III. Appendices

E. Water Appendix

11. Analysis of Varying Input Factors on Cumulative Assessment

To help characterize the regional estimated cumulative OP distributions in drinking water sources, OPP analyzed critical assumptions that went into the cumulative water exposure assessment. The first three sections evaluate the way usage information was incorporated into the modeling estimates (assuming typical versus maximum application rates, setting the application date at the beginning of application window rather than a later period, and using a single rather than split application). The fourth section contrasts the effect of different use sources (California Department of Pesticide Regulations census versus USDA National Agricultural Statistics Service use surveys) on the estimated OP cumulative distribution in Region C (Arid/Semiarid West). The fifth section examines the relative contributions of spray drift and runoff to the estimated OP cumulative loads in each of the regions.

a. Typical and Maximum Application Rates

OPP used typical application rates for the most recent reporting year to predict OP cumulative distributions for each region. Typical rates for each OP pesticide on each crop were generated by taking the average reported in the USDA NASS (National Agricultural Statistics Service) Agricultural Chemical Usage summaries. This assumes that all applications were made at this typical or average rate and that frequencies of applications were constant year to year. The assessment considered only yearly variations in weather, and not variations in application rates. Thus, using these typical application rates and frequencies may underestimate water concentrations in years when pest pressure is higher than in average and may overestimate in years when lower amounts of pesticides are used. The usage data was generally not sufficient to conduct a probabilistic assessment over a distribution of actual application rates.

To determine the extent to which this assumption may affect the predicted concentrations, OPP compared the cumulative distributions from typical and maximum application rates in three regions: Florida (Region A), Humid Southeast (Region E), and Midsouth (Region G).

In some instances, the typical and maximum label application rates were identical. For instance, the typical rate for phorate application on sugarcane in Florida was at the maximum label rate. In many cases the maximum label rates were one to eight times greater than the typical rates (Table III.E.11-1). The ratio of maximum to typical application rates for the individual OP-crop combinations ranged from 1 (same) to 7 times greater in Region A, 1 to 5 times greater for single applications in Region E, and 1 to 8 times greater for single applications in Region G. These ratios are similar to those seen in the other regions.

Table III.E.11-1. Comparison of typical and maximum application rates for individual OP-crop uses in three regions.

Crop	Chemical	Max Single Rate, lb/A	Max Sea. Rate	Typical Rate, lb/A	Total applied	Ratio Max:Typical (Single)	Ratio Max:Typical (Total)
Region A (Florida)							
Citrus/Grapefruit	Chlorpyrifos	1.50	3.00	1.50	3.00	1.0	1.0
Citrus/Orange	Chlorpyrifos	1.50	3.00	0.57	1.14	2.6	2.6
Citrus/Tangelo	Chlorpyrifos	3.00	3.00	1.01	1.01	1.5	3.0
Citrus/Tangerine	Chlorpyrifos	1.50	3.00	0.72	1.44	2.1	2.1
Corn	Chlorpyrifos	1.00	2.00	0.66	1.32	1.5	1.5
Corn	Phorate	1.30	1.30	1.30	1.30	1.0	1.0
Sugarcane	Ethoprop	6.00	6.00	3.50	3.50	1.7	1.7
Sugarcane	Phorate	3.90	3.90	3.90	3.90	1.0	1.0
Veg/Lettuce	Diazinon	4.00		0.69	1.38	5.8	na
Veg/Pepper	Acephate	1.00	2.00	0.76	1.52	1.3	1.3
Veg/Tomato	Diazinon	4.00		0.58	1.16	6.9	na
Veg/Tomato	Methamidophos	3.00	9.00	0.47	1.41	2.1	6.4
Region E (Humid Southeast)							
Corn	Chlorpyrifos	2.00	2.00	1.17	1.17	1.7	1.7
Corn	Terbufos	1.30	1.30	1.14	1.14	1.1	1.1
Cotton	Acephate	1.00	6.00	0.27	0.27	3.7	22.2
Cotton	Dimethoate	0.50	1.00	0.10	0.20	5.0	5.0
Cotton	Disulfoton	1.00	3.00	0.66	0.66	1.5	4.5
Cotton	Phorate	1.60	1.60	0.90	0.90	1.8	1.8
Cotton	Tribufos	1.13	1.13	0.46	0.46	2.4	2.4
Peanut	Acephate	1.00	4.00	0.47	0.47	2.1	8.5
Peanut	Chlorpyrifos	2.00	4.00	0.63	0.63	3.2	6.3
Peanut	Phorate	1.50	1.50	0.90	0.90	1.7	1.7
Tobacco	Acephate	**1.33**	**3.99**	0.75	0.75	1.8	5.3
Tobacco	Chlorpyrifos	1.00	1.00	1.00	1.00	1.0	0.4
Tobacco	Ethoprop	6.00	6.00	5.20	5.20	1.2	1.2
Region G (Midsouth)							
Corn	Chlorpyrifos	2.00	2.00	0.76	0.76	2.6	2.6
Corn	Dimethoate	0.50	1.50	0.43	0.43	1.2	3.5
Corn	Phostebupirim	0.15	0.15	0.08	0.08	1.9	1.9
Corn	Terbufos	1.30	1.30	0.82	0.82	1.6	1.6
Cotton	Acephate	1.00	6.00	0.35	0.70	2.9	8.6
Cotton	Dicrotophos	0.50	1.50	0.27	0.54	1.9	2.8
Cotton	Dimethoate	0.50	1.00	0.26	0.52	1.9	1.9
Cotton	Disulfoton	1.00	3.00	0.74	0.74	1.4	4.1
Cotton	Malathion	2.50	62.50	0.87	7.83	2.9	8.0
Cotton	Methamidophos	1.00	4.00	0.38	0.38	2.6	10.5
Cotton	MethylParathion	3.00	30.00	0.39	1.56	7.7	19.2
Cotton	Phorate	1.60	1.60	0.61	0.61	2.6	2.6
Cotton	Profenofos	1.00	6.00	0.86	0.86	1.2	7.0
Cotton	Tribufos	1.13	1.13	0.68	0.68	1.7	1.7
Soybean	MethylParathion	1.00	6.00	0.46	0.46	2.2	13.0

The extent to which differences between maximum and typical application rates would be reflected in the OP cumulative distribution depends on a number of factors, including the timing of applications and the relative potency of the individual pesticides. Use of maximum application rates would have resulted in little difference for upper percentile (95^{th} and greater) cumulative concentrations

in the distribution for Region A (Florida). In Regions E and G, the net effect of using maximum application rates is to increase the concentrations by a factor of 2 to 4 times (Table III.E.11-2).

Table III.E.11-2. Comparison of predicted OP cumulative concentration percentiles (ppm, methamdiophos equivalents) from typical and maximum application rates in three regions.

	Region A			Region E			Region G		
	Typical	Maximum	Ratio	Typical	Maximum	Ratio	Typical	Maximum	Ratio
Max	1.4E-02	1.4E-02	1.0	3.7E-03	1.0E-02	2.7	8.7E-03	2.9E-02	3.4
99th	9.0E-04	9.5E-04	1.1	1.1E-03	1.8E-03	1.7	4.3E-03	1.3E-02	3.1
95th	7.8E-05	1.2E-04	1.5	3.6E-04	6.6E-04	1.9	1.9E-03	5.2E-03	2.8
90th	3.6E-05	6.2E-05	1.7	1.6E-04	3.7E-04	2.3	1.0E-03	2.6E-03	2.6
80th	2.1E-05	3.6E-05	1.7	6.5E-05	2.0E-04	3.1	4.4E-04	1.1E-03	2.6
75th	1.7E-05	3.0E-05	1.7	4.9E-05	1.7E-04	3.4	3.1E-04	7.6E-04	2.4
50th	8.1E-06	1.4E-05	1.7	1.8E-05	7.4E-05	4.1	4.1E-05	1.3E-04	3.1
25th	3.4E-06	5.6E-06	1.6	9.6E-06	4.0E-05	4.1	8.4E-06	2.3E-05	2.7
10th	1.5E-06	2.3E-06	1.6	6.2E-06	2.5E-05	4.1	4.2E-06	1.1E-05	2.5
Min	4.1E-07	6.5E-07	1.6	3.9E-07	7.6E-07	1.9	1.4E-06	3.1E-06	2.3
Mean	4.6E-05	5.6E-05	1.2	7.9E-05	1.8E-04	2.3	3.6E-04	1.0E-03	2.8

Figures III.E.11-1 through 3 illustrate the effects of using maximum application rates on the estimated cumulative OP distributions. In Region A, use of maximum rates had no effect on the estimated peak concentrations because the main contributor to this peak is phorate use on sugarcane, in which the typical and maximum rates were equivalent (Figure III.E.11-1). In Region E, use of maximum rates resulted in modest increases in the peak concentrations seen in most years, primarily affecting the lower percentiles of the concentration distribution (Figure III.E.11-2). In Region G, use of maximum application rates would have increased predicted peak concentrations by a factor of two to three every year (Figure III.E.11-3).

