APPENDIX A

DOCUMENTATION OF INPUT PROPERTIES FOR TRIM. FaTE MERCURY TEST CASE

Appendix A
DOCUMENTATION OF INPUT PROPERTIES FOR TRIM.FaTE MERCURY TEST CASE

This appendix contains the following sets of tables, including supplemental tables where appropriate, listing and describing the model input properties used in the TRIM.FaTE mercury test case:

- Chemical-independent parameters for abiotic compartment types;
- Chemical-independent parameters for biotic compartment types;
- Chemical-dependent (i.e., value varies by chemical) parameters independent of compartment type;
- Chemical-dependent parameters for abiotic compartment types;
- Chemical-dependent parameters for biotic compartment types; and
- Source, meteorological, and other input parameters.

For each property listed, the parameter name, input units, value used, and a reference are given. Full citations for each reference are provided at the end. Several attachments, referred to in the tables, provide additional detailed documentation. [For a small number of properties modeled as time-varying, different values were used in steady-state model runs. See Chapter 4 and Appendix C for details.]

Within the framework of the TRIM.FaTE computer model, several different kinds of "properties" are defined and used. The input properties listed in this appendix fall into the following categories of TRIM.FaTE properties:

- Compartment properties (includes by far the largest number of input parameters);
- Volume element (VE) properties;
- Link properties;
- Chemical properties;
- Source properties; and
- Scenario properties.

In the following tables, the property category is identified for all input properties that are **not** compartment properties.

Note that the units listed in these tables are the units in which model input values need to be expressed for the algorithms in the TRIM.FaTE library used for the test case. In a few cases, these computer model input units do not match the units used for the same parameter in equations and derivations in *TRIM.FaTE Technical Support Document Volume II: Description of Chemical Transport and Transformation Algorithms* (EPA 453/R-02-011b, September 2002). In such cases, there are internal units conversions in the computer model that account for the differences.

Note on Chemical Abbreviations
Throughout the attached tables, Hg(0) = elemental mercury, Hg(2) = divalent mercury, and MHg = methyl mercury.

Chemical-Independent / Abiotic
(same values used for all air compartments)

Air Compartment Type

Parameter Name	Units	Value Used	Reference
Atmospheric dust particle load	kg[dust particles]/m^3[air compartment]	6.15E-08	Bidleman 1988
Density of air	g/cm^3	0.0012	EPA 1997
Density of dust particles	kg[dust particles]/m^3[dust particles]	1,400	Bidleman 1988
Fraction organic matter on particulates	unitless (wet wt)	0.2	Harner and Bidleman 1998
Height [VE property][a]	m	mixing height (varies hourly)[b]	local met data, 1987-1991
Particulate washout ratio	m^3[air]/m^3[rain]	200,000	Mackay et al. 1986

[a] Height of air volume elements is set in TRIM.FaTE using two properties, the bottom of the volume element (set at 0 meters for the mercury test case) and the top of the volume element (set to the mixing height, which varies hourly, for the mercury test case).

[b] A minimum value of 20 meters was used for the mercury test case.

Chemical-Independent / Abiotic
(same values used for all soil compartments of each type, except where noted)

Soil Compartment Types

Parameter Name	Units	Value Used	Reference
Surface Soil Compartment Type			
Air content	volume[air]/volume[compartment]	0.438	average for region in McKone et al. 2001
Average vertical velocity of water (percolation)	m^3[water]/m^2[surface area]-day (or m/day)	6.00E-04	assumed as 0.2 times average precipitation for region in McKone et al. 2001
Boundary layer thickness above surface soil	m	0.005	Thibodeaux 1996
Density of soil solids (dry weight)	kg[soil]/m^3[soil]	2600	Caltox value cited in McKone et al. 2001
Depth [VE property][a]	m	0.01	Caltox value cited in McKone et al. 2001
Erosion fraction [Link property]	unitless	link-specific[b]	estimated from site watershed and topo maps[c]
Fraction of area available for erosion	m^2[area available]/m^2[total]	1	professional judgment; area assumed rural
Fraction of area available for runoff	m^2[area available]/m^2[total]	1	professional judgment; area assumed rural
Fraction of area available for vertical diffusion	m^2[area available]/m^2[total]	1	professional judgment; area assumed rural
Organic carbon fraction	kg [organic carbon]/kg[soil wet wt]	0.0166	average for region in McKone et al. 2001
Runoff fraction [Link property]	unitless	link-specific[b]	estimated from site watershed and topo maps[c]
Total erosion rate	kg[soil solids]/m^2[surface soil]-day	2.89E-04	average for region in McKone et al. 2001
Total runoff rate	m^3[water]/m^2[surface soil]-day	0.00101	average for region in McKone et al. 2001
Water content	volume[water]/volume[compartment]	0.16	average for region in McKone et al. 2001
Root Zone Soil Compartment Type			
Air content	volume[air]/volume[compartment]	0.36	average for region in McKone et al. 2001
Average vertical velocity of water (percolation)	m^3[water]/m^2[surface area]-day (or m/day)	6.00E-04	assumed as 0.2 times average precipitation for region in McKone et al. 2001

Chemical-Independent / Abiotic
(same values used for all soil compartments of each type, except where noted)

Soil Compartment Types

Parameter Name	Units	Value Used	Reference
Density of soil solids (dry weight)	kg[soil]/m^3[soil]	2,600	Caltox value cited in McKone et al. 2001
Depth [VE property][a]	m	0.55	average for region in McKone et al. 2001
Organic carbon fraction	kg[organic carbon]/kg[soil wet wt]	0.0166	average for region in McKone et al. 2001
Water content	volume[water]/volume[compartment]	0.16	average for region in McKone et al. 2001
Vadose Zone Soil Compartment Type			
Air content	volume[air]/volume[compartment]	0.216	McKone et al. 1998
Average vertical velocity of water (percolation)	m^3[water]/m^2[surface area]-day (or m/day)	6.00E-04	assumed as 0.2 times average precipitation for region in McKone et al. 2001
Density of soil solids (dry weight)	kg[soil]/m^3[soil]	2,600	Caltox value cited in McKone et al. 2001
Depth [VE property][a]	m	0.75	professional judgment
Organic carbon fraction	kg[organic carbon]/kg[soil wet wt]	0.00128	McKone et al. 1998
Water content	volume[water]/volume[compartment]	0.16	McKone et al. 1998
Ground Water Compartment Type			
Depth [VE property][a]	m	3	Caltox value cited in McKone et al. 2001
Organic carbon fraction	kg[organic carbon]/kg[soil wet wt]	0.01	Schwarzenbach et al. 1993
Porosity	volume[total pore space]/volume[compartment]	0.2	Caltox value cited in McKone et al. 2001
Recharge rate to surface water [Link property]	m^3[water]/m^2[area]-day	1.42E-04	McKone et al. 1998
Solid material density in aquifer	kg[soil]/m^3[soil]	2,600	Caltox value cited in McKone et al. 2001

[a] Set using the volume element properties named "top" and "bottom."

[b] See attached erosion/runoff fraction table.

[c] See Attachment A-1 for method summary.

Values Used for Erosion and Runoff Fractions: Surface Soil Compartment Type

Sending Compartment	Receiving Compartment[a]	Runoff/Erosion Fraction[b]
Source	River	1.00
E1	River	1.00
SE1	River	1.00
W1	N1	0.40
	River	0.60
N1	River	1.00
NE2	E1	0.10
	River	0.90
ESE2	E1	0.05
	NE2	0.10
	SSE2	0.80
	ESE3	0.05
SSE2	SSE3	0.70
	River	0.30
SW2	River	0.80
	Surface Soil Advection Sink	0.20
W2	W1	0.90
	SW2	0.10
N2	N1	0.10
	W2	0.50
	River	0.35
	Surface Soil Advection Sink	0.05
NE3	NE2	0.05
	E4	0.05
	Stream N	0.70
	Surface Soil Advection Sink	0.20
ESE3	ESE2	0.15
	Fields	0.15
	Brewer	0.10
	Stream N	0.60

Values Used for Erosion and Runoff Fractions: Surface Soil Compartment Type

Sending Compartment	Receiving Compartment[a]	Runoff/Erosion Fraction[b]
SSE4	ESE3	0.10
	SSE3	0.05
	Swetts	0.75
	Surface Soil Advection Sink	0.10
SSE3	SSE2	0.10
	SSE4	0.05
	River	0.05
	Surface Soil Advection Sink	0.80
ESE4	SSE4	0.10
	Brewer	0.80
	Stream S	0.10
E4	NE3	0.10
	ESE5	0.05
	Fields	0.70
	Surface Soil Advection Sink	0.15
ESE5	Brewer	0.80
	Stream S	0.10
	Surface Soil Advection Sink	0.10
SE6	Stream S	0.70
	Thurston	0.10
	Surface Soil Advection Sink	0.20
SSE5	SSE4	0.15
	ESE4	0.20
	Stream S	0.05
	Thurston	0.55
	Surface Soil Advection Sink	0.05

[a]Adjacent compartments not receiving any runoff/erosion (i.e., runoff/erosion fraction = 0) not shown in table.

[b]Link properties. Same values used for both runoff fraction and erosion fraction for a given link. All values estimated using site watershed and topographic maps (see Attachment A-1 for method summary).

Chemical-Independent / Abiotic
(same values used for all surface water compartments, except where noted)
Surface Water Compartment Type

Parameter Name	Units	Value Used	Reference
Algae carbon content (fraction)	g[carbon]/g[algae dry wt]	0.465	APHA 1995
Algae density in water column	g[algae wet wt]/L[water]	0.0025	derived from Millard et al. 1996
Algae growth rate constant	1/day	0.7	Hudson et al. 1994 as cited in Mason et al. 1995b
Algae radius	um	2.5	Mason et al. 1995b
Algae water content (fraction)	unitless	0.9	APHA 1995
Average algae cell density (per vol cell, not water)	g[algae]/m^3[algae]	1,000,000	Mason et al. 1995b, Mason et al. 1996
Boundary layer thickness above sediment	m	0.02	Cal EPA 1993
Bulk water flow [Link property][a]	m^3[water]/day	varies by water body - see attached table	for River, average of annual flow data for nearest USGS gauging station; for other water bodies, calculated using runoff coefficient (1.5 cfs/mi^2, mean for relevant watershed) and watershed dimensions
Chloride concentration	mg[chloride]/L[water]	varies by water body - see attached table	raw lake data supplied by state agency, 1999[b]
Chlorophyll concentration	mg[chlorophyll]/L[water]	0.0053	average for Swetts Pond, 1990 and 1997 data; raw data supplied by state agency, 1999
Current velocity[c]	m/s	varies by water body - see attached table	calculated from flow and cross-sectional area
Depth [VE property][d]	m	varies by water body - see attached table	estimated based on state lake average (provided by state agency, 1999), USGS map data, and/or professional judgment
Dispersion coefficient for exchange between surface water compartments [Link property][a]	m^2/day	2.25E-04	median of values cited in Ambrose et al. 1995 from a study of Lake Erie by Di Toro and Connolly 1980
Dimensionless viscous sublayer thickness	unitless	4	Ambrose et al. 1995

Chemical-Independent / Abiotic
(same values used for all surface water compartments, except where noted)
Surface Water Compartment Type

Parameter Name	Units	Value Used	Reference
Distance between midpoints [Link property][a]	m	varies by water body - see attached table	calculated from GIS maps
Drag coefficient for water body	unitless	0.0011	Ambrose et al. 1995
Flush rate[e]	1/year	varies by water body - see attached table	Swetts Pond - supplied by state agency, 1999; River - calculated based on flow data for closest USGS gauging station (upstream) and volume of River compartment
Organic carbon fraction in suspended sediments	unitless	0.02	McKone et al. 2001
pH	unitless	6.8	raw data supplied by state agency, 1999[f]
Suspended sediment density	kg[suspended sediment particles]/m^3[suspended sediment particles]	2,650	EPA 1998b
Suspended sediment deposition velocity	m/day	2	EPA 1997
Total suspended sediment concentration	kg[suspended sediment particles]/m^3[water]	varies by water body - see attached table	raw lake data supplied by state agency, 1999[g]
Water temperature [VE property]	degrees K	293	professional judgment

[a]Applies to all surface water compartments connected to other surface water compartments.

[b]Average of available lake data, except for River; average of available data for closest USGS gauging station for River.

[c]Applies to flowing water bodies only (i.e., rivers, streams).

[d]Set using the volume element properties named "top" and "bottom."

[e]Applies to all surface water compartments connected to a flush rate sink (i.e., all or part of discharge modeled to a sink).

[f]Average of five values from two ponds in the same state used for all water bodies.

[g]State average for lakes, except for River; Schwalen and Kiefer 1996 for River.

Surface Water Compartment Properties that Vary by Water Body

Parameter	Units	Swetts Pond	Thurston Pond	Stream South	Brewer Lake	Fields Pond	Stream North	River
Bulk water flow [Link property][a]	m^3/day	N/A	8,060	16,000	43,000	53,000	74,100	N/A
Chloride concentration	mg/L	2.8.	2.8.	2.8.	2.8.	2.8.	2.8.	3.4
Current velocity	m/sec	N/A	N/A	0.0247	N/A	N/A	0.736	-[b]
Depth [VE property][c]	m	3	3	0.1	8	4	0.2	6
Distance between midpoints [Link property]	m	N/A	2,075[d]	3,015[e]	2,230[f]	4,195[g]	3,715[h]	N/A
Flush rate	1/year	4.31	N/A	N/A	N/A	N/A	N/A	-[i]
Surface area[j]	m^2	396,000	635,000	165,000	3,670,000	701,000	34,500	3,990,000
Total suspended sediment concentration	kg/m^3	0.0018	0.0018	0.0018	0.0018	0.0018	0.0018	0.015

[a]Flow at discharge point to connecting surface water compartment.

[b]Varies monthly, from 0.088 in August to 0.425 in April. Different value used for steady-state modeling (see Chapter 4).

[c]Set using the volume element properties named "top" and "bottom."

[d]Thurston Pond - Stream South midpoint.

[e]Stream South - Brewer Lake midpoint.

[f]Brewer Lake - Fields Pond midpoint.

[g]Fields Pond - Stream North midpoint.

[h]Stream North - River midpoint.

[i]Varies monthly, from 283 in August to 1,360 in April. Different value used for steady-state modeling (see Chapter 4).

[j]Not actually a required input property, but calculated from parcel coordinates, which are model inputs.

Sediment Compartment Type

Chemical-Independent / Abiotic
(same values used for all sediment compartments)

Parameter Name	Units	Value Used	Reference
Depth [VE property][a]	m	0.05	Caltox value cited in McKone et al. 2001
Organic carbon fraction	kg[organic carbon]/kg[soil wet wt]	0.02	Caltox value cited in McKone et al. 2001
Porosity of the sediment zone	m^3[pore water]/m^3[sediment compartment]	0.6	EPA 1998a
Solid material density in sediment	kg[sediment particles]/m^3[sediment particles]	2,650	EPA 1998a

[a]Set using the volume element properties named "top" and "bottom."

Chemical-Independent / Biotic
(same values used for all terrestrial plant compartments of a given type)

Terrestrial Plant Compartment Types

		Deciduous[a]		Coniferous[a]		Grass/Herb[a]	
Parameter Name	**Units**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**
Leaf Compartment Type							
Allow exchange	1=yes, 0=no	seasonal[b]	see note b	1	professional judgment	seasonal[b]	see note b
Average leaf area index	m^2[total leaf area]/m^2[underlying soil area]	3.4	Harvard Forest, dominant red oak and red maple, http://cdiac.esd.ornl.gov	5	representative value for conifers, personal comm., N. Nikolov, ORNL 1999	5	mid-range of 4-6 for old fields, personal comm., R.J. Luxmoore, ORNL 1999
Calculate wet dep interception fraction (boolean)	1=yes, 0=no	0	professional judgment	0	professional judgment	0	professional judgment
Correction exponent, octanol to lipid	unitless	0.76	from roots, Trapp 1995	0.76	from roots, Trapp 1995	0.76	from roots, Trapp 1995
Degree stomatal opening	unitless	1	set to 1 for daytime based on professional judgment (stomatal diffusion is turned off at night using a different property, IsDay)	1	set to 1 for daytime based on professional judgment (stomatal diffusion is turned off at night using a different property, IsDay)	1	set to 1 for daytime based on professional judgment (stomatal diffusion is turned off at night using a different property, IsDay)
Density of wet leaf	kg[leaf wet wt]/m^3[leaf]	820	Paterson et al. 1991	820	Paterson et al. 1991	820	Paterson et al. 1991
Leaf wetting factor	m	3.00E-04	1E-04 to 6E-04 for different crops and elements, Muller and Prohl 1993	3.00E-04	1E-04 to 6E-04 for different crops and elements, Muller and Prohl 1993	3.00E-04	1E-04 to 6E-04 for different crops and elements, Muller and Prohl 1993
Length of leaf	m	0.1	professional judgment	0.01	professional judgment	0.05	professional judgment
Lipid content of leaf	kg[lipid]/kg[leaf wet wt]	0.00224	European beech, Riederer 1995	0.00224	European beech, Riederer 1995	0.00224	European beech, Riederer 1995
Litter fall rate	1/day	seasonal[c]	see note c	0.0021[d]	see note d	seasonal[c]	see note c
Stomatal area, normalized for effective diffusion path length	1/m	200	Wilmer and Fricker 1996	200	Wilmer and Fricker 1996	200	Wilmer and Fricker 1996
Vegetation attenuation factor	m^2/kg	2.9	grass/hay, Baes et al. 1984	2.9	grass/hay, Baes et al. 1984	2.9	grass/hay, Baes et al. 1984
Water content	kg[water]/kg[leaf wet wt]	0.8	Paterson et al. 1991	0.8	Paterson et al. 1991	0.8	Paterson et al. 1991
Wet dep interception fraction (user supplied)	unitless	0.2	calculated based on 5 years of local met data, 1987-1991	0.2	calculated based on 5 years of local met data, 1987-1991	0.2	calculated based on 5 years of local met data, 1987-1991

Chemical-Independent / Biotic
(same values used for all terrestrial plant compartments of a given type)

Terrestrial Plant Compartment Types

		Deciduous[a]		Coniferous[a]		Grass/Herb[a]	
Parameter Name	Units	Value Used	Reference	Value Used	Reference	Value Used	Reference
Wet mass of leaf per unit area	kg[leaf wet wt]/m^2[surface soil]	0.6	calculated from leaf area index, leaf thickness (Simonich & Hites 1994), density of wet foliage	2	calculated from leaf area index, leaf thickness (Simonich & Hites 1994), density of wet foliage	0.6	calculated from leaf area index and Leith 1975
Particle-on-leaf Compartment Type							
Allow exchange	1=yes, 0=no	seasonal[b]	see note b	1	professional judgment	seasonal[b]	see note b
Volume particle per area leaf	m^3[leaf particles]/m^2[leaf]	1.00E-09	based on particle density and size distribution for atmospheric particles measured on an adhesive surface, Coe and Lindberg 1987	1.00E-09	based on particle density and size distribution for atmospheric particles measured on an adhesive surface, Coe and Lindberg 1987	1.00E-09	based on particle density and size distribution for atmospheric particles measured on an adhesive surface, Coe and Lindberg 1987
Root Compartment Type - Nonwoody Plants Only[e]							
Allow exchange	1=yes, 0=no					seasonal[b]	see note b
Correction exponent, octanol to lipid	unitless					0.76	Trapp 1995
Lipid content of root	kg[lipid]/kg [root wet wt]					0.011	from bean root, Trapp 1995
Water content of root	kg[water]/kg[root wet wt])					0.8	professional judgment
Wet density of root	kg[root wet wt]/m^3[root]					820	soybean, Paterson et al. 1991
Wet mass per area	kg[root wet wt]/m^2[surface soil]					1.4	temperate grassland, Jackson et al. 1996
Stem Compartment Type - Nonwoody Plants Only[e]							
Allow exchange	1=yes, 0=no					seasonal[b]	see note b
Correction exponent, octanol to lipid	unitless					0.76	from roots, Trapp 1995
Density of phloem fluid	kg[phloem]/m^3[phloem]					1,000	professional judgment
Density of xylem fluid	kg[xylem]/m^3[xylem]					900	professional judgment

Chemical-Independent / Biotic
(same values used for all terrestrial plant compartments of a given type)

Terrestrial Plant Compartment Types

		Deciduous[a]		Coniferous[a]		Grass/Herb[a]	
Parameter Name	**Units**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**
Flow rate of transpired water per leaf area	m^3[water]/m^2 [leaf]-day					0.0048	Crank et al. 1981
Fraction of transpiration flow rate that is phloem rate	unitless					0.05	Paterson et al. 1991
Lipid content of stem	kg[lipid]/kg [stem wet wt]					0.00224	leaves of European beech, Riederer 1995
Water content of stem	kg[water]/kg[stem wet wt]					0.8	Paterson et al. 1991
Wet density of stem	kg[stem wet wt]/m^3[stem]					830	professional judgment
Wet mass per area	kg[stem wet wt]/m^2[surface soil]					0.24	calculated from leaf and root biomass density based on professional judgment

[a]See attached table for assignment of vegetation types to surface soil volume elements.

[b]Begins May 12 (set to 1), ends September 30 (set to 0). Set to average days of last and first frost for modeling location. Different value used for steady-state modeling (see Chapter 4).

[c]Begins September 30, ends October 29; rate = 0.15/day during this time (value assumes first-order relationship and that 99 percent of leaves fall in 30 days). Rate is zero at all other times. Different value used for steady-state modeling (see Chapter 4).

[d]Value assumes first-order relationship and that 99 percent of leaves fall in six years.

[e]Roots and stems are not modeled for deciduous or coniferous forest in the current version of TRIM.FaTE.

Terrestrial Vegetation Types[a]

Surface Soil Volume Element	Deciduous Forest	Coniferous Forest	Grasses/ Herbs	None
source				X
E1	X			
SE1		X		
W1			X	
N1			X	
NE2			X	
ESE2	X			
SSE2		X		
SW2			X	
W2		X		
N2	X			
NE3	X			
ESE3		X		
SSE3	X			
E4		X		
ESE4		X		
SSE4		X		
ESE5	X			
SSE5	X			
SE6	X			

[a]Assignments made based on review of land use maps.

Chemical-Independent / Biotic
(same values used for all macrophyte compartments, except where noted)

Aquatic Plant Compartment Type

Parameter Name	Units	Value Used	Reference
Macrophyte Compartment Type			
Biomass per water area[a]	kg/m^2	1.5	Bonar et al. 1993
Density of macrophytes	kg/L	1	professional judgment

[a]The macrophyte compartment type was included in the Swetts Pond, Thurston Pond, Brewer Lake, Fields Pond, and River surface water compartments. The macrophyte compartment type was not included in the Stream S or Stream N compartments.

Chemical-Independent / Biotic
(same values used for all terrestrial animal compartments of a given type, except where noted)
Terrestrial Animal Compartment Types

Parameter Name	Units	Value Used	Reference
Soil Detritivore Compartment Type - Earthworm			
Density	kg[worm wet wt]/L[worm]	1	professional judgment
Density per soil area[a]	kg[worm wet wt]/m^2[soil]	0.045	avg of oak and beech values in Satchell 1983
Water content of worm	unitless	0.84	EPA 1993
Soil Detritivore Compartment Type - Soil Arthropod			
Biomass per soil area[a]	kg[arthropod wet wt]/m^2[soil]	3.01E-04	grasshopper, Porter et al. 1996
Body weight (BW)	kg	1.31E-04	grasshopper, Porter et al. 1996

[a]Presence/absence varies by surface soil compartment; see attached table.

Chemical-Independent / Biotic
(same values used for all terrestrial animal compartments of a given type, except where noted)

Terrestrial Animal Compartment Types

		Terrestrial Ground-Invertebrate Feeder - Short-tailed Shrew		Terrestrial Herbivore - Meadow Vole		Terrestrial Herbivore - White-tailed Deer		Terrestrial Insectivore - Black-capped Chickadee		Terrestrial Omnivore - Mouse		Terrestrial Carnivore - Long-tailed Weasel		Terrestrial Carnivore - Red-tailed hawk	
Parameter Name	**Units**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**
All Other Terrestrial Animal Compartment Types[a]															
Body weight (BW)	kg	0.022	0.015-0.029 kg reported for Manitoba, Silva and Downing 1995	0.0441	Reich 1981	74.8	Silva and Downing 1995	0.0108	Dunning 1993	0.02	North America, Silva and Downing 1995	0.147	Mumford and Whitaker 1982	1.13	North America, Dunning 1993
Food ingestion rate[b]	kg[diet wet wt]/kg[body wet wt]-day	0.47	Barrett and Stueck 1976	0.097	mean Microtus spp., Dark et al. 1983, Burt and Grossenheider 1976, Dice 1922	0.05	Mautz et al. 1976	0.74	calculated from Bell 1990, Dunning 1993	0.2	Green and Millar 1987	0.0735	calc from Brown and Lasiewski 1972, Golley 1961, EPA 1993	0.12	Preston and Beane 1993
Fraction diet - black-capped chickadee	unitless													0.257	approximate from Sherrod 1978
Fraction diet - mouse	unitless											0.5	professional judgment	0.303	approximate from Sherrod 1978
Fraction diet - terrestrial plants	unitless			1	professional judgment	1	professional judgment	0.3	Martin et al. 1951	0.5	professional judgment				
Fraction diet - short-tailed shrew	unitless											0.25	professional judgment	0.2	approximate from Sherrod 1978
Fraction diet - soil arthropod	unitless	0.415	Whitaker and Ferraro 1963					0.7	Smith 1993, Martin et al. 1951	0.5	professional judgment			0.04	approximate from Sherrod 1978
Fraction diet - vole	unitless											0.25	professional judgment	0.2	approximate from Sherrod 1978
Fraction diet - worm	unitless	0.585	Whitaker and Ferraro 1963, slugs represented by earthworms, Ithaca, NY												
Fraction excretion to soil	unitless	1	professional judgment	1	professional judgment	1	professional judgment	1	professional judgment	1	professional judgment	1	professional judgment	1	professional judgment
Fraction excretion to water	unitless	0	professional judgment	0	professional judgment	0	professional judgment	0	professional judgment	0	professional judgment	0	professional judgment	0	professional judgment
Population per soil area[c]	$\#/m^2$	6.10E-04	average value for state, contact at state university	0.006	average of $0.011/m^2$, Klaas et al. 1998, and $0.0015/m^2$, Getz 1961	4.60E-05	$12-80/km^2$, forest avg from Smith 1987, Torgerson and Porath 1984, Wishart 1984, Cook 1984	3.50E-05	avg of 0.2 and 0.3 /ha in British Columbia, Smith 1993	0.0023	average of range 6-57/ha, Wolff 1985	6.50E-06	average of 6-7/ha, Svendsen 1982	6.7E-07	average of range 0.0034 and 0.01 for Colorado, EPA 1993
Scaling constant A - inhalation rate	unitless	0.546	Stahl 1967	0.546	Stahl 1967	0.546	Stahl 1967	0.409	Lasiewski and Calder 1971	0.546	Stahl 1967	0.546	Stahl 1967	0.409	Lasiewski and Calder 1971
Scaling constant B - inhalation rate	unitless	0.8	Stahl 1967	0.8	Stahl 1967	0.8	Stahl 1967	0.8	Lasiewski and Calder 1971	0.8	Stahl 1967	0.8	Stahl 1967	0.8	Lasiewski and Calder 1971
Scaling constant A - water ingestion rate	unitless	0.099	Calder and Braun 1983	0.099	Calder and Braun 1983	0.099	Calder and Braun 1983	0.059	Calder and Braun 1983	0.099	Calder and Braun 1983	0.099	Calder and Braun 1983	0.059	Calder and Braun 1983

Chemical-Independent / Biotic
(same values used for all terrestrial animal compartments of a given type, except where noted)

Terrestrial Animal Compartment Types

		Terrestrial Ground-Invertebrate Feeder - Short-tailed Shrew		Terrestrial Herbivore - Meadow Vole		Terrestrial Herbivore - White-tailed Deer		Terrestrial Insectivore - Black-capped Chickadee		Terrestrial Omnivore - Mouse		Terrestrial Carnivore - Long-tailed Weasel		Terrestrial Carnivore - Red-tailed hawk	
Parameter Name	**Units**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**
Scaling constant B - water ingestion rate	unitless	0.9	Calder and Braun 1983	0.9	Calder and Braun 1983	0.9	Calder and Braun 1983	0.67	Calder and Braun 1983	0.9	Calder and Braun 1983	0.9	Calder and Braun 1983	0.67	Calder and Braun 1983
Soil ingestion rate	kg[soil dry wt]/kg[body wet wt]-day	0.0611	Talmage and Walton 1993	0.0006	calculated using data from Beyer at al. 1994	0.00013	calculated using data from Beyer at al. 1994	0	assumed, rarely observed on ground, Smith 1993	0.001	calculated using data from Beyer at al. 1994	0	professional judgment	0	professional judgment

[a]See attached table for documentation of compartment links for ingestion, inhalation, and excretion. For test case, all terrestrial animals were assumed to get 100% of their diet from a single volume element (i.e., FractionSpecificCompartmentDiet link property always set to 1.0).

[b]See Attachment A-2 for documentation of food ingestion rate calculations.

[c]Presence/absence varies by surface soil compartment; see attached table.

Population (or Biomass) per Soil Area: Terrestrial Animal Compartment Types
(number of animals per m^2, except where noted)

	Surface Soil Volume Element																			
Compartment Type	**Source**	**E1**	**SE1**	**W1**	**N1**	**NE2**	**ESE2**	**SSE2**	**SW2**	**W2**	**N2**	**NE3**	**ESE3**	**SSE3**	**E4**	**ESE4**	**SSE4**	**ESE5**	**SSE5**	**SE6**
Terrestrial Ground-Invertebrate Feeder - Short-tailed Shrew	0	6.10E-04	6.10E-04	0	0	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04	6.10E-04
Terrestrial Herbivore - Meadow Vole	0	0	0	0	0	6.00E-03	0	0	6.00E-03	0	0	0	0	0	0	0	0	0	0	0
Terrestrial Herbivore - White-tailed Deer	0	4.60E-05	4.60E-05	0	0	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05	4.60E-05
Terrestrial Insectivore - Black-capped Chickadee	0	3.50E-05	3.50E-05	0	0	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05	3.50E-05
Terrestrial Omnivore - Mouse	0	2.30E-03	2.30E-03	0	0	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03	2.30E-03
Terrestrial Carnivore - Long-tailed Weasel	0	6.50E-06	6.50E-06	0	0	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06	6.50E-06
Terrestrial Carnivore - Red-tailed hawk	0	6.70E-07	6.70E-07	0	0	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07	6.70E-07
Soil Detritivore Compartment Type - Earthworm (kg/m^2)[a]	0	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02	4.50E-02
Soil Detritivore Compartment Type - Soil Arthropod (kg/m^2)	0	3.01E-04	3.01E-04	0	0	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04	3.01E-04

[a]Associated with root zone soil volume elements (rather than surface soil).

Chemical-Independent / Biotic
(same values used for all semi-aquatic animal compartment types, except where noted)

Semi-aquatic Animal Compartment Types

		Semi-aquatic Insectivore - Tree Swallow		Semi-aquatic Omnivore - Mallard		Semi-aquatic Omnivore - Raccoon		Semi-aquatic Piscivore - Common Loon		Semi-aquatic Carnivore - Mink		Semi-aquatic Carnivore - Bald Eagle	
Parameter Name	**Units**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**
All Compartment Types[a]													
Body weight (BW)	kg	0.0201	Dunning 1993	1.13	Nelson and Martin 1953	6.35	Anderson 1979	4.13	Dunning 1993	0.831	Mumford and Whitaker 1982	4.74	Dunning 1993
Food ingestion rate[b]	(kg[diet wet wt]/kg[body wet wt]-day)	0.198	calculated from Williams 1988, Quinney and Ankney 1985, and Bell 1990	0.1	Heinz et al. 1987	0.11	based on allometric equation (Nagy et al.1999) and professional	0.23	Barr 1996	0.14	mink in captivity, Bleavins and Aulerich 1981	0.12	Stalmaster and Gessaman 1984
Fraction diet - benthic carnivores[c]	unitless											0.17	EPA 2002
Fraction diet - benthic invertebrates	unitless			0.335	EPA 1993 and professional judgment	0.69	representing molluscs, crustacea, Tyson 1950			0.17	Hamilton 1940, Sealander 1943, Korschgen 1958, Burgess and Bider 1980		
Fraction diet - benthic omnivores[c]	unitless					0.046	Tyson 1950	0.5	professional judgment	0.15	Hamilton 1940, Sealander 1943, Korschgen 1958, Burgess and Bider 1980	0.17	EPA 2002
Fraction diet - black-capped chickadee	unitless									0.08	Hamilton 1940, Sealander 1943, Korschgen 1958, Burgess and Bider 1980	0.1	professional judgment
Fraction diet - emerging benthic insect (benthic invertebrate)	unitless	1	professional judgment										
Fraction diet - mouse	unitless									0.23	Hamilton 1940, Sealander 1943, Korschgen 1958, Burgess and Bider 1980	0.23	professional judgment
Fraction diet - terrestrial plants	unitless			0.665	Martin et al. 1951								

Semi-aquatic Animal Compartment Types

Chemical-Independent / Biotic
(same values used for all semi-aquatic animal compartment types, except where noted)

		Semi-aquatic Insectivore - Tree Swallow		Semi-aquatic Omnivore - Mallard		Semi-aquatic Omnivore - Raccoon		Semi-aquatic Piscivore - Common Loon		Semi-aquatic Carnivore - Mink		Semi-aquatic Carnivore - Bald Eagle	
Parameter Name	**Units**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**
Fraction diet - vole	unitless									0.23	Hamilton 1940, Sealander 1943, Korschgen 1958, Burgess and Bider 1980		
Fraction diet - water-column carnivores[c]	unitless											0.11	assumed based on approximate trophic levels of several consumed fish species
Fraction diet - water-column herbivores[c]	unitless					0.04	Tyson 1950			0.103	Hamilton 1940, Sealander 1943, Korschgen 1958, Burgess and Bider 1980	0.11	assumed based on approximate trophic levels of several consumed fish species
Fraction diet - water-column omnivores[c]	unitless					0.014	Tyson 1950	0.5	professional judgment	0.037	Hamilton 1940, Sealander 1943, Korschgen 1958, Burgess and Bider 1980	0.11	assumed based on approximate trophic levels of several consumed fish species
Fraction diet - worm	unitless					0.21	coastal mudflats of SW Washington, Tyson 1950						
Fraction excretion to soil	unitless	1	professional judgment	0.5	professional judgment	0.5	professional judgment	0.5	professional judgment	0.5	professional judgment	0.5	professional judgment
Fraction excretion to water	unitless	0	professional judgment	0.5	professional judgment	0.5	professional judgment	0.5	professional judgment	0.5	professional judgment	0.5	professional judgment
Population per soil area[d]	$\#/m^2$	7.00E-04	De Graaf et al. 1981	9.30E-06	average of 0.012 and 0.0174/ha, North Dakota, EPA 1993	varies by compartment, depending on available shoreline; based on 2 raccoons per km shoreline	Kaufman 1982	4.90E-08	State Dept Inland Fisheries & Wildlife	varies by compartment, depending on available shoreline; based on 0.6 mink per km shoreline	Marshall 1936	1.30E-08	State Dept Inland Fisheries & Wildlife
Scaling constant A - inhalation rate	unitless	0.409	Lasiewski and Calder 1971	0.409	Lasiewski and Calder 1971	0.546	Stahl 1967	0.409	Lasiewski and Calder 1971	0.546	Stahl 1967	0.409	Lasiewski and Calder 1971
Scaling constant B - inhalation rate	unitless	0.8	Lasiewski and Calder 1971	0.8	Lasiewski and Calder 1971	0.8	Stahl 1967	0.8	Lasiewski and Calder 1971	0.8	Stahl 1967	0.8	Lasiewski and Calder 1971

Chemical-Independent / Biotic
(same values used for all semi-aquatic animal compartment types, except where noted)

Semi-aquatic Animal Compartment Types

		Semi-aquatic Insectivore - Tree Swallow		Semi-aquatic Omnivore - Mallard		Semi-aquatic Omnivore - Raccoon		Semi-aquatic Piscivore - Common Loon		Semi-aquatic Carnivore - Mink		Semi-aquatic Carnivore - Bald Eagle	
Parameter Name	**Units**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**
Scaling constant A - water ingestion rate	unitless	0.059	Calder and Braun 1983	0.059	Calder and Braun 1983	0.099	Calder and Braun 1983	0.059	Calder and Braun 1983	0.099	Calder and Braun 1983	0.059	Calder and Braun 1983
Scaling constant B - water ingestion rate	unitless	0.67	Calder and Braun 1983	0.67	Calder and Braun 1983	0.9	Calder and Braun 1983	0.67	Calder and Braun 1983	0.9	Calder and Braun 1983	0.67	Calder and Braun 1983
Soil ingestion rate	kg[soil dry wt]/kg[body wet wt]-day	0	professional judgment	0.00085	calculated using data from Beyer at al. 1994	0.0029	calculated using data from Beyer at al. 1994	0	professional judgment	0	professional judgment	0	professional judgment

[a]See attached table for documentation of compartment links for ingestion, inhalation, and excretion. For test case, all semi-aquatic animals were assumed to get 100% of their water-based diet from a single volume element and 100% of their land-based diet from a single volume element (i.e., FractionSpecificCompartmentDiet link property always set to 1.0).

[b]See Attachment A-2 for documentation of food ingestion rate calculations.

[c]Proportion of fish in wildlife species diet based on EPA 1993 and professional judgment; distribution of fish in diet among the different fish compartment types based on general size classes of fish consumed (EPA 2002) and relative abundance of fish in the different compartment types (trophic levels).

[d]Presence/absence of mallard and common loon varies by surface water compartment, and presence/absence of other species varies by surface soil compartment; density value for mink and raccoon varies by surface soil compartment; see attached table.

Population per Soil or Water Area: Semi-aquatic Animal Compartment Types
(number of animals per m^2 of soil or water)

	Surface Soil Volume Element																			
Compartment Type	**Source**	**E1**	**SE1**	**W1**	**N1**	**NE2**	**ESE2**	**SSE2**	**SW2**	**W2**	**N2**	**NE3**	**ESE3**	**SSE3**	**E4**	**ESE4**	**SSE4**	**ESE5**	**SSE5**	**SE6**
Semi-aquatic Insectivore - Tree Swallow	0	7.00E-04	7.00E-04	0	0	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04	7.00E-04
Semi-aquatic Omnivore - Raccoon	0	9.06E-07	9.06E-07	0	0	9.06E-07	0	9.06E-07	1.23E-06	0	1.23E-06	0	7.65E-07	9.06E-07	2.01E-06	7.00E-07	7.00E-07	2.01E-06	6.52E-07	6.52E-07
Semi-aquatic Carnivore - Mink	0	2.72E-07	2.72E-07	0	0	2.72E-07	0	2.72E-07	3.70E-07	0	3.70E-07	0	2.29E-07	2.72E-07	6.02E-07	2.10E-07	2.10E-07	6.02E-07	1.96E-07	1.96E-07
Semi-aquatic Carnivore - Bald Eagle	0	1.30E-08	1.30E-08	0	0	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08	1.30E-08

	Surface Water Volume Element						
Compartment Type	**Swetts Pond**	**Thurston Pond**	**Stream S**	**Brewer Lake**	**Fields Pond**	**Stream N**	**River**
Semi-aquatic Omnivore - Mallard	9.30E-06	9.30E-06	0	9.30E-06	9.30E-06	0	9.30E-06
Semi-aquatic Piscivore - Common Loon	4.90E-08	4.90E-08	0	4.90E-08	4.90E-08	0	4.90E-08

Compartment Links for Terrestrial and Land-based Semi-aquatic Animals

	Surface Soil Volume Element that Animal Is Based in									
Type of Link	Source	E1	SE1	W1	N1	NE2	ESE2	SSE2	SW2	W2
Compartment Link for Inhalation	n/a	ESE1	SSE1	n/a	n/a	ENE2	ESE2	SSE2	SSW2	W2
Compartment Link for Drinking Water	n/a	River	River	n/a	n/a	River	River StreamN	River	River	River
Compartment Link for Terrestrial Diet Components[a]	n/a	E1[b]	SE1[c]	n/a	n/a	NE2	ESE2[b]	SSE2[c]	SW2	W2[c]
Compartment Link for Aquatic Diet Components[d]	n/a	River	River	n/a	n/a	River	River	River	River	River

	Surface Soil Volume Element that Animal Is Based in									
Type of Link	N2	NE3	ESE3	SSE3	E4	ESE4	SSE4	ESE5	SSE5	SE6
Compartment Link for Inhalation	NNW2	ENE3	ESE3	SSE3	ENE4	ESE4	SSE4	ESE5	SSE4	ESE5
Compartment Link for Drinking Water	River	River StreamN	Fields	River	Fields	Brewer	Swetts	Brewer	Thurston	Thurston
Compartment Link for Terrestrial Diet Components[a]	N2[b]	NE3[b]	ESE3[b]	SSE3[c]	E4[b]	ESE4[c]	SSE4[c]	ESE5[b]	SSE5[c]	SE6[c]
Compartment Link for Aquatic Diet Components[d]	River	River	Fields	River	Fields	Brewer	Swetts	Brewer	Thurston	Thurston

[a]Same links for soil ingestion and for excretion to surface soil.
[b]NE2 for voles in diet.
[c]SW2 for voles in diet.
[d]Same links for excretion to surface water.

Compartment Links for Water-based Semi-aquatic Animals

	Surface Water Volume Element that Animal Is Based In				
Type of Link	Swetts Pond	Thurston Pond	Brewer Lake	Fields Pond	River
Compartment Link for Inhalation	SSE3	SSE5	ESE4	ESE4	SSW2
Compartment Link for Drinking Water	Swetts	Thurston	Brewer	Fields	River
Compartment Link for Terrestrial Diet Components	NE2	NE2	NE2	NE2	W1
Compartment Link for Soil Ingestion[a]	SSE4	SSE5	ESE4	ESE3	SSE2
Compartment Link for Aquatic Diet Components[b]	Swetts	Thurston	Brewer	Fields	River

[a]Same links for excretion to surface soil.
[b]Same links for excretion to surface water.

Chemical-Independent / Biotic
(same values used for all aquatic animal compartments of a given type, except where noted)

Aquatic Animal Compartment Types

		Water-column Carnivore		Water-column Herbivore		Water-column Omnivore		Benthic Carnivore		Benthic Omnivore	
Parameter Name	**Units**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**	**Value Used**	**Reference**
All Fish Compartment Types[a]											
Body weight (BW)	kg[fish wet wt]	2	professional judgment	0.025	professional judgment	0.25	professional judgment	2	professional judgment	0.25	professional judgment
Fraction diet - algae	unitless			1	value set based on definition of trophic levels						
Fraction diet - benthic invertebrates	unitless									1	value set based on definition of trophic levels
Fraction diet - benthic omnivores	unitless							1	value set based on definition of trophic levels		
Fraction diet - water-column herbivores	unitless					1	value set based on definition of trophic levels				
Fraction diet - water-column omnivores	unitless	1	value set based on definition of trophic levels								
Fraction lipid weight	kg[lipid]/kg[fish wet wt]	0.057	Thomann 1989	0.034	Thomann 1989	0.07	Thomann 1989	0.057	Thomann 1989	0.07	Thomann 1989
Population per water area[b]	#/m^2	8.95E-05	biomass per area divided by body weight of individual; biomass (1.79E-04 kg/m^2) taken as mean of selected lake data in Kelso and Johnson 1991	0.0658	biomass per area divided by body weight of individual; biomass (0.00165 kg/m^2) taken as mean of selected lake data in Kelso and Johnson 1991	0.00234	biomass per area divided by body weight of individual; biomass (5.85E-04 kg/m^2) taken as mean of selected lake data in Kelso and Johnson 1991	1.07E-04	biomass per area divided by body weight of individual; biomass (2.14E-04 kg/m^2) taken as mean of selected lake data in Kelso and Johnson 1991	0.00755	biomass per area divided by body weight of individual; biomass (0.00189 kg/m^2) taken as mean of selected lake data in Kelso and Johnson 1991

Parameter Name	Units	Value Used	Reference
Benthic Invertebrate Compartment Type			
Biomass per water area[b]	kg/m^2	0.0373	value for Bewer Lake, state agency
Body weight (BW)	kg[inv wet wt]	2.55E-04	professional judgment

[a]For test case, all aquatic animals were assumed to get 100% of their diet from a single volume element (i.e., FractionSpecificCompartmentDiet link property always set to 1.0).

[b]All six aquatic animal compartment types were included in the Swetts Pond, Thurston Pond, Brewer Lake, Fields Pond, and River surface water compartments. No aquatic animal types were included in the Stream S or Stream N compartments.

Chemical-Dependent / Independent of Compartment Type[a]

Parameter Name	Units	Value Hg(0)[b]	Hg(2)[b]	MHg[b]	Reference
Diffusion coefficient in pure air	m^2[air]/day	0.478	0.478	0.456	EPA 1997
Diffusion coefficient in pure water	m^2[water]/day	5.54E-05	5.54E-05	5.28E-05	EPA 1997
Henry's Law constant	Pa-m^3/mol	719	7.19E-05	0.0477	EPA 1997
Melting point	degrees K	234	550	443	CARB 1994
Molecular weight	g/mol	201	201	216	EPA 1997
Octanol-water partition coefficient (Kow)	L[water]/kg[octanol]	4.15	3.33	1.7	Mason et al. 1996
Vapor washout ratio	m^3[air]/m^3[rain]	1,200	1.6E+06	0	EPA 1997, based on Petersen et al. 1995

[a]All parameters in this table are TRIM.FaTE chemical properties.

[b]On this and all following tables, Hg(0) = elemental mercury, Hg(2) = divalent mercury, and MHg = methyl mercury.

Chemical-Dependent / Abiotic
(same values used for all air compartments, except where noted)

Air Compartment Type

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Initial concentration	g/m^3	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Boundary concentration [VE property][b]	g/m^3	1.60E-09	1.60E-11	0	EPA 1997
Particle dry deposition velocity	m/day	500	500	500	Caltox value cited in McKone et al. 2001
Demethylation rate	1/day	N/A	N/A	0	professional judgment
Methylation rate	1/day	0	0	0	professional judgment
Oxidation rate	1/day	0.00385	0	0	low end of half-life range (6 months to 2 years) in EPA 1997
Reduction rate	1/day	0	0	0	professional judgment

[a]Set to zero for Cases A and B. Values for Case C set to final concentration from 30-year "boundary contributions only" run for each compartment.

[b]Only used in model runs specified as including non-zero boundary contributions (Case C, and also the "boundary contributions only" run). Only applicable for air volume elements with at least one boundary on the outer edge of the modeling region (zero boundary contribution for all internal air compartments).

Chemical-Dependent / Abiotic
(same values used for all soil compartments of each type)

Soil Compartment Types

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Surface Soil Compartment Type					
Initial concentration	g/m^3	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Input characteristic depth (user supplied)	m	0.08	0.08	0.08	not used (model set to calculate value)
Soil-water partition coefficient	L[water]/kg[soil wet wt]	1,000	58,000	7,000	EPA 1997
Use input characteristic depth (boolean)	0 = no, Else = yes	0	0	0	professional judgment
Vapor dry deposition velocity	m/day	8.64	864	0	EPA 1997[b]
Demethylation rate	1/day	N/A	N/A	0.06	range reported in Porvari and Verta 1995 is 3E-2 to 6E-2 /day; value is average maximum potential demethylation rate constant under anaerobic conditions
Methylation rate	1/day	0	0.001	0	range reported in Porvari and Verta 1995 is 2E-4 to 1E-3 /day; value is average maximum potential methylation rate constant under anaerobic conditions
Oxidation rate	1/day	0	0	0	value assumed in EPA 1997
Reduction rate	1/day	0	1.25E-05	0	value used for untilled surface soil (2cm), 10% moisture content, in EPA 1997; general range is (0.0013/day)*moisture content to (0.0001/day)*moisture content for forested region (Lindberg 1996; Carpi and Lindberg 1997)
Root Zone Soil Compartment Type					
Initial concentration	g/m^3	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Input characteristic depth (user supplied)	m	0.08	0.08	0.08	not used (model set to calculate value)
Soil-water partition coefficient	L[water]/kg[soil wet wt]	1,000	58,000	7,000	EPA 1997
Use input characteristic depth (boolean)	0 = no, Else = yes	0	0	0	professional judgment

Chemical-Dependent / Abiotic
(same values used for all soil compartments of each type)

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Demethylation rate	1/day	N/A	N/A	0.06	range reported in Porvari and Verta 1995 is 3E-2 to 6E-2 /day; value is average maximum potential demethylation rate constant under anaerobic conditions
Methylation rate	1/day	0	0.001	0	range reported in Porvari and Verta 1995 is 2E-4 to 1E-3 /day; value is average maximum potential methylation rate constant under anaerobic conditions
Oxidation rate	1/day	0	0	0	value assumed in EPA 1997
Reduction rate	1/day	0	3.25E-06	0	value used for tilled surface soil (20cm), 10% moisture content, in EPA 1997 (Lindberg 1996; Carpi and Lindberg, 1997)
Vadose Zone Soil Compartment Type					
Initial concentration	g/m^3	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Input characteristic depth (user supplied)	m	0.08	0.08	0.08	not used (model set to calculate value)
Soil-water partition coefficient	L[water]/kg[soil wet wt]	1,000	58,000	7,000	EPA 1997
Use input characteristic depth (boolean)	0 = no, Else = yes	0	0	0	professional judgment
Demethylation rate	1/day	N/A	N/A	0.06	range reported in Porvari and Verta 1995 is 3E-2 to 6E-2 /day; value is average maximum potential demethylation rate constant under anaerobic conditions
Methylation rate	1/day	0	0.001	0	range reported in Porvari and Verta 1995 is 2E-4 to 1E-3 /day; value is average maximum potential methylation rate constant under anaerobic conditions
Oxidation rate	1/day	0	0	0	value assumed in EPA 1997
Reduction rate	1/day	0	3.25E-06	0	value used for tilled surface soil (20cm), 10% moisture content, in EPA 1997 (Lindberg 1996; Carpi and Lindberg, 1997)

Chemical-Dependent / Abiotic
(same values used for all soil compartments of each type)

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Ground Water Compartment Type					
Initial concentration	g/L	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Soil-water partition coefficient	L[water]/kg[soil wet wt]	1,000	58,000	7,000	EPA 1997
Demethylation rate	1/day	N/A	N/A	0.06	range reported in Porvari and Verta 1995 is 3E-2 to 6E-2 /day; value is average maximum potential demethylation rate constant under anaerobic conditions
Methylation rate	1/day	0	0.001	0	range reported in Porvari and Verta 1995 is 2E-4 to 1E-3 /day; value is average maximum potential methylation rate constant under anaerobic conditions
Oxidation rate	1/day	1.00E-08	0	0	small default nonzero value (0 assumed in EPA 1997)
Reduction rate	1/day	0	3.25E-06	0	value used for tilled surface soil (20cm), 10% moisture content, in EPA 1997 (Lindberg 1996; Carpi and Lindberg, 1997)

[a]Set to zero for Cases A and B. Values for Case C set to final concentration from 30-year "boundary contributions only" run for each compartment.
[b]Values in EPA 1997 actually 50 (Hg0) and 2,500 (Hg2). Listed values used inadvertantly.

Chemical-Dependent / Abiotic
(same values used for all surface water compartments)

Surface Water Compartment Type

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Initial concentration	g/L	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Algal surface area-specific uptake rate constant	nmol/[µm^2-day-nM]	0	2.04E-10	3.60E-10	Mason et al. 1996; zero assumed for Hg(0)
Dow ("overall Kow")	L[water]/kg[octanol]	0	-[b]	-[c]	derived from Figure 2 in Mason et al. 1996
Solids-water partition coefficient	L[water]/kg[solids wet wt]	1,000	100,000	100,000	EPA 1997
Vapor dry deposition velocity	m/day	N/A	864	N/A	EPA 1997[d]
Demethylation rate	1/day	N/A	N/A	0.013	average of range of 1E-3 to 2.5E-2/day from Gilmour and Henry 1991
Methylation rate	1/day	0	0.001	0	value used in EPA 1997; range is from 1E-4 to 3E-3/day (Gilmour and Henry 1991)
Oxidation rate	1/day	0	0	0	professional judgment
Reduction rate	1/day	0	0.0075	0	value used in EPA 1997; reported values range from less than 5E-3/day for depths greater than 17m, up to 3.5/day (Xiao et al. 1995; Vandal et al. 1995; Mason et al. 1995a; Amyot et al. 1997)

[a]Set to zero for Cases A and B. Values for Case C set to final concentration from 30-year "boundary contributions only" run for each compartment.
[b]TRIM.FaTE Formula Property (*i.e.,* calculated, not an input), which varies from 0.025 to 1.625 depending on input pH and chloride concentration.
[c]TRIM.FaTE Formula Property (*i.e.,* calculated, not an input), which varies from 0.075 to 1.7 depending on input pH and chloride concentration.
[d]Value in EPA 1997 actually 2,500 (Hg2). Listed value used inadvertantly.

Sediment Compartment Type

Chemical-Dependent / Abiotic (same values used for all sediment compartments)

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Initial concentration	g/m^3	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Solids-water partition coefficient	L[water]/kg[solids wet wt]	3,000	50,000	3,000	EPA 1997
Demethylation rate	1/day	N/A	N/A	0.0501	average of range of 2E-4 to 1E-1/day from Gilmour and Henry 1991
Methylation rate	1/day	0	1.00E-04	0	value used in EPA 1997; range is from 1E-5 to 1E-3/day (Gilmour and Henry 1991)
Oxidation rate	1/day	0	0	0	professional judgment
Reduction rate	1/day	0	1.00E-06	0	inferred value based on presence of Hg(0) in sediment porewater (EPA 1997; Vandal et al. 1995)

[a]Set to zero for Cases A and B. Values for Case C set to final concentration from 30-year "boundary contributions only" run for each compartment.

Chemical-Dependent / Biotic
(same values used for all terrestrial plant compartments of each type, except for initial concentration)

Terrestrial Plant Compartment Types[a]

Parameter Name	Units	Value Hg(0)	Value Hg(2)	Value MHg	Reference
Leaf Compartment Type					
Initial concentration	g/kg	-[b]	-[b]	-[b]	Case C based on "boundary contributions only" run
Transfer factor to leaf particle	1/day	0.002	0.002	0.002	professional judgment (assumed 1% of transfer factor from leaf particle to leaf)
Demethylation rate	1/day	N/A	N/A	0.03	calculated from Bache et al. 1973
Methylation rate	1/day	0	0	0	assumed from Gay 1975, Bache et al. 1973
Oxidation rate	1/day	1.0E+06	0	0	professional judgment; assumed close to instantaneous
Reduction rate	1/day	0	0	0	professional judgment
Particle-on-leaf Compartment Type					
Initial concentration	g/kg	-[b]	-[b]	-[b]	Case C based on "boundary contributions only" run
Transfer factor to leaf	1/day	0.2	0.2	0.2	professional judgment
Demethylation rate	1/day	N/A	N/A	0	professional judgment
Methylation rate	1/day	0	0	0	professional judgment
Oxidation rate	1/day	0	0	0	professional judgment
Reduction rate	1/day	0	0	0	professional judgment
Root Compartment Type - Nonwoody Plants Only[c]					
Initial concentration	g/kg	-[b]	-[b]	-[b]	Case C based on "boundary contributions only" run
Alpha for root-root zone bulk soil	unitless	0.95	0.95	0.95	selected value
Root/root-zone-soil-water partition coefficient	m^3[bulk root soil]/m^3[root]	0	0.18	1.2	Hg2- geometric mean Leonard et al. 1998, John 1972, Hogg et al. 1978; MHg- assumed, based on Hogg et al. 1978

Chemical-Dependent / Biotic
(same values used for all terrestrial plant compartments of each type, except for initial concentration)

Terrestrial Plant Compartment Types[a]

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
t-alpha for root-root zone bulk soil	day	21	21	21	professional judgment
Demethylation rate	1/day	N/A	N/A	0	professional judgment
Methylation rate	1/day	0	0	0	professional judgment
Oxidation rate	1/day	0	0	0	professional judgment
Reduction rate	1/day	0	0	0	professional judgment
Stem Compartment Type - Nonwoody Plants Only[c]					
Initial concentration	g/kg	-[b]	-[b]	-[b]	Case C based on "boundary contributions only" run
Transpiration stream concentration factor (TSCF)	m^3[soil pore water]/m^3[xylem fluid]	0	0.5	0.2	calculation from Norway spruce, Scots pine, Bishop et al. 1998
Demethylation rate	1/day	N/A	N/A	0.03	calculated from Bache et al. 1973
Methylation rate	1/day	0	0	0	professional judgment
Oxidation rate	1/day	0	0	0	professional judgment
Reduction rate	1/day	0	0	0	professional judgment

[a]TRIM.FaTE currently includes four kinds of terrestrial plants (*i.e.,* vegetation types): deciduous forest, coniferous forest, grasses/herbs, and agricultural (agricultural not used in mercury test case). Same chemical-dependent values used for each, except for initial concentration in Case C.

[b]Set to zero for Cases A and B. Values for Case C set to final concentration from 30-year "boundary contributions only" run for each compartment.

[c]Roots and stems are not modeled for deciduous or coniferous forest vegetation type in the current version of TRIM.FaTE.

Chemical-Dependent / Biotic
(same values used for all macrophyte compartments)

Aquatic Plant Compartment Type

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Macrophyte Compartment Type					
Initial concentration	g/kg	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Alpha for macrophyte	unitless	0.95	0.95	0.95	selected value
Macrophyte/water partition coefficient	L[water]/kg[macrophyte wet wt]	0.883	0.883	4.4	*Elodea densa,* Ribeyre and Boudou 1994
Oxidation rate	1/day	1.00E+09	0	0	professional judgment
t-alpha	day	18	18	18	experiment duration from Ribeyre and Boudou 1994

[a]Set to zero for Cases A and B. Values for Case C set to final concentration from 30-year "boundary contributions only" run for each compartment.

Chemical-Dependent / Biotic
(same values used for all terrestrial animal compartments of each type)

Terrestrial Animal Compartment Types

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Soil Detritivore - Earthworm					
Initial concentration	g/kg	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Alpha for worm-bulk soil	unitless	0.95	0.95	0.95	selected value
Earthworm/dry-soil partition coefficient	kg [soil dry wt]/kg[worm dry wt]	0.36	0.36	0.36	Bull et al. 1977
t-alpha for worm-bulk soil	day	21	21	21	assumed same as metals in earthworms, Janssen et al. 1997
Soil Detritivore - Soil Arthropod					
Initial concentration	g/kg	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Alpha for arthropod-soil	unitless	0.95	0.95	0.95	selected value
Arthropod/bulk-soil partition coefficient	kg[soil wet wt]/kg[arthropod wet wt])	0	0.46	2.9	Hg(2) - median from Talmage and Walton 1993; MHg - median from Nuorteva and Nuorteva 1982
t-alpha for arthropod-soil	day	21	21	21	assumed same as metals in earthworms, Janssen et al. 1997
All Other Terrestrial Animal Compartment Types[b]					
Initial concentration	g/kg	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Assimilation efficiency for inhalation	unitless	0.75	0.4	0.75	Hg(0) - based on human values, ATSDR 1997, Teisinger and Fiserova-Bergerova 1965; Hg(2) - based on dog value, EPA 1997; MHg - assumed same as Hg(0)
Assimilation efficiency from arthropods	unitless	1	1	1	set to 1[c]
Assimilation efficiency from food	unitless	1	1	1	set to 1[c]
Assimilation efficiency from terrestrial plants	unitless	1	1	1	set to 1[c]

Chemical-Dependent / Biotic
(same values used for all terrestrial animal compartments of each type)
Terrestrial Animal Compartment Types

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Assimilation efficiency from soils	unitless	1	1	1	set to 1[c]
Assimilation efficiency from water	unitless	1	1	1	set to 1[c]
Assimilation efficiency from worms	unitless	1	1	1	set to 1[c]
Total elimination rate	1/day	0.05	0.48	0.26[d]/0.086[e]	see Attachment A-3 for documentation
Demethylation rate	1/day	N/A	N/A	0.09	for rats, Takeda and Ukita 1970
Methylation rate	1/day	0	0	0	professional judgment
Oxidation rate	1/day	1	0	0	professional judgment
Reduction rate	1/day	0	0	0	professional judgment

[a]Set to zero for Cases A and B. Values for Case C set to final concentration from 30-year "boundary contributions only" run for each compartment.

[b]Test case includes Terrestrial Ground-Invertebrate Feeder - Short-tailed Shrew, Terrestrial Herbivore - Meadow Vole, Terrestrial Herbivore - White-tailed Deer, Terrestrial Insectivore - Black-capped Chickadee, Terrestrial Omnivore - Mouse, Terrestrial Carnivore - Long-tailed Weasel, and Terrestrial Carnivore - Red-tailed Hawk.

[c]All ingestion assimilation efficiencies set to 1 to be consistent with excretion rate calculations. Excretion rates are all based on ingested (not absorbed) dose, hence assimilation efficiency must equal 1.

[d]Value for all mammals.

[e]Value for all birds.

Chemical-Dependent / Biotic
(same values used for all semi-aquatic animal compartments of each type)

Semi-aquatic Animal Compartment Types[a]

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Initial concentration	g/kg	-[b]	-[b]	-[b]	Case C based on "boundary contributions only" run
Assimilation efficiency for inhalation	unitless	0.75	0.4	0.75	Hg(0) - based on human values, ATSDR 1997, Teisinger and Fiserova-Bergerova 1965; Hg(2) - based on dog value, EPA 1997; MHg - assumed same as Hg(0)
Assimilation efficiency from arthropods	unitless	1	1	1	set to 1[c]
Assimilation efficiency from food	unitless	1	1	1	set to 1[c]
Assimilation efficiency from terrestrial plants	unitless	1	1	1	set to 1[c]
Assimilation efficiency from soils	unitless	1	1	1	set to 1[c]
Assimilation efficiency from water	unitless	1	1	1	set to 1[c]
Assimilation efficiency from worms	unitless	1	1	1	set to 1[c]
Total elimination rate	1/day	0.05	0.48	0.26[d]/0.086[e]	see Attachment A-3 for documentation
Demethylation rate	1/day	N/A	N/A	0.09	for rats, Takeda and Ukita 1970
Methylation rate	1/day	0	0	0	professional judgment
Oxidation rate	1/day	1	0	0	professional judgment
Reduction rate	1/day	0	0	0	professional judgment

[a]Test case includes Semi-aquatic Insectivore - Tree Swallow, Semi-aquatic Omnivore - Mallard, Semi-aquatic Omnivore - Raccoon, Semi-aquatic Piscivore - Common Loon, Semi-aquatic Carnivore - Mink, and Semi-aquatic Carnivore - Bald Eagle.

[b]Set to zero for Cases A and B. Values for Case C set to final concentration from 30-year "boundary contributions only" run for each compartment.

[c]All ingestion assimilation efficiencies set to 1 to be consistent with excretion rate calculations. Excretion rates are all based on ingested (not absorbed) dose, hence assimilation efficiency must equal 1.

[d]Value for all mammals.

[e]Value for all birds.

Chemical-Dependent / Biotic
(same values used for all aquatic animal compartments of each type)

Aquatic Animal Compartment Types

Parameter Name	Units	Value			Reference
		Hg(0)	Hg(2)	MHg	
Benthic Invertebrate Compartment Type					
Initial concentration	g/kg	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Alpha of equilibrium for sediment partitioning	unitless	0.95	0.95	0.95	selected value
Benthic invertebrate-bulk sediment partition coefficient	kg[bulk sediment]/kg[invertebrate wet wt]	0.0824	0.0824	5.04	Hg(0) - assumed based on Hg(2) value; Hg(2) and MHg - Saouter et al. 1991
t-alpha for equilibrium for sediment partitioning	day	14	14	14	experiment duration from Saouter et al. 1991
All Fish Compartment Types[b]					
Initial concentration	g/kg	-[a]	-[a]	-[a]	Case C based on "boundary contributions only" run
Assimilation efficiency from food	unitless	0.04	0.04	0.2	Phillips and Gregory 1979
Elimination adjustment factor	unitless	3	3	1	Trudel and Rasmussen 1997
Demethylation rate	1/day	N/A	N/A	0	professional judgment
Methylation rate	1/day	0	0	0	professional judgment
Oxidation rate	1/day	1.0E+06	0	0	professional judgment
Reduction rate	1/day	0	0	0	professional judgment

[a]Set to zero for Cases A and B. Values for Case C set to final concentration from 30-year "boundary contributions only" run for each compartment.

[b]Test case includes Benthic Carnivore, Benthic Omnivore, Water-column Carnivore, Water-column Herbivore, and Water-column Omnivore.

Source, Meteorological, and Other Input Data and Settings

Parameter Name	Units	Value Used	Reference
Source Inputs (all TRIM.FaTE source properties) (only one source modeled for mercury test case)			
Emission rate, Hg0	g/day	335.6[a]	Total mercury based on estimates supplied by state agency, 1999, speciation assumed to be 95% Hg0
Emission rate, Hg2	g/day	17.663	Total mercury based on estimates supplied by state agency, 1999, speciation assumed to be 5% Hg2
Source height	m	0.01	Assumed value for ground-level fugitive emissions
Meteorological Inputs (all TRIM.FaTE scenario properties, except mixing height)			
Air temperature	degrees K	varies hourly[b]	Local composite met data, 1987-1991 (ave = 280 K)
Horizontal wind speed	m/sec	varies hourly[b]	Local composite met data, 1987-1991 (ave = 3.64 m/sec); used minimum value of 0.75 m/sec for mercury test case
Wind direction	degrees clockwise from N (blowing from)	varies hourly[b]	Local composite met data, 1987-1991
Rainfall rate	m^3[rain]/m^2[surface area]-day	varies hourly[b]	Local composite met data, 1987-1991 (annual totals = 93, 78, 112, 123, and 113 cm)[c]
Mixing height (used to set air VE property named “top”)	m	varies hourly[b]	Calculated from hourly local composite met data, 1987-1991 (used calculated values for rural setting) (ave = 887 m); used minimum value of 20 m for mercury test case
Day/night	1=day, 0=night	varies hourly[d]	Based on sunrise/sunset data for source latitude and longitude
Other Settings (all TRIM.FaTE scenario properties)			
Start of simulation	date/time	1/1/1987, midnight	Selected to match start of meteorological data set
End of simulation	date/time	1/1/2017, midnight or 1/1/2027, midnight	Selected to provide 30-year (Case A and B) or 40-year (Case C) modeling period
Simulation time step	hr	1	Selected value
Output time step[d]	hr	2	Selected value

[a]Value used for Dynamic Cases B and C and Steady-state Case. Set to 0 for Dynamic Case A.

[b]Input data used repeats in five-year cycle throughout modeling period based on 1987-1991 meteorological data. Different value (and approach for wind data) used for steady-state modeling (see Chapter 4).

[c]Rainfall data missing for April 1988 in data source; zero precipitation assumed for that month.

[d]Different value used for steady-state modeling (see Chapter 4).

[e]Output time step is set in TRIM.FaTE using the scenario properties "simulationStepsPerOutputStep" and "simulationTimeStep."

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Attachment A-1
Summary of Method Used to Estimate Runoff/Erosion Fractions for the Mercury Test Case

Starting point. Final surface parcel layout map (GIS) for the modeling region, along with watershed delineation map (GIS) and USGS topographic map (hard copy) for the modeling region.

Step 1. Identified the main watersheds within the modeling region and define the watershed boundaries.

Step 2. For each soil parcel, identified the watersheds located within (or partly within) the parcel, and the percentage of the parcel surface area covered by each watershed. The percentages of parcel area covered by each watershed were calculated using GIS software.

Step 3. For each soil parcel (i.e., sending parcel for runoff/erosion), determined all neighboring parcels (i.e., potential receiving parcels, which can be either soil or surface water parcels or soil advection sinks) based on the existence of a common border.

Step 4. Created a transparent map overlay of watershed boundaries and surface parcel boundaries, scaled to the topographic map. Lined up the overlay on the topographic map.

Step 5. For each watershed portion located within each soil parcel (sending parcel), estimated the percentage of the watershed portion surface area that drains into each neighboring parcel (receiving parcel). Made these estimates based on the elevation data and water body locations shown on the topographic map. Drainage was assumed to be downhill and perpendicular to lines of elevation. It was assumed that water will not cross watershed boundaries. Estimates were made in 5% increments.

See Table 1 for illustrative sample data. For example, assume Parcel A contains two different watersheds. Watershed 1 covers 60% of the parcel. 50% of the Watershed 1 portion in Parcel A is estimated to drain to Parcel B, with 25% estimated to drain to Parcel C and 25% to Parcel D.

Table 1
Sample Data and Calculations

Sending Parcel	Watershed	% Parcel	Receiving Parcel	% Runoff	% Total Flow (% Parcel x % Runoff)
A	1	60%	B	50%	30%
			C	25%	15%
			D		15%
A	2	40%	B	0%	0%
			C	50%	20%
			D	50%	20%
B	1	100%	A	0%	0%
			C	0%	0%
			E	0%	0%
			F	100%	100%

The % Runoff estimates were done independently by two people to minimize error in map interpretation and as a check on subjective judgments in assigning percentages.

Step 6. Compared % Runoff estimates made by different people to identify and reconcile obvious discrepancies. For the mercury test case, estimates differing by 20% or more were re-evaluated. After discrepancies were addressed, we averaged the estimates and rounded to the nearest 5%.

Step 7. For each watershed within each sending parcel, estimated the % Total Flow to each receiving parcel by multiplying the % Parcel by the % Runoff (see Table 1 for sample calculations).

Step 8. For each combination of sending parcel-receiving parcel (e.g., A→B, B→A, A→C), summed the % Total Flow for all contributing watersheds. These sums were then converted to the runoff/erosion fractions used as inputs to TRIM FaTE for the mercury test case. As a QA check, we made sure that the values for each sending parcel sum to 100%. For the Table 1 illustrative example, the runoff/erosion percentages are shown for each parcel combination in Table 2.

Table 2
Sample Runoff/Erosion Percentages and Fractions

Parcel Combination	Runoff/Erosion %	Runoff/Erosion Fraction
A→B	30%	0.3
A→C	35%	0.35
A→D	35%	0.35
B→A	0%	0
B→C	0%	0
B→E	0%	0
B→F	100%	1.0

Attachment A-2
Documentation of Food Ingestion Rate Values for Terrestrial and Semi-aquatic Animals for Mercury Test Case

(1) Chickadee

Food ingestion rate: **0.74 kg[food wet wt]/kg[body weight (BW) wet]-day**
Smith (1993) reports that while no data on nutrition and food ingestion by black-capped chickadees are available, parids of comparable size require 10 kcal/day (41.8 kJ/day). Assuming that the chickadee diet consists 100 percent of insects, the chickadee wet body weight (BW) is 0.0108 kg (Dunning 1993), and energy and water content of insects are 22.1 kJ/g dry weight (5.28 kcal/g dry wt) and 76.3 percent, respectively (Bell 1990), daily food ingestion by chickadees would be 0.74 kg[food wet wt]/kg[BW wet]-day.

(2) Short-tailed shrew

Food ingestion rate: **0.47 kg[food wet wt]/kg[BW wet]-day**
The mean daily ingestion rate of shrews in Barrett and Stueck (1976) was 0.49 kg[food wet wt]/kg[BW wet]-day. The value of 0.47 that was included in the mercury test simulations is close to the value from Barrett and Stueck (1976). Caged shrews were fed mealworms, which have essentially the same water content as the natural prey of shrews.

(3) Meadow vole

Food ingestion rate: **0.097 kg[food wet wt]/kg[BW wet]-day**
Food intake by meadow voles when exposed to 14-h days was 0.095 ± 0.002 (mean ± SE) kg[food wet wt]/kg[BW wet]-day; intake by individuals exposed to 10-h days was 0.085 ± 0.005 kg/kg-day (wet wt) (Dark et al. 1983). Mean food consumption by prairie voles (assumed to weigh 35 g; Burt and Grossenheider 1976) was 0.088 kg/kg-day (wet wt) and 0.12 kg/kg-day (wet wt) when ambient temperatures were 21 degrees and 28 degrees Celsius, respectively (Dice 1922).

(4) White-tailed deer

Food ingestion rate: **0.05 kg[food wet wt]/kg[BW wet]-day**
Mautz et al. (1976) reported a 1.74 kg/day diet for a 35 kg deer, which represents maintenance of the deer through the winter. There is no value adjustment for summer, because the energy required by females to thermoregulate and gestate in the winter might be roughly equivalent to the energy for late gestation and lactation.

(5) Tree swallow

Food ingestion rate: **0.198 kg[food wet wt]/kg[BW wet]-day**
Female tree swallows in New Brunswick, Canada in the summer were observed to require 5.73 ± 1.40 kJ/g-day (mean ± SD; n=10; Williams 1988). Using body weights reported in Williams (1988, 22.6 g), assuming that the diet consists exclusively of insects (Quinney and Ankney

1985), and that the energy and water content of insects are 22.09 kJ/g dry weight (5.28 kcal/g dry wt) and 76.3 percent, respectively (Bell 1990), daily food consumption by tree swallows is estimated to be 0.198 ± 0.048 kg[food wet wt]/kg[BW wet]-day. [Note: the calculation for food ingestion rate is incorrect; it should have been 0.34 kg/kg-day (wet wt).]

(6) White-footed mouse

Food ingestion rate: **0.20 kg[food wet wt]/kg[BW wet]-day**
Green and Millar (1987) observed an ingestion rate of 3.4 g/day, for laboratory mice fed Purina rat chow of an average weight of 21 g eating standard food, or a food ingestion rate of 0.16 kg[food dry wt]/kg[BW wet]-day. Body weight and gut dimensions of male and female mice did not differ, so data from both sexes were pooled (reported as g food consumed/individual-day). Food ingestion rate was normalized to body weight using body weights reported in study. The water content of Purina rat chow is approximately 0.10 (or 10 percent). The water content (WC) of the natural diet of white-footed mice is higher. Their diet includes seeds (WC of 0.09), vegetation (WC of 0.10 for mature dry grass, 0.7 to 0.88 for growing grasses), and soil arthropods (WC of 0.60 to 0.70) (US EPA 1993). We assumed that the diet consists primarily of seeds and dry grasses (80 percent), but includes also soil arthropods (20 percent), for an overall moisture content of approximately 0.20. The wet food ingestion rate = the dry food ingestion rate divided by (1-WC), or in this case, the wet food ingestion rate = 0.20 kg[food wet wt]/kg[BW]-day (i.e., 0.16 kg[food dry wt]/kg[BW]-day/(1-0.20)).

(7) Long-tailed weasel

Food ingestion rate: **0.0735 kg[food wet wt]/kg[BW wet]-day**
Brown and Lasiewski (1972) reported the mean metabolism of male and female long-tailed weasels to be 1.36 ± 0.2 and 0.84 ± 0.12 (SE) kcal/hr, respectively. Assuming that male and female weasels weigh 0.297 kg and 0.153 kg (Brown and Lasiewski 1972), respectively, that the diet consists exclusively of small mammals with an energy content of 5163 kcal/kg (or 5.163 kcal/g) dry weight (Golley 1961), and that the water content of small mammals is 68 percent (US EPA 1993), male and female weasels consume 0.067 and 0.080 kg[food wet wt]/kg[BW wet]-day, respectively.

(8) Red-tailed hawk

Food ingestion rate: **0.12 kg[food wet wt]/kg[BW wet]-day**
Preston and Beane (1993) cite a study (Craighead and Craighead 1956) in which males ate an average of 147 g/day (13 percent of body weight) and females an average of 136 g/day (11 percent of body weight) during fall-winter. Males ingested 82 g/day (7 percent of body weight), and females only 85 g/day (7 percent), during spring-summer. To be conservative, the fall-winter food ingestion rate (average of 12 percent) was used.

(9) Mallard

Food ingestion rate: **0.1 kg[food wet wt]/kg[BW wet]-day**
Heinz et al. (1987) report that mallards maintained in the laboratory consumed 0.1 kg[food dry wt]/kg[BW wet]-day. The water content of this diet (mostly seeds) ranged from 7-10 percent.

Because the plant material consumed by mallards consists largely of seeds, and the mean water content of seeds is 9.3 percent (US EPA 1993), the food ingestion rate used by Heinz may be used to represent the wet weight food ingestion rate without adjusting for water content.

(10) Mink

Food ingestion rate: **0.14 kg[food wet wt]/kg[BW wet]-day**
Bleavins and Aulerich (1981) reported a food ingestion rate of 0.14 kg[food wet wt]/kg[BW wet]-day for male and female mink in captivity. The diet consisted of chicken (20 percent), commercial mink cereal (17 percent), fish scraps (13 percent), beef parts, cooked eggs, powdered milk, and added water. The water content of that diet as fed to the mink was 66.2 percent, which is roughly equivalent to the water content of a natural mink diet.

(11) Raccoon

Food ingestion rate: **0.11 kg[food wet wt]/kg[BW wet]-day**
Using a body weight of 6.35 kg for an adult raccoon from EPA (1993) and the allometric equation for omnivorous mammals from Nagy et al. (1999), it is estimated that a raccoon would need 548 kcal daily or 86 kcal/kg-day. Assuming 0.95 kcal/g as an average gross energy content of the diet (wet wt), and an assimilation efficiency of 0.85, a raccoon would need 678 g of the diet daily, or 0.11 kg[food wet wt]/kg[BW wet]-day.

(12) Common loon

Food ingestion rate: **0.23 kg[food wet wt]/kg[BW wet]-day**
Assuming a diet of 100 percent fish, a gross energy content of 1.2 kcal/g[fish wet wt], and an energy assimilation efficiency of 79 percent for seabirds eating fish and using Nagy et al.'s (1999) allometric equation for seabirds consuming fish, we calculated a food ingestion rate for loons of 0.23 kg[food wet wt]/kg[BW wet]-day.

(13) Bald eagle

Food ingestion rate: **0.12 kg[food wet wt]/kg[BW wet]-day**
The value of 0.12 kg[food wet wt]/kg[BW wet] is for adults with an assumed body weight of 4.5 kg eating 100 percent fish. It is based on a field study conducted in the winter by Stalmaster and Gessaman (1984) where the eagles were provisioned with fish of known weights.

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Attachment A-3
Documentation of Total Elimination Rate Values for Terrestrial and Semi-aquatic Animals for the Mercury Test Case

First-order rate constants used to derive the mercury elimination rate constants for wildlife in the current TRIM.FaTE library are summarized in Table 1. Supporting information is presented in the subsections that follow.

