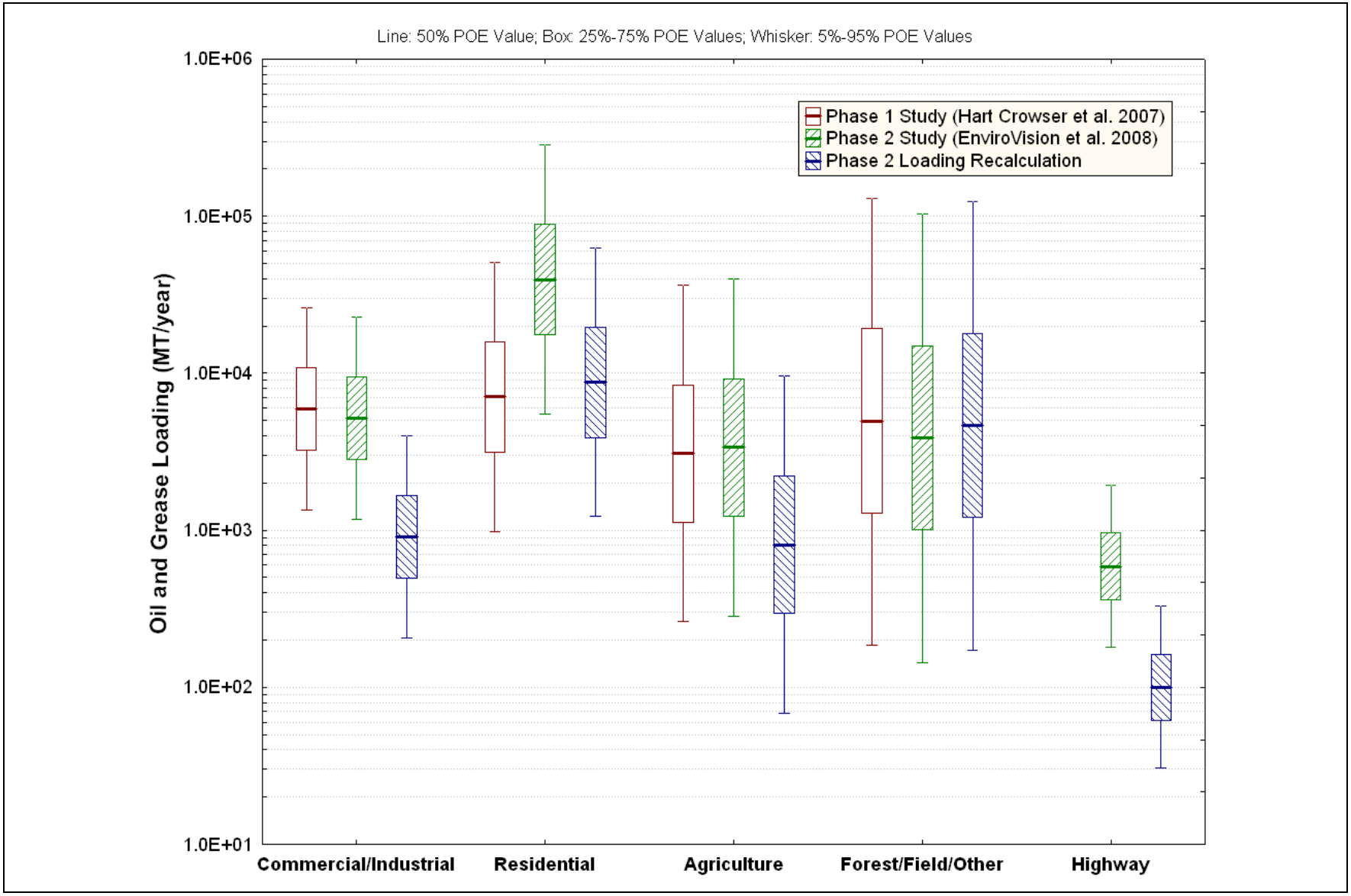
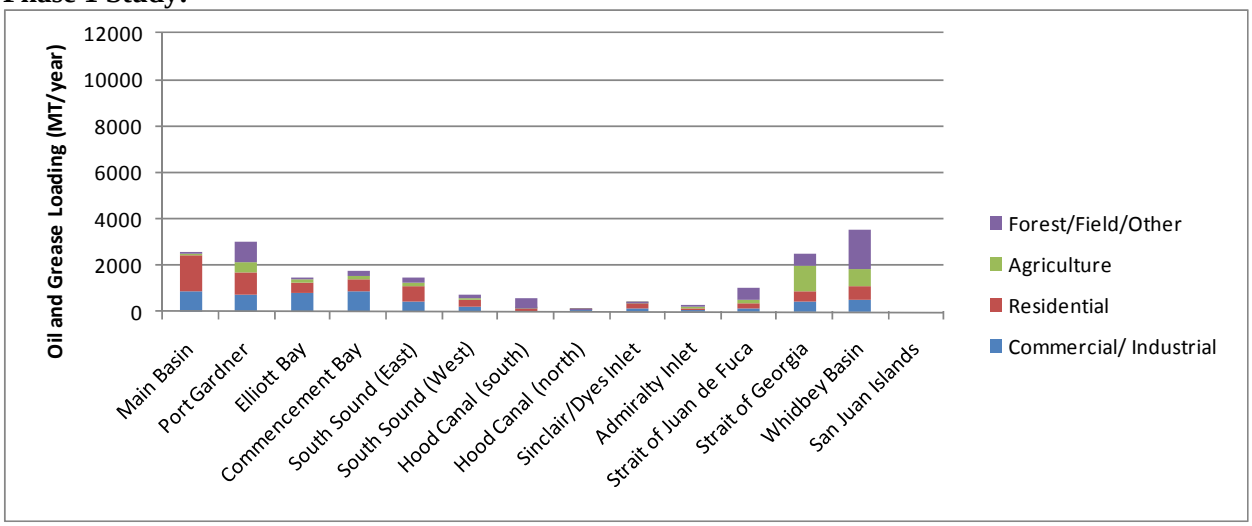
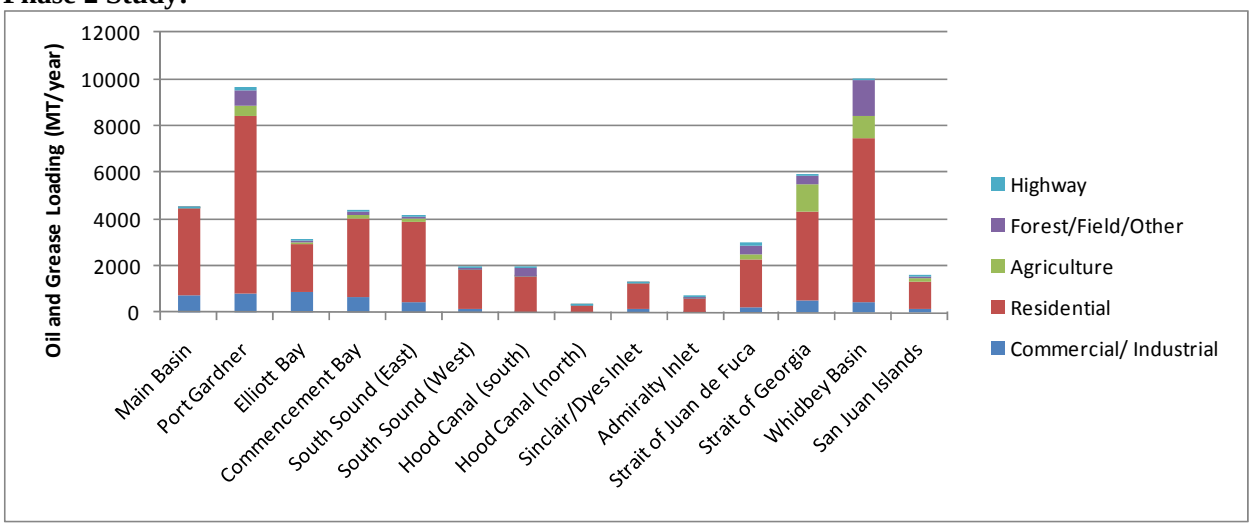


Figure 5. Box plots comparing absolute toxic loading rates for oil and grease for the entire Puget Sound from Phase 1 study, Phase 2 study, and the Phase 2 loading recalculation across all five land use categories.

Phase 1 Study:



Phase 2 Study:



Phase 2 Loading Recalculation:

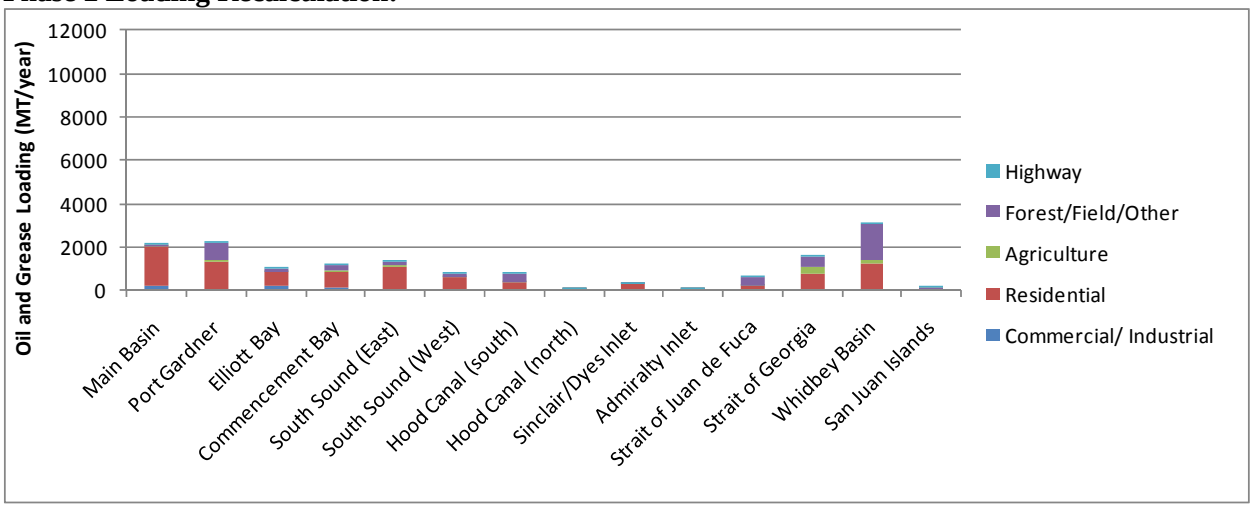


Figure 6. Bar charts comparing oil and grease loading rates by study area from the Phase 1 study, Phase 2 study, and the Phase 2 loading recalculation.

ATTACHMENT A

GIS Analyses Steps for Phase 2 Loading Recalculation

GIS Analyses Steps for Phase 2 Loading Recalculation

1. Convert VIC point data to a raster with a pixel resolution of 0.0625 degrees.

2. Generalize the detailed PRISM raster (pixel resolution of 0.00833 degrees) to a precipitation raster with 0.0625 degrees. This is accomplished by taking the average PRISM precipitation value within each VIC pixel.

3. Where the PRISM raster has coverage and the VIC raster does not (mainly in the Puget Sound islands), set the pixels to a value of 17 inches.

4. Using raster calculator, subtract the VIC raster from the Precip raster.

5. Assign negative values in runoff polygon file to zero (a negative value was present for only 1 pixel in the Strait of Juan de Fuca).

6. Convert runoff grid pixel size from 0.0625 degrees to 30 meters and run zonal statistics to calculate total runoff by study area (independent of land use).

7. Intersect the runoff polygon file with the land use shapefiles. Group the land use codes into the four land use categories used in Phase 1 and Phase 2 studies, as well as highways.

8. Calculate the land use average runoff estimates by study area using the following formula: SUM(Intersected Runoffs *Individual Polygon Areas)/SUM(Individual Polygon Areas), where Individual Polygon Areas include polygons of a given land use type and study area.

ATTACHMENT B

Re-calculated Loading Rates by Land Use for All of Puget Sound and Each of the 14 Study Areas

Table B1. Re-calculated loading rates for Puget Sound by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		
POE	Annual Loading	% of Total Loading	Annual Loading	% of Total Loading	Annual Loading	% of Total Loading	Annual Loading	% of Total Loading	Annual Loading	% of Total Loading	Total Loading
Arsenic (MT/year)											
5	2.25E+00	1%	2.37E+01	9%	4.53E+00	2%	2.40E+02	89%	2.06E-01	<1%	2.71E+02
25	1.04E+00	1%	1.04E+01	10%	2.08E+00	2%	9.11E+01	87%	1.26E-01	<1%	1.05E+02
50	6.04E-01	1%	5.85E+00	11%	1.22E+00	2%	4.64E+01	86%	8.95E-02	<1%	5.42E+01
75	3.48E-01	1%	3.30E+00	12%	7.09E-01	3%	2.36E+01	84%	6.37E-02	<1%	2.81E+01
95	1.66E-01	2%	1.45E+00	13%	3.26E-01	3%	8.96E+00	82%	3.90E-02	<1%	1.09E+01
Cadmium (MT/year)											
5	1.38E+00	2%	1.05E+01	18%	2.47E+00	4%	4.34E+01	75%	1.21E-01	<1%	5.79E+01
25	4.76E-01	6%	3.29E+00	40%	8.51E-01	10%	3.48E+00	43%	6.53E-02	1%	8.16E+00
50	2.27E-01	8%	1.46E+00	53%	4.05E-01	15%	6.03E-01	22%	4.26E-02	2%	2.74E+00
75	1.08E-01	10%	6.51E-01	60%	1.93E-01	18%	1.04E-01	10%	2.77E-02	3%	1.08E+00
95	3.71E-02	11%	2.03E-01	62%	6.63E-02	20%	8.38E-03	3%	1.50E-02	5%	3.30E-01
Copper (MT/year)											
5	1.66E+01	4%	6.07E+01	14%	2.92E+01	7%	3.34E+02	75%	2.04E+00	<1%	4.43E+02
25	6.93E+00	5%	2.30E+01	16%	9.10E+00	6%	1.04E+02	72%	1.20E+00	1%	1.44E+02
50	3.78E+00	6%	1.17E+01	18%	4.05E+00	6%	4.64E+01	69%	8.30E-01	1%	6.68E+01
75	2.06E+00	7%	5.96E+00	19%	1.80E+00	6%	2.07E+01	67%	5.74E-01	2%	3.11E+01
95	8.60E-01	8%	2.26E+00	22%	5.63E-01	5%	6.45E+00	62%	3.37E-01	3%	1.05E+01
Lead (MT/year)											
5	2.00E+01	2%	3.45E+02	37%	2.69E+01	3%	5.28E+02	57%	1.37E+01	1%	9.34E+02
25	6.56E+00	4%	8.05E+01	44%	8.80E+00	5%	8.36E+01	45%	4.44E+00	2%	1.84E+02
50	3.02E+00	5%	2.93E+01	48%	4.05E+00	7%	2.32E+01	38%	2.03E+00	3%	6.16E+01
75	1.39E+00	7%	1.06E+01	50%	1.87E+00	9%	6.44E+00	30%	9.26E-01	4%	2.13E+01
95	4.56E-01	9%	2.48E+00	51%	6.11E-01	13%	1.02E+00	21%	3.00E-01	6%	4.87E+00
Zinc (MT/year)											
5	7.97E+01	6%	4.55E+02	36%	5.83E+01	5%	6.68E+02	52%	1.27E+01	1%	1.27E+03
25	3.33E+01	8%	1.72E+02	39%	1.82E+01	4%	2.09E+02	47%	6.74E+00	2%	4.39E+02
50	1.81E+01	9%	8.78E+01	42%	8.10E+00	4%	9.28E+01	44%	4.33E+00	2%	2.11E+02
75	9.88E+00	10%	4.47E+01	44%	3.61E+00	4%	4.13E+01	40%	2.79E+00	3%	1.02E+02
95	4.13E+00	11%	1.70E+01	46%	1.13E+00	3%	1.29E+01	35%	1.48E+00	4%	3.66E+01
Mercury (kg/year)											
5	3.56E+02	10%	3.45E+02	10%	1.52E+02	4%	2.74E+03	76%	1.71E+01	<1%	3.61E+03
25	8.31E+01	10%	8.05E+01	10%	2.19E+01	3%	6.38E+02	77%	5.22E+00	1%	8.29E+02
50	3.02E+01	10%	2.93E+01	10%	5.67E+00	2%	2.32E+02	77%	2.28E+00	1%	2.99E+02
75	1.10E+01	10%	1.06E+01	10%	1.47E+00	1%	8.44E+01	78%	9.99E-01	1%	1.08E+02
95	2.56E+00	10%	2.48E+00	10%	2.11E-01	1%	1.97E+01	78%	3.04E-01	1%	2.52E+01
Total PCBs (kg/year)											
5	1.22E+02	3%	1.57E+03	33%	2.17E+02	5%	2.83E+03	60%	No studies measuring total PCBs in highway runoff		4.74E+03
25	1.75E+01	3%	2.26E+02	43%	3.12E+01	6%	2.51E+02	48%			5.25E+02
50	4.53E+00	4%	5.85E+01	50%	8.10E+00	7%	4.64E+01	39%			1.18E+02
75	1.18E+00	4%	1.52E+01	56%	2.10E+00	8%	8.60E+00	32%			2.71E+01
95	1.69E-01	5%	2.18E+00	64%	3.02E-01	9%	7.60E-01	22%			3.41E+00
Total PBDEs (g/year)											
5	8.11E+01	1%	1.38E+03	11%	6.52E+02	5%	9.96E+03	82%	No studies measuring total PBDEs in highway runoff		1.21E+04
25	1.16E+01	1%	3.22E+02	17%	9.37E+01	5%	1.43E+03	77%			1.86E+03
50	3.02E+00	1%	1.17E+02	23%	2.43E+01	5%	3.71E+02	72%			5.16E+02
75	7.84E-01	1%	4.26E+01	29%	6.31E+00	4%	9.63E+01	66%			1.46E+02
95	1.13E-01	<1%	9.93E+00	40%	9.06E-01	4%	1.38E+01	56%			2.48E+01
Carcinogenic PAHs (MT/year)											
5	1.78E+00	11%	5.18E+00	32%	1.43E+00	9%	7.47E+00	47%	1.48E-01	1%	1.60E+01
25	4.16E-01	13%	1.21E+00	39%	3.34E-01	11%	1.07E+00	35%	6.49E-02	2%	3.10E+00
50	1.51E-01	15%	4.39E-01	43%	1.22E-01	12%	2.78E-01	27%	3.66E-02	4%	1.03E+00
75	5.49E-02	16%	1.60E-01	45%	4.42E-02	13%	7.23E-02	21%	2.07E-02	6%	3.52E-01
95	1.28E-02	16%	3.72E-02	47%	1.03E-02	13%	1.04E-02	13%	9.08E-03	11%	7.98E-02

Table B1 (continued). Re-calculated loading rates for Puget Sound by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		
POE	Annual Loading	% of Total Loading	Annual Loading	% of Total Loading	Annual Loading	% of Total Loading	Annual Loading	% of Total Loading	Annual Loading	% of Total Loading	Total Loading
Other High MW PAHs (MT/year)											
5	1.43E+00	12%	3.45E+00	28%	9.55E-01	8%	6.23E+00	51%	9.73E-02	1%	1.22E+01
25	3.32E-01	15%	8.05E-01	35%	2.23E-01	10%	8.94E-01	39%	3.66E-02	2%	2.29E+00
50	1.21E-01	16%	2.93E-01	39%	8.10E-02	11%	2.32E-01	31%	1.85E-02	2%	7.45E-01
75	4.39E-02	18%	1.06E-01	43%	2.95E-02	12%	6.02E-02	24%	9.39E-03	4%	2.49E-01
95	1.03E-02	19%	2.48E-02	46%	6.87E-03	13%	8.65E-03	16%	3.53E-03	7%	5.41E-02
Low MW PAHs (MT/year)											
5	5.34E+00	14%	1.04E+01	28%	2.87E+00	8%	1.87E+01	50%	8.65E-03	<1%	3.73E+01
25	1.25E+00	18%	2.42E+00	34%	6.69E-01	10%	2.68E+00	38%	5.84E-03	<1%	7.02E+00
50	4.53E-01	20%	8.78E-01	39%	2.43E-01	11%	6.96E-01	31%	4.44E-03	<1%	2.28E+00
75	1.65E-01	22%	3.19E-01	42%	8.84E-02	12%	1.81E-01	24%	3.38E-03	<1%	7.56E-01
95	3.84E-02	24%	7.45E-02	46%	2.06E-02	13%	2.59E-02	16%	2.28E-03	1%	1.62E-01
bis(2-Ethylhexyl)phthalate (MT/year)											
5	4.05E+01	3%	7.86E+02	59%	2.17E+02	16%	2.83E+02	21%	8.39E-01	<1%	1.33E+03
25	5.82E+00	3%	1.13E+02	64%	3.12E+01	18%	2.51E+01	14%	4.90E-01	<1%	1.75E+02
50	1.51E+00	3%	2.93E+01	67%	8.10E+00	18%	4.64E+00	11%	3.37E-01	1%	4.39E+01
75	3.92E-01	4%	7.60E+00	68%	2.10E+00	19%	8.60E-01	8%	2.32E-01	2%	1.12E+01
95	5.63E-02	3%	1.09E+00	66%	3.02E-01	18%	7.60E-02	5%	1.35E-01	8%	1.66E+00
Total Dioxin TEQs (g/year)											
5	4.05E+01	5%	3.93E+02	48%	1.09E+02	13%	2.83E+02	34%	No studies measuring total dioxin TEQs in highway runoff		8.25E+02
25	5.82E+00	6%	5.64E+01	55%	1.56E+01	15%	2.51E+01	24%			1.03E+02
50	1.51E+00	6%	1.46E+01	59%	4.05E+00	16%	4.64E+00	19%			2.48E+01
75	3.92E-01	6%	3.80E+00	62%	1.05E+00	17%	8.60E-01	14%			6.10E+00
95	5.63E-02	7%	5.45E-01	66%	1.51E-01	18%	7.60E-02	9%			8.29E-01
Total DDT (kg/year)											
5	8.11E-01	<1%	7.86E+01	2%	1.30E+02	3%	3.74E+03	95%	No studies measuring total DDT in highway runoff		3.95E+03
25	1.16E-01	<1%	1.13E+01	2%	1.87E+01	3%	5.36E+02	95%			5.67E+02
50	3.02E-02	<1%	2.93E+00	2%	4.86E+00	3%	1.39E+02	95%			1.47E+02
75	7.84E-03	<1%	7.60E-01	2%	1.26E+00	3%	3.61E+01	95%			3.82E+01
95	1.13E-03	<1%	1.09E-01	2%	1.81E-01	3%	5.19E+00	95%			5.48E+00
Triclopyr (MT/year)											
5	2.77E-01	3%	2.36E+00	26%	1.30E+00	15%	4.98E+00	56%	No studies measuring triclopyr in highway runoff		8.92E+00
25	2.45E-02	2%	3.38E-01	27%	1.87E-01	15%	7.15E-01	57%			1.27E+00
50	4.53E-03	1%	8.78E-02	27%	4.86E-02	15%	1.86E-01	57%			3.27E-01
75	8.40E-04	1%	2.28E-02	27%	1.26E-02	15%	4.82E-02	57%			8.44E-02
95	7.42E-05	1%	3.27E-03	27%	1.81E-03	15%	6.92E-03	57%			1.21E-02
Nonylphenol (MT/year)											
5	1.62E+01	12%	2.36E+01	18%	6.52E+00	5%	8.50E+01	64%	8.60E-01	1%	1.32E+02
25	2.33E+00	16%	3.38E+00	23%	9.37E-01	6%	7.52E+00	52%	4.26E-01	3%	1.46E+01
50	6.04E-01	18%	8.78E-01	26%	2.43E-01	7%	1.39E+00	41%	2.61E-01	8%	3.38E+00
75	1.57E-01	18%	2.28E-01	26%	6.31E-02	7%	2.58E-01	30%	1.60E-01	18%	8.66E-01
95	2.25E-02	14%	3.27E-02	20%	9.06E-03	5%	2.28E-02	14%	7.93E-02	48%	1.66E-01
Oil and Grease (MT/year)											
5	3.98E+03	2%	6.32E+04	31%	9.55E+03	5%	1.25E+05	62%	3.28E+02	<1%	2.02E+05
25	1.66E+03	4%	1.97E+04	47%	2.23E+03	5%	1.79E+04	43%	1.63E+02	<1%	4.17E+04
50	9.07E+02	6%	8.78E+03	58%	8.10E+02	5%	4.64E+03	30%	1.00E+02	1%	1.52E+04
75	4.94E+02	8%	3.91E+03	66%	2.95E+02	5%	1.20E+03	20%	6.15E+01	1%	5.96E+03
95	2.06E+02	12%	1.22E+03	72%	6.87E+01	4%	1.73E+02	10%	3.05E+01	2%	1.70E+03