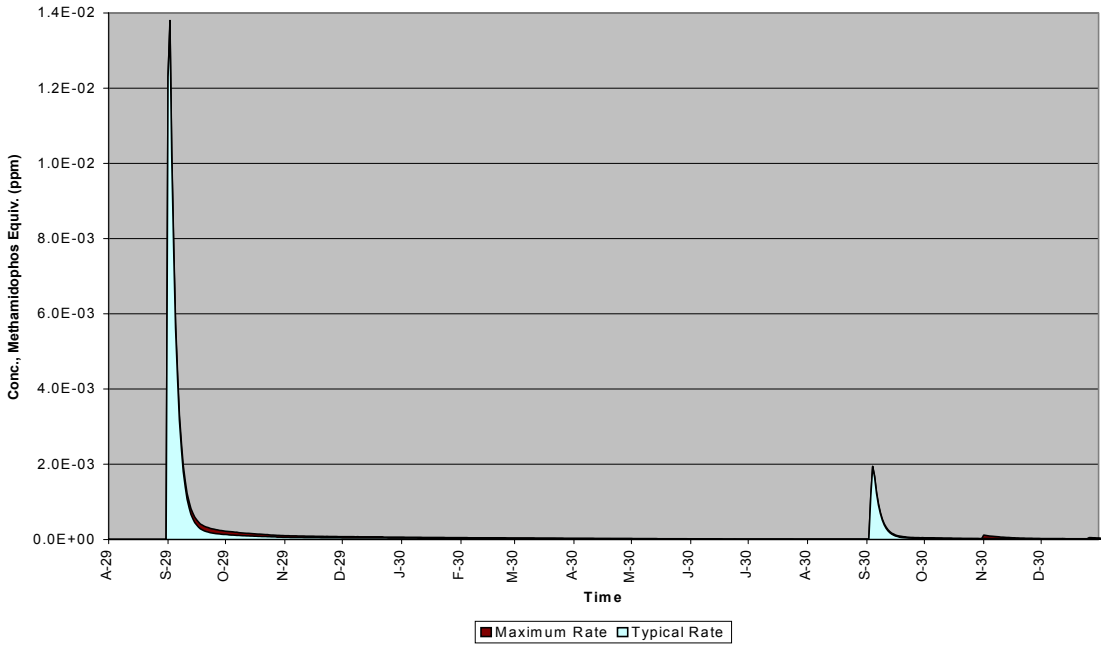

Figure III.E.11-1. Comparison of OP cumulative concentrations resulting from typical (light color) and maximum (dark color) application rates for all OP uses in Region A.

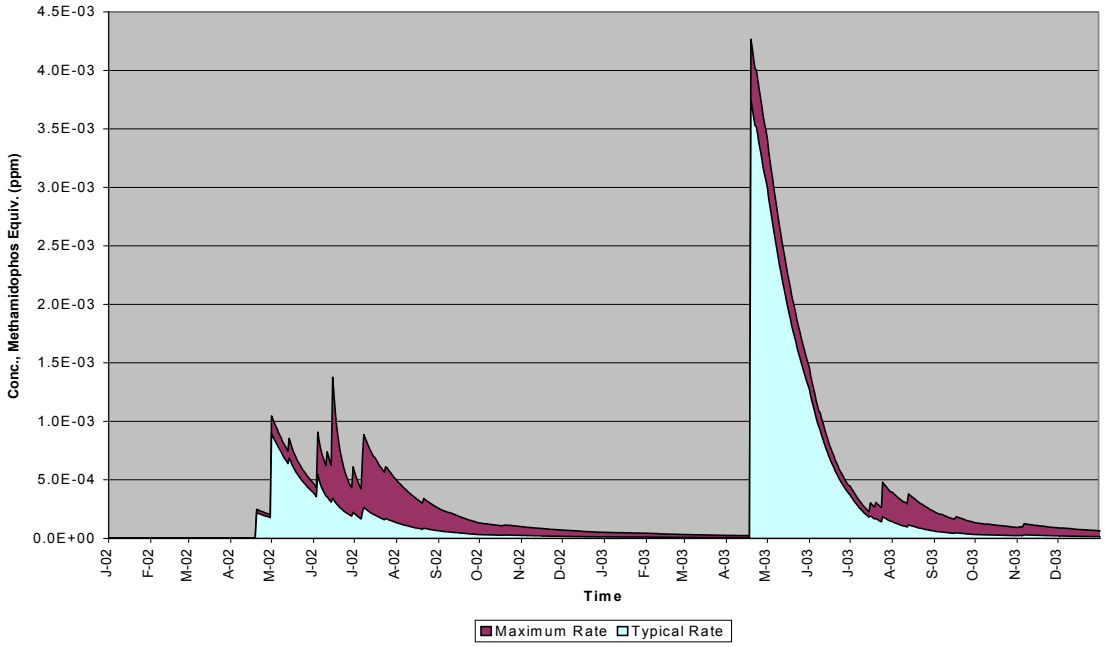

Figure III.E.11-2. Comparison of OP cumulative concentrations resulting from typical (light color) and maximum (dark color) application rates for all OP uses in Region E.

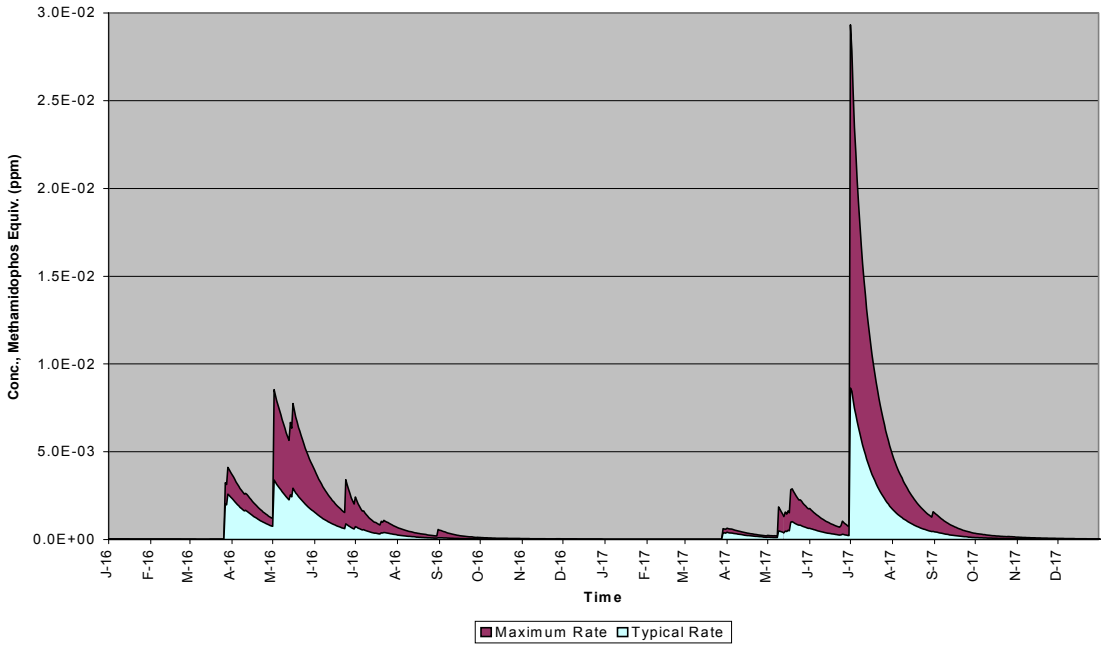

Figure III.E.11-3. Comparison of OP cumulative concentrations resulting from typical (light color) and maximum (dark color) application rates for all OP uses in Region G.

These comparisons reflect the maximum potential difference between typical and maximum application rates by assuming that all OP pesticides would be applied at the maximum rates to all crops. In reality, given the range in crops and pests treated by OP pesticides, it is more likely that only some of the OP pesticides might be applied at maximum rates in a given year and, thus, the difference would be less than that found in the comparison.

b. Timing of Application

The date of application can affect predicted concentrations generated by PRZM/EXAMS, depending on how close the application coincides with rainfall events in any given year. For consistency, OPP selected a single date, either at the midpoint of of a most active application period, if defined, or the beginning date from the application window of each pesticide on a particular crop. A preliminary evaluation of this assumption in the Heartland region (part of the Northeast/North Central region) found that variations based on date of selection may result in differences of approximately two to three times in cumulative concentrations (Table III.E.11-3). The highest concentrations were found when the applications were made at the end of the most active application period rather than at the midpoint, which was used in the probabilistic exposure assessment.

Table III.E.11-3. Variations in OP cumulative distribution (ppm, methamidophos equivalents) with shift in application date from beginning to middle to end of application window for 4 corn-use OP pesticides in central Illinois.

Application Date:	30-Apr	9-May	18-May
Max	9.7E-04	8.0E-04	1.9E-03
99th	4.1E-04	3.7E-04	4.5E-04
95th	1.6E-04	1.3E-04	1.7E-04
90th	6.9E-05	6.7E-05	8.2E-05
80th	2.1E-05	2.2E-05	2.5E-05
75th	1.2E-05	1.3E-05	1.5E-05
50th	2.2E-06	2.3E-06	2.7E-06
25th	8.5E-07	8.7E-07	1.0E-06
10th	5.0E-07	5.0E-07	5.6E-07
Min	1.6E-07	1.4E-07	1.4E-07
Mean	2.8E-05	2.5E-05	3.2E-05

OP cumulative distribution based on single applications of chlorethoxyfos (0.08 lb/A to 3% of acres), chlorpyrifos (1.2 lb/A to 13% of acres), phostebupirim (0.1 lb/A to 3% of acres), and terbufos (1.24 lb/A to 3% of acres) to corn (PCA of 46%) in central IL watershed.

In a follow-up evaluation, OPP compared the effect of application dates by dividing the application window for each OP-crop combination into 10 increments. These increments vary depending on the size of the application windows. For instance, the application window for dimethoate use on potatoes in Region D is July 1 to August 30 – a range of 60 days, with an increment of 6 days. The window for terbufos use on sugarbeets in the same region is April 22 to May 30 – a range of 38 days and an increment of 4 days. We ran 10 sets of distributions in two regions (A and D), shifting the application date by 1/10th increment for each run (in the case of multiple applications of the same pesticide, we kept the interval between applications the same, so subsequent applications will shift by the same 1/10th increment). Table III.E.11-4 compares the range and median values of these 10 incremental distributions with the distribution used in CRA, in which applications were applied at beginning of application window.

Table III.E.11-4. Effect of changing dates within application window on OP cumulative distribution (ppm, methamidophos equivalents) in two regions.

