Appendix 1: Supplemental Data

Some station names in this appendix are slightly abbreviated. See table 1 in main part of report for full names.

Table 1– 1. Correlations of mercury concentrations with instantaneous streamflow at monitoring stations on Indiana streams, 2002–2006.

Station number	Station name	Correlation coefficient for mercury[1] and instantaneous streamflow at time of sample collection			
		Unfiltered total mercury	Estimated particulate total mercury	Filtered total mercury	Unfiltered methyl-mercury
1	Fall Creek near Fortville	0.95	−0.03	0.84	0.72
2	Eel River near Logansport	.89	− .08	.82	.70
3	Tippecanoe River at Winimac	.25	.33	.41	.49
4	Wildcat Creek near Lafayette	.78	− .03	.65	.36
5	Wabash River at Terre Haute	.26	− .01	.44	− .04
6	Mills Creek at Cagles Mill Dam	.16	− .08	.04	− .29
7	White River near Centerton	.78	− .19	.45	.16
8	White River at Nora	.85	.40	.87	.52
9	Sugar Creek near New Palestine	.83	− .05	.72	.31
10	East Fork Whitewater River near Brookville	.26	.16	.19	− .21
11	Vernon Fork Muscatatuck River at Vernon	.89	− .04	.82	.46
12	East Fork White River at Seymour	.84	− .10	.67	.68
13	Blue River at Fredericksburg	.20	.09	.04	.01
14	Patoka River at Winslow	.38	− .01	.46	.12
15	White River at Petersburg	.10	.52	.04	− .75
16	Busseron Creek near Carlisle	.75	− .14	.34	− .28
17	Mississinewa River near Peoria	.50	.16	.65	− .22
18	Wabash River near Huntington	.80	.01	.71	− .11
19	Maumee River at New Haven	.72	− .17	.76	.03
20	Fish Creek near Artic	.76	− .22	.93	.02
21	St. Joseph River at Elkhart	.53	.39	.64	.34
22	Trail Creek at Michigan City	.64	.18	− .06	− .02
23	Deep River at Lake George at Hobart	.83	.26	.77	.36
24	Kankakee River at Shelby	.56	.06	.70	.66
25	Wabash River at Vincennes	.34	− .29	.85	− .48
26	Wabash River at Mt. Carmel, Ill.	.99	− .46	.89	− .01

[1]Pearson correlation coefficient computed with statistical software (S-Plus, Tibco Software, 2008); censored mercury concentrations were set equal to half the reporting limit for computing correlations.

Table 1– 2. Statistical values separating categories of daily average streamflow at monitoring stations on Indiana streams, 2002–2006.

[ft^3/s, cubic feet per second; streamflow categories are low (less than or equal to the 10th percentile), medium (greater than the 10th percentile and less than or equal to the median); high (greater than the median and less than or equal to the 90th percentile); and event (greater than the 90th percentile)]

Station number	Station name	Daily average streamflow (ft^3/s)[1]		
		10th percentile	Median	90th percentile
1	Fall Creek near Fortville	51	150	486
2	Eel River near Logansport	169	438	1,770
3	Tippecanoe River at Winimac	270	628	1,910
4	Wildcat Creek near Lafayette	152	469	1,920
5	Wabash River at Terre Haute	3,030	8,705	30,900
6	Mills Creek at Cagles Mill Dam	28	216	1,300
7	White River near Centerton	730	2,020	7,165
8	White River at Nora	309	905	3,624
9	Sugar Creek near New Palestine	10	60	319
10	East Fork Whitewater River near Brookville	53	265	1,305
11	Vernon Fork Muscatatuck River at Vernon	10	107	531
12	East Fork White River at Seymour	636	2,070	7,334
13	Blue River at Fredericksburg	15	197	858
14	Patoka River at Winslow	74	473	1,990
15	White River at Petersburg	3,260	10,900	29,860
16	Busseron Creek near Carlisle	11	103	667
17	Mississinewa River near Peoria	103	353	2,590
18	Wabash River near Huntington	51	280	2,370
19	Maumee River at New Haven	200	988	5,915
20	Fish Creek near Artic	10	42	228
21	St. Joseph River at Elkhart	1,230	2,485	4,990
22	Trail Creek at Michigan City	39	70	145
23	Deep River at Lake George at Hobart	16	50	316
24	Kankakee River at Shelby	629	1,290	3,160
25	Wabash River at Vincennes	3,700	9,960	31,940
26	Wabash River at Mt. Carmel, Ill.	8,662	26,800	74,300

[1]Daily average streamflow for calendar years 2002–2006 from the USGS streamflow gaging station at or near the monitoring station (U.S. Geological Survey, 2008).