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B2. Re-calculated loading rates for Main Basin by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study Area Loading
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	
Arsenic (MT/year)											
5	6.32E-01	6%	4.73E+00	42%	8.07E-02	1%	5.84E+00	52%	2.74E-02	<1%	1.13E+01
25	2.91E-01	6%	2.07E+00	45%	3.72E-02	1%	2.21E+00	48%	1.68E-02	<1%	4.63E+00
50	1.69E-01	7%	1.17E+00	47%	2.17E-02	1%	1.13E+00	45%	1.19E-02	<1%	2.50E+00
75	9.74E-02	7%	6.58E-01	49%	1.26E-02	1%	5.74E-01	42%	8.47E-03	1%	1.35E+00
95	4.66E-02	8%	2.89E-01	51%	5.81E-03	1%	2.18E-01	39%	5.19E-03	1%	5.64E-01
Cadmium (MT/year)											
5	3.88E-01	11%	2.10E+00	58%	4.41E-02	1%	1.05E+00	29%	1.61E-02	<1%	3.61E+00
25	1.33E-01	15%	6.56E-01	73%	1.52E-02	2%	8.46E-02	9%	8.69E-03	1%	8.98E-01
50	6.36E-02	17%	2.92E-01	76%	7.22E-03	2%	1.47E-02	4%	5.66E-03	1%	3.83E-01
75	3.03E-02	18%	1.30E-01	77%	3.44E-03	2%	2.54E-03	1%	3.69E-03	2%	1.70E-01
95	1.04E-02	19%	4.06E-02	75%	1.18E-03	2%	2.04E-04	<1%	1.99E-03	4%	5.44E-02
Copper (MT/year)											
5	4.65E+00	18%	1.21E+01	47%	5.20E-01	2%	8.11E+00	32%	2.72E-01	1%	2.57E+01
25	1.94E+00	21%	4.59E+00	49%	1.62E-01	2%	2.53E+00	27%	1.60E-01	2%	9.38E+00
50	1.06E+00	23%	2.34E+00	50%	7.22E-02	2%	1.13E+00	24%	1.10E-01	2%	4.71E+00
75	5.77E-01	24%	1.19E+00	50%	3.21E-02	1%	5.02E-01	21%	7.64E-02	3%	2.38E+00
95	2.41E-01	27%	4.51E-01	50%	1.00E-02	1%	1.57E-01	17%	4.49E-02	5%	9.04E-01
Lead (MT/year)											
5	5.62E+00	6%	6.89E+01	77%	4.79E-01	1%	1.28E+01	14%	1.83E+00	2%	8.96E+01
25	1.84E+00	9%	1.61E+01	78%	1.57E-01	1%	2.03E+00	10%	5.91E-01	3%	2.07E+01
50	8.47E-01	11%	5.84E+00	77%	7.22E-02	1%	5.64E-01	7%	2.70E-01	4%	7.59E+00
75	3.90E-01	14%	2.12E+00	75%	3.32E-02	1%	1.56E-01	6%	1.23E-01	4%	2.83E+00
95	1.28E-01	18%	4.95E-01	71%	1.09E-02	2%	2.48E-02	4%	3.99E-02	6%	6.99E-01
Zinc (MT/year)											
5	2.23E+01	17%	9.08E+01	69%	1.04E+00	1%	1.62E+01	12%	1.69E+00	1%	1.32E+02
25	9.33E+00	19%	3.44E+01	69%	3.24E-01	1%	5.06E+00	10%	8.97E-01	2%	5.00E+01
50	5.08E+00	20%	1.75E+01	68%	1.44E-01	1%	2.25E+00	9%	5.77E-01	2%	2.56E+01
75	2.77E+00	21%	8.93E+00	68%	6.43E-02	<1%	1.00E+00	8%	3.71E-01	3%	1.31E+01
95	1.16E+00	23%	3.38E+00	67%	2.01E-02	<1%	3.13E-01	6%	1.97E-01	4%	5.07E+00
Mercury (kg/year)											
5	9.99E+01	42%	6.89E+01	29%	2.71E+00	1%	6.64E+01	28%	2.28E+00	1%	2.40E+02
25	2.33E+01	42%	1.61E+01	29%	3.89E-01	1%	1.55E+01	28%	6.95E-01	1%	5.60E+01
50	8.47E+00	42%	5.84E+00	29%	1.01E-01	<1%	5.64E+00	28%	3.04E-01	1%	2.04E+01
75	3.08E+00	42%	2.12E+00	29%	2.62E-02	<1%	2.05E+00	28%	1.33E-01	2%	7.41E+00
95	7.19E-01	41%	4.95E-01	29%	3.77E-03	<1%	4.78E-01	28%	4.05E-02	2%	1.74E+00
Total PCBs (kg/year)											
5	3.41E+01	8%	3.13E+02	75%	3.87E+00	1%	6.88E+01	16%	No studies measuring total PCBs in highway runoff		4.20E+02
25	4.90E+00	9%	4.50E+01	80%	5.56E-01	1%	6.09E+00	11%			5.66E+01
50	1.27E+00	9%	1.17E+01	82%	1.44E-01	1%	1.13E+00	8%			1.42E+01
75	3.30E-01	9%	3.03E+00	84%	3.75E-02	1%	2.09E-01	6%			3.61E+00
95	4.74E-02	9%	4.35E-01	86%	5.38E-03	1%	1.85E-02	4%			5.06E-01
Total PBDEs (g/year)											
5	2.27E+01	4%	2.75E+02	50%	1.16E+01	2%	2.42E+02	44%	No studies measuring total PBDEs in highway runoff		5.52E+02
25	3.27E+00	3%	6.43E+01	62%	1.67E+00	2%	3.47E+01	33%			1.04E+02
50	8.47E-01	3%	2.34E+01	69%	4.33E-01	1%	9.02E+00	27%			3.37E+01
75	2.20E-01	2%	8.49E+00	76%	1.12E-01	1%	2.34E+00	21%			1.12E+01
95	3.16E-02	1%	1.98E+00	84%	1.61E-02	1%	3.36E-01	14%			2.37E+00
Carcinogenic PAHs (MT/year)											
5	5.00E-01	28%	1.03E+00	59%	2.55E-02	1%	1.81E-01	10%	1.97E-02	1%	1.76E+00
25	1.17E-01	29%	2.41E-01	61%	5.96E-03	1%	2.61E-02	7%	8.64E-03	2%	3.98E-01
50	4.24E-02	29%	8.76E-02	61%	2.17E-03	2%	6.76E-03	5%	4.88E-03	3%	1.44E-01
75	1.54E-02	29%	3.19E-02	61%	7.87E-04	1%	1.75E-03	3%	2.75E-03	5%	5.26E-02
95	3.59E-03	28%	7.43E-03	59%	1.84E-04	1%	2.52E-04	2%	1.21E-03	10%	1.27E-02

Table B2 (continued). Re-calculated loading rates for Main Basin by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Other High MW PAHs (MT/year)											
5	4.00E-01	31%	6.89E-01	54%	1.70E-02	1%	1.51E-01	12%	1.30E-02	1%	1.27E+00
25	9.32E-02	33%	1.61E-01	56%	3.97E-03	1%	2.17E-02	8%	4.87E-03	2%	2.84E-01
50	3.39E-02	33%	5.84E-02	57%	1.44E-03	1%	5.64E-03	6%	2.47E-03	2%	1.02E-01
75	1.23E-02	33%	2.12E-02	58%	5.25E-04	1%	1.46E-03	4%	1.25E-03	3%	3.68E-02
95	2.87E-03	33%	4.95E-03	57%	1.22E-04	1%	2.10E-04	2%	4.70E-04	5%	8.63E-03
Low MW PAHs (MT/year)											
5	1.50E+00	37%	2.07E+00	51%	5.11E-02	1%	4.54E-01	11%	1.15E-03	<1%	4.07E+00
25	3.50E-01	38%	4.82E-01	53%	1.19E-02	1%	6.52E-02	7%	7.77E-04	<1%	9.09E-01
50	1.27E-01	39%	1.75E-01	54%	4.33E-03	1%	1.69E-02	5%	5.91E-04	<1%	3.24E-01
75	4.62E-02	40%	6.37E-02	55%	1.57E-03	1%	4.39E-03	4%	4.50E-04	<1%	1.16E-01
95	1.08E-02	40%	1.49E-02	55%	3.67E-04	1%	6.30E-04	2%	3.04E-04	1%	2.69E-02
bis(2-Ethylhexyl)phthalate (MT/year)											
5	1.14E+01	6%	1.57E+02	88%	3.87E+00	2%	6.88E+00	4%	1.12E-01	<1%	1.79E+02
25	1.63E+00	6%	2.25E+01	89%	5.56E-01	2%	6.09E-01	2%	6.52E-02	<1%	2.54E+01
50	4.24E-01	6%	5.84E+00	89%	1.44E-01	2%	1.13E-01	2%	4.48E-02	1%	6.57E+00
75	1.10E-01	6%	1.52E+00	88%	3.75E-02	2%	2.09E-02	1%	3.08E-02	2%	1.71E+00
95	1.58E-02	6%	2.18E-01	84%	5.38E-03	2%	1.85E-03	1%	1.80E-02	7%	2.59E-01
Total Dioxin TEQs (g/year)											
5	1.14E+01	12%	7.84E+01	80%	1.94E+00	2%	6.88E+00	7%	No studies measuring total dioxin TEQs in highway runoff		9.86E+01
25	1.63E+00	12%	1.13E+01	82%	2.78E-01	2%	6.09E-01	4%			1.38E+01
50	4.24E-01	12%	2.92E+00	83%	7.22E-02	2%	1.13E-01	3%			3.53E+00
75	1.10E-01	12%	7.58E-01	84%	1.87E-02	2%	2.09E-02	2%			9.07E-01
95	1.58E-02	12%	1.09E-01	84%	2.69E-03	2%	1.85E-03	1%			1.29E-01
Total DDT (kg/year)											
5	2.27E-01	<1%	1.57E+01	14%	2.32E+00	2%	9.07E+01	83%	No studies measuring total DDT in highway runoff		1.09E+02
25	3.27E-02	<1%	2.25E+00	14%	3.34E-01	2%	1.30E+01	83%			1.56E+01
50	8.47E-03	<1%	5.84E-01	14%	8.66E-02	2%	3.38E+00	83%			4.06E+00
75	2.20E-03	<1%	1.52E-01	14%	2.25E-02	2%	8.77E-01	83%			1.05E+00
95	3.16E-04	<1%	2.18E-02	14%	3.23E-03	2%	1.26E-01	83%			1.51E-01
Triclopyr (MT/year)											
5	7.76E-02	11%	4.70E-01	68%	2.32E-02	3%	1.21E-01	17%	No studies measuring triclopyr in highway runoff		6.92E-01
25	6.86E-03	7%	6.75E-02	71%	3.34E-03	4%	1.74E-02	18%			9.51E-02
50	1.27E-03	5%	1.75E-02	73%	8.66E-04	4%	4.51E-03	19%			2.42E-02
75	2.35E-04	4%	4.55E-03	74%	2.25E-04	4%	1.17E-03	19%			6.18E-03
95	2.08E-05	2%	6.53E-04	75%	3.23E-05	4%	1.68E-04	19%			8.74E-04
Nonylphenol (MT/year)											
5	4.55E+00	39%	4.70E+00	41%	1.16E-01	1%	2.07E+00	18%	1.14E-01	1%	1.15E+01
25	6.53E-01	41%	6.75E-01	43%	1.67E-02	1%	1.83E-01	12%	5.67E-02	4%	1.58E+00
50	1.69E-01	41%	1.75E-01	42%	4.33E-03	1%	3.38E-02	8%	3.47E-02	8%	4.18E-01
75	4.40E-02	37%	4.55E-02	38%	1.12E-03	1%	6.26E-03	5%	2.13E-02	18%	1.18E-01
95	6.32E-03	26%	6.53E-03	27%	1.61E-04	1%	5.54E-04	2%	1.05E-02	44%	2.41E-02
Oil and Grease (MT/year)											
5	1.12E+03	7%	1.26E+04	74%	1.70E+02	1%	3.02E+03	18%	4.36E+01	<1%	1.70E+04
25	4.66E+02	10%	3.94E+03	80%	3.97E+01	1%	4.34E+02	9%	2.17E+01	<1%	4.90E+03
50	2.54E+02	12%	1.75E+03	82%	1.44E+01	1%	1.13E+02	5%	1.33E+01	1%	2.15E+03
75	1.39E+02	14%	7.80E+02	81%	5.25E+00	1%	2.92E+01	3%	8.19E+00	1%	9.61E+02
95	5.78E+01	19%	2.43E+02	78%	1.22E+00	<1%	4.20E+00	1%	4.07E+00	1%	3.11E+02

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B3. Re-calculated loading rates for Port Gardner by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	1.70E-01	<1%	3.30E+00	7%	4.86E-01	1%	4.18E+01	91%	2.83E-02	<1%	4.58E+01
25	7.84E-02	<1%	1.45E+00	8%	2.24E-01	1%	1.58E+01	90%	1.73E-02	<1%	1.76E+01
50	4.57E-02	1%	8.16E-01	9%	1.30E-01	1%	8.07E+00	89%	1.23E-02	<1%	9.08E+00
75	2.63E-02	1%	4.60E-01	10%	7.60E-02	2%	4.11E+00	88%	8.74E-03	<1%	4.68E+00
95	1.26E-02	1%	2.02E-01	11%	3.50E-02	2%	1.56E+00	86%	5.35E-03	<1%	1.81E+00
Cadmium (MT/year)											
5	1.05E-01	1%	1.47E+00	16%	2.65E-01	3%	7.56E+00	80%	1.66E-02	<1%	9.41E+00
25	3.60E-02	3%	4.58E-01	38%	9.12E-02	8%	6.06E-01	50%	8.97E-03	1%	1.20E+00
50	1.71E-02	5%	2.04E-01	54%	4.34E-02	12%	1.05E-01	28%	5.84E-03	2%	3.75E-01
75	8.16E-03	6%	9.08E-02	64%	2.07E-02	15%	1.82E-02	13%	3.81E-03	3%	1.42E-01
95	2.81E-03	7%	2.83E-02	68%	7.11E-03	17%	1.46E-03	3%	2.06E-03	5%	4.18E-02
Copper (MT/year)											
5	1.26E+00	2%	8.45E+00	12%	3.13E+00	4%	5.81E+01	82%	2.81E-01	<1%	7.12E+01
25	5.24E-01	2%	3.20E+00	14%	9.76E-01	4%	1.81E+01	79%	1.65E-01	1%	2.30E+01
50	2.86E-01	3%	1.63E+00	15%	4.34E-01	4%	8.07E+00	77%	1.14E-01	1%	1.05E+01
75	1.56E-01	3%	8.31E-01	17%	1.93E-01	4%	3.59E+00	74%	7.88E-02	2%	4.85E+00
95	6.50E-02	4%	3.15E-01	20%	6.03E-02	4%	1.12E+00	70%	4.63E-02	3%	1.61E+00
Lead (MT/year)											
5	1.51E+00	1%	4.81E+01	33%	2.88E+00	2%	9.19E+01	63%	1.88E+00	1%	1.46E+02
25	4.96E-01	2%	1.12E+01	40%	9.43E-01	3%	1.45E+01	52%	6.10E-01	2%	2.78E+01
50	2.28E-01	3%	4.08E+00	45%	4.34E-01	5%	4.04E+00	45%	2.79E-01	3%	9.06E+00
75	1.05E-01	3%	1.48E+00	49%	2.00E-01	7%	1.12E+00	37%	1.27E-01	4%	3.04E+00
95	3.45E-02	5%	3.46E-01	52%	6.55E-02	10%	1.77E-01	27%	4.12E-02	6%	6.65E-01
Zinc (MT/year)											
5	6.02E+00	3%	6.34E+01	33%	6.25E+00	3%	1.16E+02	60%	1.75E+00	1%	1.94E+02
25	2.52E+00	4%	2.40E+01	37%	1.95E+00	3%	3.63E+01	55%	9.25E-01	1%	6.57E+01
50	1.37E+00	4%	1.22E+01	39%	8.69E-01	3%	1.61E+01	52%	5.95E-01	2%	3.12E+01
75	7.47E-01	5%	6.24E+00	42%	3.87E-01	3%	7.19E+00	48%	3.83E-01	3%	1.49E+01
95	3.12E-01	6%	2.36E+00	45%	1.21E-01	2%	2.24E+00	43%	2.03E-01	4%	5.24E+00
Mercury (kg/year)											
5	2.69E+01	5%	4.81E+01	8%	1.63E+01	3%	4.76E+02	84%	2.35E+00	<1%	5.70E+02
25	6.28E+00	5%	1.12E+01	9%	2.34E+00	2%	1.11E+02	84%	7.17E-01	1%	1.32E+02
50	2.28E+00	5%	4.08E+00	9%	6.08E-01	1%	4.04E+01	85%	3.14E-01	1%	4.77E+01
75	8.31E-01	5%	1.48E+00	9%	1.58E-01	1%	1.47E+01	85%	1.37E-01	1%	1.73E+01
95	1.94E-01	5%	3.46E-01	9%	2.27E-02	1%	3.42E+00	85%	4.18E-02	1%	4.03E+00
Total PCBs (kg/year)											
5	9.20E+00	1%	2.19E+02	29%	2.33E+01	3%	4.93E+02	66%	No studies measuring total PCBs in highway runoff		7.45E+02
25	1.32E+00	2%	3.14E+01	39%	3.35E+00	4%	4.36E+01	55%			7.97E+01
50	3.43E-01	2%	8.16E+00	47%	8.69E-01	5%	8.07E+00	46%			1.74E+01
75	8.89E-02	2%	2.12E+00	54%	2.25E-01	6%	1.50E+00	38%			3.93E+00
95	1.28E-02	3%	3.04E-01	63%	3.24E-02	7%	1.32E-01	27%			4.81E-01
Total PBDEs (g/year)											
5	6.13E+00	<1%	1.92E+02	10%	6.99E+01	3%	1.73E+03	87%	No studies measuring total PBDEs in highway runoff		2.00E+03
25	8.80E-01	<1%	4.49E+01	15%	1.00E+01	3%	2.49E+02	82%			3.05E+02
50	2.28E-01	<1%	1.63E+01	19%	2.61E+00	3%	6.46E+01	77%			8.37E+01
75	5.93E-02	<1%	5.93E+00	25%	6.76E-01	3%	1.68E+01	72%			2.34E+01
95	8.51E-03	<1%	1.38E+00	36%	9.71E-02	2%	2.41E+00	62%			3.90E+00
Carcinogenic PAHs (MT/year)											
5	1.35E-01	6%	7.22E-01	31%	1.54E-01	7%	1.30E+00	56%	2.03E-02	1%	2.33E+00
25	3.14E-02	7%	1.68E-01	39%	3.58E-02	8%	1.87E-01	43%	8.92E-03	2%	4.31E-01
50	1.14E-02	8%	6.12E-02	44%	1.30E-02	9%	4.84E-02	35%	5.03E-03	4%	1.39E-01
75	4.15E-03	9%	2.23E-02	48%	4.74E-03	10%	1.26E-02	27%	2.84E-03	6%	4.66E-02
95	9.69E-04	9%	5.19E-03	50%	1.11E-03	11%	1.81E-03	17%	1.25E-03	12%	1.03E-02

Table B3 (continued). Re-calculated loading rates for Port Gardner by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study Area Loading
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	
Other High MW PAHs (MT/year)											
5	1.08E-01	6%	4.81E-01	27%	1.02E-01	6%	1.08E+00	61%	1.34E-02	1%	1.79E+00
25	2.51E-02	8%	1.12E-01	35%	2.39E-02	7%	1.56E-01	48%	5.02E-03	2%	3.22E-01
50	9.14E-03	9%	4.08E-02	40%	8.69E-03	9%	4.04E-02	40%	2.54E-03	3%	1.02E-01
75	3.32E-03	10%	1.48E-02	45%	3.16E-03	10%	1.05E-02	32%	1.29E-03	4%	3.31E-02
95	7.75E-04	11%	3.46E-03	50%	7.37E-04	11%	1.50E-03	22%	4.85E-04	7%	6.96E-03
Low MW PAHs (MT/year)											
5	4.04E-01	7%	1.44E+00	27%	3.07E-01	6%	3.25E+00	60%	1.19E-03	<1%	5.41E+00
25	9.43E-02	10%	3.37E-01	35%	7.17E-02	7%	4.67E-01	48%	8.02E-04	<1%	9.70E-01
50	3.43E-02	11%	1.22E-01	40%	2.61E-02	9%	1.21E-01	40%	6.10E-04	<1%	3.04E-01
75	1.25E-02	13%	4.45E-02	45%	9.48E-03	10%	3.14E-02	32%	4.64E-04	<1%	9.83E-02
95	2.91E-03	14%	1.04E-02	51%	2.21E-03	11%	4.51E-03	22%	3.13E-04	2%	2.03E-02
bis(2-Ethylhexyl)phthalate (MT/year)											
5	3.07E+00	2%	1.09E+02	59%	2.33E+01	13%	4.93E+01	27%	1.15E-01	<1%	1.85E+02
25	4.40E-01	2%	1.57E+01	66%	3.35E+00	14%	4.36E+00	18%	6.73E-02	<1%	2.39E+01
50	1.14E-01	2%	4.08E+00	69%	8.69E-01	15%	8.07E-01	14%	4.62E-02	1%	5.92E+00
75	2.96E-02	2%	1.06E+00	71%	2.25E-01	15%	1.50E-01	10%	3.18E-02	2%	1.50E+00
95	4.26E-03	2%	1.52E-01	69%	3.24E-02	15%	1.32E-02	6%	1.86E-02	8%	2.20E-01
Total Dioxin TEQs (g/year)											
5	3.07E+00	3%	5.47E+01	46%	1.17E+01	10%	4.93E+01	42%	No studies measuring total dioxin TEQs in highway runoff		1.19E+02
25	4.40E-01	3%	7.86E+00	55%	1.67E+00	12%	4.36E+00	30%			1.43E+01
50	1.14E-01	3%	2.04E+00	60%	4.34E-01	13%	8.07E-01	24%			3.40E+00
75	2.96E-02	4%	5.29E-01	64%	1.13E-01	14%	1.50E-01	18%			8.21E-01
95	4.26E-03	4%	7.60E-02	69%	1.62E-02	15%	1.32E-02	12%			1.10E-01
Total DDT (kg/year)											
5	6.13E-02	<1%	1.09E+01	2%	1.40E+01	2%	6.50E+02	96%	No studies measuring total DDT in highway runoff		6.75E+02
25	8.80E-03	<1%	1.57E+00	2%	2.01E+00	2%	9.33E+01	96%			9.69E+01
50	2.28E-03	<1%	4.08E-01	2%	5.21E-01	2%	2.42E+01	96%			2.52E+01
75	5.93E-04	<1%	1.06E-01	2%	1.35E-01	2%	6.29E+00	96%			6.53E+00
95	8.51E-05	<1%	1.52E-02	2%	1.94E-02	2%	9.03E-01	96%			9.37E-01
Triclopyr (MT/year)											
5	2.09E-02	2%	3.28E-01	24%	1.40E-01	10%	8.67E-01	64%	No studies measuring triclopyr in highway runoff		1.36E+00
25	1.85E-03	1%	4.72E-02	24%	2.01E-02	10%	1.24E-01	64%			1.94E-01
50	3.43E-04	1%	1.22E-02	24%	5.21E-03	10%	3.23E-02	64%			5.01E-02
75	6.35E-05	<1%	3.18E-03	24%	1.35E-03	10%	8.38E-03	65%			1.30E-02
95	5.61E-06	<1%	4.56E-04	25%	1.94E-04	10%	1.20E-03	65%			1.86E-03
Nonylphenol (MT/year)											
5	1.23E+00	6%	3.28E+00	16%	6.99E-01	3%	1.48E+01	74%	1.18E-01	1%	2.01E+01
25	1.76E-01	8%	4.72E-01	22%	1.00E-01	5%	1.31E+00	62%	5.84E-02	3%	2.11E+00
50	4.57E-02	10%	1.22E-01	26%	2.61E-02	6%	2.42E-01	51%	3.58E-02	8%	4.72E-01
75	1.19E-02	10%	3.18E-02	27%	6.76E-03	6%	4.49E-02	38%	2.20E-02	19%	1.17E-01
95	1.70E-03	8%	4.56E-03	21%	9.71E-04	4%	3.97E-03	18%	1.09E-02	49%	2.21E-02
Oil and Grease (MT/year)											
5	3.01E+02	1%	8.81E+03	28%	1.02E+03	3%	2.17E+04	68%	4.50E+01	<1%	3.18E+04
25	1.26E+02	2%	2.75E+03	44%	2.39E+02	4%	3.11E+03	50%	2.23E+01	<1%	6.25E+03
50	6.85E+01	3%	1.22E+03	56%	8.69E+01	4%	8.07E+02	37%	1.37E+01	1%	2.20E+03
75	3.74E+01	4%	5.45E+02	66%	3.16E+01	4%	2.10E+02	25%	8.45E+00	1%	8.32E+02
95	1.56E+01	7%	1.70E+02	75%	7.37E+00	3%	3.01E+01	13%	4.19E+00	2%	2.27E+02