	Beginning of Window	Ten distributions spaced across window			Ratio Between	
		Minimum	Maximum	Median	Min:Max	Beg:Max
Region A (Florida)						
Max	1.4E-02	3.6E-03	2.2E-02	1.7E-02	6.1	1.6
99th	9.0E-04	6.1E-04	1.3E-03	8.4E-04	2.1	1.5
95th	7.8E-05	4.6E-05	9.3E-05	7.4E-05	2.0	1.2
90th	3.6E-05	2.6E-05	5.3E-05	4.2E-05	2.1	1.5
Mean	4.6E-05	2.9E-05	6.7E-05	4.9E-05	2.3	1.4

	Beginning of Window	Ten distributions spaced across window			Ratio Between	
		Minimum	Maximum	Median	Min:Max	Beg:Max
Region D (Northeast/ North Central)						
Max	4.9E-03	3.9E-03	2.1E-02	5.2E-03	5.3	4.2
99th	1.5E-03	1.3E-03	2.1E-03	1.6E-03	1.6	1.4
95th	4.8E-04	3.7E-04	5.3E-04	4.4E-04	1.5	1.1
90th	2.0E-04	1.6E-04	2.2E-04	1.8E-04	1.4	1.1
Mean	9.2E-05	7.9E-05	1.2E-04	9.0E-05	1.5	1.3

Note: In the "Beginning of Window" distribution, all application dates were set at the beginning of the application window. This distribution was used in the OP cumulative risk assessment. For subsequent distributions, the application windows for the specific OP-crop uses were divided into increments of 10. Ten distributions were generated, with the application dates in each distribution shifting by 1/10th of the date range.
For instance, if OP A used on Crop X had an active window of 30 days (March 1-31), The application date for the beginning window would be March 1. Subsequent dates would shift by 3 day increments (e.g., March 4, 7, 10, ... 31).

The impact of varying dates of application was most evident at the maximum estimated concentration, which differed by a factor of 5 to 6 between the lowest and highest estimates. For 99th and lower percentiles, the differences were not as dramatic, with the ratios between lowest and highest values generally two or less. This analysis only looked at the cumulative OP distribution and did not evaluate variations in individual chemical distributions. In both regions, the cumulative distribution generated at the beginning of the application window and used for the regional assessment was less than the maximum estimated distribution. The ratio between the highest estimated concentration distributions and that used for the regional assessment was between 2 to 4 for the maximum estimated concentrations, but less than 2 for 99th and lower distributions.

Figures III.E.11-4 and -5 show how high peak concentrations may shift from year to year depending on the timing of application. The OP cumulative distribution generated for this risk assessment (shown as a thick black line in the forefront of the plots) did not reflect the highest potential peak OP loads. In both regions, the distribution used in the cumulative risk assessment tended toward the median distributions estimated across a range of application dates.

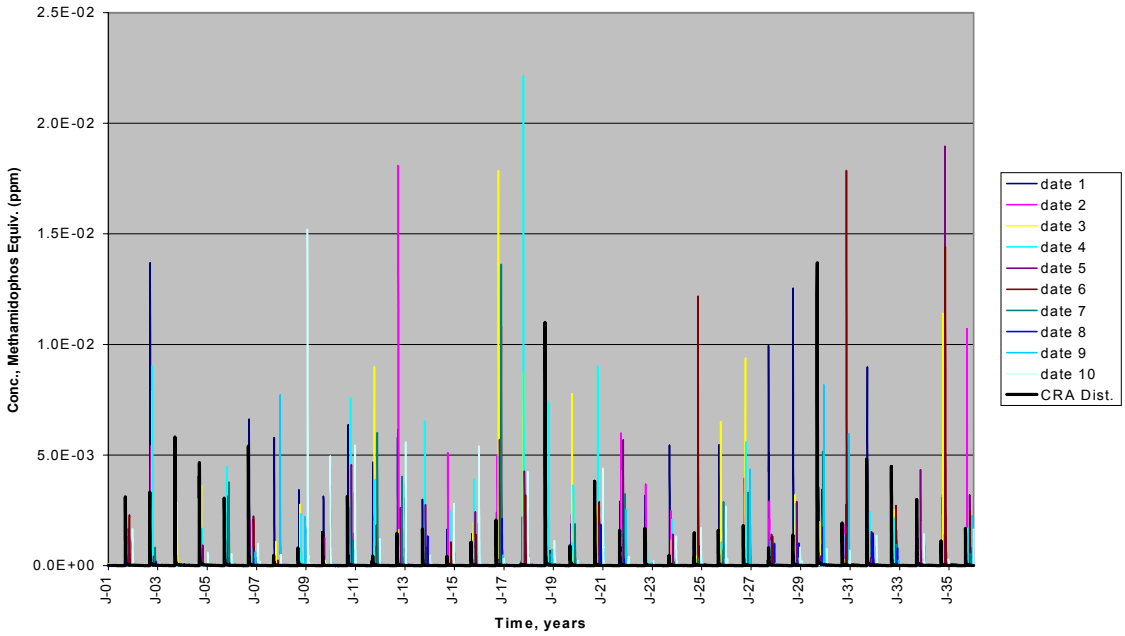

Figure III.E.11-4. Variations in OP cumulative concentration distributions due to varying application dates in Region A. Concentration profile for cumulative distribution at beginning of active window is in thick black line.

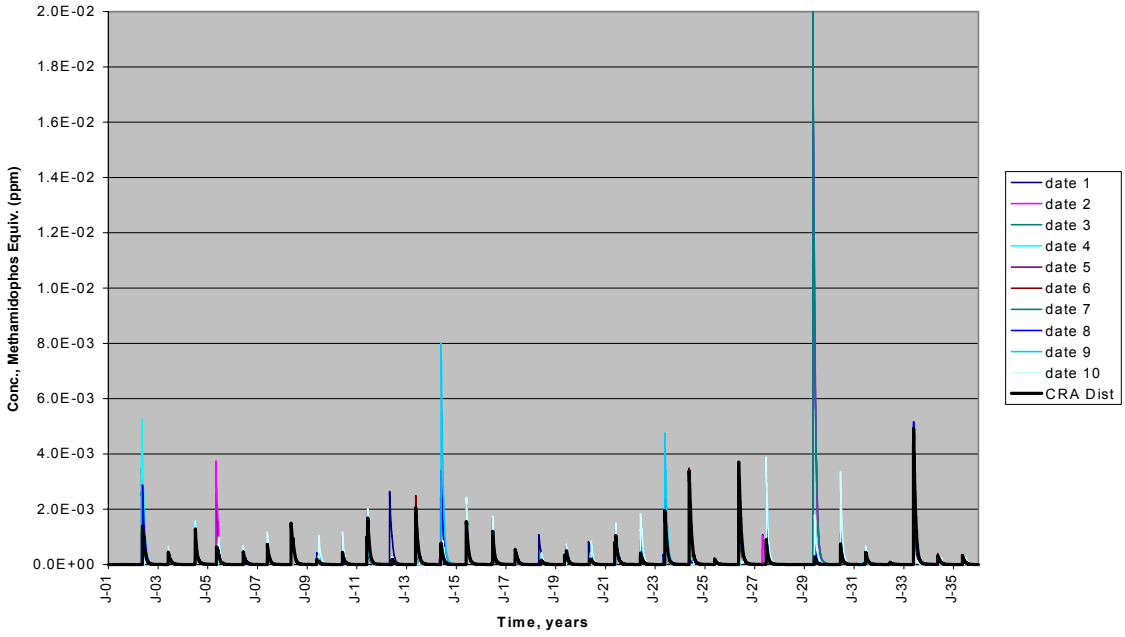

Figure III.E.11-5. Variations in OP cumulative concentration distributions due to varying application dates in Region D. Concentration profile for cumulative distribution at beginning of active window is in thick black line.

c. Single vs Multiple Applications Within the Application Window

In the absence of data to show otherwise, OPP assumed that all single applications of the pesticide occurred at the same time, rather than being split. While this may be an unreasonable assumption for a large watershed, it is not unrealistic for the size of the watershed used in this assessment. This assumption may result in higher peaks, but similar overall average concentrations than if applications are spread out over time. The resulting estimate of exposure may result in a small overestimation bias in the results that will be greater in large than in small watersheds.

In California (used for Region C - Arid/Semiarid West), OPP used California Department of Pesticide Regulations (CDPR) census data for its regional assessment. This information provided a distribution of applications by actual date of application. For Region C, OPP split the total application into 5 applications, each representing 20% of the total amount applied on that particular crop. The absence of information on application dates in NASS precluded a similar approach in other regions. For comparison, OPP also generated an estimated cumulative OP distribution by using a single application at the beginning of the application window, as was done in other regions.

Table III.E.11-5. Comparison of predicted OP cumulative concentration percentiles (ppm, methamidophos equivalents) from single and split applications in Region C.

Cumulative Distribution Profile	Split Application (5 app spread across window)	Single Application (at beginning of application window)	Ratio of Single to Split Application
Max	7.60E-04	8.79E-04	1.2
99th	2.23E-04	3.48E-04	1.6
95th	1.61E-04	2.69E-04	1.7
90th	1.41E-04	2.41E-04	1.7
80th	1.20E-04	2.03E-04	1.7
75th	1.12E-04	1.89E-04	1.7
50th	7.57E-05	1.38E-04	1.8
25th	4.58E-05	6.73E-05	1.5
10th	3.02E-05	4.67E-05	1.5
Min	1.72E-05	2.71E-05	1.6
Mean	8.31E-05	1.40E-04	1.7

The cumulative OP concentration distribution estimated using a single application was greater than that estimated using 5 split applications by a factor of two or less (Table III.E.11-5 and Figure III.E-6). While splitting the application over multiple days is expected to result in lower peaks than a single application, the degree to which a difference is seen depends on a number of factors, including the mobility and persistence of the pesticide and the timing of applications in relation to runoff-producing rainfalls.