Table 1–3. Annual stream loads and yields of unfiltered total mercury and unfiltered methylmercury in watersheds upstream from monitoring stations on Indiana streams, 2002–2006.

[g/yr, gram per year; µg/m²/yr, microgram per square meter per year; ND, not determined]

Station[1] number	Station name	Year	Annual stream load of total mercury (g/yr)	Standard error of prediction[2] for annual stream load of total mercury (percent)	Annual stream yield of total mercury (µg/m²/yr)	Annual stream load of methylmercury (g/yr)	Standard error of prediction[2] for annual stream load of methylmercury (percent)	Annual stream yield of methylmercury (µg/m²/yr)
1	Fall Creek near Fortville	2002	5,184	35.5	11.6	ND	ND	ND
		2003	15,222	151	34.1	ND	ND	ND
		2004	5,274	32.1	11.8	ND	ND	ND
		2005	11,190	77.1	25.0	ND	ND	ND
		2006	2,723	9.7	6.1	ND	ND	ND
2	Eel River near Logansport	2002	6,384	13.7	3.1	129	4.5	0.06
		2003	5,276	2.0	2.6	135	5.5	.07
		2004	7,604	2.8	3.7	175	6.1	.09
		2005	13,399	73.4	6.6	165	21	.08
		2006	5,519	3.3	2.7	136	2.7	.07
3	Tippecanoe River at Winimac	2002	2,016	2.0	.83	101	2.1	.04
		2003	1,385	1.4	.57	63	1.4	.03
		2004	1,834	1.5	.75	85	1.6	.03
		2005	2,049	1.6	.84	98	1.7	.04
		2006	1,877	2.3	.77	101	2.5	.04
4	Wildcat Creek near Lafayette	2002	14,260	11.5	6.9	ND	ND	ND
		2003	65,549	1,710	31.9	ND	ND	ND
		2004	35,973	409	17.5	ND	ND	ND
		2005	52,220	1,040	25.4	ND	ND	ND
		2006	17,934	11.4	8.7	ND	ND	ND

Table 1–3. Annual stream loads and yields of unfiltered total mercury and unfiltered methylmercury in watersheds upstream from monitoring stations on Indiana streams, 2002–2006.—Continued

[g/yr, gram per year; µg/m²/yr, microgram per square meter per year; ND, not determined]

Station[1] number	Station name	Year	Annual stream load of total mercury (g/yr)	Standard error of prediction[2] for annual stream load of total mercury (percent)	Annual stream yield of total mercury (µg/m²/yr)	Annual stream load of methylmercury (g/yr)	Standard error of prediction[2] for annual stream load of methylmercury (percent)	Annual stream yield of methylmercury (µg/m²/yr)
5	Wabash River at Terre Haute	2002	65,418	1.4	2.0	2,100	2.5	.07
		2003	71,823	1.3	2.2	2,335	2.5	.07
		2004	66,939	1.2	2.1	2,172	2.3	.07
		2005	51,177	1.9	1.6	1,899	2.9	.06
		2006	71,267	1.0	2.2	2,186	2.1	.07
7	White River near Centerton	2002	189,458	28.7	30.0	565	143	.09
		2003	451,023	92.5	71.3	638	2,960	.10
		2004	83,911	9.6	13.3	448	14.5	.07
		2005	438,960	85.3	69.4	520	3,360	.08
		2006	87,307	5.0	13.8	674	5.4	.11
8	White River at Nora	2002	44,518	24.7	14.1	ND	ND	ND
		2003	119,475	32.3	37.9	ND	ND	ND
		2004	19,468	8.8	6.2	ND	ND	ND
		2005	121,137	40.2	38.5	ND	ND	ND
		2006	18,200	5.1	5.8	ND	ND	ND
9	Sugar Creek near New Palestine	2002	434	2.7	1.8	9.6	4.1	.04
		2003	350	2.1	1.4	14	4.3	.06
		2004	436	3.1	1.8	9.4	4.3	.04
		2005	702	3.8	2.9	14	5.3	.06
		2006	533	2.3	2.2	15	4.1	.06