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year

MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers

PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B4. Re-calculated loading rates for Elliott Bay by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	4.86E-01	6%	1.74E+00	21%	1.87E-01	2%	5.90E+00	71%	1.14E-02	<1%	8.33E+00
25	2.24E-01	7%	7.63E-01	23%	8.59E-02	3%	2.24E+00	67%	6.95E-03	<1%	3.32E+00
50	1.30E-01	7%	4.30E-01	25%	5.01E-02	3%	1.14E+00	65%	4.94E-03	<1%	1.75E+00
75	7.49E-02	8%	2.43E-01	26%	2.92E-02	3%	5.80E-01	62%	3.51E-03	<1%	9.31E-01
95	3.58E-02	9%	1.06E-01	28%	1.34E-02	4%	2.20E-01	58%	2.15E-03	1%	3.78E-01
Cadmium (MT/year)											
5	2.98E-01	13%	7.74E-01	34%	1.02E-01	5%	1.07E+00	47%	6.67E-03	<1%	2.25E+00
25	1.03E-01	22%	2.42E-01	52%	3.51E-02	7%	8.55E-02	18%	3.60E-03	1%	4.69E-01
50	4.89E-02	26%	1.08E-01	57%	1.67E-02	9%	1.48E-02	8%	2.35E-03	1%	1.90E-01
75	2.33E-02	28%	4.79E-02	58%	7.95E-03	10%	2.56E-03	3%	1.53E-03	2%	8.32E-02
95	8.00E-03	30%	1.49E-02	56%	2.73E-03	10%	2.06E-04	1%	8.27E-04	3%	2.67E-02
Copper (MT/year)											
5	3.58E+00	20%	4.46E+00	25%	1.20E+00	7%	8.20E+00	47%	1.13E-01	1%	1.76E+01
25	1.49E+00	24%	1.69E+00	27%	3.75E-01	6%	2.56E+00	41%	6.63E-02	1%	6.18E+00
50	8.15E-01	27%	8.61E-01	28%	1.67E-01	6%	1.14E+00	38%	4.58E-02	2%	3.03E+00
75	4.44E-01	30%	4.38E-01	29%	7.43E-02	5%	5.07E-01	34%	3.17E-02	2%	1.50E+00
95	1.85E-01	34%	1.66E-01	30%	2.32E-02	4%	1.58E-01	29%	1.86E-02	3%	5.52E-01
Lead (MT/year)											
5	4.32E+00	10%	2.54E+01	57%	1.11E+00	2%	1.30E+01	29%	7.57E-01	2%	4.45E+01
25	1.42E+00	14%	5.92E+00	59%	3.63E-01	4%	2.05E+00	21%	2.45E-01	2%	9.99E+00
50	6.52E-01	18%	2.15E+00	59%	1.67E-01	5%	5.70E-01	16%	1.12E-01	3%	3.65E+00
75	3.00E-01	22%	7.82E-01	57%	7.69E-02	6%	1.58E-01	12%	5.11E-02	4%	1.37E+00
95	9.83E-02	28%	1.82E-01	53%	2.52E-02	7%	2.50E-02	7%	1.65E-02	5%	3.48E-01
Zinc (MT/year)											
5	1.72E+01	25%	3.34E+01	48%	2.40E+00	3%	1.64E+01	23%	7.02E-01	1%	7.01E+01
25	7.18E+00	28%	1.27E+01	49%	7.50E-01	3%	5.12E+00	20%	3.72E-01	1%	2.61E+01
50	3.91E+00	30%	6.45E+00	49%	3.34E-01	3%	2.28E+00	17%	2.39E-01	2%	1.32E+01
75	2.13E+00	32%	3.29E+00	49%	1.49E-01	2%	1.01E+00	15%	1.54E-01	2%	6.74E+00
95	8.90E-01	34%	1.25E+00	48%	4.64E-02	2%	3.17E-01	12%	8.15E-02	3%	2.58E+00
Mercury (kg/year)											
5	7.68E+01	44%	2.54E+01	14%	6.27E+00	4%	6.72E+01	38%	9.46E-01	1%	1.77E+02
25	1.79E+01	44%	5.92E+00	15%	9.01E-01	2%	1.57E+01	38%	2.88E-01	1%	4.07E+01
50	6.52E+00	44%	2.15E+00	15%	2.34E-01	2%	5.70E+00	39%	1.26E-01	1%	1.47E+01
75	2.37E+00	44%	7.82E-01	15%	6.06E-02	1%	2.07E+00	39%	5.51E-02	1%	5.34E+00
95	5.53E-01	44%	1.82E-01	15%	8.71E-03	1%	4.83E-01	39%	1.68E-02	1%	1.24E+00
Total PCBs (kg/year)											
5	2.62E+01	12%	1.15E+02	52%	8.96E+00	4%	6.96E+01	32%	No studies measuring total PCBs in highway runoff		2.20E+02
25	3.77E+00	14%	1.66E+01	60%	1.29E+00	5%	6.15E+00	22%			2.78E+01
50	9.78E-01	14%	4.30E+00	64%	3.34E-01	5%	1.14E+00	17%			6.75E+00
75	2.54E-01	15%	1.12E+00	67%	8.66E-02	5%	2.11E-01	13%			1.67E+00
95	3.64E-02	16%	1.60E-01	70%	1.24E-02	5%	1.87E-02	8%			2.28E-01
Total PBDEs (g/year)											
5	1.75E+01	4%	1.01E+02	26%	2.69E+01	7%	2.45E+02	63%	No studies measuring total PBDEs in highway runoff		3.90E+02
25	2.51E+00	4%	2.37E+01	36%	3.86E+00	6%	3.51E+01	54%			6.52E+01
50	6.52E-01	3%	8.61E+00	44%	1.00E+00	5%	9.11E+00	47%			1.94E+01
75	1.69E-01	3%	3.13E+00	53%	2.60E-01	4%	2.37E+00	40%			5.92E+00
95	2.43E-02	2%	7.30E-01	65%	3.73E-02	3%	3.40E-01	30%			1.13E+00
Carcinogenic PAHs (MT/year)											
5	3.84E-01	38%	3.80E-01	37%	5.90E-02	6%	1.83E-01	18%	8.16E-03	1%	1.02E+00
25	8.96E-02	40%	8.88E-02	40%	1.38E-02	6%	2.63E-02	12%	3.58E-03	2%	2.22E-01
50	3.26E-02	41%	3.23E-02	41%	5.01E-03	6%	6.84E-03	9%	2.02E-03	3%	7.87E-02
75	1.18E-02	42%	1.17E-02	41%	1.82E-03	6%	1.77E-03	6%	1.14E-03	4%	2.83E-02
95	2.76E-03	41%	2.74E-03	41%	4.25E-04	6%	2.55E-04	4%	5.01E-04	7%	6.68E-03

Table B4 (continued). Re-calculated loading rates for Elliott Bay by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study Area Loading
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	
Other High MW PAHs (MT/year)											
5	3.07E-01	41%	2.54E-01	33%	3.94E-02	5%	1.53E-01	20%	5.37E-03	1%	7.59E-01
25	7.17E-02	44%	5.92E-02	36%	9.18E-03	6%	2.19E-02	13%	2.02E-03	1%	1.64E-01
50	2.61E-02	45%	2.15E-02	37%	3.34E-03	6%	5.70E-03	10%	1.02E-03	2%	5.76E-02
75	9.48E-03	46%	7.82E-03	38%	1.21E-03	6%	1.48E-03	7%	5.18E-04	3%	2.05E-02
95	2.21E-03	47%	1.82E-03	39%	2.83E-04	6%	2.12E-04	4%	1.95E-04	4%	4.73E-03
Low MW PAHs (MT/year)											
5	1.15E+00	46%	7.61E-01	31%	1.18E-01	5%	4.59E-01	18%	4.78E-04	<1%	2.49E+00
25	2.69E-01	50%	1.78E-01	33%	2.75E-02	5%	6.58E-02	12%	3.22E-04	<1%	5.40E-01
50	9.78E-02	52%	6.45E-02	34%	1.00E-02	5%	1.71E-02	9%	2.45E-04	<1%	1.90E-01
75	3.55E-02	53%	2.35E-02	35%	3.64E-03	5%	4.43E-03	7%	1.86E-04	<1%	6.73E-02
95	8.29E-03	54%	5.47E-03	36%	8.50E-04	6%	6.37E-04	4%	1.26E-04	1%	1.54E-02
bis(2-Ethylhexyl)phthalate (MT/year)											
5	8.74E+00	11%	5.77E+01	70%	8.96E+00	11%	6.96E+00	8%	4.63E-02	<1%	8.24E+01
25	1.26E+00	11%	8.29E+00	72%	1.29E+00	11%	6.15E-01	5%	2.70E-02	<1%	1.15E+01
50	3.26E-01	11%	2.15E+00	73%	3.34E-01	11%	1.14E-01	4%	1.86E-02	1%	2.94E+00
75	8.46E-02	11%	5.58E-01	73%	8.66E-02	11%	2.11E-02	3%	1.28E-02	2%	7.63E-01
95	1.21E-02	11%	8.02E-02	70%	1.24E-02	11%	1.87E-03	2%	7.45E-03	7%	1.14E-01
Total Dioxin TEQs (g/year)											
5	8.74E+00	18%	2.89E+01	59%	4.48E+00	9%	6.96E+00	14%	No studies measuring total dioxin TEQs in highway runoff		4.90E+01
25	1.26E+00	19%	4.15E+00	62%	6.43E-01	10%	6.15E-01	9%			6.66E+00
50	3.26E-01	19%	1.08E+00	64%	1.67E-01	10%	1.14E-01	7%			1.68E+00
75	8.46E-02	20%	2.79E-01	65%	4.33E-02	10%	2.11E-02	5%			4.28E-01
95	1.21E-02	20%	4.01E-02	66%	6.22E-03	10%	1.87E-03	3%			6.03E-02
Total DDT (kg/year)											
5	1.75E-01	<1%	5.77E+00	6%	5.38E+00	5%	9.17E+01	89%	No studies measuring total DDT in highway runoff		1.03E+02
25	2.51E-02	<1%	8.29E-01	6%	7.72E-01	5%	1.32E+01	89%			1.48E+01
50	6.52E-03	<1%	2.15E-01	6%	2.00E-01	5%	3.42E+00	89%			3.84E+00
75	1.69E-03	<1%	5.58E-02	6%	5.20E-02	5%	8.87E-01	89%			9.96E-01
95	2.43E-04	<1%	8.02E-03	6%	7.47E-03	5%	1.27E-01	89%			1.43E-01
Triclopyr (MT/year)											
5	5.97E-02	15%	1.73E-01	42%	5.38E-02	13%	1.22E-01	30%	No studies measuring triclopyr in highway runoff		4.09E-01
25	5.28E-03	10%	2.49E-02	45%	7.72E-03	14%	1.76E-02	32%			5.54E-02
50	9.78E-04	7%	6.45E-03	46%	2.00E-03	14%	4.56E-03	33%			1.40E-02
75	1.81E-04	5%	1.67E-03	47%	5.20E-04	15%	1.18E-03	33%			3.56E-03
95	1.60E-05	3%	2.41E-04	48%	7.47E-05	15%	1.70E-04	34%			5.01E-04
Nonylphenol (MT/year)											
5	3.50E+00	46%	1.73E+00	23%	2.69E-01	4%	2.09E+00	27%	4.74E-02	1%	7.63E+00
25	5.02E-01	50%	2.49E-01	25%	3.86E-02	4%	1.85E-01	18%	2.35E-02	2%	9.98E-01
50	1.30E-01	51%	6.45E-02	25%	1.00E-02	4%	3.42E-02	13%	1.44E-02	6%	2.53E-01
75	3.38E-02	49%	1.67E-02	25%	2.60E-03	4%	6.33E-03	9%	8.83E-03	13%	6.83E-02
95	4.86E-03	39%	2.41E-03	19%	3.73E-04	3%	5.60E-04	4%	4.37E-03	35%	1.26E-02
Oil and Grease (MT/year)											
5	8.59E+02	10%	4.65E+03	52%	3.94E+02	4%	3.06E+03	34%	1.81E+01	<1%	8.97E+03
25	3.59E+02	15%	1.45E+03	62%	9.18E+01	4%	4.39E+02	19%	8.98E+00	<1%	2.35E+03
50	1.96E+02	20%	6.45E+02	65%	3.34E+01	3%	1.14E+02	11%	5.52E+00	1%	9.94E+02
75	1.07E+02	24%	2.87E+02	65%	1.21E+01	3%	2.96E+01	7%	3.39E+00	1%	4.39E+02
95	4.45E+01	31%	8.97E+01	63%	2.83E+00	2%	4.25E+00	3%	1.69E+00	1%	1.43E+02

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B5. Re-calculated loading rates for Commencement Bay by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	2.71E-01	2%	2.08E+00	13%	2.26E-01	1%	1.35E+01	84%	1.38E-02	<1%	1.61E+01
25	1.25E-01	2%	9.11E-01	15%	1.04E-01	2%	5.13E+00	82%	8.43E-03	<1%	6.28E+00
50	7.27E-02	2%	5.13E-01	16%	6.05E-02	2%	2.61E+00	80%	5.99E-03	<1%	3.27E+00
75	4.18E-02	2%	2.89E-01	17%	3.53E-02	2%	1.33E+00	78%	4.26E-03	<1%	1.70E+00
95	2.00E-02	3%	1.27E-01	19%	1.62E-02	2%	5.05E-01	75%	2.61E-03	<1%	6.70E-01
Cadmium (MT/year)											
5	1.66E-01	5%	9.24E-01	25%	1.23E-01	3%	2.45E+00	67%	8.09E-03	<1%	3.67E+00
25	5.73E-02	10%	2.88E-01	49%	4.24E-02	7%	1.96E-01	33%	4.37E-03	1%	5.89E-01
50	2.73E-02	13%	1.28E-01	60%	2.02E-02	9%	3.40E-02	16%	2.85E-03	1%	2.13E-01
75	1.30E-02	15%	5.71E-02	65%	9.61E-03	11%	5.89E-03	7%	1.86E-03	2%	8.75E-02
95	4.46E-03	16%	1.78E-02	66%	3.31E-03	12%	4.72E-04	2%	1.00E-03	4%	2.71E-02
Copper (MT/year)											
5	2.00E+00	7%	5.32E+00	19%	1.45E+00	5%	1.88E+01	68%	1.37E-01	<1%	2.77E+01
25	8.34E-01	9%	2.02E+00	22%	4.53E-01	5%	5.87E+00	63%	8.03E-02	1%	9.26E+00
50	4.54E-01	10%	1.03E+00	24%	2.02E-01	5%	2.61E+00	60%	5.55E-02	1%	4.35E+00
75	2.48E-01	12%	5.23E-01	25%	8.98E-02	4%	1.16E+00	56%	3.84E-02	2%	2.06E+00
95	1.03E-01	14%	1.98E-01	28%	2.80E-02	4%	3.63E-01	51%	2.26E-02	3%	7.15E-01
Lead (MT/year)											
5	2.41E+00	4%	3.03E+01	47%	1.34E+00	2%	2.98E+01	46%	9.18E-01	1%	6.47E+01
25	7.90E-01	6%	7.06E+00	53%	4.38E-01	3%	4.71E+00	35%	2.97E-01	2%	1.33E+01
50	3.64E-01	8%	2.57E+00	56%	2.02E-01	4%	1.31E+00	29%	1.36E-01	3%	4.58E+00
75	1.67E-01	10%	9.33E-01	58%	9.29E-02	6%	3.63E-01	22%	6.20E-02	4%	1.62E+00
95	5.48E-02	14%	2.18E-01	57%	3.04E-02	8%	5.74E-02	15%	2.01E-02	5%	3.80E-01
Zinc (MT/year)											
5	9.59E+00	11%	3.99E+01	44%	2.91E+00	3%	3.76E+01	41%	8.51E-01	1%	9.09E+01
25	4.00E+00	12%	1.51E+01	47%	9.07E-01	3%	1.17E+01	36%	4.51E-01	1%	3.22E+01
50	2.18E+00	14%	7.70E+00	49%	4.04E-01	3%	5.23E+00	33%	2.90E-01	2%	1.58E+01
75	1.19E+00	15%	3.92E+00	50%	1.80E-01	2%	2.33E+00	30%	1.86E-01	2%	7.81E+00
95	4.96E-01	17%	1.49E+00	52%	5.61E-02	2%	7.27E-01	25%	9.88E-02	3%	2.86E+00
Mercury (kg/year)											
5	4.29E+01	18%	3.03E+01	13%	7.58E+00	3%	1.54E+02	65%	1.15E+00	<1%	2.36E+02
25	1.00E+01	18%	7.06E+00	13%	1.09E+00	2%	3.60E+01	66%	3.49E-01	1%	5.45E+01
50	3.64E+00	18%	2.57E+00	13%	2.83E-01	1%	1.31E+01	66%	1.53E-01	1%	1.97E+01
75	1.32E+00	18%	9.33E-01	13%	7.33E-02	1%	4.75E+00	66%	6.68E-02	1%	7.15E+00
95	3.08E-01	19%	2.18E-01	13%	1.05E-02	1%	1.11E+00	67%	2.04E-02	1%	1.67E+00
Total PCBs (kg/year)											
5	1.46E+01	5%	1.38E+02	43%	1.08E+01	3%	1.60E+02	49%	No studies measuring total PCBs in highway runoff		3.23E+02
25	2.10E+00	6%	1.98E+01	53%	1.56E+00	4%	1.41E+01	38%			3.76E+01
50	5.45E-01	6%	5.13E+00	59%	4.04E-01	5%	2.61E+00	30%			8.70E+00
75	1.42E-01	7%	1.33E+00	65%	1.05E-01	5%	4.84E-01	23%			2.06E+00
95	2.03E-02	8%	1.91E-01	71%	1.50E-02	6%	4.28E-02	16%			2.69E-01
Total PBDEs (g/year)											
5	9.76E+00	1%	1.21E+02	17%	3.25E+01	4%	5.61E+02	77%	No studies measuring total PBDEs in highway runoff		7.25E+02
25	1.40E+00	1%	2.82E+01	25%	4.67E+00	4%	8.06E+01	70%			1.15E+02
50	3.64E-01	1%	1.03E+01	31%	1.21E+00	4%	2.09E+01	64%			3.28E+01
75	9.43E-02	1%	3.73E+00	39%	3.14E-01	3%	5.43E+00	57%			9.57E+00
95	1.35E-02	1%	8.71E-01	51%	4.51E-02	3%	7.80E-01	46%			1.71E+00
Carcinogenic PAHs (MT/year)											
5	2.14E-01	18%	4.54E-01	39%	7.14E-02	6%	4.21E-01	36%	9.90E-03	1%	1.17E+00
25	5.00E-02	21%	1.06E-01	45%	1.67E-02	7%	6.05E-02	25%	4.35E-03	2%	2.37E-01
50	1.82E-02	22%	3.85E-02	48%	6.05E-03	7%	1.57E-02	19%	2.45E-03	3%	8.09E-02
75	6.61E-03	23%	1.40E-02	50%	2.20E-03	8%	4.07E-03	14%	1.38E-03	5%	2.83E-02
95	1.54E-03	24%	3.27E-03	50%	5.14E-04	8%	5.85E-04	9%	6.07E-04	9%	6.51E-03

Table B5 (continued). Re-calculated loading rates for Commencement Bay by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study Area Loading
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	
Other High MW PAHs (MT/year)											
5	1.71E-01	20%	3.03E-01	34%	4.76E-02	5%	3.51E-01	40%	6.51E-03	1%	8.79E-01
25	4.00E-02	23%	7.06E-02	40%	1.11E-02	6%	5.04E-02	29%	2.45E-03	1%	1.75E-01
50	1.45E-02	25%	2.57E-02	44%	4.04E-03	7%	1.31E-02	22%	1.24E-03	2%	5.86E-02
75	5.29E-03	26%	9.33E-03	46%	1.47E-03	7%	3.39E-03	17%	6.28E-04	3%	2.01E-02
95	1.23E-03	28%	2.18E-03	49%	3.42E-04	8%	4.87E-04	11%	2.36E-04	5%	4.48E-03
Low MW PAHs (MT/year)											
5	6.43E-01	23%	9.08E-01	33%	1.43E-01	5%	1.05E+00	38%	5.79E-04	<1%	2.75E+00
25	1.50E-01	27%	2.12E-01	39%	3.33E-02	6%	1.51E-01	28%	3.91E-04	<1%	5.47E-01
50	5.45E-02	30%	7.70E-02	42%	1.21E-02	7%	3.92E-02	21%	2.97E-04	<1%	1.83E-01
75	1.98E-02	32%	2.80E-02	45%	4.40E-03	7%	1.02E-02	16%	2.26E-04	<1%	6.26E-02
95	4.62E-03	34%	6.53E-03	47%	1.03E-03	7%	1.46E-03	11%	1.53E-04	1%	1.38E-02
bis(2-Ethylhexyl)phthalate (MT/year)											
5	4.88E+00	5%	6.89E+01	68%	1.08E+01	11%	1.60E+01	16%	5.62E-02	<1%	1.01E+02
25	7.00E-01	5%	9.89E+00	73%	1.56E+00	11%	1.41E+00	10%	3.28E-02	<1%	1.36E+01
50	1.82E-01	5%	2.57E+00	75%	4.04E-01	12%	2.61E-01	8%	2.25E-02	1%	3.44E+00
75	4.72E-02	5%	6.66E-01	76%	1.05E-01	12%	4.84E-02	5%	1.55E-02	2%	8.82E-01
95	6.77E-03	5%	9.57E-02	73%	1.50E-02	12%	4.28E-03	3%	9.04E-03	7%	1.31E-01
Total Dioxin TEQs (g/year)											
5	4.88E+00	8%	3.44E+01	57%	5.42E+00	9%	1.60E+01	26%	No studies measuring total dioxin TEQs in highway runoff		6.07E+01
25	7.00E-01	9%	4.95E+00	63%	7.78E-01	10%	1.41E+00	18%			7.84E+00
50	1.82E-01	9%	1.28E+00	67%	2.02E-01	10%	2.61E-01	14%			1.93E+00
75	4.72E-02	10%	3.33E-01	69%	5.24E-02	11%	4.84E-02	10%			4.81E-01
95	6.77E-03	10%	4.78E-02	72%	7.52E-03	11%	4.28E-03	6%			6.64E-02
Total DDT (kg/year)											
5	9.76E-02	<1%	6.89E+00	3%	6.50E+00	3%	2.11E+02	94%	No studies measuring total DDT in highway runoff		2.24E+02
25	1.40E-02	<1%	9.89E-01	3%	9.33E-01	3%	3.02E+01	94%			3.22E+01
50	3.64E-03	<1%	2.57E-01	3%	2.42E-01	3%	7.84E+00	94%			8.35E+00
75	9.43E-04	<1%	6.66E-02	3%	6.29E-02	3%	2.04E+00	94%			2.17E+00
95	1.35E-04	<1%	9.57E-03	3%	9.03E-03	3%	2.92E-01	94%			3.11E-01
Triclopyr (MT/year)											
5	3.33E-02	6%	2.07E-01	35%	6.50E-02	11%	2.81E-01	48%	No studies measuring triclopyr in highway runoff		5.86E-01
25	2.94E-03	4%	2.97E-02	36%	9.33E-03	11%	4.03E-02	49%			8.23E-02
50	5.45E-04	3%	7.70E-03	36%	2.42E-03	11%	1.05E-02	50%			2.11E-02
75	1.01E-04	2%	2.00E-03	37%	6.29E-04	12%	2.71E-03	50%			5.44E-03
95	8.93E-06	1%	2.87E-04	37%	9.03E-05	12%	3.90E-04	50%			7.76E-04
Nonylphenol (MT/year)											
5	1.95E+00	21%	2.07E+00	22%	3.25E-01	4%	4.79E+00	52%	5.75E-02	1%	9.19E+00
25	2.80E-01	26%	2.97E-01	28%	4.67E-02	4%	4.24E-01	39%	2.85E-02	3%	1.08E+00
50	7.27E-02	28%	7.70E-02	30%	1.21E-02	5%	7.84E-02	30%	1.75E-02	7%	2.58E-01
75	1.89E-02	28%	2.00E-02	30%	3.14E-03	5%	1.45E-02	22%	1.07E-02	16%	6.72E-02
95	2.71E-03	21%	2.87E-03	23%	4.51E-04	4%	1.28E-03	10%	5.30E-03	42%	1.26E-02
Oil and Grease (MT/year)											
5	4.79E+02	4%	5.54E+03	41%	4.76E+02	4%	7.02E+03	52%	2.19E+01	<1%	1.35E+04
25	2.00E+02	7%	1.73E+03	57%	1.11E+02	4%	1.01E+03	33%	1.09E+01	<1%	3.06E+03
50	1.09E+02	9%	7.70E+02	65%	4.04E+01	3%	2.61E+02	22%	6.69E+00	1%	1.19E+03
75	5.94E+01	12%	3.43E+02	70%	1.47E+01	3%	6.79E+01	14%	4.11E+00	1%	4.89E+02
95	2.48E+01	17%	1.07E+02	73%	3.42E+00	2%	9.74E+00	7%	2.04E+00	1%	1.47E+02