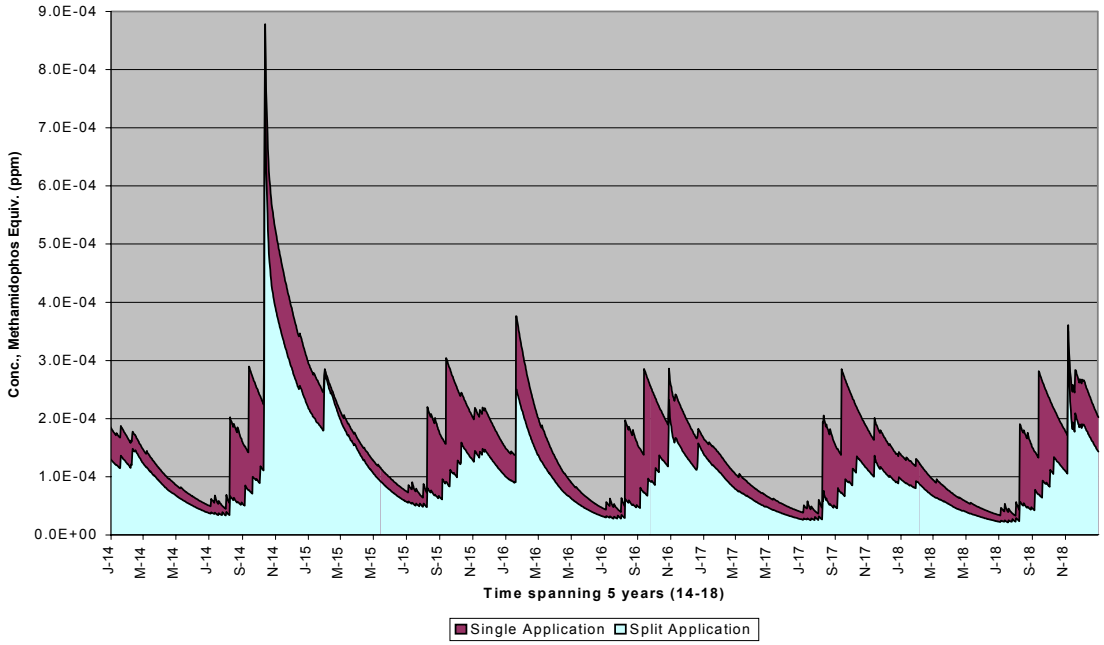

Figure III.E.11-6. Comparison of OP cumulative concentrations resulting from 5 split applications (light color) or 1 single application (dark color) within the active application window in Region C.

d. Comparison of OP Use Sources: CA DPR and NASS

For all regions except the West (Region C), OPP used UDSA National Agricultural Statistics Service (NASS) Agricultural Chemical Usage summaries to estimate OP-crop usage data. These summaries are compiled from surveys of users. In Region C, OPP used California Department of Pesticide Regulation (CDPR) Pesticide Use Reporting (PUR) data. The PUR compiles information on every commercial pesticide application made in California. As a census of all commercial applications, the PUR provides a baseline for comparing survey data such as the NASS reports. An internal OPP comparison of these data sources found that NASS estimates of use in Californie routinely misrepresent (under- or over-estimate) pesticide usage recorded in the CDPR PUR (internal communication with Philip Villaneuva, Environmental Protection Specialist, USEPA OPP Biological and Economic Analysis Division, Jan. 9, 2002).

For comparisons, OPP used NASS OP usage information, compiled in the same manner as in other regions (see Section I.E.3.e), to estimate OP cumulative distribution in water. Appendix III.E.8 includes a comparison of CDPR and NASS usage information for Region C. Estimated OP cumulative distributions generated using CDPR data were greater than those generated using NASS data by a factor of 3 (Table III.E.11-6 and Figure III.E.11-7).

Table III.E.11-6. Comparison of predicted OP cumulative concentration percentiles (ppm, in methamidophos equivalents) from CA DPR and NASS pesticide use information.

Cumulative Distribution Profile	CA DPR Usage (using single application at beginning of window)	NASS Usage (using single application at beginning of window)	Ratio of CA DPR to NASS
Max	8.79E-04	2.75E-04	3.2
99th	3.48E-04	1.39E-04	2.5
95th	2.69E-04	8.56E-05	3.1
90th	2.41E-04	7.69E-05	3.1
80th	2.03E-04	6.55E-05	3.1
75th	1.89E-04	6.10E-05	3.1
50th	1.38E-04	4.47E-05	3.1
25th	6.73E-05	2.26E-05	3.0
10th	4.67E-05	1.46E-05	3.2
Min	2.71E-05	8.81E-06	3.1
Mean	1.40E-04	4.58E-05	3.1

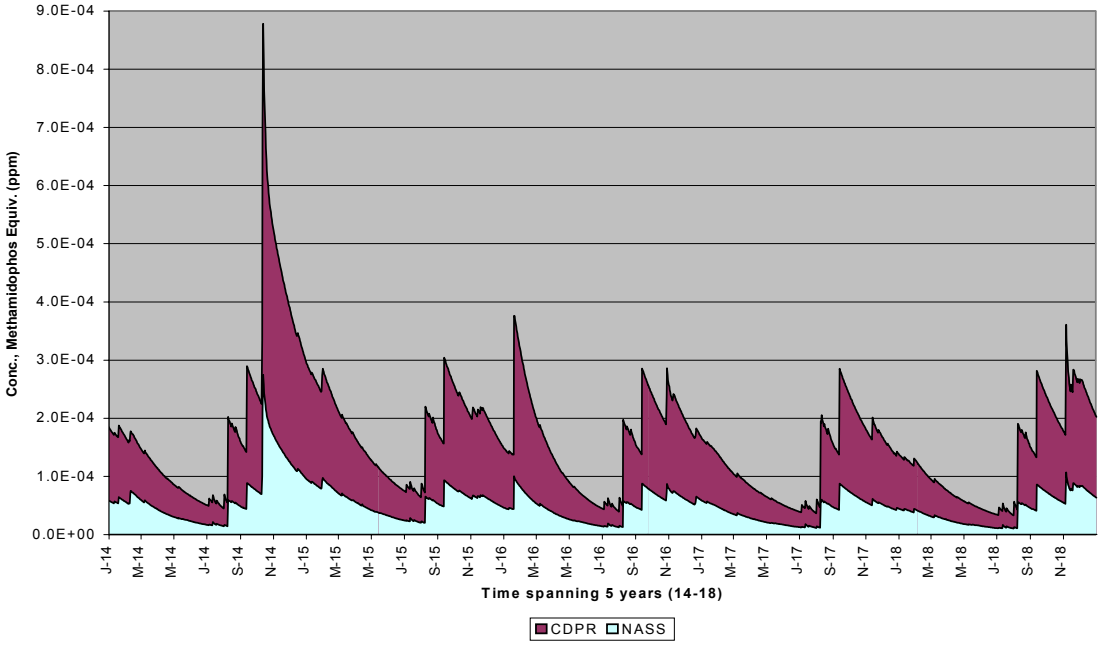

Figure III.E.11-7. Comparison of OP cumulative concentrations generated using NASS (light color) or CA DPR (dark color) usage information in Region C.

e. Spray Drift Loads

Spray drift loadings for the Index Reservoir scenario were developed using AgDRIFT 2.01, a spray drift model developed through a cooperative research and development agreement with EPA, USDA, and the Spray Drift Task Force (see Appendix III.E.9 for details). For this refined assessment, OPP used typical, rather than conservative, spray application parameters to estimate drift fractions, which are documented for each OP-chemical combination in Appendix III.E.6. OPP made no assumptions regarding a buffer between treated fields and the

reservoir or streams flowing into the reservoirs. Thus, the estimated drift loading is expected to be protective in each of the regions.

OPP evaluated estimated spray drift loads in two ways: (1) The OP-crop distributions were run in PRZM/EXAMS with the drift fractions set to 0 and the distributions estimated with the drift fractions were compared to those estimated with no drift; and (2) for each region, OPP summarized PRZM-generated annual loads from runoff, erosion, and drift (converted from kg/ha/da to kg/year by multiplying by 365 day and by the size of the index reservoir watershed, 172.8 ha).

Drift was minor contributor to OP cumulative distribution in every region except Region C (Arid/Semiarid West), where drift is expected to be significant component in those years when runoff is low or nonexistent. Cumulative distributions estimated with the drift component were virtually identical to distributions estimated with no drift in every region but C (Table III.E.11-7). In region C, OP cumulative concentrations at percentiles of 90 and greater were less than two times greater when the drift component was included.

Table III.E.11-7. Comparison of estimated OP cumulative distributions with and without a drift component included.