Table 1
Mean First-order Rate Constants (day^{-1}) for Elimination of Mercury from Birds and Mammals

	Chemical Species	Urine and Feces (E_{uf})	Lactation (E_{lact})	Eggs (E_{egg})	Fur, Feathers, or Hair (E_{ff})
mammals	Hg^{2+}	0.48[a]	0.00001	NA	0.00001
	Hg^0	0.0502[b]	0[b]	NA	0[b]
	organic Hg	0.26[a]	0.00001[c]	NA	0.00014[d]
birds	Hg^{2+}	0.48[e]	NA	0[f]	0.00011[g]
	Hg^0	0.0502[b]	NA	0[b]	0[b]
	organic Hg	0.0282[a]	NA	0.0244	0.0559

[a] Averages of elimination rate constants for oral and dietary doses.
[b] Rate constant based on inhalation study for mammals; same value assumed for birds.
[c] Assume same as lactation rate constant for Hg^{2+}.
[d] Averages of elimination rate constants for oral dose and injection.
[e] Assume same as elimination rate constant to mammalian urine and feces.
[f] No information available.
[g] Assume same as elimination rate constant to mammal fur.

For each mercury species, the total elimination rate constant for birds or mammals is equal to the sum of the excretion rate constants in Table 1 for urine and feces; lactation (mammals), and fur, hair (mammals), or feathers (birds). In the current TRIM.FaTE library, chemical excretion to eggs is assumed to remain within the bird population compartment, hence it is not included in the total bird elimination rate constant for organic mercury.

Elemental Mercury

Elemental mercury vapor is rapidly absorbed in the lungs (75 to 85 percent in humans), and to a much lesser extent (three percent), it can be absorbed dermally (ATSDR 1997, U.S. EPA 1997). Five human subjects inhaled from 107 to 202 μg[Hg]/m^3[air] and retained an average of 74 percent of the dose (Teisinger and Fiserova-Bergerova 1965). The inhaled vapor readily distributes throughout the body and can cross the blood-brain and placental barriers.

Rats exposed for 5 hours to 1.4 mg/m^3 radio-labeled mercury vapor retained an average body burden of 0.256 mg/kg BW (37 μg[Hg]/rat) and had excreted (urine and feces) 8.5 percent of the initial body burden in 1 day, 24.8 percent in 5 days, and 42.9 percent in 15 days (Hayes and Rothstein 1962). Cherian et al. (1978) exposed 5 human volunteers to approximately 1 μCi of radio-labeled Hg vapor for approximately 19 minutes. Mean cumulative excretion over the first 7 days after exposure was 2.4 percent of the retained dose in urine and 9.2 percent in feces for a total excretion of 11.6 percent of the retained dose (Cherian et al. 1978).

Rates of excretion of elemental mercury by mammals (rats and humans) are summarized in Table 2 (mean value presented in Table 1). No information on excretion by avian species is available.

Table 2
Excretion of Inhaled Elemental Mercury (Hg^o) in Mammals

Test Species	Dose	Elimination Route	Percent of Dose	Days	Rate Constant (Day^{-1})	Source
Rat	0.256 mg/kg	urine + feces	8.5	1	0.08883	Hayes & Rothstein 1962
Rat	0.256 mg/kg	urine + feces	24.8	5	0.05700	Hayes & Rothstein 1962
Rat	0.256 mg/kg	urine + feces	42.9	15	0.03736	Hayes & Rothstein 1962
Human	1 μCi	urine + feces	11.6	7	0.01761	Cherian et al. 1978
			$\bar{x} \pm$ SE		**0.05020 ± 0.01518**	

Divalent Mercury

Divalent mercury can be absorbed through oral, dermal, and inhalation routes; however, absorption is lower than for elemental mercury by all routes. In mice, only 20 percent of the administered dose is absorbed from the GI tract, 2-3 percent of the dose was absorbed dermally in exposed guinea pigs, and limited information on inhalation exposure indicates that 40 percent of the dose was absorbed in the lungs of dogs (U.S. EPA 1997). Additionally, the absorption of mercuric salts varies with the solubility of the specific salt. For example, the less soluble sulfide salt is more poorly absorbed as mercuric sulfide than the more soluble chloride salt as mercuric chloride (U.S. EPA 1997). Divalent mercury distributes widely throughout the body; however, it cannot cross the blood-brain or placental barriers.

The metabolism and distribution of mercuric chloride ($HgCl_2$) has been described in dairy cows and rats. Potter et al. (1972) orally administered 344 μCi of radio-labeled mercuric chloride by gelatin capsule using balling gum to 2 Holstein cows. After 6 days, 94.87 percent of the dose was excreted in feces, 0.044 percent in urine, and 0.0097 percent in milk, for a total excretion of 94.92 percent of the dose. The biological half-life was calculated as 28.5 hours. Rats dosed by intravenous injection with 1 mg[Hg]/kg[body weight] mercuric chloride excreted 15.2 percent of the dose in feces and 16.3 percent in urine over 4 days for a total excretion (fecal and urinary) of 31.5 percent of the administered dose in 4 days (Gregus and Klaassen 1986).

The metabolism and distribution of mercuric nitrate [$Hg(NO_3)_2$] have also been described for dairy cows and rats. Four Holstein dairy cows were given an oral dose of 1.7 mCi radio-labeled $Hg(NO_3)_2$ in a gelatin capsule via balling gum. Urine, feces, and milk were collected for 10 days and analyzed. Results indicated that 74.91 percent of the administered dose was excreted in feces, 0.08 percent in urine, and 0.01 percent in milk with a total excretion of 75 percent of the dose in 10 days (Mullen et al. 1975). Mullen et al. (1975) also reported a biological half-life for the transfer of orally ingested mercury to milk of 5 days. Transfer of mercury to feces was slightly more complicated with an initial half-life of 15 hr (probably reflecting the unabsorbed dose), then a decrease in elimination time which resulted in a 3 day half-life (probably representing excretion of the absorbed dose) (Mullen et al. 1975). Rothstein and Hayes (1960) dosed 7 Wistar rats with 50 µg (0.2 mg[Hg]/kg[body wt]) radio-labeled mercury as $Hg(NO_3)_2$ via intravenous injection. After 52 days the cumulative percent excretion was 25 percent of the administered dose in urine and 37 percent in feces for a total excretion of 62 percent of the injected dose over 52 days (Rothstein and Hayes 1960). In another study, 6 Holtzman rats were dosed by subcutaneous injection with 20 µCi of radio-labeled $Hg(NO_3)_2$, and 0.018 percent of the dose was recovered in the hair 20 days after administration (Mansour et al. 1973). For pregnant female rats, a clearance half-time of 16.2 days was also reported (18 measurements over a 3-week period).

Fitzhugh et al. (1950) exposed rats (20/dose group) to mercuric acetate in the diet at concentrations of 0.5, 2.5, 10, 40, and 160 ppm Hg. The average intake of Hg in a 24-hour period was 7.5, 37.5, 150, 600, and 2,400 µg per rat, and the 24-hour excretion was 52, 40, 43, 47, and 43 percent of those doses, respectively, in feces and 4.8, 1.0, 0.5, 0.37, and 1.7 percent, respectively, in urine (Fitzhugh et al. 1950).

Divalent mercury is poorly absorbed from the GI tract (20 percent, see above), therefore, elimination rates obtained from oral or dietary exposure may be misleading. Hayes and Rothstein (1962) reported an initial half-life for fecal elimination of inorganic mercury of 0.6 days in Holstein cows. Later, the half-life increased to 3 days, as in the study by Mullen et al. (1975) . This indicates that a large proportion of the dose is initially excreted via the feces due to lack of absorption. In the current TRIM.FaTE library, the elimination rate constant for terrestrial wildlife represents the elimination of both absorbed and unabsorbed mercury in feces (and urine). As long as the concentration of mercury in the tissues of the wildlife (birds and mammals) is not needed for the risk assessment, these elimination rates can be used for purposes of estimating the transfer of ingested mercury from wildlife to surface soil and water by setting the assimilation efficiency property in the wildlife compartment to 1.0. However, if the concentration of Hg in the animals tissues is needed for the risk assessment (e.g., to track risks to humans that consume meat from deer or cows in the modeling region), it would be necessary to determine a true assimilation efficiency to estimate the proportion of the ingested mercury that is absorbed by the animal. Then, separate rate constants and algorithms would be needed to track separately the elimination of the absorbed mercury and unabsorbed mercury.

Rates of excretion of divalent mercury by mammals (rats and cows) are summarized in Table 3 (mean values for excretion to urine and feces, lactation, and excretion to hair presented in Table 1). No information on excretion by avian species is available.

Table 3
Excretion of Divalent Mercury in Mammals

Test Species [a]	Form	Dose	Dose Route [b]	Elimination Route	Percent of Dose	Days	Rate (Day^{-1})	Dose Vehicle	Source
Cow-Holstein	$HgCl_2$	344 µCi	oral	urine + feces	94.91	6	0.49632	gel cap	Potter et al. 1972
Cow-Holstein	$Hg(NO_3)_2$	1.7 mCi	oral	urine + feces	74.99	10	0.13859	gel cap	Mullen et al. 1975
					$\bar{x}$ ± SE		**0.31745 ± 0.17886**		
Rat-SD	$HgCl_2$	1 mg/kg	iv	urine + feces	31.5	4	0.09458	saline sol	Gregus & Klaassen 1986
Rat-Wistar	$Hg(NO_3)_2$	50 µg	iv	urine + feces	62	52	0.01861	sodium chloride	Rothstein & Hayes 1960
					$\bar{x}$ ± SE		**0.05660 ± 0.03798**		
Rat	mercuric acetate	7.5 µg	diet	urine + feces	56.8	1	0.83933	food	Fitzhugh et al. 1950
Rat	mercuric acetate	37.5 µg	diet	urine + feces	41.0	1	0.52763	food	Fitzhugh et al. 1950
Rat	mercuric acetate	150 µg	diet	urine + feces	43.5	1	0.57093	food	Fitzhugh et al. 1950
Rat	mercuric acetate	600 µg	diet	urine + feces	47.37	1	0.64188	food	Fitzhugh et al. 1950
Rat	mercuric acetate	2400 µg	diet	urine + feces	44.7	1	0.59240	food	Fitzhugh et al. 1950
					$\bar{x}$ ± SE		**0.63443 ± 0.05443**		
Cow-Holstein	$HgCl_2$	344 µCi	oral	milk	0.0097	6	0.00002	gel cap	Potter et al. 1972
Cow-Holstein	$Hg(NO_3)_2$	1.7 mCi	oral	milk	0.01	10	0.00001	gel cap	Mullen et al. 1975
					$\bar{x}$ ± SE		**0.00001 ± 0.000003**		
Rat-Holtzman	$Hg(NO_3)_2$	20 µg	sc inj	hair	0.018	20	0.00001	injection	Mansour et al. 1973

[a] Rat-SD = Sprague Dawley rat.
[b] iv = intravenous injection and sc inj = subcutaneous injection.

Organic Mercury

Organic mercury is by far the most studied species of mercury. It is rapidly and extensively absorbed through the GI tract (95 percent of the dose in humans) and is distributed throughout the body via carrier-mediated transport (U.S. EPA 1997). Like elemental mercury, organic mercury can cross the blood-brain and placental barriers.

Radio-labeled methylmercuric chloride was intravenously injected into 6 pregnant Holtzman rats at a dose of 10 μCi; after 20 days, 0.21 percent of the administered dose was transferred to hair. The whole-body clearance half-life was reported to be 8.4 days (Mansour et al. 1973). Gregus and Klaassen (1986) also administered radio-labeled methylmercuric chloride via intravenous injection to Sprague-Dawley rats at a dose of 1 mg[Hg]/kg[body wt]. Within 4 days, 5.6 percent of the injected dose was excreted in feces and 0.5 percent in urine for a total excretion of 6.1 percent of the administered dose. Additionally, 2-hr biliary excretion was 0.7, 0.9, 0.7, and 0.5 percent of doses at 0.1, 0.3, 1.0, and 3.0 mg[Hg]/kg[body wt], respectively (Gregus and Klaassen 1986). Syrian Golden hamsters (N = 9) were given an oral dose of 0.32 mg[Hg]/kg[body wt] as radio-labeled methylmercury chloride, and the elimination rate was found to follow a first-order rate equation with a half-life of 6.9 days (Nordenhäll et al. 1995). Nordenhäll et al. (1995) estimated that approximately 5 percent of the oral dose administered to the dams was transferred to pups via milk over 21 days. Four days after oral administration of methylmercury chloride, 20 percent of the mercury in milk was inorganic (Nordenhäll et al. 1995). Sell and Davison (1975) dosed via intraruminal injection, 1 Nubian goat and 1 Guernsey cow with 100 and 500 μCi radio-labeled methylmercury chloride, respectively. After 13 days, 0.28, 31.18, and 1.45 percent of the dose administered to the goat were excreted in milk, feces, and urine, respectively. Conversely, *none of the dose* was excreted in cow milk, 25.32 percent was excreted in cow feces, and 1.28 percent was excreted in cow urine after 7 days.

Takeda and Ukita (1970) exposed Donryu rats to 20 μg[Hg]/kg[body wt] as radio-labeled ethyl-mercuric chloride dissolved in olive oil by subcutaneous injection. Cumulative excretion during 8 days post-exposure was 10.52 percent of dose in urine and 6.01 percent of dose in feces. In urine, 41.9 percent and 58.1 percent of the total mercury was organic and inorganic, respectively, on day 8. In contrast, 65 percent of fecal mercury was organic and 35 percent was inorganic on day 8 (Takeda and Ukita 1970). Fang and Fallin (1973) orally dosed 14 rats with 3 μmol radio-labeled ethyl-mercuric chloride in corn oil. Mercury content was measured in 1-2 rats on days 0.25, 1, 2, 3, 4, 5, 7, 10, and 14 after dosing. Fourteen days after dosing, 32.5 nmole/g hair had accumulated in the fur. Wistar rats have an estimated 3 g of fur (Talmage 1999), therefore, approximately 3.25 percent of the original dose was excreted in fur.

Fitzhugh et al. (1950) exposed rats (20/dose group) to phenyl mercuric acetate in the diet at doses of 0.5, 2.5, 10, 40, and 160 ppm [Hg]. The average intake of Hg in a 24-hour period was 7.5, 37.5, 150, 600, and 2,400 μg and the 24-hour excretion was 44, 35, 27, 35, and 30 percent of those doses, respectively, in feces and 9.2, 4.5, 6.2, 4.3, and 2.4 percent, respectively, in urine (Fitzhugh et al. 1950).

Humans also have been used as subjects for studying the metabolism of methylmercury. Three subjects were given an oral dose of 2.6 μCi radio-labeled methylmercuric nitrate (Aberg et al. 1969). Mean cumulative mercury excretion values 10 days post-exposure were 13.6 percent

(13.6, 13, and 14.2 percent) of the dose in feces and 0.24 percent (0.18, 0.26, and 0.27 percent) in urine. After 49 days, 34.1 percent (33.4 and 34.7 percent) of the initial dose was excreted via feces and 3.31 percent (3.29 and 3.33 percent) via urine (Aberg et al. 1969). Aberg et al. (1969) also reported the biological half-life of methylmercuric chloride to be 70.4, 74.2, and 73.7days ($\bar{x}$ = 72.8 days) for the three subjects and measured approximately 0.12 percent of the initial dose in hair approximately 45 days (range 40-50 days) after exposure.

Two papers contained data suitable for use in determining excretion rates for avian species. In the first study, Lewis and Furness (1991) orally dosed black-headed gulls with 200, 100, or 20 μL methylmercuric chloride using gelatin capsules. The cumulative excretion of mercury for the 200 μL group was 26.4 percent of the dose in urine/feces and 51.2 percent in feathers for a total of 77.5 percent eliminated from the body over 13 days. At the 100 μL dose, a total of 80.3 percent of the dose was eliminated (37.8 and 44.2 percent in urine/feces and feathers, respectively) in 13 days. Finally, only 56.3 percent of the low dose was measured in urine/feces and feathers, with 11 percent of the dose in urine/feces and 52.6 percent in feathers after 13 days (Lewis and Furness 1991).

In the second study, 4 white-leghorn chickens and 4 Japanese quail were administered 20 ppm Hg as methylmercuric chloride in the diet for 21 days (Sell 1977). During the first 7 days of this dosing period, chickens and quail were also given an oral dose of 2 μCi of radio-labeled methylmercuric chloride (Sell 1977). The rate calculations reported in Table A-18 assume that the author accounted for the total intake of radio-labeled mercury from both sources when reporting percent of dose excreted in feces and eggs. Chickens excreted 64 percent of the dose in urine/feces and 22 percent of the dose in eggs produced during the 21 days post-exposure, while quail excreted 41 and 54 percent of the dose in urine/feces and eggs, respective, during the same 21 day post-exposure period (Sell 1977).

Rates of excretion of organic mercury by mammals (humans, goats, cows, and rats) are summarized in Table 4, and rates of excretion by birds are summarized in Table 5 (mean values for excretion to urine and feces, fur, feathers, and eggs presented in Table 1). No information on excretion by avian species is available.

Table 4
Excretion of Organic Mercury in Mammals

Test Species [a]	Form	Dose	Dose Route [b]	Elimination Route	Percent of Dose	Days	Rate (Day^{-1})	Dose Vehicle	Source
Human	methylmercuric nitrate	2.6 µCi	oral	urine + feces	13.84	10	0.01490	aq sol	Aberg et al. 1969
Human	methylmercuric nitrate	2.6 µCi	oral	urine + feces	37.41	49	0.00956	aq sol	Aberg et al. 1969
Goat-Nubian	CH_3-HgCl	100 µCi	ir inj	urine + feces	0.67	1	0.00672	ethanol	Sell & Davison 1975
Goat-Nubian	CH_3-HgCl	100 µCi	ir inj	urine + feces	17.19	3	0.06287	ethanol	Sell & Davison 1975
Goat-Nubian	CH_3-HgCl	100 µCi	ir inj	urine + feces	22.62	5	0.05129	ethanol	Sell & Davison 1975
Goat-Nubian	CH_3-HgCl	100 µCi	ir inj	urine + feces	25.72	7	0.04248	ethanol	Sell & Davison 1975
Goat-Nubian	CH_3-HgCl	100 µCi	ir inj	urine + feces	31.63	13	0.02925	ethanol	Sell & Davison 1975
Cow-Guernsey	CH_3-HgCl	500 µCi	ir inj	urine + feces	4.80	1	0.04919	ethanol	Sell & Davison 1975
Cow-Guernsey	CH_3-HgCl	500 µCi	ir inj	urine + feces	18.86	3	0.06966	ethanol	Sell & Davison 1975
Cow-Guernsey	CH_3-HgCl	500 µCi	ir inj	urine + feces	23.05	5	0.05240	ethanol	Sell & Davison 1975
Cow-Guernsey	CH_3-HgCl	500 µCi	ir inj	urine + feces	26.60	7	0.04418	ethanol	Sell & Davison 1975
					$\bar{x} \pm$ SE		**0.03932 $\pm$ 0.00644**		
Rat-SD	CH_3-HgCl	1 mg/kg	iv	urine + feces	6.1	4	0.01573	saline sol	Gregus & Klaassen 1986
Rat-Donryu	ethyl-$HgCl_2$	20 µg/kg	sc inj	urine + feces	16.53	8	0.02259	olive oil	Takeda & Ukita 1970
					$\bar{x} \pm$ SE		**0.01916 $\pm$ 0.00343**		
Rat	phenyl mercuric acetate	7.5 µg	diet	urine + feces	53.2	1	0.75929	food	Fitzhugh et al. 1950
Rat	phenyl mercuric acetate	37.5 µg	diet	urine + feces	39.5	1	0.50253	food	Fitzhugh et al. 1950
Rat	phenyl mercuric acetate	150 µg	diet	urine + feces	33.2	1	0.40347	food	Fitzhugh et al. 1950
Rat	phenyl mercuric acetate	600 µg	diet	urine + feces	39.3	1	0.49923	food	Fitzhugh et al. 1950
Rat	phenyl mercuric acetate	2400 µg	diet	urine + feces	32.4	1	0.39156	food	Fitzhugh et al. 1950
					$\bar{x} \pm$ SE		**0.51121 $\pm$ 0.06621**		

Table 4 (continued)
Excretion of Organic Mercury in Mammals

Test Species [a]	Form	Dose	Dose Route [b]	Elimination Route	Percent of Dose	Days	Rate (Day^{-1})	Dose Vehicle	Source
Goat-Nubian	CH_3-HgCl	100 µCi	ir inj	milk	0.08	3	0.00027	ethanol	Sell & Davison 1975
Goat-Nubian	CH_3-HgCl	100 µCi	ir inj	milk	0.14	5	0.00028	ethanol	Sell & Davison 1975
Goat-Nubian	CH_3-HgCl	100 µCi	ir inj	milk	0.19	7	0.00027	ethanol	Sell & Davison 1975
Goat-Nubian	CH_3-HgCl	100 µCi	ir inj	milk	0.28	13	0.00022	ethanol	Sell & Davison 1975
					$\bar{x}$ ± SE		**0.00026 ± 0.00001**		
Human	methylmercuric nitrate	2.6 µCi	oral	hair	0.12	45	0.00003	aq sol	Aberg et al. 1969
Rat-Wistar	ethyl-$HgCl_2$	3 µmole	oral	hair	0.05	0.25	0.00200	corn oil	Fang & Fallin 1973
Rat-Wistar	ethyl-$HgCl_2$	3 µmole	oral	hair	0.14	1	0.00140	corn oil	Fang & Fallin 1973
Rat-Wistar	ethyl-$HgCl_2$	3 µmole	oral	hair	0.18	2	0.00090	corn oil	Fang & Fallin 1973
Rat-Wistar	ethyl-$HgCl_2$	3 µmole	oral	hair	0.52	3	0.00174	corn oil	Fang & Fallin 1973
Rat-Wistar	ethyl-$HgCl_2$	3 µmole	oral	hair	0.59	4	0.00148	corn oil	Fang & Fallin 1973
Rat-Wistar	ethyl-$HgCl_2$	3 µmole	oral	hair	0.67	5	0.00134	corn oil	Fang & Fallin 1973
Rat-Wistar	ethyl-$HgCl_2$	3 µmole	oral	hair	1.08	7	0.00155	corn oil	Fang & Fallin 1973
Rat-Wistar	ethyl-$HgCl_2$	3 µmole	oral	hair	2.25	10	0.00228	corn oil	Fang & Fallin 1973
Rat-Wistar	ethyl-$HgCl_2$	3 µmole	oral	hair	5.50	14	0.00404	corn oil	Fang & Fallin 1973
					$\bar{x}$ ± SE		**0.00168 ± 0.00033**		
Rat-Holtzman	CH_3-HgCl	10 µCi	iv	hair	0.21	20	0.00011		Mansour et al. 1973

[a] Rat-SD = Sprague Dawley rat.
[b] ir = intraruminal injection, iv = intravenous injection, and sc inj = subcutaneous injection.

Table 5
Excretion of Organic Mercury in Birds

Test Species [a]	Form	Dose	Dose Route	Elimination Route	Percent of Dose	Days	Rate (Day^{-1})	Dose Vehicle	Source
Gull-BH	methyl-HgCl	200 µL	oral	feces	26.4	13	0.02358	gel cap	Lewis & Furness 1991
Gull-BH	methyl-HgCl	100 µL	oral	feces	37.7	13	0.03640	gel cap	Lewis & Furness 1991
Gull-BH	methyl-HgCl	20 µL	oral	feces	11	13	0.00896	gel cap	Lewis & Furness 1991
					$\bar{x}$ ± SE		**0.02298 ± 0.00793**		
Chicken-WL	methyl-HgCl	20 ppm + 2 µCi	diet/oral	feces	64	21	0.04865	food	Sell 1977
Quail-Japanese	methyl-HgCl	20 ppm + 2 µCi	diet/oral	feces	32	21	0.01836	food	Sell 1977
					$\bar{x}$ ± SE		**0.03351 ± 0.01514**		
Gull-BH	methyl-HgCl	200 µL	oral	feathers	51.2	13	0.05519	gel cap	Lewis & Furness 1991
Gull-BH	methyl-HgCl	100 µL	oral	feathers	44.2	13	0.04488	gel cap	Lewis & Furness 1991
Gull-BH	methyl-HgCl	20 µL	oral	feathers	52.6	13	0.05743	gel cap	Lewis & Furness 1991
					$\bar{x}$ ± SE		**0.05593 ± 0.00075**		
Chicken-WL	methyl-HgCl	20 ppm + 2 µCi	diet/oral	eggs	21.88	21	0.01176	food	Sell 1977
Quail-Japanese	methyl-HgCl	20 ppm + 2 µCi	diet/oral	eggs	54.08	21	0.03706	food	Sell 1977
					$\bar{x}$ ± SE		**0.02441 ± 0.01265**		

[a] Gull-BH = black-headed gull, Chicken-WL = white-leghorn chicken.

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APPENDIX B

DETAILED RESULTS FOR EMISSION CASE B

Appendix B
DETAILED RESULTS FOR EMISSION CASE B [1]

B.1 Mass Accumulation Tables

Table #	Title of Table	Corresponds to
Table B-1	**Overall Distribution of Total Mercury Mass (g) in Modeling System**	**Exhibit 3-2**
Table B-2	**Distribution of Total Mercury Mass (g) in Abiotic Compartments**	**Exhibit 3-3**
Table B-3	**Distribution of Total Mercury Mass (g) in Biotic Compartment Groups**	**Exhibit 3-4**
Table B-4	**Distribution of Total Mercury Mass (g) in Air, Surface Soil, and Terrestrial Plant Compartments**	**Exhibit 3-5**
Table B-5	**Distribution of Total Mercury Mass (g) in Surface Water, Sediment, and Aquatic Biota Compartments**	**Exhibit 3-6**
Table B-6	**Distribution of Total Mercury Mass (g) in Surface Soil and Terrestrial and Semi-aquatic Animal Compartments**	**N/A**

[1] All data for emission case B (both elemental mercury and divalent mercury emitted from source only, no boundary contributions or initial concentrations), 11-23-03 model run.

Table B-1
Overall Distribution of Total Mercury Mass (g) in Modeling System [a]

Compartment/Sink Group	Year					
	Initial	1	5	10	20	30
All Abiotic Compartments	0	2.2E+02	2.2E+03	4.6E+03	9.0E+03	1.3E+04
All Biotic Compartments	0	2.5E+01	4.5E+01	4.5E+01	4.5E+01	4.5E+01
Total in Modeling Region	0	2.5E+02	2.3E+03	4.6E+03	9.0E+03	1.3E+04
Air Sinks	0	6.4E+04	5.8E+05	1.2E+06	2.5E+06	3.8E+06
All Other Sinks	0	7.0E+01	7.2E+02	1.6E+03	3.6E+03	5.9E+03
Total in Sinks	0	6.4E+04	5.8E+05	1.2E+06	2.5E+06	3.8E+06
Total Mass in System	0	6.5E+04	5.8E+05	1.2E+06	2.5E+06	3.8E+06

[a] All values other than initial are annual averages for the specified year.

Table B-2
Distribution of Total Mercury Mass (g) in Abiotic Compartments [a]

Compartment Type	Year					
	Initial	1	5	10	20	30
Air	0	1.4E+01	1.3E+01	1.3E+01	1.3E+01	1.3E+01
Surface Soil	0	2.0E+02	2.1E+03	4.3E+03	8.5E+03	1.2E+04
Root Zone Soil	0	4.4E+00	4.2E+01	8.0E+01	1.5E+02	2.1E+02
Vadose Zone Soil	0	8.1E-04	5.4E-02	2.2E-01	7.7E-01	1.5E+00
Ground Water	0	2.9E-11	1.2E-08	1.0E-07	7.8E-07	2.4E-06
Surface Water	0	9.0E-01	1.1E+00	1.4E+00	1.8E+00	2.2E+00
Sediment	0	7.5E+00	6.9E+01	1.5E+02	3.3E+02	5.5E+02
Total in Abiotic Compartments	0	2.2E+02	2.2E+03	4.6E+03	9.0E+03	1.3E+04
Total Mass in System	0	6.5E+04	5.8E+05	1.2E+06	2.5E+06	3.8E+06

[a] All values other than initial are annual averages for the specified year.

Table B-3
Distribution of Total Mercury Mass (g) in Biotic Compartment Groups [a]

Compartment Group	Year					
	Initial	1	5	10	20	30
Terrestrial Plants	0	2.5E+01	4.5E+01	4.5E+01	4.5E+01	4.5E+01
Terrestrial/Semi-aquatic Animals	0	1.0E-01	1.9E-01	1.9E-01	1.9E-01	1.9E-01
Aquatic Plants [b]	0	1.6E-01	2.1E-01	2.4E-01	3.2E-01	4.0E-01
Aquatic Animals	0	9.6E-04	4.4E-03	8.2E-03	1.6E-02	2.6E-02
Total in Biotic Compartments	0	2.5E+01	4.5E+01	4.5E+01	4.5E+01	4.5E+01
Total Mass in System	0	6.5E+04	5.8E+05	1.2E+06	2.5E+06	3.8E+06

[a] All values other than initial are annual averages for the specified year.
[b] Macrophyte compartments only; algae not included in this grouping because they are modeled as a phase of surface water (not as a distinct compartment type).

Table B-4
Distribution of Total Mercury Mass (g) in Air, Surface Soil, and Terrestrial Plant Compartments [a]

Compartment Type	Year					
	Initial	1	5	10	20	30
Air	0	1.4E+01	1.3E+01	1.3E+01	1.3E+01	1.3E+01
Surface Soil	0	2.0E+02	2.1E+03	4.3E+03	8.5E+03	1.2E+04
Leaf	0	2.5E+01	4.5E+01	4.4E+01	4.5E+01	4.4E+01
Particle on Leaf	0	4.2E-03	5.6E-03	5.6E-03	5.6E-03	5.6E-03
Root [b]	0	2.5E-06	2.0E-04	9.6E-04	4.1E-03	9.1E-03
Stem [b]	0	5.5E-02	1.3E-01	1.3E-01	1.3E-01	1.3E-01
Total Mass in System	0	6.5E+04	5.8E+05	1.2E+06	2.5E+06	3.8E+06

[a] All values other than initial are annual averages for the specified year.
[b] Because of methodology limitations, only modeled in the four volume elements with grasses/herbs vegetation type (versus 19 volume elements modeled for leaf and particle on leaf).

Table B-5
Distribution of Total Mercury Mass (g) in Surface Water, Sediment, and Aquatic Biota Compartments [a]

Compartment Type	Year					
	Initial	1	5	10	20	30
Surface Water	0	9.0E-01	1.1E+00	1.4E+00	1.8E+00	2.2E+00
Macrophyte	0	1.6E-01	2.1E-01	2.4E-01	3.2E-01	4.0E-01
Water-column Herbivore	0	3.6E-04	5.9E-04	8.1E-04	1.3E-03	1.7E-03
Water-column Omnivore	0	8.3E-05	2.3E-04	3.5E-04	5.7E-04	7.9E-04
Water-column Carnivore	0	2.7E-05	3.1E-04	4.9E-04	8.2E-04	1.1E-03
Sediment	0	7.5E+00	6.9E+01	1.5E+02	3.3E+02	5.5E+02
Benthic Invertebrate	0	3.1E-04	2.8E-03	5.9E-03	1.3E-02	2.1E-02
Benthic Omnivore	0	6.1E-06	8.5E-05	1.9E-04	4.1E-04	6.7E-04
Benthic Carnivore	0	5.0E-07	2.3E-05	6.0E-05	1.4E-04	2.3E-04
Total Mass in System	0	6.5E+04	5.8E+05	1.2E+06	2.5E+06	3.8E+06

[a] All values other than initial are annual averages for the specified year.

Table B-6
Distribution of Total Mercury Mass (g) in Surface Soil and Terrestrial and Semi-aquatic Animal Compartments [a]

Compartment Type	Year					
	Initial	1	5	10	20	30
Surface Soil	0	2.0E+02	2.1E+03	4.3E+03	8.5E+03	1.2E+04
Soil Arthropod	0	1.8E-09	1.2E-07	5.4E-07	2.2E-06	4.9E-06
Earthworm	0	8.7E-06	8.4E-05	1.6E-04	2.9E-04	4.2E-04
White-tailed Deer	0	9.8E-02	1.8E-01	1.8E-01	1.8E-01	1.8E-01
Meadow Vole [b]	0	3.2E-04	5.2E-04	5.2E-04	5.3E-04	5.3E-04
Mouse	0	2.6E-03	4.8E-03	4.8E-03	4.8E-03	4.8E-03
Black-capped Chickadee	0	4.2E-05	7.7E-05	7.7E-05	7.7E-05	7.7E-05
Short-tailed Shrew	0	1.2E-05	1.1E-04	2.2E-04	4.3E-04	6.1E-04
Long-tailed Weasel	0	4.8E-06	8.9E-06	9.2E-06	9.8E-06	1.0E-05
Red-tailed Hawk	0	9.2E-06	1.7E-05	1.7E-05	1.8E-05	1.9E-05
Mink [b]	0	1.4E-06	2.3E-06	2.4E-06	2.5E-06	2.6E-06
Bald Eagle	0	3.9E-07	8.1E-07	9.2E-07	1.1E-06	1.3E-06
Raccoon [b]	0	7.5E-07	3.5E-06	6.7E-06	1.3E-05	2.0E-05
Tree Swallow	0	3.9E-06	1.0E-05	1.8E-05	3.5E-05	5.4E-05
Mallard [c]	0	1.8E-04	4.1E-04	4.1E-04	4.1E-04	4.1E-04
Common Loon [c]	0	2.0E-08	6.2E-08	9.7E-08	1.7E-07	2.4E-07
Total Mass in System	0	6.5E+04	5.8E+05	1.2E+06	2.5E+06	3.8E+06

[a] All values other than initial are annual averages for the specified year.
[b] Voles only present in two volume elements, raccoons and mink only present in 14 volume elements (versus 17 for other land-based animals).
[c] Mallards and loons assigned to surface water volume elements rather than surface soil; thus, only present in five volume elements.

B.2 Concentration Tables and Charts

Table #	Title of Table	Corresponds to
Table B-7	**Annual Average Concentration of Total Mercury in Air at Increasing Distance from the Source**	**Exhibit 3-8**
Table B-8a	**Annual Average Concentration of Total Mercury: Soil and Soil Biota in SW2**	**N/A**
Table B-8b	**Annual Average Concentration of Total Mercury: Soil and Soil Biota in SSE4**	**N/A**
Table B-9a	**Annual Average Concentration of Total Mercury: Terrestrial Plants in SW2**	**Exhibit 3-10**
Table B-9b	**Annual Average Concentration of Total Mercury: Terrestrial Plants in SSE4**	**N/A**
Table B-9c	**Annual Average Concentration of Total Mercury: Terrestrial Plants in W2**	**N/A**
Table B-10a	**Annual Average Concentration of Total Mercury: All Compartments in Swetts Pond**	**Exhibit 3-11**
Table B-10b	**Annual Average Concentration of Total Mercury: All Compartments in Brewer Lake**	**N/A**
Table B-11a	**Annual Average Concentration of Total Mercury: Terrestrial and Land-based Semi-aquatic Animals in SW2**	**Exhibit 3-13**
Table B-11b	**Annual Average Concentration of Total Mercury: Terrestrial and Land-based Semi-aquatic Animals in SSE4**	**N/A**

Chart #	Title of Chart
Chart B-1a	**Total Mercury Concentration in Air vs. Time at Increasing Distance (Southeast) from the Source**
Chart B-1b	**Total Mercury Concentration in Air vs. Time at Increasing Distance (West) from the Source**
Chart B-2a	**Total Mercury Concentration in Soil and Soil Biota vs. Time: SW**
Chart B-2b	**Total Mercury Concentration in Soil and Soil Biota vs. Time: SSE4**

<u>Chart #</u>	<u>Title of Chart</u>
Chart B-3a	**Total Mercury Concentration in Air, Soil, and Plants vs. Time: SW2 (grasses/herbs)**
Chart B-3b	**Total Mercury Concentration in Air, Soil, and Plants vs. Time: SSE4 (coniferous forest)**
Chart B-3c	**Total Mercury Concentration in Air, Soil, and Plants vs. Time: W2 (coniferous forest)**
Chart B-4a	**Total Mercury Concentration in Water-column and Related Biotic Compartments vs. Time: Swetts Pond**
Chart B-4b	**Total Mercury Concentration in Water-column and Related Biotic Compartments vs. Time: Brewer Lake**
Chart B-5a	**Total Mercury Concentration in Benthic and Related Biotic Compartments vs. Time: Swetts Pond**
Chart B-5b	**Total Mercury Concentration in Benthic and Related Biotic Compartments vs. Time: Brewer Lake**
Chart B-6a	**Total Mercury Concentration in Land-based Semi-aquatic Biotic Compartments vs. Time: SW2**
Chart B-6b	**Total Mercury Concentration in Land-based Semi-aquatic Biotic Compartments vs. Time: SSE4**
Chart B-7a	**Total Mercury Concentration in Shrew and Mouse Compartments vs. Time: SW2**
Chart B-7b	**Total Mercury Concentration in Shrew and Mouse Compartments vs. Time: SSE4**
Chart B-8a	**Total Mercury Concentration in Terrestrial Herbivore and Omnivore Compartments vs. Time: SW2**
Chart B-8b	**Total Mercury Concentration in Terrestrial Herbivore and Omnivore Compartments vs. Time: SSE4**
Chart B-9a	**Total Mercury Concentration in Terrestrial Carnivore (Weasel and Hawk) Compartments vs. Time: SW2**
Chart B-9b	**Total Mercury Concentration in Terrestrial Carnivore (Weasel and Hawk) Compartments vs. Time: SSE4**

Table B-7
Annual Average Concentration of Total Mercury in Air at Increasing Distance from the Source

Air Compartment	Units	Year					
		Initial	1	5	10	20	30
SSE1	g/m3	0	8.8E-10	9.2E-10	9.2E-10	9.2E-10	9.2E-10
SSE2	g/m3	0	3.3E-10	3.3E-10	3.3E-10	3.3E-10	3.3E-10
SSE3	g/m3	0	2.0E-10	2.0E-10	1.9E-10	2.0E-10	1.9E-10
SSE4	g/m3	0	1.3E-10	1.3E-10	1.3E-10	1.3E-10	1.3E-10
SSE5	g/m3	0	1.1E-10	1.0E-10	1.0E-10	1.0E-10	1.0E-10
WNW1	g/m3	0	3.5E-10	4.7E-10	4.7E-10	4.7E-10	4.7E-10
WSW1	g/m3	0	4.6E-10	5.4E-10	5.4E-10	5.4E-10	5.4E-10
W2	g/m3	0	1.4E-10	1.7E-10	1.7E-10	1.8E-10	1.7E-10
W3	g/m3	0	8.1E-11	1.1E-10	1.1E-10	1.1E-10	1.1E-10

Table B-8a
Annual Average Concentration of Total Mercury: Soil and Soil Biota in SW2

Compartment	Units	Year					
		Initial	1	5	10	20	30
Surface Soil	g/g dry wt	0	2.4E-10	1.9E-09	4.0E-09	7.7E-09	1.1E-08
Root Zone Soil	g/g dry wt	0	6.4E-14	6.1E-13	1.2E-12	2.1E-12	3.1E-12
Vadose Zone Soil	g/g dry wt	0	6.6E-18	4.8E-16	1.9E-15	6.5E-15	1.3E-14
Ground Water	g/L	0	1.0E-22	4.5E-20	3.7E-19	2.7E-18	8.2E-18
Soil Arthropod	g/kg wet wt	0	1.0E-13	5.4E-12	2.3E-11	9.4E-11	2.1E-10
Earthworm	g/kg wet wt	0	2.0E-12	2.0E-11	3.8E-11	6.9E-11	1.0E-10

Table B-8b
Annual Average Concentration of Total Mercury: Soil and Soil Biota in SSE4

Compartment	Units	Year					
		Initial	1	5	10	20	30
Surface Soil	g/g dry wt	0	5.3E-11	5.2E-10	1.1E-09	2.1E-09	3.1E-09
Root Zone Soil	g/g dry wt	0	3.7E-14	2.9E-13	5.3E-13	8.5E-13	1.1E-12
Vadose Zone Soil	g/g dry wt	0	4.2E-18	2.3E-16	9.0E-16	3.0E-15	5.6E-15
Ground Water	g/L	0	6.5E-23	2.1E-20	1.8E-19	1.3E-18	3.7E-18
Soil Arthropod	g/kg wet wt	0	2.1E-14	1.4E-12	6.3E-12	2.6E-11	5.7E-11
Earthworm	g/kg wet wt	0	1.2E-12	9.6E-12	1.7E-11	2.8E-11	3.7E-11

Table B-9a
Annual Average Concentration of Total Mercury: Terrestrial Plants in SW2

Compartment	Units	Year					
		Initial	1	5	10	20	30
Leaf - Grasses/Herbs [a]	g/kg wet wt	0	1.2E-07	2.8E-07	2.8E-07	2.8E-07	2.8E-07
Particle on Leaf - Grasses/Herbs [a]	g/kg wet wt	0	6.8E-07	1.6E-06	1.6E-06	1.6E-06	1.6E-06
Stem - Grasses/Herbs	g/kg wet wt	0	7.0E-09	1.9E-08	1.9E-08	1.9E-08	1.9E-08
Root - Grasses/Herbs	g/kg wet wt	0	1.2E-13	7.2E-12	3.3E-11	1.3E-10	3.0E-10
Surface Soil	g/g dry wt	0	2.4E-10	1.9E-09	4.0E-09	7.7E-09	1.1E-08
Air - SSW2[b]	g/m3	0	3.0E-10	3.0E-10	3.0E-10	3.0E-10	3.0E-10
Air - SSW3[b]	g/m3	0	1.9E-10	1.8E-10	1.8E-10	1.8E-10	1.8E-10

[a] Each annual average data point shown for leaf and particle on leaf is the average of values during the days (May 13 - September 29 for each year) for which leaves were modeled as present during the entire day (i.e., represents a growing season average).
[b] Because of the differences in the air and surface parcel layouts, there is not one single air parcel whose boundaries match those of the SW2 surface parcel (see Exhibits 2-1 and 2-2). However, air parcels SSW2 and SSW3 do completely overlay the SW2 surface parcel (among the air parcels, SSW2 has the most overlap with surface parcel SW2).

Table B-9b
Annual Average Concentration of Total Mercury: Terrestrial Plants in SSE4

Compartment	Units	Year					
		Initial	1	5	10	20	30
Leaf - Coniferous Forest	g/kg wet wt	0	8.1E-08	1.3E-07	1.3E-07	1.3E-07	1.3E-07
Particle on Leaf - Coniferous Forest	g/kg wet wt	0	1.8E-06	3.0E-06	2.9E-06	3.0E-06	2.9E-06
Stem - Coniferous Forest [a]	g/kg wet wt	N/A	N/A	N/A	N/A	N/A	N/A
Root - Coniferous Forest [a]	g/kg wet wt	N/A	N/A	N/A	N/A	N/A	N/A
Surface Soil	g/g dry wt	0	5.3E-11	5.2E-10	1.1E-09	2.1E-09	3.1E-09
Air - SSE4[b]	g/m3	0	1.3E-10	1.3E-10	1.3E-10	1.3E-10	1.3E-10
Air - SSE3[b]	g/m3	0	2.0E-10	2.0E-10	1.9E-10	2.0E-10	1.9E-10
Air - ESE3[b]	g/m3	0	2.8E-10	2.8E-10	2.8E-10	2.8E-10	2.8E-10
Air - ESE4[b]	g/m3	0	1.9E-10	1.9E-10	1.9E-10	1.9E-10	1.9E-10

[a] Root and stem not modeled for coniferous forest.
[b] Because of the differences in the air and surface parcel layouts, there is not one single air parcel whose boundaries match those of the SSE4 surface parcel (see Exhibits 2-1 and 2-2). However, air parcels SSE4, SSE3, ESE3, and ESE4 do completely overlay the SSE4 surface parcel (among the air parcels, SSE4 has the most overlap with surface parcel SSE4).

Table B-9c
Annual Average Concentration of Total Mercury: Terrestrial Plants in W2

Compartment	Units	Year					
		Initial	1	5	10	20	30
Leaf - Coniferous Forest	g/kg wet wt	0	2.2E-07	5.5E-07	5.5E-07	5.6E-07	5.5E-07
Particle on Leaf - Coniferous Forest	g/kg wet wt	0	4.8E-06	1.2E-05	1.2E-05	1.2E-05	1.2E-05
Stem - Coniferous Forest [a]	g/kg wet wt	N/A	N/A	N/A	N/A	N/A	N/A
Root - Coniferous Forest [a]	g/kg wet wt	N/A	N/A	N/A	N/A	N/A	N/A
Surface Soil	g/g dry wt	0	1.1E-10	1.4E-09	3.1E-09	6.3E-09	9.2E-09
Air - W2 (100% overlap)	g/m3	0	1.4E-10	1.7E-10	1.7E-10	1.8E-10	1.7E-10

[a] Root and stem not modeled for coniferous forest.

Table B-10a
Annual Average Concentration of Total Mercury: All Compartments in Swetts Pond

Compartment	Units	Year					
		Initial	1	5	10	20	30
Surface Water	g/L	0	2.2E-11	3.3E-11	4.5E-11	7.1E-11	9.8E-11
Macrophyte	g/kg wet wt	0	1.6E-08	2.5E-08	3.5E-08	5.5E-08	7.6E-08
Water-column Herbivore	g/kg wet wt	0	4.3E-08	9.0E-08	1.4E-07	2.4E-07	3.4E-07
Water-column Omnivore	g/kg wet wt	0	2.2E-08	8.8E-08	1.5E-07	2.8E-07	4.1E-07
Water-column Carnivore	g/kg wet wt	0	2.2E-08	3.2E-07	6.4E-07	1.2E-06	1.8E-06
Sediment	g/g dry wt	0	2.2E-11	2.3E-10	5.9E-10	1.5E-09	2.8E-09
Benthic Invertebrate	g/kg wet wt	0	1.3E-09	1.4E-08	3.4E-08	9.1E-08	1.6E-07
Benthic Omnivore	g/kg wet wt	0	5.1E-10	8.1E-09	2.1E-08	5.7E-08	1.0E-07
Benthic Carnivore	g/kg wet wt	0	3.7E-10	1.9E-08	5.7E-08	1.6E-07	3.0E-07
Mallard	g/kg wet wt	0	1.3E-07	1.8E-07	1.8E-07	1.8E-07	1.9E-07
Common Loon	g/kg wet wt	0	1.4E-08	6.4E-08	1.2E-07	2.3E-07	3.4E-07

Table B-10b
Annual Average Concentration of Total Mercury: All Compartments in Brewer Lake

Compartment	Units	Year					
		Initial	1	5	10	20	30
Surface Water	g/L	0	1.6E-11	2.0E-11	2.4E-11	3.4E-11	4.3E-11
Macrophyte	g/kg wet wt	0	1.2E-08	1.5E-08	1.9E-08	2.6E-08	3.4E-08
Water-column Herbivore	g/kg wet wt	0	3.9E-08	5.9E-08	7.8E-08	1.2E-07	1.5E-07
Water-column Omnivore	g/kg wet wt	0	2.9E-08	7.2E-08	1.0E-07	1.6E-07	2.1E-07
Water-column Carnivore	g/kg wet wt	0	3.1E-08	3.3E-07	4.8E-07	7.6E-07	1.0E-06
Sediment	g/g dry wt	0	1.5E-11	1.4E-10	3.2E-10	7.4E-10	1.2E-09
Benthic Invertebrate	g/kg wet wt	0	9.4E-10	8.1E-09	1.9E-08	4.4E-08	7.3E-08
Benthic Omnivore	g/kg wet wt	0	4.3E-10	5.1E-09	1.2E-08	2.8E-08	4.8E-08
Benthic Carnivore	g/kg wet wt	0	3.6E-10	1.3E-08	3.5E-08	8.7E-08	1.5E-07
Mallard	g/kg wet wt	0	1.3E-07	1.7E-07	1.8E-07	1.8E-07	1.8E-07
Common Loon	g/kg wet wt	0	2.0E-08	5.4E-08	7.9E-08	1.3E-07	1.8E-07

Table B-11a
Annual Average Concentration of Total Mercury: Terrestrial and Land-based Semi-aquatic Animals in SW2

Compartment	Units	Year					
		Initial	1	5	10	20	30
White-tailed Deer	g/kg wet wt	0	3.2E-08	7.7E-08	7.7E-08	7.7E-08	7.8E-08
Meadow Vole	g/kg wet wt	0	6.3E-08	1.5E-07	1.5E-07	1.5E-07	1.5E-07
Mouse	g/kg wet wt	0	6.5E-08	1.6E-07	1.6E-07	1.6E-07	1.6E-07
Black-capped Chickadee	g/kg wet wt	0	1.2E-07	3.0E-07	3.0E-07	3.0E-07	3.0E-07
Short-tailed Shrew	g/kg wet wt	0	1.4E-08	1.0E-07	2.1E-07	4.0E-07	5.7E-07
Long-tailed Weasel	g/kg wet wt	0	9.3E-09	2.3E-08	2.7E-08	3.5E-08	4.2E-08
Red-tailed Hawk	g/kg wet wt	0	1.8E-08	4.4E-08	5.0E-08	6.1E-08	7.0E-08
Tree Swallow	g/kg wet wt	0	2.9E-09	6.1E-09	8.7E-09	1.2E-08	1.5E-08
Raccoon	g/kg wet wt	0	1.4E-09	6.7E-09	1.3E-08	2.3E-08	3.2E-08
Mink	g/kg wet wt	0	1.3E-08	2.9E-08	3.0E-08	3.2E-08	3.3E-08
Bald Eagle	g/kg wet wt	0	7.6E-09	2.1E-08	2.6E-08	3.4E-08	4.1E-08
Surface Soil	g/g dry wt	0	2.4E-10	1.9E-09	4.0E-09	7.7E-09	1.1E-08
Leaf - Grasses/Herbs [a]	g/kg wet wt	0	1.2E-07	2.8E-07	2.8E-07	2.8E-07	2.8E-07

[a] Each annual average data point shown for leaf is the average of values during the days (May 13 - September 29 each year) for which leaves were modeled as present (i.e., represents a growing season average).

Table B-11b
Annual Average Concentration of Total Mercury: Terrestrial and Land-based Semi-aquatic Animals in SSE4

Compartment	Units	Year					
		Initial	1	5	10	20	30
White-tailed Deer	g/kg wet wt	0	1.9E-07	3.2E-07	3.2E-07	3.2E-07	3.2E-07
Mouse	g/kg wet wt	0	3.8E-07	6.4E-07	6.4E-07	6.4E-07	6.4E-07
Black-capped Chickadee	g/kg wet wt	0	7.5E-07	1.2E-06	1.2E-06	1.2E-06	1.2E-06
Short-tailed Shrew	g/kg wet wt	0	3.5E-09	2.8E-08	5.7E-08	1.1E-07	1.6E-07
Long-tailed Weasel	g/kg wet wt	0	3.2E-08	5.6E-08	5.8E-08	6.0E-08	6.2E-08
Red-tailed Hawk	g/kg wet wt	0	8.0E-08	1.4E-07	1.4E-07	1.4E-07	1.5E-07
Tree Swallow	g/kg wet wt	0	1.8E-09	8.2E-09	1.9E-08	4.8E-08	8.6E-08
Raccoon	g/kg wet wt	0	1.2E-09	5.4E-09	1.1E-08	2.6E-08	4.3E-08
Mink	g/kg wet wt	0	4.9E-08	8.9E-08	9.4E-08	1.1E-07	1.2E-07
Bald Eagle	g/kg wet wt	0	4.6E-08	1.1E-07	1.5E-07	2.4E-07	3.3E-07
Surface Soil	g/g dry wt	0	5.3E-11	5.2E-10	1.1E-09	2.1E-09	3.1E-09
Leaf - Coniferous Forest	g/kg wet wt	0	8.1E-08	1.3E-07	1.3E-07	1.3E-07	1.3E-07

Chart B-1a
Total Mercury Concentration in Air vs. Time at Increasing Distance (South-Southeast) from the Source

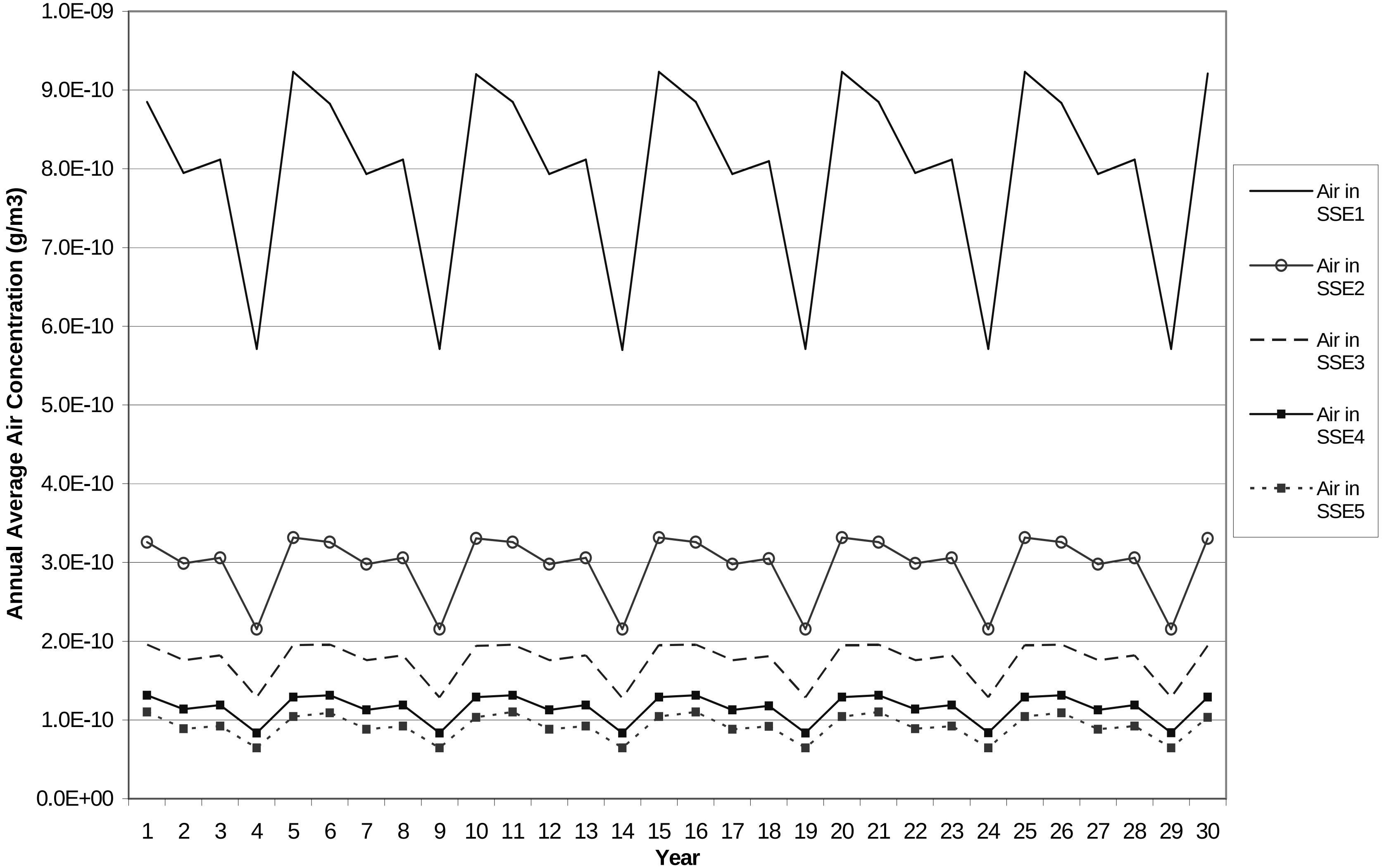


Chart B-1b
Total Mercury Concentration in Air vs. Time at Increasing Distance (West) from the Source

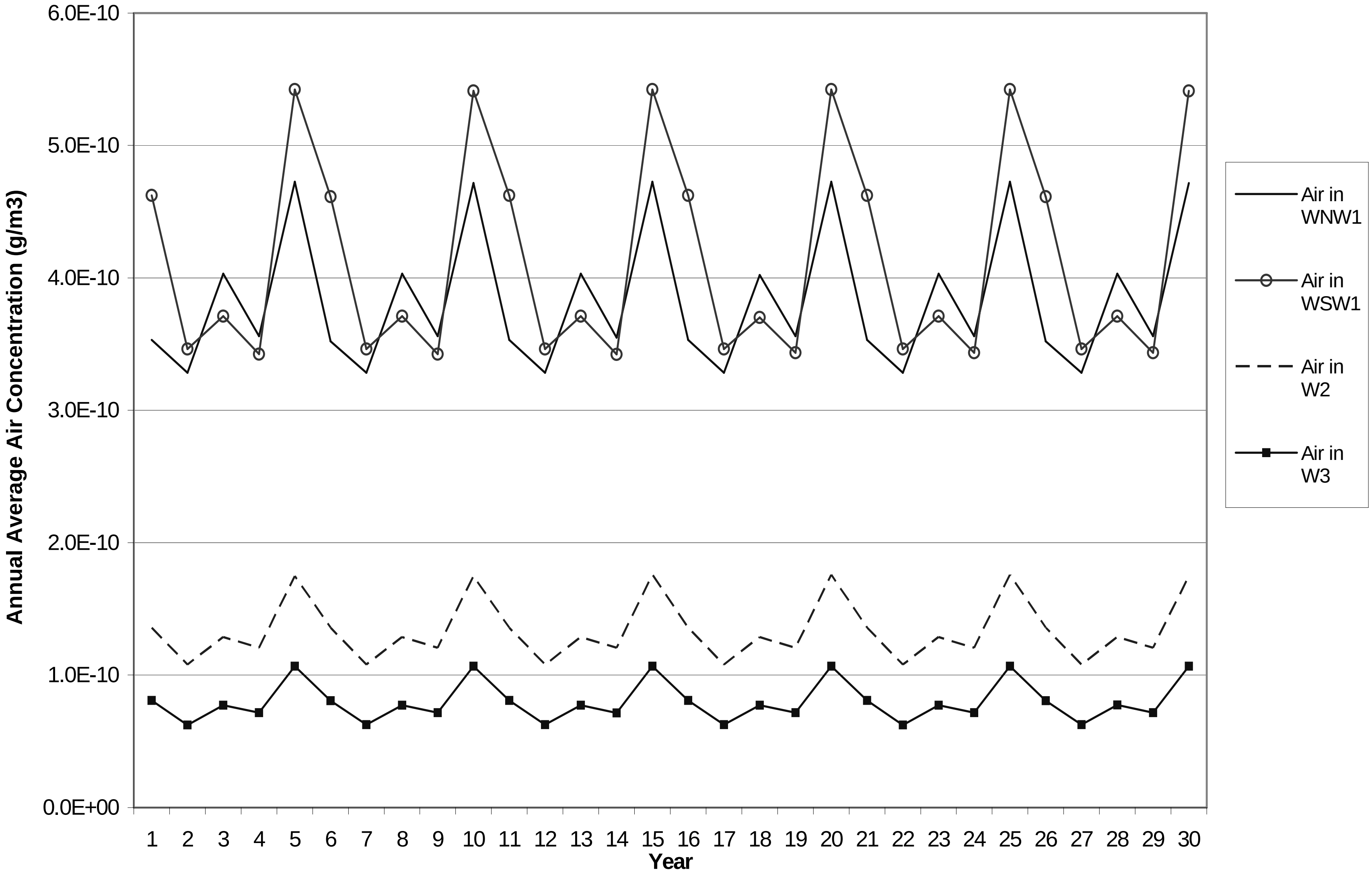
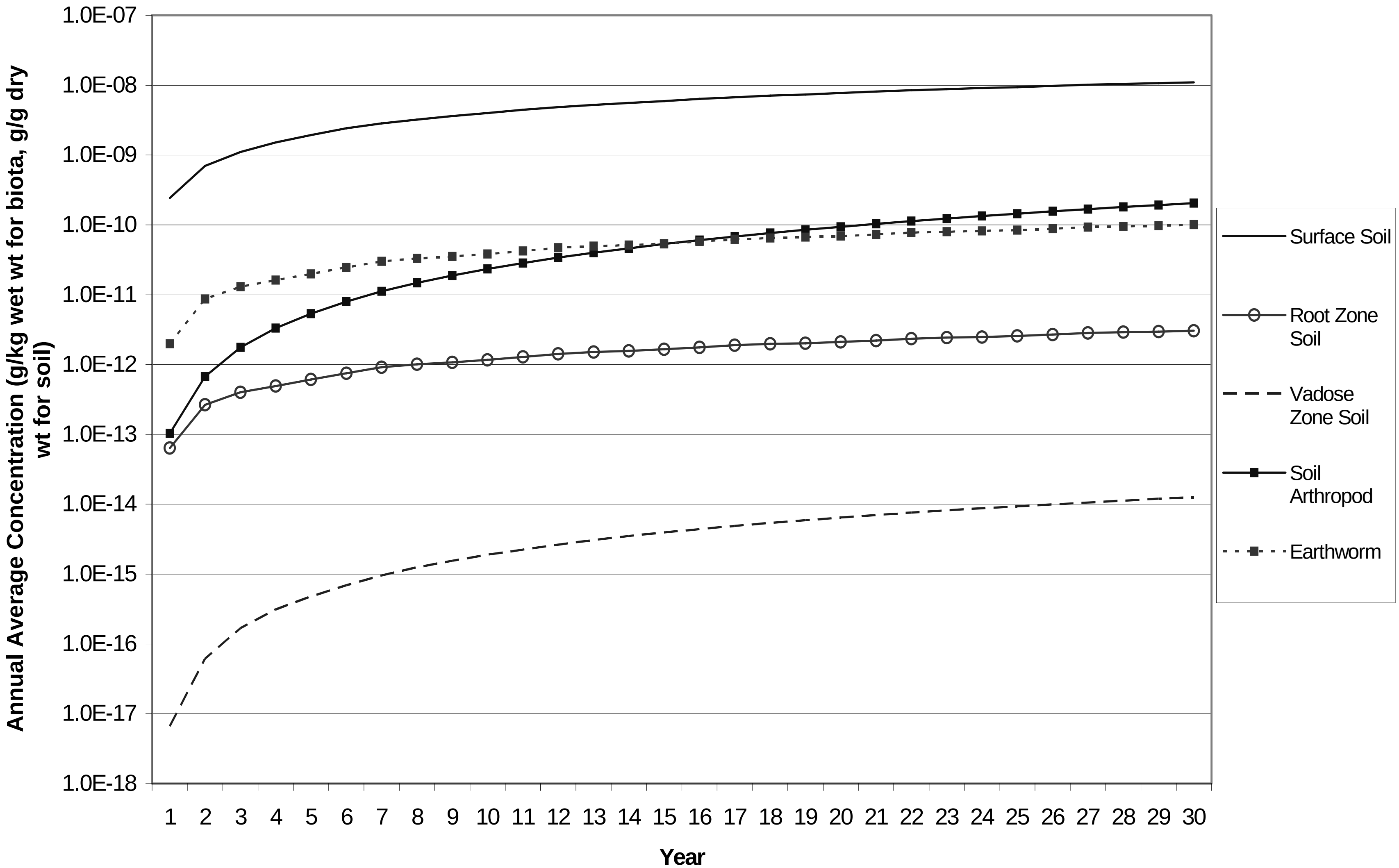
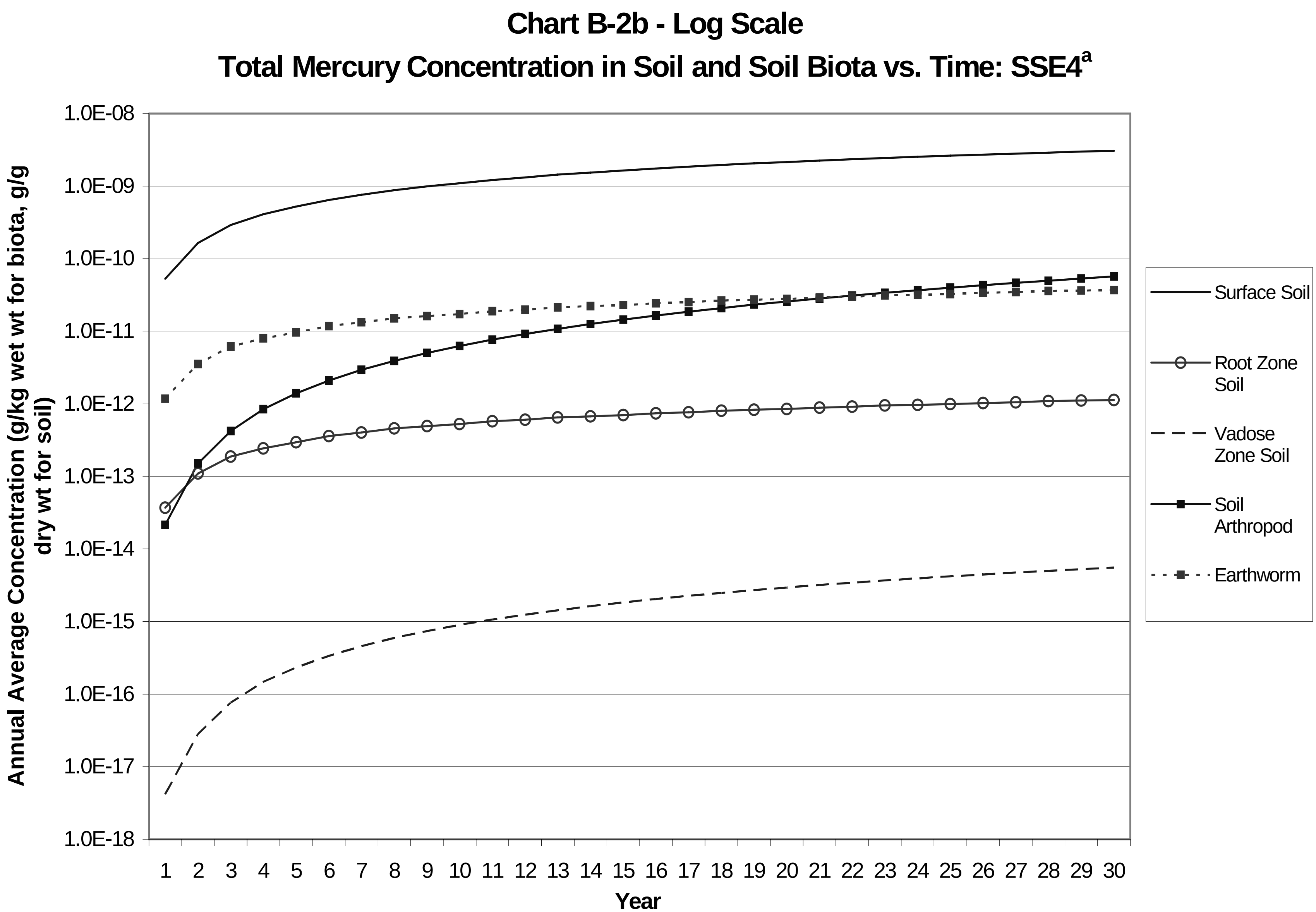


Chart B-2a - Log Scale
Total Mercury Concentration in Soil and Soil Biota vs. Time: SW2[a]

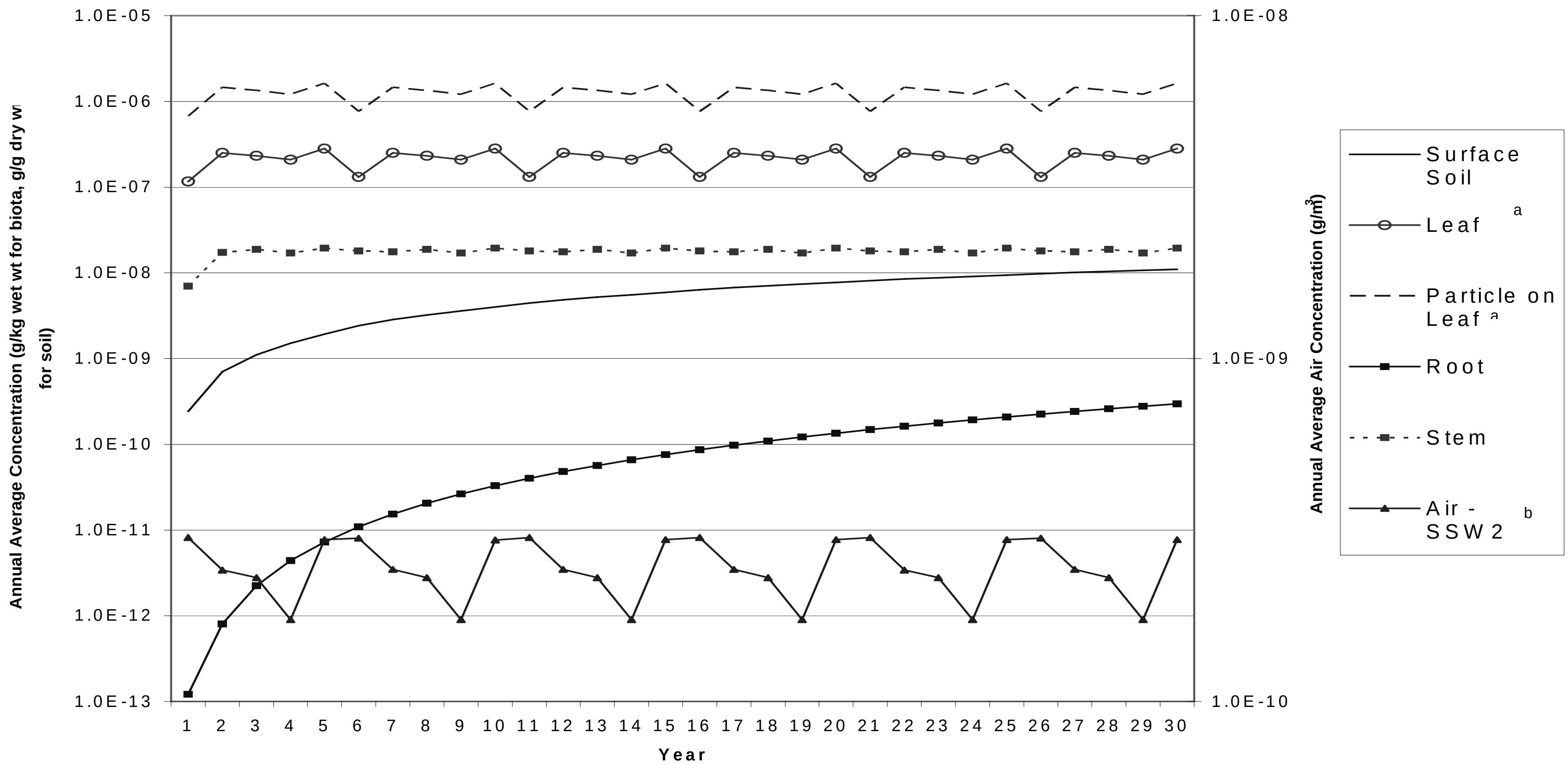


[a] Ground water not shown; maximum value is 8.2E-18 g/L at year 30.



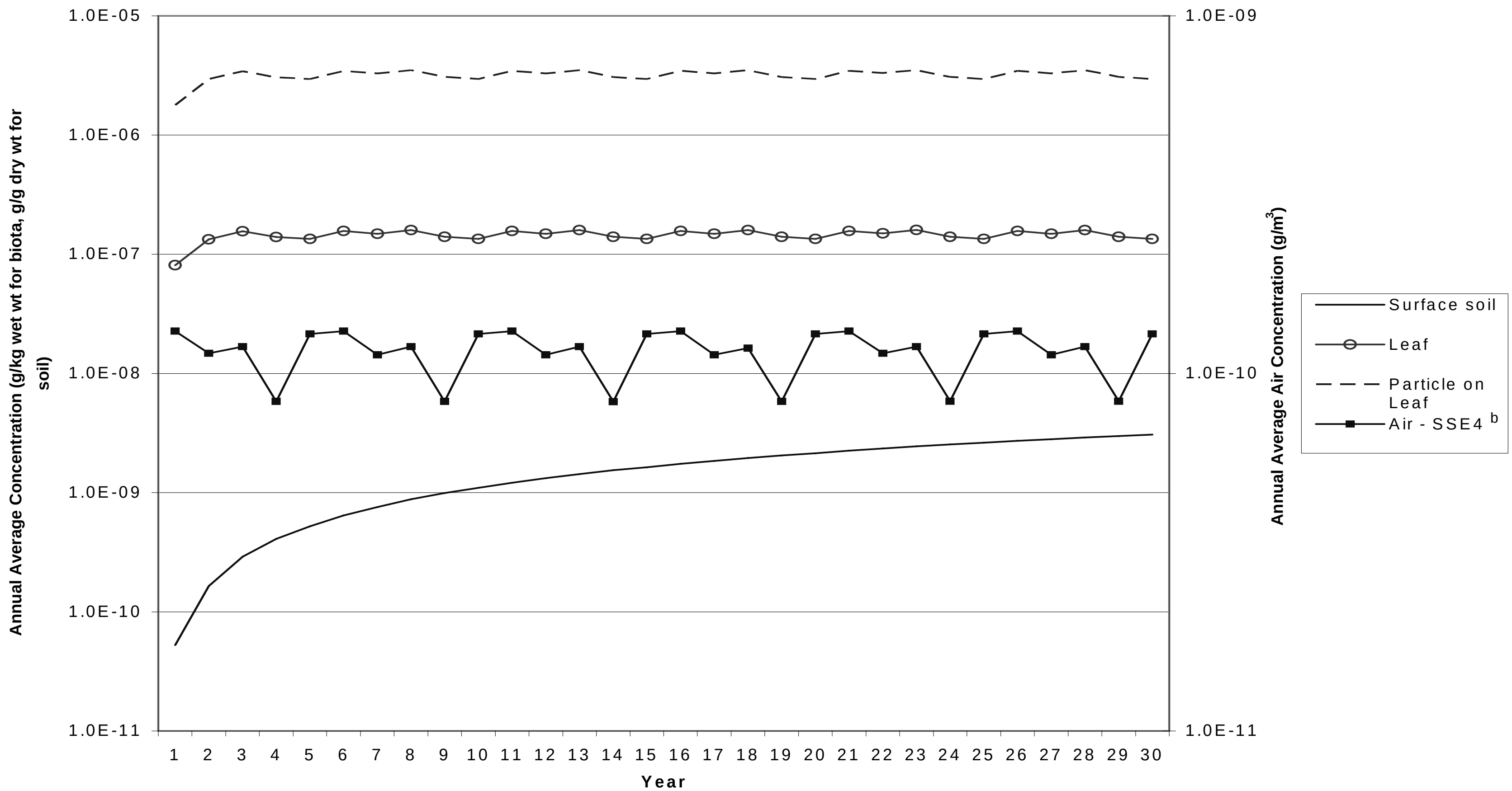
[a] Ground water not shown; maximum value is 3.7E-18 g/L at year 30.

Chart B-3a - Log Scale
Total Mercury Concentration in Air, Soil, and Plants vs. Time: SW2 (grasses/herbs)



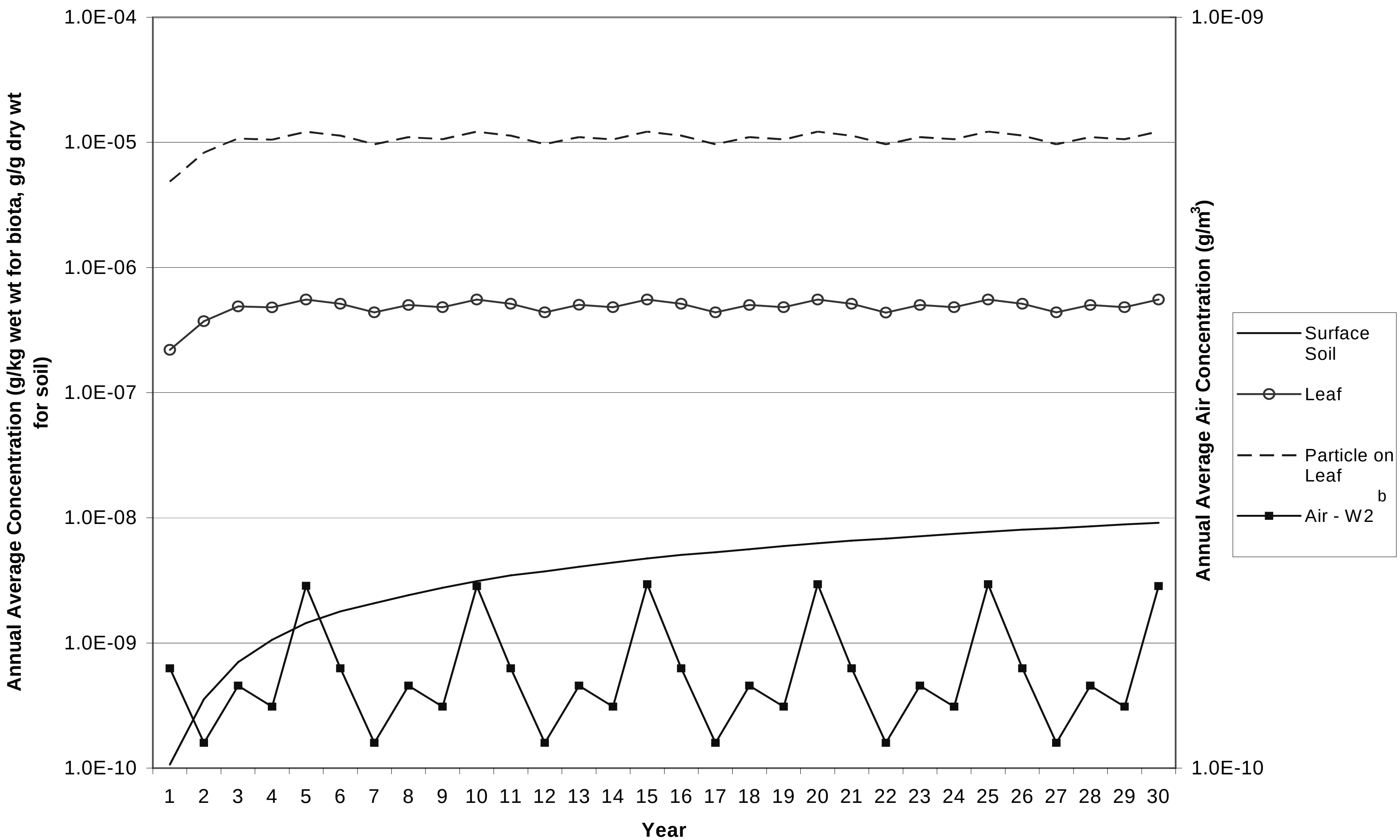
[a] Each annual average data point shown for leaf and leaf particle is the average of values during the three months (June to August) for which leaves were modeled as present during the entire month.
[b] Because of the differences in the air and surface parcel layouts, the boundaries of the SSW2 air parcel do not match those of the SW2 parcel (see Exhibits 2-1 and 2-2), but this air parcel does have substantial overlap with the surface parcel (among air parcels, SSW2 has the most overlap with surface parcel SW2).