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B6. Re-calculated loading rates for South Sound (East) by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	2.43E-01	2%	2.63E+00	20%	3.66E-01	3%	1.01E+01	76%	1.73E-02	<1%	1.34E+01
25	1.12E-01	2%	1.15E+00	22%	1.68E-01	3%	3.84E+00	73%	1.06E-02	<1%	5.28E+00
50	6.53E-02	2%	6.50E-01	23%	9.82E-02	4%	1.95E+00	70%	7.53E-03	<1%	2.78E+00
75	3.75E-02	3%	3.66E-01	25%	5.72E-02	4%	9.96E-01	68%	5.36E-03	<1%	1.46E+00
95	1.80E-02	3%	1.61E-01	27%	2.63E-02	4%	3.77E-01	64%	3.28E-03	1%	5.85E-01
Cadmium (MT/year)											
5	1.50E-01	4%	1.17E+00	35%	2.00E-01	6%	1.83E+00	54%	1.02E-02	<1%	3.36E+00
25	5.14E-02	8%	3.65E-01	57%	6.87E-02	11%	1.47E-01	23%	5.49E-03	1%	6.37E-01
50	2.45E-02	10%	1.62E-01	65%	3.27E-02	13%	2.54E-02	10%	3.58E-03	1%	2.49E-01
75	1.17E-02	11%	7.23E-02	68%	1.56E-02	15%	4.40E-03	4%	2.33E-03	2%	1.06E-01
95	4.01E-03	12%	2.26E-02	67%	5.36E-03	16%	3.53E-04	1%	1.26E-03	4%	3.35E-02
Copper (MT/year)											
5	1.79E+00	7%	6.73E+00	27%	2.36E+00	9%	1.41E+01	56%	1.72E-01	1%	2.51E+01
25	7.49E-01	9%	2.55E+00	30%	7.35E-01	9%	4.39E+00	51%	1.01E-01	1%	8.53E+00
50	4.08E-01	10%	1.30E+00	32%	3.27E-01	8%	1.95E+00	48%	6.98E-02	2%	4.06E+00
75	2.22E-01	11%	6.62E-01	34%	1.46E-01	7%	8.70E-01	45%	4.83E-02	2%	1.95E+00
95	9.29E-02	13%	2.51E-01	36%	4.55E-02	7%	2.72E-01	39%	2.84E-02	4%	6.89E-01
Lead (MT/year)											
5	2.16E+00	3%	3.83E+01	58%	2.17E+00	3%	2.23E+01	34%	1.15E+00	2%	6.60E+01
25	7.09E-01	5%	8.94E+00	63%	7.11E-01	5%	3.52E+00	25%	3.74E-01	3%	1.42E+01
50	3.26E-01	6%	3.25E+00	64%	3.27E-01	6%	9.77E-01	19%	1.71E-01	3%	5.05E+00
75	1.50E-01	8%	1.18E+00	64%	1.51E-01	8%	2.71E-01	15%	7.79E-02	4%	1.83E+00
95	4.92E-02	11%	2.76E-01	62%	4.94E-02	11%	4.29E-02	10%	2.52E-02	6%	4.42E-01
Zinc (MT/year)											
5	8.61E+00	9%	5.05E+01	54%	4.71E+00	5%	2.81E+01	30%	1.07E+00	1%	9.30E+01
25	3.59E+00	11%	1.91E+01	57%	1.47E+00	4%	8.78E+00	26%	5.67E-01	2%	3.35E+01
50	1.96E+00	12%	9.75E+00	59%	6.55E-01	4%	3.91E+00	24%	3.65E-01	2%	1.66E+01
75	1.07E+00	13%	4.97E+00	60%	2.91E-01	4%	1.74E+00	21%	2.34E-01	3%	8.30E+00
95	4.46E-01	14%	1.88E+00	61%	9.09E-02	3%	5.43E-01	18%	1.24E-01	4%	3.09E+00
Mercury (kg/year)											
5	3.85E+01	19%	3.83E+01	19%	1.23E+01	6%	1.15E+02	56%	1.44E+00	1%	2.06E+02
25	8.98E+00	19%	8.94E+00	19%	1.77E+00	4%	2.69E+01	57%	4.39E-01	1%	4.70E+01
50	3.26E+00	19%	3.25E+00	19%	4.58E-01	3%	9.77E+00	58%	1.92E-01	1%	1.69E+01
75	1.19E+00	19%	1.18E+00	19%	1.19E-01	2%	3.55E+00	58%	8.40E-02	1%	6.12E+00
95	2.77E-01	19%	2.76E-01	19%	1.71E-02	1%	8.29E-01	58%	2.56E-02	2%	1.42E+00
Total PCBs (kg/year)											
5	1.31E+01	4%	1.74E+02	54%	1.76E+01	5%	1.19E+02	37%	No studies measuring total PCBs in highway runoff		3.24E+02
25	1.89E+00	5%	2.50E+01	63%	2.52E+00	6%	1.06E+01	26%			4.00E+01
50	4.90E-01	5%	6.50E+00	68%	6.55E-01	7%	1.95E+00	20%			9.60E+00
75	1.27E-01	5%	1.69E+00	72%	1.70E-01	7%	3.62E-01	15%			2.35E+00
95	1.82E-02	6%	2.42E-01	76%	2.44E-02	8%	3.20E-02	10%			3.17E-01
Total PBDEs (g/year)											
5	8.76E+00	1%	1.53E+02	24%	5.27E+01	8%	4.20E+02	66%	No studies measuring total PBDEs in highway runoff		6.34E+02
25	1.26E+00	1%	3.57E+01	34%	7.57E+00	7%	6.03E+01	57%			1.05E+02
50	3.26E-01	1%	1.30E+01	42%	1.96E+00	6%	1.56E+01	51%			3.09E+01
75	8.47E-02	1%	4.72E+00	50%	5.10E-01	5%	4.06E+00	43%			9.38E+00
95	1.22E-02	1%	1.10E+00	62%	7.32E-02	4%	5.83E-01	33%			1.77E+00
Carcinogenic PAHs (MT/year)											
5	1.92E-01	16%	5.75E-01	47%	1.16E-01	10%	3.15E-01	26%	1.24E-02	1%	1.21E+00
25	4.49E-02	17%	1.34E-01	52%	2.70E-02	11%	4.52E-02	18%	5.46E-03	2%	2.57E-01
50	1.63E-02	18%	4.87E-02	54%	9.82E-03	11%	1.17E-02	13%	3.08E-03	3%	8.97E-02
75	5.93E-03	19%	1.77E-02	55%	3.57E-03	11%	3.04E-03	10%	1.74E-03	5%	3.20E-02
95	1.38E-03	18%	4.13E-03	55%	8.33E-04	11%	4.37E-04	6%	7.64E-04	10%	7.55E-03

Table B6 (continued). Re-calculated loading rates for South Sound (East) by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study Area Loading
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	
Other High MW PAHs (MT/year)											
5	1.54E-01	17%	3.83E-01	43%	7.72E-02	9%	2.62E-01	30%	8.18E-03	1%	8.85E-01
25	3.59E-02	20%	8.94E-02	49%	1.80E-02	10%	3.77E-02	20%	3.08E-03	2%	1.84E-01
50	1.31E-02	21%	3.25E-02	51%	6.55E-03	10%	9.77E-03	15%	1.56E-03	2%	6.34E-02
75	4.75E-03	21%	1.18E-02	53%	2.38E-03	11%	2.54E-03	11%	7.90E-04	4%	2.23E-02
95	1.11E-03	22%	2.76E-03	54%	5.55E-04	11%	3.64E-04	7%	2.97E-04	6%	5.08E-03
Low MW PAHs (MT/year)											
5	5.77E-01	21%	1.15E+00	42%	2.32E-01	8%	7.87E-01	29%	7.28E-04	<1%	2.75E+00
25	1.35E-01	24%	2.68E-01	47%	5.40E-02	9%	1.13E-01	20%	4.91E-04	<1%	5.70E-01
50	4.90E-02	25%	9.75E-02	50%	1.96E-02	10%	2.93E-02	15%	3.74E-04	<1%	1.96E-01
75	1.78E-02	26%	3.54E-02	52%	7.14E-03	10%	7.61E-03	11%	2.84E-04	<1%	6.83E-02
95	4.15E-03	27%	8.27E-03	54%	1.67E-03	11%	1.09E-03	7%	1.92E-04	1%	1.54E-02
bis(2-Ethylhexyl)phthalate (MT/year)											
5	4.38E+00	4%	8.72E+01	72%	1.76E+01	15%	1.19E+01	10%	7.06E-02	<1%	1.21E+02
25	6.29E-01	4%	1.25E+01	75%	2.52E+00	15%	1.06E+00	6%	4.12E-02	<1%	1.68E+01
50	1.63E-01	4%	3.25E+00	76%	6.55E-01	15%	1.95E-01	5%	2.83E-02	1%	4.29E+00
75	4.24E-02	4%	8.43E-01	76%	1.70E-01	15%	3.62E-02	3%	1.95E-02	2%	1.11E+00
95	6.08E-03	4%	1.21E-01	73%	2.44E-02	15%	3.20E-03	2%	1.14E-02	7%	1.66E-01
Total Dioxin TEQs (g/year)											
5	4.38E+00	6%	4.36E+01	63%	8.78E+00	13%	1.19E+01	17%	No studies measuring total dioxin TEQs in highway runoff		6.87E+01
25	6.29E-01	7%	6.26E+00	68%	1.26E+00	14%	1.06E+00	11%			9.21E+00
50	1.63E-01	7%	1.62E+00	70%	3.27E-01	14%	1.95E-01	8%			2.31E+00
75	4.24E-02	7%	4.22E-01	72%	8.49E-02	15%	3.62E-02	6%			5.85E-01
95	6.08E-03	7%	6.05E-02	74%	1.22E-02	15%	3.20E-03	4%			8.20E-02
Total DDT (kg/year)											
5	8.76E-02	<1%	8.72E+00	5%	1.05E+01	6%	1.57E+02	89%	No studies measuring total DDT in highway runoff		1.77E+02
25	1.26E-02	<1%	1.25E+00	5%	1.51E+00	6%	2.26E+01	89%			2.54E+01
50	3.26E-03	<1%	3.25E-01	5%	3.93E-01	6%	5.86E+00	89%			6.59E+00
75	8.47E-04	<1%	8.43E-02	5%	1.02E-01	6%	1.52E+00	89%			1.71E+00
95	1.22E-04	<1%	1.21E-02	5%	1.46E-02	6%	2.19E-01	89%			2.45E-01
Triclopyr (MT/year)											
5	2.99E-02	5%	2.62E-01	43%	1.05E-01	17%	2.10E-01	35%	No studies measuring triclopyr in highway runoff		6.07E-01
25	2.64E-03	3%	3.76E-02	44%	1.51E-02	18%	3.01E-02	35%			8.55E-02
50	4.90E-04	2%	9.75E-03	44%	3.93E-03	18%	7.82E-03	36%			2.20E-02
75	9.07E-05	2%	2.53E-03	45%	1.02E-03	18%	2.03E-03	36%			5.67E-03
95	8.02E-06	1%	3.63E-04	45%	1.46E-04	18%	2.91E-04	36%			8.09E-04
Nonylphenol (MT/year)											
5	1.75E+00	20%	2.62E+00	31%	5.27E-01	6%	3.58E+00	42%	7.23E-02	1%	8.55E+00
25	2.52E-01	24%	3.76E-01	36%	7.57E-02	7%	3.17E-01	30%	3.58E-02	3%	1.06E+00
50	6.53E-02	25%	9.75E-02	37%	1.96E-02	7%	5.86E-02	22%	2.20E-02	8%	2.63E-01
75	1.69E-02	24%	2.53E-02	35%	5.10E-03	7%	1.09E-02	15%	1.35E-02	19%	7.17E-02
95	2.43E-03	17%	3.63E-03	25%	7.32E-04	5%	9.60E-04	7%	6.67E-03	46%	1.44E-02
Oil and Grease (MT/year)											
5	4.30E+02	3%	7.02E+03	52%	7.72E+02	6%	5.25E+03	39%	2.76E+01	<1%	1.35E+04
25	1.80E+02	5%	2.19E+03	66%	1.80E+02	5%	7.53E+02	23%	1.37E+01	<1%	3.32E+03
50	9.79E+01	7%	9.75E+02	73%	6.55E+01	5%	1.95E+02	15%	8.41E+00	1%	1.34E+03
75	5.34E+01	9%	4.34E+02	77%	2.38E+01	4%	5.07E+01	9%	5.17E+00	1%	5.67E+02
95	2.23E+01	13%	1.35E+02	78%	5.55E+00	3%	7.28E+00	4%	2.57E+00	1%	1.73E+02

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year

MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers

PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B7. Re-calculated loading rates for South Sound (West) by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	1.08E-01	1%	1.53E+00	21%	1.26E-01	2%	5.67E+00	76%	1.48E-02	<1%	7.45E+00
25	4.97E-02	2%	6.73E-01	23%	5.78E-02	2%	2.15E+00	73%	9.06E-03	<1%	2.94E+00
50	2.90E-02	2%	3.79E-01	25%	3.37E-02	2%	1.09E+00	71%	6.44E-03	<1%	1.54E+00
75	1.67E-02	2%	2.14E-01	26%	1.97E-02	2%	5.57E-01	69%	4.58E-03	1%	8.12E-01
95	7.97E-03	2%	9.37E-02	29%	9.04E-03	3%	2.11E-01	65%	2.80E-03	1%	3.25E-01
Cadmium (MT/year)											
5	6.64E-02	4%	6.82E-01	37%	6.86E-02	4%	1.02E+00	55%	8.70E-03	<1%	1.85E+00
25	2.28E-02	7%	2.13E-01	62%	2.36E-02	7%	8.21E-02	24%	4.70E-03	1%	3.46E-01
50	1.09E-02	8%	9.48E-02	71%	1.12E-02	8%	1.42E-02	11%	3.06E-03	2%	1.34E-01
75	5.18E-03	9%	4.22E-02	74%	5.35E-03	9%	2.46E-03	4%	2.00E-03	3%	5.72E-02
95	1.78E-03	10%	1.32E-02	73%	1.84E-03	10%	1.98E-04	1%	1.08E-03	6%	1.81E-02
Copper (MT/year)											
5	7.96E-01	6%	3.93E+00	29%	8.09E-01	6%	7.88E+00	58%	1.47E-01	1%	1.36E+01
25	3.32E-01	7%	1.49E+00	32%	2.52E-01	5%	2.46E+00	53%	8.64E-02	2%	4.62E+00
50	1.81E-01	8%	7.58E-01	34%	1.12E-01	5%	1.09E+00	50%	5.97E-02	3%	2.21E+00
75	9.87E-02	9%	3.86E-01	36%	5.00E-02	5%	4.87E-01	46%	4.13E-02	4%	1.06E+00
95	4.12E-02	11%	1.46E-01	39%	1.56E-02	4%	1.52E-01	40%	2.43E-02	6%	3.79E-01
Lead (MT/year)											
5	9.61E-01	3%	2.24E+01	60%	7.45E-01	2%	1.25E+01	33%	9.87E-01	3%	3.75E+01
25	3.15E-01	4%	5.21E+00	65%	2.44E-01	3%	1.97E+00	24%	3.20E-01	4%	8.06E+00
50	1.45E-01	5%	1.90E+00	67%	1.12E-01	4%	5.47E-01	19%	1.46E-01	5%	2.85E+00
75	6.67E-02	7%	6.89E-01	67%	5.17E-02	5%	1.52E-01	15%	6.66E-02	6%	1.03E+00
95	2.19E-02	9%	1.61E-01	66%	1.70E-02	7%	2.40E-02	10%	2.16E-02	9%	2.45E-01
Zinc (MT/year)											
5	3.82E+00	7%	2.95E+01	57%	1.62E+00	3%	1.58E+01	31%	9.15E-01	2%	5.16E+01
25	1.60E+00	9%	1.12E+01	60%	5.05E-01	3%	4.92E+00	26%	4.85E-01	3%	1.87E+01
50	8.69E-01	9%	5.69E+00	61%	2.25E-01	2%	2.19E+00	24%	3.12E-01	3%	9.28E+00
75	4.74E-01	10%	2.90E+00	62%	1.00E-01	2%	9.74E-01	21%	2.01E-01	4%	4.65E+00
95	1.98E-01	11%	1.10E+00	63%	3.12E-02	2%	3.04E-01	17%	1.06E-01	6%	1.74E+00
Mercury (kg/year)											
5	1.71E+01	16%	2.24E+01	20%	4.22E+00	4%	6.45E+01	59%	1.23E+00	1%	1.09E+02
25	3.99E+00	16%	5.21E+00	21%	6.06E-01	2%	1.50E+01	60%	3.76E-01	1%	2.52E+01
50	1.45E+00	16%	1.90E+00	21%	1.57E-01	2%	5.47E+00	60%	1.64E-01	2%	9.14E+00
75	5.27E-01	16%	6.89E-01	21%	4.08E-02	1%	1.99E+00	60%	7.19E-02	2%	3.32E+00
95	1.23E-01	16%	1.61E-01	21%	5.86E-03	1%	4.64E-01	60%	2.19E-02	3%	7.75E-01
Total PCBs (kg/year)											
5	5.83E+00	3%	1.02E+02	56%	6.03E+00	3%	6.68E+01	37%	No studies measuring total PCBs in highway runoff		1.80E+02
25	8.38E-01	4%	1.46E+01	66%	8.66E-01	4%	5.91E+00	27%			2.22E+01
50	2.17E-01	4%	3.79E+00	71%	2.25E-01	4%	1.09E+00	21%			5.33E+00
75	5.64E-02	4%	9.84E-01	76%	5.83E-02	4%	2.03E-01	16%			1.30E+00
95	8.10E-03	5%	1.41E-01	80%	8.38E-03	5%	1.79E-02	10%			1.76E-01
Total PBDEs (g/year)											
5	3.89E+00	1%	8.94E+01	26%	1.81E+01	5%	2.35E+02	68%	No studies measuring total PBDEs in highway runoff		3.46E+02
25	5.58E-01	1%	2.09E+01	36%	2.60E+00	5%	3.37E+01	58%			5.77E+01
50	1.45E-01	1%	7.58E+00	44%	6.74E-01	4%	8.75E+00	51%			1.72E+01
75	3.76E-02	1%	2.76E+00	53%	1.75E-01	3%	2.27E+00	43%			5.24E+00
95	5.40E-03	1%	6.43E-01	64%	2.51E-02	3%	3.26E-01	33%			1.00E+00
Carcinogenic PAHs (MT/year)											
5	8.54E-02	13%	3.35E-01	52%	3.98E-02	6%	1.76E-01	27%	1.06E-02	2%	6.47E-01
25	1.99E-02	15%	7.82E-02	57%	9.27E-03	7%	2.53E-02	18%	4.67E-03	3%	1.37E-01
50	7.25E-03	15%	2.84E-02	59%	3.37E-03	7%	6.56E-03	14%	2.64E-03	5%	4.83E-02
75	2.63E-03	15%	1.03E-02	59%	1.23E-03	7%	1.70E-03	10%	1.49E-03	9%	1.74E-02
95	6.14E-04	15%	2.41E-03	57%	2.86E-04	7%	2.45E-04	6%	6.53E-04	16%	4.21E-03

Table B7 (continued). Re-calculated loading rates for South Sound (West) by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study Area Loading
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	
Other High MW PAHs (MT/year)											
5	6.83E-02	14%	2.24E-01	47%	2.65E-02	6%	1.47E-01	31%	7.00E-03	1%	4.72E-01
25	1.59E-02	16%	5.21E-02	53%	6.18E-03	6%	2.11E-02	22%	2.63E-03	3%	9.80E-02
50	5.80E-03	17%	1.90E-02	56%	2.25E-03	7%	5.47E-03	16%	1.33E-03	4%	3.38E-02
75	2.11E-03	18%	6.89E-03	58%	8.17E-04	7%	1.42E-03	12%	6.75E-04	6%	1.19E-02
95	4.92E-04	18%	1.61E-03	59%	1.91E-04	7%	2.04E-04	7%	2.54E-04	9%	2.75E-03
Low MW PAHs (MT/year)											
5	2.56E-01	18%	6.71E-01	46%	7.95E-02	5%	4.40E-01	30%	6.23E-04	<1%	1.45E+00
25	5.98E-02	20%	1.56E-01	52%	1.85E-02	6%	6.32E-02	21%	4.20E-04	<1%	2.98E-01
50	2.17E-02	21%	5.69E-02	56%	6.74E-03	7%	1.64E-02	16%	3.20E-04	<1%	1.02E-01
75	7.90E-03	22%	2.07E-02	58%	2.45E-03	7%	4.26E-03	12%	2.43E-04	1%	3.55E-02
95	1.84E-03	23%	4.82E-03	60%	5.72E-04	7%	6.12E-04	8%	1.64E-04	2%	8.02E-03
bis(2-Ethylhexyl)phthalate (MT/year)											
5	1.94E+00	3%	5.09E+01	78%	6.03E+00	9%	6.68E+00	10%	6.04E-02	<1%	6.56E+01
25	2.79E-01	3%	7.31E+00	80%	8.66E-01	10%	5.91E-01	7%	3.52E-02	<1%	9.08E+00
50	7.25E-02	3%	1.90E+00	81%	2.25E-01	10%	1.09E-01	5%	2.42E-02	1%	2.33E+00
75	1.88E-02	3%	4.92E-01	81%	5.83E-02	10%	2.03E-02	3%	1.67E-02	3%	6.06E-01
95	2.70E-03	3%	7.06E-02	76%	8.38E-03	9%	1.79E-03	2%	9.72E-03	10%	9.32E-02
Total Dioxin TEQs (g/year)											
5	1.94E+00	5%	2.54E+01	69%	3.02E+00	8%	6.68E+00	18%	No studies measuring total dioxin TEQs in highway runoff		3.71E+01
25	2.79E-01	6%	3.65E+00	74%	4.33E-01	9%	5.91E-01	12%			4.96E+00
50	7.25E-02	6%	9.48E-01	76%	1.12E-01	9%	1.09E-01	9%			1.24E+00
75	1.88E-02	6%	2.46E-01	78%	2.92E-02	9%	2.03E-02	6%			3.14E-01
95	2.70E-03	6%	3.53E-02	80%	4.19E-03	10%	1.79E-03	4%			4.40E-02
Total DDT (kg/year)											
5	3.89E-02	<1%	5.09E+00	5%	3.62E+00	4%	8.81E+01	91%	No studies measuring total DDT in highway runoff		9.68E+01
25	5.58E-03	<1%	7.31E-01	5%	5.20E-01	4%	1.26E+01	91%			1.39E+01
50	1.45E-03	<1%	1.90E-01	5%	1.35E-01	4%	3.28E+00	91%			3.61E+00
75	3.76E-04	<1%	4.92E-02	5%	3.50E-02	4%	8.52E-01	91%			9.36E-01
95	5.40E-05	<1%	7.06E-03	5%	5.03E-03	4%	1.22E-01	91%			1.34E-01
Triclopyr (MT/year)											
5	1.33E-02	4%	1.53E-01	48%	3.62E-02	11%	1.17E-01	37%	No studies measuring triclopyr in highway runoff		3.20E-01
25	1.17E-03	3%	2.19E-02	49%	5.20E-03	12%	1.69E-02	37%			4.52E-02
50	2.17E-04	2%	5.69E-03	49%	1.35E-03	12%	4.38E-03	38%			1.16E-02
75	4.03E-05	1%	1.48E-03	49%	3.50E-04	12%	1.14E-03	38%			3.00E-03
95	3.56E-06	1%	2.12E-04	49%	5.03E-05	12%	1.63E-04	38%			4.29E-04
Nonylphenol (MT/year)											
5	7.78E-01	17%	1.53E+00	34%	1.81E-01	4%	2.00E+00	44%	6.19E-02	1%	4.55E+00
25	1.12E-01	20%	2.19E-01	39%	2.60E-02	5%	1.77E-01	31%	3.06E-02	5%	5.65E-01
50	2.90E-02	20%	5.69E-02	39%	6.74E-03	5%	3.28E-02	23%	1.88E-02	13%	1.44E-01
75	7.52E-03	18%	1.48E-02	35%	1.75E-03	4%	6.08E-03	15%	1.15E-02	28%	4.16E-02
95	1.08E-03	11%	2.12E-03	22%	2.51E-04	3%	5.37E-04	6%	5.70E-03	59%	9.69E-03
Oil and Grease (MT/year)											
5	1.91E+02	3%	4.09E+03	55%	2.65E+02	4%	2.94E+03	39%	2.36E+01	<1%	7.51E+03
25	7.98E+01	4%	1.28E+03	69%	6.18E+01	3%	4.22E+02	23%	1.17E+01	1%	1.85E+03
50	4.35E+01	6%	5.69E+02	76%	2.25E+01	3%	1.09E+02	15%	7.20E+00	1%	7.51E+02
75	2.37E+01	7%	2.53E+02	80%	8.17E+00	3%	2.84E+01	9%	4.43E+00	1%	3.18E+02
95	9.89E+00	10%	7.90E+01	81%	1.91E+00	2%	4.08E+00	4%	2.20E+00	2%	9.71E+01