	Cumulative OP Distribution, ppm		Ratio: Drift: No Drift	Cumulative OP Distribution, ppm		Ratio: Drift: No Drift	Cumulative OP Distribution, ppm		Ratio: Drift: No Drift
	With Drift	No Drift		With Drift	No Drift		With Drift	No Drift	
Region	**A (Florida)**			**B (Northwest)**			**C (Arid/Semiarid West)**		
Max	1.4E-02	1.4E-02	1.0	1.5E-04	1.4E-04	1.0	7.6E-04	6.3E-04	1.2
99th	9.0E-04	9.0E-04	1.0	1.2E-04	1.2E-04	1.0	2.2E-04	1.7E-04	1.3
95th	7.8E-05	7.8E-05	1.0	9.3E-05	9.2E-05	1.0	1.6E-04	9.7E-05	1.7
90th	3.6E-05	3.6E-05	1.0	7.6E-05	7.5E-05	1.0	1.4E-04	7.8E-05	1.8
50th	8.1E-06	8.0E-06	1.0	3.1E-05	3.0E-05	1.0	7.6E-05	2.1E-05	3.6
Mean	4.6E-05	4.6E-05	1.0	3.8E-05	3.7E-05	1.0	8.3E-05	3.3E-05	2.5
Region	**D (Northeast/ North Central)**			**E (Humid Southeast)**			**F (Lower Midwest)**		
Max	4.9E-03	4.9E-03	1.0	3.8E-03	3.7E-03	1.0	3.7E-03	3.7E-03	1.0
99th	1.5E-03	1.5E-03	1.0	1.1E-03	1.1E-03	1.0	1.3E-03	1.3E-03	1.0
95th	4.8E-04	4.8E-04	1.0	3.6E-04	3.6E-04	1.0	4.7E-04	4.7E-04	1.0
90th	2.0E-04	2.0E-04	1.0	1.6E-04	1.6E-04	1.0	2.3E-04	2.2E-04	1.0
50th	5.7E-06	5.3E-06	1.1	1.9E-05	1.8E-05	1.1	4.6E-06	4.2E-06	1.1
Mean	9.2E-05	9.1E-05	1.0	8.1E-05	7.9E-05	1.0	8.2E-05	8.2E-05	1.0
Region	**G (Mid-south)**								
Max	8.7E-03	8.7E-03	1.0						
99th	4.3E-03	4.2E-03	1.0						
95th	1.9E-03	1.9E-03	1.0						
90th	1.0E-03	1.0E-03	1.0						
50th	4.1E-05	3.2E-05	1.3						
Mean	3.6E-04	3.5E-04	1.0						

Figure III.E.11-8 shows runoff and drift components of cumulative OP load during a 5-year period in Region C. The maximum peak here, which was the maximum peak for the entire 35-year distribution, is largely due to runoff. Because application rates (and drift fractions) were constant while weather

patterns varied, the drift fraction remained constant over the time period while the runoff component varied depending on the timing and amount of runoff-producing rainfall events.

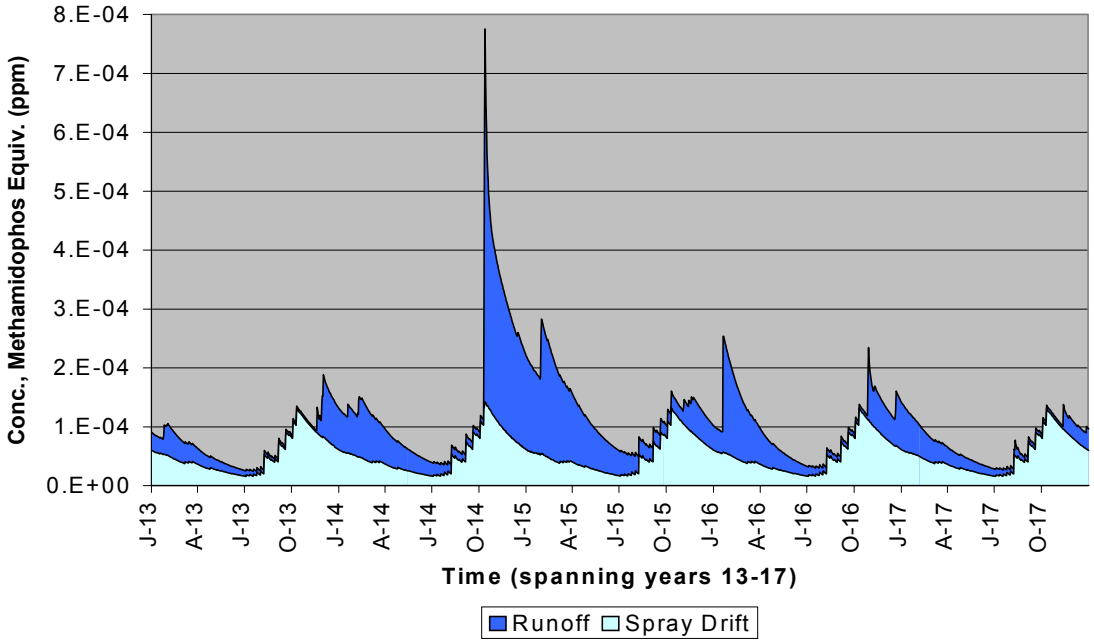

Figure III.E.11-8. Runoff and drift components of the OP cumulative distribution in Region C.

Region G (Midsouth) is illustrative of relative impact of drift in the rest of the regional assessments (Figure III.E.11-9). In this instance, the early-season pulses seen in each year are due to runoff from ground-applied OP pesticides, which contribute little or no drift to the OP load in water. The slight drift component that coincides with the third pulse is due to mid- or late-season aerial applications of OP pesticides to cotton.

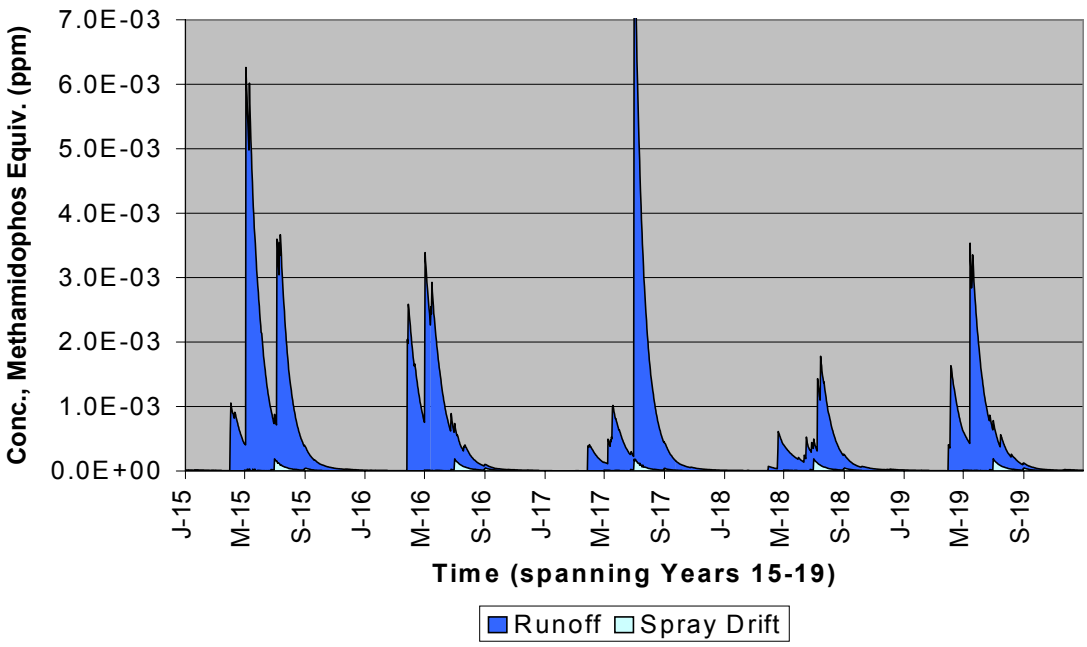

Figure III.E.11-9. Runoff and drift components of the OP cumulative distribution in Region G.

Tables III.E.11-8 through 14 show drift as a fraction of the annual OP load that enters the reservoir. Because this only accounts for the initial mass of OP entering the reservoir, rather than the concentration profile over time, the drift fraction is likely to be greater than that indicated in Table III.E.11-7. The annual drift load is less than or equal to 1% for each year in Regions A and E. In Regions D and F, the drift load is less than 2 percent in most years. In contrast, drift comprised more than 50% of the annual OP load entering the index reservoir in most years in Region C.

Table III.E.11-8. Runoff, erosion, and drift contributions to the annual cumulative OP load in Region A (Florida).