Chart B-3b - Log Scale
Total Mercury Concentration in Air, Soil, and Plants vs. Time: SSE4 (coniferous forest) [a]



[a] Root and stem not modeled for coniferous forest.
[b] Because of the differences in the air and surface parcel layouts, the boundaries of the SSE4 air parcel do not match those of the SSE4 surface parcel (see Exhibits 2-1 and 2-2), but this air parcel does have substantial overlap with the surface parcel (among air parcels, SSE4 has the most overlap with surface parcel SSE4).

Chart B-3c - Log Scale
Total Mercury Concentration in Air, Soil, and Plants vs. Time: W2 (coniferous forest) [a]



[a] Root and stem not modeled for coniferous forest.
[b] 100 percent overlap between air parcel W2 and surface parcel W2.

Chart B-4a - Log Scale
Total Mercury Concentration in Water-column and Related Biotic Compartments vs. Time: Swetts Pond

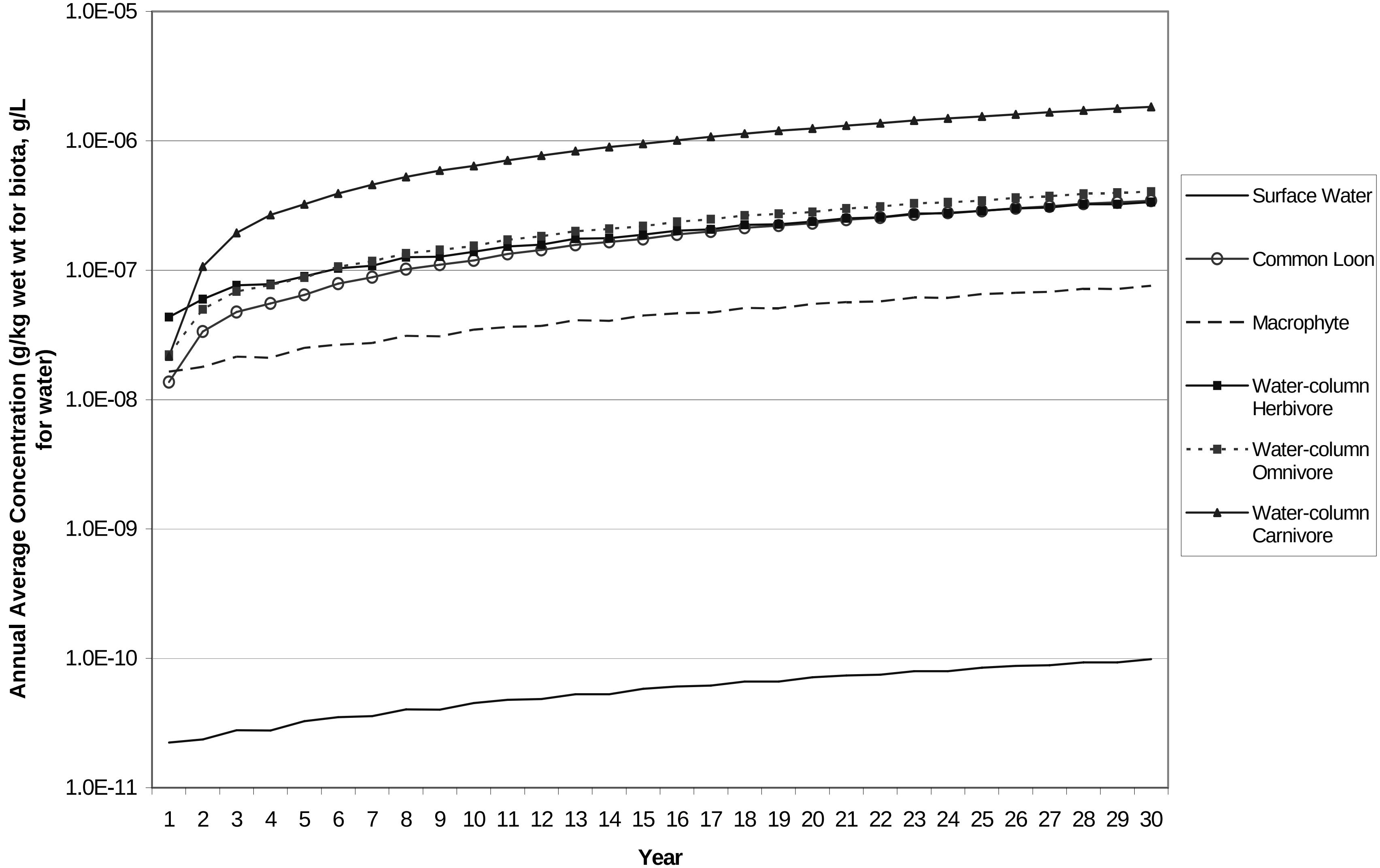
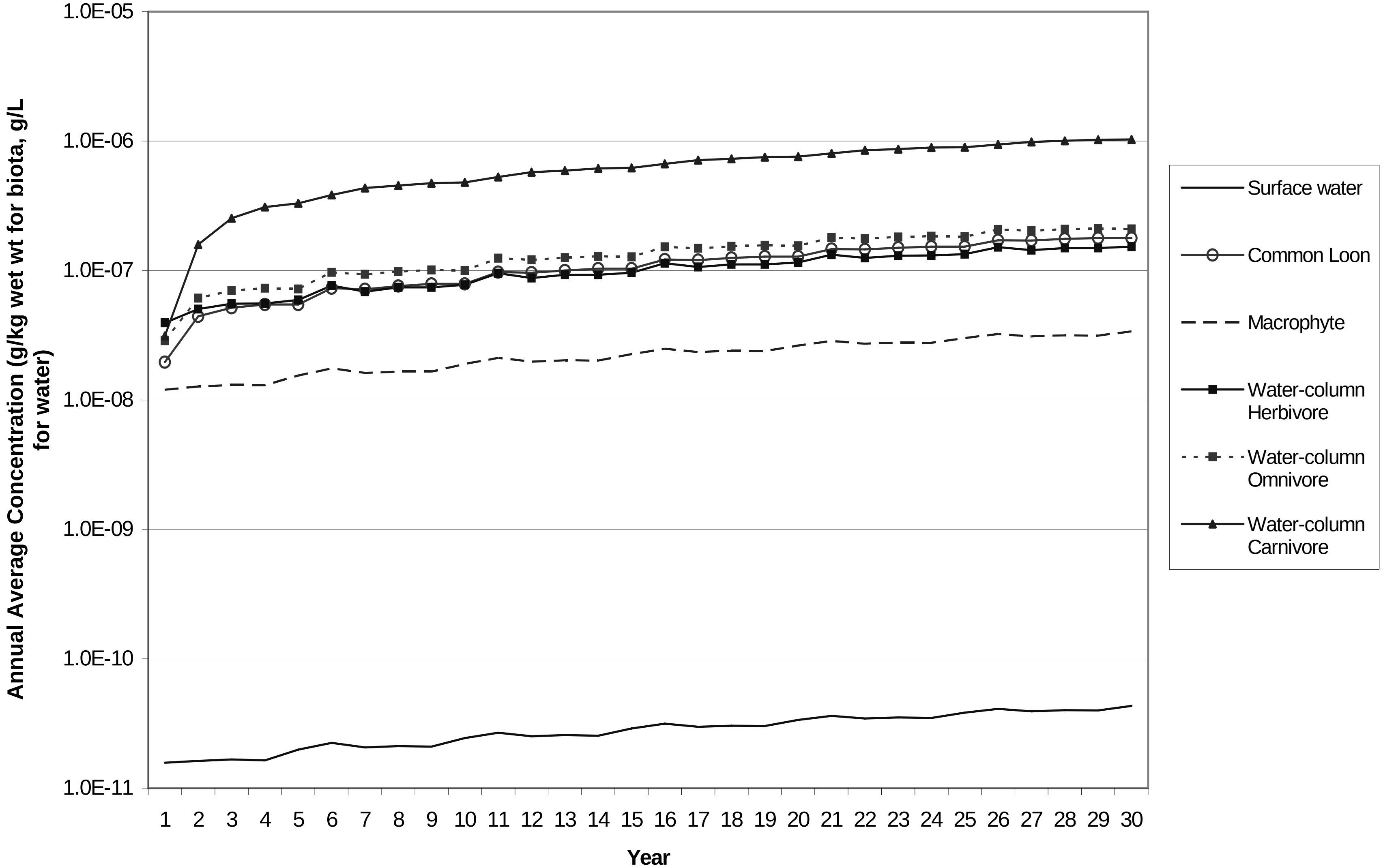
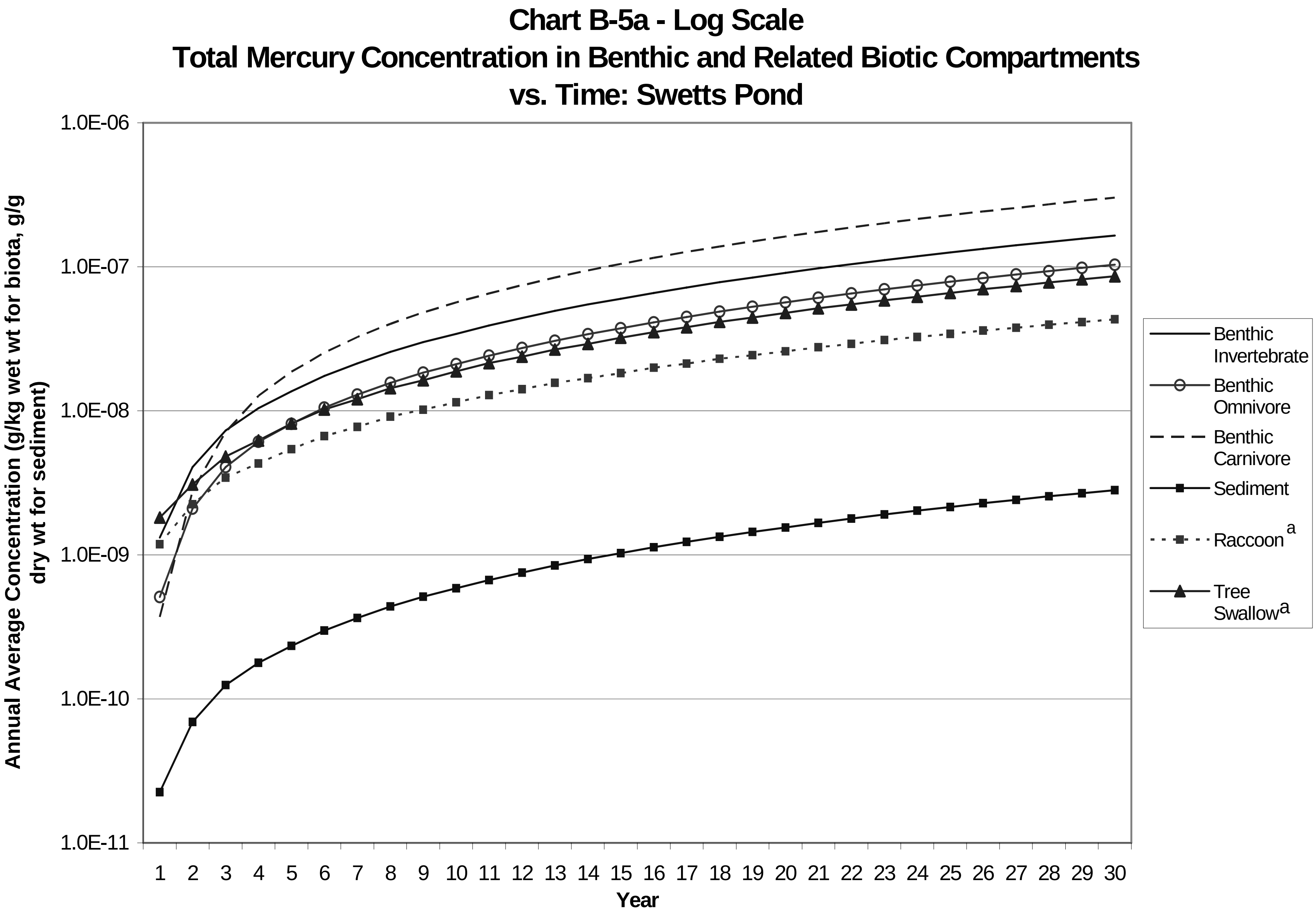


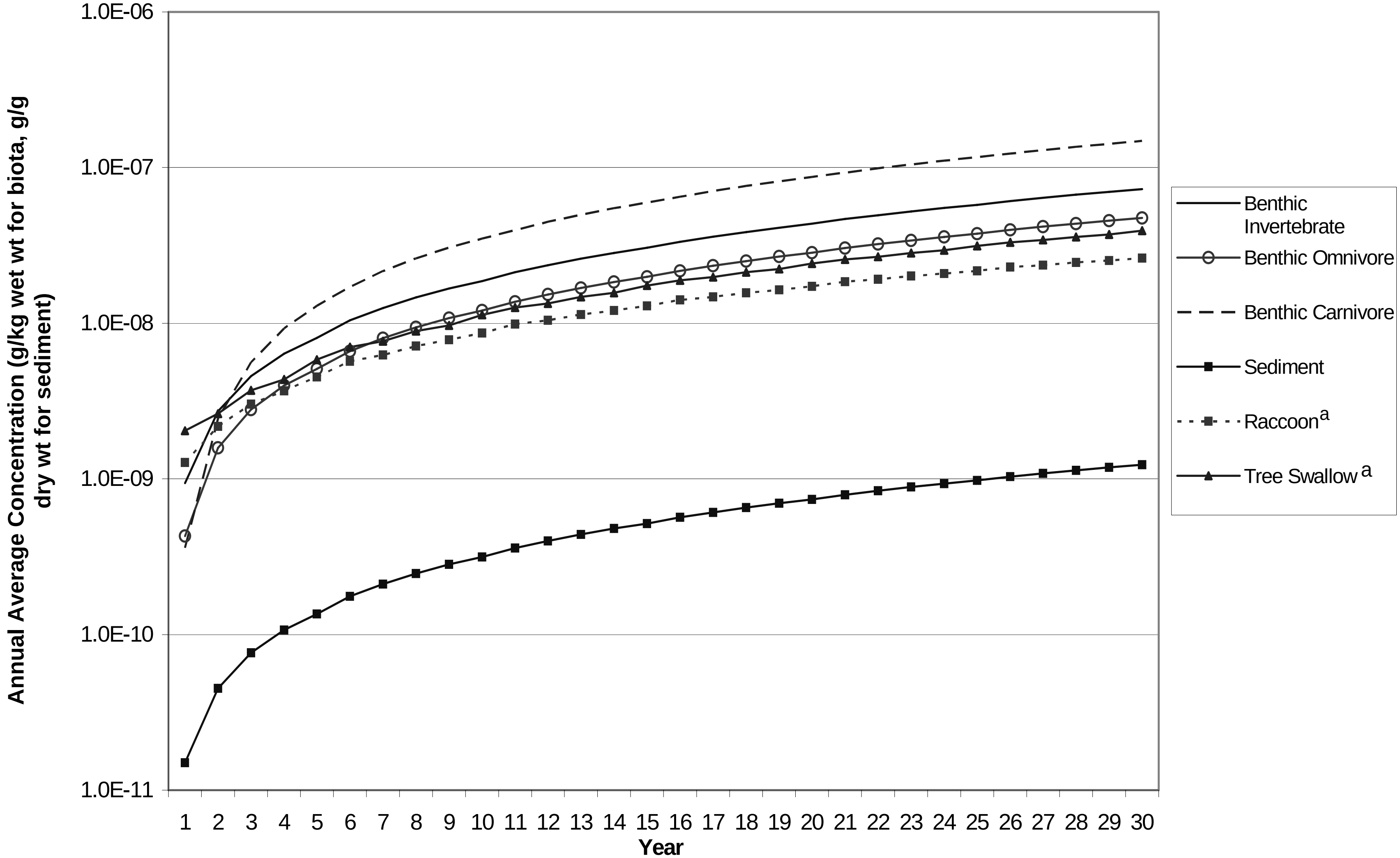
Chart B-4b - Log Scale
Total Mercury Concentration in Water-column and Related Biotic Compartments vs. Time: Brewer Lake





[a] Results shown for compartment SSE4, where semi-aquatic animals feed from Swetts Pond.

Chart B-5b - Log Scale
Total Mercury Concentration in Benthic and Related Biotic Compartments vs. Time: Brewer Lake



[a] Results shown for compartment ESE4, where semi-aquatic animals feed from Brewer Lake.

Chart B-6a - Log Scale
Total Mercury Concentration in Land-based Semi-aquatic Biotic Compartments vs. Time: SW2

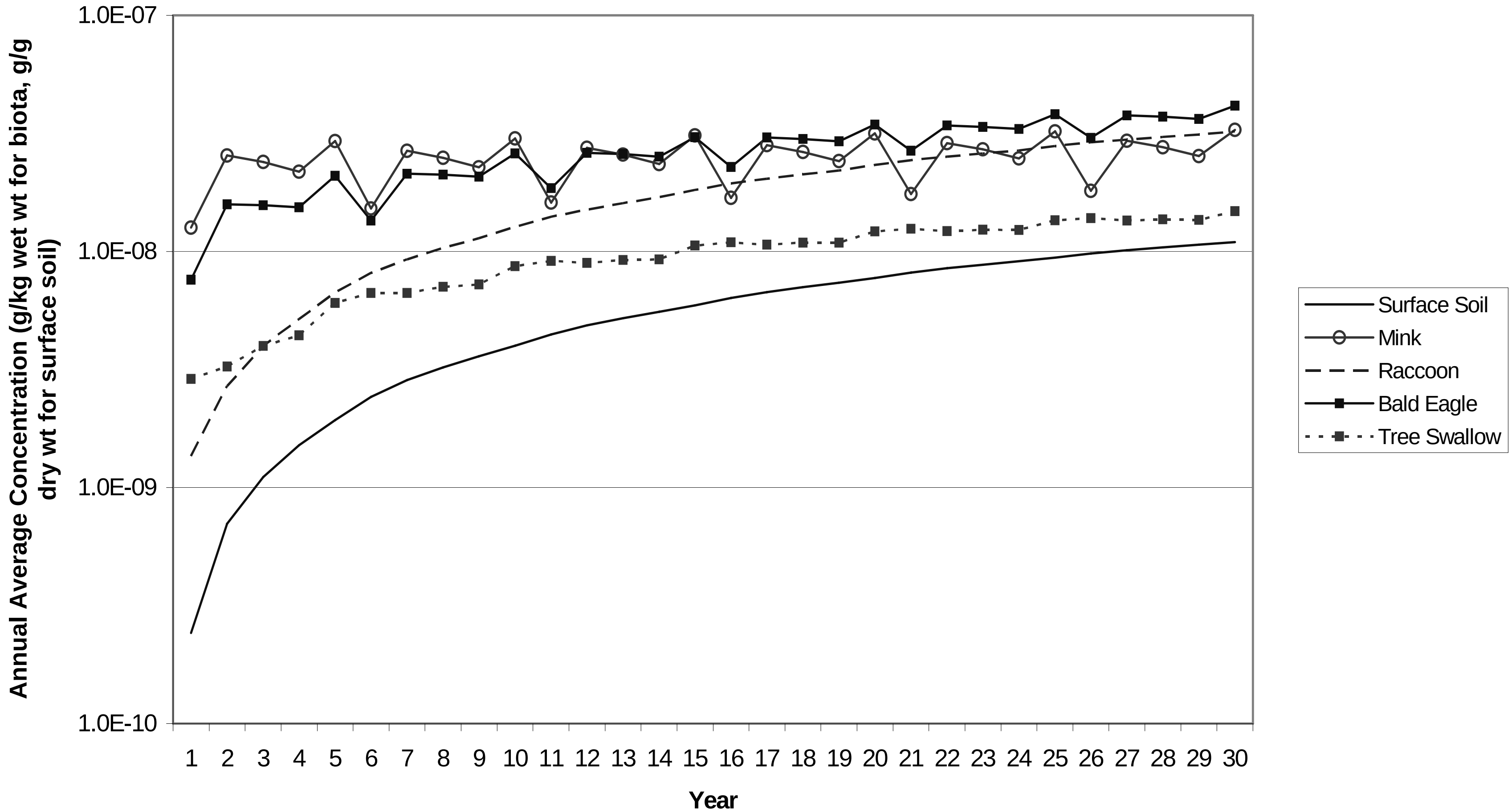


Chart B-6b - Log Scale
Total Mercury Concentration in Land-based Semi-aquatic Biotic Compartments vs. Time: SSE4

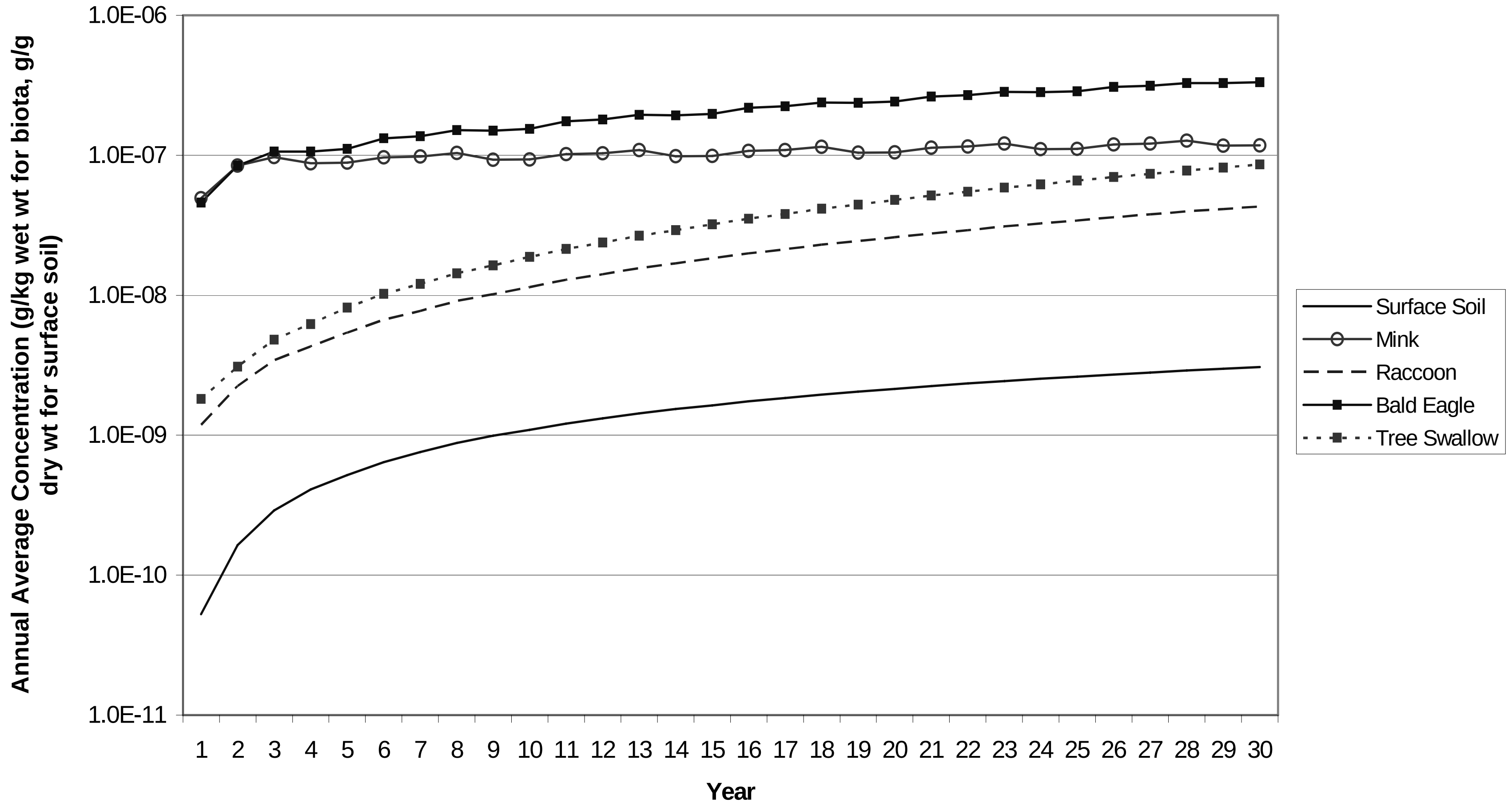
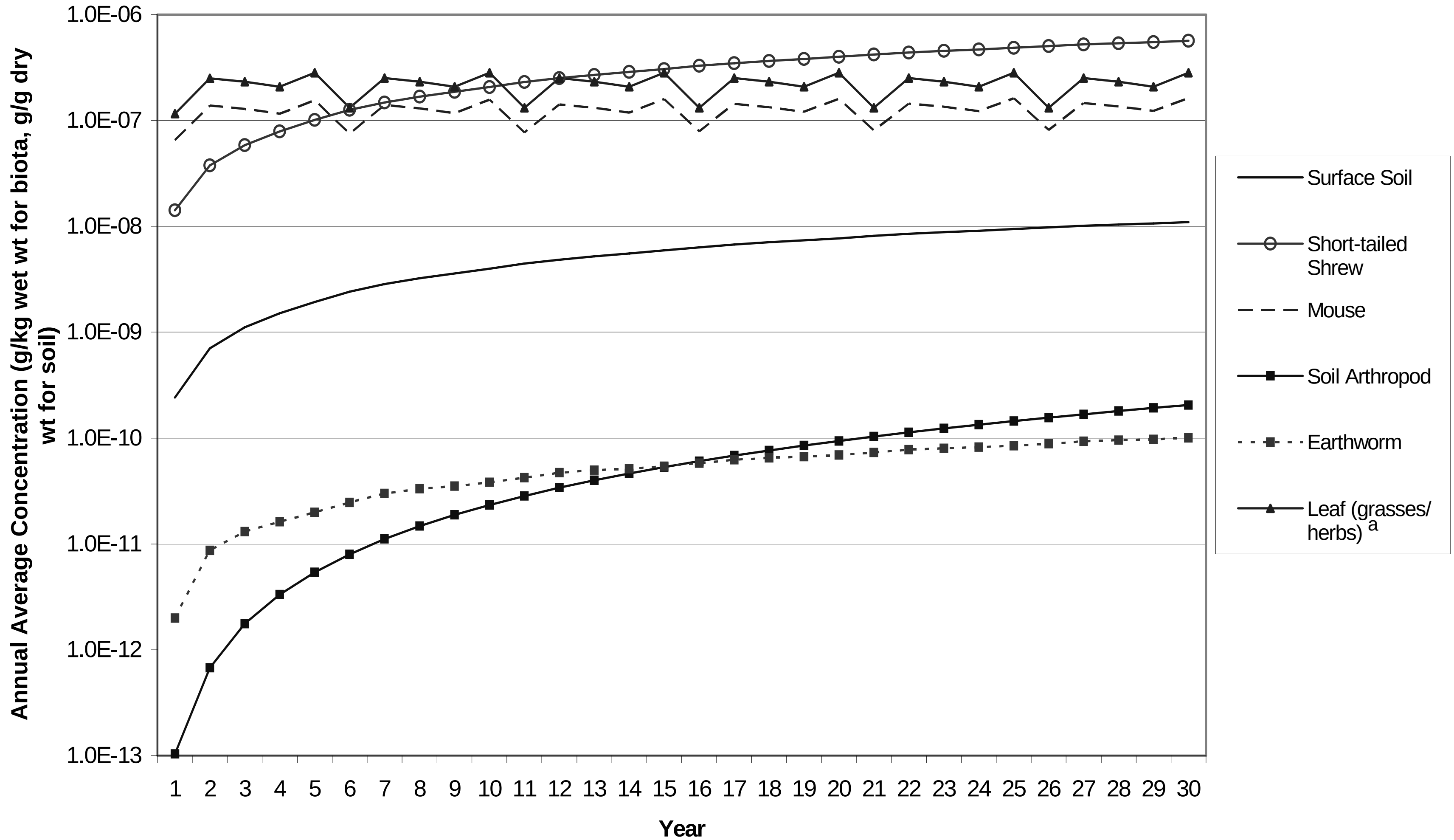


Chart B-7a - Log Scale
Total Mercury Concentration in Shrew and Mouse Compartments vs. Time: SW2



[a] Each annual average data point shown for leaf and particle on leaf is the average of values during the days (May 13 to September 29 each year) for which leaves were modeled as present (i.e., represents a growing season average).

Chart B-7b - Log Scale
Total Mercury Concentration in Shrew and Mouse Compartments vs. Time: SSE4

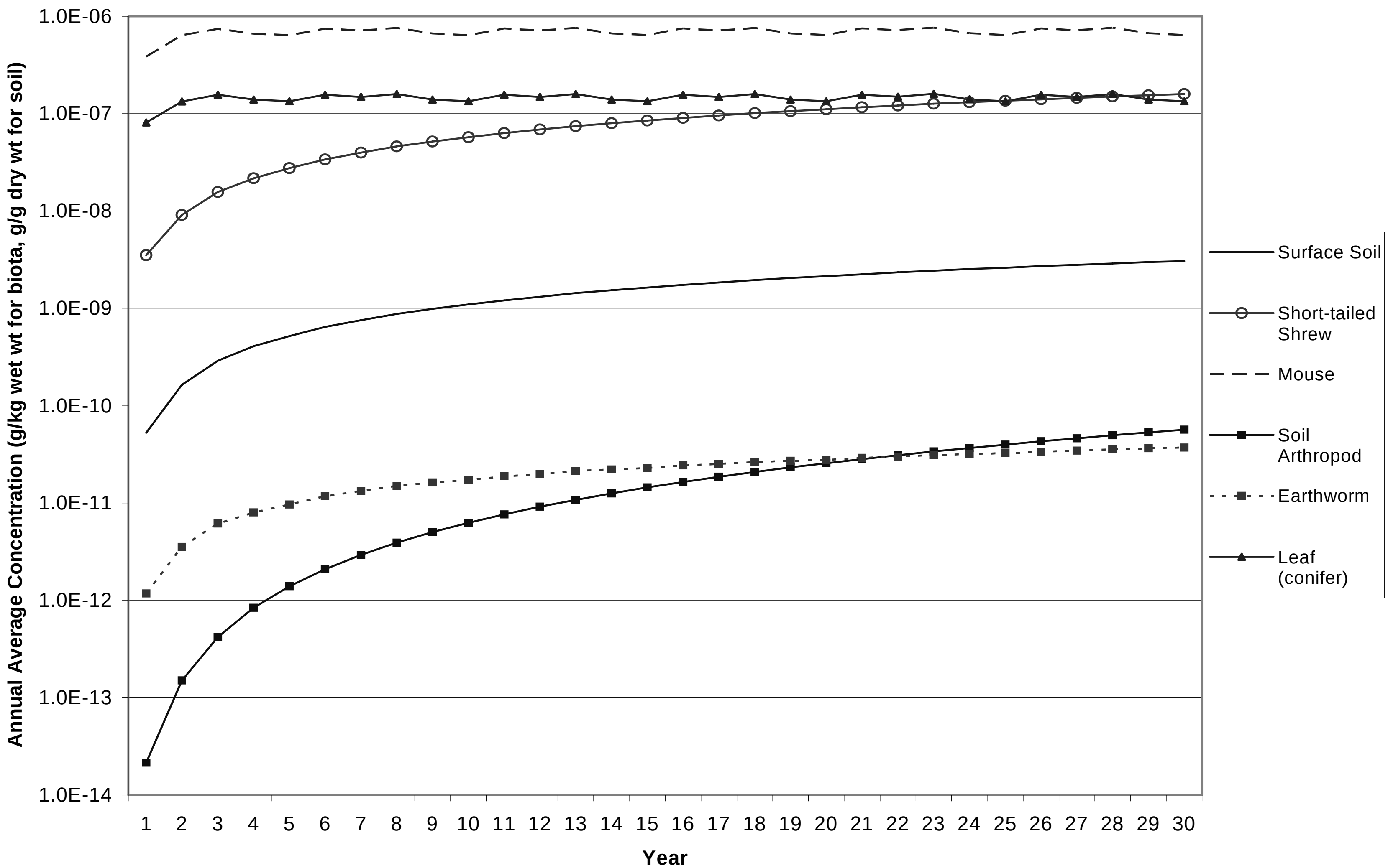
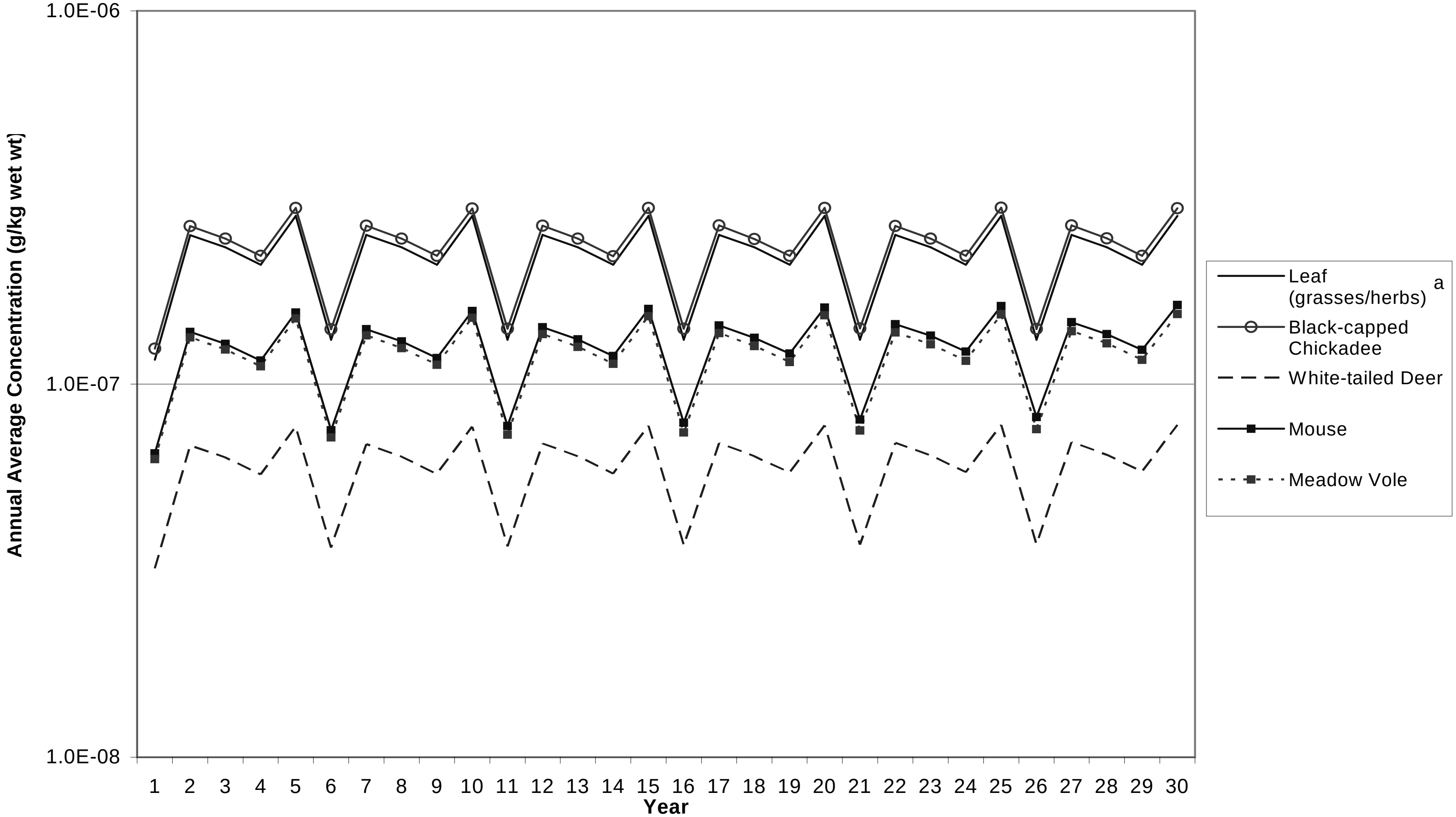


Chart B-8a - Log Scale
Total Mercury Concentration in Terrestrial Herbivore and Omnivore Compartments vs. Time: SW2



[a] Each annual average data point shown for leaf and particle on leaf is the average of values during the days (May 13 to September 29 each year) for which leaves were modeled as present (i.e., represents a growing season average).

Chart B-8b - Log Scale
Total Mercury Concentration in Terrestrial Herbivore and Omnivore Compartments vs. Time: SSE4

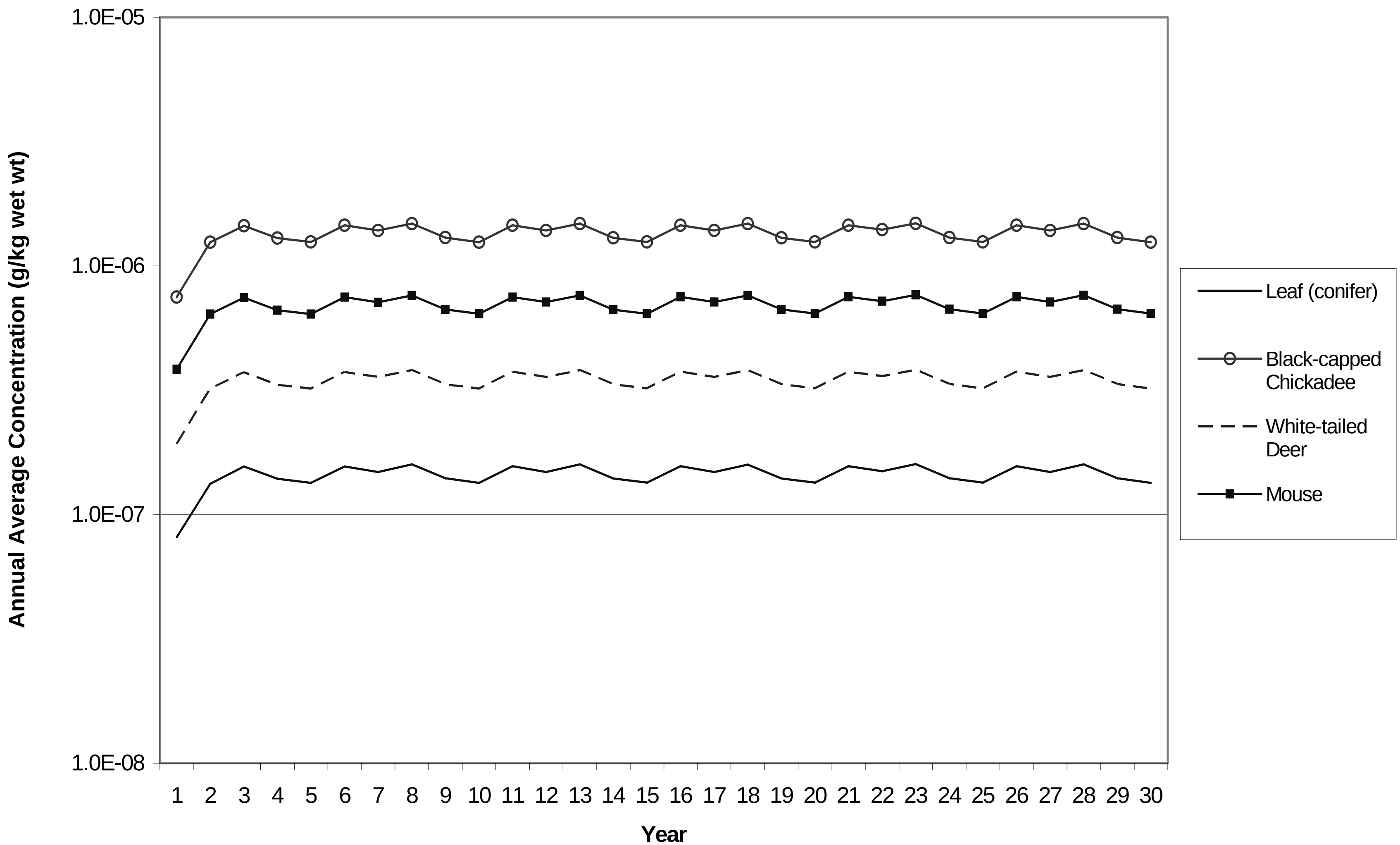


Chart B-9a - Log Scale
Total Mercury Concentration in Terrestrial Carnivore (Weasel and Hawk) Compartments vs. Time: SW2

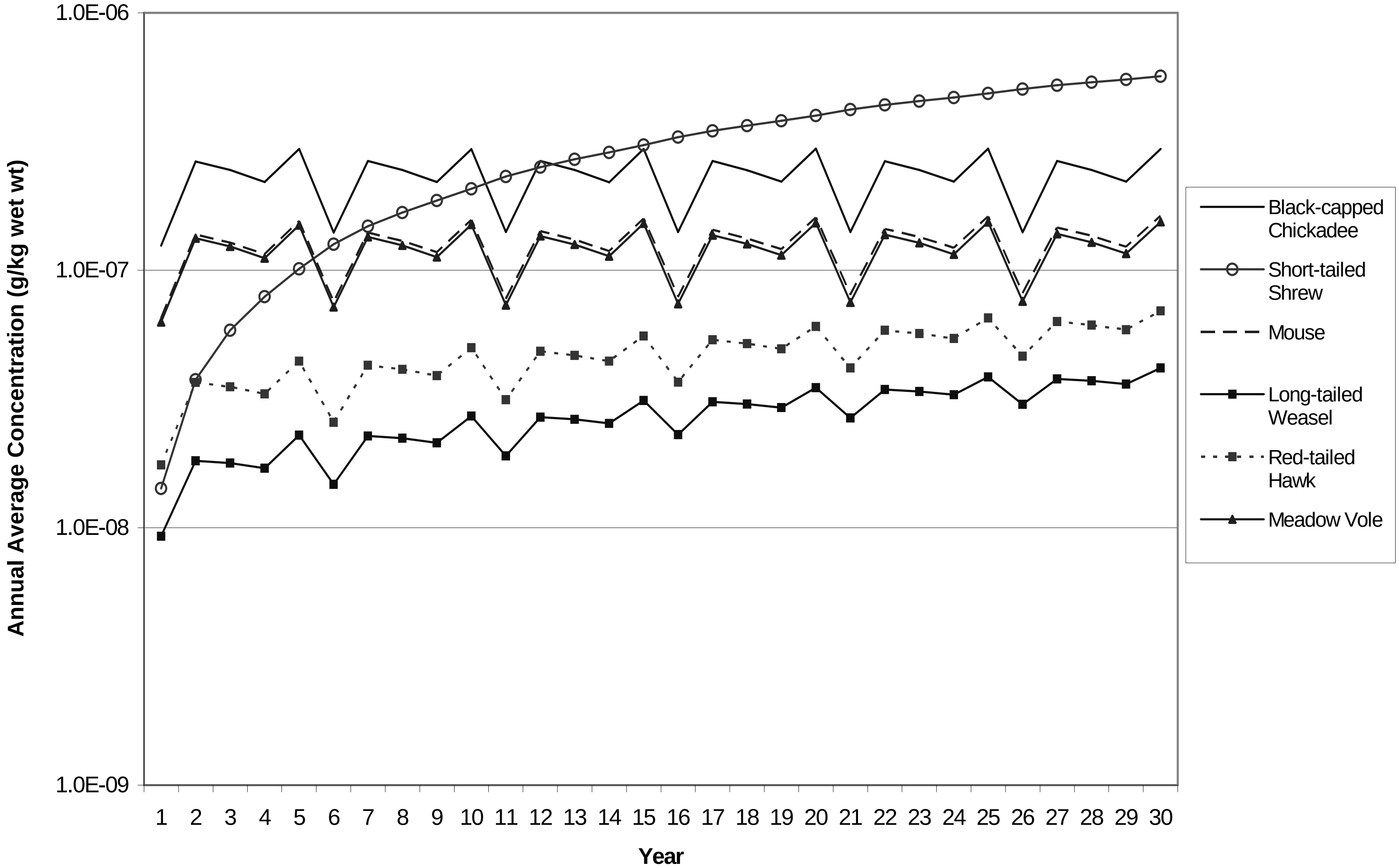
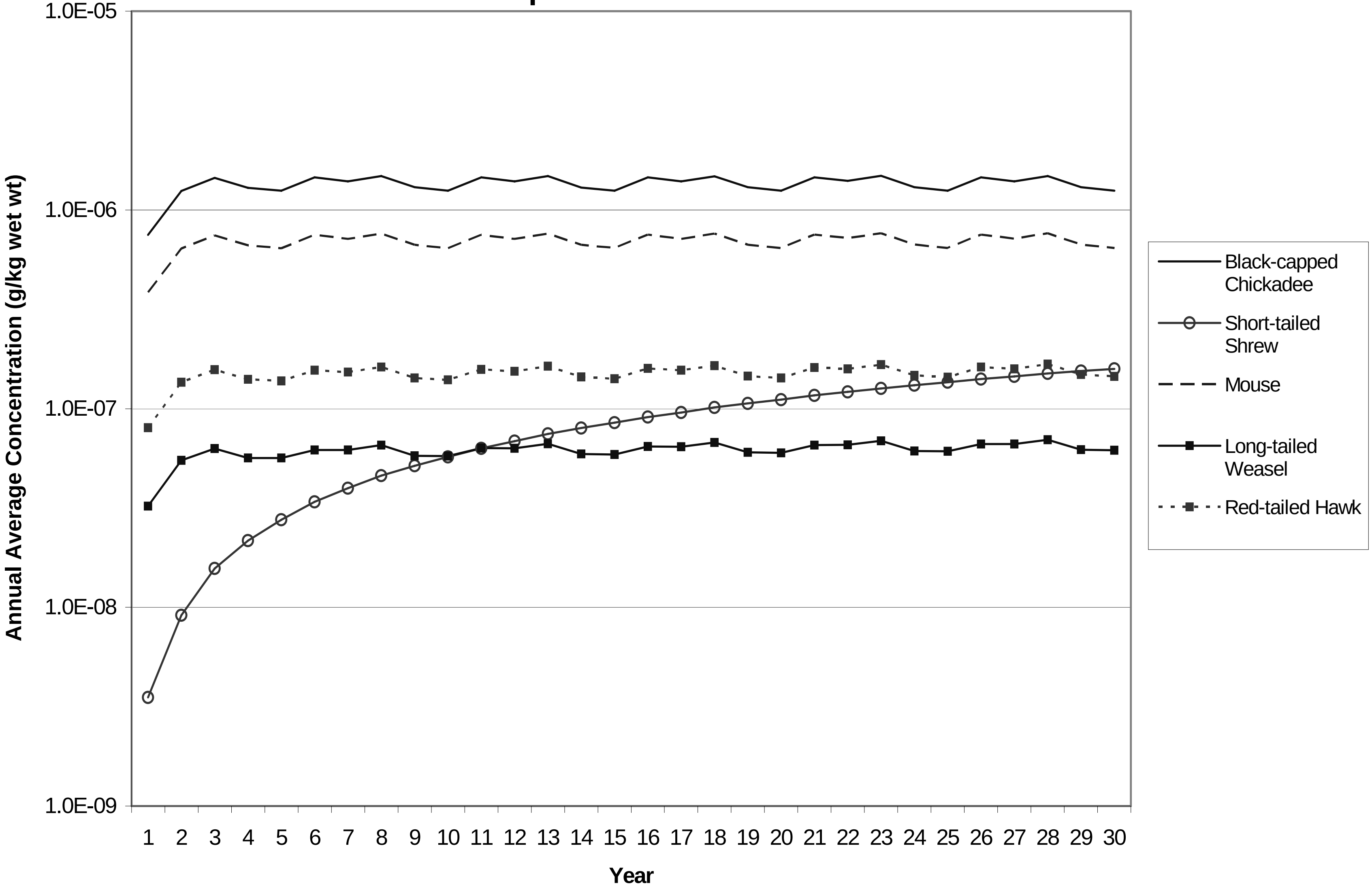


Chart B-9b - Log Scale
Total Mercury Concentration in Terrestrial Carnivore (Weasel and Hawk) Compartments vs. Time: SSE4



APPENDIX C

STEADY-STATE: INPUTS AND DETAILED RESULTS

Appendix C
STEADY-STATE: INPUTS AND DETAILED RESULTS

C.1 Estimation of Steady-state Inputs for Mercury Test Case

As discussed in Chapter 4, the steady-state mode of TRIM.FaTE requires that no model inputs can be assigned time-varying values. Therefore, all time-varying inputs in a dynamic scenario must be replaced with representative constant values to generate steady-state results for that scenario. In the dynamic scenarios for the mercury test case, the following inputs were assigned time-varying values:

- Air temperature;
- Wind speed;
- Wind direction;
- Mixing height;
- Precipitation rate;
- *isDay* (0 at night, 1 during the day);
- *AllowExchange* (0 during non-growing season, 1 during growing season);
- Litter fall rate (for deciduous forest and grasses/herbs, user-specified rate during litter fall and zero at all other times); and
- River flush rate (i.e., flow) and current velocity.

In order to provide a sound basis of comparison with the results from the dynamic simulations, constant values for these inputs were calculated such that the resulting steady-state simulation closely approximated the system modeled in the dynamic simulations. Many of these time-varying inputs combine and interact in complex ways within TRIM.FaTE to affect the magnitude of internally calculated variables and ultimately the ways pollutant mass is moved within the modeled system. In order to capture the impact of interactions between these time-varying inputs, the processes affected by time-varying inputs were considered when developing the constant values for these inputs.

C.1.1 Estimating Constant Values for Time-varying Inputs

Steady-state models have typically used arithmetic means for inputs that vary over time and space; however, it is not clear whether arithmetic means are appropriate for setting up a steady-state simulation in a way that is representative of – and comparable to – a specific dynamic scenario. By evaluating the hourly-based values of time-varying inputs and exploring different ways for calculating long-term central tendency of the data, this analysis found that not only are the hourly data not normally distributed but different calculation methods can result in differing results. This is illustrated in the following text box.

Example of Potential Problems in Representing Dynamic Data with Constant Values

In its simplest form, the advective transfer factor (in units of 1/day) across an interface between two neighboring air parcels is given by:

$$TF_{s \to r} = \frac{f_{s \to r}}{V_s} \qquad (1)$$

where:

$f_{s \to r}$ = flow of air across the interface from sending compartment *s* to receiving compartment *r*, in units of m^3/day. It is calculated as the product of flux (in m/day) and interfacial area (in m^2) across the interface.
V_s = volume of the sending compartment *s*, in units of m^3.

The arithmetic mean of $TF_{As \to Ar}$ (i.e., $AM[TF_{s \to r}]$) can be calculated in two ways.

The first approach calculates $TF_{s \to r}$ for each hour of met data and then estimates the long-term average of these hourly transfer factors as:

$$AM\left[TF_{s \to r}\right]_{Approach1} = \frac{1}{n}\sum_{j=1}^{n} TF_{s \to r} \qquad (2)$$

where:

j = hour
n = total number of hours (i.e., n = 8,760 for one year of meteorological data).

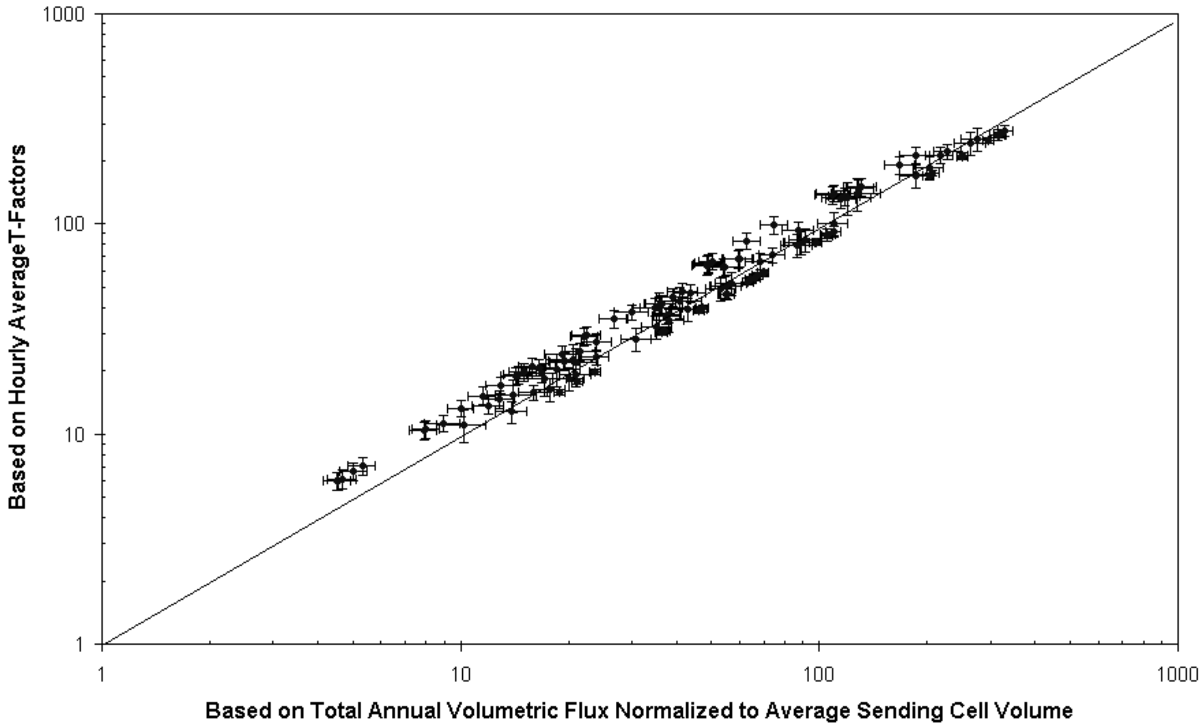
Alternatively, given Equation 1, the average values of $f_{s \to r}$ and V_s can be calculated from the meteorological data and spatial coordinates of the air parcels, and then the $AM[TF_{s \to r}]$ can be estimated as the quotient of the two average values such that :

$$AM\left[TF_{s \to r}\right]_{Approach2} = \frac{AM\left[f_{s \to r}\right]}{AM\left[V_s\right]} \qquad (3)$$

However, if the hourly values for flow and/or volume are not normally distributed (which they typically are not), the two approaches give different answers.

To evaluate the magnitude of this potential difference, both methods were applied to the five-year meteorological data set used as the basis of the meteorological input data in the dynamic mercury test case simulation. Advective transfer factors were calculated across a total of 124 defined air parcel boundaries. On average, Approach 1 (Equation 2) resulted in steady-state transfer factors that were approximately five percent greater than Approach 2 (Equation 3) and the difference between the two approaches for any given air parcel boundary ranged from –40 percent to +20 percent. This difference is illustrated on a log scale in Exhibit C-1.

Exhibit C-1
Comparison of Long-term Advective Transfer Factors Calculated Using the Average of the Hourly Transfer Factors (y-axis) (Eq. 2) and the Daily Average Volumetric Flux Normalized to the Average Sending Cell Volume (x-axis) (Eq. 3) [a]



[a] Plot represents 124 air parcel boundaries.

These types of uncertainties were considered during the development of the constant approximations for dynamic inputs. To be consistent with existing modeling approaches, this analysis used arithmetic means to represent central tendency of the time-varying inputs. In general, the steady-state inputs were estimated by first identifying the processes affected by each time-varying input and determining how the various inputs interact or combine to influence these processes. Next, long-term arithmetic means were calculated for each input and correlations between related inputs were estimated. It is important to note that the steady-state inputs described in this appendix are designed to be representative of long-term average transfers for the mercury test case, and may not be representative of day-to-day or hour-to-hour variations or for other TRIM.FaTE applications.

The remainder of this appendix describes how steady-state values were developed for each of these time-varying inputs. For the purposes of this discussion, these inputs are grouped into the following three categories:

- **Meteorological inputs** (i.e., air temperature, wind speed, wind direction, mixing height, and precipitation rate);

- **Plant inputs** (i.e., *isDay*, *AllowExchange*, and litter fall rate); and

- **Water body flow inputs** (i.e., river flush rate and river current velocity).

C.1.2 Meteorological Inputs

There are five time-varying meteorological inputs used in the mercury test case:

- Air temperature;
- Wind direction;
- Wind speed;
- Mixing height; and
- Precipitation rate.

The methods used to estimate constant values for these inputs are described below.

Air Temperature

Based on a review of the meteorological data and relevant TRIM.FaTE algorithms, it was determined that the long-term arithmetic mean of the time-varying air temperature values (i.e., **280 K**) was appropriate for this application of TRIM.FaTE's steady-state mode.

Wind Direction

Due to the relationship between wind speed and direction, using constant input values in the algorithm used to estimate air-to-air advective transfers could potentially result in a much different modeled system than that modeled in the dynamic simulations – in particular, a much different spatial distribution of the mass. In light of this, a new algorithm that does not require wind speed and direction as inputs was developed and used for modeling air-to-air advective transfers in steady-state mode. The only input required by this algorithm is an estimate of the steady-state transfer (a first-order rate constant, in units of "per day") across each air-to-air interface in the modeling area. That is,

$$TF_{s \to r} = AdvectiveTF_{s \to r} \tag{4}$$

TRIM.FaTE calculates the transfer of pollutant mass across each air-to-air interface by multiplying $TF_{s \to r}$ by the moles of pollutant in air compartment *s*. This algorithm is also used to estimate the transfers of pollutant mass from the air compartments bounding the modeling domain to air advection sinks.

The constant steady-state advective transfer factors in Equation (4) were estimated using TRIM.FaTE-generated hourly air-to-air advective transfers for each interface for the case B dynamic simulation and calculating the arithmetic mean of these transfers over the five-year meteorological input data period for each interface. The resulting steady-state advective transfer factors are provided in Exhibit C-2. As described in Section 1 of this appendix, these transfer

Exhibit C-2
Steady-state Advective Transfer Factors

Air-to-Air Interface	Transfer Factor (1/day)	Air-to-Air Interface	Transfer Factor (1/day)
Air_ENE1 to Air_ENE2	1.81e+02	Air_NNW3 to Air_W3	2.30e+01
Air_ENE1 to Air_ESE1	1.59e+02	Air_NNW3 to Sink 20 for Air_NNW3	6.48e+01
Air_ENE1 to Air_NNE1	1.29e+02	Air_Source to Air_ENE1	2.79e+02
Air_ENE1 to Air_Source	6.23e+00	Air_Source to Air_ESE1	2.35e+02
Air_ENE2 to Air_ENE1	1.38e+01	Air_Source to Air_NNE1	2.04e+02
Air_ENE2 to Air_ENE3	9.96e+01	Air_Source to Air_NNW1	1.96e+02
Air_ENE2 to Air_ESE2	4.99e+01	Air_Source to Air_SSE1	2.34e+02
Air_ENE2 to Air_NNE2	4.20e+01	Air_Source to Air_SSW1	2.58e+02
Air_ENE3 to Air_ENE2	1.90e+01	Air_Source to Air_WNW1	9.33e+01
Air_ENE3 to Air_ENE4	8.24e+01	Air_Source to Air_WSW1	8.73e+01
Air_ENE3 to Air_ESE3	2.75e+01	Air_SSE1 to Air_ESE1	2.18e+02
Air_ENE3 to Air_NNE3	2.23e+01	Air_SSE1 to Air_Source	1.32e+01
Air_ENE4 to Air_ENE3	2.06e+01	Air_SSE1 to Air_SSE2	1.84e+02
Air_ENE4 to Air_ENE5	3.74e+01	Air_SSE1 to Air_SSW1	6.20e+01
Air_ENE4 to Air_ESE4	2.78e+01	Air_SSE2 to Air_ESE2	6.59e+01
Air_ENE4 to Sink 29 for Air_ENE4	2.97e+01	Air_SSE2 to Air_SSE1	2.83e+01
Air_ENE5 to Air_ENE4	2.04e+01	Air_SSE2 to Air_SSE3	8.40e+01
Air_ENE5 to Air_ESE5	5.56e+01	Air_SSE2 to Air_SSW2	1.99e+01
Air_ENE5 to Sink 36 for Air_ENE5	1.71e+01	Air_SSE3 to Air_ESE3	3.68e+01
Air_ENE5 to Sink 37 for Air_ENE5	5.80e+01	Air_SSE3 to Air_SSE2	3.91e+01
Air_ESE1 to Air_ENE1	1.39e+02	Air_SSE3 to Air_SSE4	7.69e+01
Air_ESE1 to Air_ESE2	1.83e+02	Air_SSE3 to Air_SSW3	1.09e+01
Air_ESE1 to Air_Source	5.55e+00	Air_SSE4 to Air_ESE4	2.49e+01
Air_ESE1 to Air_SSE1	1.34e+02	Air_SSE4 to Air_SSE3	3.14e+01
Air_ESE2 to Air_ENE2	4.15e+01	Air_SSE4 to Air_SSE5	5.82e+01
Air_ESE2 to Air_ESE1	1.36e+01	Air_SSE4 to Air_SSW4	6.96e+00
Air_ESE2 to Air_ESE3	9.89e+01	Air_SSE5 to Air_ESE5	2.84e+01
Air_ESE2 to Air_SSE2	4.25e+01	Air_SSE5 to Air_SSE4	4.10e+01
Air_ESE3 to Air_ENE3	2.29e+01	Air_SSE5 to Sink 39 for Air_SSE5	2.40e+01
Air_ESE3 to Air_ESE2	1.88e+01	Air_SSE5 to Sink 40 for Air_SSE5	4.13e+01
Air_ESE3 to Air_ESE4	8.34e+01	Air_SSW1 to Air_Source	1.49e+01
Air_ESE3 to Air_SSE3	2.24e+01	Air_SSW1 to Air_SSE1	1.78e+02

Exhibit C-2 (continued)
Steady-state Advective Transfer Factors

Air-to-Air Interface	Transfer Factor (1/day)	Air-to-Air Interface	Transfer Factor (1/day)
Air_ESE4 to Air_ENE4	1.52e+01	Air_SSW1 to Air_SSW2	1.82e+02
Air_ESE4 to Air_ESE3	1.40e+01	Air_SSW1 to Air_WSW1	1.29e+02
Air_ESE4 to Air_ESE5	5.91e+01	Air_SSW2 to Air_SSE2	5.37e+01
Air_ESE4 to Air_SSE4	1.42e+01	Air_SSW2 to Air_SSW1	2.59e+01
Air_ESE5 to Air_ENE5	1.01e+01	Air_SSW2 to Air_SSW3	8.58e+01
Air_ESE5 to Air_ESE4	1.07e+01	Air_SSW2 to Air_W2	4.24e+01
Air_ESE5 to Air_SSE5	1.01e+01	Air_SSW3 to Air_SSE3	2.97e+01
Air_ESE5 to Sink 42 for Air_ESE5	4.28e+01	Air_SSW3 to Air_SSW2	4.00e+01
Air_NNE1 to Air_ENE1	2.79e+02	Air_SSW3 to Air_SSW4	7.73e+01
Air_NNE1 to Air_NNE2	1.48e+02	Air_SSW3 to Air_W3	2.22e+01
Air_NNE1 to Air_NNW1	5.95e+01	Air_SSW4 to Air_SSE4	4.82e+01
Air_NNE1 to Air_Source	1.67e+01	Air_SSW4 to Air_SSW3	8.04e+01
Air_NNE2 to Air_ENE2	8.20e+01	Air_SSW4 to Sink 31 for	8.08e+01
Air_NNE2 to Air_NNE1	3.39e+01	Air_W2 to Air_NNW2	3.26e+01
Air_NNE2 to Air_NNE3	6.39e+01	Air_W2 to Air_SSW2	4.31e+01
Air_NNE2 to Air_NNW2	1.95e+01	Air_W2 to Air_W3	3.10e+01
Air_NNE3 to Air_ENE3	4.96e+01	Air_W2 to Air_WNW1	1.69e+01
Air_NNE3 to Air_NNE2	5.11e+01	Air_W2 to Air_WSW1	1.68e+01
Air_NNE3 to Air_NNW3	1.07e+01	Air_W3 to Air_NNW3	1.75e+01
Air_NNE3 to Sink 18 for Air_NNE3	6.50e+01	Air_W3 to Air_SSW3	2.32e+01
Air_NNW1 to Air_NNE1	1.88e+02	Air_W3 to Air_W2	5.30e+01
Air_NNW1 to Air_NNW2	1.47e+02	Air_W3 to Sink 23 for Air_W3	2.89e+01
Air_NNW1 to Air_Source	1.79e+01	Air_WNW1 to Air_NNW1	2.22e+02
Air_NNW1 to Air_WNW1	1.31e+02	Air_WNW1 to Air_Source	1.99e+01
Air_NNW2 to Air_NNE2	5.57e+01	Air_WNW1 to Air_W2	7.37e+01
Air_NNW2 to Air_NNW1	3.07e+01	Air_WNW1 to Air_WSW1	1.67e+02
Air_NNW2 to Air_NNW3	6.64e+01	Air_WSW1 to Air_Source	1.88e+01
Air_NNW2 to Air_W2	4.10e+01	Air_WSW1 to Air_SSW1	2.95e+02
Air_NNW3 to Air_NNE3	2.93e+01	Air_WSW1 to Air_W2	7.43e+01
Air_NNW3 to Air_NNW2	5.17e+01	Air_WSW1 to Air_WNW1	1.36e+02

factors can also be estimated based on the daily average volumetric flux from the sending air compartment to the receiving air compartment normalized to the volume of the sending air compartment. It is not clear that one method is preferable, and thus the method using the arithmetic means of the hourly transfer factors was used because these data were readily available as outputs of TRIM.FaTE, whereas the other method would have required additional calculations outside of TRIM.FaTE.

Because wind direction was already used in the dynamic model run to generate the hourly advective transfer factors, a constant wind direction was not required to run TRIM.FaTE in steady-state mode.

Wind Speed

Although wind speed is not required to calculate steady-state air-to-air advective transfers because of the use of advective transfer factors (described above), it is still a required input used in calculating diffusion between air and surface water and between air and leaves. Based on a review of its use in these algorithms, it was determined that the long-term arithmetic mean of the time-varying wind speed values (i.e., **3.64 m/s**) was appropriate for this application of TRIM.FaTE's steady-state mode.

Mixing Height

Based on a review of the meteorological data and relevant TRIM.FaTE algorithms, it was determined that the long-term arithmetic mean of the time-varying mixing height (i.e., **887 m**) was appropriate for this application of TRIM.FaTE's steady-state mode.

Precipitation Rate

Based on a review of the meteorological data and relevant TRIM.FaTE algorithms, it was determined that the long-term arithmetic mean of the time-varying precipitation rate (i.e., **0.0041 m/day**) was appropriate for this application of TRIM.FaTE's steady-state mode.

C.1.3 Plants Inputs

There are five time-varying plant-related inputs used in the mercury test case:

- *AllowExchange* (two inputs);
- *isDay* (two inputs); and
- Litter fall rate.

The methods used to estimate constant values for these inputs are described below.

AllowExchange

AllowExchange is used as a seasonal on/off "switch" to account for the presence or absence of leaf and particle-on-leaf compartments in the chemical mass balance. In the mercury test case simulation, it is set to 1.0 when the leaf and particle-on-leaf compartments can exchange pollutant mass with other compartments (i.e., the growing season) and zero when they cannot (i.e., the non-growing season). It is used in every algorithm involving leaf and particle-on-leaf compartments.

For coniferous plants, *AllowExchange* is set to 1.0 for the duration of each dynamic simulation because coniferous leaf and particle-on-leaf compartments are assumed to exchange pollutant mass throughout the year. Because coniferous leaf and particle-on-leaf compartments are assigned a constant value for *AllowExchange* in the dynamic simulations, there was no need to develop separate steady-state values.

For deciduous and grasses/herbs plants, *AllowExchange* is set to 1.0 from May 12 until September 30 (i.e, the growing season for the test case) and to zero from September 30 until May 12 (i.e., the non-growing season). In developing the constant value for *AllowExchange* for use in TRIM.FaTE's steady-state mode, all of the algorithms involving *AllowExchange* were analyzed to determine if there are complex interactions between AllowExchange and any other time-varying inputs. The results of this analysis indicated that, because of the relationship between *AllowExchange* and the mixing height, two different values of AllowExchange are appropriate for deciduous and grasses/herbs leaf and particle-on-leaf compartment, one for algorithms that transport mass from air to plants and another for the other plant-related algorithms.

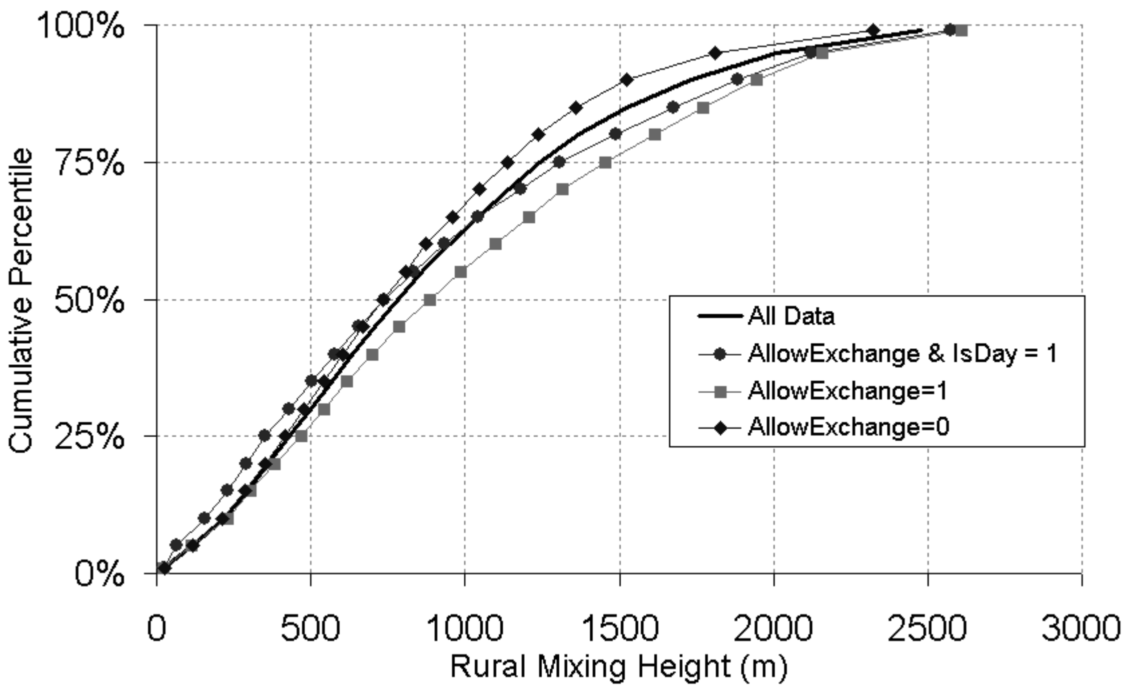
For algorithms involving deciduous and grasses/herbs leaf and particle-on-leaf compartments that do not involve the mixing height (e.g., leaf-to-stem transfers, ingestion of leaves by biota), the constant value for AllowExchange for use in steady-state simulations was assigned the long-term average of the dynamic AllowExchange value (**0.386**).

For algorithms involving deciduous and grasses/herbs leaf and particle-on-leaf compartments that transport mass from air to plants, a more involved analysis was required due to the relationship between *AllowExchange* and mixing height. As described in Section 2 of this appendix, the constant value for mixing height used in the steady-state simulations was 887 m. However, as illustrated in Exhibit C-3, the mixing height is generally lower when AllowExchange is 1.0 than when it is zero. The lower mixing height when *AllowExchange* is 1.0 leads to an increase in the transfer of pollutant mass due to dry particle and dry gaseous deposition due to the lower volume of the sending air compartment. Thus, a steady-state value for AllowExchange for deciduous and grasses/herbs leaf and particle-on-leaf compartments was developed to account for the differences between the long-term average mixing height (887 m) and the average mixing height when *AllowExchange* is equal to 1.0 (803 m). This value was calculated by multiplying the long-term average value for *AllowExchange* (0.386) by the ratio of the long-term average mixing height to the average mixing height when AllowExchange is 1.0 (887/803 = 1.1), resulting in an AllowExchange value of **0.426** for algorithms that transport pollutant mass from air to plants.

isDay

When run in dynamic mode, TRIM.FaTE uses the *isDay* property to determine if plant stomata are open. It is set to zero at night (when stomata are closed) and 1.0 during the day

Exhibit C-3
Distributions of Hourly Mixing Heights for Different Values of *AllowExchange* and *isDay*



(when stomata are open). The *isDay* and *AllowExchange* properties are both used in calculating diffusion from air to plant leaves, and thus their interactions were considered in calculating the steady-state value for *isDay*.

Because of the relationship between *isDay* and *AllowExchange* and the fact that two constant values were developed for *AllowExchange* (as described above), two values were also developed for *isDay*, one for algorithms that transport pollutant mass from air to plants and one for algorithms that transport pollutant mass from plants to air. To calculate the *isDay* value for use in algorithms that transport pollutant mass from air to plants (**0.552**), the long-term average of the product of *isDay* and *AllowExchange* (0.235) was divided by the constant *AllowExchange* value developed for algorithms that transport pollutant mass from air to plants (0.426). To calculate the *isDay* value for use in the other plant-related algorithms (**0.609**), the long-term average of the product of *isDay* and *AllowExchange* (0.235) was divided by the *AllowExchange* value developed for the other plant-related algorithms (0.386).

Litter Fall Rate

For this test case, the litter fall rate for deciduous and grasses/herbs plants is configured in the dynamic simulations such that 99 percent of the pollutant mass in leaf and particle-on-leaf compartments is transferred to surface soil in 32 days each year, starting on September 27 and ending on October 29. The constant value for litter fall rate for use in steady-state simulations was developed such that 99 percent of the pollutant mass is transferred to surface soil at a constant rate over the course of the year (i.e., 365 days). This value was calculated using the following equation:

$$0.01 = \exp\left(- L_{litter} \times 365\right) \tag{5}$$

Solving Equation 12 for L_{litter} gives a steady-state litter fall rate for deciduous and grasses/herbs leaf and particle-on-leaf compartments of **0.013/day**. Because coniferous leaf and particle-on-leaf compartments are assigned constant litter fall rates in the dynamic simulations, there was no need to develop separate steady-state values.

C.1.4 Water Body Flow Inputs

There are two time-varying inputs related to water body flow used in the mercury test case:

- River current velocity; and
- River flush rate (i.e., flow).

The methods used to estimate constant values for these inputs are described below. Note that the other water bodies included in the mercury test case were, unlike the river, assigned constant values for current velocity and flush rate/flow, and thus it was not necessary to develop steady-state values for these water bodies.

River Current Velocity

Based on a review of the meteorological data and relevant TRIM.FaTE algorithms, it was determined that the time-weighted average current velocity of the time-varying river current velocity (i.e., **0.166 m/s**) was appropriate for this application of TRIM.FaTE's steady-state mode.

River Flush Rate

The constant value for river flush rate developed for this application of TRIM.FaTE's steady-state mode was calculated based on the constant river current velocity (described above), the depth and width of the river at the downstream end, and the volume of the river using the following formula.

$$Flush\ rate\ (1/yr) = \frac{Current\ velocity\ (m/yr) \times width\ (m) \times depth\ (m)}{Volume\ (m^3)} \tag{6}$$

The resulting constant value for river flush rate was **531.24/yr**.