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B8. Re-calculatd loading rates for Hood Canal (South) by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	7.27E-03	<1%	9.44E-01	5%	3.15E-02	<1%	1.96E+01	95%	9.42E-03	<1%	2.06E+01
25	3.35E-03	<1%	4.14E-01	5%	1.45E-02	<1%	7.44E+00	94%	5.77E-03	<1%	7.88E+00
50	1.95E-03	<1%	2.33E-01	6%	8.44E-03	<1%	3.79E+00	94%	4.10E-03	<1%	4.04E+00
75	1.12E-03	<1%	1.32E-01	6%	4.92E-03	<1%	1.93E+00	93%	2.91E-03	<1%	2.07E+00
95	5.36E-04	<1%	5.76E-02	7%	2.26E-03	<1%	7.32E-01	92%	1.78E-03	<1%	7.94E-01
Cadmium (MT/year)											
5	4.47E-03	<1%	4.20E-01	11%	1.72E-02	0%	3.55E+00	89%	5.53E-03	<1%	3.99E+00
25	1.54E-03	<1%	1.31E-01	31%	5.91E-03	1%	2.85E-01	67%	2.99E-03	1%	4.26E-01
50	7.31E-04	1%	5.83E-02	52%	2.81E-03	2%	4.93E-02	44%	1.95E-03	2%	1.13E-01
75	3.48E-04	1%	2.60E-02	69%	1.34E-03	4%	8.53E-03	23%	1.27E-03	3%	3.75E-02
95	1.20E-04	1%	8.10E-03	81%	4.61E-04	5%	6.84E-04	7%	6.86E-04	7%	1.01E-02
Copper (MT/year)											
5	5.36E-02	<1%	2.42E+00	8%	2.03E-01	1%	2.73E+01	91%	9.35E-02	<1%	3.01E+01
25	2.24E-02	<1%	9.16E-01	10%	6.32E-02	1%	8.51E+00	89%	5.50E-02	1%	9.57E+00
50	1.22E-02	<1%	4.67E-01	11%	2.81E-02	1%	3.79E+00	87%	3.80E-02	1%	4.34E+00
75	6.64E-03	<1%	2.38E-01	12%	1.25E-02	1%	1.69E+00	86%	2.63E-02	1%	1.97E+00
95	2.77E-03	<1%	9.01E-02	14%	3.91E-03	1%	5.27E-01	82%	1.54E-02	2%	6.39E-01
Lead (MT/year)											
5	6.47E-02	<1%	1.38E+01	24%	1.87E-01	<1%	4.31E+01	75%	6.28E-01	1%	5.78E+01
25	2.12E-02	<1%	3.21E+00	31%	6.11E-02	1%	6.83E+00	66%	2.03E-01	2%	1.03E+01
50	9.75E-03	<1%	1.17E+00	37%	2.81E-02	1%	1.90E+00	59%	9.29E-02	3%	3.19E+00
75	4.49E-03	<1%	4.24E-01	42%	1.30E-02	1%	5.26E-01	52%	4.24E-02	4%	1.01E+00
95	1.47E-03	1%	9.90E-02	49%	4.24E-03	2%	8.32E-02	41%	1.37E-02	7%	2.02E-01
Zinc (MT/year)											
5	2.57E-01	<1%	1.81E+01	25%	4.05E-01	1%	5.46E+01	74%	5.82E-01	1%	7.39E+01
25	1.07E-01	<1%	6.87E+00	28%	1.26E-01	1%	1.70E+01	70%	3.08E-01	1%	2.44E+01
50	5.85E-02	1%	3.50E+00	31%	5.63E-02	<1%	7.58E+00	67%	1.98E-01	2%	1.14E+01
75	3.19E-02	1%	1.78E+00	33%	2.51E-02	<1%	3.37E+00	63%	1.28E-01	2%	5.34E+00
95	1.33E-02	1%	6.76E-01	37%	7.82E-03	<1%	1.05E+00	58%	6.76E-02	4%	1.82E+00
Mercury (kg/year)											
5	1.15E+00	<1%	1.38E+01	6%	1.06E+00	<1%	2.23E+02	93%	7.85E-01	<1%	2.40E+02
25	2.68E-01	<1%	3.21E+00	6%	1.52E-01	<1%	5.21E+01	93%	2.39E-01	<1%	5.60E+01
50	9.75E-02	<1%	1.17E+00	6%	3.94E-02	<1%	1.90E+01	93%	1.05E-01	1%	2.04E+01
75	3.55E-02	<1%	4.24E-01	6%	1.02E-02	<1%	6.89E+00	93%	4.57E-02	1%	7.41E+00
95	8.27E-03	<1%	9.90E-02	6%	1.47E-03	<1%	1.61E+00	93%	1.39E-02	1%	1.73E+00
Total PCBs (kg/year)											
5	3.93E-01	<1%	6.26E+01	21%	1.51E+00	1%	2.31E+02	78%	No studies measuring total PCBs in highway runoff		2.96E+02
25	5.64E-02	<1%	8.99E+00	30%	2.17E-01	1%	2.05E+01	69%			2.97E+01
50	1.46E-02	<1%	2.33E+00	38%	5.63E-02	1%	3.79E+00	61%			6.19E+00
75	3.80E-03	<1%	6.06E-01	46%	1.46E-02	1%	7.02E-01	53%			1.33E+00
95	5.45E-04	<1%	8.70E-02	57%	2.10E-03	1%	6.21E-02	41%			1.52E-01
Total PBDEs (g/year)											
5	2.62E-01	<1%	5.50E+01	6%	4.53E+00	1%	8.14E+02	93%	No studies measuring total PBDEs in highway runoff		8.74E+02
25	3.76E-02	<1%	1.28E+01	10%	6.51E-01	<1%	1.17E+02	90%			1.30E+02
50	9.75E-03	<1%	4.67E+00	13%	1.69E-01	<1%	3.03E+01	86%			3.52E+01
75	2.53E-03	<1%	1.70E+00	18%	4.38E-02	<1%	7.87E+00	82%			9.61E+00
95	3.63E-04	<1%	3.96E-01	26%	6.29E-03	<1%	1.13E+00	74%			1.53E+00
Carcinogenic PAHs (MT/year)											
5	5.75E-03	1%	2.06E-01	25%	9.95E-03	1%	6.10E-01	73%	6.77E-03	1%	8.39E-01
25	1.34E-03	1%	4.81E-02	34%	2.32E-03	2%	8.76E-02	62%	2.97E-03	2%	1.42E-01
50	4.88E-04	1%	1.75E-02	40%	8.44E-04	2%	2.27E-02	53%	1.68E-03	4%	4.33E-02
75	1.77E-04	1%	6.36E-03	46%	3.07E-04	2%	5.90E-03	43%	9.47E-04	7%	1.37E-02
95	4.14E-05	1%	1.48E-03	52%	7.16E-05	3%	8.47E-04	30%	4.16E-04	15%	2.86E-03

Table B8 (continued). Re-calculated loading rates for Hood Canal (South) by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Other High MW PAHs (MT/year)											
5	4.60E-03	1%	1.38E-01	21%	6.64E-03	1%	5.09E-01	77%	4.45E-03	1%	6.62E-01
25	1.07E-03	1%	3.21E-02	29%	1.55E-03	1%	7.30E-02	67%	1.67E-03	2%	1.09E-01
50	3.90E-04	1%	1.17E-02	36%	5.63E-04	2%	1.90E-02	58%	8.48E-04	3%	3.24E-02
75	1.42E-04	1%	4.24E-03	43%	2.05E-04	2%	4.92E-03	49%	4.30E-04	4%	9.94E-03
95	3.31E-05	2%	9.90E-04	51%	4.77E-05	2%	7.06E-04	36%	1.62E-04	8%	1.94E-03
Low MW PAHs (MT/year)											
5	1.72E-02	1%	4.13E-01	21%	1.99E-02	1%	1.53E+00	77%	3.96E-04	<1%	1.98E+00
25	4.02E-03	1%	9.63E-02	30%	4.64E-03	1%	2.19E-01	68%	2.67E-04	<1%	3.24E-01
50	1.46E-03	2%	3.50E-02	37%	1.69E-03	2%	5.69E-02	60%	2.03E-04	<1%	9.52E-02
75	5.32E-04	2%	1.27E-02	44%	6.14E-04	2%	1.48E-02	51%	1.55E-04	1%	2.88E-02
95	1.24E-04	2%	2.97E-03	54%	1.43E-04	3%	2.12E-03	39%	1.04E-04	2%	5.46E-03
bis(2-Ethylhexyl)phthalate (MT/year)											
5	1.31E-01	<1%	3.13E+01	56%	1.51E+00	3%	2.31E+01	41%	3.84E-02	<1%	5.61E+01
25	1.88E-02	<1%	4.50E+00	66%	2.17E-01	3%	2.05E+00	30%	2.24E-02	<1%	6.80E+00
50	4.88E-03	<1%	1.17E+00	72%	5.63E-02	3%	3.79E-01	23%	1.54E-02	1%	1.62E+00
75	1.27E-03	<1%	3.03E-01	76%	1.46E-02	4%	7.02E-02	18%	1.06E-02	3%	3.99E-01
95	1.82E-04	<1%	4.35E-02	75%	2.10E-03	4%	6.21E-03	11%	6.18E-03	11%	5.81E-02
Total Dioxin TEQs (g/year)											
5	1.31E-01	<1%	1.57E+01	39%	7.55E-01	2%	2.31E+01	58%	No studies measuring total dioxin TEQs in highway runoff		3.97E+01
25	1.88E-02	<1%	2.25E+00	51%	1.08E-01	2%	2.05E+00	46%			4.42E+00
50	4.88E-03	<1%	5.83E-01	59%	2.81E-02	3%	3.79E-01	38%			9.95E-01
75	1.27E-03	1%	1.51E-01	66%	7.30E-03	3%	7.02E-02	31%			2.30E-01
95	1.82E-04	1%	2.17E-02	75%	1.05E-03	4%	6.21E-03	21%			2.92E-02
Total DDT (kg/year)											
5	2.62E-03	<1%	3.13E+00	1%	9.06E-01	<1%	3.05E+02	99%	No studies measuring total DDT in highway runoff		3.09E+02
25	3.76E-04	<1%	4.50E-01	1%	1.30E-01	<1%	4.38E+01	99%			4.44E+01
50	9.75E-05	<1%	1.17E-01	1%	3.38E-02	<1%	1.14E+01	99%			1.15E+01
75	2.53E-05	<1%	3.03E-02	1%	8.76E-03	<1%	2.95E+00	99%			2.99E+00
95	3.63E-06	<1%	4.35E-03	1%	1.26E-03	<1%	4.24E-01	99%			4.29E-01
Triclopyr (MT/year)											
5	8.94E-04	<1%	9.39E-02	18%	9.06E-03	2%	4.07E-01	80%	No studies measuring triclopyr in highway runoff		5.11E-01
25	7.90E-05	<1%	1.35E-02	18%	1.30E-03	2%	5.84E-02	80%			7.33E-02
50	1.46E-05	<1%	3.50E-03	18%	3.38E-04	2%	1.52E-02	80%			1.90E-02
75	2.71E-06	<1%	9.08E-04	18%	8.76E-05	2%	3.93E-03	80%			4.93E-03
95	2.40E-07	<1%	1.30E-04	18%	1.26E-05	2%	5.65E-04	80%			7.08E-04
Nonylphenol (MT/year)											
5	5.23E-02	1%	9.39E-01	12%	4.53E-02	1%	6.94E+00	87%	3.94E-02	<1%	8.02E+00
25	7.52E-03	1%	1.35E-01	17%	6.51E-03	1%	6.14E-01	78%	1.95E-02	2%	7.82E-01
50	1.95E-03	1%	3.50E-02	21%	1.69E-03	1%	1.14E-01	69%	1.20E-02	7%	1.64E-01
75	5.06E-04	1%	9.08E-03	24%	4.38E-04	1%	2.11E-02	55%	7.33E-03	19%	3.84E-02
95	7.27E-05	1%	1.30E-03	19%	6.29E-05	1%	1.86E-03	27%	3.63E-03	52%	6.93E-03
Oil and Grease (MT/year)											
5	1.29E+01	<1%	2.52E+03	20%	6.64E+01	1%	1.02E+04	80%	1.50E+01	<1%	1.28E+04
25	5.37E+00	<1%	7.86E+02	35%	1.55E+01	1%	1.46E+03	64%	7.45E+00	<1%	2.28E+03
50	2.93E+00	<1%	3.50E+02	47%	5.63E+00	1%	3.79E+02	51%	4.58E+00	1%	7.42E+02
75	1.59E+00	1%	1.56E+02	60%	2.05E+00	1%	9.84E+01	38%	2.82E+00	1%	2.61E+02
95	6.66E-01	1%	4.86E+01	74%	4.77E-01	1%	1.41E+01	22%	1.40E+00	2%	6.53E+01

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B9. Re-calculated loading rates for Hood Canal (North) by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	4.11E-03	<1%	1.96E-01	21%	2.36E-03	<1%	7.27E-01	78%	8.97E-04	<1%	9.30E-01
25	1.89E-03	1%	8.60E-02	24%	1.09E-03	<1%	2.75E-01	75%	5.49E-04	<1%	3.65E-01
50	1.10E-03	1%	4.85E-02	25%	6.33E-04	<1%	1.40E-01	73%	3.90E-04	<1%	1.91E-01
75	6.34E-04	1%	2.73E-02	27%	3.69E-04	<1%	7.15E-02	71%	2.78E-04	<1%	1.00E-01
95	3.03E-04	1%	1.20E-02	30%	1.70E-04	<1%	2.71E-02	68%	1.70E-04	<1%	3.97E-02
Cadmium (MT/year)											
5	2.52E-03	1%	8.73E-02	39%	1.29E-03	1%	1.31E-01	59%	5.27E-04	<1%	2.23E-01
25	8.68E-04	2%	2.72E-02	69%	4.43E-04	1%	1.05E-02	27%	2.85E-04	1%	3.94E-02
50	4.13E-04	3%	1.21E-02	82%	2.11E-04	1%	1.82E-03	12%	1.86E-04	1%	1.48E-02
75	1.97E-04	3%	5.40E-03	88%	1.00E-04	2%	3.16E-04	5%	1.21E-04	2%	6.13E-03
95	6.77E-05	4%	1.68E-03	90%	3.46E-05	2%	2.53E-05	1%	6.53E-05	3%	1.88E-03
Copper (MT/year)											
5	3.03E-02	2%	5.02E-01	32%	1.52E-02	1%	1.01E+00	64%	8.91E-03	1%	1.57E+00
25	1.26E-02	2%	1.90E-01	36%	4.74E-03	1%	3.15E-01	60%	5.24E-03	1%	5.28E-01
50	6.89E-03	3%	9.70E-02	39%	2.11E-03	1%	1.40E-01	56%	3.62E-03	1%	2.50E-01
75	3.76E-03	3%	4.94E-02	42%	9.39E-04	1%	6.24E-02	52%	2.50E-03	2%	1.19E-01
95	1.57E-03	4%	1.87E-02	45%	2.93E-04	1%	1.95E-02	47%	1.47E-03	4%	4.15E-02
Lead (MT/year)											
5	3.65E-02	1%	2.86E+00	63%	1.40E-02	<1%	1.60E+00	35%	5.98E-02	1%	4.57E+00
25	1.20E-02	1%	6.67E-01	70%	4.58E-03	<1%	2.53E-01	26%	1.94E-02	2%	9.55E-01
50	5.51E-03	2%	2.42E-01	74%	2.11E-03	1%	7.01E-02	21%	8.84E-03	3%	3.29E-01
75	2.54E-03	2%	8.81E-02	77%	9.71E-04	1%	1.95E-02	17%	4.04E-03	4%	1.15E-01
95	8.31E-04	3%	2.06E-02	79%	3.18E-04	1%	3.08E-03	12%	1.31E-03	5%	2.61E-02
Zinc (MT/year)											
5	1.45E-01	2%	3.77E+00	63%	3.04E-02	1%	2.02E+00	34%	5.54E-02	1%	6.02E+00
25	6.07E-02	3%	1.43E+00	66%	9.48E-03	<1%	6.30E-01	29%	2.94E-02	1%	2.16E+00
50	3.31E-02	3%	7.27E-01	68%	4.22E-03	<1%	2.81E-01	26%	1.89E-02	2%	1.06E+00
75	1.80E-02	3%	3.71E-01	70%	1.88E-03	<1%	1.25E-01	24%	1.22E-02	2%	5.27E-01
95	7.53E-03	4%	1.40E-01	72%	5.86E-04	<1%	3.90E-02	20%	6.44E-03	3%	1.94E-01
Mercury (kg/year)											
5	6.50E-01	5%	2.86E+00	24%	7.93E-02	1%	8.27E+00	69%	7.47E-02	1%	1.19E+01
25	1.52E-01	5%	6.67E-01	24%	1.14E-02	<1%	1.93E+00	69%	2.28E-02	1%	2.78E+00
50	5.51E-02	5%	2.42E-01	24%	2.95E-03	<1%	7.01E-01	69%	9.96E-03	1%	1.01E+00
75	2.00E-02	5%	8.81E-02	24%	7.67E-04	<1%	2.55E-01	69%	4.36E-03	1%	3.68E-01
95	4.68E-03	5%	2.06E-02	24%	1.10E-04	<1%	5.95E-02	69%	1.33E-03	2%	8.62E-02
Total PCBs (kg/year)											
5	2.22E-01	1%	1.30E+01	59%	1.13E-01	1%	8.57E+00	39%	No studies measuring total PCBs in highway runoff		2.19E+01
25	3.19E-02	1%	1.87E+00	70%	1.63E-02	1%	7.57E-01	28%			2.67E+00
50	8.27E-03	1%	4.85E-01	76%	4.22E-03	1%	1.40E-01	22%			6.38E-01
75	2.15E-03	1%	1.26E-01	81%	1.10E-03	1%	2.60E-02	17%			1.55E-01
95	3.08E-04	1%	1.81E-02	87%	1.57E-04	1%	2.30E-03	11%			2.08E-02
Total PBDEs (g/year)											
5	1.48E-01	<1%	1.14E+01	27%	3.40E-01	1%	3.01E+01	72%	No studies measuring total PBDEs in highway runoff		4.20E+01
25	2.12E-02	<1%	2.67E+00	38%	4.88E-02	1%	4.32E+00	61%			7.06E+00
50	5.51E-03	<1%	9.70E-01	46%	1.27E-02	1%	1.12E+00	53%			2.11E+00
75	1.43E-03	<1%	3.53E-01	54%	3.29E-03	1%	2.91E-01	45%			6.49E-01
95	2.05E-04	<1%	8.23E-02	66%	4.72E-04	<1%	4.18E-02	34%			1.25E-01
Carcinogenic PAHs (MT/year)											
5	3.25E-03	5%	4.29E-02	61%	7.46E-04	1%	2.26E-02	32%	6.45E-04	1%	7.01E-02
25	7.58E-04	5%	1.00E-02	69%	1.74E-04	1%	3.24E-03	22%	2.83E-04	2%	1.45E-02
50	2.76E-04	6%	3.64E-03	73%	6.33E-05	1%	8.42E-04	17%	1.60E-04	3%	4.98E-03
75	1.00E-04	6%	1.32E-03	75%	2.30E-05	1%	2.18E-04	12%	9.02E-05	5%	1.75E-03
95	2.34E-05	6%	3.08E-04	76%	5.37E-06	1%	3.14E-05	8%	3.96E-05	10%	4.08E-04

Table B9 (continued). Re-calculated loading rates for Hood Canal (North) by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Other High MW PAHs (MT/year)											
5	2.60E-03	5%	2.86E-02	56%	4.98E-04	1%	1.88E-02	37%	4.24E-04	1%	5.09E-02
25	6.06E-04	6%	6.67E-03	65%	1.16E-04	1%	2.70E-03	26%	1.59E-04	2%	1.03E-02
50	2.21E-04	6%	2.42E-03	70%	4.22E-05	1%	7.01E-04	20%	8.08E-05	2%	3.47E-03
75	8.02E-05	7%	8.81E-04	73%	1.53E-05	1%	1.82E-04	15%	4.09E-05	3%	1.20E-03
95	1.87E-05	7%	2.06E-04	76%	3.58E-06	1%	2.61E-05	10%	1.54E-05	6%	2.69E-04
Low MW PAHs (MT/year)											
5	9.75E-03	6%	8.58E-02	56%	1.49E-03	1%	5.65E-02	37%	3.77E-05	<1%	1.53E-01
25	2.27E-03	7%	2.00E-02	65%	3.48E-04	1%	8.11E-03	26%	2.55E-05	<1%	3.08E-02
50	8.27E-04	8%	7.27E-03	70%	1.27E-04	1%	2.10E-03	20%	1.94E-05	<1%	1.04E-02
75	3.01E-04	8%	2.64E-03	74%	4.60E-05	1%	5.46E-04	15%	1.47E-05	<1%	3.55E-03
95	7.01E-05	9%	6.17E-04	78%	1.07E-05	1%	7.84E-05	10%	9.94E-06	1%	7.86E-04
bis(2-Ethylhexyl)phthalate (MT/year)											
5	7.40E-02	1%	6.51E+00	86%	1.13E-01	1%	8.57E-01	11%	3.66E-03	<1%	7.55E+00
25	1.06E-02	1%	9.34E-01	90%	1.63E-02	2%	7.57E-02	7%	2.14E-03	<1%	1.04E+00
50	2.76E-03	1%	2.42E-01	92%	4.22E-03	2%	1.40E-02	5%	1.47E-03	1%	2.65E-01
75	7.15E-04	1%	6.29E-02	92%	1.10E-03	2%	2.60E-03	4%	1.01E-03	1%	6.83E-02
95	1.03E-04	1%	9.03E-03	89%	1.57E-04	2%	2.30E-04	2%	5.89E-04	6%	1.01E-02
Total Dioxin TEQs (g/year)											
5	7.40E-02	2%	3.25E+00	77%	5.66E-02	1%	8.57E-01	20%	No studies measuring total dioxin TEQs in highway runoff		4.24E+00
25	1.06E-02	2%	4.67E-01	83%	8.13E-03	1%	7.57E-02	13%			5.62E-01
50	2.76E-03	2%	1.21E-01	87%	2.11E-03	2%	1.40E-02	10%			1.40E-01
75	7.15E-04	2%	3.15E-02	89%	5.48E-04	2%	2.60E-03	7%			3.53E-02
95	1.03E-04	2%	4.52E-03	92%	7.86E-05	2%	2.30E-04	5%			4.93E-03
Total DDT (kg/year)											
5	1.48E-03	<1%	6.51E-01	5%	6.79E-02	1%	1.13E+01	94%	No studies measuring total DDT in highway runoff		1.20E+01
25	2.12E-04	<1%	9.34E-02	5%	9.76E-03	1%	1.62E+00	94%			1.72E+00
50	5.51E-05	<1%	2.42E-02	5%	2.53E-03	1%	4.21E-01	94%			4.48E-01
75	1.43E-05	<1%	6.29E-03	5%	6.57E-04	1%	1.09E-01	94%			1.16E-01
95	2.05E-06	<1%	9.03E-04	5%	9.44E-05	1%	1.57E-02	94%			1.67E-02
Triclopyr (MT/year)											
5	5.05E-04	1%	1.95E-02	55%	6.79E-04	2%	1.51E-02	42%	No studies measuring triclopyr in highway runoff		3.58E-02
25	4.46E-05	1%	2.80E-03	55%	9.76E-05	2%	2.16E-03	42%			5.11E-03
50	8.27E-06	1%	7.27E-04	55%	2.53E-05	2%	5.61E-04	42%			1.32E-03
75	1.53E-06	<1%	1.89E-04	55%	6.57E-06	2%	1.46E-04	43%			3.42E-04
95	1.35E-07	<1%	2.71E-05	55%	9.44E-07	2%	2.09E-05	43%			4.91E-05
Nonylphenol (MT/year)											
5	2.96E-02	6%	1.95E-01	40%	3.40E-03	1%	2.57E-01	53%	3.75E-03	1%	4.89E-01
25	4.25E-03	7%	2.80E-02	49%	4.88E-04	1%	2.27E-02	40%	1.86E-03	3%	5.73E-02
50	1.10E-03	8%	7.27E-03	53%	1.27E-04	1%	4.21E-03	30%	1.14E-03	8%	1.38E-02
75	2.86E-04	8%	1.89E-03	51%	3.29E-05	1%	7.79E-04	21%	6.98E-04	19%	3.68E-03
95	4.11E-05	6%	2.71E-04	37%	4.72E-06	1%	6.89E-05	9%	3.46E-04	47%	7.31E-04
Oil and Grease (MT/year)											
5	7.27E+00	1%	5.24E+02	57%	4.98E+00	1%	3.76E+02	41%	1.43E+00	<1%	9.14E+02
25	3.03E+00	1%	1.63E+02	73%	1.16E+00	1%	5.41E+01	24%	7.09E-01	<1%	2.22E+02
50	1.65E+00	2%	7.27E+01	81%	4.22E-01	<1%	1.40E+01	16%	4.36E-01	<1%	8.93E+01
75	9.01E-01	2%	3.24E+01	87%	1.53E-01	<1%	3.64E+00	10%	2.68E-01	1%	3.73E+01
95	3.76E-01	3%	1.01E+01	90%	3.58E-02	<1%	5.23E-01	5%	1.33E-01	1%	1.12E+01