	Annual Load, kg				Percentage of Load From:		
Years	Runoff	Erosion	Drift	Total	Runoff	Erosion	Drift
1	4.6E-01	5.3E-05	1.9E-04	4.6E-01	99.95%	0.01%	0.04%
2	6.1E-01	1.3E-04	1.9E-04	6.1E-01	99.95%	0.01%	0.03%
3	8.8E-01	2.1E-04	1.9E-04	8.8E-01	99.95%	0.02%	0.02%
4	9.7E-01	7.2E-04	1.9E-04	9.8E-01	99.91%	0.02%	0.02%
5	4.9E-01	1.5E-04	1.9E-04	4.9E-01	99.93%	0.02%	0.04%
6	8.3E-01	3.5E-04	1.9E-04	8.3E-01	99.93%	0.01%	0.02%
7	9.1E-02	6.8E-05	1.9E-04	9.2E-02	99.72%	0.07%	0.21%
8	1.8E-01	9.5E-05	1.9E-04	1.8E-01	99.84%	0.01%	0.10%
9	2.4E-01	2.1E-04	1.9E-04	2.4E-01	99.83%	0.03%	0.08%
10	5.2E-01	2.2E-04	1.9E-04	5.2E-01	99.92%	0.02%	0.04%
11	1.1E-01	1.2E-04	1.9E-04	1.1E-01	99.73%	0.10%	0.17%
12	3.5E-01	2.4E-04	1.9E-04	3.5E-01	99.88%	0.02%	0.05%
13	2.7E-01	7.6E-05	1.9E-04	2.7E-01	99.90%	0.02%	0.07%
14	9.1E-02	6.0E-05	1.9E-04	9.1E-02	99.73%	0.06%	0.21%
15	2.3E-01	2.6E-04	1.9E-04	2.3E-01	99.80%	0.10%	0.08%
16	3.4E-01	2.6E-04	1.9E-04	3.5E-01	99.87%	0.05%	0.05%
17	2.8E-02	2.5E-04	1.9E-04	2.9E-02	98.47%	0.86%	0.66%
18	1.7E+00	7.2E-04	1.9E-04	1.7E+00	99.95%	0.01%	0.01%
19	1.8E-01	1.7E-04	1.9E-04	1.8E-01	99.80%	0.08%	0.11%
20	6.0E-01	6.6E-04	1.9E-04	6.0E-01	99.86%	0.02%	0.03%
21	2.9E-01	1.5E-04	1.9E-04	2.9E-01	99.88%	0.04%	0.07%
22	2.8E-01	1.4E-04	1.9E-04	2.8E-01	99.88%	0.04%	0.07%
23	1.2E-01	9.1E-05	1.9E-04	1.2E-01	99.76%	0.07%	0.16%
24	2.7E-01	1.7E-04	1.9E-04	2.7E-01	99.87%	0.04%	0.07%
25	3.4E-01	2.1E-04	1.9E-04	3.4E-01	99.88%	0.02%	0.06%
26	3.3E-01	1.5E-04	1.9E-04	3.3E-01	99.89%	0.04%	0.06%
27	1.7E-01	3.0E-05	1.9E-04	1.7E-01	99.87%	0.02%	0.11%
28	2.6E-01	1.3E-04	1.9E-04	2.6E-01	99.88%	0.04%	0.07%
29	2.5E+00	1.4E-03	1.9E-04	2.5E+00	99.93%	0.01%	0.01%
30	3.6E-01	1.5E-04	1.9E-04	3.6E-01	99.91%	0.02%	0.05%
31	7.9E-01	1.8E-04	1.9E-04	7.9E-01	99.95%	0.01%	0.02%
32	7.6E-01	7.2E-04	1.9E-04	7.6E-01	99.88%	0.01%	0.02%
33	5.0E-01	1.5E-04	1.9E-04	5.0E-01	99.93%	0.02%	0.04%
34	2.4E-01	2.4E-04	1.9E-04	2.4E-01	99.82%	0.09%	0.08%
35	2.5E-01	1.5E-04	1.9E-04	2.5E-01	99.86%	0.03%	0.08%
Min	2.8E-02	3.0E-05	1.9E-04	2.9E-02	98.47%	0.01%	0.01%
Max	2.5E+00	1.4E-03	1.9E-04	2.5E+00	99.95%	0.86%	0.66%
Median	3.3E-01	1.7E-04	1.9E-04	3.3E-01	99.88%	0.02%	0.06%
Mean	4.8E-01	2.6E-04	1.9E-04	4.8E-01	99.83%	0.06%	0.09%
SD	4.8E-01	2.8E-04	5.6E-12	4.8E-01	0.25%	0.14%	0.11%
Var	2.3E-01	7.8E-08	3.1E-23	2.3E-01	0.00%	0.00%	0.00%

Table III.E.11-9. Runoff, erosion, and drift contributions to the annual cumulative OP load in Region B (Northwest).

	Annual Load, kg				Percentage of Load From:		
Years	Runoff	Erosion	Drift	Total	Runoff	Erosion	Drift
1	1.5E-02	6.0E-04	2.1E-04	1.6E-02	94.89%	3.80%	1.31%
2	6.1E-03	2.7E-04	2.1E-04	6.5E-03	92.72%	4.10%	3.18%
3	9.0E-03	3.7E-04	2.1E-04	9.6E-03	93.93%	3.90%	2.17%
4	3.3E-03	1.3E-04	2.1E-04	3.6E-03	90.85%	3.45%	5.71%
5	4.1E-03	1.8E-04	2.1E-04	4.5E-03	91.31%	4.07%	4.62%
6	3.1E-03	1.8E-04	2.1E-04	3.5E-03	88.98%	5.10%	5.92%
7	4.4E-03	3.0E-04	2.1E-04	4.9E-03	89.69%	6.07%	4.24%
8	1.0E-03	1.9E-04	2.1E-04	1.4E-03	72.31%	13.11%	14.57%
9	5.7E-03	2.4E-04	2.1E-04	6.2E-03	92.77%	3.85%	3.38%
10	2.8E-03	2.6E-04	2.1E-04	3.2E-03	85.58%	8.00%	6.42%
11	3.2E-03	1.3E-04	2.1E-04	3.5E-03	90.31%	3.76%	5.93%
12	2.0E-03	1.9E-04	2.1E-04	2.4E-03	83.73%	7.67%	8.60%
13	2.5E-03	3.7E-04	2.1E-04	3.1E-03	81.36%	11.97%	6.67%
14	4.7E-03	3.9E-04	2.1E-04	5.3E-03	88.66%	7.39%	3.95%
15	1.8E-02	6.5E-04	2.1E-04	1.9E-02	95.39%	3.49%	1.12%
16	2.2E-03	8.2E-05	2.1E-04	2.5E-03	88.28%	3.32%	8.40%
17	2.6E-03	2.3E-04	2.1E-04	3.0E-03	85.47%	7.58%	6.95%
18	8.7E-04	1.5E-04	2.1E-04	1.2E-03	71.00%	12.10%	16.90%
19	4.3E-03	1.3E-04	2.1E-04	4.6E-03	92.67%	2.85%	4.48%
20	6.5E-03	2.8E-04	2.1E-04	7.0E-03	93.09%	3.94%	2.98%
21	4.1E-03	2.9E-04	2.1E-04	4.6E-03	89.28%	6.20%	4.51%
22	3.2E-03	2.2E-04	2.1E-04	3.6E-03	88.18%	6.03%	5.79%
23	2.9E-03	2.5E-04	2.1E-04	3.4E-03	86.51%	7.33%	6.15%
24	1.2E-02	2.6E-04	2.1E-04	1.3E-02	96.32%	2.05%	1.64%
25	2.9E-03	1.5E-04	2.1E-04	3.3E-03	89.09%	4.51%	6.40%
26	1.0E-03	1.7E-04	2.1E-04	1.4E-03	73.34%	11.98%	14.67%
27	5.1E-03	2.1E-04	2.1E-04	5.5E-03	92.44%	3.78%	3.78%
28	4.5E-04	9.5E-05	2.1E-04	7.5E-04	59.84%	12.57%	27.59%
29	3.9E-03	1.1E-04	2.1E-04	4.2E-03	92.56%	2.50%	4.93%
30	1.4E-02	2.6E-04	2.1E-04	1.4E-02	96.62%	1.89%	1.49%
31	1.2E-02	4.1E-04	2.1E-04	1.2E-02	94.91%	3.38%	1.71%
32	3.4E-03	1.8E-04	2.1E-04	3.7E-03	89.73%	4.70%	5.57%
33	3.7E-03	2.2E-04	2.1E-04	4.1E-03	89.60%	5.38%	5.02%
34	1.1E-03	1.3E-04	2.1E-04	1.5E-03	76.71%	8.97%	14.32%
35	6.9E-03	3.0E-04	2.1E-04	7.4E-03	93.20%	3.99%	2.81%
Min	4.5E-04	8.2E-05	2.1E-04	7.5E-04	59.84%	1.89%	1.12%
Max	1.8E-02	6.5E-04	2.1E-04	1.9E-02	96.62%	13.11%	27.59%
Median	3.7E-03	2.2E-04	2.1E-04	4.1E-03	89.69%	4.51%	5.02%
Mean	5.1E-03	2.4E-04	2.1E-04	5.5E-03	87.75%	5.85%	6.40%
SD	4.2E-03	1.3E-04	7.9E-12	4.3E-03	8.17%	3.21%	5.38%
Var	1.8E-05	1.6E-08	6.2E-23	1.9E-05	0.67%	0.10%	0.29%

Table III.E.11-10. Runoff, erosion, and drift contributions to the annual cumulative OP load in Region C (Arid/Semi-arid West).

	Annual Load, kg				Percentage of Load From:		
Years	Runoff	Erosion	Drift	Total	Runoff	Erosion	Drift
1	9.1E-03	4.8E-05	3.1E-02	4.1E-02	22.38%	0.12%	77.50%
2	3.3E-02	1.2E-04	3.1E-02	6.4E-02	50.97%	0.18%	48.85%
3	2.8E-02	1.3E-04	3.1E-02	6.0E-02	47.11%	0.22%	52.67%
4	4.3E-02	1.3E-04	3.1E-02	7.4E-02	57.46%	0.17%	42.37%
5	3.3E-03	2.1E-05	3.1E-02	3.5E-02	9.47%	0.06%	90.47%
6	3.4E-02	1.6E-04	3.1E-02	6.6E-02	52.19%	0.24%	47.57%
7	2.1E-02	5.1E-05	3.1E-02	5.2E-02	39.48%	0.10%	60.42%
8	1.9E-02	5.5E-05	3.1E-02	5.0E-02	37.20%	0.11%	62.69%
9	2.2E-02	4.8E-05	3.1E-02	5.4E-02	41.19%	0.09%	58.72%
10	1.6E-02	9.7E-05	3.1E-02	4.8E-02	33.91%	0.20%	65.89%
11	7.0E-02	2.8E-04	3.1E-02	1.0E-01	68.76%	0.28%	30.96%
12	1.8E-02	4.3E-05	3.1E-02	4.9E-02	35.81%	0.09%	64.11%
13	2.5E-02	8.7E-05	3.1E-02	5.7E-02	44.28%	0.15%	55.56%
14	1.1E-01	5.2E-04	3.1E-02	1.5E-01	78.15%	0.36%	21.50%
15	2.7E-02	9.5E-05	3.1E-02	5.9E-02	46.18%	0.16%	53.66%
16	5.2E-02	1.4E-04	3.1E-02	8.3E-02	62.05%	0.17%	37.78%
17	1.2E-02	4.2E-05	3.1E-02	4.3E-02	27.30%	0.10%	72.60%
18	4.9E-02	2.7E-04	3.1E-02	8.1E-02	60.86%	0.33%	38.81%
19	1.6E-02	3.3E-05	3.1E-02	4.7E-02	33.48%	0.07%	66.45%
20	1.8E-02	4.0E-05	3.1E-02	5.0E-02	36.63%	0.08%	63.29%
21	4.6E-02	1.0E-04	3.1E-02	7.7E-02	59.12%	0.14%	40.74%
22	2.7E-02	8.2E-05	3.1E-02	5.9E-02	46.19%	0.14%	53.67%
23	5.1E-03	1.4E-05	3.1E-02	3.7E-02	13.96%	0.04%	86.00%
24	1.3E-02	6.5E-05	3.1E-02	4.4E-02	29.21%	0.15%	70.65%
25	3.0E-02	8.5E-05	3.1E-02	6.2E-02	49.08%	0.14%	50.79%
26	1.2E-02	5.0E-05	3.1E-02	4.4E-02	27.71%	0.12%	72.18%
27	5.3E-03	3.4E-05	3.1E-02	3.7E-02	14.39%	0.09%	85.52%
28	1.5E-03	4.8E-06	3.1E-02	3.3E-02	4.67%	0.01%	95.32%
29	2.6E-02	1.0E-04	3.1E-02	5.7E-02	44.97%	0.18%	54.85%
30	2.7E-02	6.6E-05	3.1E-02	5.8E-02	45.90%	0.11%	53.99%
31	3.2E-02	1.0E-04	3.1E-02	6.4E-02	50.61%	0.16%	49.23%
32	1.7E-02	5.6E-05	3.1E-02	4.8E-02	35.02%	0.12%	64.86%
33	4.0E-02	1.5E-04	3.1E-02	7.2E-02	55.88%	0.21%	43.91%
34	3.1E-02	1.8E-04	3.1E-02	6.2E-02	49.38%	0.28%	50.34%
35	3.4E-02	1.4E-04	3.1E-02	6.5E-02	51.49%	0.21%	48.30%
Min	1.5E-03	4.8E-06	3.1E-02	3.3E-02	4.67%	0.01%	21.50%
Max	1.1E-01	5.2E-04	3.1E-02	1.5E-01	78.15%	0.36%	95.32%
Median	2.6E-02	8.5E-05	3.1E-02	5.7E-02	44.97%	0.14%	54.85%
Mean	2.8E-02	1.0E-04	3.1E-02	5.9E-02	41.78%	0.15%	58.06%
SD	2.1E-02	9.6E-05	0.0E+00	2.1E-02	16.54%	0.08%	16.60%
Var	4.5E-04	9.3E-09	0.0E+00	4.5E-04	2.74%	0.00%	2.76%