C.2 Compartment-specific Steady-state Results

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Air	Air_ENE1	6.1e-01	6.8e-10	g/m3
Air	Air_ENE2	1.3e+00	3.2e-10	g/m3
Air	Air_ENE3	1.5e+00	2.0e-10	g/m3
Air	Air_ENE4	1.5e+00	1.4e-10	g/m3
Air	Air_ENE5	5.7e-01	8.2e-11	g/m3
Air	Air_ESE1	6.1e-01	7.3e-10	g/m3
Air	Air_ESE2	1.5e+00	3.8e-10	g/m3
Air	Air_ESE3	1.8e+00	2.5e-10	g/m3
Air	Air_ESE4	2.6e+00	1.7e-10	g/m3
Air	Air_ESE5	2.8e+00	9.3e-11	g/m3
Air	Air_NNE1	4.2e-01	5.0e-10	g/m3
Air	Air_NNE2	8.6e-01	1.9e-10	g/m3
Air	Air_NNE3	5.5e-01	7.8e-11	g/m3
Air	Air_NNW1	2.8e-01	3.7e-10	g/m3
Air	Air_NNW2	4.8e-01	1.1e-10	g/m3
Air	Air_NNW3	2.6e-01	3.6e-11	g/m3
Air	Air_Source	2.5e-01	4.4e-09	g/m3
Air	Air_SSE1	4.9e-01	6.1e-10	g/m3
Air	Air_SSE2	1.2e+00	2.8e-10	g/m3
Air	Air_SSE3	1.3e+00	1.7e-10	g/m3
Air	Air_SSE4	1.5e+00	1.0e-10	g/m3
Air	Air_SSE5	8.6e-01	5.1e-11	g/m3
Air	Air_SSW1	3.5e-01	4.4e-10	g/m3
Air	Air_SSW2	6.8e-01	1.5e-10	g/m3
Air	Air_SSW3	6.0e-01	7.9e-11	g/m3
Air	Air_SSW4	2.7e-01	4.6e-11	g/m3
Air	Air_W2	6.9e-01	7.6e-11	g/m3
Air	Air_W3	3.3e-01	2.2e-11	g/m3
Air	Air_WNW1	2.1e-01	2.8e-10	g/m3
Air	Air_WSW1	2.2e-01	2.9e-10	g/m3
Arthropod	SurfSoil_E1	3.7e-04	5.3e-07	g/kg wet
Arthropod	SurfSoil_E4	1.3e-04	6.1e-08	g/kg wet
Arthropod	SurfSoil_ESE2	3.7e-04	2.8e-07	g/kg wet
Arthropod	SurfSoil_ESE3	4.1e-04	1.2e-07	g/kg wet
Arthropod	SurfSoil_ESE4	1.8e-04	9.4e-08	g/kg wet
Arthropod	SurfSoil_ESE5	1.2e-04	5.2e-08	g/kg wet
Arthropod	SurfSoil_N2	2.4e-04	9.1e-08	g/kg wet
Arthropod	SurfSoil_NE2	3.2e-04	2.2e-07	g/kg wet
Arthropod	SurfSoil_NE3	3.3e-04	1.2e-07	g/kg wet
Arthropod	SurfSoil_SE1	1.5e-04	4.1e-07	g/kg wet

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Arthropod	SurfSoil_SE6	8.2e-05	4.3e-08	g/kg wet
Arthropod	SurfSoil_SSE2	5.3e-04	3.0e-07	g/kg wet
Arthropod	SurfSoil_SSE3	4.6e-04	2.0e-07	g/kg wet
Arthropod	SurfSoil_SSE4	2.5e-04	8.7e-08	g/kg wet
Arthropod	SurfSoil_SSE5	1.1e-04	5.6e-08	g/kg wet
Arthropod	SurfSoil_SW2	1.3e-04	9.4e-08	g/kg wet
Arthropod	SurfSoil_W2	2.4e-04	7.6e-08	g/kg wet
Bald Eagle	SurfSoil_E1	4.8e-08	3.4e-07	g/kg wet
Bald Eagle	SurfSoil_E4	8.5e-06	1.9e-05	g/kg wet
Bald Eagle	SurfSoil_ESE2	8.7e-08	3.2e-07	g/kg wet
Bald Eagle	SurfSoil_ESE3	1.3e-05	1.9e-05	g/kg wet
Bald Eagle	SurfSoil_ESE4	7.6e-06	1.9e-05	g/kg wet
Bald Eagle	SurfSoil_ESE5	8.6e-06	1.9e-05	g/kg wet
Bald Eagle	SurfSoil_N2	1.3e-07	2.4e-07	g/kg wet
Bald Eagle	SurfSoil_NE2	9.0e-08	2.9e-07	g/kg wet
Bald Eagle	SurfSoil_NE3	1.5e-07	2.6e-07	g/kg wet
Bald Eagle	SurfSoil_SE1	1.9e-07	2.6e-06	g/kg wet
Bald Eagle	SurfSoil_SE6	6.4e-06	1.6e-05	g/kg wet
Bald Eagle	SurfSoil_SSE2	4.5e-07	1.3e-06	g/kg wet
Bald Eagle	SurfSoil_SSE3	1.2e-07	2.6e-07	g/kg wet
Bald Eagle	SurfSoil_SSE4	2.1e-05	3.6e-05	g/kg wet
Bald Eagle	SurfSoil_SSE5	6.5e-06	1.6e-05	g/kg wet
Bald Eagle	SurfSoil_SW2	6.9e-08	2.5e-07	g/kg wet
Bald Eagle	SurfSoil_W2	3.6e-07	5.6e-07	g/kg wet
Benthic Carnivore	Sed_Brewer	3.5e-02	4.5e-05	g/kg wet
Benthic Carnivore	Sed_Fields	8.2e-03	5.5e-05	g/kg wet
Benthic Carnivore	Sed_River	3.3e-04	3.9e-07	g/kg wet
Benthic Carnivore	Sed_Swetts	9.6e-03	1.1e-04	g/kg wet
Benthic Carnivore	Sed_Thurston	7.3e-03	5.4e-05	g/kg wet
Benthic Invertebrate	Sed_Brewer	2.9e+00	2.1e-05	g/kg wet
Benthic Invertebrate	Sed_Fields	7.9e-01	3.0e-05	g/kg wet
Benthic Invertebrate	Sed_River	2.7e-02	1.8e-07	g/kg wet
Benthic Invertebrate	Sed_Swetts	8.7e-01	5.9e-05	g/kg wet
Benthic Invertebrate	Sed_Thurston	6.5e-01	2.7e-05	g/kg wet
Benthic Omnivore	Sed_Brewer	9.6e-02	1.4e-05	g/kg wet
Benthic Omnivore	Sed_Fields	2.4e-02	1.8e-05	g/kg wet
Benthic Omnivore	Sed_River	9.1e-04	1.2e-07	g/kg wet
Benthic Omnivore	Sed_Swetts	2.8e-02	3.7e-05	g/kg wet
Benthic Omnivore	Sed_Thurston	2.1e-02	1.7e-05	g/kg wet
Black-capped Chickadee	SurfSoil_E1	1.5e-06	1.7e-06	g/kg wet
Black-capped Chickadee	SurfSoil_E4	7.8e-06	2.8e-06	g/kg wet
Black-capped Chickadee	SurfSoil_ESE2	2.6e-06	1.6e-06	g/kg wet

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Black-capped Chickadee	SurfSoil_ESE3	4.5e-05	1.1e-05	g/kg wet
Black-capped Chickadee	SurfSoil_ESE4	2.4e-05	1.0e-05	g/kg wet
Black-capped Chickadee	SurfSoil_ESE5	8.0e-07	2.8e-07	g/kg wet
Black-capped Chickadee	SurfSoil_N2	1.0e-06	3.1e-07	g/kg wet
Black-capped Chickadee	SurfSoil_NE2	2.1e-06	1.1e-06	g/kg wet
Black-capped Chickadee	SurfSoil_NE3	2.0e-06	5.6e-07	g/kg wet
Black-capped Chickadee	SurfSoil_SE1	1.9e-05	4.3e-05	g/kg wet
Black-capped Chickadee	SurfSoil_SE6	5.5e-07	2.3e-07	g/kg wet
Black-capped Chickadee	SurfSoil_SSE2	4.1e-05	1.9e-05	g/kg wet
Black-capped Chickadee	SurfSoil_SSE3	1.7e-06	5.9e-07	g/kg wet
Black-capped Chickadee	SurfSoil_SSE4	1.2e-05	3.4e-06	g/kg wet
Black-capped Chickadee	SurfSoil_SSE5	5.7e-07	2.3e-07	g/kg wet
Black-capped Chickadee	SurfSoil_SW2	7.2e-07	4.2e-07	g/kg wet
Black-capped Chickadee	SurfSoil_W2	2.4e-05	6.2e-06	g/kg wet
Common Loon	SW_Brewer	1.7e-05	2.2e-05	g/kg wet
Common Loon	SW_Fields	3.2e-06	2.3e-05	g/kg wet
Common Loon	SW_River	2.2e-07	2.7e-07	g/kg wet
Common Loon	SW_Swetts	3.4e-06	4.3e-05	g/kg wet
Common Loon	SW_Thurston	2.5e-06	1.9e-05	g/kg wet
Earthworm	RootSoil_E1	9.2e-03	8.8e-08	g/kg wet
Earthworm	RootSoil_E4	3.3e-03	1.0e-08	g/kg wet
Earthworm	RootSoil_ESE2	9.2e-03	4.7e-08	g/kg wet
Earthworm	RootSoil_ESE3	1.0e-02	2.1e-08	g/kg wet
Earthworm	RootSoil_ESE4	4.4e-03	1.6e-08	g/kg wet
Earthworm	RootSoil_ESE5	2.9e-03	8.6e-09	g/kg wet
Earthworm	RootSoil_N1	3.8e-03	1.0e-07	g/kg wet
Earthworm	RootSoil_N2	5.9e-03	1.5e-08	g/kg wet
Earthworm	RootSoil_NE2	8.0e-03	3.6e-08	g/kg wet
Earthworm	RootSoil_NE3	8.1e-03	1.9e-08	g/kg wet
Earthworm	RootSoil_SE1	3.6e-03	6.8e-08	g/kg wet
Earthworm	RootSoil_SE6	2.0e-03	7.1e-09	g/kg wet
Earthworm	RootSoil_SSE2	1.3e-02	5.0e-08	g/kg wet
Earthworm	RootSoil_SSE3	1.1e-02	3.4e-08	g/kg wet
Earthworm	RootSoil_SSE4	6.2e-03	1.4e-08	g/kg wet
Earthworm	RootSoil_SSE5	2.7e-03	9.3e-09	g/kg wet
Earthworm	RootSoil_SW2	3.2e-03	1.6e-08	g/kg wet
Earthworm	RootSoil_W1	6.2e-03	8.2e-08	g/kg wet
Earthworm	RootSoil_W2	5.9e-03	1.3e-08	g/kg wet
Leaf - Coniferous Forest	SurfSoil_E4	4.5e+00	3.1e-07	g/kg wet
Leaf - Coniferous Forest	SurfSoil_ESE3	2.6e+01	1.2e-06	g/kg wet
Leaf - Coniferous Forest	SurfSoil_ESE4	1.4e+01	1.1e-06	g/kg wet
Leaf - Coniferous Forest	SurfSoil_SE1	1.1e+01	4.7e-06	g/kg wet

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Leaf - Coniferous Forest	SurfSoil_SSE2	2.4e+01	2.1e-06	g/kg wet
Leaf - Coniferous Forest	SurfSoil_SSE4	7.0e+00	3.6e-07	g/kg wet
Leaf - Coniferous Forest	SurfSoil_W2	1.4e+01	6.7e-07	g/kg wet
Leaf - Deciduous Forest	SurfSoil_E1	1.5e+00	1.1e-06	g/kg wet
Leaf - Deciduous Forest	SurfSoil_ESE2	3.1e+00	1.2e-06	g/kg wet
Leaf - Deciduous Forest	SurfSoil_ESE5	9.7e-01	2.2e-07	g/kg wet
Leaf - Deciduous Forest	SurfSoil_N2	1.1e+00	2.0e-07	g/kg wet
Leaf - Deciduous Forest	SurfSoil_NE3	2.3e+00	4.0e-07	g/kg wet
Leaf - Deciduous Forest	SurfSoil_SE6	6.5e-01	1.7e-07	g/kg wet
Leaf - Deciduous Forest	SurfSoil_SSE3	1.6e+00	3.5e-07	g/kg wet
Leaf - Deciduous Forest	SurfSoil_SSE5	6.1e-01	1.6e-07	g/kg wet
Leaf - Grasses/Herbs	SurfSoil_N1	5.7e-01	1.1e-06	g/kg wet
Leaf - Grasses/Herbs	SurfSoil_NE2	2.8e+00	9.2e-07	g/kg wet
Leaf - Grasses/Herbs	SurfSoil_SW2	9.2e-01	3.4e-07	g/kg wet
Leaf - Grasses/Herbs	SurfSoil_W1	4.7e-01	4.6e-07	g/kg wet
Leaf Particle - Coniferous Forest	SurfSoil_E4	3.4e-04	6.7e-06	g/kg wet
Leaf Particle - Coniferous Forest	SurfSoil_ESE3	1.9e-03	2.5e-05	g/kg wet
Leaf Particle - Coniferous Forest	SurfSoil_ESE4	1.0e-03	2.4e-05	g/kg wet
Leaf Particle - Coniferous Forest	SurfSoil_SE1	8.3e-04	1.0e-04	g/kg wet
Leaf Particle - Coniferous Forest	SurfSoil_SSE2	1.8e-03	4.4e-05	g/kg wet
Leaf Particle - Coniferous Forest	SurfSoil_SSE4	5.2e-04	7.7e-06	g/kg wet
Leaf Particle - Coniferous Forest	SurfSoil_W2	1.0e-03	1.4e-05	g/kg wet
Leaf Particle - Deciduous Forest	SurfSoil_E1	7.4e-05	6.8e-06	g/kg wet
Leaf Particle - Deciduous Forest	SurfSoil_ESE2	1.6e-04	7.5e-06	g/kg wet
Leaf Particle - Deciduous Forest	SurfSoil_ESE5	5.0e-05	1.4e-06	g/kg wet
Leaf Particle - Deciduous Forest	SurfSoil_N2	5.4e-05	1.3e-06	g/kg wet
Leaf Particle - Deciduous Forest	SurfSoil_NE3	1.2e-04	2.6e-06	g/kg wet
Leaf Particle - Deciduous Forest	SurfSoil_SE6	3.3e-05	1.1e-06	g/kg wet
Leaf Particle - Deciduous Forest	SurfSoil_SSE3	8.1e-05	2.3e-06	g/kg wet
Leaf Particle - Deciduous Forest	SurfSoil_SSE5	3.1e-05	1.0e-06	g/kg wet
Leaf Particle - Grasses/Herbs	SurfSoil_N1	6.8e-04	1.2e-04	g/kg wet
Leaf Particle - Grasses/Herbs	SurfSoil_NE2	1.8e-04	5.1e-06	g/kg wet
Leaf Particle - Grasses/Herbs	SurfSoil_SW2	6.1e-05	1.9e-06	g/kg wet
Leaf Particle - Grasses/Herbs	SurfSoil_W1	4.9e-04	4.1e-05	g/kg wet
Long-tailed Weasel	SurfSoil_E1	2.6e-06	1.2e-06	g/kg wet
Long-tailed Weasel	SurfSoil_E4	1.8e-06	2.6e-07	g/kg wet
Long-tailed Weasel	SurfSoil_ESE2	2.7e-06	6.5e-07	g/kg wet
Long-tailed Weasel	SurfSoil_ESE3	7.3e-06	6.9e-07	g/kg wet
Long-tailed Weasel	SurfSoil_ESE4	3.6e-06	5.9e-07	g/kg wet
Long-tailed Weasel	SurfSoil_ESE5	9.7e-07	1.4e-07	g/kg wet
Long-tailed Weasel	SurfSoil_N2	1.8e-06	2.2e-07	g/kg wet
Long-tailed Weasel	SurfSoil_NE2	2.5e-06	5.1e-07	g/kg wet

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Long-tailed Weasel	SurfSoil_NE3	2.5e-06	2.8e-07	g/kg wet
Long-tailed Weasel	SurfSoil_SE1	2.9e-06	2.5e-06	g/kg wet
Long-tailed Weasel	SurfSoil_SE6	6.4e-07	1.0e-07	g/kg wet
Long-tailed Weasel	SurfSoil_SSE2	7.5e-06	1.4e-06	g/kg wet
Long-tailed Weasel	SurfSoil_SSE3	3.2e-06	4.4e-07	g/kg wet
Long-tailed Weasel	SurfSoil_SSE4	2.9e-06	3.2e-07	g/kg wet
Long-tailed Weasel	SurfSoil_SSE5	8.2e-07	1.3e-07	g/kg wet
Long-tailed Weasel	SurfSoil_SW2	9.6e-07	2.2e-07	g/kg wet
Long-tailed Weasel	SurfSoil_W2	4.0e-06	4.0e-07	g/kg wet
Macrophyte	SW_Brewer	2.0e+01	3.6e-06	g/kg wet
Macrophyte	SW_Fields	5.0e+00	4.8e-06	g/kg wet
Macrophyte	SW_River	2.1e-01	3.4e-08	g/kg wet
Macrophyte	SW_Swetts	5.3e+00	8.9e-06	g/kg wet
Macrophyte	SW_Thurston	4.0e+00	4.2e-06	g/kg wet
Mallard	SW_Brewer	8.6e-05	2.2e-06	g/kg wet
Mallard	SW_Fields	2.2e-05	3.0e-06	g/kg wet
Mallard	SW_River	9.6e-05	2.3e-06	g/kg wet
Mallard	SW_Swetts	2.3e-05	5.5e-06	g/kg wet
Mallard	SW_Thurston	1.8e-05	2.7e-06	g/kg wet
Meadow Vole	SurfSoil_NE2	7.1e-04	5.4e-07	g/kg wet
Meadow Vole	SurfSoil_SW2	2.5e-04	2.1e-07	g/kg wet
Mink	SurfSoil_E1	9.7e-08	1.9e-07	g/kg wet
Mink	SurfSoil_E4	1.4e-05	3.9e-06	g/kg wet
Mink	SurfSoil_ESE3	9.2e-06	4.3e-06	g/kg wet
Mink	SurfSoil_ESE4	3.9e-06	3.5e-06	g/kg wet
Mink	SurfSoil_ESE5	1.1e-05	3.0e-06	g/kg wet
Mink	SurfSoil_N2	2.3e-07	8.7e-08	g/kg wet
Mink	SurfSoil_NE2	1.6e-07	1.4e-07	g/kg wet
Mink	SurfSoil_SE1	6.8e-07	2.5e-06	g/kg wet
Mink	SurfSoil_SE6	3.4e-06	3.3e-06	g/kg wet
Mink	SurfSoil_SSE2	1.5e-06	1.2e-06	g/kg wet
Mink	SurfSoil_SSE3	1.5e-07	8.5e-08	g/kg wet
Mink	SurfSoil_SSE4	1.2e-05	7.3e-06	g/kg wet
Mink	SurfSoil_SSE5	3.5e-06	3.3e-06	g/kg wet
Mink	SurfSoil_SW2	1.0e-07	7.2e-08	g/kg wet
Mouse	SurfSoil_E1	1.2e-04	1.1e-06	g/kg wet
Mouse	SurfSoil_E4	5.0e-04	1.5e-06	g/kg wet
Mouse	SurfSoil_ESE2	1.9e-04	9.3e-07	g/kg wet
Mouse	SurfSoil_ESE3	2.8e-03	5.5e-06	g/kg wet
Mouse	SurfSoil_ESE4	1.5e-03	5.2e-06	g/kg wet
Mouse	SurfSoil_ESE5	5.9e-05	1.7e-07	g/kg wet
Mouse	SurfSoil_N2	8.2e-05	2.0e-07	g/kg wet

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Mouse	SurfSoil_NE2	1.6e-04	6.7e-07	g/kg wet
Mouse	SurfSoil_NE3	1.5e-04	3.4e-07	g/kg wet
Mouse	SurfSoil_SE1	1.2e-03	2.2e-05	g/kg wet
Mouse	SurfSoil_SE6	4.1e-05	1.4e-07	g/kg wet
Mouse	SurfSoil_SSE2	2.6e-03	9.9e-06	g/kg wet
Mouse	SurfSoil_SSE3	1.4e-04	4.0e-07	g/kg wet
Mouse	SurfSoil_SSE4	7.9e-04	1.8e-06	g/kg wet
Mouse	SurfSoil_SSE5	4.4e-05	1.5e-07	g/kg wet
Mouse	SurfSoil_SW2	5.5e-05	2.7e-07	g/kg wet
Mouse	SurfSoil_W2	1.5e-03	3.2e-06	g/kg wet
Raccoon	SurfSoil_E1	1.8e-05	1.3e-06	g/kg wet
Raccoon	SurfSoil_E4	5.4e-04	5.9e-06	g/kg wet
Raccoon	SurfSoil_ESE3	3.2e-04	6.0e-06	g/kg wet
Raccoon	SurfSoil_ESE4	1.2e-04	4.3e-06	g/kg wet
Raccoon	SurfSoil_ESE5	4.0e-04	4.2e-06	g/kg wet
Raccoon	SurfSoil_N2	1.7e-05	2.5e-07	g/kg wet
Raccoon	SurfSoil_NE2	1.7e-05	5.7e-07	g/kg wet
Raccoon	SurfSoil_SE1	7.0e-06	1.0e-06	g/kg wet
Raccoon	SurfSoil_SE6	1.4e-04	5.2e-06	g/kg wet
Raccoon	SurfSoil_SSE2	2.6e-05	7.7e-07	g/kg wet
Raccoon	SurfSoil_SSE3	2.3e-05	5.3e-07	g/kg wet
Raccoon	SurfSoil_SSE4	4.8e-04	1.1e-05	g/kg wet
Raccoon	SurfSoil_SSE5	1.4e-04	5.3e-06	g/kg wet
Raccoon	SurfSoil_SW2	9.6e-06	2.7e-07	g/kg wet
Red-tailed hawk	SurfSoil_E1	2.9e-06	1.7e-06	g/kg wet
Red-tailed hawk	SurfSoil_E4	2.7e-06	4.9e-07	g/kg wet
Red-tailed hawk	SurfSoil_ESE2	3.2e-06	9.6e-07	g/kg wet
Red-tailed hawk	SurfSoil_ESE3	1.2e-05	1.5e-06	g/kg wet
Red-tailed hawk	SurfSoil_ESE4	6.2e-06	1.3e-06	g/kg wet
Red-tailed hawk	SurfSoil_ESE5	1.1e-06	2.0e-07	g/kg wet
Red-tailed hawk	SurfSoil_N2	2.0e-06	3.1e-07	g/kg wet
Red-tailed hawk	SurfSoil_NE2	2.8e-06	7.5e-07	g/kg wet
Red-tailed hawk	SurfSoil_NE3	2.9e-06	4.0e-07	g/kg wet
Red-tailed hawk	SurfSoil_SE1	5.0e-06	5.5e-06	g/kg wet
Red-tailed hawk	SurfSoil_SE6	7.3e-07	1.5e-07	g/kg wet
Red-tailed hawk	SurfSoil_SSE2	1.2e-05	2.8e-06	g/kg wet
Red-tailed hawk	SurfSoil_SSE3	3.6e-06	6.3e-07	g/kg wet
Red-tailed hawk	SurfSoil_SSE4	4.4e-06	6.0e-07	g/kg wet
Red-tailed hawk	SurfSoil_SSE5	9.3e-07	1.9e-07	g/kg wet
Red-tailed hawk	SurfSoil_SW2	1.1e-06	3.2e-07	g/kg wet
Red-tailed hawk	SurfSoil_W2	6.7e-06	8.5e-07	g/kg wet
Root - Grasses/Herbs	SurfSoil_N1	1.1e+00	9.1e-07	g/kg wet

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Root - Grasses/Herbs	SurfSoil_NE2	2.2e+00	3.2e-07	g/kg wet
Root - Grasses/Herbs	SurfSoil_SW2	8.7e-01	1.4e-07	g/kg wet
Root - Grasses/Herbs	SurfSoil_W1	1.7e+00	7.2e-07	g/kg wet
Sediment	Sed_Brewer	7.1e+04	3.6e-07	g/g dry
Sediment	Sed_Fields	1.9e+04	5.2e-07	g/g dry
Sediment	Sed_River	6.5e+02	3.1e-09	g/g dry
Sediment	Sed_StreamN	1.8e+03	9.9e-07	g/g dry
Sediment	Sed_StreamS	6.4e+03	7.3e-07	g/g dry
Sediment	Sed_Swetts	2.1e+04	1.0e-06	g/g dry
Sediment	Sed_Thurston	1.6e+04	4.7e-07	g/g dry
Short-tailed Shrew	SurfSoil_E1	8.4e-04	2.7e-05	g/kg wet
Short-tailed Shrew	SurfSoil_E4	3.0e-04	3.1e-06	g/kg wet
Short-tailed Shrew	SurfSoil_ESE2	8.4e-04	1.4e-05	g/kg wet
Short-tailed Shrew	SurfSoil_ESE3	9.4e-04	6.3e-06	g/kg wet
Short-tailed Shrew	SurfSoil_ESE4	4.0e-04	4.8e-06	g/kg wet
Short-tailed Shrew	SurfSoil_ESE5	2.6e-04	2.6e-06	g/kg wet
Short-tailed Shrew	SurfSoil_N2	5.4e-04	4.6e-06	g/kg wet
Short-tailed Shrew	SurfSoil_NE2	7.6e-04	1.1e-05	g/kg wet
Short-tailed Shrew	SurfSoil_NE3	7.4e-04	5.8e-06	g/kg wet
Short-tailed Shrew	SurfSoil_SE1	3.3e-04	2.1e-05	g/kg wet
Short-tailed Shrew	SurfSoil_SE6	1.9e-04	2.2e-06	g/kg wet
Short-tailed Shrew	SurfSoil_SSE2	1.2e-03	1.5e-05	g/kg wet
Short-tailed Shrew	SurfSoil_SSE3	1.0e-03	1.0e-05	g/kg wet
Short-tailed Shrew	SurfSoil_SSE4	5.7e-04	4.4e-06	g/kg wet
Short-tailed Shrew	SurfSoil_SSE5	2.5e-04	2.8e-06	g/kg wet
Short-tailed Shrew	SurfSoil_SW2	3.0e-04	4.9e-06	g/kg wet
Short-tailed Shrew	SurfSoil_W2	5.4e-04	3.9e-06	g/kg wet
Soil - Root Zone	RootSoil_E1	4.2e+03	2.7e-09	g/g dry
Soil - Root Zone	RootSoil_E4	1.5e+03	3.1e-10	g/g dry
Soil - Root Zone	RootSoil_ESE2	4.3e+03	1.4e-09	g/g dry
Soil - Root Zone	RootSoil_ESE3	4.8e+03	6.3e-10	g/g dry
Soil - Root Zone	RootSoil_ESE4	2.1e+03	4.7e-10	g/g dry
Soil - Root Zone	RootSoil_ESE5	1.3e+03	2.6e-10	g/g dry
Soil - Root Zone	RootSoil_N1	1.8e+03	3.1e-09	g/g dry
Soil - Root Zone	RootSoil_N2	2.7e+03	4.6e-10	g/g dry
Soil - Root Zone	RootSoil_NE2	3.7e+03	1.1e-09	g/g dry
Soil - Root Zone	RootSoil_NE3	3.8e+03	5.8e-10	g/g dry
Soil - Root Zone	RootSoil_SE1	1.7e+03	2.1e-09	g/g dry
Soil - Root Zone	RootSoil_SE6	9.4e+02	2.1e-10	g/g dry
Soil - Root Zone	RootSoil_Source	8.0e+02	1.9e-08	g/g dry
Soil - Root Zone	RootSoil_SSE2	6.1e+03	1.5e-09	g/g dry
Soil - Root Zone	RootSoil_SSE3	5.3e+03	1.0e-09	g/g dry

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Soil - Root Zone	RootSoil_SSE4	2.9e+03	4.4e-10	g/g dry
Soil - Root Zone	RootSoil_SSE5	1.3e+03	2.8e-10	g/g dry
Soil - Root Zone	RootSoil_SW2	1.5e+03	4.7e-10	g/g dry
Soil - Root Zone	RootSoil_W1	2.9e+03	2.5e-09	g/g dry
Soil - Root Zone	RootSoil_W2	2.7e+03	3.8e-10	g/g dry
Soil - Surface	SurfSoil_E1	1.3e+04	5.2e-07	g/g dry
Soil - Surface	SurfSoil_E4	4.5e+03	6.0e-08	g/g dry
Soil - Surface	SurfSoil_ESE2	1.3e+04	2.7e-07	g/g dry
Soil - Surface	SurfSoil_ESE3	1.4e+04	1.2e-07	g/g dry
Soil - Surface	SurfSoil_ESE4	6.0e+03	9.1e-08	g/g dry
Soil - Surface	SurfSoil_ESE5	3.9e+03	5.0e-08	g/g dry
Soil - Surface	SurfSoil_N1	5.4e+03	6.3e-07	g/g dry
Soil - Surface	SurfSoil_N2	8.1e+03	8.8e-08	g/g dry
Soil - Surface	SurfSoil_NE2	1.1e+04	2.2e-07	g/g dry
Soil - Surface	SurfSoil_NE3	1.1e+04	1.1e-07	g/g dry
Soil - Surface	SurfSoil_SE1	5.0e+03	4.0e-07	g/g dry
Soil - Surface	SurfSoil_SE6	2.8e+03	4.1e-08	g/g dry
Soil - Surface	SurfSoil_Source	2.4e+03	3.6e-06	g/g dry
Soil - Surface	SurfSoil_SSE2	1.8e+04	3.0e-07	g/g dry
Soil - Surface	SurfSoil_SSE3	1.6e+04	2.0e-07	g/g dry
Soil - Surface	SurfSoil_SSE4	8.5e+03	8.5e-08	g/g dry
Soil - Surface	SurfSoil_SSE5	3.7e+03	5.5e-08	g/g dry
Soil - Surface	SurfSoil_SW2	4.5e+03	9.5e-08	g/g dry
Soil - Surface	SurfSoil_W1	8.8e+03	5.0e-07	g/g dry
Soil - Surface	SurfSoil_W2	8.1e+03	7.4e-08	g/g dry
Soil - Vadose Zone	VadoseSoil_E1	2.2e+02	7.8e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_E4	8.2e+01	9.3e-12	g/g dry
Soil - Vadose Zone	VadoseSoil_ESE2	2.2e+02	4.2e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_ESE3	2.5e+02	1.9e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_ESE4	1.1e+02	1.4e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_ESE5	7.0e+01	7.8e-12	g/g dry
Soil - Vadose Zone	VadoseSoil_N1	9.2e+01	9.1e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_N2	1.4e+02	1.4e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_NE2	2.0e+02	3.3e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_NE3	2.0e+02	1.7e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_SE1	8.7e+01	6.0e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_SE6	5.0e+01	6.5e-12	g/g dry
Soil - Vadose Zone	VadoseSoil_Source	4.2e+01	5.4e-10	g/g dry
Soil - Vadose Zone	VadoseSoil_SSE2	3.1e+02	4.4e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_SSE3	2.7e+02	2.9e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_SSE4	1.5e+02	1.3e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_SSE5	6.7e+01	8.5e-12	g/g dry

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Soil - Vadose Zone	VadoseSoil_SW2	7.8e+01	1.4e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_W1	1.5e+02	7.2e-11	g/g dry
Soil - Vadose Zone	VadoseSoil_W2	1.4e+02	1.1e-11	g/g dry
Stem - Grasses/Herbs	SurfSoil_N1	1.3e-02	6.3e-08	g/kg wet
Stem - Grasses/Herbs	SurfSoil_NE2	6.1e-02	5.1e-08	g/kg wet
Stem - Grasses/Herbs	SurfSoil_SW2	2.1e-02	1.9e-08	g/kg wet
Stem - Grasses/Herbs	SurfSoil_W1	1.0e-02	2.6e-08	g/kg wet
Surface water	SW_Brewer	1.4e+02	4.6e-09	g/L
Surface water	SW_Fields	1.7e+01	6.2e-09	g/L
Surface water	SW_River	2.0e+00	8.3e-11	g/L
Surface water	SW_StreamN	7.5e-02	1.1e-08	g/L
Surface water	SW_StreamS	1.3e-01	8.0e-09	g/L
Surface water	SW_Swetts	1.4e+01	1.2e-08	g/L
Surface water	SW_Thurston	1.0e+01	5.5e-09	g/L
Tree swallow	SurfSoil_E1	3.2e-06	1.0e-07	g/kg wet
Tree swallow	SurfSoil_E4	1.6e-03	1.6e-05	g/kg wet
Tree swallow	SurfSoil_ESE2	6.3e-06	1.0e-07	g/kg wet
Tree swallow	SurfSoil_ESE3	2.4e-03	1.6e-05	g/kg wet
Tree swallow	SurfSoil_ESE4	9.8e-04	1.1e-05	g/kg wet
Tree swallow	SurfSoil_ESE5	1.1e-03	1.1e-05	g/kg wet
Tree swallow	SurfSoil_N2	1.2e-05	9.5e-08	g/kg wet
Tree swallow	SurfSoil_NE2	6.8e-06	9.6e-08	g/kg wet
Tree swallow	SurfSoil_NE3	1.3e-05	1.0e-07	g/kg wet
Tree swallow	SurfSoil_SE1	1.7e-06	9.9e-08	g/kg wet
Tree swallow	SurfSoil_SE6	1.3e-03	1.4e-05	g/kg wet
Tree swallow	SurfSoil_SSE2	7.8e-06	9.6e-08	g/kg wet
Tree swallow	SurfSoil_SSE3	1.0e-05	9.5e-08	g/kg wet
Tree swallow	SurfSoil_SSE4	4.1e-03	3.0e-05	g/kg wet
Tree swallow	SurfSoil_SSE5	1.3e-03	1.4e-05	g/kg wet
Tree swallow	SurfSoil_SW2	6.1e-06	9.5e-08	g/kg wet
Tree swallow	SurfSoil_W2	1.4e-05	9.4e-08	g/kg wet
Water-column Carnivore	SW_Brewer	6.6e-02	1.0e-04	g/kg wet
Water-column Carnivore	SW_Fields	1.1e-02	8.4e-05	g/kg wet
Water-column Carnivore	SW_River	9.8e-04	1.4e-06	g/kg wet
Water-column Carnivore	SW_Swetts	1.0e-02	1.4e-04	g/kg wet
Water-column Carnivore	SW_Thurston	7.2e-03	6.3e-05	g/kg wet
Water-column Herbivore	SW_Brewer	9.4e-02	1.6e-05	g/kg wet
Water-column Herbivore	SW_Fields	2.1e-02	1.8e-05	g/kg wet
Water-column Herbivore	SW_River	1.2e-03	1.8e-07	g/kg wet
Water-column Herbivore	SW_Swetts	2.2e-02	3.3e-05	g/kg wet
Water-column Herbivore	SW_Thurston	1.6e-02	1.5e-05	g/kg wet
Water-column Omnivore	SW_Brewer	4.5e-02	2.1e-05	g/kg wet

Compartment Type	Volume Element	Steady-state Mass (g)	Steady-state Concentration	
			Value	Units
Water-column Omnivore	SW_Fields	7.8e-03	1.9e-05	g/kg wet
Water-column Omnivore	SW_River	6.5e-04	2.8e-07	g/kg wet
Water-column Omnivore	SW_Swetts	7.7e-03	3.3e-05	g/kg wet
Water-column Omnivore	SW_Thurston	5.5e-03	1.5e-05	g/kg wet
White-tailed Deer	SurfSoil_E1	2.7e-03	3.4e-07	g/kg wet
White-tailed Deer	SurfSoil_E4	1.8e-02	7.3e-07	g/kg wet
White-tailed Deer	SurfSoil_ESE2	5.3e-03	3.5e-07	g/kg wet
White-tailed Deer	SurfSoil_ESE3	1.0e-01	2.7e-06	g/kg wet
White-tailed Deer	SurfSoil_ESE4	5.6e-02	2.6e-06	g/kg wet
White-tailed Deer	SurfSoil_ESE5	1.7e-03	6.6e-08	g/kg wet
White-tailed Deer	SurfSoil_N2	1.9e-03	6.4e-08	g/kg wet
White-tailed Deer	SurfSoil_NE2	4.2e-03	2.5e-07	g/kg wet
White-tailed Deer	SurfSoil_NE3	4.0e-03	1.2e-07	g/kg wet
White-tailed Deer	SurfSoil_SE1	4.5e-02	1.1e-05	g/kg wet
White-tailed Deer	SurfSoil_SE6	1.1e-03	5.2e-08	g/kg wet
White-tailed Deer	SurfSoil_SSE2	9.6e-02	4.8e-06	g/kg wet
White-tailed Deer	SurfSoil_SSE3	3.0e-03	1.2e-07	g/kg wet
White-tailed Deer	SurfSoil_SSE4	2.8e-02	8.5e-07	g/kg wet
White-tailed Deer	SurfSoil_SSE5	1.1e-03	4.9e-08	g/kg wet
White-tailed Deer	SurfSoil_SW2	1.5e-03	9.3e-08	g/kg wet
White-tailed Deer	SurfSoil_W2	5.6e-02	1.6e-06	g/kg wet

C.3 Detailed Comparison of Steady-state and Dynamic Simulation Results

Compartment Type	Steady-state Conc : Year 30 Dynamic Conc					Steady-state Conc : Year 30 Dynamic w/ Steady-state Inputs Conc					Year 30 Dynamic with Steady-state Inputs Conc : Year 30 Dynamic Conc				
	Max Ratio	Parcel w/ Max	Min Ratio	Parcel w/ Min	Arith Mean Ratio	Max Ratio	Parcel w/ Max	Min Ratio	Parcel w/ Min	Arith Mean Ratio	Max Ratio	Parcel w/ Max	Min Ratio	Parcel w/ Min	Arith Mean Ratio
Air[a]	1.1	ESE4	0.2	NNW3	0.7	1.0	All	1.0	All	1.0	1.0	Multiple	0.2	NNW3	0.6
Soil - Surface	30	SSE3	1.6	Source	16	5.4	SSE3	2.7	Source	3.3	9.2	ESE3	0.6	Source	5.1
Soil - Root Zone	570	SSE3	40	Source	290	150	SSE3	70	SE6	90	5.5	ESE3	0.5	Source	3.3
Soil - Vadose Zone	3,900	SSE3	390	Source	2,000	1,700	W1	750	SE6	1,000	3.2	ESE3	0.4	Source	2.1
Surface water	120	Swetts	3.6	River	77	25	Thurston	2.5	River	12	7.8	Swetts	1.4	River	5.9
Sediment	360	Swetts	7.6	River	230	75	Thurston	3.1	River	37	8.0	Fields	2.4	River	6.1
Leaf - Deciduous Forest[a]	7.6	SSE3	1.5	N2	5.8	1.0	All	1.0	All	1.0	7.6	SSE3	1.5	N2	5.8
Leaf - Coniferous Forest[a]	3.3	ESE3	1.3	W2	2.5	1.0	All	1.0	All	1.0	3.3	ESE3	1.3	W2	2.5
Leaf - Grasses/Herbs[a]	5.7	NE2	1.4	N1	3.3	1.0	All	1.0	All	1.0	5.6	NE2	1.4	N1	3.2
Leaf Particle - Deciduous Forest[a]	7.4	SSE3	1.5	N2	5.6	1.0	All	1.0	All	1.0	7.4	SSE3	1.5	N2	5.6
Leaf Particle - Coniferous Forest[a]	3.2	ESE3	1.3	W2	2.4	1.0	All	1.0	All	1.0	3.2	ESE3	1.3	W2	2.4
Leaf Particle - Grasses/Herbs[a]	5.5	NE2	0.4	N1	2.6	1.0	All	1.0	All	1.0	5.5	NE2	0.4	N1	2.6
Root - Grasses/Herbs	980	NE2	460	SW2	640	300	W1	150	NE2	220	6.4	NE2	1.9	W1	3.3
Stem - Grasses/Herbs[a]	1.4	NE2	0.4	N1	0.8	1.0	All	1.0	All	1.0	1.4	NE2	0.4	N1	0.8
Macrophyte	120	Swetts	2.4	River	87	24	Thurston	2.2	River	14	7.8	Fields	1.1	River	5.6
Earthworm	570	SSE3	120	N2	300	150	SSE3	70	SE6	91	5.5	ESE3	1.5	W2	3.5
Arthropod	1,700	SSE3	350	N2	1,000	310	SSE3	150	N2	170	9.3	ESE3	2.2	W2	5.8
Short-tailed Shrew	31	SSE3	6.5	N2	18	5.4	SSE3	2.7	N2	3.2	9.2	ESE3	2.2	W2	5.7
Meadow Vole[a]	2.4	NE2	1.7	SW2	2.0	1.2	NE2, SW2	1.2	NE2, SW2	1.2	2.0	NE2	1.4	SW2	1.7
White-tailed Deer[a]	3.2	ESE3	0.6	N2	2.3	1.2	SSE3	1.0	Multiple	1.1	3.2	ESE3	0.5	N2	2.1
Black-capped Chickadee[a]	4.1	SSE3	0.8	N2	2.5	1.6	SSE3	1.0	Multiple	1.2	3.2	ESE3	0.5	N2	2.1
Mouse[a]	5.1	SSE3	0.9	N2	2.8	1.8	SSE3	1.0	Multiple	1.3	3.2	ESE3	0.6	N2	2.2
Long-tailed Weasel	19	SSE3	2.0	W2	7.0	4.7	SSE3	1.3	SE1	2.2	4.7	ESE2	1.4	W2	3.1
Red-tailed hawk	16	SSE3	1.7	W2	6.1	4.4	SSE3	1.2	SE1	2.1	4.2	ESE2	1.3	W2	2.9
Tree swallow	350	SSE4	4.5	E1	130	74	SE6	2.8	E1	23	7.7	E4	1.6	E1	3.8
Mallard	29	Swetts	0.2	River	15	13	Swetts	1.1	River	7.2	2.2	Swetts	0.2	River	1.7
Mink[a]	110	SSE5	2.0	N2	32	34	SSE5	1.0	SE1, SSE2	9.6	4.0	ESE5	1.2	N2	2.7
Raccoon	260	SSE4	6.5	N2	110	44	SE6	2.7	SE1	17	8.3	ESE3	2.3	N2	5.4
Common Loon	130	Brewer	8.8	River	97	23	Thurston	3.3	River	15	8.3	Swetts	2.7	River	6.3
Bald Eagle[a]	130	ESE5	2.0	W2	45	27	SSE5	1.1	SE1	8.9	6.9	SSE4	1.4	W2	3.6

Compartment Type	Steady-state Conc : Year 30 Dynamic Conc					Steady-state Conc : Year 30 Dynamic w/ Steady-state Inputs Conc					Year 30 Dynamic with Steady-state Inputs Conc : Year 30 Dynamic Conc				
	Max Ratio	Parcel w/ Max	Min Ratio	Parcel w/ Min	Arith Mean Ratio	Max Ratio	Parcel w/ Max	Min Ratio	Parcel w/ Min	Arith Mean Ratio	Max Ratio	Parcel w/ Max	Min Ratio	Parcel w/ Min	Arith Mean Ratio
Water-column Herbivore	100	Brewer	8.2	River	78	19	Thurston	3.1	River	12	8.2	Swetts	2.6	River	6.2
Water-column Omnivore	99	Brewer	9.2	River	69	15	Thurston	3.3	River	10	8.4	Swetts	2.8	River	6.4
Water-column Carnivore	98	Brewer	9.7	River	67	14	Thurston	3.4	River	10	8.4	Swetts	2.8	River	6.3
Benthic Invertebrate	360	Swetts	7.6	River	260	74	Thurston	3.2	River	41	8.0	Fields	2.4	River	5.9
Benthic Omnivore	360	Swetts	7.8	River	260	74	Thurston	3.2	River	41	8.0	Fields	2.4	River	5.9
Benthic Carnivore	370	Swetts	8.2	V	260	78	Thurston	3.3	River	42	8.0	Fields	2.5	River	5.9

[a] Indicates dynamic concentration was average of years 26-30 rather than year 30 (all leaf and particle on leaf averaged for entire year, zeros included, to facilitate comparison to steady-state).

APPENDIX D

DETAILED RESULTS FOR SENSITIVITY ANALYSIS

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
AirDensity_g_cm3	All	Compartment	Air	30	0.0012
AirTemperature_K	All	Scenario	FullSS	N/a	280
AlgaeCarbonContentDryWt	All	Compartment	Surface water	7	0.465
AlgaeDensity_g_m3	All	Compartment	Surface water	7	1.00E+06
AlgaeDensityinWaterColumn_g_L	All	Compartment	Surface water	7	0.0025
AlgaeGrowthRate	All	Compartment	Surface water	7	0.7
AlgaeRadius	All	Compartment	Surface water	7	2.5
AlgaeUptakeRate	Hg2	Compartment	Surface water	7	4.00E-11
AlgaeUptakeRate	MHg	Compartment	Surface water	7	7.07E-11
AlgaeWaterContent	All	Compartment	Surface water	7	0.9
AllowExchange_SteadyState_forAir	All	Compartment	Leaf - Coniferous Forest	7	1
AllowExchange_SteadyState_forAir	All	Compartment	Leaf - Deciduous Forest	8	0.426
AllowExchange_SteadyState_forAir	All	Compartment	Leaf - Grasses/Herbs	4	0.426
AllowExchange_SteadyState_forAir	All	Compartment	Leaf Particle - Coniferous Forest	7	1
AllowExchange_SteadyState_forAir	All	Compartment	Leaf Particle - Deciduous Forest	8	0.426
AllowExchange_SteadyState_forAir	All	Compartment	Leaf Particle - Grasses/Herbs	4	0.426
AllowExchange_SteadyState_forAir	All	Compartment	Root - Grasses/Herbs	4	0.426
AllowExchange_SteadyState_forAir	All	Compartment	Stem - Grasses/Herbs	4	0.426
AllowExchange_SteadyState_forOther	All	Compartment	Leaf - Coniferous Forest	7	1
AllowExchange_SteadyState_forOther	All	Compartment	Leaf - Deciduous Forest	8	0.35
AllowExchange_SteadyState_forOther	All	Compartment	Leaf - Grasses/Herbs	4	0.35
AllowExchange_SteadyState_forOther	All	Compartment	Leaf Particle - Coniferous Forest	7	1
AllowExchange_SteadyState_forOther	All	Compartment	Leaf Particle - Deciduous Forest	8	0.35
AllowExchange_SteadyState_forOther	All	Compartment	Leaf Particle - Grasses/Herbs	4	0.35
AllowExchange_SteadyState_forOther	All	Compartment	Root - Grasses/Herbs	4	0.35
AllowExchange_SteadyState_forOther	All	Compartment	Stem - Grasses/Herbs	4	0.35
ArealDensity_Freshweight	All	Compartment	Earthworm	19	0.045
ArthropodSoilPartitioning_TimetoReachAlphaofEquilibrium	Hg2	Compartment	Arthropod	17	21
ArthropodSoilPartitioning_TimetoReachAlphaofEquilibrium	Hg0	Compartment	Arthropod	17	21
ArthropodSoilPartitioning_TimetoReachAlphaofEquilibrium	MHg	Compartment	Arthropod	17	21
Arthropod_SoilPartitionCoefficient	Hg2	Compartment	Arthropod	17	0.46
Arthropod_SoilPartitionCoefficient	MHg	Compartment	Arthropod	17	2.9
AssimilationEfficiencyFromArthropods	Hg2	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromArthropods	Hg2	Compartment	Mallard	5	1
AssimilationEfficiencyFromArthropods	Hg2	Compartment	Mouse	17	1
AssimilationEfficiencyFromArthropods	Hg2	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromArthropods	Hg2	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromArthropods	Hg0	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromArthropods	Hg0	Compartment	Mallard	5	1

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
AssimilationEfficiencyFromArthropods	Hg0	Compartment	Mouse	17	1
AssimilationEfficiencyFromArthropods	Hg0	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromArthropods	Hg0	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromArthropods	MHg	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromArthropods	MHg	Compartment	Mallard	5	1
AssimilationEfficiencyFromArthropods	MHg	Compartment	Mouse	17	1
AssimilationEfficiencyFromArthropods	MHg	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromArthropods	MHg	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Bald Eagle	17	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Benthic Carnivore	5	0.04
AssimilationEfficiencyFromFood	Hg2	Compartment	Benthic Omnivore	5	0.04
AssimilationEfficiencyFromFood	Hg2	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Common Loon	5	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Long-tailed Weasel	17	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Mallard	5	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Mink	14	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Raccoon	14	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Tree swallow	17	1
AssimilationEfficiencyFromFood	Hg2	Compartment	Water-column Carnivore	5	0.04
AssimilationEfficiencyFromFood	Hg2	Compartment	Water-column Herbivore	5	0.04
AssimilationEfficiencyFromFood	Hg2	Compartment	Water-column Omnivore	5	0.04
AssimilationEfficiencyFromFood	Hg0	Compartment	Bald Eagle	17	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Benthic Carnivore	5	0.04
AssimilationEfficiencyFromFood	Hg0	Compartment	Benthic Omnivore	5	0.04
AssimilationEfficiencyFromFood	Hg0	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Common Loon	5	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Long-tailed Weasel	17	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Mallard	5	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Mink	14	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Raccoon	14	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Tree swallow	17	1
AssimilationEfficiencyFromFood	Hg0	Compartment	Water-column Carnivore	5	0.04
AssimilationEfficiencyFromFood	Hg0	Compartment	Water-column Herbivore	5	0.04

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
AssimilationEfficiencyFromFood	Hg0	Compartment	Water-column Omnivore	5	0.04
AssimilationEfficiencyFromFood	MHg	Compartment	Bald Eagle	17	1
AssimilationEfficiencyFromFood	MHg	Compartment	Benthic Carnivore	5	0.2
AssimilationEfficiencyFromFood	MHg	Compartment	Benthic Omnivore	5	0.2
AssimilationEfficiencyFromFood	MHg	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromFood	MHg	Compartment	Common Loon	5	1
AssimilationEfficiencyFromFood	MHg	Compartment	Long-tailed Weasel	17	1
AssimilationEfficiencyFromFood	MHg	Compartment	Mallard	5	1
AssimilationEfficiencyFromFood	MHg	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromFood	MHg	Compartment	Mink	14	1
AssimilationEfficiencyFromFood	MHg	Compartment	Raccoon	14	1
AssimilationEfficiencyFromFood	MHg	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromFood	MHg	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromFood	MHg	Compartment	Tree swallow	17	1
AssimilationEfficiencyFromFood	MHg	Compartment	Water-column Carnivore	5	0.2
AssimilationEfficiencyFromFood	MHg	Compartment	Water-column Herbivore	5	0.2
AssimilationEfficiencyFromFood	MHg	Compartment	Water-column Omnivore	5	0.2
AssimilationEfficiencyFromPlants	Hg2	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromPlants	Hg2	Compartment	Mallard	5	1
AssimilationEfficiencyFromPlants	Hg2	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromPlants	Hg2	Compartment	Mouse	17	1
AssimilationEfficiencyFromPlants	Hg2	Compartment	White-tailed Deer	17	1
AssimilationEfficiencyFromPlants	Hg0	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromPlants	Hg0	Compartment	Mallard	5	1
AssimilationEfficiencyFromPlants	Hg0	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromPlants	Hg0	Compartment	Mouse	17	1
AssimilationEfficiencyFromPlants	Hg0	Compartment	White-tailed Deer	17	1
AssimilationEfficiencyFromPlants	MHg	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromPlants	MHg	Compartment	Mallard	5	1
AssimilationEfficiencyFromPlants	MHg	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromPlants	MHg	Compartment	Mouse	17	1
AssimilationEfficiencyFromPlants	MHg	Compartment	White-tailed Deer	17	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Bald Eagle	17	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Long-tailed Weasel	17	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Mallard	5	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Mink	14	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Mouse	17	1

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
AssimilationEfficiencyFromSoils	Hg2	Compartment	Raccoon	14	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	Tree swallow	17	1
AssimilationEfficiencyFromSoils	Hg2	Compartment	White-tailed Deer	17	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Bald Eagle	17	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Long-tailed Weasel	17	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Mallard	5	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Mink	14	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Mouse	17	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Raccoon	14	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	Tree swallow	17	1
AssimilationEfficiencyFromSoils	Hg0	Compartment	White-tailed Deer	17	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Bald Eagle	17	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Long-tailed Weasel	17	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Mallard	5	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Mink	14	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Mouse	17	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Raccoon	14	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromSoils	MHg	Compartment	Tree swallow	17	1
AssimilationEfficiencyFromSoils	MHg	Compartment	White-tailed Deer	17	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Bald Eagle	17	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Common Loon	5	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Long-tailed Weasel	17	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Mallard	5	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Mink	14	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Mouse	17	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Raccoon	14	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Red-tailed hawk	17	1

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
AssimilationEfficiencyFromWater	Hg2	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromWater	Hg2	Compartment	Tree swallow	17	1
AssimilationEfficiencyFromWater	Hg2	Compartment	White-tailed Deer	17	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Bald Eagle	17	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Common Loon	5	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Long-tailed Weasel	17	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Mallard	5	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Mink	14	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Mouse	17	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Raccoon	14	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromWater	Hg0	Compartment	Tree swallow	17	1
AssimilationEfficiencyFromWater	Hg0	Compartment	White-tailed Deer	17	1
AssimilationEfficiencyFromWater	MHg	Compartment	Bald Eagle	17	1
AssimilationEfficiencyFromWater	MHg	Compartment	Black-capped Chickadee	17	1
AssimilationEfficiencyFromWater	MHg	Compartment	Common Loon	5	1
AssimilationEfficiencyFromWater	MHg	Compartment	Long-tailed Weasel	17	1
AssimilationEfficiencyFromWater	MHg	Compartment	Mallard	5	1
AssimilationEfficiencyFromWater	MHg	Compartment	Meadow Vole	2	1
AssimilationEfficiencyFromWater	MHg	Compartment	Mink	14	1
AssimilationEfficiencyFromWater	MHg	Compartment	Mouse	17	1
AssimilationEfficiencyFromWater	MHg	Compartment	Raccoon	14	1
AssimilationEfficiencyFromWater	MHg	Compartment	Red-tailed hawk	17	1
AssimilationEfficiencyFromWater	MHg	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromWater	MHg	Compartment	Tree swallow	17	1
AssimilationEfficiencyFromWater	MHg	Compartment	White-tailed Deer	17	1
AssimilationEfficiencyFromWorms	Hg2	Compartment	Raccoon	14	1
AssimilationEfficiencyFromWorms	Hg2	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromWorms	Hg0	Compartment	Raccoon	14	1
AssimilationEfficiencyFromWorms	Hg0	Compartment	Short-tailed Shrew	17	1
AssimilationEfficiencyFromWorms	MHg	Compartment	Raccoon	14	1
AssimilationEfficiencyFromWorms	MHg	Compartment	Short-tailed Shrew	17	1
AttenuationFactor	All	Compartment	Leaf - Coniferous Forest	7	2.9
AttenuationFactor	All	Compartment	Leaf - Deciduous Forest	8	2.9
AttenuationFactor	All	Compartment	Leaf - Grasses/Herbs	4	2.9
AverageLeafAreaIndex_No_Time_Dependence	All	Compartment	Leaf - Coniferous Forest	7	5

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
AverageLeafAreaIndex_No_Time_Dependence	All	Compartment	Leaf - Deciduous Forest	8	3.4
AverageLeafAreaIndex_No_Time_Dependence	All	Compartment	Leaf - Grasses/Herbs	4	5
AverageVerticalVelocity	All	Compartment	Soil - Root Zone	20	6.00E-04
AverageVerticalVelocity	All	Compartment	Soil - Surface	20	6.00E-04
AverageVerticalVelocity	All	Compartment	Soil - Vadose Zone	20	6.00E-04
BW	All	Compartment	Arthropod	17	1.31E-04
BW	All	Compartment	Bald Eagle	17	4.74
BW	All	Compartment	Benthic Carnivore	5	2
BW	All	Compartment	Benthic Omnivore	5	0.25
BW	All	Compartment	Black-capped Chickadee	17	0.0108
BW	All	Compartment	Common Loon	5	4.134
BW	All	Compartment	Long-tailed Weasel	17	0.147
BW	All	Compartment	Mallard	5	1.134
BW	All	Compartment	Meadow Vole	2	0.0441
BW	All	Compartment	Mink	14	0.8315
BW	All	Compartment	Mouse	17	0.02
BW	All	Compartment	Raccoon	14	6.35
BW	All	Compartment	Red-tailed hawk	17	1.126
BW	All	Compartment	Short-tailed Shrew	17	0.022
BW	All	Compartment	Tree swallow	17	0.0201
BW	All	Compartment	Water-column Carnivore	5	2
BW	All	Compartment	Water-column Herbivore	5	0.025
BW	All	Compartment	Water-column Omnivore	5	0.25
BW	All	Compartment	White-tailed Deer	17	74.8
BiomassPerArea_kg_m2	All	Compartment	Arthropod	17	3.01E-04
BiomassPerArea_kg_m2	All	Compartment	Macrophyte	5	1.5
BoundaryLayerThicknessAboveSediment	All	Compartment	Surface water	7	0.02
BulkWaterFlowRate_Volumetric	All	Link	from SW_Brewer, to SW_Fields	1	4.30E+04
BulkWaterFlowRate_Volumetric	All	Link	from SW_Fields, to SW_StreamN	1	5.30E+04
BulkWaterFlowRate_Volumetric	All	Link	from SW_StreamN, to SW_River	1	7.41E+04
BulkWaterFlowRate_Volumetric	All	Link	from SW_StreamS, to SW_Brewer	1	1.62E+04
BulkWaterFlowRate_Volumetric	All	Link	from SW_Thurston, to SW_StreamS	1	8,060
ChlorideConcentration_mg_L	All	Compartment	Surface water	6	2.8
ChlorideConcentration_mg_L	All	Compartment	Surface water - River	1	3.4
ChlorophyllConcentration_mg_L	All	Compartment	Surface water	7	0.0053
CorrectionExponent	All	Compartment	Leaf - Deciduous Forest	8	0.76
CorrectionExponent	All	Compartment	Leaf - Grasses/Herbs	4	0.76
CorrectionExponent	All	Compartment	Root - Grasses/Herbs	4	0.76
CorrectionExponent	All	Compartment	Stem - Grasses/Herbs	4	0.76

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
CurrentVelocity	All	Compartment	Surface water - River	1	0.166
CurrentVelocity	All	Compartment	Surface water - Stream N	1	0.736
CurrentVelocity	All	Compartment	Surface water - Stream S	1	0.0247
D_pureair	Hg2	Chemical	Divalent Mercury	N/a	0.4784
D_pureair	Hg0	Chemical	Elemental Mercury	N/a	0.4784
D_pureair	MHg	Chemical	MethylMercury	N/a	0.456
D_purewater	Hg2	Chemical	Divalent Mercury	N/a	5.54E-05
D_purewater	Hg0	Chemical	Elemental Mercury	N/a	5.54E-05
D_purewater	MHg	Chemical	MethylMercury	N/a	5.28E-05
DegreeStomatalOpening	All	Compartment	Leaf - Coniferous Forest	7	1
DegreeStomatalOpening	All	Compartment	Leaf - Deciduous Forest	8	1
DegreeStomatalOpening	All	Compartment	Leaf - Grasses/Herbs	4	1
DemethylationRate	MHg	Compartment	Bald Eagle	17	0.09
DemethylationRate	MHg	Compartment	Black-capped Chickadee	17	0.09
DemethylationRate	MHg	Compartment	Common Loon	5	0.09
DemethylationRate	MHg	Compartment	Groundwater	20	0.06
DemethylationRate	MHg	Compartment	Leaf - Coniferous Forest	7	0.03
DemethylationRate	MHg	Compartment	Leaf - Deciduous Forest	8	0.03
DemethylationRate	MHg	Compartment	Leaf - Grasses/Herbs	4	0.03
DemethylationRate	MHg	Compartment	Long-tailed Weasel	17	0.09
DemethylationRate	MHg	Compartment	Mallard	5	0.09
DemethylationRate	MHg	Compartment	Meadow Vole	2	0.09
DemethylationRate	MHg	Compartment	Mink	14	0.09
DemethylationRate	MHg	Compartment	Mouse	17	0.09
DemethylationRate	MHg	Compartment	Raccoon	14	0.09
DemethylationRate	MHg	Compartment	Red-tailed hawk	17	0.09
DemethylationRate	MHg	Compartment	Sediment	7	0.0501
DemethylationRate	MHg	Compartment	Short-tailed Shrew	17	0.09
DemethylationRate	MHg	Compartment	Soil - Root Zone	20	0.06
DemethylationRate	MHg	Compartment	Soil - Surface	20	0.06
DemethylationRate	MHg	Compartment	Soil - Vadose Zone	20	0.06
DemethylationRate	MHg	Compartment	Stem - Grasses/Herbs	4	0.03
DemethylationRate	MHg	Compartment	Surface water	7	0.013
DemethylationRate	MHg	Compartment	Tree swallow	17	0.09
DemethylationRate	MHg	Compartment	White-tailed Deer	17	0.09
Density	All	Compartment	Macrophyte	5	1
DiffusiveExchangeCoefficient	All	Link	Various	10	2.25E-04
DimensionlessViscousSublayerThickness	All	Compartment	Surface water	7	4
DistanceBetweenMidpoints	All	Link	from SW_Brewer, to SW_Fields	1	2,230

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
DistanceBetweenMidpoints	All	Link	from SW_Brewer, to SW_StreamS	1	3,015
DistanceBetweenMidpoints	All	Link	from SW_Fields, to SW_Brewer	1	2,230
DistanceBetweenMidpoints	All	Link	from SW_Fields, to SW_StreamN	1	4,195
DistanceBetweenMidpoints	All	Link	from SW_River, to SW_StreamN	1	3,715
DistanceBetweenMidpoints	All	Link	from SW_StreamN, to SW_Fields	1	4,195
DistanceBetweenMidpoints	All	Link	from SW_StreamN, to SW_River	1	3,715
DistanceBetweenMidpoints	All	Link	from SW_StreamS, to SW_Brewer	1	3,015
DistanceBetweenMidpoints	All	Link	from SW_StreamS, to SW_Thurston	1	2,075
DistanceBetweenMidpoints	All	Link	from SW_Thurston, to SW_StreamS	1	2,075
DragCoefficient	All	Compartment	Surface water	7	0.0011
DustDensity	All	Compartment	Air	30	1,400
DustLoad	All	Compartment	Air	30	6.15E-08
elevation	All	Source	Facility	N/a	0.01
emissionRate	Hg2	Source	Facility	N/a	17.66
emissionRate	Hg0	Source	Facility	N/a	335.6
FlowRateofTranspiredWaterperAreaofLeafSurface	All	Compartment	Stem - Grasses/Herbs	4	0.0048
Flushes_per_year	All	Compartment	Surface water - River	1	531.2
Flushes_per_year	All	Compartment	Surface water - Swetts	1	4.31
FoodIngestionRate	All	Compartment	Bald Eagle	17	0.12
FoodIngestionRate	All	Compartment	Black-capped Chickadee	17	0.74
FoodIngestionRate	All	Compartment	Common Loon	5	0.23
FoodIngestionRate	All	Compartment	Long-tailed Weasel	17	0.0735
FoodIngestionRate	All	Compartment	Mallard	5	0.1
FoodIngestionRate	All	Compartment	Meadow Vole	2	0.097
FoodIngestionRate	All	Compartment	Mink	14	0.14
FoodIngestionRate	All	Compartment	Mouse	17	0.2
FoodIngestionRate	All	Compartment	Raccoon	14	0.11
FoodIngestionRate	All	Compartment	Red-tailed hawk	17	0.12
FoodIngestionRate	All	Compartment	Short-tailed Shrew	17	0.47
FoodIngestionRate	All	Compartment	Tree swallow	17	0.198
FoodIngestionRate	All	Compartment	White-tailed Deer	17	0.05
FractionOrganicMatteronParticulates	All	Compartment	Air	30	0.2
FractionPhloemRatewithTranspirationFlowRate	All	Compartment	Stem - Grasses/Herbs	4	0.05
FractionofAreaAvailableforRunoff	All	Compartment	Soil - Surface	20	1
Fractionofareaavailableforerosion	All	Compartment	Soil - Surface	20	1
Fractionofareaavailableforverticaldiffusion	All	Compartment	Soil - Surface	20	1
HenryLawConstant	Hg2	Chemical	Divalent Mercury	N/a	7.19E-05
HenryLawConstant	Hg0	Chemical	Elemental Mercury	N/a	719.4
HenryLawConstant	MHg	Chemical	MethylMercury	N/a	0.04762

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
horizontalWindSpeed	All	Scenario	FullSS	N/a	3.64
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Benthic Carnivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Benthic Omnivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Water-column Carnivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Water-column Herbivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Water-column Omnivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	Hg0	Compartment	Benthic Carnivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	Hg0	Compartment	Benthic Omnivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	Hg0	Compartment	Water-column Carnivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	Hg0	Compartment	Water-column Herbivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	Hg0	Compartment	Water-column Omnivore	5	3
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Benthic Carnivore	5	1
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Benthic Omnivore	5	1
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Water-column Carnivore	5	1
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Water-column Herbivore	5	1
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Water-column Omnivore	5	1
InhalationAssimilationEfficiency	Hg2	Compartment	Bald Eagle	17	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Black-capped Chickadee	17	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Common Loon	5	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Long-tailed Weasel	17	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Mallard	5	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Meadow Vole	2	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Mink	14	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Mouse	17	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Raccoon	14	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Red-tailed hawk	17	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Short-tailed Shrew	17	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	Tree swallow	17	0.4
InhalationAssimilationEfficiency	Hg2	Compartment	White-tailed Deer	17	0.4
InhalationAssimilationEfficiency	Hg0	Compartment	Bald Eagle	17	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Black-capped Chickadee	17	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Common Loon	5	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Long-tailed Weasel	17	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Mallard	5	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Meadow Vole	2	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Mink	14	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Mouse	17	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Raccoon	14	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Red-tailed hawk	17	0.75

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
InhalationAssimilationEfficiency	Hg0	Compartment	Short-tailed Shrew	17	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	Tree swallow	17	0.75
InhalationAssimilationEfficiency	Hg0	Compartment	White-tailed Deer	17	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Bald Eagle	17	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Black-capped Chickadee	17	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Common Loon	5	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Long-tailed Weasel	17	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Mallard	5	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Meadow Vole	2	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Mink	14	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Mouse	17	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Raccoon	14	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Red-tailed hawk	17	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Short-tailed Shrew	17	0.75
InhalationAssimilationEfficiency	MHg	Compartment	Tree swallow	17	0.75
InhalationAssimilationEfficiency	MHg	Compartment	White-tailed Deer	17	0.75
InhalationProps_A	All	Compartment	Bald Eagle	17	0.409
InhalationProps_A	All	Compartment	Black-capped Chickadee	17	0.409
InhalationProps_A	All	Compartment	Common Loon	5	0.409
InhalationProps_A	All	Compartment	Long-tailed Weasel	17	0.5458
InhalationProps_A	All	Compartment	Mallard	5	0.409
InhalationProps_A	All	Compartment	Meadow Vole	2	0.5458
InhalationProps_A	All	Compartment	Mink	14	0.5458
InhalationProps_A	All	Compartment	Mouse	17	0.5458
InhalationProps_A	All	Compartment	Raccoon	14	0.5458
InhalationProps_A	All	Compartment	Red-tailed hawk	17	0.409
InhalationProps_A	All	Compartment	Short-tailed Shrew	17	0.5458
InhalationProps_A	All	Compartment	Tree swallow	17	0.409
InhalationProps_A	All	Compartment	White-tailed Deer	17	0.5458
InhalationProps_B	All	Compartment	Bald Eagle	17	0.8
InhalationProps_B	All	Compartment	Black-capped Chickadee	17	0.8
InhalationProps_B	All	Compartment	Common Loon	5	0.8
InhalationProps_B	All	Compartment	Long-tailed Weasel	17	0.8
InhalationProps_B	All	Compartment	Mallard	5	0.8
InhalationProps_B	All	Compartment	Meadow Vole	2	0.8
InhalationProps_B	All	Compartment	Mink	14	0.8
InhalationProps_B	All	Compartment	Mouse	17	0.8
InhalationProps_B	All	Compartment	Raccoon	14	0.8
InhalationProps_B	All	Compartment	Red-tailed hawk	17	0.8

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
InhalationProps_B	All	Compartment	Short-tailed Shrew	17	0.8
InhalationProps_B	All	Compartment	Tree swallow	17	0.8
InhalationProps_B	All	Compartment	White-tailed Deer	17	0.8
InputCharacteristicDepth_m	Hg2	Compartment	Soil - Root Zone	20	0.08
InputCharacteristicDepth_m	Hg2	Compartment	Soil - Surface	20	0.08
InputCharacteristicDepth_m	Hg2	Compartment	Soil - Vadose Zone	20	0.08
InputCharacteristicDepth_m	Hg0	Compartment	Soil - Root Zone	20	0.08
InputCharacteristicDepth_m	Hg0	Compartment	Soil - Surface	20	0.08
InputCharacteristicDepth_m	Hg0	Compartment	Soil - Vadose Zone	20	0.08
InputCharacteristicDepth_m	MHg	Compartment	Soil - Root Zone	20	0.08
InputCharacteristicDepth_m	MHg	Compartment	Soil - Surface	20	0.08
InputCharacteristicDepth_m	MHg	Compartment	Soil - Vadose Zone	20	0.08
isDay_SteadyState_forAir	All	Scenario	FullSS	N/a	0.552
isDay_SteadyState_forOther	All	Scenario	FullSS	N/a	0.609
K_ow	Hg2	Chemical	Divalent Mercury	N/a	3.33
K_ow	Hg0	Chemical	Elemental Mercury	N/a	4.15
K_ow	MHg	Chemical	MethylMercury	N/a	1.7
Kd	Hg2	Compartment	Groundwater	20	5.80E+04
Kd	Hg2	Compartment	Sediment	7	5.80E+04
Kd	Hg2	Compartment	Soil - Root Zone	20	5.80E+04
Kd	Hg2	Compartment	Soil - Surface	20	5.80E+04
Kd	Hg2	Compartment	Soil - Vadose Zone	20	5.80E+04
Kd	Hg2	Compartment	Surface water	7	1.00E+05
Kd	Hg0	Compartment	Groundwater	20	1,000
Kd	Hg0	Compartment	Sediment	7	3,000
Kd	Hg0	Compartment	Soil - Root Zone	20	1,000
Kd	Hg0	Compartment	Soil - Surface	20	1,000
Kd	Hg0	Compartment	Soil - Vadose Zone	20	1,000
Kd	Hg0	Compartment	Surface water	7	1,000
Kd	MHg	Compartment	Groundwater	20	7,000
Kd	MHg	Compartment	Sediment	7	3,000
Kd	MHg	Compartment	Soil - Root Zone	20	7,000
Kd	MHg	Compartment	Soil - Surface	20	7,000
Kd	MHg	Compartment	Soil - Vadose Zone	20	7,000
Kd	MHg	Compartment	Surface water	7	1.00E+05
LeafWettingFactor	All	Compartment	Leaf - Deciduous Forest	8	3.00E-04
LengthofLeaf	All	Compartment	Leaf - Coniferous Forest	7	0.01
LengthofLeaf	All	Compartment	Leaf - Deciduous Forest	8	0.1
LengthofLeaf	All	Compartment	Leaf - Grasses/Herbs	4	0.05

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
LipidContent	All	Compartment	Leaf - Deciduous Forest	8	0.00224
LipidContent	All	Compartment	Leaf - Grasses/Herbs	4	0.00224
LipidContent	All	Compartment	Root - Grasses/Herbs	4	0.011
LipidContent	All	Compartment	Stem - Grasses/Herbs	4	0.00224
LitterFallRate	All	Compartment	Leaf - Coniferous Forest	7	0.0021
LitterFallRate	All	Compartment	Leaf - Deciduous Forest	8	0.013
LitterFallRate	All	Compartment	Leaf - Grasses/Herbs	4	0.013
MethylationRate	Hg2	Compartment	Groundwater	20	0.001
MethylationRate	Hg2	Compartment	Sediment	7	1.00E-04
MethylationRate	Hg2	Compartment	Soil - Root Zone	20	0.001
MethylationRate	Hg2	Compartment	Soil - Surface	20	0.001
MethylationRate	Hg2	Compartment	Soil - Vadose Zone	20	0.001
MethylationRate	Hg2	Compartment	Surface water	7	0.001
NumberofFishperSquareMeter	All	Compartment	Benthic Carnivore	5	1.07E-04
NumberofFishperSquareMeter	All	Compartment	Benthic Omnivore	5	0.00755
NumberofFishperSquareMeter	All	Compartment	Water-column Carnivore	5	8.95E-05
NumberofFishperSquareMeter	All	Compartment	Water-column Herbivore	5	0.06584
NumberofFishperSquareMeter	All	Compartment	Water-column Omnivore	5	0.00234
NumberofIndividualsPerSquareMeter	All	Compartment	Bald Eagle	17	1.30E-08
NumberofIndividualsPerSquareMeter	All	Compartment	Black-capped Chickadee	17	3.50E-05
NumberofIndividualsPerSquareMeter	All	Compartment	Common Loon	5	4.90E-08
NumberofIndividualsPerSquareMeter	All	Compartment	Long-tailed Weasel	17	6.50E-06
NumberofIndividualsPerSquareMeter	All	Compartment	Mallard	5	9.30E-06
NumberofIndividualsPerSquareMeter	All	Compartment	Meadow Vole	2	0.006
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - E1	1	2.72E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - E4	1	6.02E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - ESE3	1	2.29E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - ESE4	1	2.10E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - ESE5	1	6.02E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - N2	1	3.70E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - NE2	1	2.72E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - SE1	1	2.72E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - SE6	1	1.96E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - SSE2	1	2.72E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - SSE3	1	2.72E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - SSE4	1	2.10E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - SSE5	1	1.96E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mink - SW2	1	3.70E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Mouse	17	0.0023

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - E1	1	9.06E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - E4	1	2.01E-06
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - ESE3	1	7.65E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - ESE4	1	6.99E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - ESE5	1	2.01E-06
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - N2	1	1.24E-06
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - NE2	1	9.06E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - SE1	1	9.06E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - SE6	1	6.52E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - SSE2	1	9.06E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - SSE3	1	9.06E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - SSE4	1	6.99E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - SSE5	1	6.52E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Raccoon - SW2	1	1.24E-06
NumberofIndividualsPerSquareMeter	All	Compartment	Red-tailed hawk	17	6.70E-07
NumberofIndividualsPerSquareMeter	All	Compartment	Short-tailed Shrew	17	6.10E-04
NumberofIndividualsPerSquareMeter	All	Compartment	Tree swallow	17	7.00E-04
NumberofIndividualsPerSquareMeter	All	Compartment	White-tailed Deer	17	4.60E-05
OrganicCarbonContent	All	Compartment	Groundwater	20	0.01
OrganicCarbonContent	All	Compartment	Soil - Root Zone	20	0.01664
OrganicCarbonContent	All	Compartment	Soil - Vadose Zone	20	0.00128
OxidationRate	Hg0	Compartment	Air	30	0.00385
OxidationRate	Hg0	Compartment	Bald Eagle	17	1
OxidationRate	Hg0	Compartment	Benthic Carnivore	5	1.00E+06
OxidationRate	Hg0	Compartment	Benthic Omnivore	5	1.00E+06
OxidationRate	Hg0	Compartment	Black-capped Chickadee	17	1
OxidationRate	Hg0	Compartment	Common Loon	5	1
OxidationRate	Hg0	Compartment	Groundwater	20	1.00E-08
OxidationRate	Hg0	Compartment	Leaf - Coniferous Forest	7	1.00E+06
OxidationRate	Hg0	Compartment	Leaf - Deciduous Forest	8	1.00E+06
OxidationRate	Hg0	Compartment	Leaf - Grasses/Herbs	4	1.00E+06
OxidationRate	Hg0	Compartment	Long-tailed Weasel	17	1
OxidationRate	Hg0	Compartment	Macrophyte	5	1.00E+09
OxidationRate	Hg0	Compartment	Mallard	5	1
OxidationRate	Hg0	Compartment	Meadow Vole	2	1
OxidationRate	Hg0	Compartment	Mink	14	1
OxidationRate	Hg0	Compartment	Mouse	17	1
OxidationRate	Hg0	Compartment	Raccoon	14	1
OxidationRate	Hg0	Compartment	Red-tailed hawk	17	1

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
OxidationRate	Hg0	Compartment	Short-tailed Shrew	17	1
OxidationRate	Hg0	Compartment	Tree swallow	17	1
OxidationRate	Hg0	Compartment	Water-column Carnivore	5	1.00E+06
OxidationRate	Hg0	Compartment	Water-column Herbivore	5	1.00E+06
OxidationRate	Hg0	Compartment	Water-column Omnivore	5	1.00E+06
OxidationRate	Hg0	Compartment	White-tailed Deer	17	1
pH	All	Compartment	Surface water	7	6.8
phi	All	Compartment	Sediment	7	0.6
PhloemDensity	All	Compartment	Stem - Grasses/Herbs	4	1000
Porosity	All	Compartment	Groundwater	20	0.2
Rain	All	Scenario	FullSS	N/a	0.0041
ReductionRate	Hg2	Compartment	Groundwater	20	3.25E-06
ReductionRate	Hg2	Compartment	Sediment	7	1.00E-06
ReductionRate	Hg2	Compartment	Soil - Root Zone	20	3.25E-06
ReductionRate	Hg2	Compartment	Soil - Surface	20	1.25E-05
ReductionRate	Hg2	Compartment	Soil - Vadose Zone	20	3.25E-06
ReductionRate	Hg2	Compartment	Surface water	7	0.0075
rho	All	Compartment	Groundwater	20	2,600
rho	All	Compartment	Sediment	7	2,650
rho	All	Compartment	Soil - Root Zone	20	2,600
rho	All	Compartment	Soil - Surface	20	2,600
rho	All	Compartment	Soil - Vadose Zone	20	2,600
rho	All	Compartment	Surface water	7	2,650
Root_RootZonePartitioningBulkSoil_PartitionCoefficient	Hg2	Compartment	Root - Grasses/Herbs	4	0.18
Root_RootZonePartitioningBulkSoil_PartitionCoefficient	MHg	Compartment	Root - Grasses/Herbs	4	1.2
Root_RootZonePartitioningBulkSoil_TimetoReachAlphaofSS	Hg2	Compartment	Root - Grasses/Herbs	4	21
Root_RootZonePartitioningBulkSoil_TimetoReachAlphaofSS	Hg0	Compartment	Root - Grasses/Herbs	4	21
Root_RootZonePartitioningBulkSoil_TimetoReachAlphaofSS	MHg	Compartment	Root - Grasses/Herbs	4	21
SedimentDepositionVelocity	All	Compartment	Surface water	7	2
SedimentPartitioning_PartitionCoefficient	Hg2	Compartment	Benthic Invertebrate	5	0.0824
SedimentPartitioning_PartitionCoefficient	Hg0	Compartment	Benthic Invertebrate	5	0.0824
SedimentPartitioning_PartitionCoefficient	MHg	Compartment	Benthic Invertebrate	5	5.04
SedimentPartitioning_TimeToReachAlphaofEquilibrium	Hg2	Compartment	Benthic Invertebrate	5	14
SedimentPartitioning_TimeToReachAlphaofEquilibrium	Hg0	Compartment	Benthic Invertebrate	5	14
SedimentPartitioning_TimeToReachAlphaofEquilibrium	MHg	Compartment	Benthic Invertebrate	5	14
SoilIngestionRate	All	Compartment	Mallard	5	0.0033
SoilIngestionRate	All	Compartment	Meadow Vole	2	0.0023
SoilIngestionRate	All	Compartment	Mouse	17	0.02
SoilIngestionRate	All	Compartment	Raccoon	14	0.094

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
SoilIngestionRate	All	Compartment	Short-tailed Shrew	17	0.0611
SoilIngestionRate	All	Compartment	White-tailed Deer	17	0.001
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE1, to Air_ENE2	1	60.61
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE1, to Air_ESE1	1	128.5
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE1, to Air_NNE1	1	260.5
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE1, to Air_Source	1	17.32
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE2, to Air_ENE1	1	38.41
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE2, to Air_ENE3	1	33.18
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE2, to Air_ESE2	1	39.22
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE2, to Air_NNE2	1	90.04
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE3, to Air_ENE2	1	52.84
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE3, to Air_ENE4	1	27.46
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE3, to Air_ESE3	1	21.87
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE3, to Air_NNE3	1	45.5
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE4, to Air_ENE3	1	57.34
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE4, to Air_ENE5	1	12.45
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE4, to Air_ESE4	1	21.81
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE5, to Air_ENE4	1	56.95
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE5, to Air_ESE5	1	43.85
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE1, to Air_ENE1	1	167.1
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE1, to Air_ESE2	1	61.1
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE1, to Air_SSE1	1	208.2
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE1, to Air_Source	1	15.48
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE2, to Air_ENE2	1	51.09
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE2, to Air_ESE1	1	37.9
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE2, to Air_ESE3	1	33.16
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE2, to Air_SSE2	1	69.81
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE3, to Air_ENE3	1	27.83
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE3, to Air_ESE2	1	52.01
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE3, to Air_ESE4	1	27.87
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE3, to Air_SSE3	1	36.04
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE4, to Air_ENE4	1	18.79
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE4, to Air_ESE3	1	38.77
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE4, to Air_ESE5	1	19.66
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE4, to Air_SSE4	1	22.7
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE5, to Air_ENE5	1	12.47
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE5, to Air_ESE4	1	29.83
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE5, to Air_SSE5	1	15.39
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE1, to Air_ENE1	1	133.1