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B10. Re-calculated loading rates for Sinclair/Dyes Inlet by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	7.87E-02	5%	7.76E-01	48%	7.69E-03	<1%	7.46E-01	46%	7.56E-03	<1%	1.62E+00
25	3.62E-02	5%	3.40E-01	51%	3.54E-03	1%	2.83E-01	42%	4.63E-03	1%	6.68E-01
50	2.11E-02	6%	1.92E-01	53%	2.06E-03	1%	1.44E-01	40%	3.29E-03	1%	3.62E-01
75	1.21E-02	6%	1.08E-01	55%	1.20E-03	1%	7.34E-02	37%	2.34E-03	1%	1.97E-01
95	5.80E-03	7%	4.74E-02	57%	5.53E-04	1%	2.78E-02	34%	1.43E-03	2%	8.30E-02
Cadmium (MT/year)											
5	4.83E-02	9%	3.45E-01	64%	4.20E-03	1%	1.35E-01	25%	4.44E-03	1%	5.37E-01
25	1.66E-02	12%	1.08E-01	77%	1.44E-03	1%	1.08E-02	8%	2.40E-03	2%	1.39E-01
50	7.92E-03	13%	4.80E-02	80%	6.88E-04	1%	1.87E-03	3%	1.56E-03	3%	6.00E-02
75	3.77E-03	14%	2.13E-02	80%	3.27E-04	1%	3.24E-04	1%	1.02E-03	4%	2.68E-02
95	1.30E-03	15%	6.66E-03	77%	1.13E-04	1%	2.60E-05	<1%	5.50E-04	6%	8.65E-03
Copper (MT/year)											
5	5.80E-01	16%	1.99E+00	53%	4.95E-02	1%	1.04E+00	28%	7.50E-02	2%	3.73E+00
25	2.42E-01	18%	7.53E-01	55%	1.54E-02	1%	3.24E-01	23%	4.41E-02	3%	1.38E+00
50	1.32E-01	19%	3.84E-01	55%	6.88E-03	1%	1.44E-01	21%	3.05E-02	4%	6.97E-01
75	7.19E-02	20%	1.95E-01	55%	3.06E-03	1%	6.41E-02	18%	2.11E-02	6%	3.56E-01
95	3.00E-02	22%	7.41E-02	54%	9.55E-04	1%	2.00E-02	15%	1.24E-02	9%	1.37E-01
Lead (MT/year)											
5	7.00E-01	5%	1.13E+01	80%	4.56E-02	<1%	1.64E+00	12%	5.04E-01	4%	1.42E+01
25	2.29E-01	7%	2.64E+00	80%	1.49E-02	<1%	2.59E-01	8%	1.63E-01	5%	3.30E+00
50	1.06E-01	9%	9.59E-01	79%	6.88E-03	1%	7.20E-02	6%	7.45E-02	6%	1.22E+00
75	4.86E-02	11%	3.49E-01	77%	3.17E-03	1%	2.00E-02	4%	3.40E-02	7%	4.55E-01
95	1.59E-02	14%	8.14E-02	72%	1.04E-03	1%	3.16E-03	3%	1.10E-02	10%	1.12E-01
Zinc (MT/year)											
5	2.78E+00	14%	1.49E+01	73%	9.90E-02	<1%	2.07E+00	10%	4.67E-01	2%	2.03E+01
25	1.16E+00	15%	5.65E+00	73%	3.09E-02	<1%	6.47E-01	8%	2.47E-01	3%	7.74E+00
50	6.33E-01	16%	2.88E+00	72%	1.38E-02	<1%	2.88E-01	7%	1.59E-01	4%	3.97E+00
75	3.45E-01	17%	1.47E+00	72%	6.12E-03	<1%	1.28E-01	6%	1.02E-01	5%	2.05E+00
95	1.44E-01	18%	5.55E-01	70%	1.91E-03	<1%	4.00E-02	5%	5.42E-02	7%	7.96E-01
Mercury (kg/year)											
5	1.24E+01	38%	1.13E+01	34%	2.58E-01	1%	8.49E+00	26%	6.29E-01	2%	3.31E+01
25	2.90E+00	37%	2.64E+00	34%	3.71E-02	<1%	1.98E+00	26%	1.92E-01	2%	7.75E+00
50	1.06E+00	37%	9.59E-01	34%	9.63E-03	<1%	7.20E-01	25%	8.38E-02	3%	2.83E+00
75	3.84E-01	37%	3.49E-01	34%	2.50E-03	<1%	2.62E-01	25%	3.67E-02	4%	1.03E+00
95	8.95E-02	37%	8.14E-02	33%	3.59E-04	<1%	6.11E-02	25%	1.12E-02	5%	2.43E-01
Total PCBs (kg/year)											
5	4.25E+00	7%	5.15E+01	79%	3.69E-01	1%	8.80E+00	14%	No studies measuring total PCBs in highway runoff		6.49E+01
25	6.10E-01	7%	7.39E+00	84%	5.30E-02	1%	7.78E-01	9%			8.83E+00
50	1.58E-01	7%	1.92E+00	86%	1.38E-02	1%	1.44E-01	6%			2.23E+00
75	4.11E-02	7%	4.98E-01	87%	3.57E-03	1%	2.67E-02	5%			5.69E-01
95	5.90E-03	7%	7.15E-02	89%	5.13E-04	1%	2.36E-03	3%			8.03E-02
Total PBDEs (g/year)											
5	2.83E+00	4%	4.52E+01	56%	1.11E+00	1%	3.09E+01	39%	No studies measuring total PBDEs in highway runoff		8.01E+01
25	4.07E-01	3%	1.06E+01	68%	1.59E-01	1%	4.44E+00	29%			1.56E+01
50	1.06E-01	2%	3.84E+00	75%	4.13E-02	1%	1.15E+00	22%			5.14E+00
75	2.74E-02	2%	1.39E+00	81%	1.07E-02	1%	2.99E-01	17%			1.73E+00
95	3.93E-03	1%	3.25E-01	87%	1.54E-03	<1%	4.30E-02	11%			3.74E-01
Carcinogenic PAHs (MT/year)											
5	6.22E-02	24%	1.70E-01	65%	2.43E-03	1%	2.32E-02	9%	5.43E-03	2%	2.63E-01
25	1.45E-02	24%	3.96E-02	66%	5.67E-04	1%	3.33E-03	6%	2.38E-03	4%	6.04E-02
50	5.28E-03	24%	1.44E-02	65%	2.06E-04	1%	8.64E-04	4%	1.35E-03	6%	2.21E-02
75	1.92E-03	23%	5.23E-03	64%	7.50E-05	1%	2.24E-04	3%	7.59E-04	9%	8.21E-03
95	4.48E-04	22%	1.22E-03	59%	1.75E-05	1%	3.22E-05	2%	3.33E-04	16%	2.05E-03

Table B10 (continued). Re-calculated loading rates for Sinclair/Dyes Inlet by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Other High MW PAHs (MT/year)											
5	4.98E-02	27%	1.13E-01	60%	1.62E-03	1%	1.93E-02	10%	3.57E-03	2%	1.87E-01
25	1.16E-02	27%	2.64E-02	62%	3.78E-04	1%	2.78E-03	7%	1.34E-03	3%	4.25E-02
50	4.22E-03	28%	9.59E-03	62%	1.38E-04	1%	7.20E-04	5%	6.80E-04	4%	1.54E-02
75	1.53E-03	27%	3.49E-03	62%	5.00E-05	1%	1.87E-04	3%	3.45E-04	6%	5.60E-03
95	3.58E-04	27%	8.14E-04	61%	1.17E-05	1%	2.68E-05	2%	1.30E-04	10%	1.34E-03
Low MW PAHs (MT/year)											
5	1.87E-01	32%	3.39E-01	58%	4.86E-03	1%	5.80E-02	10%	3.18E-04	<1%	5.89E-01
25	4.35E-02	33%	7.91E-02	60%	1.13E-03	1%	8.33E-03	6%	2.14E-04	<1%	1.32E-01
50	1.58E-02	33%	2.88E-02	61%	4.13E-04	1%	2.16E-03	5%	1.63E-04	<1%	4.73E-02
75	5.76E-03	34%	1.05E-02	61%	1.50E-04	1%	5.61E-04	3%	1.24E-04	1%	1.71E-02
95	1.34E-03	34%	2.44E-03	61%	3.50E-05	1%	8.05E-05	2%	8.37E-05	2%	3.98E-03
bis(2-Ethylhexyl)phthalate (MT/year)											
5	1.42E+00	5%	2.57E+01	91%	3.69E-01	1%	8.80E-01	3%	3.08E-02	<1%	2.84E+01
25	2.03E-01	5%	3.70E+00	91%	5.30E-02	1%	7.78E-02	2%	1.80E-02	<1%	4.05E+00
50	5.28E-02	5%	9.59E-01	91%	1.38E-02	1%	1.44E-02	1%	1.24E-02	1%	1.05E+00
75	1.37E-02	5%	2.49E-01	90%	3.57E-03	1%	2.67E-03	1%	8.50E-03	3%	2.77E-01
95	1.97E-03	5%	3.57E-02	82%	5.13E-04	1%	2.36E-04	1%	4.96E-03	11%	4.34E-02
Total Dioxin TEQs (g/year)											
5	1.42E+00	9%	1.29E+01	84%	1.85E-01	1%	8.80E-01	6%	No studies measuring total dioxin TEQs in highway runoff		1.54E+01
25	2.03E-01	9%	1.85E+00	86%	2.65E-02	1%	7.78E-02	4%			2.16E+00
50	5.28E-02	10%	4.80E-01	87%	6.88E-03	1%	1.44E-02	3%			5.54E-01
75	1.37E-02	10%	1.24E-01	87%	1.78E-03	1%	2.67E-03	2%			1.43E-01
95	1.97E-03	10%	1.79E-02	88%	2.56E-04	1%	2.36E-04	1%			2.03E-02
Total DDT (kg/year)											
5	2.83E-02	<1%	2.57E+00	18%	2.21E-01	2%	1.16E+01	80%	No studies measuring total DDT in highway runoff		1.44E+01
25	4.07E-03	<1%	3.70E-01	18%	3.18E-02	2%	1.67E+00	80%			2.07E+00
50	1.06E-03	<1%	9.59E-02	18%	8.25E-03	2%	4.32E-01	80%			5.37E-01
75	2.74E-04	<1%	2.49E-02	18%	2.14E-03	2%	1.12E-01	80%			1.39E-01
95	3.93E-05	<1%	3.57E-03	18%	3.08E-04	2%	1.61E-02	80%			2.00E-02
Triclopyr (MT/year)											
5	9.67E-03	9%	7.72E-02	74%	2.21E-03	2%	1.55E-02	15%	No studies measuring triclopyr in highway runoff		1.05E-01
25	8.55E-04	6%	1.11E-02	77%	3.18E-04	2%	2.22E-03	15%			1.45E-02
50	1.58E-04	4%	2.88E-03	78%	8.25E-05	2%	5.76E-04	16%			3.69E-03
75	2.93E-05	3%	7.47E-04	79%	2.14E-05	2%	1.50E-04	16%			9.47E-04
95	2.59E-06	2%	1.07E-04	80%	3.08E-06	2%	2.15E-05	16%			1.34E-04
Nonylphenol (MT/year)											
5	5.66E-01	34%	7.72E-01	47%	1.11E-02	1%	2.64E-01	16%	3.16E-02	2%	1.65E+00
25	8.13E-02	35%	1.11E-01	48%	1.59E-03	1%	2.33E-02	10%	1.56E-02	7%	2.33E-01
50	2.11E-02	33%	2.88E-02	45%	4.13E-04	1%	4.32E-03	7%	9.59E-03	15%	6.42E-02
75	5.48E-03	28%	7.47E-03	38%	1.07E-04	1%	8.01E-04	4%	5.88E-03	30%	1.97E-02
95	7.87E-04	16%	1.07E-03	22%	1.54E-05	<1%	7.08E-05	1%	2.91E-03	60%	4.86E-03
Oil and Grease (MT/year)											
5	1.39E+02	5%	2.07E+03	79%	1.62E+01	1%	3.87E+02	15%	1.20E+01	<1%	2.63E+03
25	5.81E+01	8%	6.46E+02	84%	3.78E+00	<1%	5.55E+01	7%	5.97E+00	1%	7.70E+02
50	3.17E+01	9%	2.88E+02	85%	1.38E+00	<1%	1.44E+01	4%	3.67E+00	1%	3.39E+02
75	1.73E+01	11%	1.28E+02	84%	5.00E-01	<1%	3.74E+00	2%	2.26E+00	1%	1.52E+02
95	7.21E+00	15%	4.00E+01	82%	1.17E-01	<1%	5.37E-01	1%	1.12E+00	2%	4.90E+01

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B11. Re-calculated loading rates for Admiralty Inlet by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	2.31E-03	1%	7.68E-02	21%	2.13E-02	6%	2.68E-01	73%	6.76E-04	<1%	3.69E-01
25	1.06E-03	1%	3.37E-02	23%	9.78E-03	7%	1.02E-01	69%	4.14E-04	<1%	1.47E-01
50	6.21E-04	1%	1.90E-02	25%	5.70E-03	7%	5.18E-02	67%	2.94E-04	<1%	7.74E-02
75	3.57E-04	1%	1.07E-02	26%	3.32E-03	8%	2.64E-02	64%	2.09E-04	1%	4.10E-02
95	1.71E-04	1%	4.69E-03	28%	1.53E-03	9%	1.00E-02	61%	1.28E-04	1%	1.65E-02
Cadmium (MT/year)											
5	1.42E-03	1%	3.42E-02	36%	1.16E-02	12%	4.85E-02	50%	3.97E-04	<1%	9.61E-02
25	4.89E-04	3%	1.07E-02	55%	3.99E-03	21%	3.89E-03	20%	2.14E-04	1%	1.92E-02
50	2.33E-04	3%	4.75E-03	62%	1.90E-03	25%	6.73E-04	9%	1.40E-04	2%	7.69E-03
75	1.11E-04	3%	2.11E-03	63%	9.05E-04	27%	1.17E-04	3%	9.11E-05	3%	3.34E-03
95	3.81E-05	4%	6.59E-04	62%	3.11E-04	29%	9.35E-06	1%	4.92E-05	5%	1.07E-03
Copper (MT/year)											
5	1.70E-02	2%	1.97E-01	27%	1.37E-01	19%	3.73E-01	51%	6.71E-03	1%	7.30E-01
25	7.12E-03	3%	7.45E-02	30%	4.27E-02	17%	1.16E-01	48%	3.94E-03	2%	2.45E-01
50	3.88E-03	3%	3.80E-02	33%	1.90E-02	16%	5.18E-02	45%	2.73E-03	2%	1.15E-01
75	2.11E-03	4%	1.93E-02	35%	8.46E-03	15%	2.31E-02	42%	1.88E-03	3%	5.48E-02
95	8.83E-04	5%	7.33E-03	38%	2.64E-03	14%	7.19E-03	38%	1.11E-03	6%	1.92E-02
Lead (MT/year)											
5	2.06E-02	1%	1.12E+00	59%	1.26E-01	7%	5.89E-01	31%	4.51E-02	2%	1.90E+00
25	6.74E-03	2%	2.61E-01	63%	4.13E-02	10%	9.33E-02	22%	1.46E-02	3%	4.17E-01
50	3.10E-03	2%	9.49E-02	63%	1.90E-02	13%	2.59E-02	17%	6.66E-03	4%	1.50E-01
75	1.43E-03	3%	3.45E-02	63%	8.75E-03	16%	7.19E-03	13%	3.04E-03	6%	5.49E-02
95	4.68E-04	3%	8.05E-03	60%	2.87E-03	21%	1.14E-03	8%	9.85E-04	7%	1.35E-02
Zinc (MT/year)											
5	8.18E-02	3%	1.47E+00	56%	2.74E-01	10%	7.46E-01	28%	4.18E-02	2%	2.62E+00
25	3.42E-02	4%	5.59E-01	60%	8.54E-02	9%	2.33E-01	25%	2.21E-02	2%	9.33E-01
50	1.86E-02	4%	2.85E-01	62%	3.80E-02	8%	1.04E-01	23%	1.42E-02	3%	4.59E-01
75	1.01E-02	4%	1.45E-01	64%	1.69E-02	7%	4.61E-02	20%	9.15E-03	4%	2.27E-01
95	4.24E-03	5%	5.50E-02	66%	5.28E-03	6%	1.44E-02	17%	4.85E-03	6%	8.37E-02
Mercury (kg/year)											
5	3.66E-01	7%	1.12E+00	21%	7.14E-01	13%	3.05E+00	58%	5.63E-02	1%	5.31E+00
25	8.53E-02	7%	2.61E-01	22%	1.03E-01	9%	7.12E-01	60%	1.71E-02	1%	1.18E+00
50	3.10E-02	7%	9.49E-02	23%	2.66E-02	6%	2.59E-01	62%	7.50E-03	2%	4.19E-01
75	1.13E-02	8%	3.45E-02	23%	6.90E-03	5%	9.41E-02	63%	3.28E-03	2%	1.50E-01
95	2.63E-03	8%	8.05E-03	23%	9.91E-04	3%	2.20E-02	63%	9.99E-04	3%	3.46E-02
Total PCBs (kg/year)											
5	1.25E-01	1%	5.09E+00	54%	1.02E+00	11%	3.16E+00	34%	No studies measuring total PCBs in highway runoff		9.40E+00
25	1.79E-02	2%	7.31E-01	62%	1.46E-01	12%	2.80E-01	24%			1.18E+00
50	4.65E-03	2%	1.90E-01	67%	3.80E-02	13%	5.18E-02	18%			2.84E-01
75	1.21E-03	2%	4.93E-02	70%	9.86E-03	14%	9.59E-03	14%			6.99E-02
95	1.73E-04	2%	7.07E-03	74%	1.42E-03	15%	8.48E-04	9%			9.51E-03
Total PBDEs (g/year)											
5	8.33E-02	<1%	4.48E+00	24%	3.06E+00	16%	1.11E+01	59%	No studies measuring total PBDEs in highway runoff		1.87E+01
25	1.20E-02	<1%	1.04E+00	34%	4.39E-01	14%	1.60E+00	52%			3.09E+00
50	3.10E-03	<1%	3.80E-01	42%	1.14E-01	13%	4.14E-01	45%			9.11E-01
75	8.05E-04	<1%	1.38E-01	50%	2.96E-02	11%	1.08E-01	39%			2.76E-01
95	1.16E-04	<1%	3.22E-02	62%	4.25E-03	8%	1.54E-02	30%			5.20E-02
Carcinogenic PAHs (MT/year)											
5	1.83E-03	5%	1.68E-02	49%	6.72E-03	20%	8.34E-03	24%	4.86E-04	1%	3.42E-02
25	4.27E-04	6%	3.92E-03	53%	1.57E-03	21%	1.20E-03	16%	2.13E-04	3%	7.32E-03
50	1.55E-04	6%	1.42E-03	55%	5.70E-04	22%	3.11E-04	12%	1.20E-04	5%	2.58E-03
75	5.64E-05	6%	5.18E-04	56%	2.07E-04	22%	8.06E-05	9%	6.79E-05	7%	9.30E-04
95	1.32E-05	6%	1.21E-04	54%	4.83E-05	22%	1.16E-05	5%	2.98E-05	13%	2.24E-04

Table B11 (continued). Re-calculated loading rates for Admiralty Inlet by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Other High MW PAHs (MT/year)											
5	1.46E-03	6%	1.12E-02	46%	4.48E-03	18%	6.95E-03	28%	3.20E-04	1%	2.44E-02
25	3.41E-04	7%	2.61E-03	51%	1.05E-03	20%	9.98E-04	20%	1.20E-04	2%	5.11E-03
50	1.24E-04	7%	9.49E-04	54%	3.80E-04	21%	2.59E-04	15%	6.08E-05	3%	1.77E-03
75	4.51E-05	7%	3.45E-04	55%	1.38E-04	22%	6.72E-05	11%	3.08E-05	5%	6.26E-04
95	1.05E-05	7%	8.05E-05	56%	3.22E-05	22%	9.65E-06	7%	1.16E-05	8%	1.44E-04
Low MW PAHs (MT/year)											
5	5.49E-03	7%	3.36E-02	46%	1.34E-02	18%	2.08E-02	28%	2.84E-05	<1%	7.34E-02
25	1.28E-03	8%	7.83E-03	51%	3.14E-03	21%	2.99E-03	20%	1.92E-05	<1%	1.53E-02
50	4.65E-04	9%	2.85E-03	54%	1.14E-03	22%	7.77E-04	15%	1.46E-05	<1%	5.24E-03
75	1.69E-04	9%	1.04E-03	57%	4.15E-04	23%	2.02E-04	11%	1.11E-05	1%	1.83E-03
95	3.95E-05	10%	2.41E-04	58%	9.67E-05	23%	2.89E-05	7%	7.49E-06	2%	4.14E-04
bis(2-Ethylhexyl)phthalate (MT/year)											
5	4.16E-02	1%	2.55E+00	65%	1.02E+00	26%	3.16E-01	8%	2.76E-03	<1%	3.93E+00
25	5.98E-03	1%	3.66E-01	67%	1.46E-01	27%	2.80E-02	5%	1.61E-03	<1%	5.48E-01
50	1.55E-03	1%	9.49E-02	67%	3.80E-02	27%	5.18E-03	4%	1.11E-03	1%	1.41E-01
75	4.03E-04	1%	2.46E-02	67%	9.86E-03	27%	9.59E-04	3%	7.60E-04	2%	3.66E-02
95	5.78E-05	1%	3.54E-03	64%	1.42E-03	26%	8.48E-05	2%	4.44E-04	8%	5.54E-03
Total Dioxin TEQs (g/year)											
5	4.16E-02	2%	1.27E+00	59%	5.10E-01	24%	3.16E-01	15%	No studies measuring total dioxin TEQs in highway runoff		2.14E+00
25	5.98E-03	2%	1.83E-01	63%	7.32E-02	25%	2.80E-02	10%			2.90E-01
50	1.55E-03	2%	4.75E-02	65%	1.90E-02	26%	5.18E-03	7%			7.32E-02
75	4.03E-04	2%	1.23E-02	66%	4.93E-03	26%	9.59E-04	5%			1.86E-02
95	5.78E-05	2%	1.77E-03	68%	7.08E-04	27%	8.48E-05	3%			2.62E-03
Total DDT (kg/year)											
5	8.33E-04	<1%	2.55E-01	5%	6.12E-01	12%	4.17E+00	83%	No studies measuring total DDT in highway runoff		5.04E+00
25	1.20E-04	<1%	3.66E-02	5%	8.79E-02	12%	5.99E-01	83%			7.23E-01
50	3.10E-05	<1%	9.49E-03	5%	2.28E-02	12%	1.55E-01	83%			1.88E-01
75	8.05E-06	<1%	2.46E-03	5%	5.92E-03	12%	4.03E-02	83%			4.87E-02
95	1.16E-06	<1%	3.54E-04	5%	8.50E-04	12%	5.79E-03	83%			6.99E-03
Triclopyr (MT/year)											
5	2.84E-04	1%	7.64E-03	39%	6.12E-03	31%	5.56E-03	28%	No studies measuring triclopyr in highway runoff		1.96E-02
25	2.51E-05	1%	1.10E-03	39%	8.79E-04	31%	7.98E-04	29%			2.80E-03
50	4.65E-06	1%	2.85E-04	39%	2.28E-04	31%	2.07E-04	29%			7.25E-04
75	8.62E-07	<1%	7.39E-05	39%	5.92E-05	32%	5.38E-05	29%			1.88E-04
95	7.62E-08	<1%	1.06E-05	39%	8.50E-06	32%	7.72E-06	29%			2.69E-05
Nonylphenol (MT/year)											
5	1.67E-02	8%	7.64E-02	35%	3.06E-02	14%	9.49E-02	43%	2.82E-03	1%	2.21E-01
25	2.39E-03	9%	1.10E-02	40%	4.39E-03	16%	8.39E-03	30%	1.40E-03	5%	2.75E-02
50	6.21E-04	9%	2.85E-03	41%	1.14E-03	16%	1.55E-03	22%	8.57E-04	12%	7.02E-03
75	1.61E-04	8%	7.39E-04	37%	2.96E-04	15%	2.88E-04	14%	5.26E-04	26%	2.01E-03
95	2.31E-05	5%	1.06E-04	23%	4.25E-05	9%	2.54E-05	6%	2.60E-04	57%	4.57E-04
Oil and Grease (MT/year)											
5	4.09E+00	1%	2.05E+02	52%	4.48E+01	11%	1.39E+02	35%	1.08E+00	<1%	3.94E+02
25	1.71E+00	2%	6.40E+01	66%	1.05E+01	11%	2.00E+01	21%	5.34E-01	1%	9.66E+01
50	9.31E-01	2%	2.85E+01	74%	3.80E+00	10%	5.18E+00	13%	3.28E-01	1%	3.87E+01
75	5.07E-01	3%	1.27E+01	79%	1.38E+00	9%	1.34E+00	8%	2.02E-01	1%	1.61E+01
95	2.12E-01	4%	3.96E+00	83%	3.22E-01	7%	1.93E-01	4%	1.00E-01	2%	4.78E+00