Table III.E.11-11. Runoff, erosion, and drift contributions to the annual cumulative OP load in Region D (Northeast/North Central).

	Annual Load, kg				Percentage of Load From:		
Years	Runoff	Erosion	Drift	Total	Runoff	Erosion	Drift
1	3.1E-04	1.1E-04	7.2E-04	1.1E-03	27.50%	9.89%	62.61%
2	2.1E-01	1.1E-04	7.2E-04	2.1E-01	99.61%	0.05%	0.34%
3	7.8E-02	2.7E-04	7.2E-04	7.9E-02	98.75%	0.34%	0.91%
4	1.9E-01	3.1E-04	7.2E-04	2.0E-01	99.47%	0.16%	0.37%
5	1.2E-01	1.9E-04	7.2E-04	1.2E-01	99.23%	0.16%	0.60%
6	7.6E-02	8.5E-05	7.2E-04	7.6E-02	98.95%	0.11%	0.94%
7	1.1E-01	2.2E-04	7.2E-04	1.1E-01	99.14%	0.20%	0.66%
8	2.5E-01	7.1E-04	7.2E-04	2.6E-01	99.44%	0.28%	0.28%
9	3.8E-02	2.2E-04	7.2E-04	3.9E-02	97.59%	0.56%	1.85%
10	6.8E-02	3.2E-04	7.2E-04	6.9E-02	98.50%	0.47%	1.04%
11	3.0E-01	4.1E-04	7.2E-04	3.0E-01	99.63%	0.14%	0.24%
12	3.4E-02	1.7E-04	7.2E-04	3.4E-02	97.42%	0.50%	2.08%
13	3.1E-01	3.5E-04	7.2E-04	3.1E-01	99.65%	0.11%	0.23%
14	1.3E-01	2.8E-04	7.2E-04	1.3E-01	99.25%	0.21%	0.54%
15	2.5E-01	2.0E-04	7.2E-04	2.5E-01	99.63%	0.08%	0.29%
16	1.8E-01	2.0E-04	7.2E-04	1.8E-01	99.49%	0.11%	0.40%
17	8.5E-02	1.4E-04	7.2E-04	8.6E-02	99.00%	0.17%	0.83%
18	3.4E-02	2.4E-04	7.2E-04	3.5E-02	97.24%	0.69%	2.07%
19	9.9E-02	1.2E-04	7.2E-04	1.0E-01	99.16%	0.12%	0.72%
20	4.3E-02	7.7E-05	7.2E-04	4.4E-02	98.18%	0.18%	1.64%
21	2.0E-01	5.2E-04	7.2E-04	2.0E-01	99.40%	0.25%	0.35%
22	6.8E-02	1.2E-04	7.2E-04	6.9E-02	98.79%	0.17%	1.03%
23	2.9E-01	2.4E-04	7.2E-04	2.9E-01	99.67%	0.08%	0.25%
24	4.9E-01	5.4E-04	7.2E-04	5.0E-01	99.75%	0.11%	0.14%
25	3.3E-02	1.7E-04	7.2E-04	3.3E-02	97.35%	0.50%	2.15%
26	5.8E-01	2.5E-03	7.2E-04	5.8E-01	99.45%	0.43%	0.12%
27	1.4E-01	2.3E-04	7.2E-04	1.4E-01	99.32%	0.17%	0.52%
28	2.8E-05	1.4E-06	7.2E-04	7.5E-04	3.80%	0.18%	96.02%
29	4.4E-02	2.8E-04	7.2E-04	4.5E-02	97.79%	0.62%	1.59%
30	1.1E-01	1.7E-04	7.2E-04	1.1E-01	99.18%	0.16%	0.66%
31	7.9E-02	1.2E-04	7.2E-04	8.0E-02	98.95%	0.16%	0.89%
32	1.4E-02	1.9E-04	7.2E-04	1.5E-02	94.03%	1.23%	4.74%
33	7.4E-01	2.3E-03	7.2E-04	7.5E-01	99.60%	0.30%	0.10%
34	5.3E-02	1.1E-04	7.2E-04	5.4E-02	98.48%	0.20%	1.32%
35	4.9E-02	1.7E-04	7.2E-04	5.0E-02	98.22%	0.33%	1.44%
Min	2.8E-05	1.4E-06	7.2E-04	7.5E-04	3.80%	0.05%	0.10%
Max	7.4E-01	2.5E-03	7.2E-04	7.5E-01	99.75%	9.89%	96.02%
Median	9.9E-02	2.0E-04	7.2E-04	1.0E-01	99.14%	0.18%	0.72%
Mean	1.6E-01	3.5E-04	7.2E-04	1.6E-01	94.02%	0.56%	5.43%
SD	1.7E-01	5.3E-04	0.0E+00	1.7E-01	19.81%	1.64%	18.92%
Var	2.8E-02	2.8E-07	0.0E+00	2.8E-02	3.93%	0.03%	3.58%

Table III.E.11-12. Runoff, erosion, and drift contributions to the annual cumulative OP load in Region E (Humid Southeast).

	Annual Load, kg				Percentage of Load From:		
Years	Runoff	Erosion	Drift	Total	Runoff	Erosion	Drift
1	1.8E-02	9.3E-04	2.1E-04	2.0E-02	94.20%	4.75%	1.05%
2	2.1E-01	5.6E-03	2.1E-04	2.1E-01	97.24%	2.66%	0.10%
3	5.7E-01	6.0E-03	2.1E-04	5.7E-01	98.92%	1.04%	0.04%
4	4.6E-02	4.3E-03	2.1E-04	5.1E-02	91.12%	8.48%	0.41%
5	1.0E-01	2.9E-03	2.1E-04	1.1E-01	97.05%	2.76%	0.19%
6	2.1E-01	7.8E-03	2.1E-04	2.1E-01	96.24%	3.66%	0.10%
7	7.9E-02	3.4E-03	2.1E-04	8.3E-02	95.64%	4.11%	0.25%
8	3.5E-01	8.6E-03	2.1E-04	3.6E-01	97.52%	2.42%	0.06%
9	5.0E-02	2.3E-03	2.1E-04	5.2E-02	95.23%	4.38%	0.39%
10	5.8E-02	3.0E-03	2.1E-04	6.1E-02	94.67%	4.99%	0.34%
11	2.7E-02	3.0E-03	2.1E-04	3.0E-02	89.43%	9.89%	0.68%
12	1.8E-01	9.0E-03	2.1E-04	1.9E-01	95.18%	4.71%	0.11%
13	1.8E-01	4.0E-03	2.1E-04	1.9E-01	97.78%	2.11%	0.11%
14	5.7E-02	2.1E-03	2.1E-04	6.0E-02	96.08%	3.57%	0.35%
15	1.3E-01	7.9E-03	2.1E-04	1.4E-01	94.23%	5.63%	0.15%
16	2.9E-01	5.8E-03	2.1E-04	2.9E-01	97.96%	1.97%	0.07%
17	8.3E-02	4.4E-03	2.1E-04	8.7E-02	94.72%	5.04%	0.24%
18	2.1E-01	8.4E-03	2.1E-04	2.2E-01	96.12%	3.79%	0.09%
19	7.2E-02	3.3E-03	2.1E-04	7.6E-02	95.30%	4.43%	0.27%
20	4.0E-02	3.7E-03	2.1E-04	4.4E-02	91.08%	8.45%	0.47%
21	3.0E-01	1.3E-02	2.1E-04	3.2E-01	95.70%	4.24%	0.06%
22	1.3E-01	7.6E-03	2.1E-04	1.4E-01	94.45%	5.41%	0.15%
23	5.6E-02	4.6E-03	2.1E-04	6.1E-02	92.01%	7.65%	0.34%
24	5.3E-02	3.5E-03	2.1E-04	5.7E-02	93.49%	6.15%	0.36%
25	2.7E-01	6.5E-03	2.1E-04	2.8E-01	97.59%	2.33%	0.07%
26	3.5E-02	2.6E-03	2.1E-04	3.8E-02	92.63%	6.83%	0.54%
27	3.9E-02	2.2E-03	2.1E-04	4.1E-02	94.10%	5.40%	0.50%
28	5.8E-02	2.4E-03	2.1E-04	6.0E-02	95.66%	4.00%	0.34%
29	1.9E-01	1.0E-02	2.1E-04	2.0E-01	94.79%	5.11%	0.10%
30	4.2E-02	2.5E-03	2.1E-04	4.5E-02	93.90%	5.63%	0.46%
31	4.7E-01	9.2E-03	2.1E-04	4.8E-01	98.06%	1.90%	0.04%
32	3.8E-02	3.0E-03	2.1E-04	4.1E-02	92.24%	7.27%	0.50%
33	1.3E-01	2.0E-03	2.1E-04	1.3E-01	98.30%	1.54%	0.16%
34	1.0E-01	5.1E-03	2.1E-04	1.1E-01	94.99%	4.81%	0.19%
35	2.3E-02	2.9E-03	2.1E-04	2.6E-02	88.11%	11.11%	0.78%
Min	1.8E-02	9.3E-04	2.1E-04	2.0E-02	88.11%	1.04%	0.04%
Max	5.7E-01	1.3E-02	2.1E-04	5.7E-01	98.92%	11.11%	1.05%
Median	8.3E-02	4.0E-03	2.1E-04	8.7E-02	95.18%	4.71%	0.24%
Mean	1.4E-01	5.0E-03	2.1E-04	1.5E-01	94.91%	4.81%	0.29%
SD	1.3E-01	2.9E-03	6.6E-12	1.3E-01	2.53%	2.36%	0.23%
Var	1.7E-02	8.3E-06	4.4E-23	1.8E-02	0.06%	0.06%	0.00%