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE1, to Air_NNE2	1	181.9
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE1, to Air_NNW1	1	165.6
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE1, to Air_Source	1	13.38
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE2, to Air_ENE2	1	36.8
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE2, to Air_NNE1	1	26.85
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE2, to Air_NNE3	1	77.83
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE2, to Air_NNW2	1	54.32
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE3, to Air_ENE3	1	23.46
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE3, to Air_NNE2	1	40.63
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE3, to Air_NNW3	1	29.76
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW1, to Air_NNE1	1	62.52
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW1, to Air_NNW2	1	181.6
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW1, to Air_Source	1	14.34
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW1, to Air_WNW1	1	215.5
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW2, to Air_NNE2	1	18.58
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW2, to Air_NNW1	1	24.2
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW2, to Air_NNW3	1	81.89
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW2, to Air_W2	1	65.1
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW3, to Air_NNE3	1	9.78
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW3, to Air_NNW2	1	40.53
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW3, to Air_W3	1	35.86
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE1, to Air_ESE1	1	133.6
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE1, to Air_SSE2	1	146.9
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE1, to Air_SSW1	1	170.8
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE1, to Air_Source	1	16
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE2, to Air_ESE2	1	38.08
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE2, to Air_SSE1	1	34.29
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE2, to Air_SSE3	1	66.39
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE2, to Air_SSW2	1	55.36
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE3, to Air_ESE3	1	21.75
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE3, to Air_SSE2	1	47.84
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE3, to Air_SSE4	1	60.7
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE3, to Air_SSW3	1	30.27
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE4, to Air_ESE4	1	14.81
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE4, to Air_SSE3	1	38.49
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE4, to Air_SSE5	1	46.58
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE4, to Air_SSW4	1	19.37
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE5, to Air_ESE5	1	17.76
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE5, to Air_SSE4	1	49.64

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW1, to Air_SSE1	1	59.93
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW1, to Air_SSW2	1	144.6
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW1, to Air_Source	1	18.03
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW1, to Air_WSW1	1	272.2
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW2, to Air_SSE2	1	17.94
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW2, to Air_SSW1	1	31.69
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW2, to Air_SSW3	1	67.11
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW2, to Air_W2	1	87.31
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW3, to Air_SSE3	1	9.92
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW3, to Air_SSW2	1	49.47
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW3, to Air_SSW4	1	61.2
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW3, to Air_W3	1	45.73
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW4, to Air_SSE4	1	16.05
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW4, to Air_SSW3	1	98.3
SteadyState_AdvectiveTransfer	All	Link	from Air_Source, to Air_ENE1	1	93.05
SteadyState_AdvectiveTransfer	All	Link	from Air_Source, to Air_ESE1	1	49.93
SteadyState_AdvectiveTransfer	All	Link	from Air_Source, to Air_NNE1	1	247.5
SteadyState_AdvectiveTransfer	All	Link	from Air_Source, to Air_NNW1	1	237.7
SteadyState_AdvectiveTransfer	All	Link	from Air_Source, to Air_SSE1	1	187.7
SteadyState_AdvectiveTransfer	All	Link	from Air_Source, to Air_SSW1	1	207.1
SteadyState_AdvectiveTransfer	All	Link	from Air_Source, to Air_WNW1	1	259.9
SteadyState_AdvectiveTransfer	All	Link	from Air_Source, to Air_WSW1	1	243
SteadyState_AdvectiveTransfer	All	Link	from Air_W2, to Air_NNW2	1	19.51
SteadyState_AdvectiveTransfer	All	Link	from Air_W2, to Air_SSW2	1	20.18
SteadyState_AdvectiveTransfer	All	Link	from Air_W2, to Air_W3	1	86.07
SteadyState_AdvectiveTransfer	All	Link	from Air_W2, to Air_WNW1	1	5.64
SteadyState_AdvectiveTransfer	All	Link	from Air_W2, to Air_WSW1	1	5.62
SteadyState_AdvectiveTransfer	All	Link	from Air_W3, to Air_NNW3	1	10.66
SteadyState_AdvectiveTransfer	All	Link	from Air_W3, to Air_SSW3	1	10.89
SteadyState_AdvectiveTransfer	All	Link	from Air_W3, to Air_W2	1	17.65
SteadyState_AdvectiveTransfer	All	Link	from Air_WNW1, to Air_NNW1	1	127.8
SteadyState_AdvectiveTransfer	All	Link	from Air_WNW1, to Air_Source	1	6.61
SteadyState_AdvectiveTransfer	All	Link	from Air_WNW1, to Air_W2	1	205.2
SteadyState_AdvectiveTransfer	All	Link	from Air_WNW1, to Air_WSW1	1	132.1
SteadyState_AdvectiveTransfer	All	Link	from Air_WSW1, to Air_SSW1	1	134.9
SteadyState_AdvectiveTransfer	All	Link	from Air_WSW1, to Air_Source	1	6.26
SteadyState_AdvectiveTransfer	All	Link	from Air_WSW1, to Air_W2	1	206.2
SteadyState_AdvectiveTransfer	All	Link	from Air_WSW1, to Air_WNW1	1	166.8
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE4, to Sink 29 for Air_ENE4	1	21.11

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE5, to Sink 36 for Air_ENE5	1	5.77
SteadyState_AdvectiveTransfer	All	Link	from Air_ENE5, to Sink 37 for Air_ENE5	1	41.25
SteadyState_AdvectiveTransfer	All	Link	from Air_ESE5, to Sink 42 for Air_ESE5	1	14.3
SteadyState_AdvectiveTransfer	All	Link	from Air_NNE3, to Sink 18 for Air_NNE3	1	79.84
SteadyState_AdvectiveTransfer	All	Link	from Air_NNW3, to Sink 20 for Air_NNW3	1	79.42
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE5, to Sink 39 for Air_SSE5	1	18.94
SteadyState_AdvectiveTransfer	All	Link	from Air_SSE5, to Sink 40 for Air_SSE5	1	45.85
SteadyState_AdvectiveTransfer	All	Link	from Air_SSW4, to Sink 31 for Air_SSW4	1	91.12
SteadyState_AdvectiveTransfer	All	Link	from Air_W3, to Sink 23 for Air_W3	1	80.16
StomatalAreaNormalizedEffectiveDiffusionPathLength	All	Compartment	Leaf - Coniferous Forest	7	200
StomatalAreaNormalizedEffectiveDiffusionPathLength	All	Compartment	Leaf - Deciduous Forest	8	200
StomatalAreaNormalizedEffectiveDiffusionPathLength	All	Compartment	Leaf - Grasses/Herbs	4	200
SuspendedSedimentconcentration	All	Compartment	Surface water	6	0.0018
SuspendedSedimentconcentration	All	Compartment	Surface water - River	1	0.015
TSCF	Hg2	Compartment	Stem - Grasses/Herbs	4	0.5
TSCF	MHg	Compartment	Stem - Grasses/Herbs	4	0.2
TotalErosionRate_kg_m2_day	All	Compartment	Soil - Surface	20	2.89E-04
TotalExcretionRate	Hg2	Compartment	Bald Eagle	17	0.48
TotalExcretionRate	Hg2	Compartment	Black-capped Chickadee	17	0.48
TotalExcretionRate	Hg2	Compartment	Common Loon	5	0.48
TotalExcretionRate	Hg2	Compartment	Long-tailed Weasel	17	0.48
TotalExcretionRate	Hg2	Compartment	Mallard	5	0.48
TotalExcretionRate	Hg2	Compartment	Meadow Vole	2	0.48
TotalExcretionRate	Hg2	Compartment	Mink	14	0.48
TotalExcretionRate	Hg2	Compartment	Mouse	17	0.48
TotalExcretionRate	Hg2	Compartment	Raccoon	14	0.48
TotalExcretionRate	Hg2	Compartment	Red-tailed hawk	17	0.48
TotalExcretionRate	Hg2	Compartment	Short-tailed Shrew	17	0.48
TotalExcretionRate	Hg2	Compartment	Tree swallow	17	0.48
TotalExcretionRate	Hg2	Compartment	White-tailed Deer	17	0.48
TotalExcretionRate	Hg0	Compartment	Bald Eagle	17	0.05
TotalExcretionRate	Hg0	Compartment	Black-capped Chickadee	17	0.05
TotalExcretionRate	Hg0	Compartment	Common Loon	5	0.05
TotalExcretionRate	Hg0	Compartment	Long-tailed Weasel	17	0.05
TotalExcretionRate	Hg0	Compartment	Mallard	5	0.05
TotalExcretionRate	Hg0	Compartment	Meadow Vole	2	0.05
TotalExcretionRate	Hg0	Compartment	Mink	14	0.05
TotalExcretionRate	Hg0	Compartment	Mouse	17	0.05
TotalExcretionRate	Hg0	Compartment	Raccoon	14	0.05

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
TotalExcretionRate	Hg0	Compartment	Red-tailed hawk	17	0.05
TotalExcretionRate	Hg0	Compartment	Short-tailed Shrew	17	0.05
TotalExcretionRate	Hg0	Compartment	Tree swallow	17	0.05
TotalExcretionRate	Hg0	Compartment	White-tailed Deer	17	0.05
TotalExcretionRate	MHg	Compartment	Bald Eagle	17	0.086
TotalExcretionRate	MHg	Compartment	Black-capped Chickadee	17	0.086
TotalExcretionRate	MHg	Compartment	Common Loon	5	0.086
TotalExcretionRate	MHg	Compartment	Long-tailed Weasel	17	0.26
TotalExcretionRate	MHg	Compartment	Mallard	5	0.086
TotalExcretionRate	MHg	Compartment	Meadow Vole	2	0.26
TotalExcretionRate	MHg	Compartment	Mink	14	0.26
TotalExcretionRate	MHg	Compartment	Mouse	17	0.26
TotalExcretionRate	MHg	Compartment	Raccoon	14	0.26
TotalExcretionRate	MHg	Compartment	Red-tailed hawk	17	0.086
TotalExcretionRate	MHg	Compartment	Short-tailed Shrew	17	0.26
TotalExcretionRate	MHg	Compartment	Tree swallow	17	0.086
TotalExcretionRate	MHg	Compartment	White-tailed Deer	17	0.26
TotalRunoffRate_m3_m2_day	All	Compartment	Soil - Surface	20	0.00101
TransferFactortoLeaf	Hg2	Compartment	Leaf Particle - Coniferous Forest	7	0.2
TransferFactortoLeaf	Hg2	Compartment	Leaf Particle - Deciduous Forest	8	0.2
TransferFactortoLeaf	Hg2	Compartment	Leaf Particle - Grasses/Herbs	4	0.2
TransferFactortoLeaf	Hg0	Compartment	Leaf Particle - Coniferous Forest	7	0.2
TransferFactortoLeaf	Hg0	Compartment	Leaf Particle - Deciduous Forest	8	0.2
TransferFactortoLeaf	Hg0	Compartment	Leaf Particle - Grasses/Herbs	4	0.2
TransferFactortoLeaf	MHg	Compartment	Leaf Particle - Coniferous Forest	7	0.2
TransferFactortoLeaf	MHg	Compartment	Leaf Particle - Deciduous Forest	8	0.2
TransferFactortoLeaf	MHg	Compartment	Leaf Particle - Grasses/Herbs	4	0.2
TransferFactortoLeafParticle	Hg2	Compartment	Leaf - Coniferous Forest	7	0.002
TransferFactortoLeafParticle	Hg2	Compartment	Leaf - Deciduous Forest	8	0.002
TransferFactortoLeafParticle	Hg2	Compartment	Leaf - Grasses/Herbs	4	0.002
TransferFactortoLeafParticle	Hg0	Compartment	Leaf - Coniferous Forest	7	0.002
TransferFactortoLeafParticle	Hg0	Compartment	Leaf - Deciduous Forest	8	0.002
TransferFactortoLeafParticle	Hg0	Compartment	Leaf - Grasses/Herbs	4	0.002
TransferFactortoLeafParticle	MHg	Compartment	Leaf - Coniferous Forest	7	0.002
TransferFactortoLeafParticle	MHg	Compartment	Leaf - Deciduous Forest	8	0.002
TransferFactortoLeafParticle	MHg	Compartment	Leaf - Grasses/Herbs	4	0.002
VaporDryDepositionVelocity_m_day	Hg2	Compartment	Soil - Surface	20	864
VaporDryDepositionVelocity_m_day	Hg2	Compartment	Surface water	7	864
VaporDryDepositionVelocity_m_day	Hg0	Compartment	Soil - Surface	20	8.64

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
VaporWashoutRatio	Hg2	Chemical	Divalent Mercury	N/a	1.60E+06
VaporWashoutRatio	Hg0	Chemical	Elemental Mercury	N/a	1,200
vdep	Hg2	Compartment	Air	30	500
vdep	Hg0	Compartment	Air	30	500
vdep	MHg	Compartment	Air	30	500
VolumeParticlePerAreaLeaf	All	Compartment	Leaf Particle - Coniferous Forest	7	1.00E-09
VolumeParticlePerAreaLeaf	All	Compartment	Leaf Particle - Deciduous Forest	8	1.00E-09
VolumeParticlePerAreaLeaf	All	Compartment	Leaf Particle - Grasses/Herbs	4	1.00E-09
WashoutRatio	All	Compartment	Air	30	2.00E+05
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg2	Compartment	Macrophyte	5	0.883
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Compartment	Macrophyte	5	0.883
WaterColumnDissolvedPartitioning_PartitionCoefficient	MHg	Compartment	Macrophyte	5	4.4
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg2	Compartment	Macrophyte	5	18
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg0	Compartment	Macrophyte	5	18
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	MHg	Compartment	Macrophyte	5	18
WaterContent	All	Compartment	Leaf - Coniferous Forest	7	0.8
WaterContent	All	Compartment	Leaf - Deciduous Forest	8	0.8
WaterContent	All	Compartment	Leaf - Grasses/Herbs	4	0.8
WaterContent	All	Compartment	Root - Grasses/Herbs	4	0.8
WaterContent	All	Compartment	Stem - Grasses/Herbs	4	0.8
WaterIngProps_A	All	Compartment	Bald Eagle	17	0.059
WaterIngProps_A	All	Compartment	Black-capped Chickadee	17	0.059
WaterIngProps_A	All	Compartment	Common Loon	5	0.059
WaterIngProps_A	All	Compartment	Long-tailed Weasel	17	0.099
WaterIngProps_A	All	Compartment	Mallard	5	0.059
WaterIngProps_A	All	Compartment	Meadow Vole	2	0.099
WaterIngProps_A	All	Compartment	Mink	14	0.099
WaterIngProps_A	All	Compartment	Mouse	17	0.099
WaterIngProps_A	All	Compartment	Raccoon	14	0.099
WaterIngProps_A	All	Compartment	Red-tailed hawk	17	0.059
WaterIngProps_A	All	Compartment	Short-tailed Shrew	17	0.099
WaterIngProps_A	All	Compartment	Tree swallow	17	0.059
WaterIngProps_A	All	Compartment	White-tailed Deer	17	0.099
WaterIngProps_B	All	Compartment	Bald Eagle	17	0.67
WaterIngProps_B	All	Compartment	Black-capped Chickadee	17	0.67
WaterIngProps_B	All	Compartment	Common Loon	5	0.67
WaterIngProps_B	All	Compartment	Long-tailed Weasel	17	0.9
WaterIngProps_B	All	Compartment	Mallard	5	0.67
WaterIngProps_B	All	Compartment	Meadow Vole	2	0.9

Appendix D.1. Input Properties Assessed in the Mercury Test Case Sensitivity Analysis

Property [a]	Chemical	Object Type	Object Name / Link Information	Number of VEs [b]	Mean Input
WaterIngProps_B	All	Compartment	Mink	14	0.9
WaterIngProps_B	All	Compartment	Mouse	17	0.9
WaterIngProps_B	All	Compartment	Raccoon	14	0.9
WaterIngProps_B	All	Compartment	Red-tailed hawk	17	0.67
WaterIngProps_B	All	Compartment	Short-tailed Shrew	17	0.9
WaterIngProps_B	All	Compartment	Tree swallow	17	0.67
WaterIngProps_B	All	Compartment	White-tailed Deer	17	0.9
WaterTemperature_K	All	Volume Element	Various	7	293.2
Water_content	All	Compartment	Earthworm	19	0.84
WetDensity	All	Compartment	Leaf - Coniferous Forest	7	820
WetDensity	All	Compartment	Leaf - Deciduous Forest	8	820
WetDensity	All	Compartment	Leaf - Grasses/Herbs	4	820
WetDensity	All	Compartment	Root - Grasses/Herbs	4	820
WetDensity	All	Compartment	Stem - Grasses/Herbs	4	830
WetDepInterceptionFraction_UserSupplied	All	Compartment	Leaf - Coniferous Forest	7	0.2
WetDepInterceptionFraction_UserSupplied	All	Compartment	Leaf - Deciduous Forest	8	0.2
WetDepInterceptionFraction_UserSupplied	All	Compartment	Leaf - Grasses/Herbs	4	0.2
WetMassperArea	All	Compartment	Leaf - Coniferous Forest	7	2
WetMassperArea	All	Compartment	Leaf - Deciduous Forest	8	0.6
WetMassperArea	All	Compartment	Leaf - Grasses/Herbs	4	0.6
WetMassperArea	All	Compartment	Root - Grasses/Herbs	4	1.4
WetMassperArea	All	Compartment	Stem - Grasses/Herbs	4	0.24
WormSoilInteraction_t_alpha	Hg2	Compartment	Earthworm	19	21
WormSoilInteraction_t_alpha	Hg0	Compartment	Earthworm	19	21
WormSoilInteraction_t_alpha	MHg	Compartment	Earthworm	19	21
WormSoilPartitionCoefficient_dryweight	Hg2	Compartment	Earthworm	19	0.36
WormSoilPartitionCoefficient_dryweight	Hg0	Compartment	Earthworm	19	0.36
WormSoilPartitionCoefficient_dryweight	MHg	Compartment	Earthworm	19	0.36
XylemDensity	All	Compartment	Stem - Grasses/Herbs	4	900

[a] For additional description of the input properties used in TRIM.FaTE, along with a key between common names used for properties and their TRIM.FaTE code names, see Module 16 of the *TRIM.FaTE User's Guide* and the TRIM.FaTE technical support documents.

[b] Value indicates number of volume elements (VEs) a property applies to (and was varied in at the same time in the sensitivity analysis). For link object types, the number of links is reported, not the number of VEs.

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties
(top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Air Compartment ESE1				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.999	0.999
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.444	-0.038
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.397	0.065
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.349	-0.043
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.333	0.037
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.255	-0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.228	-0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.199	0.049
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.189	0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.187	0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.149	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.140	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.139	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.131	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.121	-0.015
Rain	All	FullSS	-0.118	-0.014
VaporWashoutRatio	Hg2	Divalent Mercury	-0.118	-0.354
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.114	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.100	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.099	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.099	0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.082	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.079	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.070	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.051	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.050	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.049	0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.048	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.048	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.045	-0.005
Elemental Mercury in Air Compartment ESE1				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg0	Facility	0.997	0.997
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.458	-0.039
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.399	0.066
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.360	-0.044
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.338	0.038
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.271	-0.031
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.245	-0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.194	0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.183	0.045
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.183	0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.146	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.140	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.138	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.127	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.122	0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.117	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.117	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.110	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.095	0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.089	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.086	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.068	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.066	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.062	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.056	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.056	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.056	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.055	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.054	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.053	0.009

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Air Compartment ESE1				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.901	0.345
AirTemperature_K	All	FullSS	-1.671	-0.002
emissionRate	Hg0	Facility	0.992	0.992
HenryLawConstant	MHg	MethylMercury	0.748	0.748
Kd	MHg	Surface water	-0.693	-0.693
MethylationRate	Hg2	Surface water	0.664	0.664
DimensionlessViscousSublayerThickness	All	Surface water	-0.646	-0.194
horizontalWindSpeed	All	FullSS	0.642	0.642
Rain	All	FullSS	0.563	0.069
VaporWashoutRatio	Hg2	Divalent Mercury	0.561	1.683
SedimentDepositionVelocity	All	Surface water	-0.554	-0.166
D_pureair	MHg	MethylMercury	0.500	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.441	-0.038
WaterTemperature_K	All	Surface water	-0.432	-0.432
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.424	-0.052
ReductionRate	Hg2	Surface water	-0.389	-0.389
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.370	0.040
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.359	-0.039
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.358	-0.038
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.322	0.036
DragCoefficient	All	Surface water	0.322	0.096
ReductionRate	Hg2	Soil-Surface	-0.305	-0.305
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.303	0.050
rho	All	Soil-Surface	-0.298	-0.015
SuspendedSedimentconcentration	All	Surface water	-0.297	-0.089
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.292	-0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.266	-0.029
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	-0.263	-0.790
BiomassPerArea_kg_m2	All	Macrophyte	0.262	0.261
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Macrophyte	0.262	0.785
Divalent Mercury in Air Compartment SSE1				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.999	0.999
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.458	0.051
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.434	-0.046
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.330	-0.037
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.217	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.195	0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.174	-0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.147	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.140	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.133	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.129	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.123	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.116	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.116	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.099	-0.011
Rain	All	FullSS	-0.098	-0.012
VaporWashoutRatio	Hg2	Divalent Mercury	-0.098	-0.295
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.094	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.089	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.072	0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.063	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.056	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.055	-0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.047	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.043	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.041	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.040	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.039	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.038	-0.005

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Air Compartment SSE1				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg0	Facility	0.998	0.998
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.456	-0.049
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.431	0.048
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.333	-0.037
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.228	0.037
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.199	0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.174	-0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.153	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.144	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.141	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.132	0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.129	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.113	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.112	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.096	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.086	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.080	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.079	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.072	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.063	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.059	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.057	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.056	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.045	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.045	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.045	0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.044	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.043	-0.005

Methyl Mercury in Air Compartment SSE1				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.517	0.326
AirTemperature_K	All	FullSS	-1.638	-0.002
emissionRate	Hg2	Facility	0.993	0.993
HenryLawConstant	MHg	MethylMercury	0.733	0.733
Kd	MHg	Surface water	-0.685	-0.685
DimensionlessViscousSublayerThickness	All	Surface water	-0.651	-0.195
horizontalWindSpeed	All	FullSS	0.647	0.647
MethylationRate	Hg2	Surface water	0.642	0.641
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.616	-0.066
Rain	All	FullSS	0.572	0.070
VaporWashoutRatio	Hg2	Divalent Mercury	0.571	1.713
SedimentDepositionVelocity	All	Surface water	-0.544	-0.163
D_pureair	MHg	MethylMercury	0.490	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.426	-0.046
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.371	0.046
ReductionRate	Hg2	Surface water	-0.355	-0.354
WaterTemperature_K	All	Surface water	-0.333	-0.332
DragCoefficient	All	Surface water	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.314	-0.314
rho	All	Soil - Surface	-0.307	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.283	-0.031
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.023
SuspendedSedimentconcentration	All	Surface water	-0.258	-0.077
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.257	0.041
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.241	-0.030
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	-0.240	-0.721
BiomassPerArea_kg_m2	All	Macrophyte	0.239	0.239
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Macrophyte	0.239	0.717
Flushes_per_year	All	Surface water	-0.233	-0.070
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.231	-0.027

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Air Compartment SSE3				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.996	0.996
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.507	0.057
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.323	-0.036
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.307	0.034
Rain	All	FullSS	-0.290	-0.035
VaporWashoutRatio	Hg2	Divalent Mercury	-0.290	-0.869
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.263	-0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.248	0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.246	-0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.245	-0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.214	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.185	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.162	0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.155	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.135	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.118	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.113	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.108	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.108	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.108	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.107	0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.099	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.098	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.095	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.094	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.088	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.086	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.086	0.007
Elemental Mercury in Air Compartment SSE3				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg0	Facility	0.993	0.993
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.488	0.055
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.346	-0.039
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.293	-0.032
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.287	0.032
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.277	-0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.260	-0.032
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.224	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.218	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.194	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.193	0.031
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.177	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.176	0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.155	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.152	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.141	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.131	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.124	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.121	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.115	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.109	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.107	0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.104	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.103	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.096	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.094	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.092	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.090	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.089	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.087	0.010

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties
(top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Air Compartment SSE3				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.618	0.331
AirTemperature_K	All	FullSS	-1.745	-0.002
emissionRate	Hg2	Facility	0.993	0.993
HenryLawConstant	MHg	MethylMercury	0.779	0.779
Kd	MHg	Surface water	-0.754	-0.754
DimensionlessViscousSublayerThickness	All	Surface water	-0.741	-0.222
horizontalWindSpeed	All	FullSS	0.735	0.735
MethylationRate	Hg2	Surface water	0.691	0.690
SedimentDepositionVelocity	All	Surface water	-0.606	-0.182
Rain	All	FullSS	0.571	0.070
VaporWashoutRatio	Hg2	Divalent Mercury	0.570	1.709
D_pureair	MHg	MethylMercury	0.521	0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.512	0.057
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.448	-0.049
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.422	-0.051
Flushes_per_year	All	Surface water	-0.383	-0.115
DragCoefficient	All	Surface water	0.368	0.110
SuspendedSedimentconcentration	All	Surface water	-0.361	-0.108
ReductionRate	Hg2	Surface water	-0.324	-0.324
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.315	-0.034
ReductionRate	Hg2	Soil - Surface	-0.306	-0.306
rho	All	Soil - Surface	-0.304	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.266	-0.030
Fractionofareaavailableforerosion	All	Soil - Surface	0.248	0.074
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.248	0.074
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	-0.221	-0.663
BiomassPerArea_kg_m2	All	Macrophyte	0.220	0.220
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Macrophyte	0.220	0.660
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.206	0.023
Divalent Mercury in Soil - Surface in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.995	0.995
Rain	All	FullSS	0.608	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.607	1.822
Fractionofareaavailableforerosion	All	Soil - Surface	-0.569	-0.171
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.569	-0.171
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.367	0.041
ReductionRate	Hg2	Soil - Surface	-0.366	-0.365
rho	All	Soil - Surface	-0.366	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.265	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.227	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.223	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.193	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.178	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.173	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.163	-0.163
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.141	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.140	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.129	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.120	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.116	-0.013
WetDepInterceptionFraction_UserSupplied	All	Leaf - Coniferous Forest	-0.112	-0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.109	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.108	-0.012
WaterContent	All	Leaf - Coniferous Forest	0.105	0.053
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.105	0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.096	0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.096	-0.010

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Soil - Surface in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
HenryLawConstant	Hg0	Elemental Mercury	-1.009	-1.009
Kd	Hg0	Soil - Surface	1.000	1.000
AirTemperature_K	All	FullSS	0.998	0.001
Fractionofareaavailableforverticaldiffusion	All	Soil - Surface	-0.962	-0.289
emissionRate	Hg2	Facility	0.906	0.906
Rain	All	FullSS	0.596	0.073
VaporWashoutRatio	Hg2	Divalent Mercury	0.553	1.659
Fractionofareaavailableforerosion	All	Soil - Surface	-0.518	-0.156
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.518	-0.156
ReductionRate	Hg2	Soil - Surface	0.509	0.508
rho	All	Soil - Surface	0.508	0.025
D_pureair	Hg0	Elemental Mercury	-0.484	-0.024
VaporDryDepositionVelocity_m_day	Hg0	Soil - Surface	-0.478	-0.143
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.370	0.041
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.264	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.230	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.221	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.194	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.191	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.181	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.175	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.169	-0.02
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.159	-0.159
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.141	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.135	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.129	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.122	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.117	-0.014
WetDepInterceptionFraction_UserSupplied	All	Leaf - Coniferous Forest	-0.113	-0.034
Methyl Mercury in Soil - Surface in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.995	0.995
DemethylationRate	MHg	Soil - Surface	-0.991	-0.990
MethylationRate	Hg2	Soil - Surface	0.982	0.981
Rain	All	FullSS	0.608	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.607	1.822
Fractionofareaavailableforerosion	All	Soil - Surface	-0.570	-0.171
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.570	-0.171
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.367	0.041
ReductionRate	Hg2	Soil - Surface	-0.366	-0.365
rho	All	Soil - Surface	-0.365	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.265	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.227	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.223	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.193	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.178	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.173	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.163	-0.163
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.141	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.14	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.129	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.120	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.116	-0.013
WetDepInterceptionFraction_UserSupplied	All	Leaf - Coniferous Forest	-0.112	-0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.109	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.108	-0.012
WaterContent	All	Leaf - Coniferous Forest	0.105	0.053
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.105	0.015

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Soil - Surface in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.997	0.997
Rain	All	FullSS	0.685	0.084
VaporWashoutRatio	Hg2	Divalent Mercury	0.685	2.055
Fractionofareaavailableforerosion	All	Soil - Surface	-0.556	-0.167
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.556	-0.167
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.386	-0.042
rho	All	Soil - Surface	-0.380	-0.019
ReductionRate	Hg2	Soil - Surface	-0.380	-0.379
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.309	-0.036
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.247	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.166	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.158	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.139	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.132	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.093	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.092	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.083	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.082	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.078	-0.01
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.073	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.070	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.070	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.064	-0.008
Kd	Hg2	Soil - Surface	0.061	0.061
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.058	0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.048	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.047	0.005
Elemental Mercury in Soil - Surface in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
HenryLawConstant	Hg0	Elemental Mercury	-1.009	-1.009
Kd	Hg0	Soil - Surface	1.000	1.000
AirTemperature_K	All	FullSS	0.998	0.001
Fractionofareaavailableforverticaldiffusion	All	Soil - Surface	-0.978	-0.293
emissionRate	Hg2	Facility	0.933	0.933
Rain	All	FullSS	0.674	0.082
VaporWashoutRatio	Hg2	Divalent Mercury	0.641	1.923
Fractionofareaavailableforerosion	All	Soil - Surface	-0.520	-0.156
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.520	-0.156
ReductionRate	Hg2	Soil - Surface	0.513	0.512
rho	All	Soil - Surface	0.512	0.026
D_pureair	Hg0	Elemental Mercury	-0.492	-0.025
VaporDryDepositionVelocity_m_day	Hg0	Soil - Surface	-0.486	-0.146
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.384	-0.042
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.321	-0.037
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.256	0.036
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.169	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.160	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.142	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.136	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.106	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.095	0.013
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.087	0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.086	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.085	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.085	0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.083	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.078	-0.01
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.071	0.008

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Soil - Surface in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.997	0.997
DemethylationRate	MHg	Soil - Surface	-0.992	-0.991
MethylationRate	Hg2	Soil - Surface	0.983	0.982
Rain	All	FullSS	0.685	0.084
VaporWashoutRatio	Hg2	Divalent Mercury	0.685	2.055
Fractionofareaavailableforerosion	All	Soil - Surface	-0.556	-0.167
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.556	-0.167
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.386	-0.042
ReductionRate	Hg2	Soil - Surface	-0.380	-0.379
rho	All	Soil - Surface	-0.379	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.309	-0.036
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.247	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.166	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.158	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.139	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.132	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.093	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.092	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.083	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.082	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.078	-0.01
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.073	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.070	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.070	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.064	-0.008
Kd	Hg2	Soil - Surface	0.061	0.061
SteadyState_AdvectiveTransfer		from Air, to Air	0.058	0.005
Divalent Mercury in Worm in RootSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
Water_content	All	Worm	-5.250	-5.245
ReductionRate	Hg2	Soil - Root Zone	-1.009	-1.008
rho	All	Soil - Root Zone	-1.009	-0.050
WormSoilPartitionCoefficient_dryweight	Hg2	Worm	1.000	3.000
emissionRate	Hg2	Facility	0.995	0.995
AverageVerticalVelocity	All	Soil - Surface	0.956	0.287
Kd	Hg2	Soil - Surface	-0.822	-0.822
Rain	All	FullSS	0.608	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.607	1.822
Fractionofareaavailableforerosion	All	Soil - Surface	-0.569	-0.171
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.569	-0.171
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.367	0.041
ReductionRate	Hg2	Soil - Surface	-0.366	-0.365
rho	All	Soil - Surface	-0.366	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.265	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.227	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.223	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.193	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.178	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.173	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.163	-0.163
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.141	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.140	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.129	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.120	-0.013
Kd	MHg	Soil - Surface	-0.117	-0.117
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.116	-0.013

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Worm in RootSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
Water_content	All	Worm	-5.250	-5.245
HenryLawConstant	Hg0	Elemental Mercury	-1.011	-1.011
WormSoilPartitionCoefficient_dryweight	Hg0	Worm	1.000	3.000
Kd	Hg0	Soil - Root Zone	1.000	1.000
AirTemperature_K	All	FullSS	0.999	0.001
emissionRate	Hg2	Facility	0.927	0.927
Fractionofareaavailableforverticaldiffusion	All	Soil - Surface	-0.732	-0.219
D_pureair	Hg0	Elemental Mercury	-0.611	-0.031
Rain	All	FullSS	0.599	0.073
VaporWashoutRatio	Hg2	Divalent Mercury	0.566	1.698
Fractionofareaavailableforerosion	All	Soil - Surface	-0.531	-0.159
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.531	-0.159
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.369	0.041
VaporDryDepositionVelocity_m_day	Hg0	Comp	-0.364	-0.109
ReductionRate	Hg2	Comp	0.299	0.299
rho	All	Soil - Surface	0.299	0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.264	0.029
AverageVerticalVelocity	All	Soil - Surface	0.263	0.079
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.230	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.221	0.025
Kd	Hg2	Soil - Surface	-0.203	-0.203
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.193	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.190	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.180	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.174	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.169	-0.02
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.160	-0.160
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.142	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.141	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.135	0.019
Methyl Mercury in Worm in RootSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
Water_content	All	Worm	-5.250	-5.245
DemethylationRate	MHg	Soil - Root Zone	-1.010	-1.009
ReductionRate	Hg2	Soil - Root Zone	-1.009	-1.008
rho	All	Soil - Root Zone	-1.009	-0.050
WormSoilPartitionCoefficient_dryweight	MHg	Worm	1.000	3.000
MethylationRate	Hg2	Soil - Root Zone	1.000	0.999
emissionRate	Hg2	Facility	0.995	0.995
AverageVerticalVelocity	All	Soil - Surface	0.956	0.287
Kd	Hg2	Soil - Surface	-0.822	-0.822
Rain	All	FullSS	0.608	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.607	1.822
Fractionofareaavailableforerosion	All	Soil - Surface	-0.569	-0.171
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.569	-0.171
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.367	0.041
ReductionRate	Hg2	Soil - Surface	-0.366	-0.365
rho	All	Soil - Surface	-0.366	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.265	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.227	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.223	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.193	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.178	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.173	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.163	-0.163
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.141	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.140	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.129	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.120	-0.013

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties
(top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Worm in RootSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
Water_content	All	Worm	-5.250	-5.245
WormSoilPartitionCoefficient_dryweight	Hg2	Worm	1.000	3.000
emissionRate	Hg2	Facility	0.997	0.997
ReductionRate	Hg2	Soil - Root Zone	-0.976	-0.975
rho	All	Soil - Root Zone	-0.976	-0.049
AverageVerticalVelocity	All	Soil - Surface	0.956	0.287
Kd	Hg2	Soil - Surface	-0.823	-0.823
Rain	All	FullSS	0.685	0.084
VaporWashoutRatio	Hg2	Divalent Mercury	0.685	2.055
Fractionofareaavailableforerosion	All	Soil - Surface	-0.556	-0.167
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.556	-0.167
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.386	-0.042
ReductionRate	Hg2	Soil - Surface	-0.380	-0.379
rho	All	Soil - Surface	-0.380	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.309	-0.036
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.247	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.166	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.158	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.139	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.132	-0.015
Kd	MHg	Soil - Surface	-0.118	-0.118
DemethylationRate	MHg	Soil - Surface	-0.108	-0.108
MethylationRate	Hg2	Soil - Surface	0.107	0.107
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.093	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.092	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.083	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.082	0.009
Elemental Mercury in Worm in RootSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
Water_content	All	Worm	-5.250	-5.245
HenryLawConstant	Hg0	Elemental Mercury	-1.011	-1.011
WormSoilPartitionCoefficient_dryweight	Hg0	Worm	1.000	3.000
Kd	Hg0	Soil - Root Zone	1.000	1.000
AirTemperature_K	All	FullSS	0.999	0.001
emissionRate	Hg2	Facility	0.948	0.948
Fractionofareaavailableforverticaldiffusion	All	Soil - Surface	-0.744	-0.223
Rain	All	FullSS	0.677	0.083
VaporWashoutRatio	Hg2	Divalent Mercury	0.652	1.955
D_pureair	Hg0	Elemental Mercury	-0.617	-0.031
Fractionofareaavailableforerosion	All	Soil - Surface	-0.529	-0.159
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.529	-0.159
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.384	-0.042
VaporDryDepositionVelocity_m_day	Hg0	Soil - Surface	-0.370	-0.111
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.318	-0.037
ReductionRate	Hg2	Soil - Surface	0.299	0.299
rho	All	Soil - Surface	0.299	0.015
AverageVerticalVelocity	All	Soil - Surface	0.261	0.078
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.254	0.036
Kd	Hg2	Soil - Surface	-0.201	-0.201
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.169	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.160	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.141	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.135	-0.016
InputCharacteristicDepth_m	Hg0	Soil - Surface	0.125	0.125
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.105	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.094	0.013
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.089	0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.086	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.085	-0.010

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Worm in RootSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
Water_content	All	Worm	-5.250	-5.245
DemethylationRate	MHg	Soil - Root Zone	-1.008	-1.007
WormSoilPartitionCoefficient_dryweight	MHg	Worm	1.000	3.000
MethylationRate	Hg2	Soil - Root Zone	0.998	0.997
emissionRate	Hg2	Facility	0.997	0.997
rho	All	Soil - Root Zone	-0.976	-0.049
ReductionRate	Hg2	Soil - Root Zone	-0.976	-0.975
AverageVerticalVelocity	All	Soil - Surface	0.956	0.287
Kd	Hg2	Soil - Surface	-0.822	-0.822
Rain	All	FullSS	0.685	0.084
VaporWashoutRatio	Hg2	Divalent Mercury	0.685	2.055
Fractionofareaavailableforerosion	All	Soil - Surface	-0.556	-0.167
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.556	-0.167
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.386	-0.042
ReductionRate	Hg2	Soil - Surface	-0.380	-0.379
rho	All	Soil - Surface	-0.380	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.309	-0.036
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.247	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.166	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.158	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.139	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.132	-0.015
Kd	MHg	Soil - Surface	-0.118	-0.118
DemethylationRate	MHg	Soil - Surface	-0.109	-0.108
MethylationRate	Hg2	Soil - Surface	0.108	0.107
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.093	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.092	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.010

Divalent Mercury in Leaf - Coniferous Forest in Coniferous Forest in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	1.010	1.009
emissionRate	Hg2	Facility	0.994	0.994
WetMassperArea	All	Leaf - Coniferous Forest	-0.819	-0.819
WetDepInterceptionFraction_UserSupplied	All	Leaf - Coniferous Forest	0.696	0.209
WaterContent	All	Leaf - Coniferous Forest	-0.651	-0.326
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.534	0.060
LitterFallRate	All	Leaf - Coniferous Forest	-0.506	-0.506
AllowExchange_SteadyState_forOther	All	Leaf - Coniferous Forest	-0.496	-0.495
TransferFactortoLeafParticle	Hg2	Leaf - Coniferous Forest	-0.478	-1.434
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.416	0.047
VaporWashoutRatio	Hg2	Divalent Mercury	0.354	1.062
Rain	All	FullSS	0.354	0.043
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.352	-0.039
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.273	0.082
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.261	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.257	-0.031
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.216	0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.215	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.214	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.202	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.191	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.181	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.180	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.178	0.028
AttenuationFactor	All	Leaf - Coniferous Forest	0.168	0.168
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.145	0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.144	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.144	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.144	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.143	-0.014

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Leaf - Coniferous Forest in Coniferous Forest in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
AllowExchange_SteadyState_forOther	All	Leaf - Coniferous Forest	-1.010	-1.009
WetDensity	All	Leaf - Coniferous Forest	-1.010	-1.010
isDay_SteadyState_forOther	All	FullSS	-1.010	-1.009
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	1.000	0.999
AverageLeafAreaIndex_No_Time_Dependence	All	Leaf - Coniferous Forest	0.994	0.994
isDay_SteadyState_forAir	All	FullSS	0.994	0.993
emissionRate	Hg0	Facility	0.992	0.992
HenryLawConstant	Hg0	Elemental Mercury	-0.950	-0.950
AirTemperature_K	All	FullSS	0.940	0.001
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.515	0.058
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.403	0.045
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.385	-0.043
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.262	-0.032
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.246	0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.244	-0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.238	-0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.220	-0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.214	-0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.214	-0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.199	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.188	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.174	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.162	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.159	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.157	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.153	0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.153	0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.148	0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.147	-0.014

Methyl Mercury in Leaf - Coniferous Forest in Coniferous Forest in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	7.707	0.385
AllowExchange_SteadyState_forOther	All	Leaf - Coniferous Forest	-1.006	-1.005
isDay_SteadyState_forAir	All	FullSS	0.998	0.997
AverageLeafAreaIndex_No_Time_Dependence	All	Leaf - Coniferous Forest	0.993	0.993
emissionRate	Hg2	Facility	0.992	0.992
WetDensity	All	Leaf - Coniferous Forest	-0.949	-0.949
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	0.948	0.947
isDay_SteadyState_forOther	All	FullSS	-0.942	-0.941
AirTemperature_K	All	FullSS	-0.800	-0.001
Kd	MHg	Surface water	-0.755	-0.755
MethylationRate	Hg2	Surface water	0.728	0.727
DimensionlessViscousSublayerThickness	All	Surface water	-0.691	-0.207
horizontalWindSpeed	All	FullSS	0.687	0.687
SedimentDepositionVelocity	All	Surface water	-0.614	-0.184
D_pureair	MHg	MethylMercury	0.588	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.569	0.064
Rain	All	FullSS	0.551	0.067
VaporWashoutRatio	Hg2	Divalent Mercury	0.549	1.647
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.487	-0.054
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.427	0.048
ReductionRate	Hg2	Surface water	-0.405	-0.405
WaterTemperature_K	All	Surface water	-0.391	-0.391
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.368	-0.040
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.364	-0.044
DragCoefficient	All	Surface water	0.344	0.103
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.318	-0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.307	-0.037
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.3	0.037
ReductionRate	Hg2	Soil - Surface	-0.292	-0.291
rho	All	Soil - Surface	-0.290	-0.014

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties
(top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Leaf - Grasses/Herbs in Grasses/Herbs in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.997	0.997
AllowExchange_SteadyState_forAir	All	Leaf - Grasses/Herbs	0.987	0.986
LitterFallRate	All	Leaf - Grasses/Herbs	-0.950	-0.073
WetMassperArea	All	Leaf - Grasses/Herbs	-0.866	-0.866
WetDepInterceptionFraction_UserSupplied	All	Leaf - Grasses/Herbs	0.827	0.248
Rain	All	FullSS	0.638	0.078
VaporWashoutRatio	Hg2	Divalent Mercury	0.638	1.915
WaterContent	All	Leaf - Grasses/Herbs	-0.532	-0.266
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.486	-0.056
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.389	0.055
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.314	-0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.283	-0.032
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.253	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.210	-0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.170	0.021
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.139	0.042
AttenuationFactor	All	Leaf - Grasses/Herbs	0.134	0.134
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.132	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.118	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.11	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.101	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.089	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.080	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.079	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.075	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.071	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.070	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.064	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.062	-0.010
Elemental Mercury in Leaf - Grasses/Herbs in Grasses/Herbs in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
AllowExchange_SteadyState_forOther	All	Leaf - Grasses/Herbs	-1.010	-0.029
WetDensity	All	Leaf - Grasses/Herbs	-1.010	-1.010
isDay_SteadyState_forOther	All	FullSS	-1.010	-1.009
AllowExchange_SteadyState_forAir	All	Leaf - Grasses/Herbs	1.000	0.999
emissionRate	Hg0	Facility	0.995	0.995
AverageLeafAreaIndex_No_Time_Dependence	All	Leaf - Grasses/Herbs	0.991	0.991
isDay_SteadyState_forAir	All	FullSS	0.991	0.990
HenryLawConstant	Hg0	Elemental Mercury	-0.949	-0.949
AirTemperature_K	All	FullSS	0.940	0.001
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.525	-0.061
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.412	0.059
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.382	-0.042
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.307	-0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.230	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.208	-0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.190	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.155	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.131	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.114	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.105	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.100	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.097	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.090	0.013
K_ow	Hg0	Elemental Mercury	0.088	0.265
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.083	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.080	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.075	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.073	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.070	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.070	0.011

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Leaf - Grasses/Herbs in Grasses/Herbs in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
DemethylationRate	MHg	Soil - Root Zone	-0.998	-0.997
Kd	MHg	Soil - Root Zone	-0.998	-0.998
emissionRate	Hg2	Facility	0.997	0.997
TSCF	MHg	Stem - Grasses/Herbs	0.988	2.965
AllowExchange_SteadyState_forOther	All	Leaf - Grasses/Herbs	-0.988	-0.028
MethylationRate	Hg2	Soil - Root Zone	0.988	0.987
WetDensity	All	Leaf - Grasses/Herbs	-0.970	-0.970
rho	All	Soil - Root Zone	-0.967	-0.048
ReductionRate	Hg2	Soil - Root Zone	-0.966	-0.965
AverageLeafAreaIndex_No_Time_Dependence	All	Leaf - Grasses/Herbs	0.963	0.963
isDay_SteadyState_forOther	All	FullSS	-0.963	-0.962
FlowRateofTranspiredWaterperAreaofLeafSurface	All	Stem - Grasses/Herbs	0.959	0.959
AllowExchange_SteadyState_forOther	All	Stem - Grasses/Herbs	0.958	0.027
HenryLawConstant	MHg	MethylMercury	-0.951	-0.951
AverageVerticalVelocity	All	Soil - Surface	0.946	0.284
D_pureair	MHg	MethylMercury	-0.941	-0.047
AirTemperature_K	All	FullSS	0.931	0.001
DegreeStomatalOpening	All	Leaf - Grasses/Herbs	-0.871	-0.870
StomatalAreaNormalizedEffectiveDiffusion	All	Leaf - Grasses/Herbs	-0.871	-0.871
Kd	Hg2	Soil - Surface	-0.814	-0.814
Rain	All	FullSS	0.684	0.083
VaporWashoutRatio	Hg2	Divalent Mercury	0.684	2.052
Fractionofareaavailableforerosion	All	Soil - Surface	-0.548	-0.164
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.548	-0.164
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.386	-0.042
ReductionRate	Hg2	Soil - Surface	-0.379	-0.379
rho	All	Soil - Surface	-0.379	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.313	-0.036
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.248	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.166	0.018
Divalent Mercury in Sediment in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.209	0.060
Flushes_per_year	All	Surface water	-1.008	-0.302
emissionRate	Hg2	Facility	0.995	0.995
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
SuspendedSedimentconcentration	All	Surface water	-0.603	-0.181
Kd	Hg2	Surface water	0.394	0.394
Fractionofareaavailableforerosion	All	Soil - Surface	0.369	0.111
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.369	0.111
ReductionRate	Hg2	Soil - Surface	-0.363	-0.363
rho	All	Soil - Surface	-0.363	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.251	-0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.088	-0.011
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.076	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.076	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.074	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.059	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.056	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.046	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.046	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.043	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.037	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.037	0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.035	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.034	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.031	0.003
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.030	-0.004
AverageVerticalVelocity	All	Soil - Surface	-0.030	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.030	-0.003

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Sediment in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.399	0.070
Flushes_per_year	All	Surface water	-0.991	-0.297
emissionRate	Hg0	Facility	0.653	0.653
Kd	Hg0	Surface water	0.614	0.614
SuspendedSedimentconcentration	All	Surface water	-0.583	-0.175
HenryLawConstant	Hg0	Elemental Mercury	-0.512	-0.512
phi	All	Sediment	-0.480	-0.144
SedimentDepositionVelocity	All	Surface water	-0.380	-0.114
emissionRate	Hg2	Facility	0.347	0.347
AirTemperature_K	All	FullSS	0.343	0.000
rho	All	Sediment	0.320	0.016
ReductionRate	Hg2	Sediment	0.320	0.319
D_purewater	Hg0	Elemental Mercury	0.297	0.089
Rain	All	FullSS	0.266	0.033
VaporWashoutRatio	Hg2	Divalent Mercury	0.255	0.764
CurrentVelocity	All	Surface water	0.241	0.041
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.197	-0.021
horizontalWindSpeed	All	FullSS	0.136	0.136
DimensionlessViscousSublayerThickness	All	Surface water	-0.136	-0.041
Kd	Hg2	Surface water	0.126	0.126
Fractionofareaavailableforerosion	All	Soil - Surface	0.126	0.038
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.126	0.038
ReductionRate	Hg2	Soil - Surface	-0.123	-0.123
rho	All	Soil - Surface	-0.123	-0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.118	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.117	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.092	0.013
D_pureair	Hg0	Elemental Mercury	0.091	0.005
Methyl Mercury in Sediment in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.117	0.056
Flushes_per_year	All	Surface water	-1.001	-0.300
DemethylationRate	MHg	Sediment	-0.998	-0.997
emissionRate	Hg2	Facility	0.995	0.995
MethylationRate	Hg2	Sediment	0.910	0.909
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
SuspendedSedimentconcentration	All	Surface water	-0.527	-0.158
ReductionRate	Hg2	Soil - Surface	-0.370	-0.369
rho	All	Soil - Surface	-0.370	-0.018
Kd	Hg2	Surface water	0.359	0.359
Fractionofareaavailableforerosion	All	Soil - Surface	0.353	0.106
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.353	0.106
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.254	-0.028
phi	All	Sediment	0.120	0.036
DemethylationRate	MHg	Soil - Surface	-0.089	-0.089
MethylationRate	Hg2	Soil - Surface	0.088	0.088
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.088	-0.011
rho	All	Sediment	-0.082	-0.004
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.078	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.074	-0.008
SedimentDepositionVelocity	All	Surface water	0.068	0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.058	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.055	-0.007
FractionofAreaAvailableforRunoff	All	Soil - Surface	0.048	0.014
TotalRunoffRate_m3_m2_day	All	Soil - Surface	0.048	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.046	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.045	-0.005

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Sediment in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.975	0.349
emissionRate	Hg2	Facility	0.993	0.993
Kd	Hg2	Surface water	0.795	0.795
Flushes_per_year	All	Surface water	-0.788	-0.236
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
WaterTemperature_K	All	Surface water	-0.539	-0.539
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.201	-0.200
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.141	-0.140
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	-0.140	-0.419
BiomassPerArea_kg_m2	All	Macrophyte	0.140	0.140
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Macrophyte	0.140	0.419
SuspendedSedimentconcentration	All	Surface water	-0.136	-0.041
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.130	-0.015
Elemental Mercury in Sediment in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	7.838	0.392
phi	All	Sediment	-1.305	-0.392
SuspendedSedimentconcentration	All	Surface water	-1.072	-0.322
emissionRate	Hg2	Facility	0.993	0.993
SedimentDepositionVelocity	All	Surface water	-0.938	-0.281
ReductionRate	Hg2	Sediment	0.872	0.871
rho	All	Sediment	0.870	0.043
Flushes_per_year	All	Surface water	-0.796	-0.239
Kd	Hg2	Surface water	0.732	0.732
WaterTemperature_K	All	Surface water	-0.689	-0.688
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.317
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
DimensionlessViscousSublayerThickness	All	Surface water	0.144	0.043
horizontalWindSpeed	All	FullSS	-0.144	-0.144
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.141	-0.140

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Sediment in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.960	0.348
DemethylationRate	MHg	Sediment	-1.007	-1.006
emissionRate	Hg2	Facility	0.993	0.993
MethylationRate	Hg2	Sediment	0.991	0.990
Kd	Hg2	Surface water	0.790	0.790
Flushes_per_year	All	Surface water	-0.787	-0.236
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
WaterTemperature_K	All	Surface water	-0.539	-0.538
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.200	-0.200
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.141	-0.141
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	-0.140	-0.419
BiomassPerArea_kg_m2	All	Macrophyte	0.139	0.139
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Macrophyte	0.139	0.418
SuspendedSedimentconcentration	All	Surface water	-0.134	-0.040

Divalent Mercury in Surface Water in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
Flushes_per_year	All	Surface water	-1.010	-0.303
emissionRate	Hg2	Facility	0.995	0.995
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
Fractionofareaavailableforerosion	All	Soil - Surface	0.372	0.112
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.372	0.112
ReductionRate	Hg2	Soil - Surface	-0.362	-0.361
rho	All	Soil - Surface	-0.362	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.251	-0.027
rho	All	Surface water	0.215	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.087	-0.011
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.076	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.076	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.074	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.059	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.056	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.046	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.045	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.043	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.038	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.037	0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.035	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.034	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.031	0.003
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.030	-0.004
AverageVerticalVelocity	All	Soil - Surface	-0.030	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.030	-0.003
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.028	-0.003
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.028	-0.003

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Surface Water in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
Flushes_per_year	All	Surface water	-0.983	-0.295
emissionRate	Hg0	Facility	0.957	0.957
HenryLawConstant	Hg0	Elemental Mercury	-0.750	-0.750
AirTemperature_K	All	FullSS	0.503	0.001
CurrentVelocity	All	Surface water	0.353	0.060
D_purewater	Hg0	Elemental Mercury	0.352	0.106
horizontalWindSpeed	All	FullSS	0.201	0.201
DimensionlessViscousSublayerThickness	All	Surface water	-0.200	-0.060
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.171	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.149	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.138	-0.015
D_pureair	Hg0	Elemental Mercury	0.134	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.132	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.117	0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.114	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.101	-0.012
DragCoefficient	All	Surface water	0.101	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.093	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.086	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.083	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.083	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.064	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.064	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.060	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.058	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.057	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.057	-0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.052	-0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.050	0.007
Rain	All	FullSS	0.048	0.006
Methyl Mercury in Surface Water in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.998	0.998
DemethylationRate	MHg	Soil - Surface	-0.940	-0.939
MethylationRate	Hg2	Soil - Surface	0.931	0.930
Flushes_per_year	All	Surface water	-0.929	-0.279
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.732	2.195
ReductionRate	Hg2	Soil - Surface	-0.437	-0.436
rho	All	Soil - Surface	-0.436	-0.022
Kd	MHg	Soil - Surface	-0.310	-0.310
FractionofAreaAvailableforRunoff	All	Soil - Surface	0.285	0.086
TotalRunoffRate_m3_m2_day	All	Soil - Surface	0.285	0.086
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.279	-0.03
Fractionofareaavailableforerosion	All	Soil - Surface	0.187	0.056
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.187	0.056
SedimentDepositionVelocity	All	Surface water	-0.111	-0.033
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.096	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.095	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.076	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.069	-0.008
rho	All	Surface water	0.065	0.003
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.064	-0.007
Kd	Hg2	Soil - Surface	0.059	0.059
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.055	-0.007
Kd	MHg	Surface water	-0.054	-0.054
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.051	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.048	-0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.044	-0.005
SuspendedSedimentconcentration	All	Surface water	-0.041	-0.012
MethylationRate	Hg2	Surface water	0.038	0.038
AverageVerticalVelocity	All	Soil - Surface	-0.036	-0.011

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Surface Water in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.064	0.303
emissionRate	Hg2	Facility	0.993	0.993
Flushes_per_year	All	Surface water	-0.789	-0.237
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
WaterTemperature_K	All	Surface water	-0.538	-0.538
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.325	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.325	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.201	-0.201
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.141	-0.140
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	-0.140	-0.421
BiomassPerArea_kg_m2	All	Macrophyte	0.140	0.140
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Macrophyte	0.140	0.420
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.130	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.119	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.115	-0.013
Elemental Mercury in Surface Water in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.351	0.318
WaterTemperature_K	All	Surface water	-2.163	-2.161
emissionRate	Hg2	Facility	0.989	0.989
Flushes_per_year	All	Surface water	-0.878	-0.263
ReductionRate	Hg2	Surface water	0.631	0.630
Rain	All	FullSS	0.608	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.602	1.807
DimensionlessViscousSublayerThickness	All	Surface water	0.446	0.134
horizontalWindSpeed	All	FullSS	-0.446	-0.446
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	0.440	1.319
BiomassPerArea_kg_m2	All	Macrophyte	-0.439	-0.439
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Macrophyte	-0.439	-1.317
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.386	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.323	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.323	0.097
ReductionRate	Hg2	Soil - Surface	-0.316	-0.316
rho	All	Soil - Surface	-0.316	-0.016
D_purewater	Hg0	Elemental Mercury	-0.296	-0.089
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.271	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
DragCoefficient	All	Surface water	-0.223	-0.067
AirDensity_g_cm3	All	Air	-0.221	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
phi	All	Sediment	-0.182	-0.055
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Surface Water in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	4.932	0.247
emissionRate	Hg2	Facility	0.994	0.994
Flushes_per_year	All	Surface water	-0.714	-0.214
MethylationRate	Hg2	Surface water	0.647	0.647
Kd	MHg	Surface water	-0.637	-0.637
SedimentDepositionVelocity	All	Surface water	-0.627	-0.188
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.606	1.817
SuspendedSedimentconcentration	All	Surface water	-0.520	-0.156
WaterTemperature_K	All	Surface water	-0.400	-0.400
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.381	0.043
ReductionRate	Hg2	Soil - Surface	-0.328	-0.328
rho	All	Soil - Surface	-0.328	-0.016
Fractionofareaavailableforerosion	All	Soil - Surface	0.278	0.083
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.278	0.083
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.269	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.231	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.225	0.025
DemethylationRate	MHg	Soil - Surface	-0.209	-0.208
MethylationRate	Hg2	Soil - Surface	0.207	0.206
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.193	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.185	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.163	-0.018
ReductionRate	Hg2	Surface water	-0.159	-0.159
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.145	0.023
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.145	-0.145
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.142	0.023
DemethylationRate	MHg	Sediment	-0.139	-0.139
Divalent Mercury in Benthic Carnivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface water	-2.918	-2.915
rho	All	Surface water	1.210	0.061
Flushes_per_year	All	Surface water	-1.008	-0.302
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Benthic Carnivore	-0.998	-0.998
SedimentPartitioning_PartitionCoefficient	Hg2	Benthic Invertebrate	0.994	2.983
AssimilationEfficiencyFromFood	Hg2	Benthic Omnivore	0.994	0.993
emissionRate	Hg2	Facility	0.991	0.991
AssimilationEfficiencyFromFood	Hg2	Benthic Carnivore	0.974	0.973
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Benthic Omnivore	-0.966	-0.966
phi	All	Sediment	-0.897	-0.269
Rain	All	FullSS	0.729	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.729	2.186
SuspendedSedimentconcentration	All	Surface water	-0.603	-0.181
Kd	Hg2	Surface water	0.392	0.392
Fractionofareaavailableforerosion	All	Soil - Surface	0.368	0.110
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.368	0.110
rho	All	Sediment	0.363	0.018
rho	All	Soil - Surface	-0.362	-0.018
ReductionRate	Hg2	Soil - Surface	-0.362	-0.361
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.251	-0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.087	-0.011
BW	All	Benthic Omnivore	0.085	0.025
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.076	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.076	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.059	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.056	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.047	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.046	0.007

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Benthic Carnivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface water	29.640	29.610
rho	All	Surface water	1.399	0.070
phi	All	Sediment	-1.383	-0.415
OxidationRate	Hg0	Benthic Carnivore	-1.010	-1.009
OxidationRate	Hg0	Benthic Omnivore	-1.010	-1.009
AssimilationEfficiencyFromFood	Hg0	Benthic Carnivore	1.000	0.999
SedimentPartitioning_PartitionCoefficient	Hg0	Benthic Invertebrate	1.000	3.000
AssimilationEfficiencyFromFood	Hg0	Benthic Omnivore	0.999	0.998
Flushes_per_year	All	Surface water	-0.991	-0.297
rho	All	Sediment	0.683	0.034
emissionRate	Hg0	Facility	0.653	0.653
Kd	Hg0	Surface water	0.614	0.614
SuspendedSedimentconcentration	All	Surface water	-0.583	-0.175
HenryLawConstant	Hg0	Elemental Mercury	-0.512	-0.512
SedimentDepositionVelocity	All	Surface water	-0.380	-0.114
emissionRate	Hg2	Facility	0.347	0.347
AirTemperature_K	All	FullSS	0.343	0.000
ReductionRate	Hg2	Sediment	0.320	0.319
D_purewater	Hg0	Elemental Mercury	0.297	0.089
Rain	All	FullSS	0.266	0.033
VaporWashoutRatio	Hg2	Divalent Mercury	0.255	0.764
CurrentVelocity	All	Surface water	0.241	0.041
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.197	-0.021
BW	All	Benthic Omnivore	-0.152	-0.045
BW	All	Benthic Carnivore	-0.151	-0.045
horizontalWindSpeed	All	FullSS	0.136	0.136
DimensionlessViscousSublayerThickness	All	Surface water	-0.136	-0.041
Kd	Hg2	Surface water	0.126	0.126
Fractionofareaavailableforerosion	All	Soil - Surface	0.126	0.038
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.126	0.038
Methyl Mercury in Benthic Carnivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface water	-1.592	-1.590
rho	All	Surface water	1.117	0.056
Flushes_per_year	All	Surface water	-1.001	-0.300
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	1.000	3.000
DemethylationRate	MHg	Sediment	-0.998	-0.997
AssimilationEfficiencyFromFood	MHg	Benthic Omnivore	0.996	0.995
emissionRate	Hg2	Facility	0.995	0.995
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Carnivore	-0.975	-0.975
MethylationRate	Hg2	Sediment	0.910	0.909
phi	All	Sediment	-0.778	-0.233
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
AssimilationEfficiencyFromFood	MHg	Benthic Carnivore	0.722	0.722
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Omnivore	-0.688	-0.688
SuspendedSedimentconcentration	All	Surface water	-0.527	-0.158
ReductionRate	Hg2	Soil - Surface	-0.370	-0.369
rho	All	Soil - Surface	-0.370	-0.018
Kd	Hg2	Surface water	0.359	0.359
Fractionofareaavailableforerosion	All	Soil - Surface	0.353	0.106
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.353	0.106
NumberofFishperSquareMeter	All	Benthic Omnivore	0.315	0.315
BW	All	Benthic Omnivore	0.302	0.091
rho	All	Sediment	0.282	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.254	-0.028
NumberofFishperSquareMeter	All	Benthic Carnivore	-0.245	-0.245
BW	All	Benthic Carnivore	-0.160	-0.048
DemethylationRate	MHg	Soil - Surface	-0.089	-0.089
MethylationRate	Hg2	Soil - Surface	0.088	0.088
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.088	-0.011
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.078	0.023

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Benthic Carnivore in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.989	0.349
WaterTemperature_K	All	Surface water	-2.999	-2.996
emissionRate	Hg2	Facility	0.993	0.993
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Benthic Carnivore	-0.991	-0.991
AssimilationEfficiencyFromFood	Hg2	Benthic Omnivore	0.983	0.982
SedimentPartitioning_PartitionCoefficient	Hg2	Benthic Invertebrate	0.980	2.940
AssimilationEfficiencyFromFood	Hg2	Benthic Carnivore	0.975	0.974
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Benthic Omnivore	-0.952	-0.952
phi	All	Sediment	-0.835	-0.250
Kd	Hg2	Surface water	0.794	0.794
Flushes_per_year	All	Surface water	-0.788	-0.236
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
rho	All	Sediment	0.323	0.016
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.200	-0.199
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SuspendedSedimentconcentration	All	Surface water	-0.151	-0.045
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023

Elemental Mercury in Benthic Carnivore in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface water	29.160	29.131
rho	All	Surface water	7.838	0.392
phi	All	Sediment	-2.215	-0.665
rho	All	Sediment	1.230	0.062
SuspendedSedimentconcentration	All	Surface water	-1.072	-0.322
OxidationRate	Hg0	Benthic Carnivore	-1.010	-1.009
OxidationRate	Hg0	Benthic Omnivore	-1.010	-1.009
AssimilationEfficiencyFromFood	Hg0	Benthic Carnivore	1.000	0.999
AssimilationEfficiencyFromFood	Hg0	Benthic Omnivore	0.999	0.998
SedimentPartitioning_PartitionCoefficient	Hg0	Benthic Invertebrate	0.999	2.996
emissionRate	Hg2	Facility	0.993	0.993
SedimentDepositionVelocity	All	Surface water	-0.938	-0.281
ReductionRate	Hg2	Sediment	0.872	0.871
Flushes_per_year	All	Surface water	-0.796	-0.239
Kd	Hg2	Surface water	0.732	0.732
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.317
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties
(top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Benthic Carnivore in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.960	0.348
WaterTemperature_K	All	Surface water	-1.086	-1.085
DemethylationRate	MHg	Sediment	-1.007	-1.006
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	0.999	2.998
AssimilationEfficiencyFromFood	MHg	Benthic Omnivore	0.996	0.995
emissionRate	Hg2	Facility	0.993	0.993
MethylationRate	Hg2	Sediment	0.991	0.990
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Carnivore	-0.954	-0.954
phi	All	Sediment	-0.804	-0.241
Kd	Hg2	Surface water	0.790	0.790
Flushes_per_year	All	Surface water	-0.787	-0.236
AssimilationEfficiencyFromFood	MHg	Benthic Carnivore	0.731	0.730
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Omnivore	-0.667	-0.667
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
NumberofFishperSquareMeter	All	Benthic Omnivore	0.335	0.335
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
BW	All	Benthic Omnivore	0.318	0.095
rho	All	Sediment	0.302	0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
NumberofFishperSquareMeter	All	Benthic Carnivore	-0.216	-0.216
ReductionRate	Hg2	Surface water	-0.200	-0.200
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
Divalent Mercury in Benthic Invertebrate in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.209	0.060
Flushes_per_year	All	Surface water	-1.008	-0.302
SedimentPartitioning_PartitionCoefficient	Hg2	Benthic Invertebrate	1.000	3.000
emissionRate	Hg2	Facility	0.995	0.995
phi	All	Sediment	-0.895	-0.268
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
SuspendedSedimentconcentration	All	Surface water	-0.603	-0.181
Kd	Hg2	Surface water	0.394	0.394
Fractionofareaavailableforerosion	All	Soil - Surface	0.369	0.111
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.369	0.111
ReductionRate	Hg2	Soil - Surface	-0.363	-0.363
rho	All	Soil - Surface	-0.363	-0.018
rho	All	Sediment	0.361	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.251	-0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.088	-0.011
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.076	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.076	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.074	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.059	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.056	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.046	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.046	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.043	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.037	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.037	0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.035	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.034	-0.004
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.031	0.003

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Benthic Invertebrate in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.399	0.070
phi	All	Sediment	-1.383	-0.415
SedimentPartitioning_PartitionCoefficient	Hg0	Benthic Invertebrate	1.000	3.000
Flushes_per_year	All	Surface water	-0.991	-0.297
rho	All	Sediment	0.683	0.034
emissionRate	Hg0	Facility	0.653	0.653
Kd	Hg0	Surface water	0.614	0.614
SuspendedSedimentconcentration	All	Surface water	-0.583	-0.175
HenryLawConstant	Hg0	Elemental Mercury	-0.512	-0.512
SedimentDepositionVelocity	All	Surface water	-0.380	-0.114
emissionRate	Hg2	Facility	0.347	0.347
AirTemperature_K	All	FullSS	0.343	0.000
ReductionRate	Hg2	Sediment	0.320	0.319
D_purewater	Hg0	Elemental Mercury	0.297	0.089
Rain	All	FullSS	0.266	0.033
VaporWashoutRatio	Hg2	Divalent Mercury	0.255	0.764
CurrentVelocity	All	Surface water	0.241	0.041
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.197	-0.021
horizontalWindSpeed	All	FullSS	0.136	0.136
DimensionlessViscousSublayerThickness	All	Surface water	-0.136	-0.041
Kd	Hg2	Surface water	0.126	0.126
Fractionofareaavailableforerosion	All	Soil - Surface	0.126	0.038
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.126	0.038
ReductionRate	Hg2	Soil - Surface	-0.123	-0.123
rho	All	Soil - Surface	-0.123	-0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.118	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.117	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.092	0.013
Methyl Mercury in Benthic Invertebrate in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.117	0.056
Flushes_per_year	All	Surface water	-1.001	-0.300
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	1.000	3.000
DemethylationRate	MHg	Sediment	-0.998	-0.997
emissionRate	Hg2	Facility	0.995	0.995
MethylationRate	Hg2	Sediment	0.910	0.909
phi	All	Sediment	-0.778	-0.233
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
SuspendedSedimentconcentration	All	Surface water	-0.527	-0.158
ReductionRate	Hg2	Soil - Surface	-0.370	-0.369
rho	All	Soil - Surface	-0.370	-0.018
Kd	Hg2	Surface water	0.359	0.359
Fractionofareaavailableforerosion	All	Soil - Surface	0.353	0.106
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.353	0.106
rho	All	Sediment	0.282	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.254	-0.028
DemethylationRate	MHg	Soil - Surface	-0.089	-0.089
MethylationRate	Hg2	Soil - Surface	0.088	0.088
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.088	-0.011
WaterTemperature_K	All	Surface water	-0.082	-0.082
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.078	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.074	-0.008
SedimentDepositionVelocity	All	Surface water	0.068	0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.058	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.055	-0.007
FractionofAreaAvailableforRunoff	All	Soil - Surface	0.048	0.014
TotalRunoffRate_m3_m2_day	All	Soil - Surface	0.048	0.014

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Benthic Invertebrate in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.975	0.349
SedimentPartitioning_PartitionCoefficient	Hg2	Benthic Invertebrate	0.996	2.987
emissionRate	Hg2	Facility	0.993	0.993
phi	All	Sediment	-0.813	-0.244
Kd	Hg2	Surface water	0.795	0.795
Flushes_per_year	All	Surface water	-0.788	-0.236
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
WaterTemperature_K	All	Surface Water	-0.553	-0.553
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
rho	All	Sediment	0.308	0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.201	-0.200
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.141	-0.140
WaterColumnDissPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	-0.140	-0.419
BiomassPerArea_kg_m2	All	Macrophyte	0.140	0.140
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Macrophyte	0.140	0.419
Elemental Mercury in Benthic Invertebrate in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	7.838	0.392
phi	All	Sediment	-2.215	-0.665
rho	All	Sediment	1.230	0.062
SuspendedSedimentconcentration	All	Surface water	-1.072	-0.322
SedimentPartitioning_PartitionCoefficient	Hg0	Benthic Invertebrate	0.999	2.996
emissionRate	Hg2	Facility	0.993	0.993
SedimentDepositionVelocity	All	Surface water	-0.938	-0.281
ReductionRate	Hg2	Sediment	0.872	0.871
Flushes_per_year	All	Surface water	-0.796	-0.239
Kd	Hg2	Surface water	0.732	0.732
WaterTemperature_K	All	Surface Water	-0.702	-0.702
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.317
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
DimensionlessViscousSublayerThickness	All	Surface water	0.144	0.043
horizontalWindSpeed	All	FullSS	-0.144	-0.144
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Benthic Invertebrate in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.960	0.348
DemethylationRate	MHg	Sediment	-1.007	-1.006
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	0.999	2.998
emissionRate	Hg2	Facility	0.993	0.993
MethylationRate	Hg2	Sediment	0.991	0.990
phi	All	Sediment	-0.804	-0.241
Kd	Hg2	Surface water	0.790	0.790
Flushes_per_year	All	Surface water	-0.787	-0.236
WaterTemperature_K	All	Surface Water	-0.608	-0.607
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
rho	All	Sediment	0.302	0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.200	-0.200
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.141	-0.141
WaterColumnDissPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	-0.140	-0.419
Divalent Mercury in Benthic Omnivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface Water	-1.378	-1.377
rho	All	Surface water	1.210	0.061
Flushes_per_year	All	Surface water	-1.008	-0.302
SedimentPartitioning_PartitionCoefficient	Hg2	Benthic Invertebrate	0.994	2.983
AssimilationEfficiencyFromFood	Hg2	Benthic Omnivore	0.994	0.993
emissionRate	Hg2	Facility	0.991	0.991
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Benthic Omnivore	-0.966	-0.966
phi	All	Sediment	-0.897	-0.269
Rain	All	FullSS	0.729	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.729	2.186
SuspendedSedimentconcentration	All	Surface water	-0.603	-0.181
Kd	Hg2	Surface water	0.392	0.392
Fractionofareaavailableforerosion	All	Soil - Surface	0.368	0.110
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.368	0.110
rho	All	Sediment	0.363	0.018
rho	All	Soil - Surface	-0.362	-0.018
ReductionRate	Hg2	Soil - Surface	-0.362	-0.361
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.251	-0.027
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.087	-0.011
BW	All	Benthic Omnivore	0.085	0.025
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.076	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.076	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.059	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.056	-0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.047	-0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.046	0.007
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.043	-0.005
NumberofFishperSquareMeter	All	Benthic Omnivore	0.043	0.043

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Benthic Omnivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface Water	16.110	16.094
rho	All	Surface water	1.399	0.070
phi	All	Sediment	-1.383	-0.415
OxidationRate	Hg0	Benthic Omnivore	-1.010	-1.009
SedimentPartitioning_PartitionCoefficient	Hg0	Benthic Invertebrate	1.000	3.000
AssimilationEfficiencyFromFood	Hg0	Benthic Omnivore	0.999	0.998
Flushes_per_year	All	Surface water	-0.991	-0.297
rho	All	Sediment	0.683	0.034
emissionRate	Hg0	Facility	0.653	0.653
Kd	Hg0	Surface water	0.614	0.614
SuspendedSedimentconcentration	All	Surface water	-0.583	-0.175
HenryLawConstant	Hg0	Elemental Mercury	-0.512	-0.512
SedimentDepositionVelocity	All	Surface water	-0.380	-0.114
emissionRate	Hg2	Facility	0.347	0.347
AirTemperature_K	All	FullSS	0.343	0.000
ReductionRate	Hg2	Sediment	0.320	0.319
D_purewater	Hg0	Elemental Mercury	0.297	0.089
Rain	All	FullSS	0.266	0.033
VaporWashoutRatio	Hg2	Divalent Mercury	0.255	0.764
CurrentVelocity	All	Surface water	0.241	0.041
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.197	-0.021
BW	All	Benthic Omnivore	-0.152	-0.045
horizontalWindSpeed	All	FullSS	0.136	0.136
DimensionlessViscousSublayerThickness	All	Surface water	-0.136	-0.041
Kd	Hg2	Surface water	0.126	0.126
Fractionofareaavailableforerosion	All	Soil - Surface	0.126	0.038
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.126	0.038
ReductionRate	Hg2	Soil - Surface	-0.123	-0.123
rho	All	Soil - Surface	-0.123	-0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.118	-0.013
Methyl Mercury in Benthic Omnivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.117	0.056
Flushes_per_year	All	Surface water	-1.001	-0.3
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	1	3
DemethylationRate	MHg	Sediment	-0.998	-0.997
AssimilationEfficiencyFromFood	MHg	Benthic Omnivore	0.996	0.995
emissionRate	Hg2	Facility	0.995	0.995
MethylationRate	Hg2	Sediment	0.91	0.909
phi	All	Sediment	-0.778	-0.233
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Omnivore	-0.688	-0.688
WaterTemperature_K	All	Surface Water	-0.558	-0.557
SuspendedSedimentconcentration	All	Surface water	-0.527	-0.158
ReductionRate	Hg2	Soil - Surface	-0.37	-0.369
rho	All	Soil - Surface	-0.37	-0.018
Kd	Hg2	Surface water	0.359	0.359
Fractionofareaavailableforerosion	All	Soil - Surface	0.353	0.106
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.353	0.106
NumberofFishperSquareMeter	All	Benthic Omnivore	0.315	0.315
BW	All	Benthic Omnivore	0.302	0.091
rho	All	Sediment	0.282	0.014
AssimilationEfficiencyFromFood	MHg	Benthic Carnivore	-0.281	-0.28
NumberofFishperSquareMeter	All	Benthic Carnivore	-0.281	-0.281
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.254	-0.028
BW	All	Benthic Carnivore	-0.239	-0.072
DemethylationRate	MHg	Soil - Surface	-0.089	-0.089
MethylationRate	Hg2	Soil - Surface	0.088	0.088
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.088	-0.011
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.078	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties
(top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Benthic Omnivore in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.989	0.349
WaterTemperature_K	All	Surface Water	-1.618	-1.616
emissionRate	Hg2	Facility	0.993	0.993
AssimilationEfficiencyFromFood	Hg2	Benthic Omnivore	0.983	0.982
SedimentPartitioning_PartitionCoefficient	Hg2	Benthic Invertebrate	0.980	2.940
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Benthic Omnivore	-0.952	-0.952
phi	All	Sediment	-0.835	-0.250
Kd	Hg2	Surface water	0.794	0.794
Flushes_per_year	All	Surface water	-0.788	-0.236
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
rho	All	Sediment	0.323	0.016
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.200	-0.199
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SuspendedSedimentconcentration	All	Surface water	-0.151	-0.045
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.141	-0.140
Elemental Mercury in Benthic Omnivore in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface Water	15.540	15.524
rho	All	Surface water	7.838	0.392
phi	All	Sediment	-2.215	-0.665
rho	All	Sediment	1.230	0.062
SuspendedSedimentconcentration	All	Surface water	-1.072	-0.322
OxidationRate	Hg0	Benthic Omnivore	-1.010	-1.009
AssimilationEfficiencyFromFood	Hg0	Benthic Omnivore	0.999	0.998
SedimentPartitioning_PartitionCoefficient	Hg0	Benthic Invertebrate	0.999	2.996
emissionRate	Hg2	Facility	0.993	0.993
SedimentDepositionVelocity	All	Surface water	-0.938	-0.281
ReductionRate	Hg2	Sediment	0.872	0.871
Flushes_per_year	All	Surface water	-0.796	-0.239
Kd	Hg2	Surface water	0.732	0.732
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.317
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
BW	All	Benthic Omnivore	-0.152	-0.046
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Benthic Omnivore in Sed_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.960	0.348
DemethylationRate	MHg	Sediment	-1.007	-1.006
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	0.999	2.998
AssimilationEfficiencyFromFood	MHg	Benthic Omnivore	0.996	0.995
emissionRate	Hg2	Facility	0.993	0.993
MethylationRate	Hg2	Sediment	0.991	0.990
phi	All	Sediment	-0.804	-0.241
Kd	Hg2	Surface water	0.790	0.790
Flushes_per_year	All	Surface water	-0.787	-0.236
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Omnivore	-0.667	-0.667
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
WaterTemperature_K	All	Surface Water	-0.499	-0.499
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
NumberofFishperSquareMeter	All	Benthic Omnivore	0.335	0.335
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
BW	All	Benthic Omnivore	0.318	0.095
rho	All	Sediment	0.302	0.015
AssimilationEfficiencyFromFood	MHg	Benthic Carnivore	-0.272	-0.272
NumberofFishperSquareMeter	All	Benthic Carnivore	-0.272	-0.272
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
BW	All	Benthic Carnivore	-0.231	-0.069
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.200	-0.200
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
Divalent Mercury in Common Loon in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.153	0.058
WaterTemperature_K	All	Surface Water	-1.019	-1.018
TotalExcretionRate	Hg2	Common Loon	-1.010	-3.030
Flushes_per_year	All	Surface water	-0.990	-0.297
FoodIngestionRate	All	Common Loon	0.984	0.295
emissionRate	Hg2	Facility	0.978	0.978
phi	All	Sediment	-0.834	-0.250
Rain	All	FullSS	0.719	0.088
VaporWashoutRatio	Hg2	Divalent Mercury	0.719	2.158
AssimilationEfficiencyFromFood	Hg2	Common Loon	0.572	0.571
SedimentPartitioning_PartitionCoefficient	Hg2	Benthic Invertebrate	0.569	1.708
AssimilationEfficiencyFromFood	Hg2	Benthic Omnivore	0.569	0.568
SuspendedSedimentconcentration	All	Surface water	-0.563	-0.169
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Benthic Omnivore	-0.553	-0.553
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	0.412	1.236
AssimilationEfficiencyFromFood	MHg	Common Loon	0.412	0.411
AssimilationEfficiencyFromFood	MHg	Benthic Omnivore	0.410	0.410
DemethylationRate	MHg	Sediment	-0.410	-0.410
MethylationRate	Hg2	Sediment	0.374	0.373
Kd	Hg2	Surface water	0.373	0.373
ReductionRate	Hg2	Soil - Surface	-0.360	-0.359
rho	All	Soil - Surface	-0.360	-0.018
Fractionofareaavailableforerosion	All	Soil - Surface	0.356	0.107
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.356	0.107
rho	All	Sediment	0.324	0.016
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Omnivore	-0.284	-0.284
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.254	-0.028
DemethylationRate	MHg	Common Loon	0.203	0.202
TotalExcretionRate	MHg	Common Loon	-0.203	-0.203
BW	All	Benthic Omnivore	0.173	0.052