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B12. Re-calculated loading rates for Strait of Juan de Fuca by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	2.62E-02	<1%	4.60E-01	2%	1.16E-01	1%	2.22E+01	97%	2.55E-02	<1%	2.28E+01
25	1.21E-02	<1%	2.02E-01	2%	5.32E-02	1%	8.41E+00	97%	1.56E-02	<1%	8.69E+00
50	7.04E-03	<1%	1.14E-01	3%	3.10E-02	1%	4.28E+00	96%	1.11E-02	<1%	4.44E+00
75	4.05E-03	<1%	6.41E-02	3%	1.81E-02	1%	2.18E+00	96%	7.90E-03	<1%	2.28E+00
95	1.93E-03	<1%	2.81E-02	3%	8.32E-03	1%	8.27E-01	95%	4.83E-03	1%	8.70E-01
Cadmium (MT/year)											
5	1.61E-02	<1%	2.05E-01	5%	6.31E-02	1%	4.01E+00	93%	1.50E-02	<1%	4.31E+00
25	5.54E-03	1%	6.39E-02	15%	2.17E-02	5%	3.22E-01	76%	8.10E-03	2%	4.21E-01
50	2.64E-03	3%	2.84E-02	28%	1.03E-02	10%	5.57E-02	54%	5.28E-03	5%	1.02E-01
75	1.26E-03	4%	1.27E-02	40%	4.92E-03	15%	9.64E-03	30%	3.44E-03	11%	3.19E-02
95	4.32E-04	5%	3.95E-03	45%	1.69E-03	19%	7.73E-04	9%	1.86E-03	21%	8.71E-03
Copper (MT/year)											
5	1.93E-01	1%	1.18E+00	4%	7.44E-01	2%	3.08E+01	93%	2.53E-01	1%	3.32E+01
25	8.07E-02	1%	4.47E-01	4%	2.32E-01	2%	9.62E+00	91%	1.49E-01	1%	1.05E+01
50	4.40E-02	1%	2.28E-01	5%	1.03E-01	2%	4.28E+00	90%	1.03E-01	2%	4.76E+00
75	2.40E-02	1%	1.16E-01	5%	4.60E-02	2%	1.91E+00	88%	7.12E-02	3%	2.16E+00
95	1.00E-02	1%	4.39E-02	6%	1.44E-02	2%	5.95E-01	84%	4.18E-02	6%	7.05E-01
Lead (MT/year)											
5	2.33E-01	<1%	6.71E+00	12%	6.85E-01	1%	4.87E+01	84%	1.70E+00	3%	5.81E+01
25	7.64E-02	1%	1.56E+00	15%	2.25E-01	2%	7.71E+00	76%	5.51E-01	5%	1.01E+01
50	3.52E-02	1%	5.69E-01	18%	1.03E-01	3%	2.14E+00	69%	2.52E-01	8%	3.10E+00
75	1.62E-02	2%	2.07E-01	21%	4.76E-02	5%	5.94E-01	61%	1.15E-01	12%	9.80E-01
95	5.31E-03	3%	4.82E-02	24%	1.56E-02	8%	9.40E-02	47%	3.72E-02	19%	2.00E-01
Zinc (MT/year)											
5	9.28E-01	1%	8.84E+00	12%	1.49E+00	2%	6.16E+01	83%	1.58E+00	2%	7.45E+01
25	3.87E-01	2%	3.35E+00	14%	4.64E-01	2%	1.92E+01	79%	8.36E-01	3%	2.43E+01
50	2.11E-01	2%	1.71E+00	15%	2.07E-01	2%	8.56E+00	76%	5.37E-01	5%	1.12E+01
75	1.15E-01	2%	8.69E-01	17%	9.20E-02	2%	3.81E+00	73%	3.46E-01	7%	5.23E+00
95	4.80E-02	3%	3.29E-01	19%	2.87E-02	2%	1.19E+00	67%	1.83E-01	10%	1.78E+00
Mercury (kg/year)											
5	4.15E+00	2%	6.71E+00	2%	3.88E+00	1%	2.52E+02	94%	2.13E+00	1%	2.69E+02
25	9.68E-01	2%	1.56E+00	2%	5.58E-01	1%	5.89E+01	94%	6.47E-01	1%	6.26E+01
50	3.52E-01	2%	5.69E-01	2%	1.45E-01	1%	2.14E+01	94%	2.83E-01	1%	2.28E+01
75	1.28E-01	2%	2.07E-01	2%	3.76E-02	<1%	7.78E+00	94%	1.24E-01	1%	8.28E+00
95	2.98E-02	2%	4.82E-02	2%	5.39E-03	<1%	1.82E+00	94%	3.77E-02	2%	1.94E+00
Total PCBs (kg/year)											
5	1.42E+00	<1%	3.05E+01	10%	5.55E+00	2%	2.62E+02	87%	No studies measuring total PCBs in highway runoff		2.99E+02
25	2.03E-01	1%	4.38E+00	15%	7.97E-01	3%	2.31E+01	81%			2.85E+01
50	5.28E-02	1%	1.14E+00	20%	2.07E-01	4%	4.28E+00	75%			5.68E+00
75	1.37E-02	1%	2.95E-01	26%	5.36E-02	5%	7.93E-01	69%			1.16E+00
95	1.97E-03	2%	4.24E-02	35%	7.70E-03	6%	7.01E-02	57%			1.22E-01
Total PBDEs (g/year)											
5	9.44E-01	<1%	2.68E+01	3%	1.66E+01	2%	9.19E+02	95%	No studies measuring total PBDEs in highway runoff		9.64E+02
25	1.36E-01	<1%	6.26E+00	4%	2.39E+00	2%	1.32E+02	94%			1.41E+02
50	3.52E-02	<1%	2.28E+00	6%	6.20E-01	2%	3.43E+01	92%			3.72E+01
75	9.13E-03	<1%	8.27E-01	8%	1.61E-01	2%	8.89E+00	90%			9.89E+00
95	1.31E-03	<1%	1.93E-01	13%	2.31E-02	2%	1.28E+00	85%			1.49E+00
Carcinogenic PAHs (MT/year)											
5	2.07E-02	2%	1.01E-01	12%	3.66E-02	4%	6.89E-01	80%	1.83E-02	2%	8.66E-01
25	4.84E-03	3%	2.35E-02	16%	8.53E-03	6%	9.90E-02	69%	8.05E-03	6%	1.44E-01
50	1.76E-03	4%	8.53E-03	20%	3.10E-03	7%	2.57E-02	59%	4.55E-03	10%	4.36E-02
75	6.40E-04	5%	3.10E-03	22%	1.13E-03	8%	6.67E-03	47%	2.56E-03	18%	1.41E-02
95	1.49E-04	5%	7.24E-04	22%	2.63E-04	8%	9.57E-04	30%	1.13E-03	35%	3.22E-03

Table B12 (continued). Re-calculated loading rates for Strait of Juan de Fuca by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study Area Loading
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	
Other High MW PAHs (MT/year)											
5	1.66E-02	2%	6.71E-02	10%	2.44E-02	4%	5.75E-01	83%	1.21E-02	2%	6.95E-01
25	3.87E-03	3%	1.56E-02	14%	5.69E-03	5%	8.25E-02	74%	4.54E-03	4%	1.12E-01
50	1.41E-03	4%	5.69E-03	17%	2.07E-03	6%	2.14E-02	65%	2.30E-03	7%	3.29E-02
75	5.12E-04	5%	2.07E-03	21%	7.52E-04	7%	5.56E-03	55%	1.16E-03	12%	1.01E-02
95	1.19E-04	6%	4.82E-04	24%	1.75E-04	9%	7.98E-04	40%	4.38E-04	22%	2.01E-03
Low MW PAHs (MT/year)											
5	6.22E-02	3%	2.01E-01	10%	7.31E-02	4%	1.72E+00	84%	1.07E-03	<1%	2.06E+00
25	1.45E-02	4%	4.69E-02	14%	1.71E-02	5%	2.48E-01	76%	7.24E-04	<1%	3.27E-01
50	5.28E-03	6%	1.71E-02	18%	6.20E-03	7%	6.42E-02	69%	5.51E-04	1%	9.33E-02
75	1.92E-03	7%	6.20E-03	23%	2.25E-03	8%	1.67E-02	61%	4.19E-04	2%	2.75E-02
95	4.48E-04	9%	1.45E-03	28%	5.26E-04	10%	2.39E-03	47%	2.83E-04	6%	5.10E-03
bis(2-Ethylhexyl)phthalate (MT/year)											
5	4.72E-01	1%	1.53E+01	32%	5.55E+00	12%	2.62E+01	55%	1.04E-01	<1%	4.75E+01
25	6.78E-02	1%	2.19E+00	40%	7.97E-01	15%	2.31E+00	43%	6.07E-02	1%	5.43E+00
50	1.76E-02	1%	5.69E-01	45%	2.07E-01	16%	4.28E-01	34%	4.18E-02	3%	1.26E+00
75	4.56E-03	1%	1.48E-01	47%	5.36E-02	17%	7.93E-02	25%	2.87E-02	9%	3.14E-01
95	6.55E-04	1%	2.12E-02	40%	7.70E-03	14%	7.01E-03	13%	1.68E-02	31%	5.33E-02
Total Dioxin TEQs (g/year)											
5	4.72E-01	1%	7.63E+00	21%	2.77E+00	7%	2.62E+01	71%	No studies measuring total dioxin TEQs in highway runoff		3.70E+01
25	6.78E-02	2%	1.10E+00	28%	3.98E-01	10%	2.31E+00	60%			3.87E+00
50	1.76E-02	2%	2.84E-01	34%	1.03E-01	12%	4.28E-01	51%			8.34E-01
75	4.56E-03	2%	7.38E-02	40%	2.68E-02	15%	7.93E-02	43%			1.85E-01
95	6.55E-04	3%	1.06E-02	48%	3.85E-03	17%	7.01E-03	32%			2.21E-02
Total DDT (kg/year)											
5	9.44E-03	<1%	1.53E+00	<1%	3.33E+00	1%	3.45E+02	99%	No studies measuring total DDT in highway runoff		3.50E+02
25	1.36E-03	<1%	2.19E-01	<1%	4.78E-01	1%	4.95E+01	99%			5.02E+01
50	3.52E-04	<1%	5.69E-02	<1%	1.24E-01	1%	1.28E+01	99%			1.30E+01
75	9.13E-05	<1%	1.48E-02	<1%	3.22E-02	1%	3.33E+00	99%			3.38E+00
95	1.31E-05	<1%	2.12E-03	<1%	4.62E-03	1%	4.79E-01	99%			4.85E-01
Triclopyr (MT/year)											
5	3.22E-03	1%	4.58E-02	8%	3.33E-02	6%	4.60E-01	85%	No studies measuring triclopyr in highway runoff		5.42E-01
25	2.85E-04	<1%	6.58E-03	8%	4.78E-03	6%	6.60E-02	85%			7.76E-02
50	5.28E-05	<1%	1.71E-03	8%	1.24E-03	6%	1.71E-02	85%			2.01E-02
75	9.77E-06	<1%	4.43E-04	8%	3.22E-04	6%	4.44E-03	85%			5.22E-03
95	8.64E-07	<1%	6.36E-05	8%	4.62E-05	6%	6.38E-04	85%			7.49E-04
Nonylphenol (MT/year)											
5	1.89E-01	2%	4.58E-01	5%	1.66E-01	2%	7.85E+00	90%	1.07E-01	1%	8.77E+00
25	2.71E-02	3%	6.58E-02	8%	2.39E-02	3%	6.94E-01	80%	5.28E-02	6%	8.63E-01
50	7.04E-03	4%	1.71E-02	9%	6.20E-03	3%	1.28E-01	67%	3.24E-02	17%	1.91E-01
75	1.83E-03	4%	4.43E-03	9%	1.61E-03	3%	2.38E-02	46%	1.99E-02	39%	5.15E-02
95	2.62E-04	2%	6.36E-04	5%	2.31E-04	2%	2.10E-03	16%	9.83E-03	75%	1.31E-02
Oil and Grease (MT/year)											
5	4.64E+01	<1%	1.23E+03	9%	2.44E+02	2%	1.15E+04	88%	4.06E+01	<1%	1.30E+04
25	1.94E+01	1%	3.83E+02	18%	5.69E+01	3%	1.65E+03	77%	2.02E+01	1%	2.13E+03
50	1.06E+01	2%	1.71E+02	27%	2.07E+01	3%	4.28E+02	67%	1.24E+01	2%	6.42E+02
75	5.75E+00	3%	7.60E+01	37%	7.52E+00	4%	1.11E+02	53%	7.63E+00	4%	2.08E+02
95	2.40E+00	5%	2.37E+01	50%	1.75E+00	4%	1.60E+01	34%	3.79E+00	8%	4.76E+01

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B13. Re-calculated loading rates for Strait of Georgia by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	1.41E-01	<1%	1.83E+00	6%	1.82E+00	6%	2.48E+01	87%	2.37E-02	<1%	2.86E+01
25	6.47E-02	1%	8.00E-01	7%	8.37E-01	8%	9.39E+00	85%	1.45E-02	<1%	1.11E+01
50	3.77E-02	1%	4.51E-01	8%	4.88E-01	8%	4.78E+00	83%	1.03E-02	<1%	5.77E+00
75	2.17E-02	1%	2.54E-01	8%	2.84E-01	9%	2.44E+00	81%	7.32E-03	<1%	3.00E+00
95	1.04E-02	1%	1.11E-01	9%	1.31E-01	11%	9.23E-01	78%	4.48E-03	<1%	1.18E+00
Cadmium (MT/year)											
5	8.64E-02	1%	8.12E-01	13%	9.93E-01	16%	4.47E+00	70%	1.39E-02	<1%	6.38E+00
25	2.97E-02	3%	2.53E-01	26%	3.42E-01	34%	3.59E-01	36%	7.51E-03	1%	9.91E-01
50	1.42E-02	4%	1.13E-01	32%	1.63E-01	46%	6.22E-02	17%	4.89E-03	1%	3.57E-01
75	6.74E-03	5%	5.02E-02	34%	7.74E-02	52%	1.08E-02	7%	3.19E-03	2%	1.48E-01
95	2.32E-03	5%	1.57E-02	33%	2.66E-02	56%	8.63E-04	2%	1.72E-03	4%	4.72E-02
Copper (MT/year)											
5	1.04E+00	2%	4.67E+00	9%	1.17E+01	22%	3.44E+01	66%	2.35E-01	<1%	5.21E+01
25	4.33E-01	3%	1.77E+00	11%	3.65E+00	22%	1.07E+01	64%	1.38E-01	1%	1.67E+01
50	2.36E-01	3%	9.02E-01	12%	1.63E+00	21%	4.78E+00	63%	9.55E-02	1%	7.64E+00
75	1.29E-01	4%	4.60E-01	13%	7.24E-01	21%	2.13E+00	61%	6.60E-02	2%	3.51E+00
95	5.37E-02	5%	1.74E-01	15%	2.26E-01	20%	6.64E-01	57%	3.88E-02	3%	1.16E+00
Lead (MT/year)											
5	1.25E+00	1%	2.66E+01	28%	1.08E+01	11%	5.44E+01	58%	1.58E+00	2%	9.46E+01
25	4.10E-01	2%	6.20E+00	32%	3.53E+00	18%	8.61E+00	45%	5.11E-01	3%	1.93E+01
50	1.89E-01	3%	2.26E+00	34%	1.63E+00	24%	2.39E+00	36%	2.33E-01	3%	6.69E+00
75	8.69E-02	4%	8.20E-01	34%	7.49E-01	31%	6.64E-01	27%	1.07E-01	4%	2.43E+00
95	2.85E-02	5%	1.91E-01	32%	2.45E-01	41%	1.05E-01	17%	3.45E-02	6%	6.05E-01
Zinc (MT/year)											
5	4.98E+00	4%	3.51E+01	26%	2.34E+01	18%	6.88E+01	51%	1.46E+00	1%	1.34E+02
25	2.08E+00	5%	1.33E+01	30%	7.31E+00	16%	2.15E+01	48%	7.75E-01	2%	4.49E+01
50	1.13E+00	5%	6.77E+00	32%	3.25E+00	15%	9.56E+00	45%	4.98E-01	2%	2.12E+01
75	6.17E-01	6%	3.45E+00	34%	1.45E+00	14%	4.26E+00	42%	3.20E-01	3%	1.01E+01
95	2.58E-01	7%	1.31E+00	37%	4.52E-01	13%	1.33E+00	38%	1.70E-01	5%	3.51E+00
Mercury (kg/year)											
5	2.23E+01	6%	2.66E+01	7%	6.11E+01	16%	2.82E+02	72%	1.97E+00	1%	3.94E+02
25	5.19E+00	6%	6.20E+00	7%	8.77E+00	10%	6.57E+01	76%	6.00E-01	1%	8.65E+01
50	1.89E+00	6%	2.26E+00	7%	2.28E+00	7%	2.39E+01	78%	2.63E-01	1%	3.06E+01
75	6.86E-01	6%	8.20E-01	8%	5.91E-01	5%	8.69E+00	80%	1.15E-01	1%	1.09E+01
95	1.60E-01	6%	1.91E-01	8%	8.48E-02	3%	2.03E+00	81%	3.50E-02	1%	2.50E+00
Total PCBs (kg/year)											
5	7.60E+00	1%	1.21E+02	24%	8.73E+01	17%	2.92E+02	57%	No studies measuring total PCBs in highway runoff		5.08E+02
25	1.09E+00	2%	1.74E+01	31%	1.25E+01	22%	2.58E+01	45%			5.68E+01
50	2.83E-01	2%	4.51E+00	35%	3.25E+00	25%	4.78E+00	37%			1.28E+01
75	7.35E-02	2%	1.17E+00	39%	8.44E-01	28%	8.86E-01	30%			2.97E+00
95	1.05E-02	3%	1.68E-01	44%	1.21E-01	32%	7.83E-02	21%			3.78E-01
Total PBDEs (g/year)											
5	5.06E+00	<1%	1.06E+02	8%	2.62E+02	19%	1.03E+03	73%	No studies measuring total PBDEs in highway runoff		1.40E+03
25	7.27E-01	<1%	2.48E+01	12%	3.76E+01	18%	1.47E+02	70%			2.11E+02
50	1.89E-01	<1%	9.02E+00	16%	9.76E+00	17%	3.82E+01	67%			5.72E+01
75	4.90E-02	<1%	3.28E+00	21%	2.53E+00	16%	9.93E+00	63%			1.58E+01
95	7.03E-03	<1%	7.65E-01	30%	3.64E-01	14%	1.43E+00	56%			2.56E+00
Carcinogenic PAHs (MT/year)											
5	1.11E-01	6%	3.99E-01	21%	5.75E-01	31%	7.70E-01	41%	1.70E-02	1%	1.87E+00
25	2.60E-02	7%	9.31E-02	25%	1.34E-01	36%	1.11E-01	30%	7.47E-03	2%	3.71E-01
50	9.44E-03	8%	3.38E-02	27%	4.88E-02	39%	2.87E-02	23%	4.22E-03	3%	1.25E-01
75	3.43E-03	8%	1.23E-02	28%	1.77E-02	41%	7.44E-03	17%	2.38E-03	5%	4.33E-02
95	8.00E-04	8%	2.87E-03	29%	4.14E-03	42%	1.07E-03	11%	1.04E-03	11%	9.92E-03

Table B13 (continued). Re-calculated loading rates for Strait of Georgia by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Other High MW PAHs (MT/year)											
5	8.90E-02	6%	2.66E-01	19%	3.83E-01	28%	6.41E-01	46%	1.12E-02	1%	1.39E+00
25	2.08E-02	8%	6.20E-02	23%	8.95E-02	33%	9.21E-02	34%	4.21E-03	2%	2.69E-01
50	7.55E-03	9%	2.26E-02	25%	3.25E-02	37%	2.39E-02	27%	2.13E-03	2%	8.87E-02
75	2.74E-03	9%	8.20E-03	27%	1.18E-02	39%	6.20E-03	21%	1.08E-03	4%	3.01E-02
95	6.40E-04	10%	1.91E-03	29%	2.76E-03	42%	8.91E-04	13%	4.06E-04	6%	6.61E-03
Low MW PAHs (MT/year)											
5	3.34E-01	8%	7.98E-01	19%	1.15E+00	27%	1.92E+00	46%	9.95E-04	<1%	4.21E+00
25	7.79E-02	10%	1.86E-01	23%	2.68E-01	33%	2.76E-01	34%	6.72E-04	<1%	8.09E-01
50	2.83E-02	11%	6.77E-02	25%	9.76E-02	37%	7.17E-02	27%	5.11E-04	<1%	2.66E-01
75	1.03E-02	12%	2.46E-02	28%	3.55E-02	40%	1.86E-02	21%	3.89E-04	<1%	8.94E-02
95	2.40E-03	12%	5.74E-03	30%	8.28E-03	43%	2.67E-03	14%	2.62E-04	1%	1.94E-02
bis(2-Ethylhexyl)phthalate (MT/year)											
5	2.53E+00	1%	6.05E+01	34%	8.73E+01	49%	2.92E+01	16%	9.65E-02	<1%	1.80E+02
25	3.64E-01	2%	8.69E+00	36%	1.25E+01	52%	2.58E+00	11%	5.63E-02	<1%	2.42E+01
50	9.44E-02	2%	2.26E+00	37%	3.25E+00	53%	4.78E-01	8%	3.87E-02	1%	6.12E+00
75	2.45E-02	2%	5.85E-01	37%	8.44E-01	54%	8.86E-02	6%	2.66E-02	2%	1.57E+00
95	3.52E-03	2%	8.41E-02	36%	1.21E-01	52%	7.83E-03	3%	1.55E-02	7%	2.32E-01
Total Dioxin TEQs (g/year)											
5	2.53E+00	2%	3.03E+01	29%	4.36E+01	41%	2.92E+01	28%	No studies measuring total dioxin TEQs in highway runoff		1.06E+02
25	3.64E-01	3%	4.35E+00	32%	6.27E+00	46%	2.58E+00	19%			1.36E+01
50	9.44E-02	3%	1.13E+00	34%	1.63E+00	49%	4.78E-01	14%			3.33E+00
75	2.45E-02	3%	2.93E-01	35%	4.22E-01	51%	8.86E-02	11%			8.28E-01
95	3.52E-03	3%	4.20E-02	37%	6.06E-02	53%	7.83E-03	7%			1.14E-01
Total DDT (kg/year)											
5	5.06E-02	<1%	6.05E+00	1%	5.24E+01	12%	3.85E+02	87%	No studies measuring total DDT in highway runoff		4.43E+02
25	7.27E-03	<1%	8.69E-01	1%	7.52E+00	12%	5.53E+01	87%			6.37E+01
50	1.89E-03	<1%	2.26E-01	1%	1.95E+00	12%	1.43E+01	87%			1.65E+01
75	4.90E-04	<1%	5.85E-02	1%	5.06E-01	12%	3.72E+00	87%			4.29E+00
95	7.03E-05	<1%	8.41E-03	1%	7.27E-02	12%	5.34E-01	87%			6.16E-01
Triclopyr (MT/year)											
5	1.73E-02	1%	1.82E-01	15%	5.24E-01	42%	5.13E-01	42%	No studies measuring triclopyr in highway runoff		1.24E+00
25	1.53E-03	1%	2.61E-02	15%	7.52E-02	43%	7.37E-02	42%			1.77E-01
50	2.83E-04	1%	6.77E-03	15%	1.95E-02	43%	1.91E-02	42%			4.57E-02
75	5.24E-05	<1%	1.76E-03	15%	5.06E-03	43%	4.96E-03	42%			1.18E-02
95	4.64E-06	<1%	2.52E-04	15%	7.27E-04	43%	7.13E-04	42%			1.70E-03
Nonylphenol (MT/year)											
5	1.01E+00	7%	1.82E+00	13%	2.62E+00	18%	8.76E+00	61%	9.89E-02	1%	1.43E+01
25	1.45E-01	9%	2.61E-01	16%	3.76E-01	23%	7.74E-01	48%	4.90E-02	3%	1.61E+00
50	3.77E-02	10%	6.77E-02	18%	9.76E-02	26%	1.43E-01	38%	3.00E-02	8%	3.76E-01
75	9.80E-03	10%	1.76E-02	18%	2.53E-02	26%	2.66E-02	27%	1.84E-02	19%	9.77E-02
95	1.41E-03	7%	2.52E-03	13%	3.64E-03	19%	2.35E-03	12%	9.11E-03	48%	1.90E-02
Oil and Grease (MT/year)											
5	2.49E+02	1%	4.87E+03	22%	3.83E+03	18%	1.28E+04	59%	3.77E+01	<1%	2.18E+04
25	1.04E+02	2%	1.52E+03	35%	8.95E+02	20%	1.84E+03	42%	1.87E+01	<1%	4.38E+03
50	5.66E+01	4%	6.77E+02	44%	3.25E+02	21%	4.78E+02	31%	1.15E+01	1%	1.55E+03
75	3.09E+01	5%	3.01E+02	52%	1.18E+02	20%	1.24E+02	21%	7.07E+00	1%	5.81E+02
95	1.29E+01	8%	9.40E+01	60%	2.76E+01	18%	1.78E+01	11%	3.51E+00	2%	1.56E+02