Table 1–3. Annual stream loads and yields of unfiltered total mercury and unfiltered methylmercury in watersheds upstream from monitoring stations on Indiana streams, 2002–2006.—Continued

[g/yr, gram per year; µg/m²/yr, microgram per square meter per year; ND, not determined]

Station[1] number	Station name	Year	Annual stream load of total mercury (g/yr)	Standard error of prediction[2] for annual stream load of total mercury (percent)	Annual stream yield of total mercury (µg/m²/yr)	Annual stream load of methylmercury (g/yr)	Standard error of prediction[2] for annual stream load of methylmercury (percent)	Annual stream yield of methylmercury (µg/m²/yr)
11	Vernon Fork Muscatatuck River at Vernon	2002	7,897	6.2	15.4	52	1.8	.10
		2003	6,459	9.7	12.6	36	1.9	.07
		2004	4,708	5.6	9.2	32	1.5	.06
		2005	5,757	7.8	11.2	23	1.4	.04
		2006	8,649	8.3	16.9	77	6.6	.15
12	East Fork White River at Seymour	2002	325,707	77.6	53.8	ND	ND	ND
		2003	70,649	9.0	11.7	ND	ND	ND
		2004	203,790	234	33.6	ND	ND	ND
		2005	477,625	322	78.9	ND	ND	ND
		2006	290,694	65.2	48.0	ND	ND	ND
13	Blue River at Fredericksburg	2002	759	2.0	1.0	27	3.7	.04
		2003	639	1.7	.87	24	3.2	.03
		2004	923	2.4	1.3	31	4.1	.04
		2005	566	2.2	.77	20	3.7	.03
		2006	930	2.0	1.3	32	3.7	.04
14	Patoka River at Winslow	2002	13,558	2.0	8.7	158	4.0	.10
		2003	7,588	1.5	4.9	113	2.7	.07
		2004	8,513	1.6	5.5	124	2.8	.08
		2005	8,056	2.0	5.2	97	3.8	.06
		2006	ND	ND	ND	ND	ND	ND

Table 1–3. Annual stream loads and yields of unfiltered total mercury and unfiltered methylmercury in watersheds upstream from monitoring stations on Indiana streams, 2002–2006.—Continued

[g/yr, gram per year; µg/m²/yr, microgram per square meter per year; ND, not determined]

Station[1] number	Station name	Year	Annual stream load of total mercury (g/yr)	Standard error of prediction[2] for annual stream load of total mercury (percent)	Annual stream yield of total mercury (µg/m²/yr)	Annual stream load of methylmercury (g/yr)	Standard error of prediction[2] for annual stream load of methylmercury (percent)	Annual stream yield of methylmercury (µg/m²/yr)
16	Busseron Creek near Carlisle	2002	3,408	14.6	5.8	76	.9	.13
		2003	2,049	5.4	3.5	68	.7	.11
		2004	1,329	24.9	2.2	45	.7	.08
		2005	3,354	78.1	5.7	72	1.0	.12
		2006	3,759	12.4	6.4	105	.8	.18
19	Maumee River at New Haven	2002	20,841	1.4	4.1	330	2.2	.07
		2003	38,085	1.5	7.5	554	3.0	.11
		2004	23,855	1.3	4.7	376	2.3	.07
		2005	27,399	1.5	5.4	398	3.5	.08
		2006	27,367	1.2	5.4	437	1.9	.09
20	Fish Creek near Artic	2002	402	1.9	1.6	ND	ND	ND
		2003	324	1.6	1.3	ND	ND	ND
		2004	290	1.6	1.2	ND	ND	ND
		2005	396	1.9	1.6	ND	ND	ND
		2006	446	1.6	1.8	ND	ND	ND
21	St. Joseph River at Elkhart	2002	7,314	1.8	.84	ND	ND	ND
		2003	4,141	1.3	.47	ND	ND	ND
		2004	6,848	1.6	.78	ND	ND	ND
		2005	6,693	1.9	.76	ND	ND	ND
		2006	6,774	1.5	.77	ND	ND	ND