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Common Loon in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
InhalationProps_B	All	Common Loon	1.126	0.338
InhalationAssimilationEfficiency	Hg0	Common Loon	0.997	0.299
InhalationProps_A	All	Common Loon	0.997	0.299
emissionRate	Hg0	Facility	0.995	0.995
OxidationRate	Hg0	Common Loon	-0.962	-0.961
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.524	-0.061
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.412	0.058
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.382	-0.042
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.306	-0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.229	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.208	-0.024
BW	All	Common Loon	-0.202	-0.060
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.190	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.155	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.131	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.113	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.105	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.100	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.097	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.090	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.083	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.080	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.075	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.073	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.070	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.069	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.061	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.060	0.005
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.058	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.057	-0.006
Methyl Mercury in Common Loon in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.116	0.056
Flushes_per_year	All	Surface water	-1.001	-0.300
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	0.999	2.997
AssimilationEfficiencyFromFood	MHg	Common Loon	0.998	0.997
FoodIngestionRate	All	Common Loon	0.998	0.299
DemethylationRate	MHg	Sediment	-0.997	-0.996
AssimilationEfficiencyFromFood	MHg	Benthic Omnivore	0.995	0.994
emissionRate	Hg2	Facility	0.995	0.995
MethylationRate	Hg2	Sediment	0.909	0.908
phi	All	Sediment	-0.777	-0.233
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Omnivore	-0.687	-0.687
WaterTemperature_K	All	Surface Water	-0.558	-0.558
SuspendedSedimentconcentration	All	Surface water	-0.527	-0.158
DemethylationRate	MHg	Common Loon	-0.514	-0.513
TotalExcretionRate	MHg	Common Loon	-0.491	-0.491
ReductionRate	Hg2	Soil - Surface	-0.370	-0.369
rho	All	Soil - Surface	-0.370	-0.018
Kd	Hg2	Surface water	0.359	0.359
Fractionofareaavailableforerosion	All	Soil - Surface	0.353	0.106
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.353	0.106
NumberofFishperSquareMeter	All	Benthic Omnivore	0.315	0.315
BW	All	Benthic Omnivore	0.301	0.090
rho	All	Sediment	0.282	0.014
AssimilationEfficiencyFromFood	MHg	Benthic Carnivore	-0.280	-0.280
NumberofFishperSquareMeter	All	Benthic Carnivore	-0.280	-0.280
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.254	-0.028
BW	All	Benthic Carnivore	-0.238	-0.071
DemethylationRate	MHg	Soil - Surface	-0.090	-0.090

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Common Loon in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.977	0.349
WaterTemperature_K	All	Surface Water	-1.177	-1.176
TotalExcretionRate	Hg2	Common Loon	-1.010	-3.030
FoodIngestionRate	All	Common Loon	0.998	0.299
emissionRate	Hg2	Facility	0.993	0.993
phi	All	Sediment	-0.822	-0.247
Kd	Hg2	Surface water	0.792	0.792
Flushes_per_year	All	Surface water	-0.788	-0.236
Rain	All	FullSS	0.607	0.074
AssimilationEfficiencyFromFood	Hg2	Common Loon	0.605	0.605
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
AssimilationEfficiencyFromFood	Hg2	Benthic Omnivore	0.596	0.595
SedimentPartitioning_PartitionCoefficient	Hg2	Benthic Invertebrate	0.592	1.776
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Benthic Omnivore	-0.577	-0.577
DemethylationRate	MHg	Sediment	-0.395	-0.394
AssimilationEfficiencyFromFood	MHg	Common Loon	0.393	0.393
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	0.393	1.179
AssimilationEfficiencyFromFood	MHg	Benthic Omnivore	0.392	0.392
MethylationRate	Hg2	Sediment	0.388	0.388
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
rho	All	Sediment	0.315	0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Omnivore	-0.263	-0.263
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.200	-0.200
Elemental Mercury in Common Loon in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.068	0.053
OxidationRate	Hg0	Common Loon	-0.962	-0.961
InhalationProps_B	All	Common Loon	0.940	0.282
InhalationAssimilationEfficiency	Hg0	Common Loon	0.832	0.250
InhalationProps_A	All	Common Loon	0.832	0.250
emissionRate	Hg0	Facility	0.828	0.828
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.471	0.053
WaterTemperature_K	All	Surface Water	-0.362	-0.362
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.285	-0.032
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.284	0.032
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.283	-0.031
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.263	-0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.248	-0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.225	0.025
BW	All	Common Loon	-0.223	-0.067
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.214	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.189	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.185	0.029
emissionRate	Hg2	Facility	0.172	0.172
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.171	0.027
AssimilationEfficiencyFromWater	Hg0	Common Loon	0.168	0.168
WaterIngProps_A	All	Common Loon	0.168	0.050
WaterIngProps_B	All	Common Loon	0.159	0.048
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.149	0.021
Flushes_per_year	All	Surface water	-0.147	-0.044
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.147	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.145	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.139	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.129	-0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.122	-0.014

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties
(top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Common Loon in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.959	0.348
DemethylationRate	MHg	Sediment	-1.006	-1.005
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	0.999	2.996
AssimilationEfficiencyFromFood	MHg	Common Loon	0.998	0.997
FoodIngestionRate	All	Common Loon	0.998	0.299
AssimilationEfficiencyFromFood	MHg	Benthic Omnivore	0.995	0.994
emissionRate	Hg2	Facility	0.993	0.993
MethylationRate	Hg2	Sediment	0.990	0.989
phi	All	Sediment	-0.803	-0.241
Kd	Hg2	Surface water	0.790	0.790
Flushes_per_year	All	Surface water	-0.787	-0.236
HowMuchFasterHgEliminationIsThanForMHg	MHg	Benthic Omnivore	-0.667	-0.667
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
DemethylationRate	MHg	Common Loon	-0.514	-0.513
WaterTemperature_K	All	Surface Water	-0.499	-0.499
TotalExcretionRate	MHg	Common Loon	-0.491	-0.491
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
NumberofFishperSquareMeter	All	Benthic Omnivore	0.335	0.335
Fractionofareaavailableforerosion	All	Soil - Surface	0.324	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.324	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
BW	All	Benthic Omnivore	0.318	0.095
rho	All	Sediment	0.302	0.015
AssimilationEfficiencyFromFood	MHg	Benthic Carnivore	-0.272	-0.272
NumberofFishperSquareMeter	All	Benthic Carnivore	-0.272	-0.272
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
BW	All	Benthic Carnivore	-0.231	-0.069
Divalent Mercury in Water Column Carnivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface Water	-4.336	-4.332
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
Flushes_per_year	All	Surface water	-1.010	-0.303
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Carnivore	-1.001	-1.001
AlgaeUptakeRate	Hg2	Surface water	1.000	0.300
AssimilationEfficiencyFromFood	Hg2	Water Column Herbivore	1.000	0.999
emissionRate	Hg2	Facility	0.994	0.994
AssimilationEfficiencyFromFood	Hg2	Water Column Carnivore	0.933	0.932
AssimilationEfficiencyFromFood	Hg2	Water Column Omnivore	0.933	0.932
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Herbivore	-0.931	-0.931
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Omnivore	-0.922	-0.922
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
Kd	Hg2	Surface water	-0.604	-0.604
SuspendedSedimentconcentration	All	Surface water	-0.603	-0.181
Fractionofareaavailableforerosion	All	Soil - Surface	0.372	0.112
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.372	0.112
rho	All	Soil - Surface	-0.362	-0.018
ReductionRate	Hg2	Soil - Surface	-0.362	-0.361
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.251	-0.027
rho	All	Surface water	0.215	0.011
BW	All	Water Column Herbivore	0.113	0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.087	-0.011
NumberofFishperSquareMeter	All	Water Column Herbivore	0.078	0.078
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.076	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.076	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.074	-0.008

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Water Column Carnivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface Water	-1.998	-1.996
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
AlgaeUptakeRate	MHg	Surface water	1.000	0.300
AssimilationEfficiencyFromFood	MHg	Water Column Herbivore	1.000	0.999
emissionRate	Hg2	Facility	0.998	0.998
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Carnivore	-0.983	-0.983
DemethylationRate	MHg	Soil - Surface	-0.940	-0.939
MethylationRate	Hg2	Soil - Surface	0.931	0.930
Flushes_per_year	All	Surface water	-0.929	-0.279
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.732	2.195
Kd	MHg	Surface water	-0.658	-0.658
SuspendedSedimentconcentration	All	Surface water	-0.644	-0.193
NumberofFishperSquareMeter	All	Water Column Herbivore	0.534	0.534
AssimilationEfficiencyFromFood	MHg	Water Column Carnivore	0.493	0.492
AssimilationEfficiencyFromFood	MHg	Water Column Omnivore	0.485	0.485
NumberofFishperSquareMeter	All	Water Column Carnivore	-0.485	-0.485
BW	All	Water Column Herbivore	0.478	0.143
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Herbivore	-0.470	-0.470
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Omnivore	-0.464	-0.464
ReductionRate	Hg2	Soil - Surface	-0.437	-0.436
rho	All	Soil - Surface	-0.436	-0.022
BW	All	Water Column Carnivore	-0.363	-0.109
Kd	MHg	Soil - Surface	-0.310	-0.310
FractionofAreaAvailableforRunoff	All	Soil - Surface	0.285	0.086
TotalRunoffRate_m3_m2_day	All	Soil - Surface	0.285	0.086
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.279	-0.030
Fractionofareaavailableforerosion	All	Soil - Surface	0.187	0.056
Divalent Mercury in Water Column Carnivore in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.064	0.303
WaterTemperature_K	All	Surface Water	-4.287	-4.283
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
AlgaeUptakeRate	Hg2	Surface water	1.000	0.300
AssimilationEfficiencyFromFood	Hg2	Water Column Herbivore	1.000	0.999
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Carnivore	-0.995	-0.995
emissionRate	Hg2	Facility	0.993	0.993
AssimilationEfficiencyFromFood	Hg2	Water Column Carnivore	0.934	0.933
AssimilationEfficiencyFromFood	Hg2	Water Column Omnivore	0.933	0.932
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Herbivore	-0.923	-0.923
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Omnivore	-0.910	-0.910
Flushes_per_year	All	Surface water	-0.789	-0.237
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.325	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.325	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.201	-0.201
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
Kd	Hg2	Surface water	-0.191	-0.191
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Water Column Carnivore in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	4.932	0.247
WaterTemperature_K	All	Surface Water	-1.392	-1.391
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
AssimilationEfficiencyFromFood	MHg	Water Column Herbivore	1.000	0.999
AlgaeUptakeRate	MHg	Surface water	1.000	0.300
emissionRate	Hg2	Facility	0.994	0.994
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Carnivore	-0.966	-0.966
Kd	MHg	Surface water	-0.791	-0.791
Flushes_per_year	All	Surface water	-0.714	-0.214
SuspendedSedimentconcentration	All	Surface water	-0.673	-0.202
MethylationRate	Hg2	Surface water	0.647	0.647
SedimentDepositionVelocity	All	Surface water	-0.627	-0.188
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.606	1.817
NumberofFishperSquareMeter	All	Water Column Herbivore	0.540	0.540
AssimilationEfficiencyFromFood	MHg	Water Column Carnivore	0.503	0.503
AssimilationEfficiencyFromFood	MHg	Water Column Omnivore	0.492	0.491
BW	All	Water Column Herbivore	0.482	0.145
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Herbivore	-0.464	-0.464
NumberofFishperSquareMeter	All	Water Column Carnivore	-0.458	-0.458
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Omnivore	-0.454	-0.454
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.381	0.043
BW	All	Water Column Carnivore	-0.341	-0.102
ReductionRate	Hg2	Soil - Surface	-0.328	-0.328
rho	All	Soil - Surface	-0.328	-0.016
Fractionofareaavailableforerosion	All	Soil - Surface	0.278	0.083
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.278	0.083
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.269	0.030
Divalent Mercury in Water Column Herbivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface Water	-1.459	-1.458
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
Flushes_per_year	All	Surface water	-1.010	-0.303
AlgaeUptakeRate	Hg2	Surface water	1.000	0.300
AssimilationEfficiencyFromFood	Hg2	Water Column Herbivore	1.000	0.999
emissionRate	Hg2	Facility	0.994	0.994
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Herbivore	-0.931	-0.931
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
Kd	Hg2	Surface water	-0.604	-0.604
SuspendedSedimentconcentration	All	Surface water	-0.603	-0.181
Fractionofareaavailableforerosion	All	Soil - Surface	0.372	0.112
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.372	0.112
rho	All	Soil - Surface	-0.362	-0.018
ReductionRate	Hg2	Soil - Surface	-0.362	-0.361
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.251	-0.027
rho	All	Surface water	0.215	0.011
BW	All	Water Column Herbivore	0.113	0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.087	-0.011
NumberofFishperSquareMeter	All	Water Column Herbivore	0.078	0.078
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.076	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.076	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.074	-0.008
AssimilationEfficiencyFromFood	Hg2	Water Column Omnivore	-0.068	-0.068
NumberofFishperSquareMeter	All	Water Column Omnivore	-0.068	-0.068
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.059	-0.007
BW	All	Water Column Omnivore	-0.058	-0.017

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties
(top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Water Column Herbivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
AlgaeUptakeRate	MHg	Surface water	1.000	0.300
AssimilationEfficiencyFromFood	MHg	Water Column Herbivore	1.000	0.999
emissionRate	Hg2	Facility	0.998	0.998
DemethylationRate	MHg	Soil - Surface	-0.940	-0.939
MethylationRate	Hg2	Soil - Surface	0.931	0.930
Flushes_per_year	All	Surface water	-0.929	-0.279
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.732	2.195
Kd	MHg	Surface water	-0.658	-0.658
SuspendedSedimentconcentration	All	Surface water	-0.644	-0.193
WaterTemperature_K	All	Surface Water	-0.548	-0.547
NumberofFishperSquareMeter	All	Water Column Herbivore	0.534	0.534
AssimilationEfficiencyFromFood	MHg	Water Column Omnivore	-0.520	-0.520
NumberofFishperSquareMeter	All	Water Column Omnivore	-0.520	-0.520
BW	All	Water Column Herbivore	0.478	0.143
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Herbivore	-0.470	-0.470
BW	All	Water Column Omnivore	-0.442	-0.133
ReductionRate	Hg2	Soil - Surface	-0.437	-0.436
rho	All	Soil - Surface	-0.436	-0.022
Kd	MHg	Soil - Surface	-0.310	-0.310
FractionofAreaAvailableforRunoff	All	Soil - Surface	0.285	0.086
TotalRunoffRate_m3_m2_day	All	Soil - Surface	0.285	0.086
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.279	-0.030
Fractionofareaavailableforerosion	All	Soil - Surface	0.187	0.056
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.187	0.056
SedimentDepositionVelocity	All	Surface water	-0.111	-0.033
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.096	-0.012
Divalent Mercury in Water Column Herbivore in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.064	0.303
WaterTemperature_K	All	Surface Water	-1.817	-1.815
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
AlgaeUptakeRate	Hg2	Surface water	1.000	0.300
AssimilationEfficiencyFromFood	Hg2	Water Column Herbivore	1.000	0.999
emissionRate	Hg2	Facility	0.993	0.993
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Herbivore	-0.923	-0.923
Flushes_per_year	All	Surface water	-0.789	-0.237
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.325	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.325	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.201	-0.201
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
Kd	Hg2	Surface water	-0.191	-0.191
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.143	0.023
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.141	-0.140

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties
(top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Water Column Herbivore in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	4.932	0.247
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
AssimilationEfficiencyFromFood	MHg	Water Column Herbivore	1.000	0.999
AlgaeUptakeRate	MHg	Surface water	1.000	0.300
emissionRate	Hg2	Facility	0.994	0.994
Kd	MHg	Surface water	-0.791	-0.791
Flushes_per_year	All	Surface water	-0.714	-0.214
WaterTemperature_K	All	Surface Water	-0.694	-0.693
SuspendedSedimentconcentration	All	Surface water	-0.673	-0.202
MethylationRate	Hg2	Surface water	0.647	0.647
SedimentDepositionVelocity	All	Surface water	-0.627	-0.188
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.606	1.817
NumberofFishperSquareMeter	All	Water Column Herbivore	0.540	0.540
AssimilationEfficiencyFromFood	MHg	Water Column Omnivore	-0.514	-0.513
NumberofFishperSquareMeter	All	Water Column Omnivore	-0.514	-0.514
BW	All	Water Column Herbivore	0.482	0.145
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Herbivore	-0.464	-0.464
BW	All	Water Column Omnivore	-0.437	-0.131
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.381	0.043
ReductionRate	Hg2	Soil - Surface	-0.328	-0.328
rho	All	Soil - Surface	-0.328	-0.016
Fractionofareaavailableforerosion	All	Soil - Surface	0.278	0.083
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.278	0.083
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.269	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.231	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.225	0.025
DemethylationRate	MHg	Soil - Surface	-0.209	-0.208
Divalent Mercury in Water Column Omivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
WaterTemperature_K	All	Surface Water	-2.717	-2.714
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
Flushes_per_year	All	Surface water	-1.010	-0.303
AlgaeUptakeRate	Hg2	Surface water	1.000	0.300
AssimilationEfficiencyFromFood	Hg2	Water Column Herbivore	1.000	0.999
emissionRate	Hg2	Facility	0.995	0.995
AssimilationEfficiencyFromFood	Hg2	Water Column Omnivore	0.933	0.932
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Herbivore	-0.931	-0.931
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Omnivore	-0.922	-0.922
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.731	2.194
Kd	Hg2	Surface water	-0.604	-0.604
SuspendedSedimentconcentration	All	Surface water	-0.603	-0.181
Fractionofareaavailableforerosion	All	Soil - Surface	0.372	0.112
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.372	0.112
rho	All	Soil - Surface	-0.362	-0.018
ReductionRate	Hg2	Soil - Surface	-0.362	-0.361
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.251	-0.027
rho	All	Surface water	0.215	0.011
BW	All	Water Column Herbivore	0.113	0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.087	-0.011
NumberofFishperSquareMeter	All	Water Column Herbivore	0.078	0.078
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.076	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.076	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.075	-0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.074	-0.008
AssimilationEfficiencyFromFood	Hg2	Water Column Carnivore	-0.067	-0.067
NumberofFishperSquareMeter	All	Water Column Carnivore	-0.067	-0.067

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Water Column Omivore in River				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
AlgaeUptakeRate	MHg	Surface water	1.000	0.300
AssimilationEfficiencyFromFood	MHg	Water Column Herbivore	1.000	0.999
emissionRate	Hg2	Facility	0.998	0.998
DemethylationRate	MHg	Soil - Surface	-0.940	-0.939
MethylationRate	Hg2	Soil - Surface	0.931	0.930
Flushes_per_year	All	Surface water	-0.929	-0.279
WaterTemperature_K	All	Surface Water	-0.796	-0.796
Rain	All	FullSS	0.732	0.089
VaporWashoutRatio	Hg2	Divalent Mercury	0.732	2.195
Kd	MHg	Surface water	-0.658	-0.658
SuspendedSedimentconcentration	All	Surface water	-0.644	-0.193
NumberofFishperSquareMeter	All	Water Column Herbivore	0.534	0.534
AssimilationEfficiencyFromFood	MHg	Water Column Carnivore	-0.512	-0.512
NumberofFishperSquareMeter	All	Water Column Carnivore	-0.512	-0.512
AssimilationEfficiencyFromFood	MHg	Water Column Omnivore	0.485	0.485
BW	All	Water Column Herbivore	0.478	0.143
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Herbivore	-0.470	-0.470
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Omnivore	-0.464	-0.464
ReductionRate	Hg2	Soil - Surface	-0.437	-0.436
rho	All	Soil - Surface	-0.436	-0.022
BW	All	Water Column Carnivore	-0.435	-0.131
Kd	MHg	Soil - Surface	-0.310	-0.310
FractionofAreaAvailableforRunoff	All	Soil - Surface	0.285	0.086
TotalRunoffRate_m3_m2_day	All	Soil - Surface	0.285	0.086
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.279	-0.030
Fractionofareaavailableforerosion	All	Soil - Surface	0.187	0.056
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.187	0.056
Divalent Mercury in Water Column Omivore in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.064	0.303
WaterTemperature_K	All	Surface Water	-2.795	-2.792
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
AlgaeUptakeRate	Hg2	Surface water	1.000	0.300
AssimilationEfficiencyFromFood	Hg2	Water Column Herbivore	1.000	0.999
emissionRate	Hg2	Facility	0.993	0.993
AssimilationEfficiencyFromFood	Hg2	Water Column Omnivore	0.933	0.932
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Herbivore	-0.923	-0.923
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Water Column Omnivore	-0.910	-0.910
Flushes_per_year	All	Surface water	-0.789	-0.237
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.815
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.325	0.097
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.325	0.097
ReductionRate	Hg2	Soil - Surface	-0.318	-0.318
rho	All	Soil - Surface	-0.318	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
ReductionRate	Hg2	Surface water	-0.201	-0.201
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
Kd	Hg2	Surface water	-0.191	-0.191
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Water Column Omivore in SW_Swetts				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	4.932	0.247
AlgaeDensity_g_m3	All	Surface water	-1.010	-0.303
AlgaeGrowthRate	All	Surface water	-1.010	-0.303
AlgaeRadius	All	Surface water	-1.010	-0.303
AssimilationEfficiencyFromFood	MHg	Water Column Herbivore	1.000	0.999
AlgaeUptakeRate	MHg	Surface water	1.000	0.300
emissionRate	Hg2	Facility	0.994	0.994
Kd	MHg	Surface water	-0.791	-0.791
Flushes_per_year	All	Surface water	-0.714	-0.214
SuspendedSedimentconcentration	All	Surface water	-0.673	-0.202
MethylationRate	Hg2	Surface water	0.647	0.647
SedimentDepositionVelocity	All	Surface water	-0.627	-0.188
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.606	1.817
WaterTemperature_K	All	Surface Water	-0.548	-0.547
NumberofFishperSquareMeter	All	Water Column Herbivore	0.540	0.540
AssimilationEfficiencyFromFood	MHg	Water Column Carnivore	-0.502	-0.501
NumberofFishperSquareMeter	All	Water Column Carnivore	-0.502	-0.502
AssimilationEfficiencyFromFood	MHg	Water Column Omnivore	0.492	0.491
BW	All	Water Column Herbivore	0.482	0.145
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Herbivore	-0.464	-0.464
HowMuchFasterHgEliminationIsThanForMHg	MHg	Water Column Omnivore	-0.454	-0.454
BW	All	Water Column Carnivore	-0.427	-0.128
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.381	0.043
ReductionRate	Hg2	Soil - Surface	-0.328	-0.328
rho	All	Soil - Surface	-0.328	-0.016
Fractionofareaavailableforerosion	All	Soil - Surface	0.278	0.083
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.278	0.083
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.269	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.231	-0.025
Divalent Mercury in Mouse in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
TotalExcretionRate	Hg2	Mouse	-1.007	-1.007
emissionRate	Hg2	Facility	0.994	0.994
AssimilationEfficiencyFromSoils	Hg2	Mouse	0.953	0.952
FoodIngestionRate	All	Mouse	0.553	0.166
FoodIngestionRate	All	White-tailed Deer	-0.508	-0.152
BW	All	White-tailed Deer	-0.508	-0.152
NumberofIndividualsPerSquareMeter	All	White-tailed Deer	-0.508	-0.508
AssimilationEfficiencyFromSoils	Hg2	White-tailed Deer	-0.496	-0.496
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	0.496	0.495
VaporWashoutRatio	Hg2	Divalent Mercury	0.465	1.394
Rain	All	FullSS	0.436	0.053
SoilIngestionRate	All	Mouse	0.432	0.130
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.394	0.044
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.331	0.037
WaterContent	All	Leaf - Coniferous Forest	-0.320	-0.160
WetDepInterceptionFraction_UserSupplied	All	Leaf - Coniferous Forest	0.313	0.094
LitterFallRate	All	Leaf - Coniferous Forest	-0.284	-0.284
AllowExchange_SteadyState_forOther	All	Leaf - Coniferous Forest	0.282	0.281
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.273	-0.030
TransferFactortoLeafParticle	Hg2	Leaf - Coniferous Forest	0.270	0.810
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.263	0.029
Fractionofareaavailableforerosion	All	Soil - Surface	-0.249	-0.075
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.249	-0.075
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.220	-0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.219	0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.191	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.189	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.186	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.175	-0.020
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.173	0.052

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Mouse in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	1.736	0.087
InhalationProps_B	All	Mouse	-1.712	-0.514
WaterIngProps_B	All	Mouse	-0.974	-0.292
OxidationRate	Hg0	Mouse	-0.960	-0.959
WaterTemperature_K	All	Surface Water	-0.588	-0.587
emissionRate	Hg0	Facility	0.563	0.563
InhalationAssimilationEfficiency	Hg0	Mouse	0.539	0.162
InhalationProps_A	All	Mouse	0.539	0.162
emissionRate	Hg2	Facility	0.437	0.437
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.392	0.044
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.299	0.033
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.286	-0.032
Rain	All	FullSS	0.276	0.034
AssimilationEfficiencyFromWater	Hg0	Mouse	0.272	0.272
WaterIngProps_A	All	Mouse	0.272	0.082
VaporWashoutRatio	Hg2	Divalent Mercury	0.267	0.800
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.256	0.028
Flushes_per_year	All	Surface water	-0.239	-0.072
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.238	-0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.210	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.208	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.201	-0.025
AirTemperature_K	All	FullSS	0.191	0.000
HenryLawConstant	Hg0	Elemental Mercury	-0.191	-0.191
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.191	-0.020
AssimilationEfficiencyFromSoils	Hg0	Mouse	0.189	0.189
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.189	-0.022
Kd	Hg0	Soil - Surface	0.181	0.181
SoilIngestionRate	All	Mouse	0.181	0.054
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.177	-0.019
Methyl Mercury in Mouse in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.995	0.995
AssimilationEfficiencyFromSoils	MHg	Mouse	0.930	0.929
SoilIngestionRate	All	Mouse	0.930	0.279
DemethylationRate	MHg	Soil - Surface	-0.929	-0.928
MethylationRate	Hg2	Soil - Surface	0.921	0.920
TotalExcretionRate	MHg	Mouse	-0.745	-2.236
Rain	All	FullSS	0.608	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.607	1.822
Fractionofareaavailableforerosion	All	Soil - Surface	-0.568	-0.170
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.568	-0.170
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.367	0.041
ReductionRate	Hg2	Soil - Surface	-0.366	-0.365
rho	All	Soil - Surface	-0.365	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.265	0.029
DemethylationRate	MHg	Mouse	-0.257	-0.256
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.227	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.223	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.193	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.178	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.173	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.163	-0.163
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.141	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.140	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.129	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.120	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.116	-0.013
WetDepInterceptionFraction_UserSupplied	All	Leaf - Coniferous Forest	-0.112	-0.034

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Mouse in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
TotalExcretionRate	Hg2	Mouse	-1.007	-1.007
emissionRate	Hg2	Facility	0.997	0.997
AssimilationEfficiencyFromSoils	Hg2	Mouse	0.972	0.971
SoilIngestionRate	All	Mouse	0.910	0.273
VaporWashoutRatio	Hg2	Divalent Mercury	0.681	2.042
Rain	All	FullSS	0.678	0.083
Fractionofareaavailableforerosion	All	Soil - Surface	-0.512	-0.154
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.512	-0.154
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.380	-0.041
rho	All	Soil - Surface	-0.350	-0.017
ReductionRate	Hg2	Soil - Surface	-0.350	-0.349
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.323	-0.038
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.259	0.037
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.173	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.156	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.151	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.138	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.101	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.097	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.091	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.090	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.088	0.013
FoodIngestionRate	All	Mouse	0.087	0.026
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.085	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.082	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.077	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.076	-0.009
LitterFallRate	All	Leaf - Grasses/Herbs	-0.075	-0.006
AllowExchange_SteadyState_forOther	All	Leaf - Grasses/Herbs	0.074	0.002
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.073	0.008
Elemental Mercury in Mouse in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
InhalationProps_B	All	Mouse	-2.415	-0.725
OxidationRate	Hg0	Mouse	-0.960	-0.959
emissionRate	Hg0	Facility	0.775	0.775
InhalationAssimilationEfficiency	Hg0	Mouse	0.760	0.228
InhalationProps_A	All	Mouse	0.760	0.228
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.476	-0.055
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.382	-0.042
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.375	0.053
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.267	-0.030
HenryLawConstant	Hg0	Elemental Mercury	-0.242	-0.242
AirTemperature_K	All	FullSS	0.239	0.000
AssimilationEfficiencyFromSoils	Hg0	Mouse	0.238	0.238
SoilIngestionRate	All	Mouse	0.237	0.071
Kd	Hg0	Soil - Surface	0.237	0.237
Fractionofareaavailableforverticaldiffusion	All	Soil - Surface	-0.232	-0.069
emissionRate	Hg2	Facility	0.225	0.225
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.215	0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.191	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.165	0.020
Rain	All	FullSS	0.162	0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.156	-0.017
VaporWashoutRatio	Hg2	Divalent Mercury	0.154	0.463
BW	All	Mouse	-0.152	-0.045
Fractionofareaavailableforerosion	All	Soil - Surface	-0.125	-0.038
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.125	-0.038
ReductionRate	Hg2	Soil - Surface	0.123	0.123
rho	All	Soil - Surface	0.123	0.006
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.121	0.017
D_pureair	Hg0	Elemental Mercury	-0.116	-0.006
VaporDryDepositionVelocity_m_day	Hg0	Soil - Surface	-0.115	-0.035

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Mouse in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.997	0.997
AssimilationEfficiencyFromSoils	MHg	Mouse	0.933	0.932
SoilIngestionRate	All	Mouse	0.933	0.280
DemethylationRate	MHg	Soil - Surface	-0.933	-0.932
MethylationRate	Hg2	Soil - Surface	0.924	0.923
TotalExcretionRate	MHg	Mouse	-0.745	-2.235
Rain	All	FullSS	0.685	0.084
VaporWashoutRatio	Hg2	Divalent Mercury	0.685	2.055
Fractionofareaavailableforerosion	All	Soil - Surface	-0.556	-0.167
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.556	-0.167
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.386	-0.042
ReductionRate	Hg2	Soil - Surface	-0.380	-0.379
rho	All	Soil - Surface	-0.379	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.309	-0.036
DemethylationRate	MHg	Mouse	-0.257	-0.256
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.247	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.166	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.158	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.139	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.132	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.093	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.092	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.083	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.082	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.078	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.073	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.070	0.008
Divalent Mercury in Raccoon in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	3.965	0.198
TotalExcretionRate	Hg2	Raccoon	-1.010	-1.010
emissionRate	Hg2	Facility	0.994	0.994
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.606	1.818
FoodIngestionRate	All	Raccoon	0.564	0.169
SedimentPartitioning_PartitionCoefficient	Hg2	Benthic Invertebrate	0.536	1.609
AssimilationEfficiencyFromFood	Hg2	Raccoon	0.536	0.536
phi	All	Sediment	-0.472	-0.142
Kd	Hg2	Surface water	0.451	0.451
Flushes_per_year	All	Surface water	-0.447	-0.134
SoilIngestionRate	All	Raccoon	0.435	0.130
AssimilationEfficiencyFromSoils	Hg2	Raccoon	0.433	0.432
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.377	0.042
ReductionRate	Hg2	Soil - Surface	-0.339	-0.338
rho	All	Soil - Surface	-0.339	-0.017
WaterTemperature_K	All	Surface Water	-0.328	-0.327
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.268	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.230	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.225	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.194	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.192	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.183	-0.022
rho	All	Sediment	0.182	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.166	-0.018
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.150	-0.150
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.144	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.141	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in Raccoon in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	7.779	0.389
phi	All	Sediment	-2.197	-0.659
rho	All	Sediment	1.220	0.061
SuspendedSedimentconcentration	All	Surface water	-1.063	-0.319
emissionRate	Hg2	Facility	0.991	0.991
AssimilationEfficiencyFromFood	Hg0	Raccoon	0.991	0.990
SedimentPartitioning_PartitionCoefficient	Hg0	Benthic Invertebrate	0.990	2.971
FoodIngestionRate	All	Raccoon	0.990	0.297
OxidationRate	Hg0	Raccoon	-0.962	-0.961
SedimentDepositionVelocity	All	Surface water	-0.930	-0.279
ReductionRate	Hg2	Sediment	0.865	0.864
Flushes_per_year	All	Surface water	-0.790	-0.237
Kd	Hg2	Surface water	0.726	0.726
WaterTemperature_K	All	Surface Water	-0.699	-0.698
Rain	All	FullSS	0.606	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.604	1.811
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.385	0.043
Fractionofareaavailableforerosion	All	Soil - Surface	0.318	0.095
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.318	0.095
ReductionRate	Hg2	Soil - Surface	-0.312	-0.312
rho	All	Soil - Surface	-0.312	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.196	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.161	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.147	0.023
Methyl Mercury in Raccoon in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	6.377	0.319
emissionRate	Hg2	Facility	0.994	0.994
DemethylationRate	MHg	Sediment	-0.922	-0.921
SedimentPartitioning_PartitionCoefficient	MHg	Benthic Invertebrate	0.915	2.746
MethylationRate	Hg2	Sediment	0.907	0.906
AssimilationEfficiencyFromFood	MHg	Raccoon	0.906	0.905
FoodIngestionRate	All	Raccoon	0.906	0.272
TotalExcretionRate	MHg	Raccoon	-0.748	-2.245
phi	All	Sediment	-0.736	-0.221
Kd	Hg2	Surface water	0.724	0.724
Flushes_per_year	All	Surface water	-0.721	-0.216
Rain	All	FullSS	0.607	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.605	1.816
WaterTemperature_K	All	Surface Water	-0.539	-0.538
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.384	0.043
ReductionRate	Hg2	Soil - Surface	-0.322	-0.322
rho	All	Soil - Surface	-0.322	-0.016
rho	All	Sediment	0.277	0.014
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.270	0.030
DemethylationRate	MHg	Raccoon	-0.258	-0.258
Fractionofareaavailableforerosion	All	Soil - Surface	0.249	0.075
TotalErosionRate_kg_m2_day	All	Soil - Surface	0.249	0.075
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.232	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.226	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.195	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.194	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.186	-0.023
ReductionRate	Hg2	Surface water	-0.184	-0.183
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.162	-0.018

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in Raccoon in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
TotalExcretionRate	Hg2	Raccoon	-1.010	-1.010
SoilIngestionRate	All	Raccoon	0.998	0.299
emissionRate	Hg2	Facility	0.997	0.997
AssimilationEfficiencyFromSoils	Hg2	Raccoon	0.994	0.993
Rain	All	FullSS	0.685	0.084
VaporWashoutRatio	Hg2	Divalent Mercury	0.685	2.055
Fractionofareaavailableforerosion	All	Soil - Surface	-0.554	-0.166
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.554	-0.166
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.386	-0.042
ReductionRate	Hg2	Soil - Surface	-0.380	-0.379
rho	All	Soil - Surface	-0.380	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.309	-0.036
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.247	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.166	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.158	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.139	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.132	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.093	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.092	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.083	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.082	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.078	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.072	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.070	0.008
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.070	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.063	-0.008
Kd	Hg2	Soil - Surface	0.061	0.061

Elemental Mercury in Raccoon in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
OxidationRate	Hg0	Raccoon	-0.962	-0.961
HenryLawConstant	Hg0	Elemental Mercury	-0.815	-0.815
AirTemperature_K	All	FullSS	0.796	0.001
AssimilationEfficiencyFromSoils	Hg0	Raccoon	0.757	0.757
Kd	Hg0	Soil - Surface	0.757	0.757
SoilIngestionRate	All	Raccoon	0.757	0.227
Fractionofareaavailableforverticaldiffusion	All	Soil - Surface	-0.756	-0.227
emissionRate	Hg2	Facility	0.747	0.747
Rain	All	FullSS	0.540	0.066
VaporWashoutRatio	Hg2	Divalent Mercury	0.514	1.542
Fractionofareaavailableforerosion	All	Soil - Surface	-0.398	-0.119
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.398	-0.119
ReductionRate	Hg2	Soil - Surface	0.387	0.387
rho	All	Soil - Surface	0.387	0.019
D_pureair	Hg0	Elemental Mercury	-0.379	-0.019
VaporDryDepositionVelocity_m_day	Hg0	Soil - Surface	-0.375	-0.113
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.373	-0.041
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.342	-0.040
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.272	0.039
emissionRate	Hg0	Facility	0.253	0.253
InhalationProps_B	All	Raccoon	0.240	0.072
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.167	0.019
InhalationAssimilationEfficiency	Hg0	Raccoon	0.163	0.049
InhalationProps_A	All	Raccoon	0.163	0.049
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.163	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.155	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.146	-0.017
Water_content	All	Worm	-0.105	-0.105
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.099	0.012

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in Raccoon in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.997	0.997
AssimilationEfficiencyFromSoils	MHg	Raccoon	0.985	0.984
SoilIngestionRate	All	Raccoon	0.984	0.295
DemethylationRate	MHg	Soil - Surface	-0.978	-0.977
MethylationRate	Hg2	Soil - Surface	0.969	0.968
TotalExcretionRate	MHg	Raccoon	-0.748	-2.245
Rain	All	FullSS	0.686	0.084
VaporWashoutRatio	Hg2	Divalent Mercury	0.686	2.057
Fractionofareaavailableforerosion	All	Soil - Surface	-0.542	-0.163
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.542	-0.163
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.384	-0.042
ReductionRate	Hg2	Soil - Surface	-0.379	-0.379
rho	All	Soil - Surface	-0.379	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.305	-0.035
DemethylationRate	MHg	Raccoon	-0.258	-0.258
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.244	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.163	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.157	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.138	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.131	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.101	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.093	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.091	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.083	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.083	0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.082	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.081	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.079	-0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.071	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.070	0.011
Divalent Mercury in White-tailed Deer in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
TotalExcretionRate	Hg2	White-tailed Deer	-1.010	-1.010
emissionRate	Hg2	Facility	0.994	0.994
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	0.925	0.924
BW	All	White-tailed Deer	-0.839	-0.252
NumberofIndividualsPerSquareMeter	All	White-tailed Deer	-0.839	-0.839
WaterContent	All	Leaf - Coniferous Forest	-0.597	-0.298
WetDepInterceptionFraction_UserSupplied	All	Leaf - Coniferous Forest	0.589	0.177
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.500	0.056
LitterFallRate	All	Leaf - Coniferous Forest	-0.468	-0.468
AllowExchange_SteadyState_forOther	All	Leaf - Coniferous Forest	0.465	0.465
TransferFactortoLeafParticle	Hg2	Leaf - Coniferous Forest	0.446	1.338
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.412	0.046
VaporWashoutRatio	Hg2	Divalent Mercury	0.372	1.116
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.339	-0.038
Rain	All	FullSS	0.325	0.040
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.261	0.029
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.256	0.077
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.241	-0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.217	0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.215	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.207	-0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.200	-0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.191	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.181	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.180	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.171	0.027
AttenuationFactor	All	Leaf - Coniferous Forest	0.154	0.154
AssimilationEfficiencyFromSoils	Hg2	White-tailed Deer	0.145	0.145
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.144	0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.144	0.023

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Elemental Mercury in White-tailed Deer in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
rho	All	Surface water	3.206	0.160
WaterIngProps_B	All	White-tailed Deer	1.920	0.576
InhalationProps_B	All	White-tailed Deer	1.488	0.446
WaterTemperature_K	All	Surface Water	-1.090	-1.089
OxidationRate	Hg0	White-tailed Deer	-0.962	-0.961
emissionRate	Hg2	Facility	0.537	0.537
AssimilationEfficiencyFromWater	Hg0	White-tailed Deer	0.504	0.504
WaterIngProps_A	All	White-tailed Deer	0.504	0.151
emissionRate	Hg0	Facility	0.463	0.463
Flushes_per_year	All	Surface water	-0.443	-0.133
InhalationAssimilationEfficiency	Hg0	White-tailed Deer	0.439	0.132
InhalationProps_A	All	White-tailed Deer	0.439	0.132
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.393	0.044
Rain	All	FullSS	0.331	0.040
VaporWashoutRatio	Hg2	Divalent Mercury	0.327	0.982
ReductionRate	Hg2	Surface water	0.318	0.318
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.264	-0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.259	0.029
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.247	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.238	-0.026
DimensionlessViscousSublayerThickness	All	Surface water	0.225	0.068
horizontalWindSpeed	All	FullSS	-0.225	-0.225
WaterColumnDissPartitioning_TimeToReachAlphaofEquil	Hg0	Macrophyte	0.222	0.665
BiomassPerArea_kg_m2	All	Macrophyte	-0.221	-0.221
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Macrophyte	-0.221	-0.664
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.213	0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.206	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.199	-0.024
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.192	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.185	-0.021
Methyl Mercury in White-tailed Deer in SurfSoil_SSE4				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
emissionRate	Hg2	Facility	0.995	0.995
AssimilationEfficiencyFromSoils	MHg	White-tailed Deer	0.985	0.984
SoilIngestionRate	All	White-tailed Deer	0.985	0.295
DemethylationRate	MHg	Soil - Surface	-0.979	-0.978
MethylationRate	Hg2	Soil - Surface	0.970	0.969
TotalExcretionRate	MHg	White-tailed Deer	-0.748	-2.245
Rain	All	FullSS	0.608	0.074
VaporWashoutRatio	Hg2	Divalent Mercury	0.607	1.822
Fractionofareaavailableforerosion	All	Soil - Surface	-0.557	-0.167
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.557	-0.167
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.367	0.041
ReductionRate	Hg2	Soil - Surface	-0.365	-0.365
rho	All	Soil - Surface	-0.365	-0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.265	0.029
DemethylationRate	MHg	White-tailed Deer	-0.258	-0.258
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.227	-0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.223	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.193	-0.021
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.187	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.178	-0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.173	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.167	-0.019
AllowExchange_SteadyState_forAir	All	Leaf - Coniferous Forest	-0.162	-0.162
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.141	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.140	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.134	0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.129	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.120	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.116	-0.013
WetDepInterceptionFraction_UserSupplied	All	Leaf - Coniferous Forest	-0.112	-0.034

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Divalent Mercury in White-tailed Deer in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
TotalExcretionRate	Hg2	White-tailed Deer	-1.010	-1.010
emissionRate	Hg2	Facility	0.996	0.996
VaporWashoutRatio	Hg2	Divalent Mercury	0.661	1.982
Rain	All	FullSS	0.644	0.079
AssimilationEfficiencyFromSoils	Hg2	White-tailed Deer	0.610	0.609
SoilIngestionRate	All	White-tailed Deer	0.534	0.160
AllowExchange_SteadyState_forAir	All	Leaf - Grasses/Herbs	0.454	0.453
LitterFallRate	All	Leaf - Grasses/Herbs	-0.440	-0.034
AllowExchange_SteadyState_forOther	All	Leaf - Grasses/Herbs	0.433	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.392	-0.045
TransferFactortoLeafParticle	Hg2	Leaf - Grasses/Herbs	0.369	1.108
WetDepInterceptionFraction_UserSupplied	All	Leaf - Grasses/Herbs	0.361	0.108
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.353	-0.038
BW	All	White-tailed Deer	-0.324	-0.097
NumberofIndividualsPerSquareMeter	All	White-tailed Deer	-0.323	-0.323
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.313	0.044
Fractionofareaavailableforerosion	All	Soil - Surface	-0.300	-0.090
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.300	-0.090
WaterContent	All	Leaf - Grasses/Herbs	-0.247	-0.123
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.206	0.023
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.206	-0.023
rho	All	Soil - Surface	-0.205	-0.010
ReductionRate	Hg2	Soil - Surface	-0.205	-0.205
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.169	-0.020
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.146	-0.016
FoodIngestionRate	All	White-tailed Deer	0.145	0.043
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.124	0.015
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.114	0.034
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.107	0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.099	0.011

Elemental Mercury in White-tailed Deer in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
InhalationProps_B	All	White-tailed Deer	3.106	0.932
OxidationRate	Hg0	White-tailed Deer	-0.962	-0.961
emissionRate	Hg0	Facility	0.926	0.926
InhalationAssimilationEfficiency	Hg0	White-tailed Deer	0.915	0.275
InhalationProps_A	All	White-tailed Deer	0.915	0.275
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.508	-0.059
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.399	0.057
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.381	-0.042
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.293	-0.033
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.224	0.025
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.202	-0.023
BW	All	White-tailed Deer	-0.188	-0.056
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.181	0.022
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.155	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.128	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.110	-0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.105	-0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.099	0.011
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.095	0.010
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.090	0.013
HenryLawConstant	Hg0	Elemental Mercury	-0.083	-0.083
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.083	-0.009
AirTemperature_K	All	FullSS	0.081	0.000
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.077	-0.008
AssimilationEfficiencyFromSoils	Hg0	White-tailed Deer	0.075	0.075
SoilIngestionRate	All	White-tailed Deer	0.074	0.022
Kd	Hg0	Soil - Surface	0.074	0.074
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.074	-0.009
emissionRate	Hg2	Facility	0.074	0.074
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.073	0.008

Appendix D.2. Sensitivity of Predicted Concentration to TRIM.FaTE Input Properties (top 30 properties for each compartment examined, ranked by absolute elasticity)[a]

Methyl Mercury in White-tailed Deer in SurfSoil_SW2				
Property	**Chemical**	**Object Name**	**Elasticity**	**Sensitivity Score**
AssimilationEfficiencyFromSoils	MHg	White-tailed Deer	0.999	0.998
SoilIngestionRate	All	White-tailed Deer	0.999	0.3
emissionRate	Hg2	Facility	0.997	0.997
DemethylationRate	MHg	Soil - Surface	-0.991	-0.99
MethylationRate	Hg2	Soil - Surface	0.982	0.981
TotalExcretionRate	MHg	White-tailed Deer	-0.748	-2.245
Rain	All	FullSS	0.685	0.084
VaporWashoutRatio	Hg2	Divalent Mercury	0.685	2.055
Fractionofareaavailableforerosion	All	Soil - Surface	-0.556	-0.167
TotalErosionRate_kg_m2_day	All	Soil - Surface	-0.556	-0.167
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.386	-0.042
ReductionRate	Hg2	Soil - Surface	-0.38	-0.379
rho	All	Soil - Surface	-0.379	-0.019
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.309	-0.036
DemethylationRate	MHg	White-tailed Deer	-0.258	-0.258
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.247	0.035
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.166	0.018
SteadyState_AdvectiveTransfer	All	Link from Air, to Sink	-0.158	-0.017
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.139	-0.016
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.132	-0.015
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.102	-0.012
VaporDryDepositionVelocity_m_day	Hg2	Soil - Surface	0.093	0.028
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.092	0.013
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.012
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.084	0.01
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.083	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.082	0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.078	-0.01
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	-0.073	-0.009
SteadyState_AdvectiveTransfer	All	Link from Air, to Air	0.07	0.008

[a] For additional description of the input properties used in TRIM.FaTE, along with a key between common names used for properties and their TRIM.FaTE code names, see Module 16 of the *TRIM.FaTE User's Guide* and the TRIM.FaTE technical support documents.

Appendix D.3. Properties with Absolute Elasticities > 0.5

Property [a]	Chemical	Object Type	Object Name / Link Information	Freq [b]	Compartment Types [c]	Mean Absolute Elasticity [d]
EmissionRate	Hg2	Source	Facility	78	17	0.98
VaporWashoutRatio	MHg	Chemical	Divalent Mercury	71	17	0.65
Rain	All	Scenario	FullSS	71	17	0.65
rho	All	Compartment	Surface water	47	14	4.69
WaterTemperature_K	All	VolumeElement	Surface water	38	12	3.63
EmissionRate	Hg0	Source	Facility	15	11	0.84
SedimentDepositionVelocity	All	Compartment	Surface water	13	11	0.73
Flushes_per_year	All	Compartment	Surface water	48	10	0.88
SuspendedSedimentconcentration	All	Compartment	Surface water	29	10	0.67
HenryLawConstant	Hg0	Chemical	Elemental Mercury	12	10	0.80
Kd	Hg2	Compartment	Surface water	19	9	0.74
DemethylationRate	MHg	Compartment	Soil - Surface	11	8	0.96
MethylationRate	Hg2	Compartment	Soil - Surface	11	8	0.95
AirTemperature_K	All	Scenario	FullSS	13	7	1.07
phi	All	Compartment	Sediment	25	6	1.13
Fractionofareaavailableforerosion	All	Compartment	Soil - Surface	20	6	0.55
TotalErosionRate_kg_m2_day	All	Compartment	Soil - Surface	20	6	0.55
DemethylationRate	MHg	Compartment	Sediment	11	6	1.00
Kd	MHg	Compartment	Surface water	11	6	0.72
MethylationRate	Hg2	Compartment	Sediment	11	6	0.95
MethylationRate	Hg2	Compartment	Surface water	8	6	0.66
SteadyState_AdvectiveTransfer	All	Link	from Air, to Air	10	5	0.53
SedimentPartitioning_PartitionCoefficient	Hg2	Compartment	Benthic Invertebrate	9	5	0.85
SedimentPartitioning_PartitionCoefficient	MHg	Compartment	Benthic Invertebrate	9	5	0.99
rho	All	Compartment	Sediment	8	5	0.98
ReductionRate	Hg2	Compartment	Sediment	5	5	0.87
SedimentPartitioning_PartitionCoefficient	Hg0	Compartment	Benthic Invertebrate	7	4	1.00
Kd	Hg0	Compartment	Surface water	4	4	0.61
AlgaeDensity_g_m3	All	Compartment	Surface water	12	3	1.01
AlgaeGrowthRate	All	Compartment	Surface water	12	3	1.01
AlgaeRadius	All	Compartment	Surface water	12	3	1.01
AlgaeUptakeRate	Hg2	Compartment	Surface water	6	3	1.00
AlgaeUptakeRate	MHg	Compartment	Surface water	6	3	1.00
AssimilationEfficiencyFromFood	Hg2	Compartment	Benthic Omnivore	6	3	0.85
AssimilationEfficiencyFromFood	Hg2	Compartment	Water-column Herbivore	6	3	1.00
AssimilationEfficiencyFromFood	MHg	Compartment	Benthic Omnivore	6	3	1.00
AssimilationEfficiencyFromFood	MHg	Compartment	Water-column Herbivore	6	3	1.00
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Benthic Omnivore	6	3	0.83
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Water-column Herbivore	6	3	0.93

Appendix D.3. Properties with Absolute Elasticities > 0.5

Property [a]	Chemical	Object Type	Object Name / Link Information	Freq [b]	Compartment Types [c]	Mean Absolute Elasticity [d]
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Benthic Omnivore	6	3	0.68
NumberofFishperSquareMeter	All	Compartment	Water-column Herbivore	6	3	0.54
Fractionofareaavailableforverticaldiffusion	All	Compartment	Soil - Surface	5	3	0.83
D_pureair	MHg	Chemical	Methyl Mercury	3	3	0.68
AverageVerticalVelocity	All	Compartment	Soil - Surface	5	2	0.95
Kd	Hg2	Compartment	Soil - Surface	5	2	0.82
ReductionRate	Hg2	Compartment	Soil - Root Zone	5	2	0.99
rho	All	Compartment	Soil - Root Zone	5	2	0.99
HenryLawConstant	MHg	Chemical	Methyl Mercury	4	2	0.80
AllowExchange_SteadyState_forAir	All	Compartment	Leaf - Coniferous Forest	4	2	0.97
AssimilationEfficiencyFromFood	Hg2	Compartment	Water-column Omnivore	4	2	0.93
AssimilationEfficiencyFromFood	Hg0	Compartment	Benthic Omnivore	4	2	1.00
DimensionlessViscousSublayerThickness	All	Compartment	Surface water	4	2	0.68
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Water-column Omnivore	4	2	0.92
OxidationRate	Hg0	Compartment	Benthic Omnivore	4	2	1.01
horizontalWindSpeed	All	Scenario	FullSS	4	2	0.68
isDay_SteadyState_forOther	All	Scenario	FullSS	4	2	0.98
AssimilationEfficiencyFromFood	MHg	Compartment	Water-column Carnivore	3	2	0.51
DemethylationRate	MHg	Compartment	Soil - Root Zone	3	2	1.01
Kd	Hg0	Compartment	Soil - Surface	3	2	0.92
MethylationRate	Hg2	Compartment	Soil - Root Zone	3	2	1.00
isDay_SteadyState_forAir	All	Scenario	FullSS	3	2	0.99
BW	All	Compartment	White-tailed Deer	2	2	0.67
NumberofIndividualsPerSquareMeter	All	Compartment	White-tailed Deer	2	2	0.67
WaterContent	All	Compartment	Leaf - Coniferous Forest	2	2	0.62
WetDepInterceptionFraction_UserSupplied	All	Compartment	Leaf - Coniferous Forest	2	2	0.64
Water_content	All	Compartment	Worm	6	1	5.25
FoodIngestionRate	All	Compartment	Common Loon	4	1	0.99
FoodIngestionRate	All	Compartment	Raccoon	3	1	0.82
SoilIngestionRate	All	Compartment	Mouse	3	1	0.92
SoilIngestionRate	All	Compartment	Raccoon	3	1	0.91
SoilIngestionRate	All	Compartment	White-tailed Deer	3	1	0.84
D_pureair	Hg0	Chemical	Elemental Mercury	2	1	0.61
AllowExchange_SteadyState_forAir	All	Compartment	Leaf - Grasses/Herbs	2	1	0.99
AllowExchange_SteadyState_forOther	All	Compartment	Leaf - Coniferous Forest	2	1	1.01
AllowExchange_SteadyState_forOther	All	Compartment	Leaf - Grasses/Herbs	2	1	1.00
AssimilationEfficiencyFromFood	Hg2	Compartment	Benthic Carnivore	2	1	0.97
AssimilationEfficiencyFromFood	Hg2	Compartment	Common Loon	2	1	0.59
AssimilationEfficiencyFromFood	Hg2	Compartment	Water-column Carnivore	2	1	0.93

Appendix D.3. Properties with Absolute Elasticities > 0.5

Property [a]	Chemical	Object Type	Object Name / Link Information	Freq [b]	Compartment Types [c]	Mean Absolute Elasticity [d]
AssimilationEfficiencyFromFood	Hg0	Compartment	Benthic Carnivore	2	1	1.00
AssimilationEfficiencyFromFood	MHg	Compartment	Benthic Carnivore	2	1	0.73
AssimilationEfficiencyFromFood	MHg	Compartment	Common Loon	2	1	1.00
AssimilationEfficiencyFromFood	MHg	Compartment	Water-column Omnivore	2	1	0.52
AssimilationEfficiencyFromSoils	Hg2	Compartment	Mouse	2	1	0.96
AssimilationEfficiencyFromSoils	MHg	Compartment	Mouse	2	1	0.93
AssimilationEfficiencyFromSoils	MHg	Compartment	White-tailed Deer	2	1	0.99
AverageLeafAreaIndex_No_Time_Dependence	All	Compartment	Leaf - Coniferous Forest	2	1	0.99
AverageLeafAreaIndex_No_Time_Dependence	All	Compartment	Leaf - Grasses/Herbs	2	1	0.98
DemethylationRate	MHg	Compartment	Common Loon	2	1	0.51
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Benthic Carnivore	2	1	0.99
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Water-column Carnivore	2	1	1.00
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Benthic Carnivore	2	1	0.96
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Water-column Carnivore	2	1	0.97
InhalationAssimilationEfficiency	Hg0	Compartment	Common Loon	2	1	0.91
InhalationAssimilationEfficiency	Hg0	Compartment	Mouse	2	1	0.65
InhalationProps_A	All	Compartment	Common Loon	2	1	0.91
InhalationProps_A	All	Compartment	Mouse	2	1	0.65
InhalationProps_B	All	Compartment	Common Loon	2	1	1.03
InhalationProps_B	All	Compartment	Mouse	2	1	2.06
InhalationProps_B	All	Compartment	White-tailed Deer	2	1	2.30
Kd	Hg0	Compartment	Soil - Root Zone	2	1	1.00
NumberofFishperSquareMeter	All	Compartment	Water-column Carnivore	2	1	0.51
NumberofFishperSquareMeter	All	Compartment	Water-column Omnivore	2	1	0.52
OxidationRate	Hg0	Compartment	Benthic Carnivore	2	1	1.01
OxidationRate	Hg0	Compartment	Common Loon	2	1	0.96
OxidationRate	Hg0	Compartment	Mouse	2	1	0.96
OxidationRate	Hg0	Compartment	Raccoon	2	1	0.96
OxidationRate	Hg0	Compartment	White-tailed Deer	2	1	0.96
ReductionRate	Hg2	Compartment	Soil - Surface	2	1	0.51
TotalExcretionRate	Hg2	Compartment	Common Loon	2	1	1.01
TotalExcretionRate	Hg2	Compartment	Mouse	2	1	1.01
TotalExcretionRate	Hg2	Compartment	Raccoon	2	1	1.01
TotalExcretionRate	Hg2	Compartment	White-tailed Deer	2	1	1.01
TotalExcretionRate	MHg	Compartment	Mouse	2	1	0.75
TotalExcretionRate	MHg	Compartment	Raccoon	2	1	0.75
TotalExcretionRate	MHg	Compartment	White-tailed Deer	2	1	0.75
WetDensity	All	Compartment	Leaf - Coniferous Forest	2	1	0.98
WetDensity	All	Compartment	Leaf - Grasses/Herbs	2	1	0.99

Appendix D.3. Properties with Absolute Elasticities > 0.5

Property [a]	Chemical	Object Type	Object Name / Link Information	Freq [b]	Compartment Types [c]	Mean Absolute Elasticity [d]
WormSoilPartitionCoefficient_dryweight	Hg2	Compartment	Worm	2	1	1.00
WormSoilPartitionCoefficient_dryweight	Hg0	Compartment	Worm	2	1	1.00
WormSoilPartitionCoefficient_dryweight	MHg	Compartment	Worm	2	1	1.00
rho	All	Compartment	Soil - Surface	2	1	0.51
AllowExchange_SteadyState_forOther	All	Compartment	Stem - Grasses/Herbs	1	1	0.96
AssimilationEfficiencyFromFood	Hg2	Compartment	Raccoon	1	1	0.54
AssimilationEfficiencyFromFood	Hg0	Compartment	Raccoon	1	1	0.99
AssimilationEfficiencyFromFood	MHg	Compartment	Raccoon	1	1	0.91
AssimilationEfficiencyFromSoils	Hg2	Compartment	Raccoon	1	1	0.99
AssimilationEfficiencyFromSoils	Hg2	Compartment	White-tailed Deer	1	1	0.61
AssimilationEfficiencyFromSoils	Hg0	Compartment	Raccoon	1	1	0.76
AssimilationEfficiencyFromSoils	MHg	Compartment	Raccoon	1	1	0.98
AssimilationEfficiencyFromWater	Hg0	Compartment	White-tailed Deer	1	1	0.50
DegreeStomatalOpening	All	Compartment	Leaf - Grasses/Herbs	1	1	0.87
FlowRateofTranspiredWaterperAreaofLeafSurface	All	Compartment	Stem - Grasses/Herbs	1	1	0.96
FoodIngestionRate	All	Compartment	Mouse	1	1	0.55
FoodIngestionRate	All	Compartment	White-tailed Deer	1	1	0.51
InhalationAssimilationEfficiency	Hg0	Compartment	White-tailed Deer	1	1	0.92
InhalationProps_A	All	Compartment	White-tailed Deer	1	1	0.92
Kd	MHg	Compartment	Soil - Root Zone	1	1	1.00
LitterFallRate	All	Compartment	Leaf - Coniferous Forest	1	1	0.51
LitterFallRate	All	Compartment	Leaf - Grasses/Herbs	1	1	0.95
ReductionRate	Hg2	Compartment	Surface water	1	1	0.63
StomatalAreaNormalizedEffectiveDiffusionPathLength	All	Compartment	Leaf - Grasses/Herbs	1	1	0.87
TSCF	MHg	Compartment	Stem - Grasses/Herbs	1	1	0.99
WaterContent	All	Compartment	Leaf - Grasses/Herbs	1	1	0.53
WaterIngProps_A	All	Compartment	White-tailed Deer	1	1	0.50
WaterIngProps_B	All	Compartment	Mouse	1	1	0.97
WaterIngProps_B	All	Compartment	White-tailed Deer	1	1	1.92
WetDepInterceptionFraction_UserSupplied	All	Compartment	Leaf - Grasses/Herbs	1	1	0.83
WetMassperArea	All	Compartment	Leaf - Coniferous Forest	1	1	0.82
WetMassperArea	All	Compartment	Leaf - Grasses/Herbs	1	1	0.87

[a] For additional description of the input properties used in TRIM.FaTE, along with a key between common names used for properties and their TRIM.FaTE code names, see Module 16 of the *TRIM.FaTE User's Guide* and the TRIM.FaTE technical support documents.
[b] Number of outputs (maximum of 93) for which the property has absolute elasticity greater than 0.5.
[c] Number of compartment types (maximum of 17) for which the property has absolute elasticity greater than 0.5.
[d] Calculated using only those elasticities with absolute values greater than 0.5.

Appendix D.4. Properties with Absolute Sensitivity Scores > 0.5

Property [a]	Chemical	Object Type	Object Name / Link Information	Freq [b]	Compartment Types [c]	Mean Absolute Score [d]
EmissionRate	Hg2	Source	Facility	78	17	0.98
VaporWashoutRatio	Hg2	Chemical	Divalent Mercury	81	17	1.81
WaterTemperature_K	All	VolumeElement	Surface water	38	12	3.63
EmissionRate	Hg0	Source	Facility	15	11	0.84
HenryLawConstant	Hg0	Chemical	Elemental Mercury	12	10	0.80
Kd	Hg2	Compartment	Surface water	19	9	0.74
DemethylationRate	MHg	Compartment	Soil - Surface	11	8	0.96
MethylationRate	Hg2	Compartment	Soil - Surface	11	8	0.95
DemethylationRate	MHg	Compartment	Sediment	11	6	0.99
Kd	MHg	Compartment	Surface water	11	6	0.72
MethylationRate	Hg2	Compartment	Sediment	11	6	0.95
MethylationRate	Hg2	Compartment	Surface water	8	6	0.66
ReductionRate	Hg2	Compartment	Sediment	5	5	0.87
SedimentPartitioning_PartitionCoefficient	Hg2	Compartment	Benthic Invertebrate	9	5	2.55
SedimentPartitioning_PartitionCoefficient	MHg	Compartment	Benthic Invertebrate	11	5	2.65
Kd	Hg0	Compartment	Surface water	4	4	0.61
phi	All	Compartment	Sediment	4	4	0.66
SedimentPartitioning_PartitionCoefficient	Hg0	Compartment	Benthic Invertebrate	7	4	2.99
WaterColumnDissolvedPartitioning_PartitionCoefficient	Hg0	Compartment	Macrophyte	6	4	0.83
WaterColumnDissolvedPartitioning_TimeToReachAlphaofEquil	Hg0	Compartment	Macrophyte	6	4	0.83
AssimilationEfficiencyFromFood	Hg2	Compartment	Benthic Omnivore	6	3	0.85
AssimilationEfficiencyFromFood	Hg2	Compartment	Water-column Herbivore	6	3	1.00
AssimilationEfficiencyFromFood	MHg	Compartment	Benthic Omnivore	6	3	0.99
AssimilationEfficiencyFromFood	MHg	Compartment	Water-column Herbivore	6	3	1.00
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Benthic Omnivore	6	3	0.83
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Water-column Herbivore	6	3	0.93
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Benthic Omnivore	6	3	0.68
NumberofFishperSquareMeter	All	Compartment	Water-column Herbivore	6	3	0.54
TransferFactortoLeafParticle	Hg2	Compartment	Leaf - Coniferous Forest	3	3	1.19
AllowExchange_SteadyState_forAir	All	Compartment	Leaf - Coniferous Forest	4	2	0.97
AssimilationEfficiencyFromFood	Hg2	Compartment	Water-column Omnivore	4	2	0.93
AssimilationEfficiencyFromFood	Hg0	Compartment	Benthic Omnivore	4	2	1.00
AssimilationEfficiencyFromFood	MHg	Compartment	Water-column Carnivore	3	2	0.51
DemethylationRate	MHg	Compartment	Soil - Root Zone	3	2	1.00
HenryLawConstant	MHg	Chemical	Methyl Mercury	4	2	0.80
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Water-column Omnivore	4	2	0.92
Kd	Hg2	Compartment	Soil - Surface	5	2	0.82
Kd	Hg0	Compartment	Soil - Surface	3	2	0.92
MethylationRate	Hg2	Compartment	Soil - Root Zone	3	2	0.99

Appendix D.4. Properties with Absolute Sensitivity Scores > 0.5

Property [a]	Chemical	Object Type	Object Name / Link Information	Freq [b]	Compartment Types [c]	Mean Absolute Score [d]
NumberofIndividualsPerSquareMeter	All	Compartment	White-tailed Deer	2	2	0.67
OxidationRate	Hg0	Compartment	Benthic Omnivore	4	2	1.01
ReductionRate	Hg2	Compartment	Soil - Root Zone	5	2	0.99
horizontalWindSpeed	All	Scenario	SteadyState	4	2	0.68
isDay_SteadyState_forAir	All	Scenario	SteadyState	3	2	0.99
isDay_SteadyState_forOther	All	Scenario	SteadyState	4	2	0.98
AllowExchange_SteadyState_forAir	All	Compartment	Leaf - Grasses/Herbs	2	1	0.99
AllowExchange_SteadyState_forOther	All	Compartment	Leaf - Coniferous Forest	2	1	1.01
AssimilationEfficiencyFromFood	Hg2	Compartment	Benthic Carnivore	2	1	0.97
AssimilationEfficiencyFromFood	Hg2	Compartment	Common Loon	2	1	0.59
AssimilationEfficiencyFromFood	Hg2	Compartment	Raccoon	1	1	0.54
AssimilationEfficiencyFromFood	Hg2	Compartment	Water-column Carnivore	2	1	0.93
AssimilationEfficiencyFromFood	Hg0	Compartment	Benthic Carnivore	2	1	1.00
AssimilationEfficiencyFromFood	Hg0	Compartment	Raccoon	1	1	0.99
AssimilationEfficiencyFromFood	MHg	Compartment	Benthic Carnivore	2	1	0.73
AssimilationEfficiencyFromFood	MHg	Compartment	Common Loon	2	1	1.00
AssimilationEfficiencyFromFood	MHg	Compartment	Raccoon	1	1	0.91
AssimilationEfficiencyFromFood	MHg	Compartment	Water-column Omnivore	2	1	0.52
AssimilationEfficiencyFromSoils	Hg2	Compartment	Mouse	2	1	0.96
AssimilationEfficiencyFromSoils	Hg2	Compartment	Raccoon	1	1	0.99
AssimilationEfficiencyFromSoils	Hg2	Compartment	White-tailed Deer	1	1	0.61
AssimilationEfficiencyFromSoils	Hg0	Compartment	Raccoon	1	1	0.76
AssimilationEfficiencyFromSoils	MHg	Compartment	Mouse	2	1	0.93
AssimilationEfficiencyFromSoils	MHg	Compartment	Raccoon	1	1	0.98
AssimilationEfficiencyFromSoils	MHg	Compartment	White-tailed Deer	2	1	0.99
AssimilationEfficiencyFromWater	Hg0	Compartment	White-tailed Deer	1	1	0.50
AverageLeafAreaIndex_No_Time_Dependence	All	Compartment	Leaf - Coniferous Forest	2	1	0.99
AverageLeafAreaIndex_No_Time_Dependence	All	Compartment	Leaf - Grasses/Herbs	2	1	0.98
DegreeStomatalOpening	All	Compartment	Leaf - Grasses/Herbs	1	1	0.87
DemethylationRate	MHg	Compartment	Common Loon	2	1	0.51
FlowRateofTranspiredWaterperAreaofLeafSurface	All	Compartment	Stem - Grasses/Herbs	1	1	0.96
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Benthic Carnivore	2	1	0.99
HowMuchFasterHgEliminationIsThanForMHg	Hg2	Compartment	Water-column Carnivore	2	1	1.00
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Benthic Carnivore	2	1	0.96
HowMuchFasterHgEliminationIsThanForMHg	MHg	Compartment	Water-column Carnivore	2	1	0.97
InhalationProps_B	All	Compartment	Mouse	2	1	0.62
InhalationProps_B	All	Compartment	White-tailed Deer	1	1	0.93
Kd	Hg0	Compartment	Soil - Root Zone	2	1	1.00
Kd	MHg	Compartment	Soil - Root Zone	1	1	1.00

Appendix D.4. Properties with Absolute Sensitivity Scores > 0.5

Property [a]	Chemical	Object Type	Object Name / Link Information	Freq [b]	Compartment Types [c]	Mean Absolute Score [d]
LitterFallRate	All	Compartment	Leaf - Coniferous Forest	1	1	0.51
NumberofFishperSquareMeter	All	Compartment	Water-column Carnivore	2	1	0.51
NumberofFishperSquareMeter	All	Compartment	Water-column Omnivore	2	1	0.52
OxidationRate	Hg0	Compartment	Benthic Carnivore	2	1	1.01
OxidationRate	Hg0	Compartment	Common Loon	2	1	0.96
OxidationRate	Hg0	Compartment	Mouse	2	1	0.96
OxidationRate	Hg0	Compartment	Raccoon	2	1	0.96
OxidationRate	Hg0	Compartment	White-tailed Deer	2	1	0.96
ReductionRate	Hg2	Compartment	Soil - Surface	2	1	0.51
ReductionRate	Hg2	Compartment	Surface water	1	1	0.63
StomatalAreaNormalizedEffectiveDiffusionPathLength	All	Compartment	Leaf - Grasses/Herbs	1	1	0.87
TSCF	MHg	Compartment	Stem - Grasses/Herbs	1	1	2.96
TotalExcretionRate	Hg2	Compartment	Common Loon	2	1	3.03
TotalExcretionRate	Hg2	Compartment	Mouse	2	1	1.01
TotalExcretionRate	Hg2	Compartment	Raccoon	2	1	1.01
TotalExcretionRate	Hg2	Compartment	White-tailed Deer	2	1	1.01
TotalExcretionRate	MHg	Compartment	Mouse	2	1	2.24
TotalExcretionRate	MHg	Compartment	Raccoon	2	1	2.25
TotalExcretionRate	MHg	Compartment	White-tailed Deer	2	1	2.25
TransferFactortoLeafParticle	Hg2	Compartment	Leaf - Grasses/Herbs	1	1	1.11
WaterIngProps_B	All	Compartment	White-tailed Deer	1	1	0.58
Water_content	All	Compartment	Worm	6	1	5.24
WetDensity	All	Compartment	Leaf - Coniferous Forest	2	1	0.98
WetDensity	All	Compartment	Leaf - Grasses/Herbs	2	1	0.99
WetMassperArea	All	Compartment	Leaf - Coniferous Forest	1	1	0.82
WetMassperArea	All	Compartment	Leaf - Grasses/Herbs	1	1	0.87
WormSoilPartitionCoefficient_dryweight	Hg2	Compartment	Worm	2	1	3.00
WormSoilPartitionCoefficient_dryweight	Hg0	Compartment	Worm	2	1	3.00
WormSoilPartitionCoefficient_dryweight	MHg	Compartment	Worm	2	1	3.00

[a] For additional description of the input properties used in TRIM.FaTE, along with a key between common names used for properties and their TRIM.FaTE code names, see Module 16 of the *TRIM.FaTE User's Guide* and the TRIM.FaTE technical support documents.
[b] Number of outputs (maximum of 93) for which the property has absolute elasticity greater than 0.5.
[c] Number of compartment types (maximum of 17) for which the property has absolute elasticity greater than 0.5.
[d] Calculated using only those elasticities with absolute values greater than 0.5.

APPENDIX E

SUPPLEMENTAL MATERIALS FOR 3MRA - TRIM.FaTE COMPARISON

E.1 Description of 3MRA Processes

3MRA is an environmental modeling system designed to facilitate site-based human and ecological risk assessments at local, regional, and national scales. 3MRA combines data bases containing chemical, climatological, and site data with a series of 17 science-based simulation models within a fully integrated software architecture to provide a user the ability to execute Monte-Carlo-based assessment methodologies. Exhibit E-1 illustrates the systems design of 3MRA as applied to the assessment of national risks resulting from the disposal of solid waste in land-based waste management units, with components used in this model comparison highlighted.

A series of system processors collectively manage the execution of the 3MRA modeling system. Various system processors interact with the user to develop science module input data files, manage the execution of the individual system components, and process modeling outputs to form risk summaries. The primary 3MRA system processors are listed below.

- System User Interface (SUI): represents the user access point to the technology. Via the SUI, the user selects combinations of sites, waste management units, chemicals, and constituent concentrations in waste streams to be simulated, plus the number of Monte-Carlo simulations to be executed per site. The SUI also allows the user to configure the computer directory structure where individual components of the system are stored. Finally, the SUI manages the overall execution of the user defined national assessment.

- Site Definition Processor (SDP): performs all data retrieval from the site, regional, national, and chemical data bases and organizes it into a series of "site simulation files" that contain the input data for each of the 17 science models.

- Multi-media Simulation Processor (MMSP): manages the invocation, execution, and error handling associated with the 17 individual science models that simulate source release, multimedia fate and transport, foodweb dynamics, and human/ecological exposure and risk.

- Chemical Properties Processor (CPP): accesses the chemical properties data base and either transfers or calculates all requested data. The CPP represents a single location within the modeling system where chemical data are made available.

- Exit Level Processor I (ELP I): assimilates the individual site risk results and builds a risk summary data base containing data used to assess national protection criteria.

- Exit Level Processor II (ELP II): reads the ELP I derived risk summary data base and generates, based on regulatory criteria, specific national exemption levels.

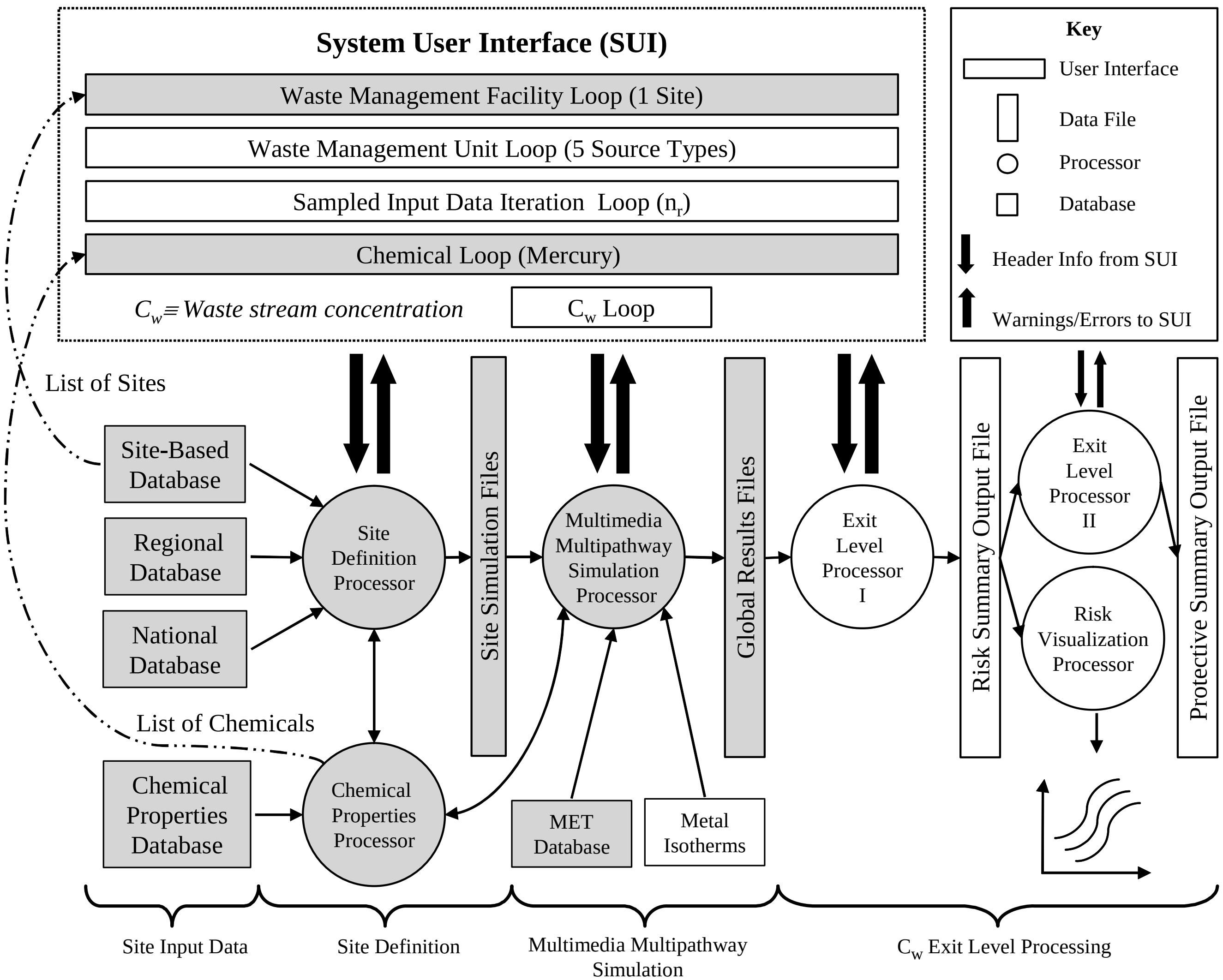
- Risk Visualization Processor (RVP): presents risk summary results in graphical form.