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B14. Re-calculated loading rates for Whidbey Basin by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	6.30E-02	<1%	3.21E+00	3%	9.68E-01	1%	8.84E+01	95%	2.45E-02	<1%	9.27E+01
25	2.90E-02	<1%	1.41E+00	4%	4.45E-01	1%	3.35E+01	95%	1.50E-02	<1%	3.54E+01
50	1.69E-02	<1%	7.93E-01	4%	2.60E-01	1%	1.71E+01	94%	1.07E-02	<1%	1.81E+01
75	9.72E-03	<1%	4.47E-01	5%	1.51E-01	2%	8.69E+00	93%	7.58E-03	<1%	9.31E+00
95	4.65E-03	<1%	1.96E-01	5%	6.97E-02	2%	3.29E+00	92%	4.64E-03	<1%	3.57E+00
Cadmium (MT/year)											
5	3.87E-02	<1%	1.43E+00	8%	5.29E-01	3%	1.60E+01	89%	1.44E-02	<1%	1.80E+01
25	1.33E-02	1%	4.46E-01	23%	1.82E-01	9%	1.28E+00	66%	7.77E-03	<1%	1.93E+00
50	6.34E-03	1%	1.98E-01	38%	8.66E-02	17%	2.22E-01	43%	5.07E-03	1%	5.18E-01
75	3.02E-03	2%	8.83E-02	51%	4.12E-02	24%	3.84E-02	22%	3.30E-03	2%	1.74E-01
95	1.04E-03	2%	2.76E-02	58%	1.42E-02	30%	3.08E-03	6%	1.78E-03	4%	4.76E-02
Copper (MT/year)											
5	4.64E-01	<1%	8.22E+00	6%	6.23E+00	5%	1.23E+02	89%	2.43E-01	<1%	1.38E+02
25	1.94E-01	<1%	3.11E+00	7%	1.94E+00	4%	3.83E+01	88%	1.43E-01	<1%	4.37E+01
50	1.06E-01	1%	1.59E+00	8%	8.66E-01	4%	1.71E+01	87%	9.88E-02	1%	1.97E+01
75	5.76E-02	1%	8.08E-01	9%	3.85E-01	4%	7.60E+00	85%	6.83E-02	1%	8.92E+00
95	2.40E-02	1%	3.06E-01	11%	1.20E-01	4%	2.37E+00	83%	4.02E-02	1%	2.86E+00
Lead (MT/year)											
5	5.60E-01	<1%	4.68E+01	19%	5.74E+00	2%	1.94E+02	78%	1.63E+00	1%	2.49E+02
25	1.84E-01	<1%	1.09E+01	25%	1.88E+00	4%	3.07E+01	69%	5.29E-01	1%	4.42E+01
50	8.45E-02	1%	3.97E+00	29%	8.66E-01	6%	8.53E+00	62%	2.42E-01	2%	1.37E+01
75	3.89E-02	1%	1.44E+00	33%	3.98E-01	9%	2.37E+00	54%	1.10E-01	3%	4.36E+00
95	1.28E-02	1%	3.36E-01	38%	1.31E-01	15%	3.75E-01	42%	3.57E-02	4%	8.90E-01
Zinc (MT/year)											
5	2.23E+00	1%	6.16E+01	19%	1.25E+01	4%	2.46E+02	76%	1.51E+00	<1%	3.24E+02
25	9.31E-01	1%	2.34E+01	22%	3.89E+00	4%	7.67E+01	73%	8.02E-01	1%	1.06E+02
50	5.07E-01	1%	1.19E+01	24%	1.73E+00	4%	3.41E+01	70%	5.16E-01	1%	4.88E+01
75	2.76E-01	1%	6.06E+00	27%	7.71E-01	3%	1.52E+01	67%	3.32E-01	1%	2.26E+01
95	1.15E-01	2%	2.30E+00	30%	2.40E-01	3%	4.74E+00	63%	1.76E-01	2%	7.57E+00
Mercury (kg/year)											
5	9.97E+00	1%	4.68E+01	4%	3.25E+01	3%	1.01E+03	92%	2.04E+00	<1%	1.10E+03
25	2.32E+00	1%	1.09E+01	4%	4.67E+00	2%	2.35E+02	93%	6.21E-01	<1%	2.53E+02
50	8.45E-01	1%	3.97E+00	4%	1.21E+00	1%	8.53E+01	93%	2.72E-01	<1%	9.16E+01
75	3.07E-01	1%	1.44E+00	4%	3.14E-01	1%	3.10E+01	93%	1.19E-01	<1%	3.32E+01
95	7.17E-02	1%	3.36E-01	4%	4.52E-02	1%	7.24E+00	94%	3.62E-02	<1%	7.73E+00
Total PCBs (kg/year)											
5	3.40E+00	<1%	2.13E+02	16%	4.65E+01	4%	1.04E+03	80%	No studies measuring total PCBs in highway runoff		1.31E+03
25	4.89E-01	<1%	3.06E+01	24%	6.67E+00	5%	9.22E+01	71%			1.30E+02
50	1.27E-01	<1%	7.93E+00	30%	1.73E+00	6%	1.71E+01	64%			2.69E+01
75	3.29E-02	1%	2.06E+00	36%	4.49E-01	8%	3.16E+00	55%			5.70E+00
95	4.73E-03	1%	2.96E-01	46%	6.45E-02	10%	2.79E-01	43%			6.44E-01
Total PBDEs (g/year)											
5	2.27E+00	<1%	1.87E+02	5%	1.39E+02	3%	3.66E+03	92%	No studies measuring total PBDEs in highway runoff		3.99E+03
25	3.26E-01	<1%	4.36E+01	7%	2.00E+01	3%	5.26E+02	89%			5.90E+02
50	8.45E-02	<1%	1.59E+01	10%	5.19E+00	3%	1.37E+02	87%			1.58E+02
75	2.19E-02	<1%	5.77E+00	14%	1.35E+00	3%	3.54E+01	83%			4.26E+01
95	3.15E-03	<1%	1.35E+00	20%	1.94E-01	3%	5.09E+00	77%			6.63E+00
Carcinogenic PAHs (MT/year)											
5	4.98E-02	1%	7.02E-01	18%	3.06E-01	8%	2.75E+00	72%	1.76E-02	<1%	3.82E+00
25	1.16E-02	2%	1.64E-01	25%	7.14E-02	11%	3.95E-01	61%	7.73E-03	1%	6.49E-01
50	4.23E-03	2%	5.95E-02	30%	2.60E-02	13%	1.02E-01	52%	4.36E-03	2%	1.96E-01
75	1.54E-03	2%	2.16E-02	35%	9.44E-03	15%	2.66E-02	43%	2.46E-03	4%	6.17E-02
95	3.58E-04	3%	5.05E-03	40%	2.20E-03	18%	3.82E-03	31%	1.08E-03	9%	1.25E-02

Table B14 (continued). Re-calculatd loading rates for Whidbey Basin by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Other High MW PAHs (MT/year)											
5	3.99E-02	1%	4.68E-01	16%	2.04E-01	7%	2.29E+00	76%	1.16E-02	<1%	3.01E+00
25	9.30E-03	2%	1.09E-01	22%	4.76E-02	10%	3.29E-01	66%	4.36E-03	1%	4.99E-01
50	3.38E-03	2%	3.97E-02	27%	1.73E-02	12%	8.53E-02	58%	2.21E-03	1%	1.48E-01
75	1.23E-03	3%	1.44E-02	32%	6.29E-03	14%	2.21E-02	49%	1.12E-03	2%	4.52E-02
95	2.87E-04	3%	3.36E-03	39%	1.47E-03	17%	3.18E-03	36%	4.20E-04	5%	8.72E-03
Low MW PAHs (MT/year)											
5	1.50E-01	2%	1.40E+00	16%	6.12E-01	7%	6.87E+00	76%	1.03E-03	<1%	9.04E+00
25	3.49E-02	2%	3.27E-01	22%	1.43E-01	10%	9.87E-01	66%	6.95E-04	<1%	1.49E+00
50	1.27E-02	3%	1.19E-01	27%	5.19E-02	12%	2.56E-01	58%	5.29E-04	<1%	4.40E-01
75	4.61E-03	3%	4.33E-02	32%	1.89E-02	14%	6.64E-02	50%	4.02E-04	<1%	1.34E-01
95	1.08E-03	4%	1.01E-02	40%	4.40E-03	17%	9.54E-03	38%	2.72E-04	1%	2.54E-02
bis(2-Ethylhexyl)phthalate (MT/year)											
5	1.13E+00	<1%	1.06E+02	41%	4.65E+01	18%	1.04E+02	40%	1.00E-01	<1%	2.58E+02
25	1.63E-01	1%	1.53E+01	49%	6.67E+00	21%	9.22E+00	29%	5.83E-02	<1%	3.14E+01
50	4.23E-02	1%	3.97E+00	53%	1.73E+00	23%	1.71E+00	23%	4.01E-02	1%	7.49E+00
75	1.10E-02	1%	1.03E+00	56%	4.49E-01	25%	3.16E-01	17%	2.76E-02	2%	1.83E+00
95	1.58E-03	1%	1.48E-01	57%	6.45E-02	25%	2.79E-02	11%	1.61E-02	6%	2.58E-01
Total Dioxin TEQs (g/year)											
5	1.13E+00	1%	5.32E+01	29%	2.32E+01	13%	1.04E+02	57%	No studies measuring total dioxin TEQs in highway runoff		1.82E+02
25	1.63E-01	1%	7.64E+00	38%	3.34E+00	16%	9.22E+00	45%			2.04E+01
50	4.23E-02	1%	1.98E+00	43%	8.66E-01	19%	1.71E+00	37%			4.60E+00
75	1.10E-02	1%	5.15E-01	48%	2.25E-01	21%	3.16E-01	30%			1.07E+00
95	1.58E-03	1%	7.39E-02	54%	3.23E-02	24%	2.79E-02	21%			1.36E-01
Total DDT (kg/year)											
5	2.27E-02	<1%	1.06E+01	1%	2.79E+01	2%	1.37E+03	97%	No studies measuring total DDT in highway runoff		1.41E+03
25	3.26E-03	<1%	1.53E+00	1%	4.00E+00	2%	1.97E+02	97%			2.03E+02
50	8.45E-04	<1%	3.97E-01	1%	1.04E+00	2%	5.12E+01	97%			5.26E+01
75	2.19E-04	<1%	1.03E-01	1%	2.70E-01	2%	1.33E+01	97%			1.37E+01
95	3.15E-05	<1%	1.48E-02	1%	3.87E-02	2%	1.91E+00	97%			1.96E+00
Triclopyr (MT/year)											
5	7.74E-03	<1%	3.19E-01	13%	2.79E-01	11%	1.83E+00	75%	No studies measuring triclopyr in highway runoff		2.44E+00
25	6.85E-04	<1%	4.59E-02	13%	4.00E-02	11%	2.63E-01	75%			3.50E-01
50	1.27E-04	<1%	1.19E-02	13%	1.04E-02	11%	6.83E-02	75%			9.07E-02
75	2.35E-05	<1%	3.09E-03	13%	2.70E-03	11%	1.77E-02	75%			2.35E-02
95	2.08E-06	<1%	4.43E-04	13%	3.87E-04	11%	2.54E-03	75%			3.38E-03
Nonylphenol (MT/year)											
5	4.54E-01	1%	3.19E+00	9%	1.39E+00	4%	3.13E+01	86%	1.02E-01	<1%	3.64E+01
25	6.51E-02	2%	4.59E-01	13%	2.00E-01	6%	2.76E+00	78%	5.07E-02	1%	3.54E+00
50	1.69E-02	2%	1.19E-01	16%	5.19E-02	7%	5.12E-01	70%	3.11E-02	4%	7.31E-01
75	4.39E-03	3%	3.09E-02	19%	1.35E-02	8%	9.48E-02	58%	1.91E-02	12%	1.63E-01
95	6.30E-04	3%	4.43E-03	18%	1.94E-03	8%	8.38E-03	34%	9.44E-03	38%	2.48E-02
Oil and Grease (MT/year)											
5	1.11E+02	<1%	8.57E+03	15%	2.04E+03	4%	4.58E+04	81%	3.90E+01	<1%	5.66E+04
25	4.65E+01	<1%	2.67E+03	27%	4.76E+02	5%	6.58E+03	67%	1.94E+01	<1%	9.79E+03
50	2.54E+01	1%	1.19E+03	38%	1.73E+02	6%	1.71E+03	55%	1.19E+01	<1%	3.11E+03
75	1.38E+01	1%	5.30E+02	50%	6.29E+01	6%	4.43E+02	42%	7.32E+00	1%	1.06E+03
95	5.77E+00	2%	1.65E+02	65%	1.47E+01	6%	6.36E+01	25%	3.64E+00	1%	2.53E+02

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents

Table B15. Re-calculated loading rates for San Juan Islands by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Area Loading
Arsenic (MT/year)											
5	2.02E-02	2%	1.90E-01	18%	9.51E-02	9%	7.57E-01	71%	6.46E-04	<1%	1.06E+00
25	9.28E-03	2%	8.31E-02	20%	4.37E-02	10%	2.87E-01	68%	3.95E-04	<1%	4.23E-01
50	5.41E-03	2%	4.69E-02	21%	2.55E-02	11%	1.46E-01	65%	2.81E-04	<1%	2.24E-01
75	3.11E-03	3%	2.64E-02	22%	1.49E-02	12%	7.44E-02	63%	2.00E-04	<1%	1.19E-01
95	1.49E-03	3%	1.16E-02	24%	6.84E-03	14%	2.82E-02	58%	1.22E-04	<1%	4.82E-02
Cadmium (MT/year)											
5	1.24E-02	4%	8.43E-02	30%	5.19E-02	18%	1.37E-01	48%	3.79E-04	<1%	2.86E-01
25	4.26E-03	7%	2.63E-02	44%	1.79E-02	30%	1.10E-02	18%	2.05E-04	<1%	5.96E-02
50	2.03E-03	8%	1.17E-02	48%	8.50E-03	35%	1.90E-03	8%	1.34E-04	1%	2.43E-02
75	9.66E-04	9%	5.21E-03	49%	4.05E-03	38%	3.29E-04	3%	8.70E-05	1%	1.06E-02
95	3.32E-04	10%	1.63E-03	48%	1.39E-03	41%	2.64E-05	1%	4.70E-05	1%	3.43E-03
Copper (MT/year)											
5	1.49E-01	6%	4.85E-01	21%	6.12E-01	27%	1.05E+00	46%	6.41E-03	<1%	2.30E+00
25	6.20E-02	8%	1.84E-01	24%	1.91E-01	25%	3.28E-01	43%	3.77E-03	<1%	7.69E-01
50	3.38E-02	9%	9.37E-02	26%	8.50E-02	24%	1.46E-01	40%	2.60E-03	1%	3.61E-01
75	1.84E-02	11%	4.77E-02	28%	3.78E-02	22%	6.50E-02	38%	1.80E-03	1%	1.71E-01
95	7.69E-03	13%	1.81E-02	31%	1.18E-02	20%	2.03E-02	34%	1.06E-03	2%	5.89E-02
Lead (MT/year)											
5	1.79E-01	3%	2.76E+00	53%	5.64E-01	11%	1.66E+00	32%	4.31E-02	1%	5.21E+00
25	5.88E-02	5%	6.44E-01	55%	1.85E-01	16%	2.63E-01	23%	1.39E-02	1%	1.16E+00
50	2.71E-02	6%	2.34E-01	55%	8.50E-02	20%	7.30E-02	17%	6.37E-03	1%	4.26E-01
75	1.25E-02	8%	8.52E-02	53%	3.91E-02	24%	2.03E-02	13%	2.91E-03	2%	1.60E-01
95	4.08E-03	10%	1.99E-02	49%	1.28E-02	31%	3.21E-03	8%	9.41E-04	2%	4.09E-02
Zinc (MT/year)											
5	7.13E-01	9%	3.64E+00	47%	1.22E+00	16%	2.10E+00	27%	3.99E-02	1%	7.72E+00
25	2.98E-01	11%	1.38E+00	50%	3.82E-01	14%	6.56E-01	24%	2.11E-02	1%	2.74E+00
50	1.62E-01	12%	7.03E-01	52%	1.70E-01	13%	2.92E-01	22%	1.36E-02	1%	1.34E+00
75	8.85E-02	13%	3.58E-01	54%	7.57E-02	11%	1.30E-01	20%	8.75E-03	1%	6.61E-01
95	3.69E-02	15%	1.36E-01	56%	2.36E-02	10%	4.06E-02	17%	4.63E-03	2%	2.41E-01
Mercury (kg/year)											
5	3.19E+00	18%	2.76E+00	16%	3.19E+00	18%	8.61E+00	48%	5.38E-02	<1%	1.78E+01
25	7.44E-01	19%	6.44E-01	17%	4.59E-01	12%	2.01E+00	52%	1.64E-02	<1%	3.87E+00
50	2.71E-01	20%	2.34E-01	17%	1.19E-01	9%	7.30E-01	54%	7.17E-03	1%	1.36E+00
75	9.84E-02	20%	8.52E-02	18%	3.09E-02	6%	2.65E-01	55%	3.14E-03	1%	4.83E-01
95	2.29E-02	21%	1.99E-02	18%	4.44E-03	4%	6.19E-02	56%	9.55E-04	1%	1.10E-01
Total PCBs (kg/year)											
5	1.09E+00	4%	1.26E+01	46%	4.56E+00	17%	8.92E+00	33%	No studies measuring total PCBs in highway runoff		2.71E+01
25	1.56E-01	5%	1.81E+00	53%	6.55E-01	19%	7.88E-01	23%			3.41E+00
50	4.06E-02	5%	4.69E-01	57%	1.70E-01	21%	1.46E-01	18%			8.25E-01
75	1.05E-02	5%	1.22E-01	60%	4.41E-02	22%	2.70E-02	13%			2.03E-01
95	1.51E-03	5%	1.75E-02	63%	6.34E-03	23%	2.39E-03	9%			2.77E-02
Total PBDEs (g/year)											
5	7.26E-01	1%	1.10E+01	19%	1.37E+01	24%	3.14E+01	55%	No studies measuring total PBDEs in highway runoff		5.68E+01
25	1.04E-01	1%	2.58E+00	28%	1.97E+00	21%	4.50E+00	49%			9.15E+00
50	2.71E-02	1%	9.37E-01	35%	5.10E-01	19%	1.17E+00	44%			2.64E+00
75	7.02E-03	1%	3.41E-01	44%	1.32E-01	17%	3.03E-01	39%			7.83E-01
95	1.01E-03	1%	7.95E-02	56%	1.90E-02	13%	4.35E-02	30%			1.43E-01
Carcinogenic PAHs (MT/year)											
5	1.59E-02	14%	4.14E-02	37%	3.01E-02	27%	2.35E-02	21%	4.64E-04	<1%	1.11E-01
25	3.72E-03	16%	9.67E-03	40%	7.01E-03	29%	3.38E-03	14%	2.04E-04	1%	2.40E-02
50	1.35E-03	16%	3.51E-03	42%	2.55E-03	30%	8.76E-04	10%	1.15E-04	1%	8.41E-03
75	4.92E-04	16%	1.28E-03	43%	9.27E-04	31%	2.27E-04	8%	6.49E-05	2%	2.99E-03
95	1.15E-04	17%	2.98E-04	43%	2.16E-04	31%	3.27E-05	5%	2.85E-05	4%	6.90E-04

Table B15 (continued). Re-calculated loading rates for San Juan Islands by land use category.

	Commercial/Industrial		Residential		Agriculture		Forest/Field/Other		Highways		Total Study Area Loading
POE	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	Annual Loading	% of Study Area Loading	
Other High MW PAHs (MT/year)											
5	1.28E-02	16%	2.76E-02	34%	2.00E-02	25%	1.96E-02	24%	3.05E-04	<1%	8.03E-02
25	2.98E-03	17%	6.44E-03	38%	4.68E-03	27%	2.81E-03	17%	1.15E-04	1%	1.70E-02
50	1.08E-03	18%	2.34E-03	40%	1.70E-03	29%	7.30E-04	12%	5.81E-05	1%	5.91E-03
75	3.93E-04	19%	8.52E-04	41%	6.18E-04	30%	1.89E-04	9%	2.95E-05	1%	2.08E-03
95	9.18E-05	19%	1.99E-04	42%	1.44E-04	30%	2.72E-05	6%	1.11E-05	2%	4.73E-04
Low MW PAHs (MT/year)											
5	4.78E-02	19%	8.29E-02	33%	6.01E-02	24%	5.88E-02	24%	2.72E-05	<1%	2.50E-01
25	1.12E-02	21%	1.93E-02	36%	1.40E-02	26%	8.44E-03	16%	1.83E-05	<1%	5.30E-02
50	4.06E-03	22%	7.03E-03	38%	5.10E-03	28%	2.19E-03	12%	1.39E-05	<1%	1.84E-02
75	1.48E-03	23%	2.56E-03	40%	1.85E-03	29%	5.68E-04	9%	1.06E-05	<1%	6.46E-03
95	3.44E-04	24%	5.96E-04	41%	4.33E-04	30%	8.16E-05	6%	7.16E-06	<1%	1.46E-03
bis(2-Ethylhexyl)phthalate (MT/year)											
5	3.63E-01	3%	6.29E+00	52%	4.56E+00	38%	8.92E-01	7%	2.63E-03	<1%	1.21E+01
25	5.21E-02	3%	9.03E-01	53%	6.55E-01	39%	7.88E-02	5%	1.54E-03	<1%	1.69E+00
50	1.35E-02	3%	2.34E-01	54%	1.70E-01	39%	1.46E-02	3%	1.06E-03	<1%	4.34E-01
75	3.51E-03	3%	6.08E-02	54%	4.41E-02	39%	2.70E-03	2%	7.27E-04	1%	1.12E-01
95	5.04E-04	3%	8.73E-03	54%	6.34E-03	39%	2.39E-04	1%	4.24E-04	3%	1.62E-02
Total Dioxin TEQs (g/year)											
5	3.63E-01	5%	3.14E+00	47%	2.28E+00	34%	8.92E-01	13%	No studies measuring total dioxin TEQs in highway runoff		6.68E+00
25	5.21E-02	6%	4.51E-01	50%	3.28E-01	36%	7.88E-02	9%			9.10E-01
50	1.35E-02	6%	1.17E-01	51%	8.50E-02	37%	1.46E-02	6%			2.30E-01
75	3.51E-03	6%	3.04E-02	52%	2.21E-02	38%	2.70E-03	5%			5.87E-02
95	5.04E-04	6%	4.37E-03	53%	3.17E-03	38%	2.39E-04	3%			8.28E-03
Total DDT (kg/year)											
5	7.26E-03	<1%	6.29E-01	4%	2.74E+00	18%	1.18E+01	78%	No studies measuring total DDT in highway runoff		1.51E+01
25	1.04E-03	<1%	9.03E-02	4%	3.93E-01	18%	1.69E+00	78%			2.17E+00
50	2.71E-04	<1%	2.34E-02	4%	1.02E-01	18%	4.38E-01	78%			5.64E-01
75	7.02E-05	<1%	6.08E-03	4%	2.65E-02	18%	1.14E-01	78%			1.46E-01
95	1.01E-05	<1%	8.73E-04	4%	3.80E-03	18%	1.63E-02	78%			2.10E-02
Triclopyr (MT/year)											
5	2.48E-03	4%	1.89E-02	29%	2.74E-02	43%	1.57E-02	24%	No studies measuring triclopyr in highway runoff		6.44E-02
25	2.19E-04	2%	2.71E-03	30%	3.93E-03	43%	2.25E-03	25%			9.11E-03
50	4.06E-05	2%	7.03E-04	30%	1.02E-03	43%	5.84E-04	25%			2.35E-03
75	7.52E-06	1%	1.82E-04	30%	2.65E-04	44%	1.52E-04	25%			6.06E-04
95	6.64E-07	1%	2.62E-05	30%	3.80E-05	44%	2.18E-05	25%			8.66E-05
Nonylphenol (MT/year)											
5	1.45E-01	20%	1.89E-01	25%	1.37E-01	18%	2.68E-01	36%	2.70E-03	<1%	7.41E-01
25	2.08E-02	23%	2.71E-02	29%	1.97E-02	21%	2.37E-02	26%	1.34E-03	1%	9.26E-02
50	5.41E-03	24%	7.03E-03	31%	5.10E-03	22%	4.38E-03	19%	8.19E-04	4%	2.27E-02
75	1.40E-03	24%	1.82E-03	31%	1.32E-03	23%	8.11E-04	14%	5.02E-04	9%	5.87E-03
95	2.02E-04	21%	2.62E-04	27%	1.90E-04	20%	7.17E-05	7%	2.49E-04	26%	9.74E-04
Oil and Grease (MT/year)											
5	3.57E+01	3%	5.06E+02	45%	2.00E+02	18%	3.92E+02	35%	1.03E+00	<1%	1.14E+03
25	1.49E+01	5%	1.58E+02	57%	4.68E+01	17%	5.63E+01	20%	5.11E-01	<1%	2.76E+02
50	8.12E+00	7%	7.03E+01	64%	1.70E+01	15%	1.46E+01	13%	3.14E-01	<1%	1.10E+02
75	4.42E+00	10%	3.13E+01	68%	6.18E+00	13%	3.79E+00	8%	1.93E-01	<1%	4.59E+01
95	1.85E+00	13%	9.76E+00	71%	1.44E+00	11%	5.44E-01	4%	9.58E-02	1%	1.37E+01

The precision of the data in this table is only two significant figures

DDT=Dichlorodiphenyltrichloroethane
g/year=Grams per year
kg/year=Kilograms per year
MT/year= Metric tonnes per year
MW=Molecular Weight
PAHs=Polyaromatic hydrocarbons
PBDEs=Polybrominated biphenyl ethers
PCBs=Polychlorinated biphenyls
TEQs=Toxicity Equivalents