Table III.E.11-13. Runoff, erosion, and drift contributions to the annual cumulative OP load in Region F (Lower Midwest).

	Annual Load, kg				Percentage of Load From:		
Years	Runoff	Erosion	Drift	Total	Runoff	Erosion	Drift
1	4.0E-03	2.0E-04	1.2E-03	5.5E-03	73.95%	3.64%	22.41%
2	1.0E-01	7.8E-04	1.2E-03	1.1E-01	98.13%	0.73%	1.14%
3	1.3E-01	1.6E-03	1.2E-03	1.3E-01	97.86%	1.23%	0.92%
4	3.0E-02	8.4E-04	1.2E-03	3.2E-02	93.55%	2.63%	3.82%
5	7.5E-02	7.6E-04	1.2E-03	7.7E-02	97.43%	0.99%	1.58%
6	3.6E-01	9.0E-04	1.2E-03	3.7E-01	99.42%	0.25%	0.33%
7	2.3E-01	1.7E-03	1.2E-03	2.3E-01	98.74%	0.72%	0.53%
8	1.9E-01	2.2E-03	1.2E-03	1.9E-01	98.18%	1.17%	0.65%
9	2.1E-01	7.3E-04	1.2E-03	2.2E-01	99.10%	0.34%	0.57%
10	1.5E-01	7.9E-04	1.2E-03	1.5E-01	98.69%	0.51%	0.80%
11	6.6E-02	1.2E-03	1.2E-03	6.8E-02	96.52%	1.69%	1.79%
12	4.2E-02	5.4E-04	1.2E-03	4.4E-02	95.95%	1.25%	2.80%
13	1.2E-01	1.3E-03	1.2E-03	1.2E-01	97.92%	1.09%	0.99%
14	1.9E-02	9.0E-04	1.2E-03	2.1E-02	90.07%	4.20%	5.73%
15	1.5E-01	2.6E-03	1.2E-03	1.5E-01	97.45%	1.73%	0.82%
16	3.3E-01	1.4E-03	1.2E-03	3.3E-01	99.22%	0.41%	0.37%
17	5.7E-01	1.6E-03	1.2E-03	5.7E-01	99.51%	0.28%	0.21%
18	1.3E-01	1.3E-03	1.2E-03	1.4E-01	98.12%	0.98%	0.90%
19	2.3E-01	1.0E-03	1.2E-03	2.3E-01	99.02%	0.44%	0.53%
20	4.4E-02	4.1E-04	1.2E-03	4.6E-02	96.41%	0.90%	2.69%
21	2.5E-01	1.4E-03	1.2E-03	2.5E-01	98.96%	0.55%	0.49%
22	6.9E-02	6.5E-04	1.2E-03	7.1E-02	97.38%	0.91%	1.72%
23	1.4E-01	1.1E-03	1.2E-03	1.5E-01	98.44%	0.73%	0.83%
24	1.5E-01	8.2E-04	1.2E-03	1.5E-01	98.64%	0.55%	0.82%
25	1.1E-01	1.2E-03	1.2E-03	1.1E-01	97.78%	1.10%	1.12%
26	7.8E-02	1.1E-03	1.2E-03	8.0E-02	97.09%	1.39%	1.52%
27	3.0E-01	6.8E-04	1.2E-03	3.1E-01	99.38%	0.22%	0.40%
28	1.2E-01	4.4E-04	1.2E-03	1.2E-01	98.58%	0.37%	1.04%
29	2.9E-02	1.7E-03	1.2E-03	3.2E-02	90.82%	5.40%	3.78%
30	1.3E-01	9.9E-04	1.2E-03	1.4E-01	98.38%	0.73%	0.89%
31	1.2E-01	8.6E-04	1.2E-03	1.2E-01	98.26%	0.72%	1.02%
32	1.9E-02	7.3E-04	1.2E-03	2.1E-02	90.52%	3.55%	5.93%
33	3.4E-02	3.4E-04	1.2E-03	3.5E-02	95.58%	0.95%	3.46%
Min	4.0E-03	2.0E-04	1.2E-03	5.5E-03	73.95%	0.22%	0.21%
Max	5.7E-01	2.6E-03	1.2E-03	5.7E-01	99.51%	5.40%	22.41%
Median	1.2E-01	9.0E-04	1.2E-03	1.2E-01	98.12%	0.91%	0.99%
Mean	1.4E-01	1.1E-03	1.2E-03	1.5E-01	96.52%	1.28%	2.20%
SD	1.2E-01	5.2E-04	0.0E+00	1.2E-01	4.76%	1.23%	3.91%
Var	1.4E-02	2.8E-07	0.0E+00	1.4E-02	0.23%	0.02%	0.15%

Table III.E.11-14. Runoff, erosion, and drift contributions to the annual cumulative OP load in Region G (Midsouth).

	Annual Load, kg				Percentage of Load From:		
Years	Runoff	Erosion	Drift	Total	Runoff	Erosion	Drift
1	5.6E-03	1.5E-03	3.8E-02	4.5E-02	12.40%	3.40%	84.21%
2	1.4E-01	8.9E-04	3.8E-02	1.8E-01	77.95%	0.51%	21.54%
3	1.7E+00	2.7E-02	3.8E-02	1.8E+00	96.37%	1.52%	2.11%
4	2.8E-01	1.2E-03	3.8E-02	3.2E-01	87.81%	0.37%	11.82%
5	1.0E-01	9.2E-04	3.8E-02	1.4E-01	72.17%	0.66%	27.17%
6	5.0E-01	8.9E-03	3.8E-02	5.4E-01	91.37%	1.64%	6.99%
7	2.1E-01	1.9E-03	3.8E-02	2.5E-01	84.35%	0.73%	14.92%
8	3.3E-01	3.6E-03	3.8E-02	3.7E-01	88.87%	0.98%	10.15%
9	5.6E-01	8.2E-03	3.8E-02	6.0E-01	92.34%	1.36%	6.30%
10	1.5E-01	1.2E-03	3.8E-02	1.9E-01	79.03%	0.65%	20.32%
11	3.7E-01	4.6E-03	3.8E-02	4.2E-01	89.80%	1.11%	9.09%
12	1.3E+00	2.9E-02	3.8E-02	1.4E+00	95.17%	2.10%	2.73%
13	1.4E-01	2.4E-03	3.8E-02	1.8E-01	77.11%	1.36%	21.53%
14	3.7E-01	2.4E-03	3.8E-02	4.1E-01	90.17%	0.58%	9.25%
15	1.8E+00	5.5E-02	3.8E-02	1.9E+00	95.15%	2.86%	1.99%
16	5.9E-01	5.4E-03	3.8E-02	6.3E-01	93.14%	0.85%	6.01%
17	6.1E-01	1.6E-02	3.8E-02	6.7E-01	91.90%	2.44%	5.67%
18	4.8E-01	1.2E-02	3.8E-02	5.3E-01	90.64%	2.26%	7.10%
19	4.8E-01	3.5E-03	3.8E-02	5.2E-01	92.10%	0.67%	7.23%
Min	5.6E-03	8.9E-04	3.8E-02	4.5E-02	12.40%	0.37%	1.99%
Max	1.8E+00	5.5E-02	3.8E-02	1.9E+00	96.37%	3.40%	84.21%
Median	3.7E-01	3.6E-03	3.8E-02	4.2E-01	90.17%	1.11%	9.09%
Mean	5.4E-01	9.8E-03	3.8E-02	5.8E-01	84.10%	1.37%	14.53%
SD	5.2E-01	1.4E-02	1.1E-09	5.3E-01	18.66%	0.87%	18.36%
Var	2.7E-01	1.9E-04	1.2E-18	2.9E-01	3.48%	0.01%	3.37%