Exhibit 6-1 (in Chapter 6) illustrates the 3MRA multimedia model design contained within the MMSP, highlighting the modules that were used as part of this model comparison study. Individual science models are included for each of five land-based waste management units that simulate the release of contaminants to air, water, and soil media. Fate and transport of contaminants through the multimedia environment are simulated by the atmospheric, watershed, surface water, vadose zone, and aquifer modules. Contaminant uptake through the food web is simulated by the farm food chain, terrestrial food web, and aquatic food web modules. Human and ecological exposure modules estimate doses to human and ecological receptors, and the risk modules apply toxicity data to the doses to derive estimates of risk. The modules included in 3MRA represent a “linked media” model, meaning that individual simulation modules, representing each element of a risk assessment, are executed in a logical sequence from source to fate and transport to food web to exposure and risk.

To download the 3MRA model and access a series of documents describing the 3MRA modeling system in detail, the reader is referred to the following web sites:

- http://www.epa.gov/ceampubl/mmedia/index.htm (modeling system); and
- http://www.epa.gov/epaoswer/hazwaste/id/hwirwste/risk.htm (documentation).

Exhibit E-1. 3MRA Modeling System Design [a]



[a] 3MRA components used in this model comparison are shaded.

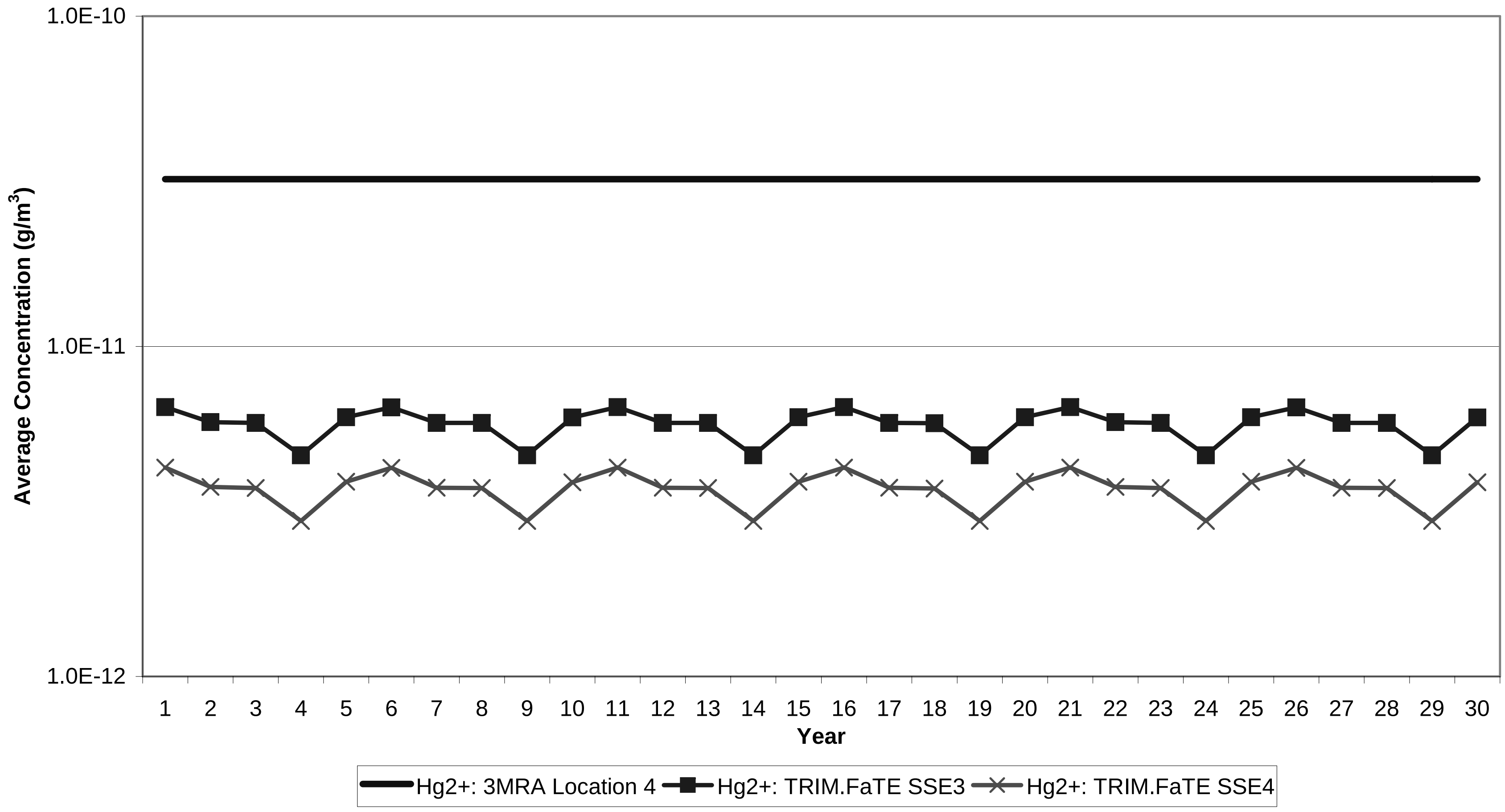
E.2 Detailed Results for 3MRA - TRIM.FaTE Comparison[1]

Chart #	Title of Chart
Chart E-1a	**Divalent Mercury Concentration in Air vs. Time: Swetts Pond Watershed**
Chart E-1b	**Divalent Mercury Concentration in Air vs. Time: Near Source, Northwest**
Chart E-1c	**Divalent Mercury Concentration in Air vs. Time: Near Source, Southwest**
Chart E-1d	**Divalent Mercury Concentration in Air vs. Time: Adjacent to Source, Southeast**
Chart E-2a	**Mercury Deposition Flux to Soil Surface vs. Time: Swetts Pond Watershed**
Chart E-2b	**Mercury Deposition Flux to Soil Surface vs. Time: Near Source, Southwest**
Chart E-2c	**Mercury Deposition Flux to Soil Surface vs. Time: Far From Source, Southeast**
Chart E-3	**Divalent Mercury Concentration in Leaves (grasses/herbs) vs. Time: Near Source, Southwest**
Chart E-4a	**Divalent Mercury Concentration in Surface Soil vs. Time: Swetts Pond Watershed**
Chart E-4b	**Divalent Mercury Concentration in Surface Soil vs. Time: Near Source, Northwest**
Chart E-4c	**Divalent Mercury Concentration in Surface Soil vs. Time: Near Source, Northeast**
Chart E-4d	**Divalent Mercury Concentration in Surface Soil vs. Time: Near Source, Southwest**
Chart E-4e	**Divalent Mercury Concentration in Surface Soil vs. Time: Adjacent to Source, Southeast**
Chart E-5	**Divalent and Total Mercury Concentration in Roots (grasses/herbs) and Associated Soil vs. Time: Near Source, Southwest**
Chart E-6a	**Divalent and Total Mercury Concentration in Earthworms and Associated Soil vs. Time: Swetts Pond Watershed**
Chart E-6b	**Divalent Mercury Concentration in Earthworms and Associated Soil vs. Time: Near Source, Northwest**
Chart E-6c	**Divalent Mercury Concentration in Earthworms and Associated Soil vs. Time: Near Source, Northeast**

[1]All TRIM.FaTE data for emission case A (divalent mercury emitted from source only, no boundary contributions or initial concentrations), 11-17-03 model run.

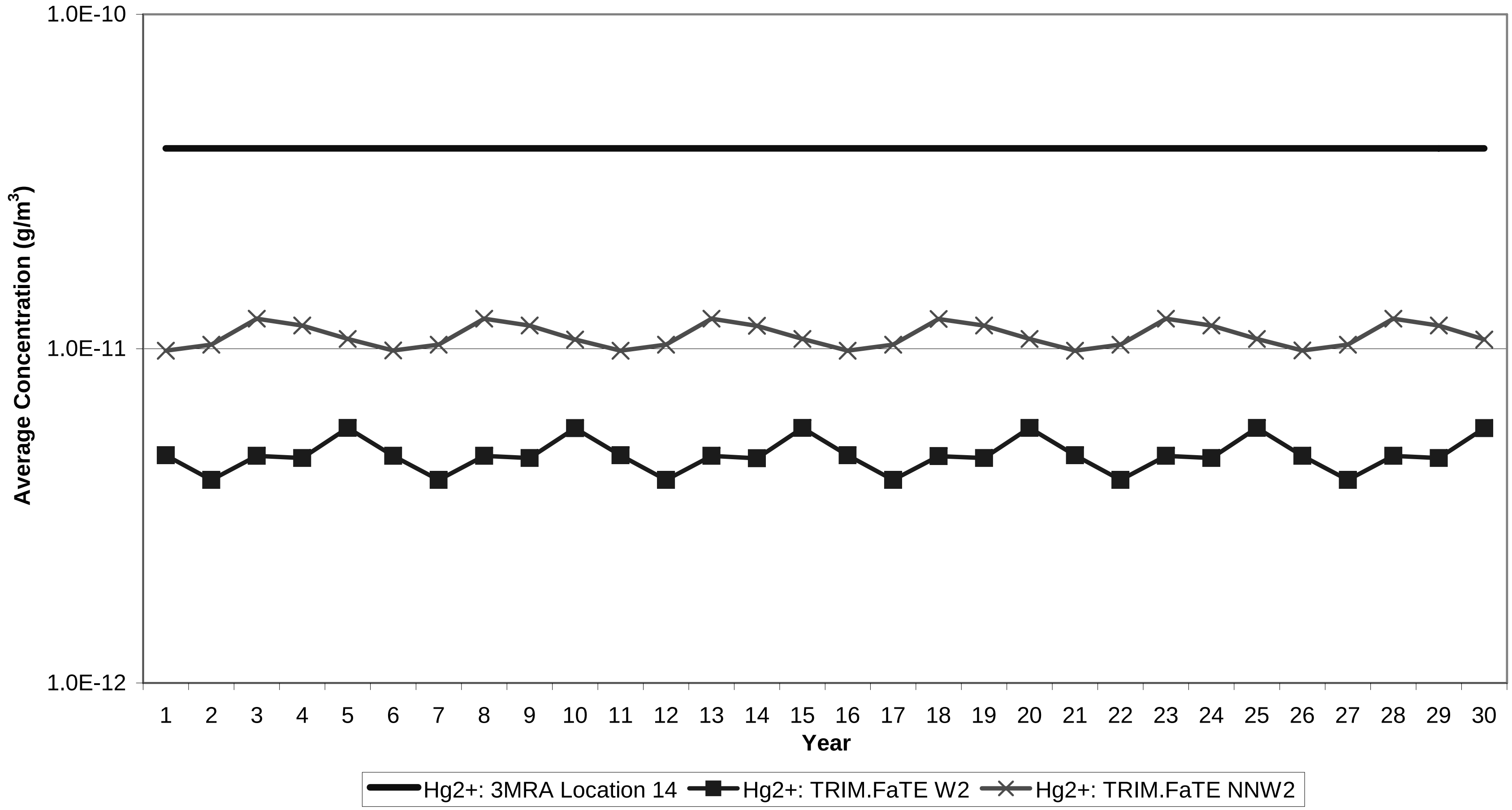
Chart E-1a - Log Scale

Divalent Mercury Concentration in Air vs. Time: Swetts Pond Watershed[a]



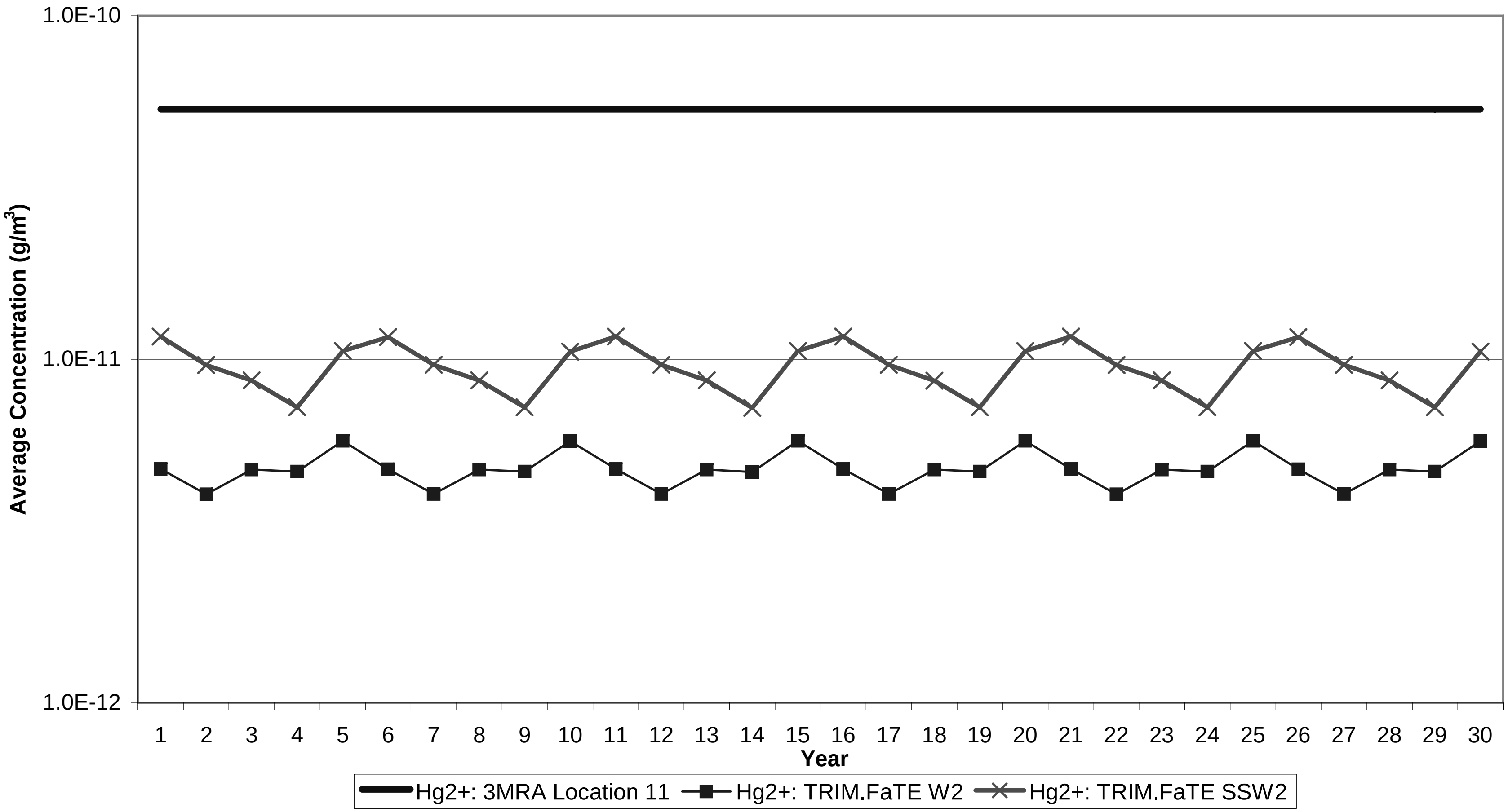
[a] Annual average for TRIM.FaTE is based on instantaneous estimates every two hours throughout the year and represents an average concentration over a volume that extends from the ground to the mixing height. 14-year average for 3MRA (based on instantaneous estimates every hour throughout the period) is applied to entire period and is a point concentration at ground level.

Chart E-1b - Log Scale
Divalent Mercury Concentration in Air vs. Time: Near Source, Northwest[a]



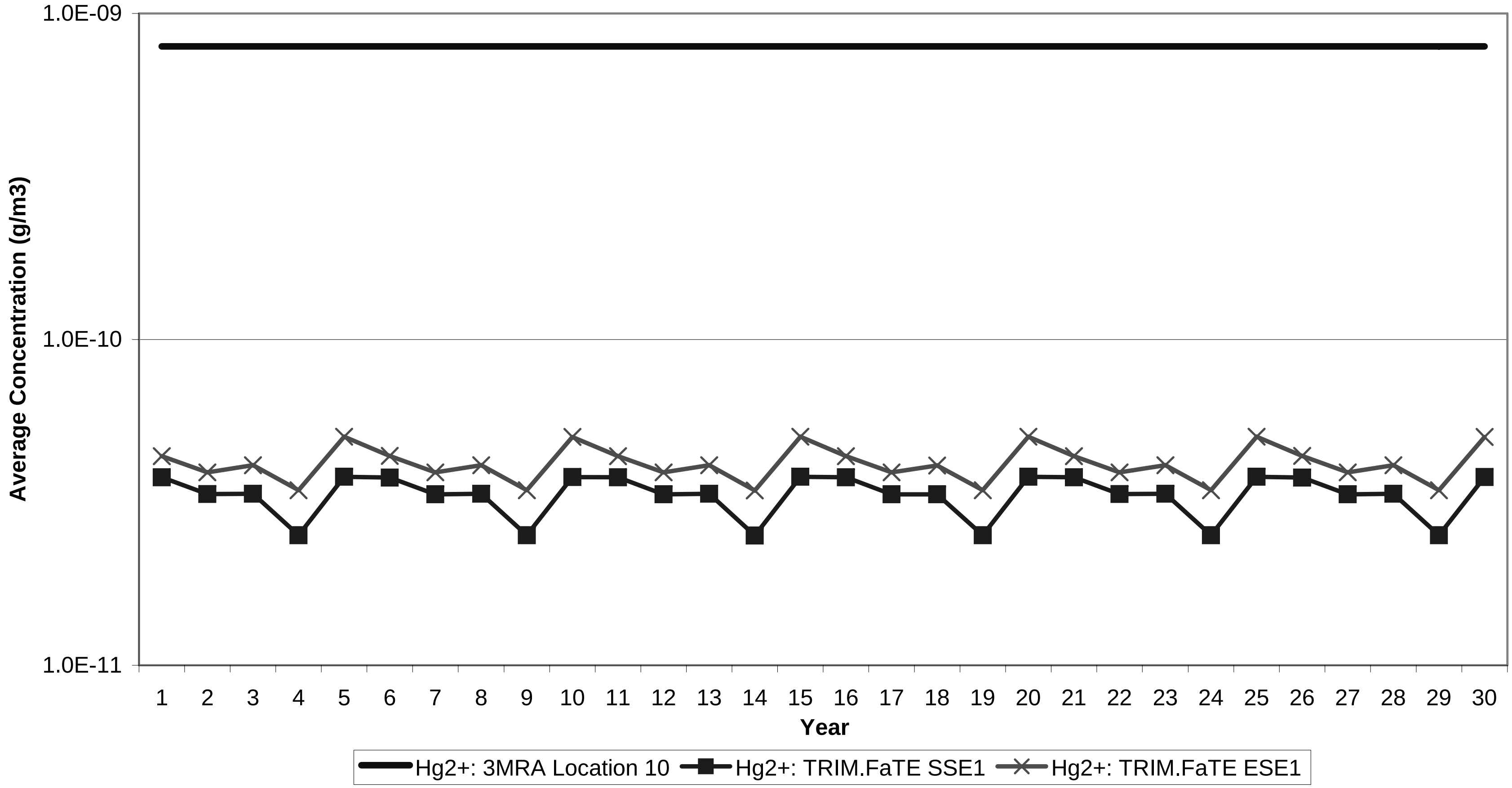
[a] Annual average for TRIM.FaTE is based on instantaneous estimates every two hours throughout the year and represents an average concentration over a volume that extends from the ground to the mixing height. 14-year average for 3MRA (based on instantaneous estimates every hour throughout the period) is applied to entire period and is a point concentration at ground level.

Chart E-1c - Log Scale
Divalent Mercury Concentration in Air vs. Time: Near Source, Southwest[a]



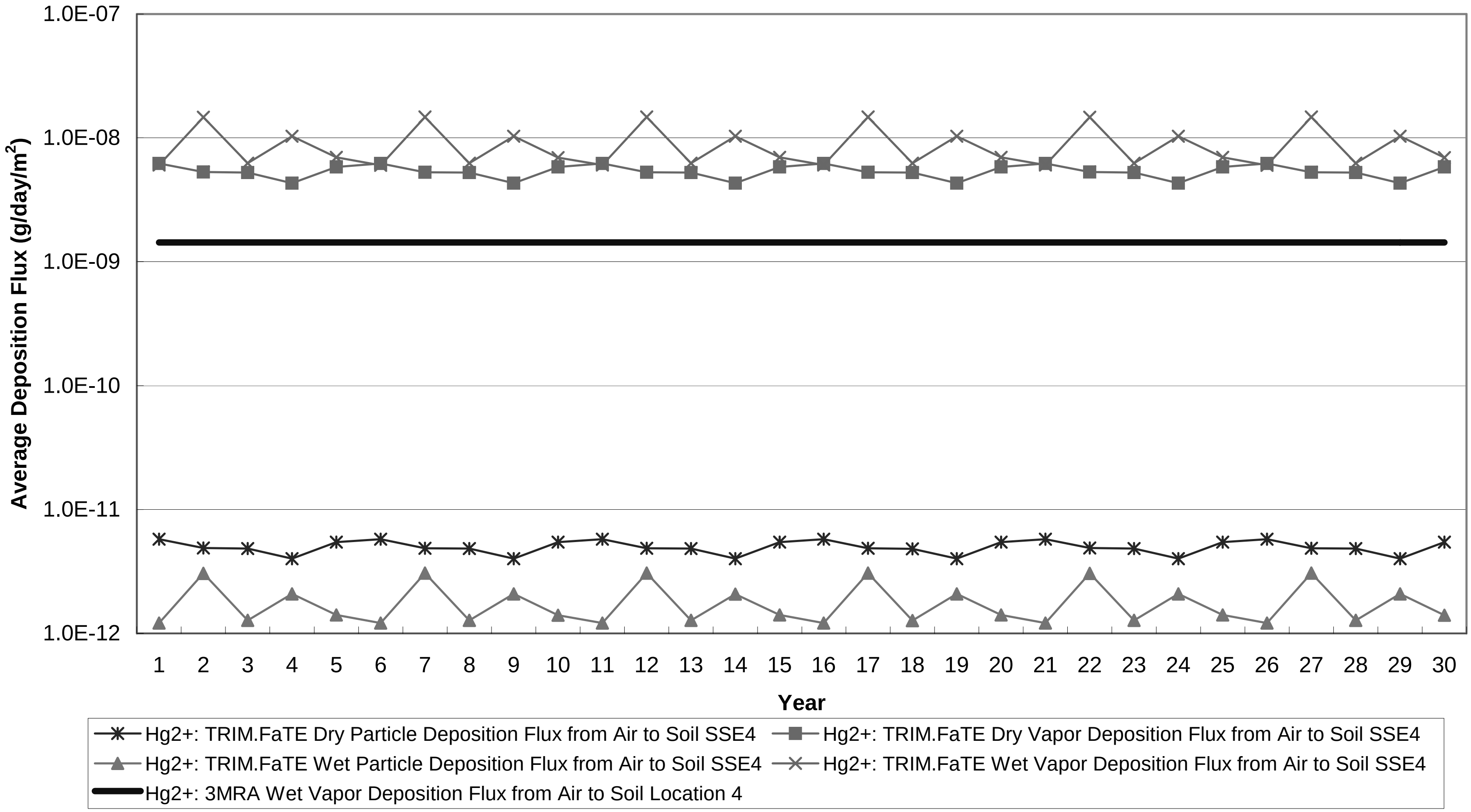
[a] Annual average for TRIM.FaTE is based on instantaneous estimates every two hours throughout the year and represents an average concentration over a volume that extends from the ground to the mixing height. 14-year average for 3MRA (based on instantaneous estimates every hour throughout the period) is applied to entire period and is a point concentration at ground level.

Chart E-1d - Log Scale
Divalent Mercury Concentration in Air vs. Time: Adjacent to Source, Southeast[a]

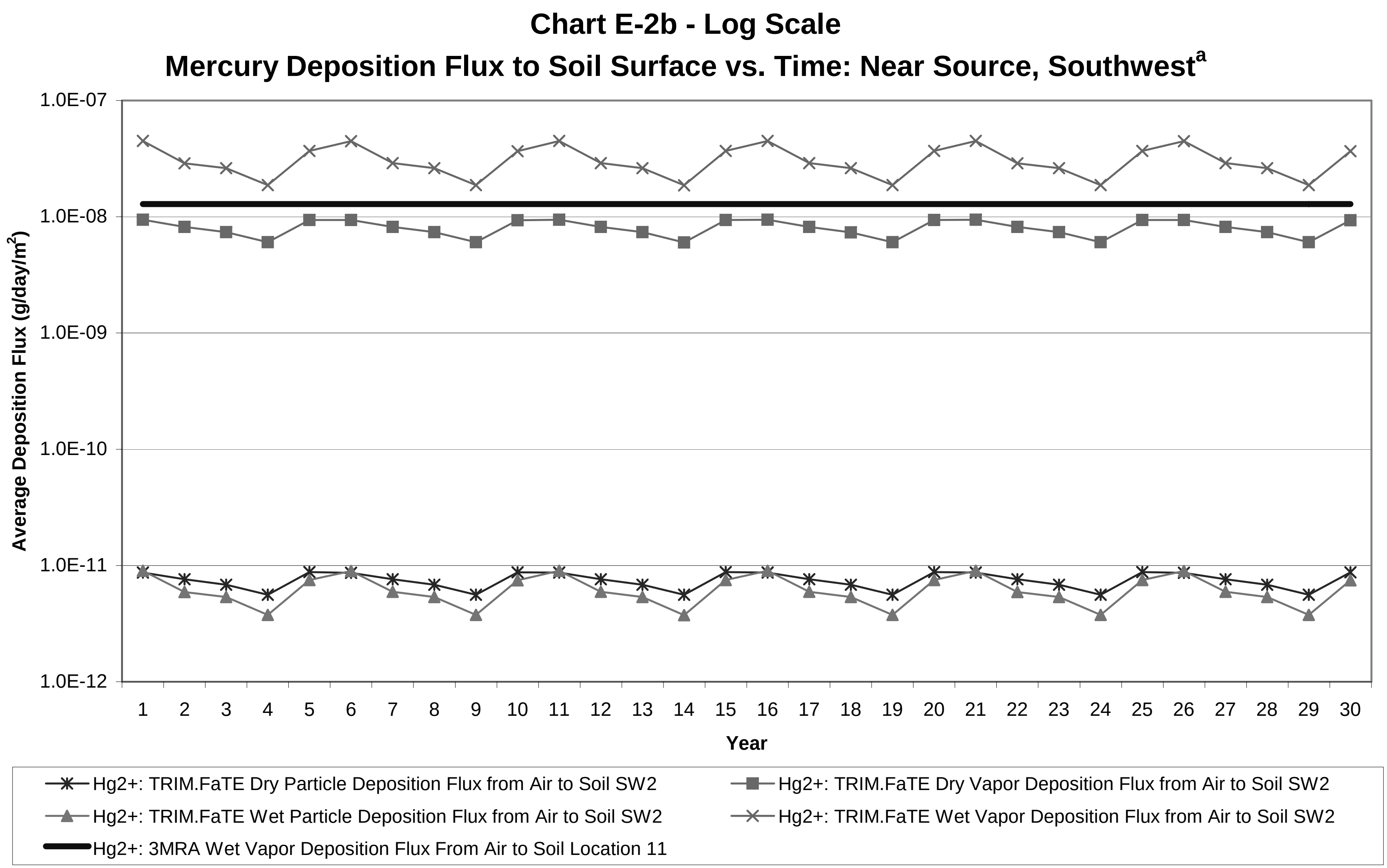


[a] Annual average for TRIM.FaTE is based on instantaneous estimates every two hours throughout the year and represents an average concentration over a volume that extends from the ground to the mixing height. 14-year average for 3MRA (based on instantaneous estimates every hour throughout the period) is applied to entire period and is a point concentration at ground level.

Chart E-2a - Log Scale
Mercury Deposition Flux to Soil Surface vs. Time: Swetts Pond Watershed[a]

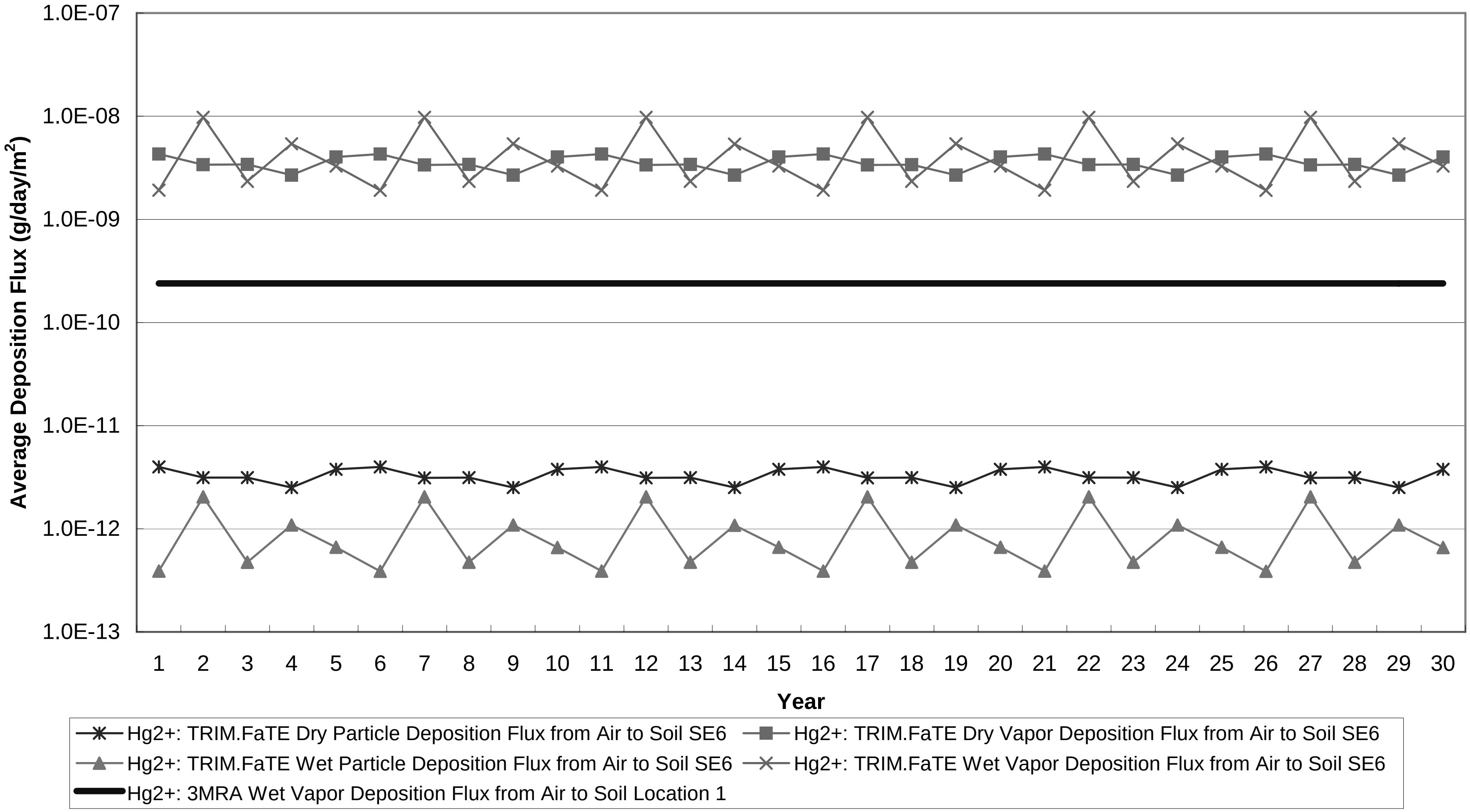


[a] Annual average for TRIM.FaTE based on instantaneous estimates every two hours throughout the year. 14-year average for 3MRA (based on instantaneous estimates every hour throughout the period) applied to entire period.



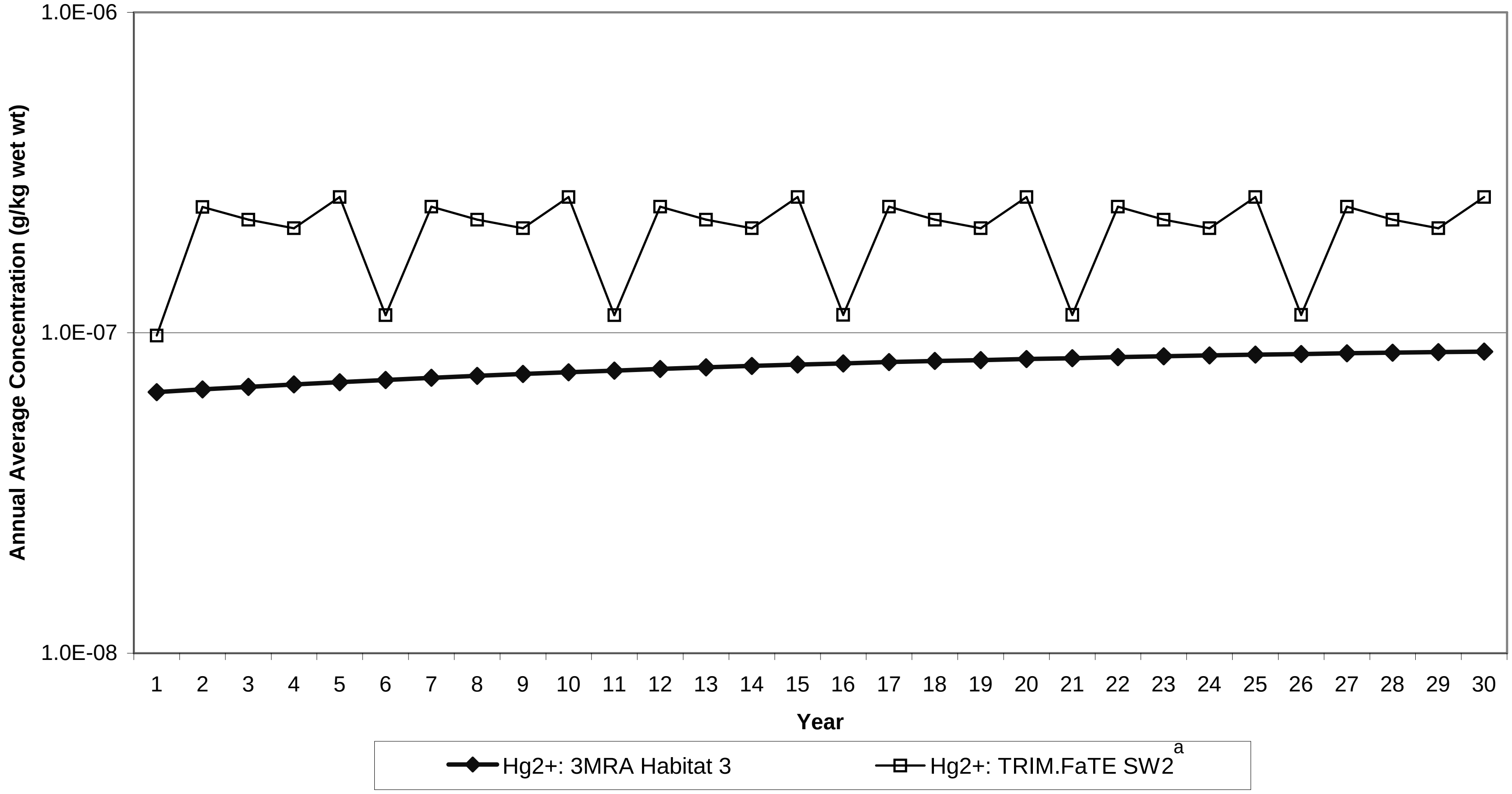
[a] Annual average for TRIM.FaTE based on instantaneous estimates every two hours throughout the year. 14-year average for 3MRA (based on instantaneous estimates every hour throughout the period) applied to entire period.

Chart E-2c - Log Scale
Mercury Deposition Flux to Soil Surface vs. Time: Far From Source, Southeast[a]



[a] Annual average for TRIM.FaTE based on instantaneous estimates every two hours throughout the year. 14-year average for 3MRA (based on instantaneous estimates every hour throughout the period) applied to entire period.

**Chart E-3 - Log Scale
Divalent Mercury Concentration in Leaves (grasses/herbs) vs. Time: Near Source, Southwest**



[a] Each TRIM.FaTE annual average data point shown is the average of values during the days (May 13 - September 29 each year) for which leaves were modeled as present during the entire day (i.e., represents a growing season average).

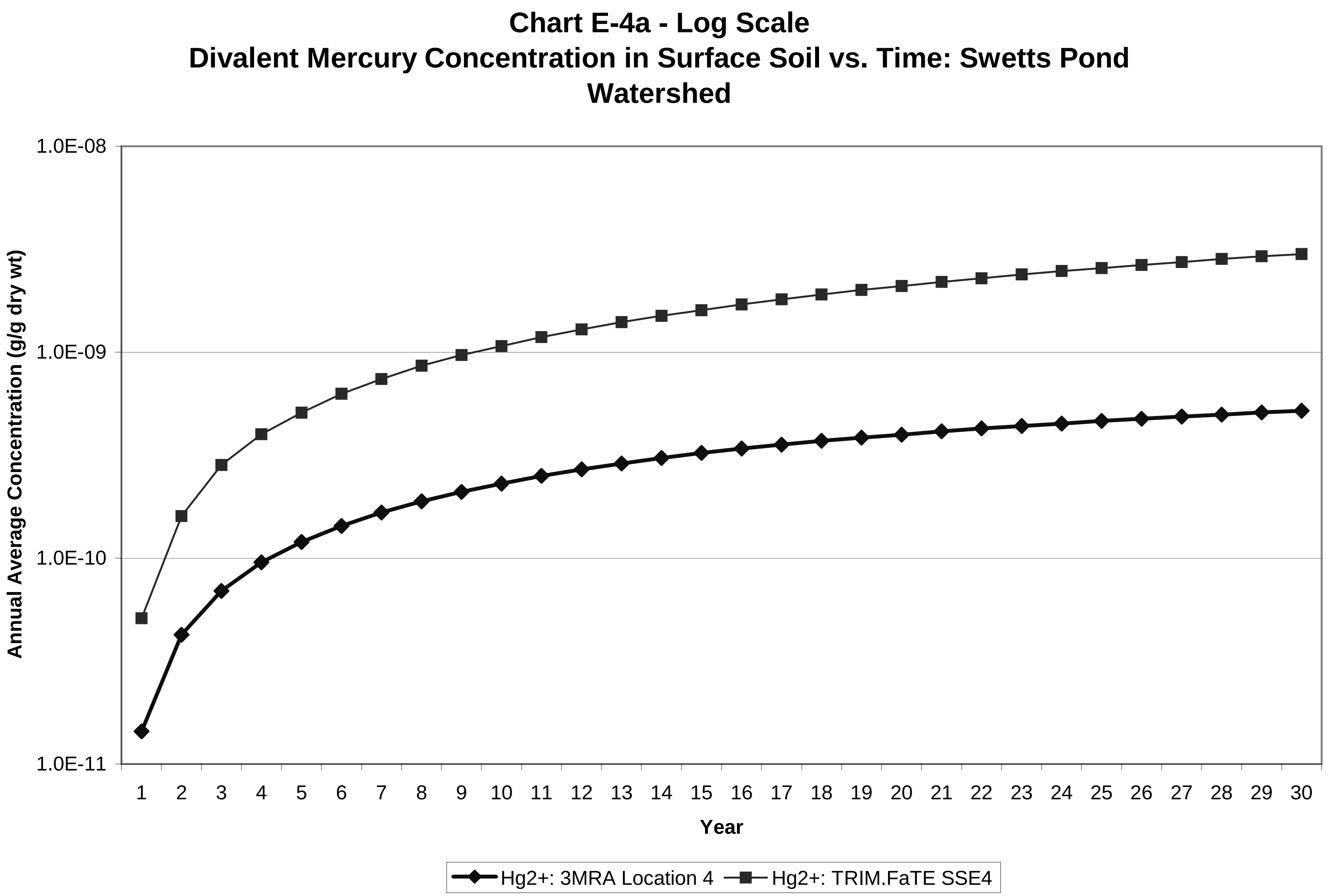


Chart E-4a - Log Scale
Divalent Mercury Concentration in Surface Soil vs. Time: Swetts Pond Watershed
Annual Average Concentration (g/g dry wt)
1.0E-08
1.0E-09
1.0E-10
1.0E-11
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
Year
Hg2+: 3MRA Location 4
Hg2+: TRIM.FaTE SSE4

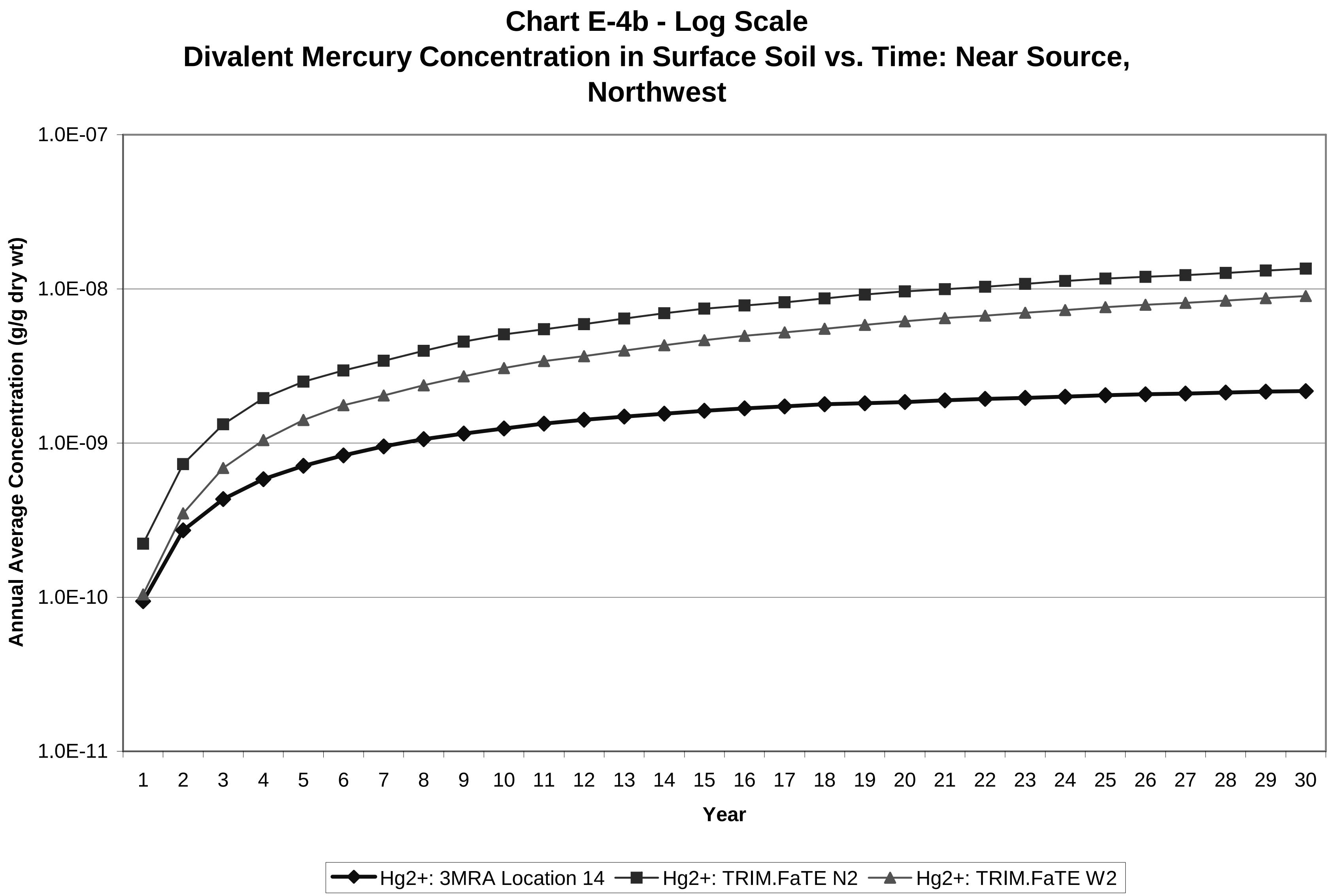


Chart E-4b - Log Scale
Divalent Mercury Concentration in Surface Soil vs. Time: Near Source, Northwest
Annual Average Concentration (g/g dry wt)
1.0E-07
1.0E-08
1.0E-09
1.0E-10
1.0E-11
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Hg2+: 3MRA Location 14
Hg2+: TRIM.FaTE N2
Hg2+: TRIM.FaTE W2

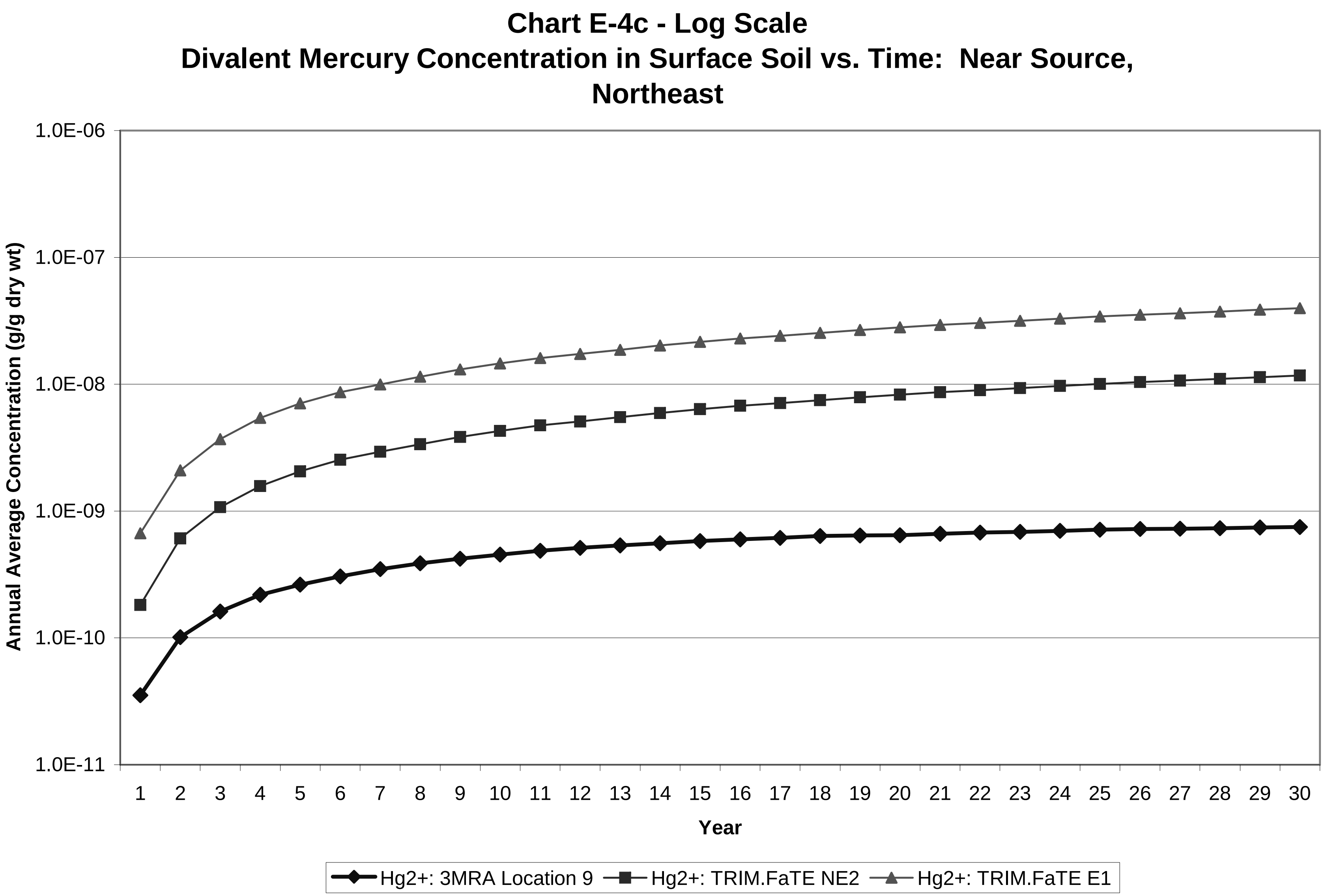
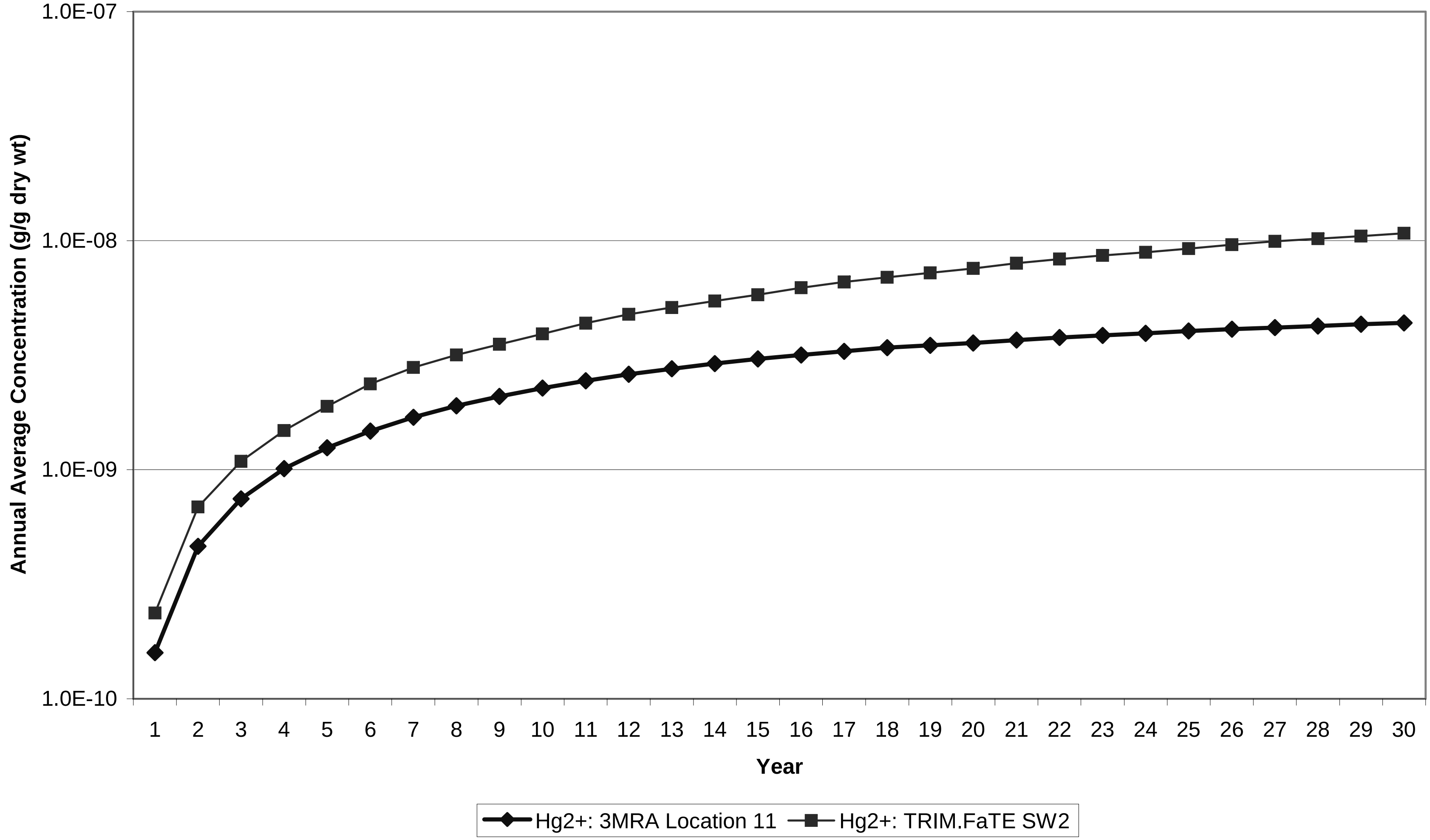


Chart E-4c - Log Scale
Divalent Mercury Concentration in Surface Soil vs. Time: Near Source, Northeast
1.0E-06
1.0E-07
1.0E-08
1.0E-09
1.0E-10
1.0E-11
Annual Average Concentration (g/g dry wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Hg2+: 3MRA Location 9
Hg2+: TRIM.FaTE NE2
Hg2+: TRIM.FaTE E1

Chart E-4d - Log Scale
Divalent Mercury Concentration in Surface Soil vs. Time: Near Source, Southwest



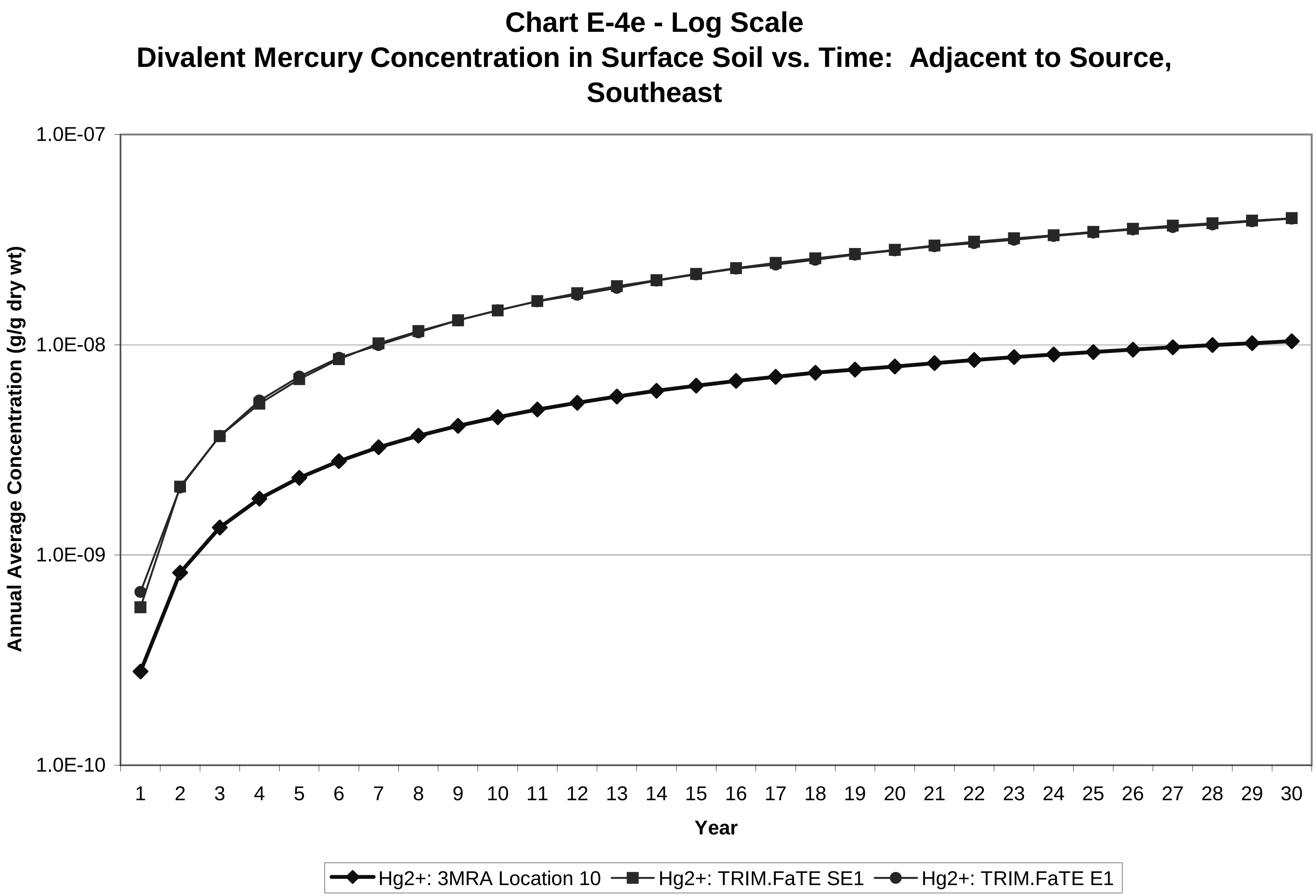


Chart E-4e - Log Scale
Divalent Mercury Concentration in Surface Soil vs. Time: Adjacent to Source, Southeast
1.0E-07
1.0E-08
1.0E-09
1.0E-10
Annual Average Concentration (g/g dry wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Hg2+: 3MRA Location 10
Hg2+: TRIM.FaTE SE1
Hg2+: TRIM.FaTE E1

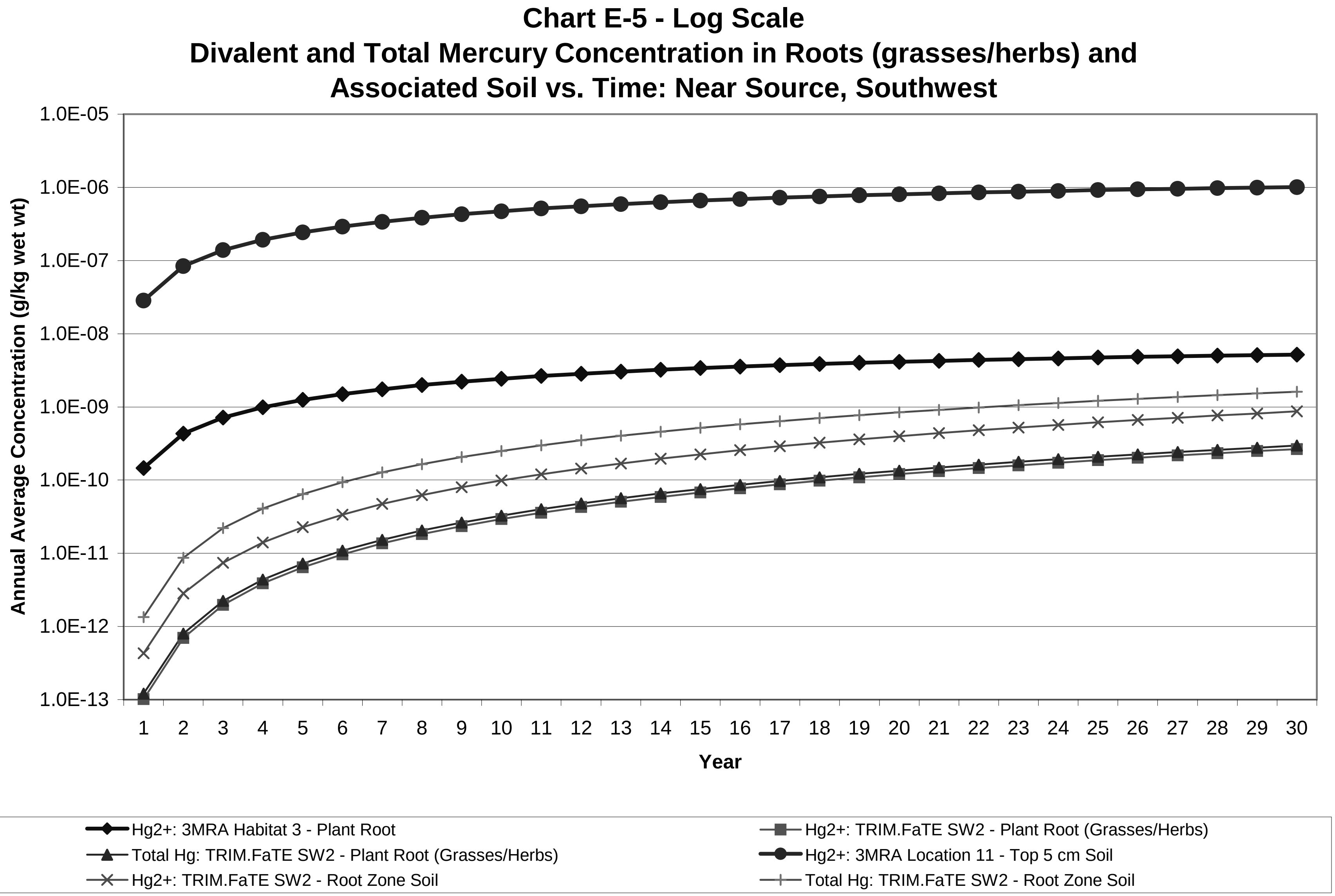


Chart E-5 - Log Scale
Divalent and Total Mercury Concentration in Roots (grasses/herbs) and
Associated Soil vs. Time: Near Source, Southwest
1.0E-05
1.0E-06
1.0E-07
1.0E-08
1.0E-09
1.0E-10
1.0E-11
1.0E-12
1.0E-13
Annual Average Concentration (g/kg wet wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Hg2+: 3MRA Habitat 3 - Plant Root
Hg2+: TRIM.FaTE SW2 - Plant Root (Grasses/Herbs)
Total Hg: TRIM.FaTE SW2 - Plant Root (Grasses/Herbs)
Hg2+: 3MRA Location 11 - Top 5 cm Soil
Hg2+: TRIM.FaTE SW2 - Root Zone Soil
Total Hg: TRIM.FaTE SW2 - Root Zone Soil

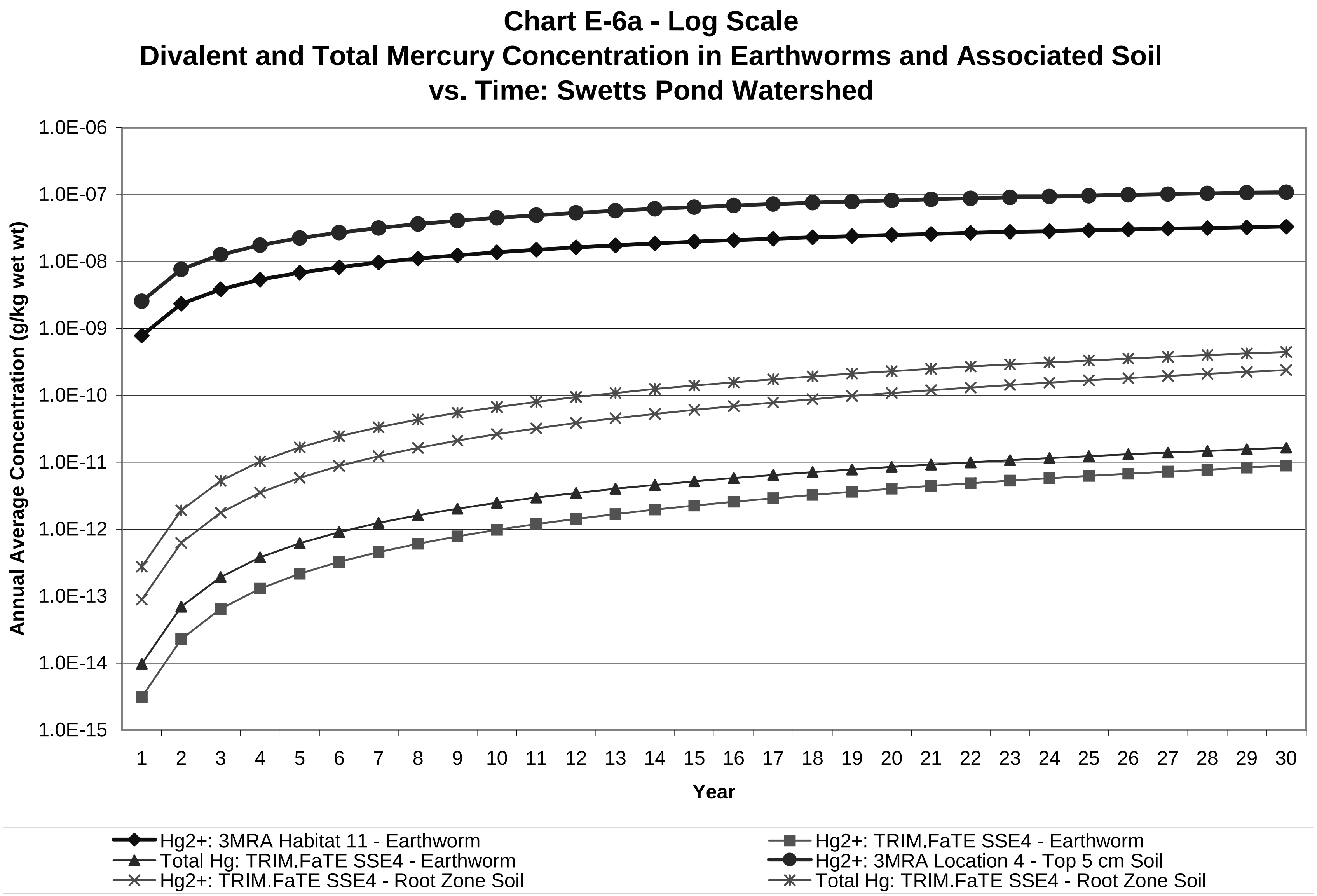


Chart E-6a - Log Scale
Divalent and Total Mercury Concentration in Earthworms and Associated Soil
vs. Time: Swetts Pond Watershed
1.0E-06
1.0E-07
1.0E-08
1.0E-09
1.0E-10
1.0E-11
1.0E-12
1.0E-13
1.0E-14
1.0E-15
Annual Average Concentration (g/kg wet wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Hg2+: 3MRA Habitat 11 - Earthworm
Hg2+: TRIM.FaTE SSE4 - Earthworm
Total Hg: TRIM.FaTE SSE4 - Earthworm
Hg2+: 3MRA Location 4 - Top 5 cm Soil
Hg2+: TRIM.FaTE SSE4 - Root Zone Soil
Total Hg: TRIM.FaTE SSE4 - Root Zone Soil

Chart E-6b - Log Scale
Divalent Mercury Concentration in Earthworms and Associated Soil vs. Time: Near Source, Northwest

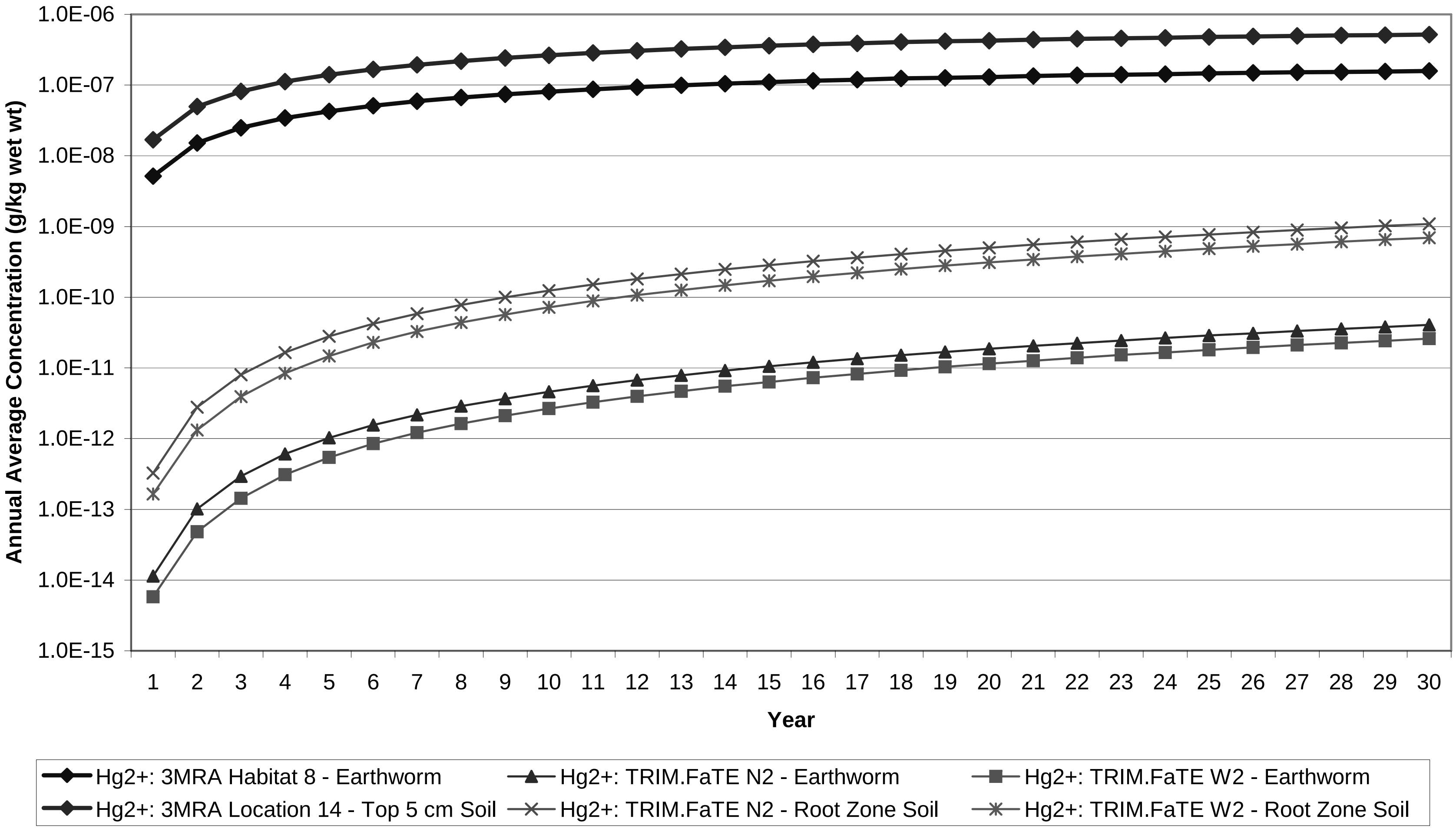


Chart E-6c - Log Scale
Divalent Mercury Concentration in Earthworms and Associated Soil vs. Time: Near Source, Northeast

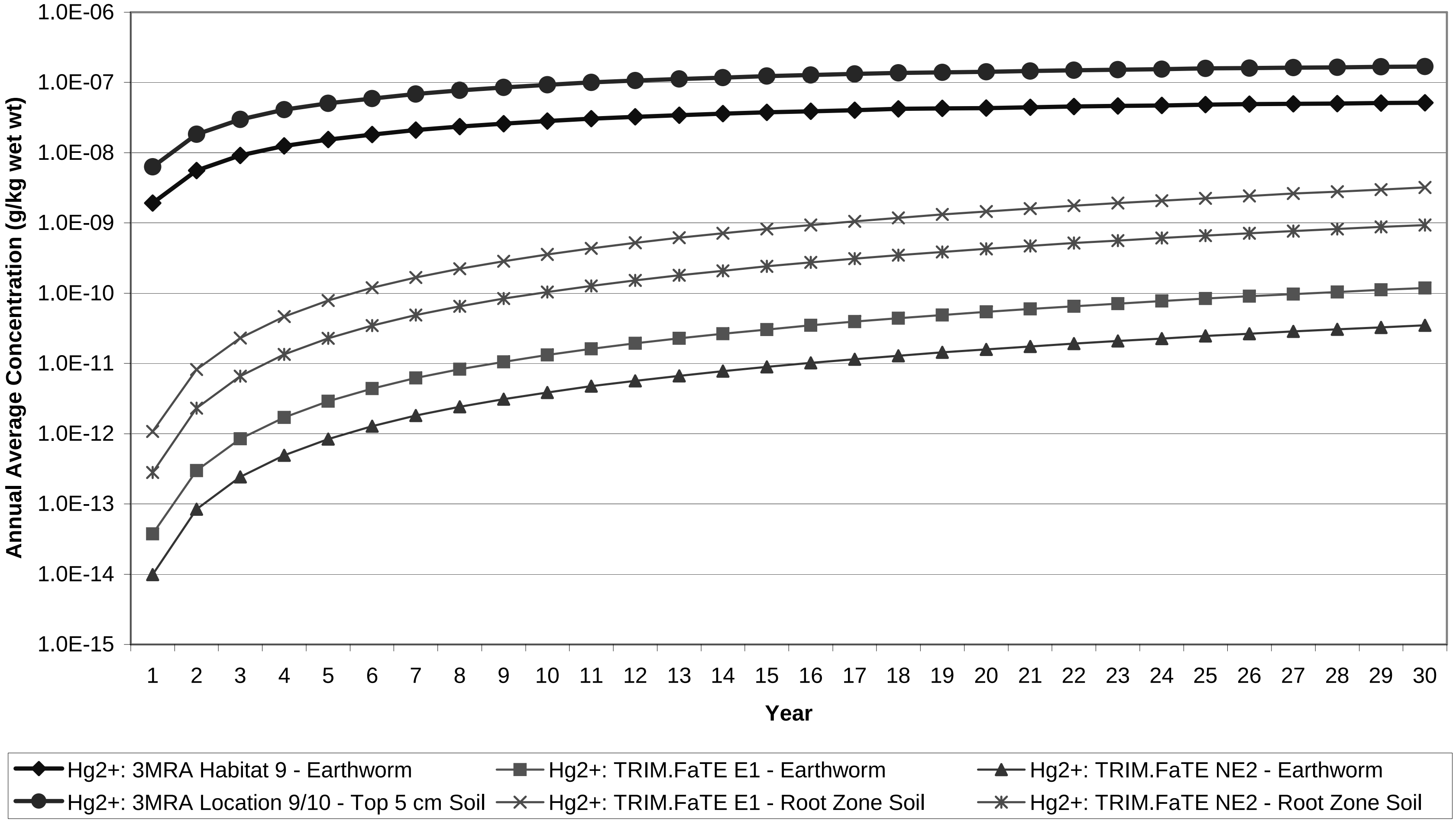


Chart E-6d - Log Scale
Divalent and Total Mercury Concentration in Earthworms and Associated Soil: Near Source, Southwest

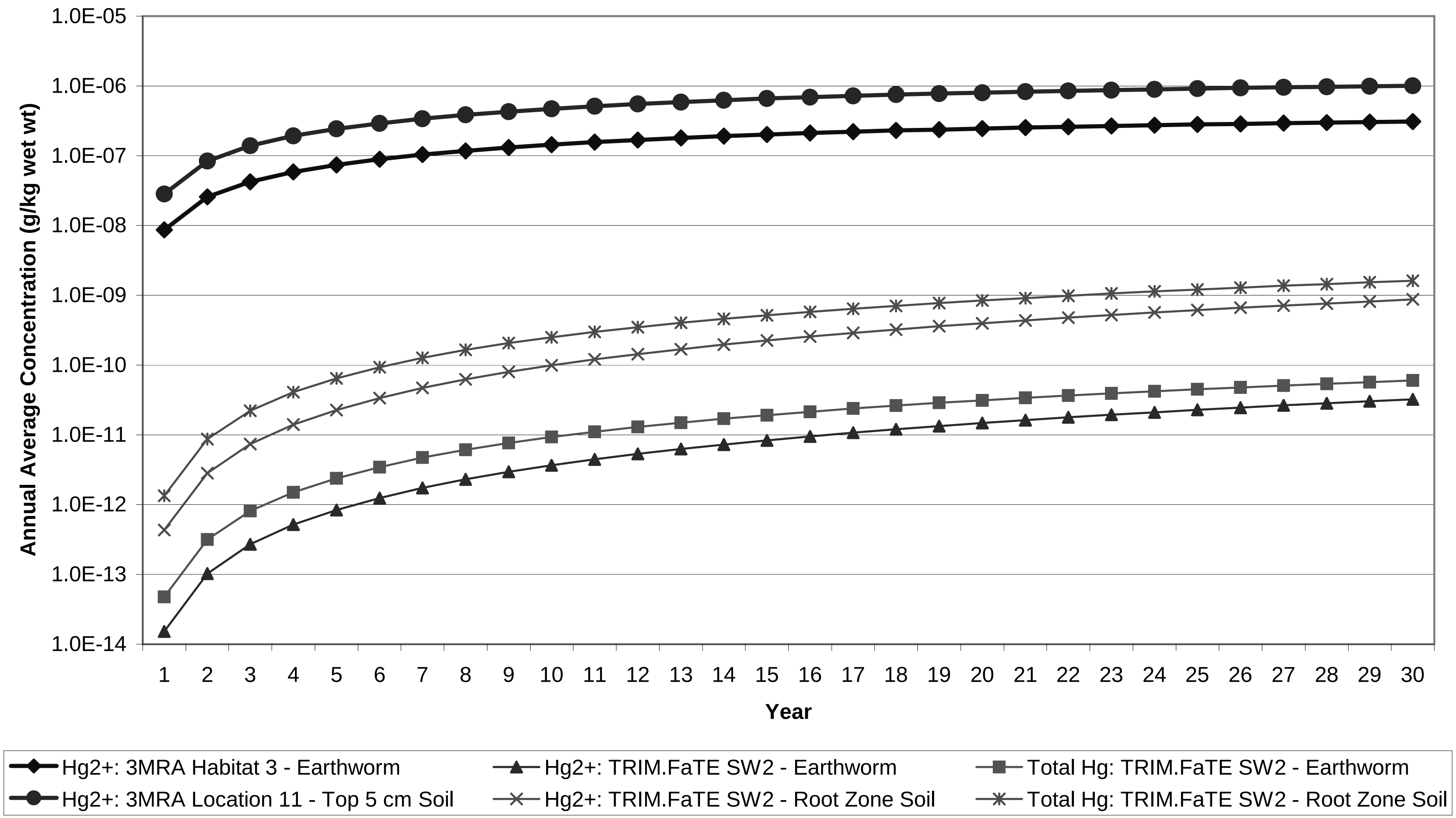
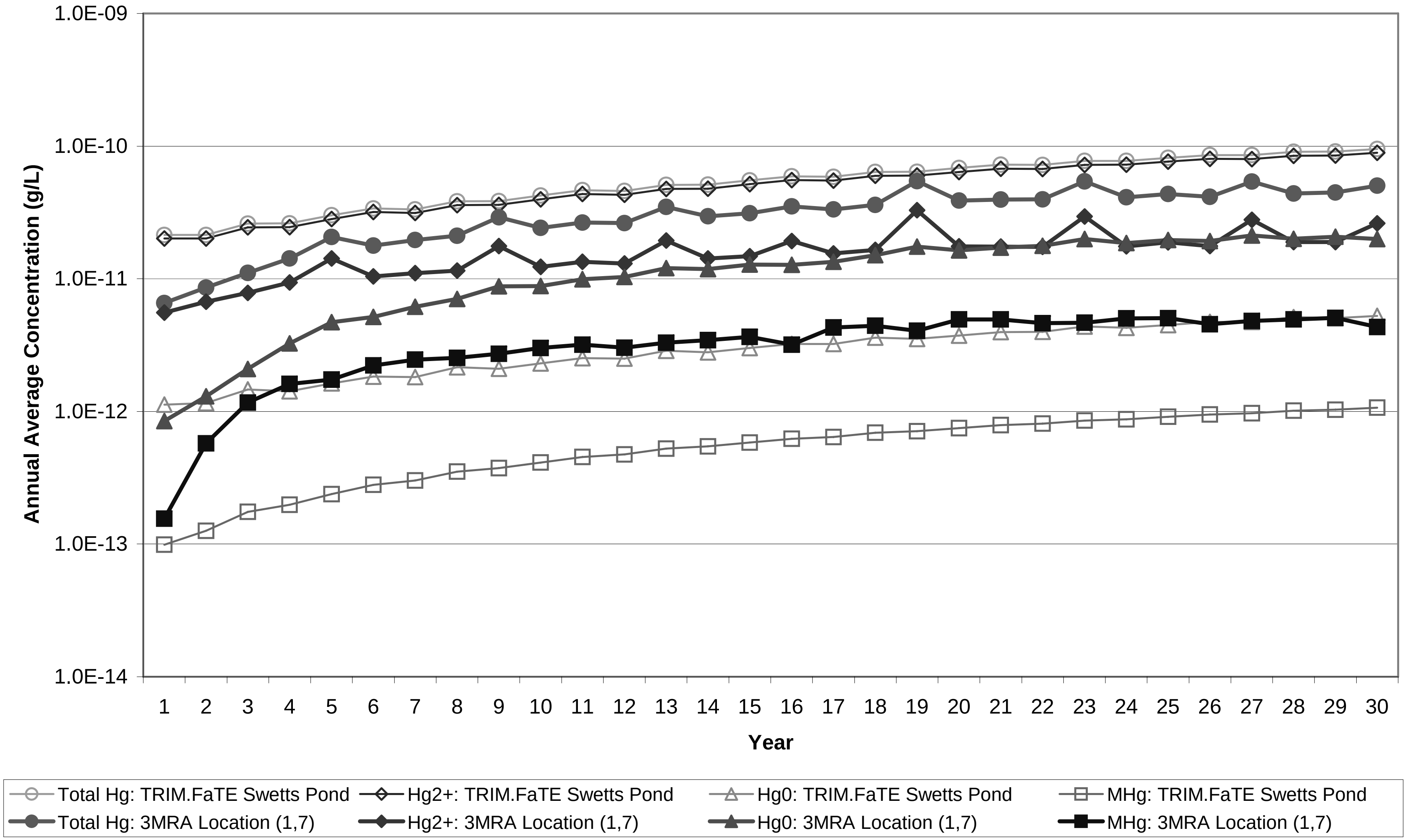


Chart E-7a - Log Scale
Mercury Concentration in Surface Water vs. Time: Swetts Pond



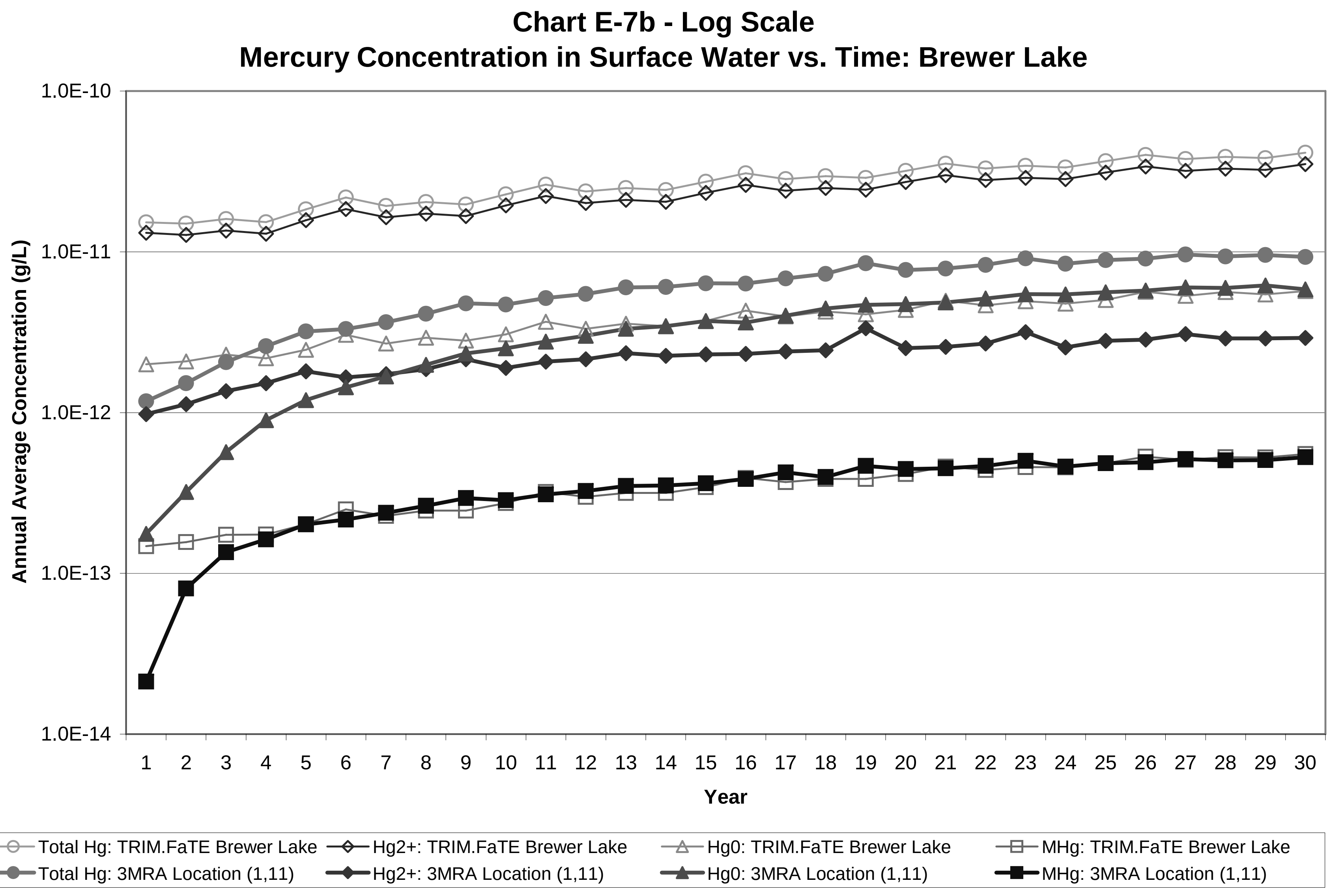


Chart E-7b - Log Scale
Mercury Concentration in Surface Water vs. Time: Brewer Lake
1.0E-10
1.0E-11
1.0E-12
1.0E-13
1.0E-14
Annual Average Concentration (g/L)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Total Hg: TRIM.FaTE Brewer Lake
Hg2+: TRIM.FaTE Brewer Lake
Hg0: TRIM.FaTE Brewer Lake
MHg: TRIM.FaTE Brewer Lake
Total Hg: 3MRA Location (1,11)
Hg2+: 3MRA Location (1,11)
Hg0: 3MRA Location (1,11)
MHg: 3MRA Location (1,11)

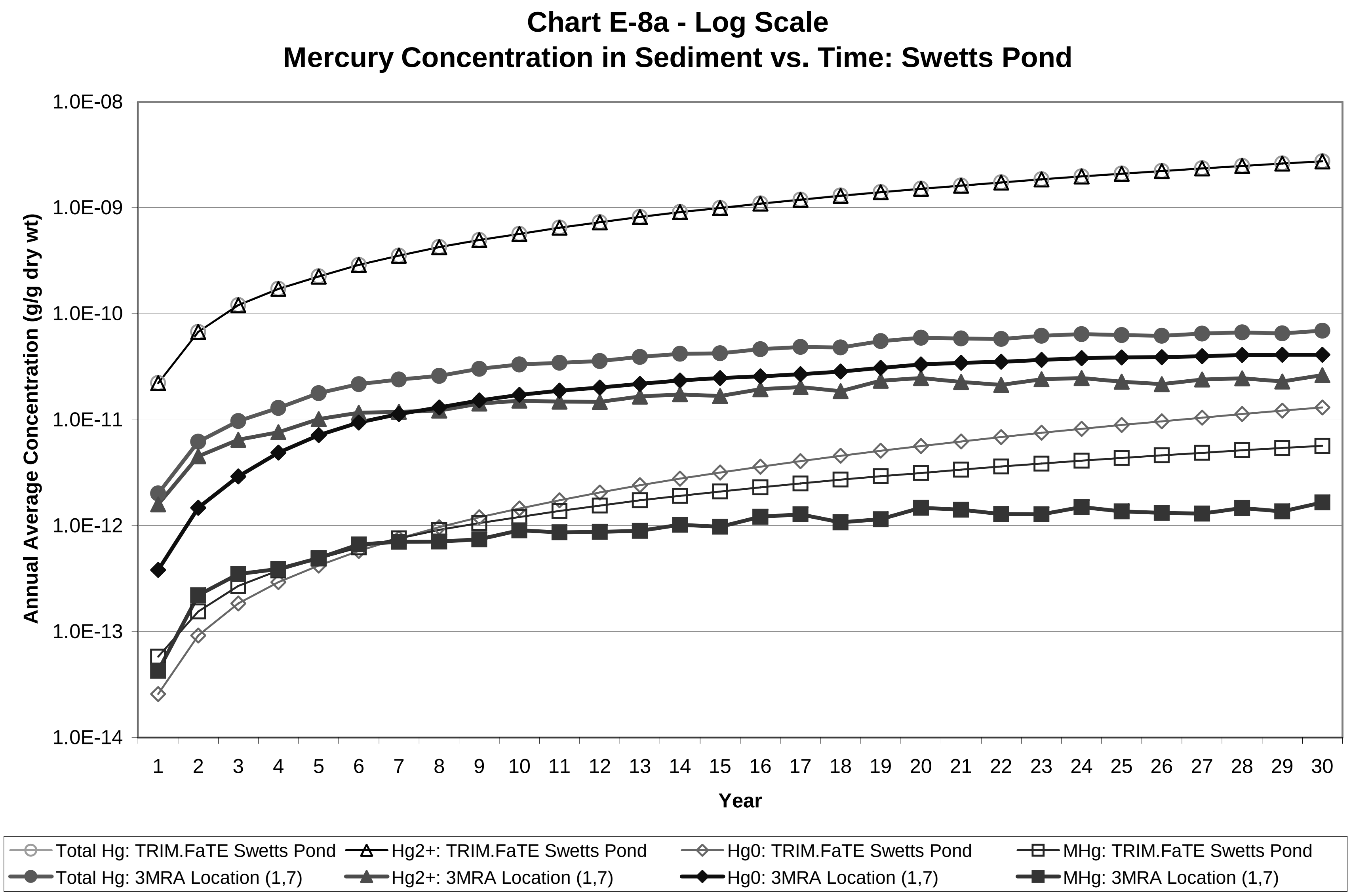


Chart E-8a - Log Scale
Mercury Concentration in Sediment vs. Time: Swetts Pond
1.0E-08
1.0E-09
1.0E-10
1.0E-11
1.0E-12
1.0E-13
1.0E-14
Annual Average Concentration (g/g dry wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Total Hg: TRIM.FaTE Swetts Pond
Hg2+: TRIM.FaTE Swetts Pond
Hg0: TRIM.FaTE Swetts Pond
MHg: TRIM.FaTE Swetts Pond
Total Hg: 3MRA Location (1,7)
Hg2+: 3MRA Location (1,7)
Hg0: 3MRA Location (1,7)
MHg: 3MRA Location (1,7)

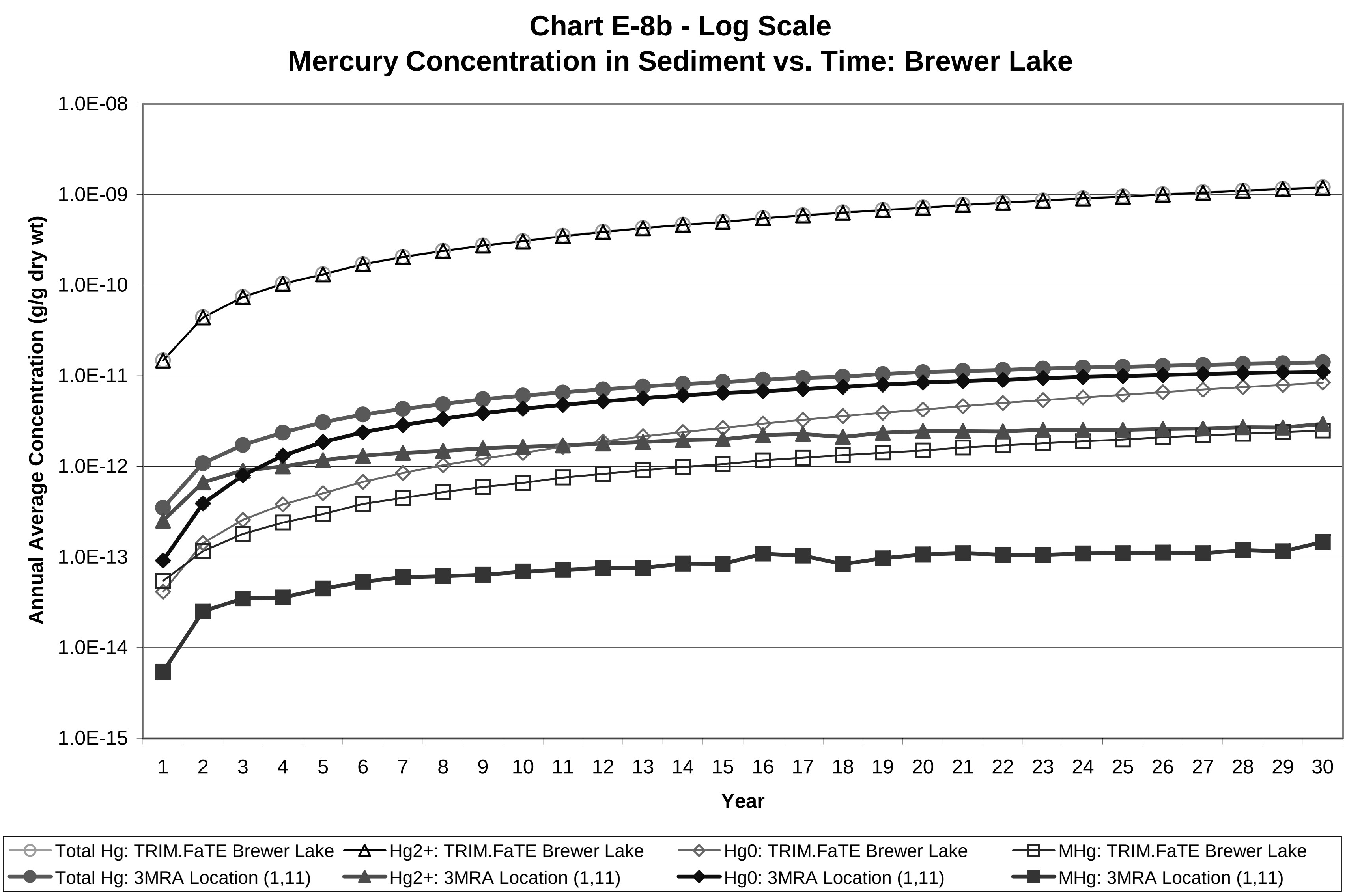


Chart E-8b - Log Scale
Mercury Concentration in Sediment vs. Time: Brewer Lake
Annual Average Concentration (g/g dry wt)
1.0E-08
1.0E-09
1.0E-10
1.0E-11
1.0E-12
1.0E-13
1.0E-14
1.0E-15
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Total Hg: TRIM.FaTE Brewer Lake
Hg2+: TRIM.FaTE Brewer Lake
Hg0: TRIM.FaTE Brewer Lake
MHg: TRIM.FaTE Brewer Lake
Total Hg: 3MRA Location (1,11)
Hg2+: 3MRA Location (1,11)
Hg0: 3MRA Location (1,11)
MHg: 3MRA Location (1,11)

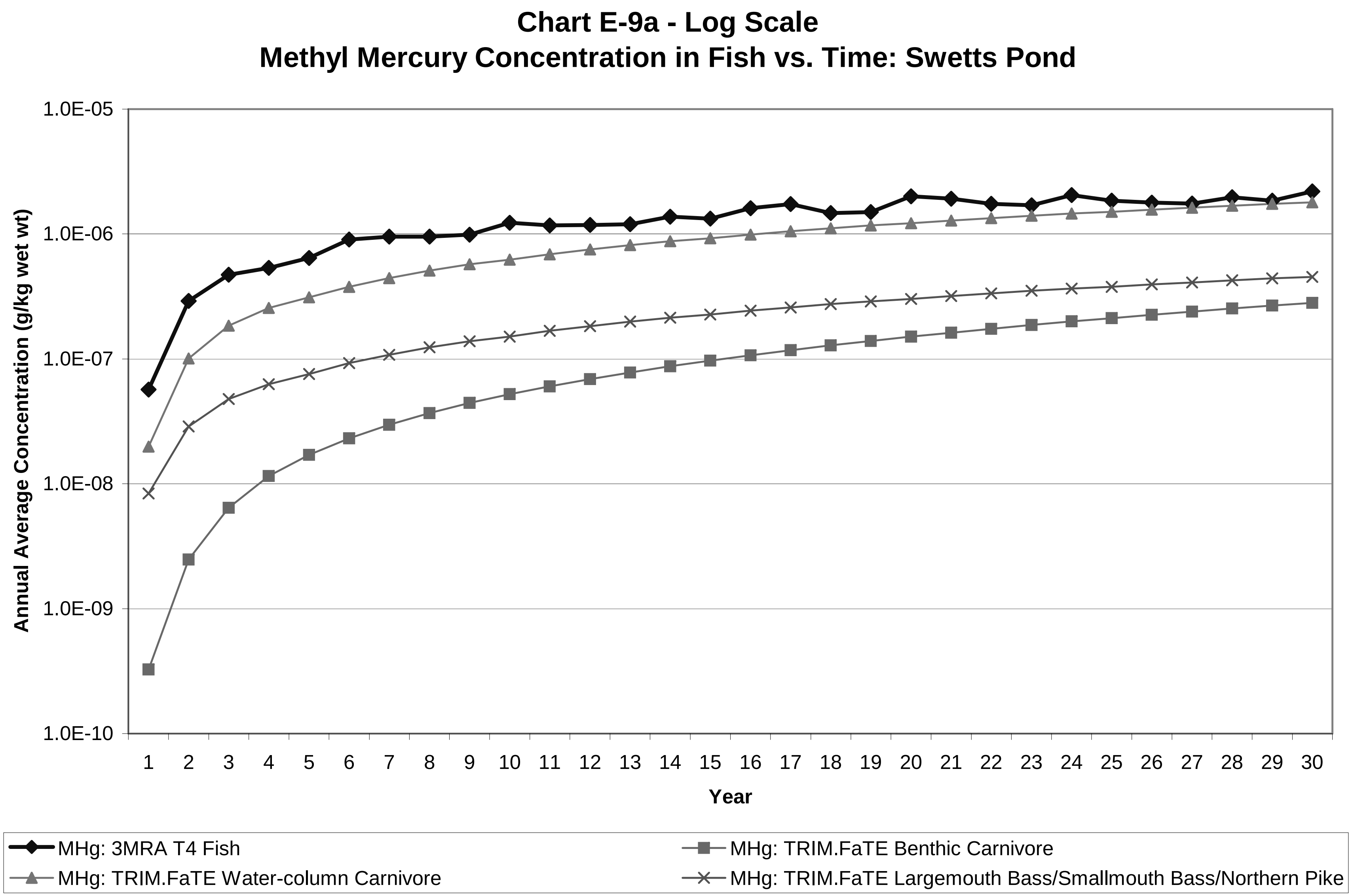
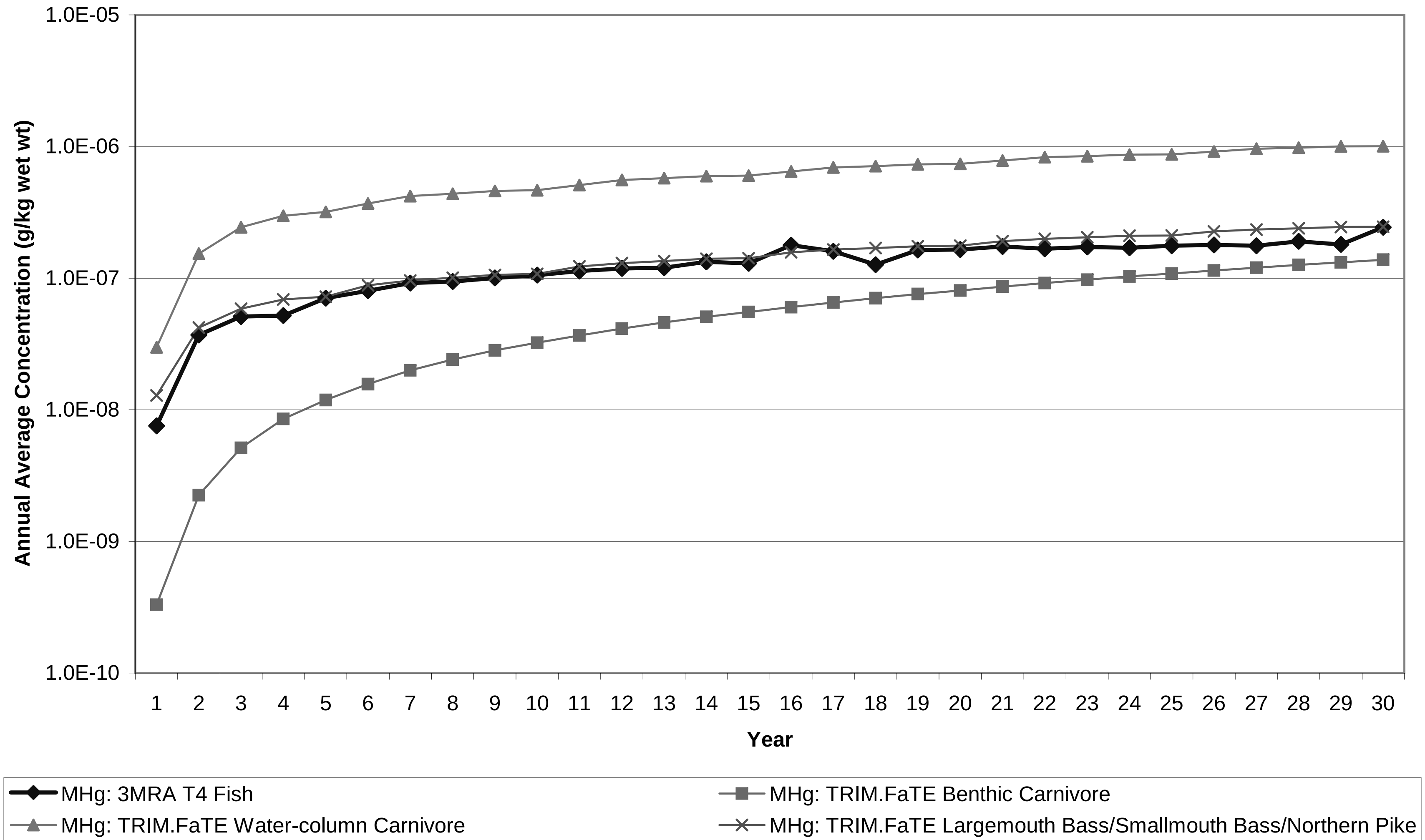


Chart E-9a - Log Scale
Methyl Mercury Concentration in Fish vs. Time: Swetts Pond
1.0E-05
1.0E-06
1.0E-07
1.0E-08
1.0E-09
1.0E-10
Annual Average Concentration (g/kg wet wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
MHg: 3MRA T4 Fish
MHg: TRIM.FaTE Benthic Carnivore
MHg: TRIM.FaTE Water-column Carnivore
MHg: TRIM.FaTE Largemouth Bass/Smallmouth Bass/Northern Pike

Chart E-9b - Log Scale
Methyl Mercury Concentration in Fish vs. Time: Brewer Lake



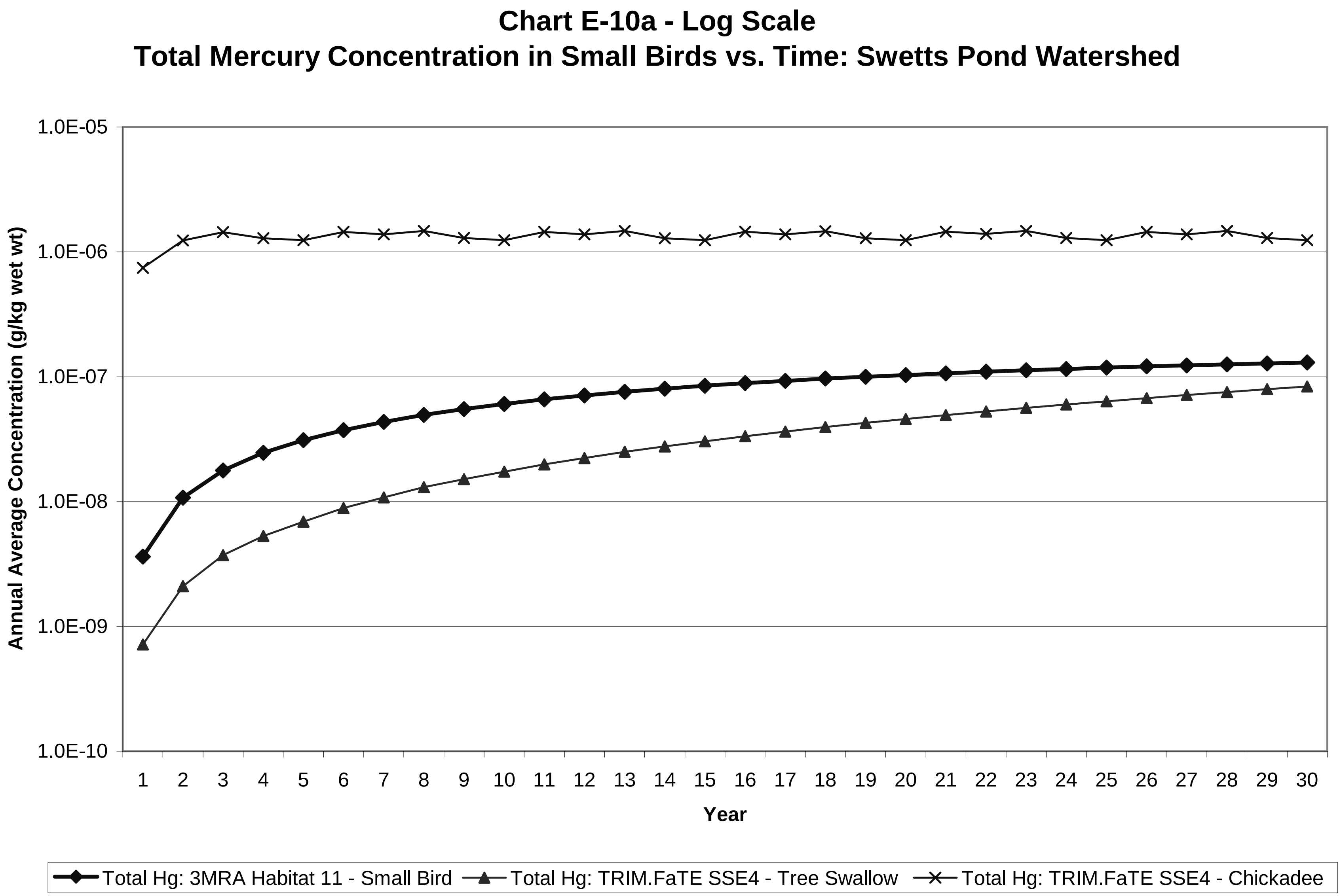


Chart E-10a - Log Scale
Total Mercury Concentration in Small Birds vs. Time: Swetts Pond Watershed
1.0E-05
1.0E-06
1.0E-07
1.0E-08
1.0E-09
1.0E-10
Annual Average Concentration (g/kg wet wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Total Hg: 3MRA Habitat 11 - Small Bird
Total Hg: TRIM.FaTE SSE4 - Tree Swallow
Total Hg: TRIM.FaTE SSE4 - Chickadee

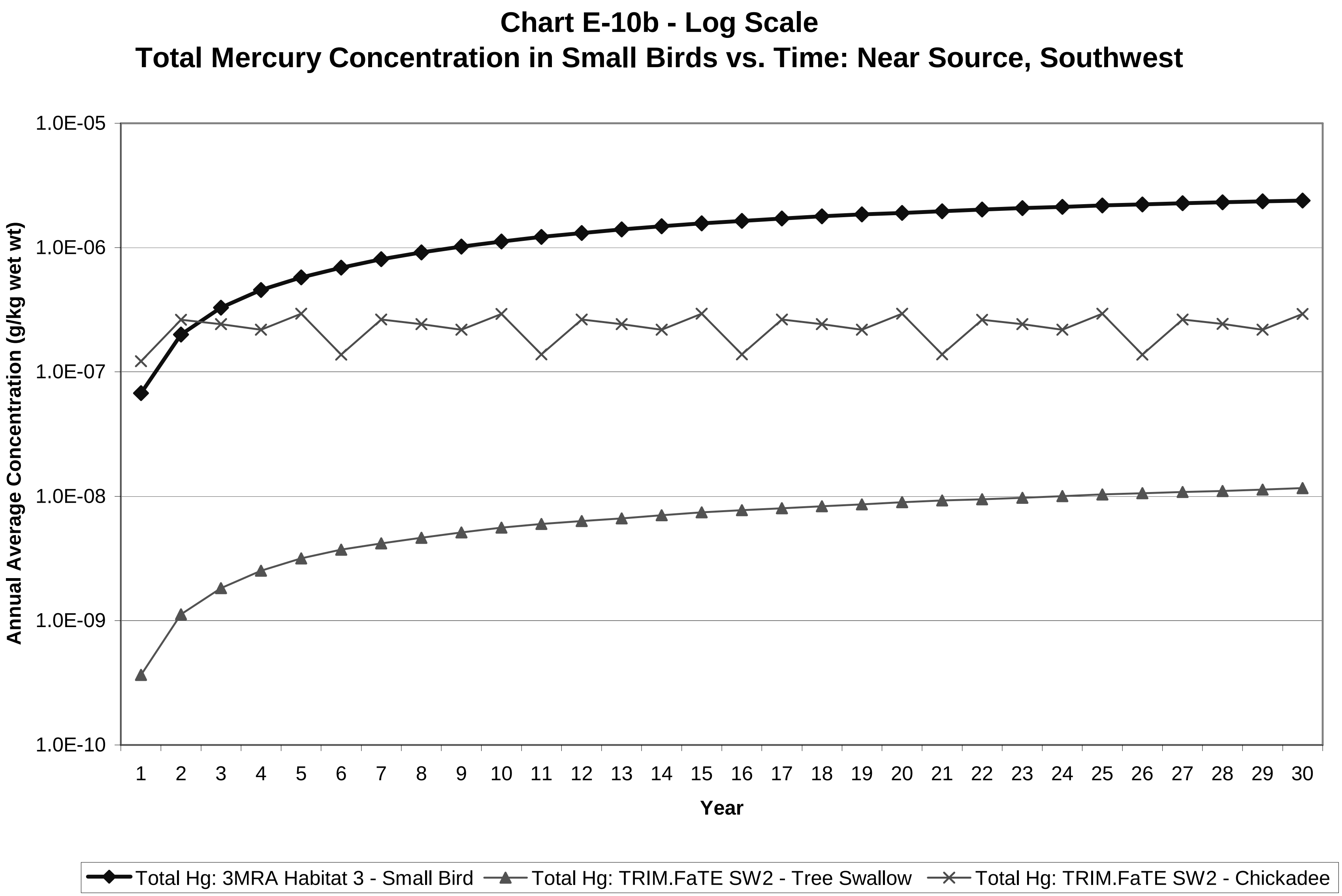


Chart E-10b - Log Scale
Total Mercury Concentration in Small Birds vs. Time: Near Source, Southwest
1.0E-05
1.0E-06
1.0E-07
1.0E-08
1.0E-09
1.0E-10
Annual Average Concentration (g/kg wet wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Total Hg: 3MRA Habitat 3 - Small Bird
Total Hg: TRIM.FaTE SW2 - Tree Swallow
Total Hg: TRIM.FaTE SW2 - Chickadee

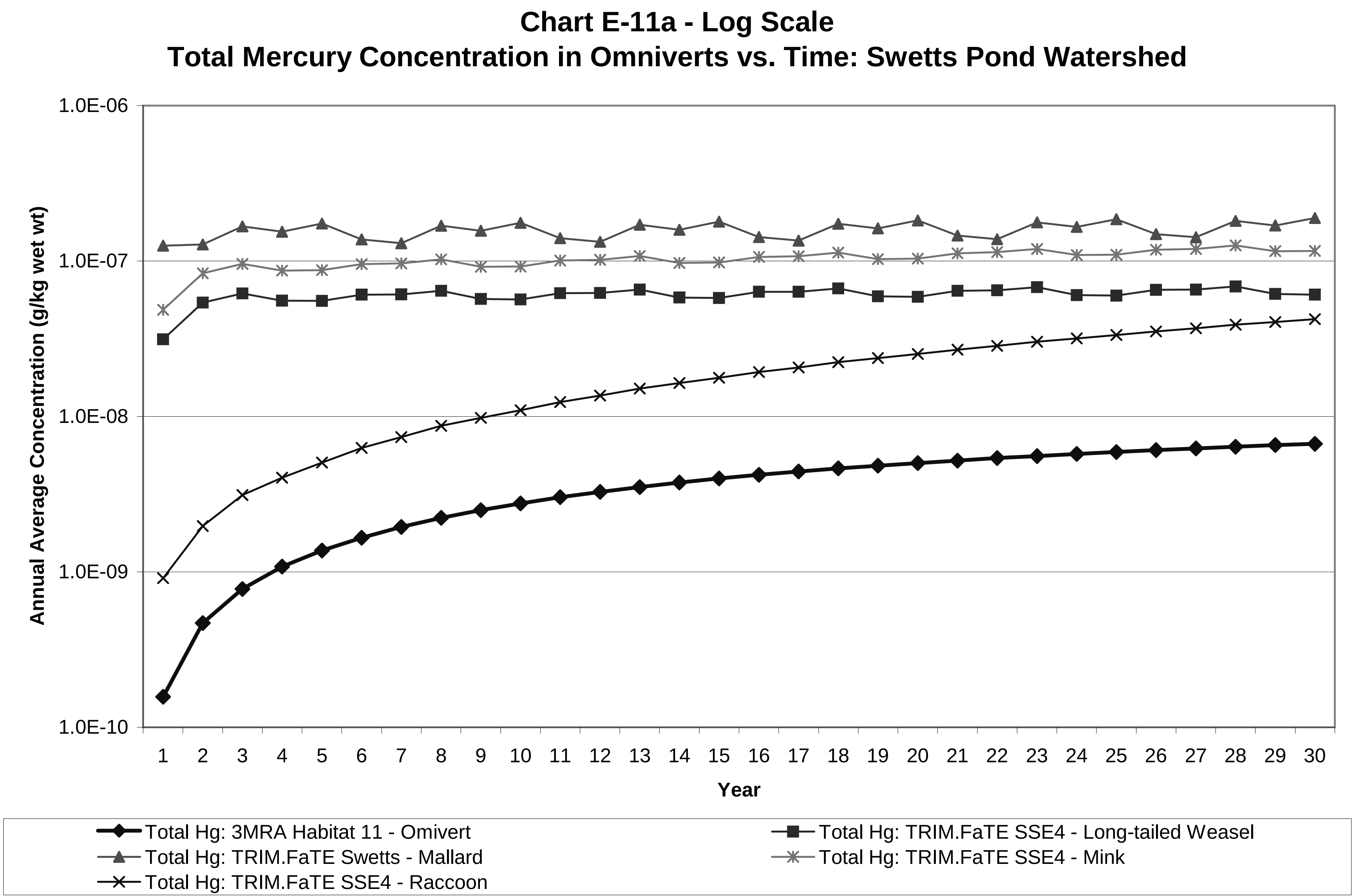
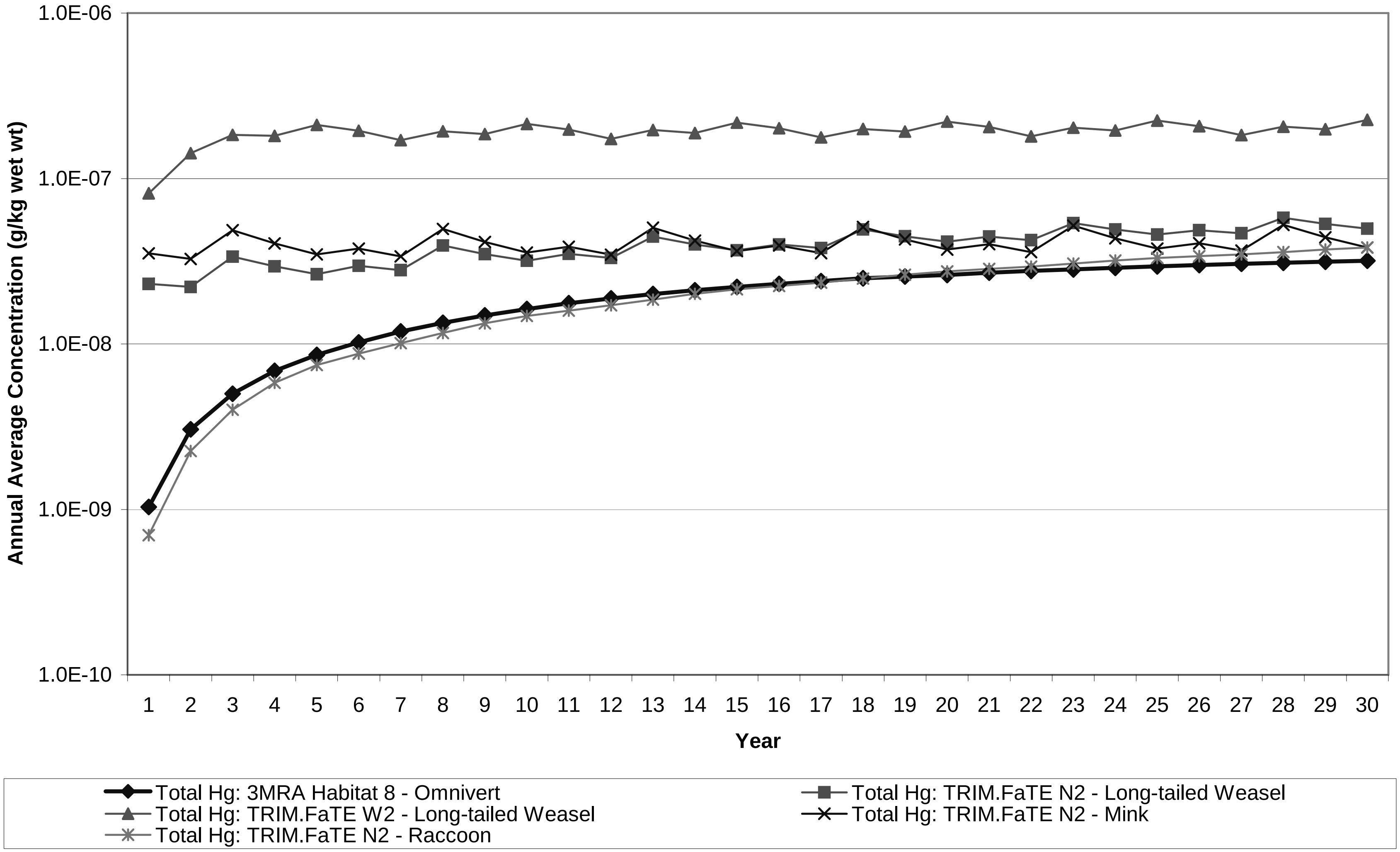


Chart E-11a - Log Scale
Total Mercury Concentration in Omniverts vs. Time: Swetts Pond Watershed
1.0E-06
1.0E-07
1.0E-08
1.0E-09
1.0E-10
Annual Average Concentration (g/kg wet wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Total Hg: 3MRA Habitat 11 - Omivert
Total Hg: TRIM.FaTE SSE4 - Long-tailed Weasel
Total Hg: TRIM.FaTE Swetts - Mallard
Total Hg: TRIM.FaTE SSE4 - Mink
Total Hg: TRIM.FaTE SSE4 - Raccoon

Chart E-11b - Log Scale
Total Mercury Concentration in Omniverts vs. Time: Near Source, Northwest



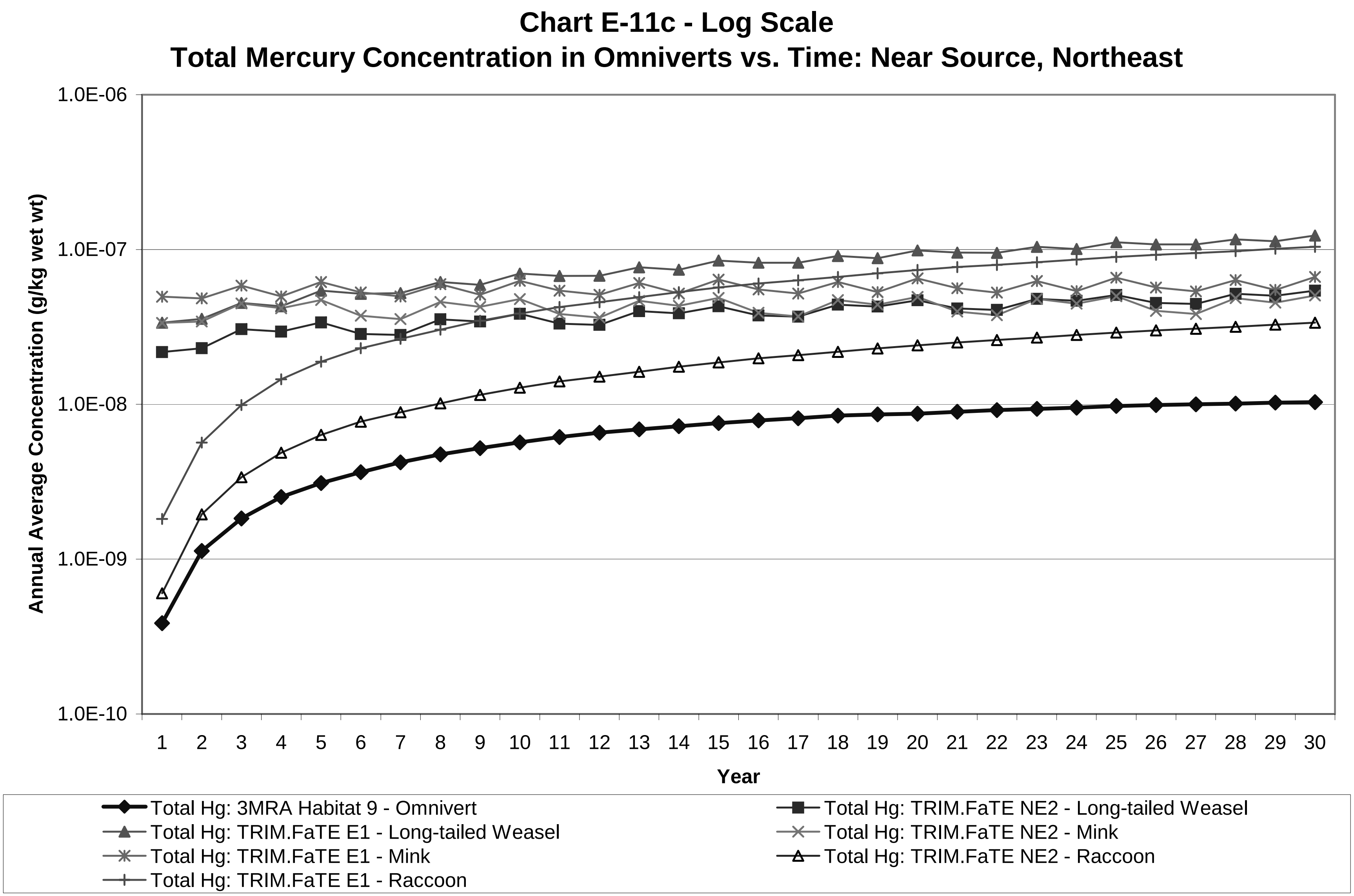


Chart E-11c - Log Scale
Total Mercury Concentration in Omniverts vs. Time: Near Source, Northeast
1.0E-06
1.0E-07
1.0E-08
1.0E-09
1.0E-10
Annual Average Concentration (g/kg wet wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Total Hg: 3MRA Habitat 9 - Omnivert
Total Hg: TRIM.FaTE NE2 - Long-tailed Weasel
Total Hg: TRIM.FaTE E1 - Long-tailed Weasel
Total Hg: TRIM.FaTE NE2 - Mink
Total Hg: TRIM.FaTE E1 - Mink
Total Hg: TRIM.FaTE NE2 - Raccoon
Total Hg: TRIM.FaTE E1 - Raccoon

Chart E-11d - Log Scale
Total Mercury Concentration in Omniverts vs. Time: Near Source, Southwest

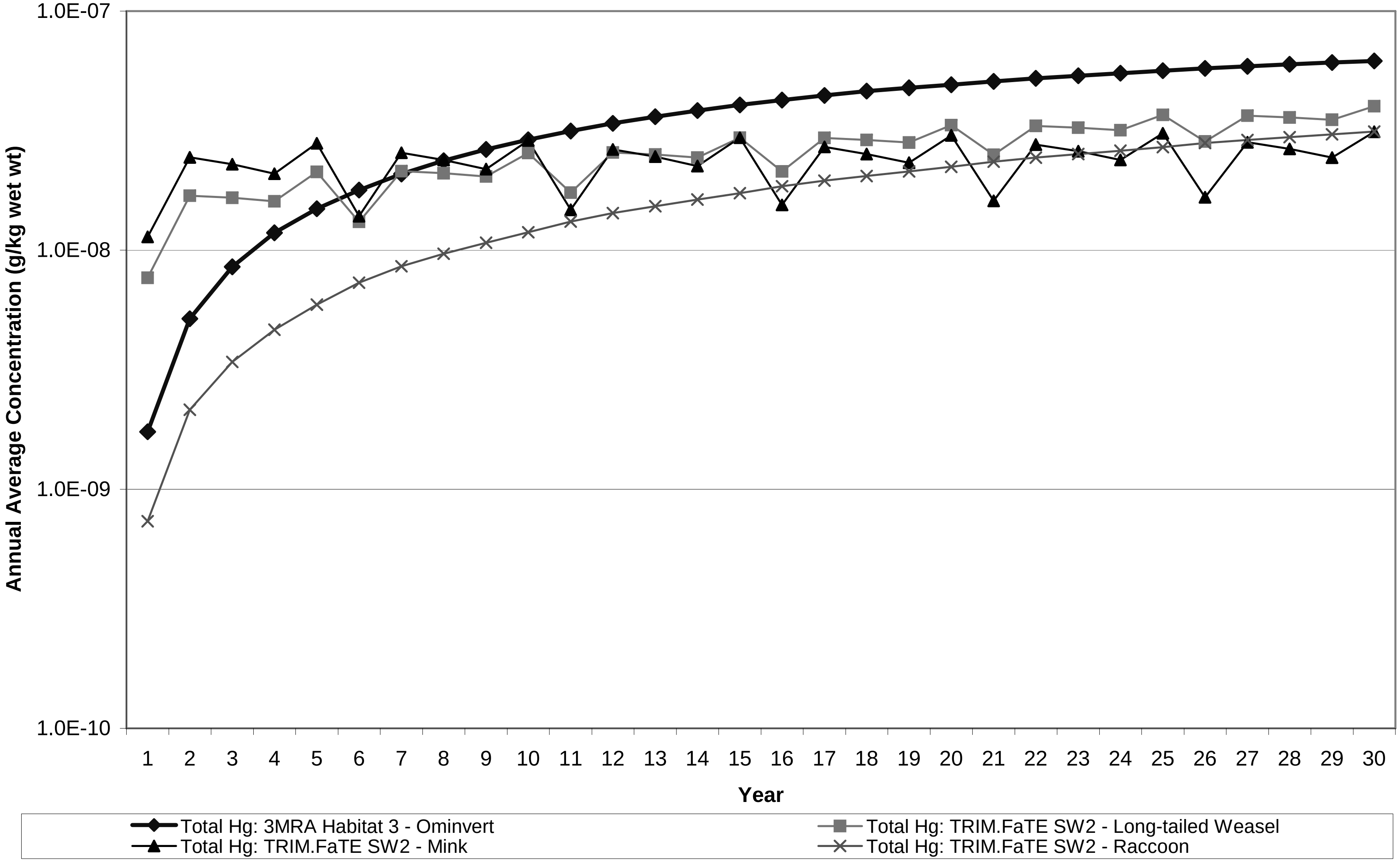
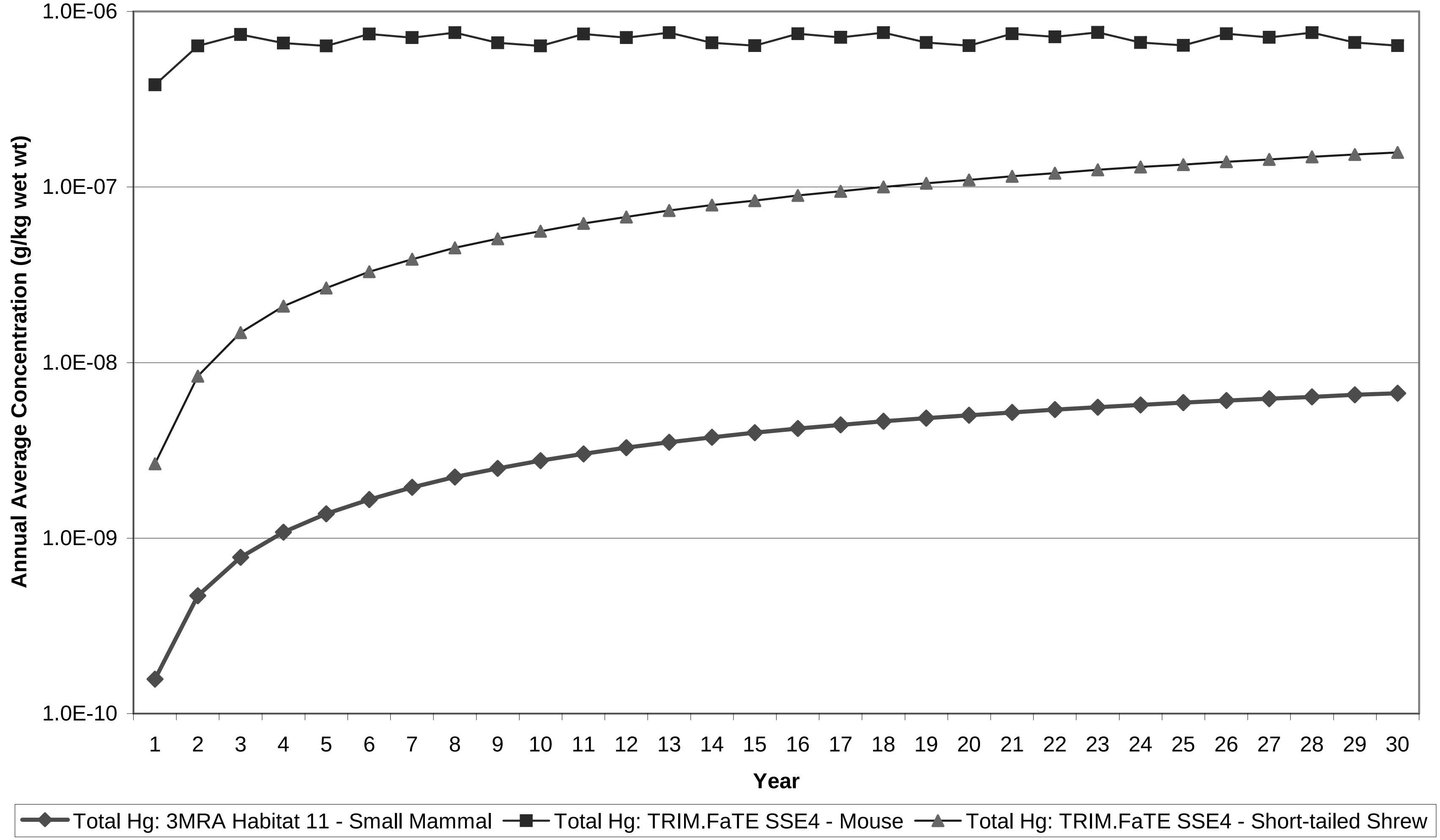


Chart E-12a - Log Scale
Total Mercury Concentration in Small Mammals vs. Time: Swetts Pond Watershed



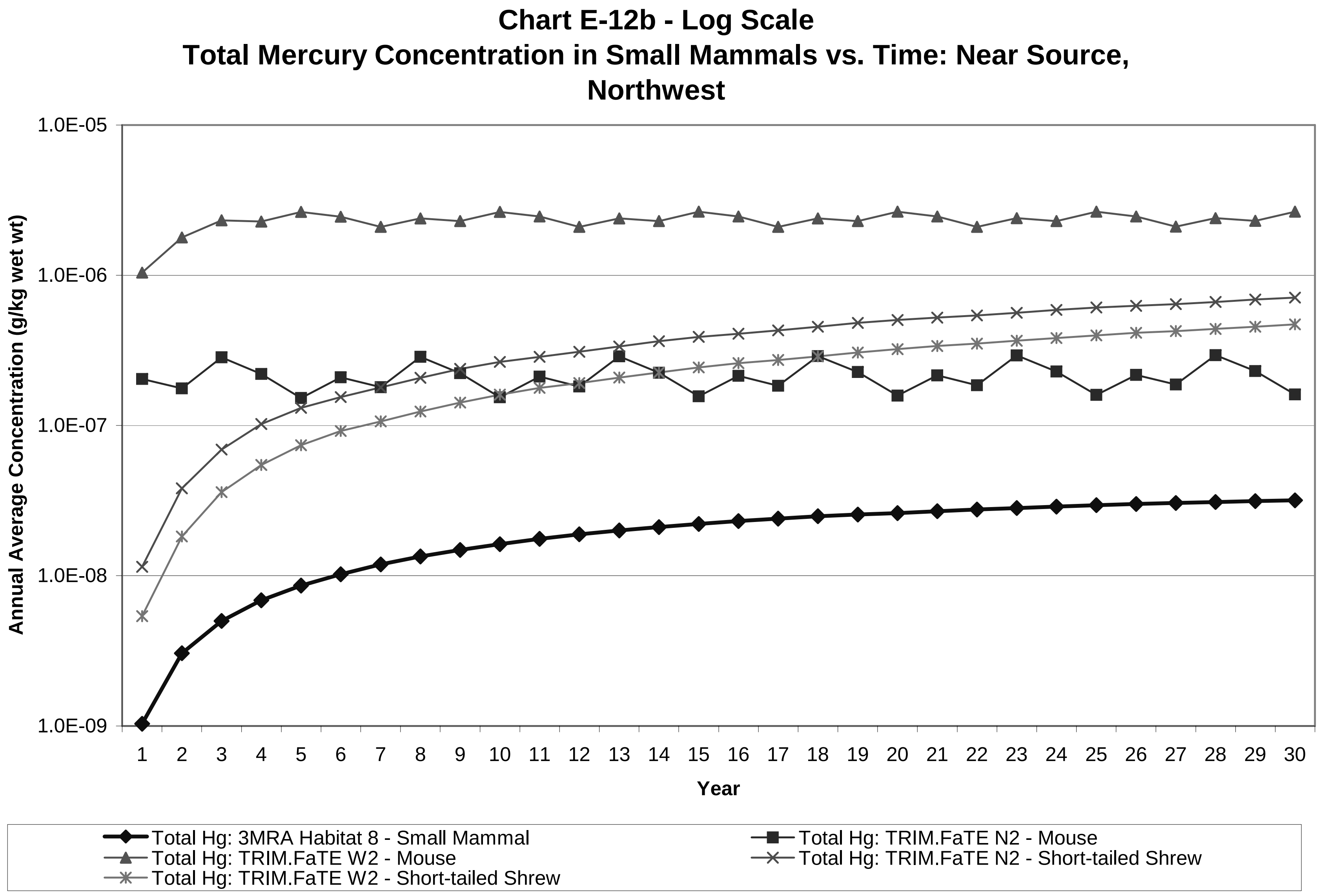


Chart E-12b - Log Scale
Total Mercury Concentration in Small Mammals vs. Time: Near Source, Northwest
1.0E-05
1.0E-06
1.0E-07
1.0E-08
1.0E-09
Annual Average Concentration (g/kg wet wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Total Hg: 3MRA Habitat 8 - Small Mammal
Total Hg: TRIM.FaTE N2 - Mouse
Total Hg: TRIM.FaTE W2 - Mouse
Total Hg: TRIM.FaTE N2 - Short-tailed Shrew
Total Hg: TRIM.FaTE W2 - Short-tailed Shrew

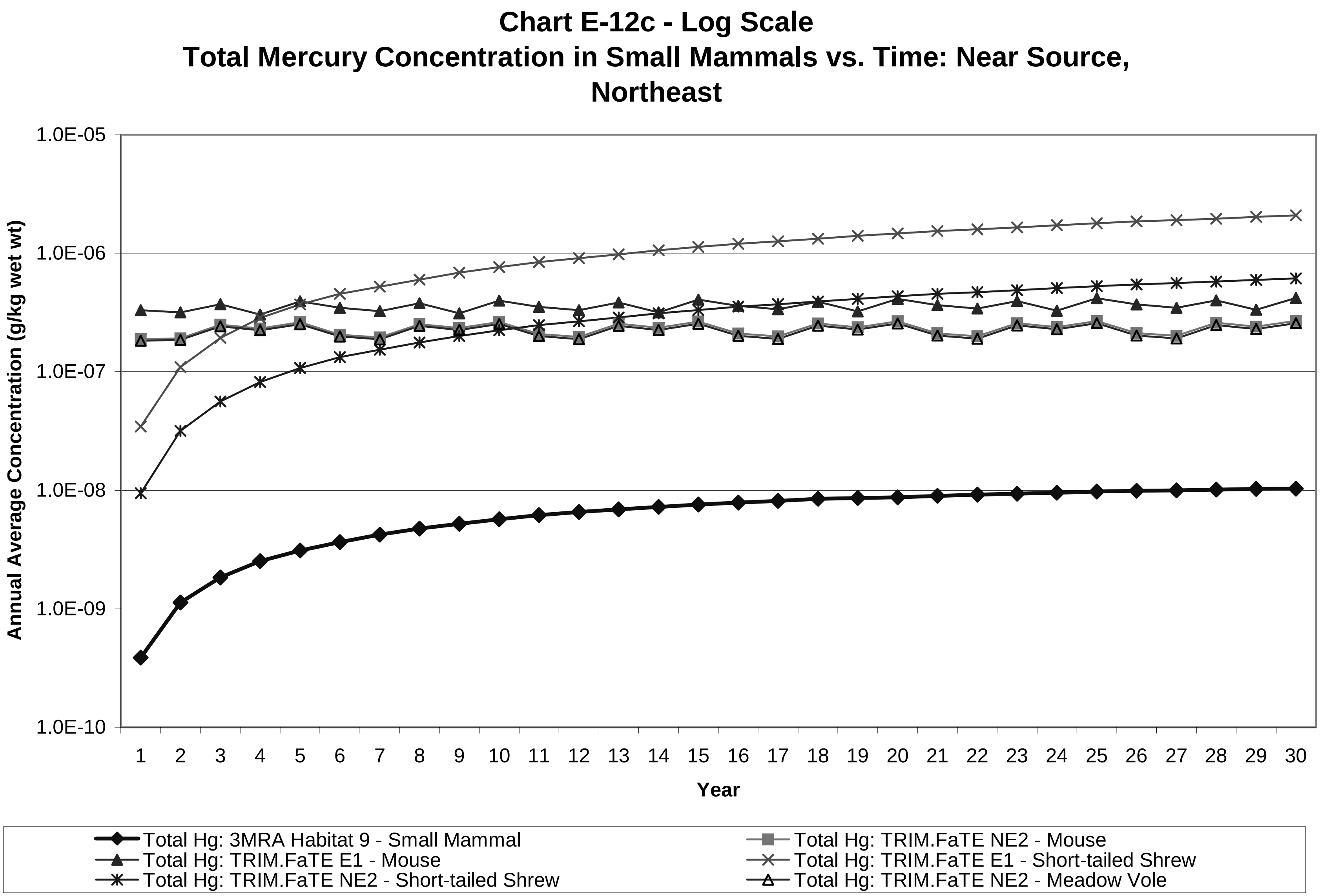


Chart E-12c - Log Scale
Total Mercury Concentration in Small Mammals vs. Time: Near Source, Northeast
1.0E-05
1.0E-06
1.0E-07
1.0E-08
1.0E-09
1.0E-10
Annual Average Concentration (g/kg wet wt)
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30
Year
Total Hg: 3MRA Habitat 9 - Small Mammal
Total Hg: TRIM.FaTE NE2 - Mouse
Total Hg: TRIM.FaTE E1 - Mouse
Total Hg: TRIM.FaTE E1 - Short-tailed Shrew
Total Hg: TRIM.FaTE NE2 - Short-tailed Shrew
Total Hg: TRIM.FaTE NE2 - Meadow Vole

APPENDIX F

SUMMARY OF AVAILABLE OFF-SITE MONITORING DATA

Appendix F
SUMMARY OF AVAILABLE OFF-SITE MONITORING DATA

This appendix provides a summary of the off-site mercury monitoring data sets identified for the test case site. Off-site measurement data for comparison were identified for air, soil, lake/pond surface water and sediment, river surface water and sediment, and various biota. However, only data that were used for comparison to TRIM.FaTE modeling results are presented in this appendix (see Chapter 7 for detailed comparison of modeling and monitoring results).

Note: Data sources have not been listed here to retain the anonymity of the case study site.

F.1 Off-site Air Monitoring Data

Environmental Medium: Ambient air

Number of Data Points: Approximately 29,000 data points from 3 continuous monitoring stations. Data quality flags are included indicating automatic calibration, power failure, valid measurement, standard addition, maintenance and manual calibrations, equipment failure or malfunction, no peak (i.e., below detection limit), overload (beyond analyzer range), and suspect data (based on quality assurance measures).

Measurement Endpoint (Units): One-hour average total gaseous mercury concentration (ng/m^3)

Sampling Date(s): (1) AA1: August 27, 1998 to November 1, 1999
(2) AA2: August 26, 1998 to September 27, 1999
(3) AA3: September 4, 1998 to September 24, 1999
(hourly samples throughout period)

Sample Location(s): (1) AA1: Approximately 1,500 feet southeast of facility
(2) AA2: Approximately 4,300 feet north-northwest of the facility
(3) AA3: Approximately 6,400 feet north-northwest of the facility

Purpose of Monitoring: To provide data to the state environmental agency as a result of a consent agreement enforcement order

Overall Range: (1) AA1: 0.774 - 526 ng/m^3
(2) AA2: 0.259 - 90.1 ng/m^3
(3) AA3: 0.461 - 34.2 ng/m^3

Mean:[a] (1) Overall mean for AA1: 8.63 ng/m^3
(2) Overall mean for AA2: 2.25 ng/m^3
(3) Overall mean for AA3: 1.78 ng/m^3

[a] Standard deviation not reported in source.

Raw Data:

Summary of 1-Hour Average TGM (ng/m^3) Collected at the AA1 Site

Statistic	1st Quarter (Sept - Dec)	2nd Quarter (Jan - Mar)	3rd Quarter (Apr - Jun)	4th Quarter (Jul - Oct)	Overall
minimum	0.826	0.798	0.786	0.774	0.774
25th percentile	1.56	0.940	0.860	0.860	0.878
median	3.53	1.93	1.10	1.02	1.80
75th percentile	11.5	9.32	6.71	5.56	8.80
maximum	157	153	171	526	526
arithmetic mean	9.96	8.33	7.47	8.33	8.63

Summary of 1-Hour Average TGM (ng/m^3) Collected at the AA2 Site

Statistic	1st Quarter (Sept - Dec)	2nd Quarter (Jan - Mar)	3rd Quarter (Apr - Jun)	4th Quarter (Jul - Sept)	Overall
minimum	0.993	1.01	0.722	0.259	0.259
25th percentile	1.45	1.31	1.17	0.77	1.25
median	1.72	1.47	1.43	1.09	1.50
75th percentile	2.66	1.70	2.21	1.91	2.19
maximum	25.8	24.5	25.8	90.1	90.1
arithmetic mean	2.48	1.85	2.34	2.20	2.25

Summary of 1-Hour Average TGM (ng/m^3) Collected at the AA3 Site

Statistic	1st Quarter (Sept - Dec)	2nd Quarter (Jan - Mar)	3rd Quarter (Apr - Jun)	4th Quarter (Jul - Sept)	Overall
minimum	0.461	0.525	0.603	0.481	0.461
25th percentile	1.03	0.677	1.09	0.794	0.893
median	1.34	1.36	1.28	0.98	1.26
75th percentile	1.73	1.61	1.56	1.51	1.62
maximum	14.8	26.4	29.4	34.2	34.2
arithmetic mean	1.76	1.58	1.87	1.91	1.78

Other Information: Corresponding meteorological data are also available from an on-site monitoring station, including approximately 8,760 data points each for (1) average hourly wind speed (mph), (2) average hourly wind direction (°N), (3) average hourly ambient temperature (°C), and (4) average hourly solar radiation (W/m^2) from 1 continuous monitoring station from November 1, 1998 to November 1, 1999. [The data set of meteorological parameters being used as inputs to TRIM.FaTE is from two monitoring stations near the facility (within 20 km), supplemented by data from a continuous monitoring station roughly 150 km southwest of the facility. This data set includes approximately 8,760 hourly averaged measurements from each year from 1987 to 1991 for wind speed (m/s), wind direction (degrees), rural and urban mixing height (m), precipitation rate (mm/hour), precipitation type (unitless), ambient temperature (K), stability class (unitless), friction velocity (m/s), monin-obukhov length (m), and surface roughness length (m).]

A wind rose was generated from the on-site hourly wind speed and direction data and presented in the final report with the on-site air monitoring data. This wind rose is included below for reference.

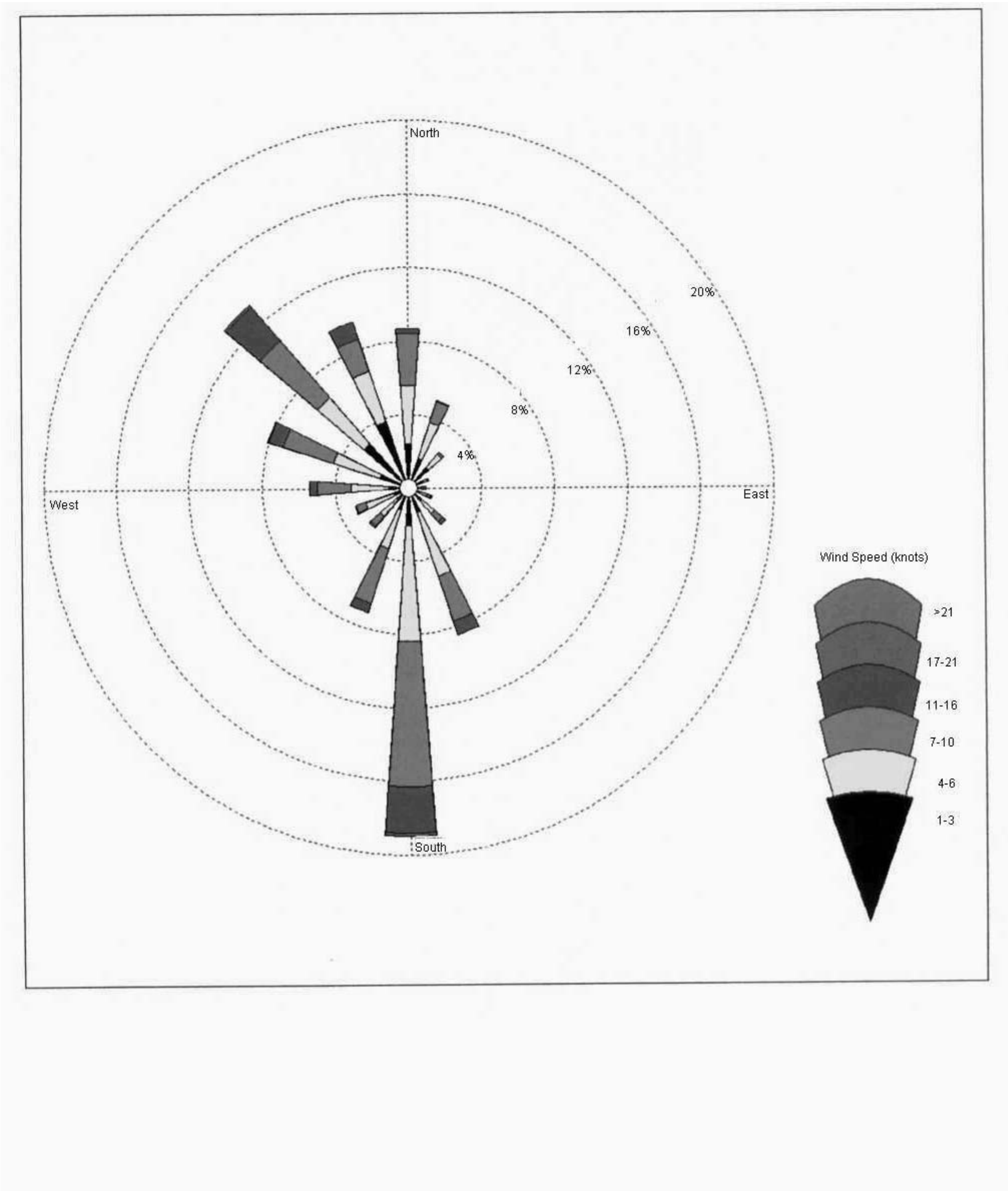
Raw Data:

Total Meteorological Data Collected at the Facility

Statistic	5-min average WS (mph)	5-min average WD (°N)	5-min average Temp. (°F)	5-min average SR (W/m^2)
available periods	105,058	105,058	105,058	105,058
observed periods	98,244	101,546	97,725	68,042
data recovery	93.5	96.7	93.0	64.8

Quarterly data summaries are also provided in the Final Report (December 1999).

Wind Rose – On-site Meteorological Station
(included in final report with on-site air monitoring)



F.2 Off-site Soil Monitoring Data

Environmental Medium: Surface soil

Number of Data Points: 4 data points from 4 locations

Measurement Endpoint(s) (Units): Total mercury dry weight concentration (mg/kg)

Sampling Date(s): June 6-7, 1995 and October 27, 1997

Sample Location(s): Park (2200 m to SSW)

Purpose of Monitoring: 1995 and 1997 site investigations

Range: 0.18 - <0.32 mg/kg, dry weight

Mean and Standard Deviation: N/A (only one value above detection limit)

Raw Data:

Park Sample Site	Year	Total Hg (mg/kg)
SSS-018	1995	0.18
SSS-054	1997	<0.32
SSS-055	1997	<0.30
SSS-056	1997	<0.30

Other Information: The value for sample code SSS-018 was obtained during 1995 earthworm sampling and concurrent soil samples from earthworm collection sites. Values for SSS-054, SSS-055, and SSS-056 were determined during 1997 soil sampling and mercury analysis. [Corresponding on-site data also available].

F.3 Off-site Sediment Monitoring Data

Environmental Medium: Sediment

Number of Data Points: 4 data points, including a single measurement each from 4 different off-site ponds and lakes.

Measurement Endpoint(s) (Units): Total mercury concentration in the upper 2 cm of the sediment in the deepest part of the water body (mg/kg, dry weight)

Sampling Date(s): (1) September 19, 1996
(2) September 26, 1996
(3) September 20, 1996
(4) September 20, 1996

Sampling Location(s): (1) Swetts Pond, (2) Thurston Pond, (3) Brewer Lake, and (4) Fields Pond. Deepest part of each water body.

Purpose of Monitoring: To determine if lakes and ponds are measurably affected by small, local air emission sources of mercury

Range: N/A (single value)

Mean and Standard Deviation: N/A

Raw Data: (1) Swetts Pond: 0.319 mg/kg
(2) Thurston Pond: 0.157 mg/kg
(3) Brewer Lake: 0.201 mg/kg
(4) Fields Pond: 0.132 mg/kg

F.4 Off-site Biota Monitoring Data

Environmental Medium: Earthworm at Park

Number of Data Points: 1 data point

Measurement Endpoint(s) (Units): (1) Percent moisture in earthworm
(2) Total mercury concentration in earthworm sample (mg/kg, wet weight)
(3) Mercury concentration in concurrent soil sample (mg/kg, dry weight)

Sampling Date: 1995

Sampling Location: Park (2200 m to SSW)

Purpose of Monitoring: unknown

Range: N/A (single value)

Mean and Standard Deviation: N/A

Raw Data: (1) 87.9 percent moisture in earthworm
(2) 0.044 (mg/kg, wet weight), mercury concentration in earthworm sample
(3) 0.18 (mg/kg, dry weight), mercury concentration in soil sample

Corresponding on-site data also available**.**

Environmental Medium: Short-tailed Shrew (*Blarina brevicauda*)

Number of Data Points: 1 data point

Measurement Endpoint(s) (Units): (1) Total mercury concentration (mg/kg, wet weight)
(2) Percent moisture (%)

Sampling Date(s): June 1995

Sample Location(s): Park (2200 m to SSW)

Purpose of Monitoring: 1995 Site Investigation

Range: N/A (single value)

Mean and Standard Deviation: N/A

Raw Data: (1) 0.064 mg/kg, wet weight
(2) 73.4 %

Environmental Medium: Deer Mouse

Number of Data Points: 2 data points

Measurement Endpoint(s) (Units): (1) Total mercury (mg/kg, wet weight)
(2) Percent moisture

Sampling Date(s): 1995

Sample Location(s): Park (2200 m to SSW)

Purpose of Monitoring: Mercury risk assessment

Range: N/A

Mean and Standard Deviation: (1) 0.0515 ± 0.05, total mercury (mg/kg, wet weight)
(2) 75.4 ± 2.68, percent moisture

Raw Data:

Sample	Percent Moisture	Total Hg (mg/kg wet weight)
Park	77.3	0.087
Park	73.5	0.016

Similar on-site data also available.

Environmental Medium: White perch from lakes in area of case study

Number of Data Points: 35 mercury concentration and fish length data points from 4 waterbodies, including (1) 10 data points from Swetts Pond, (2) 8 data points from Fields Pond, (3) 11 data points from Thurston Pond, and (4) 6 data points from Brewer Lake

Measurement Endpoint(s) (Units): (1) Total mercury concentration in skinless fillet (mg/kg, wet weight)
(2) Fish length (mm)

Sampling Date(s): (1) September 19, 1996
(2) September 20, 1996
(3) September 26, 1996
(4) September 20, 1996

Sample Location(s): (1) Swetts Pond
(2) Fields Pond
(3) Thurston Pond
(4) Brewer Lake

Purpose of Monitoring: To determine if lakes and ponds are measurably affected by small, local air emission sources of mercury

Range: (1) 0.50 - 1.31 mg/kg, wet weight and 240 - 350 mm in length
(2) 0.28 - 0.72 mg/kg, wet weight and 135 - 270 mm in length
(3) 0.60 - 2.20 mg/kg, wet weight and 186 - 305 mm in length
(4) 0.32 - 0.53 mg/kg, wet weight and 185 - 202 mm in length

Mean and Standard Deviation: (1) 0.98 ± 0.25 mg/kg, wet weight and 308 ± 32 mm in length
(2) 0.45 ± 0.14 mg/kg, wet weight and 224 ± 48 mm in length
(3) 1.07 ± 0.43 mg/kg, wet weight and 231 ± 34 mm in length
(4) 0.41 ± 0.08 mg/kg, wet weight and 195 ± 8 mm in length

Raw Data:

Sample Point	Date	Length (mm)	Total Hg (mg/kg ww)
Swetts Pond-5544	9/19/96	320	1.29
Swetts Pond-5544	9/19/96	340	1.00
Swetts Pond-5544	9/19/96	330	0.86
Swetts Pond-5544	9/19/96	350	1.31
Swetts Pond-5544	9/19/96	320	0.97
Swetts Pond-5544	9/19/96	300	0.99
Swetts Pond-5544	9/19/96	295	1.15
Swetts Pond-5544	9/19/96	285	0.73
Swetts Pond-5544	9/19/96	295	1.04
Swetts Pond-5544	9/19/96	240	0.50
Fields Pond- 4282	9/20/96	270	0.72
Fields Pond- 4282	9/20/96	258	0.45
Fields Pond- 4282	9/20/96	265	0.57

Sample Point	Date	Length (mm)	Total Hg (mg/kg ww)
Fields Pond- 4282	9/20/96	240	0.43
Fields Pond- 4282	9/20/96	240	0.49
Fields Pond- 4282	9/20/96	215	0.31
Fields Pond- 4282	9/20/96	170	0.28
Fields Pond- 4282	9/20/96	135	0.37
Thurston Pond-4321	9/26/96	305	2.20
Thurston Pond-4321	9/26/96	260	1.26
Thurston Pond-4321	9/26/96	235	1.11
Thurston Pond-4321	9/26/96	243	1.26
Thurston Pond-4321	9/26/96	245	1.02
Thurston Pond-4321	9/26/96	240	1.04
Thurston Pond-4321	9/26/96	186	0.60
Thurston Pond-4321	9/26/96	200	1.00
Thurston Pond-4321	9/26/96	210	0.75
Thurston Pond-4321	9/26/96	213	0.82
Thurston Pond-4321	9/26/96	200	0.67
Brewer Lake-4284	9/20/96	202	0.53
Brewer Lake-4284	9/20/96	191	0.43
Brewer Lake-4284	9/20/96	201	0.32
Brewer Lake-4284	9/20/96	185	0.48
Brewer Lake-4284	9/20/96	187	0.37
Brewer Lake-4284	9/20/96	201	0.32

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