Table 1–3. Annual stream loads and yields of unfiltered total mercury and unfiltered methylmercury in watersheds upstream from monitoring stations on Indiana streams, 2002–2006.—Continued

[g/yr, gram per year; µg/m²/yr, microgram per square meter per year; ND, not determined]

Station[1] number	Station name	Year	Annual stream load of total mercury (g/yr)	Standard error of prediction[2] for annual stream load of total mercury (percent)	Annual stream yield of total mercury (µg/m²/yr)	Annual stream load of methylmercury (g/yr)	Standard error of prediction[2] for annual stream load of methylmercury (percent)	Annual stream yield of methylmercury (µg/m²/yr)
23	Deep River at Lake George at Hobart	2002	451	1.4	1.4	9.0	2.1	.03
		2003	408	1.2	1.3	8.7	1.9	.03
		2004	462	1.1	1.4	10	1.8	.03
		2005	460	1.3	1.4	9.2	2.1	.03
		2006	736	1.2	2.3	15	2.0	.05
24	Kankakee River at Shelby	2002	7,190	1.7	1.6	ND	ND	ND
		2003	4,439	1.3	1.0	ND	ND	ND
		2004	5,684	1.3	1.2	ND	ND	ND
		2005	6,960	1.7	1.5	ND	ND	ND
		2006	5,813	1.3	1.3	ND	ND	ND

[1]Stream loads and stream yields for total mercury and methylmercury were not calculated for stations 6, 10, 15, 17, 18, 22, 25, and 26 because of insufficient data.

[2]The Standard Error of Prediction (SEP) begins with an estimate of parameter uncertainty (the Standard Error) and adds the unexplained variability about the model (random error). Because SEP incorporates parameter uncertainty and random error, it is larger than the Standard Error and provides a better description of how closely estimated loads correspond to actual loads. The SEP is the preferred method of describing uncertainty in loads (Runkel and others, 2004). Here, the SEP is presented as a percentage of the annual load.

Table 1–4. Model characteristics of annual stream loads of mercury in watersheds upstream from monitoring stations on Indiana streams, 2002–2006.

[UTHG, unfiltered total mercury; UMHG, unfiltered methylmercury;—, insufficient data; ln$Q$ = ln(streamflow) - center of ln(streamflow)]

Station number[1]	Station name	Number of samples with UTHG for regression model	Average standard error of prediction for stream load[2] of UTHG (percent)	Number of samples with UMHG for regression model	Average standard error of prediction for stream load[2] of UMHG (percent)	Predefined load model[3] selected by software for equation: ln (instantaneous stream mercury load) =
1	Fall Creek near Fortville	18	89.3	—	—	$a0 + a1 \ln Q + a2 \ln Q^2$
2	Eel River near Logansport	18	29.4	10	8.40	$a0 + a1 \ln Q + a2 \ln Q^2$
3	Tippecanoe River at Winimac	18	1.80	8	1.91	$a0 + a1 \ln Q$
4	Wildcat Creek near Lafayette	17	974	—	—	$a0 + a1 \ln Q + a2 \ln Q^2$
5	Wabash River at Terre Haute	18	1.36	14	2.46	$a0 + a1 \ln Q + a2 \ln Q^2$
7	White River near Centerton	18	68.7	15	1,310	$a0 + a1 \ln Q + a2 \ln Q^2$
8	White River at Nora	18	31.3	—	—	$a0 + a1 \ln Q + a2 \ln Q^2$
9	Sugar Creek near New Palestine	17	2.91	8	4.45	$a0 + a1 \ln Q$
11	Vernon Fork Muscatatuck River at Vernon	17	7.60	14	1.69	$a0 + a1 \ln Q + a2 \ln Q^2$
12	East Fork White River at Seymour	17	180	—	—	$a0 + a1 \ln Q + a2 \ln Q^2$
13	Blue River at Fredericksburg	17	2.07	8	3.72	$a0 + a1 \ln Q$
14	Patoka River at Winslow	17	1.79	13	3.36	$a0 + a1 \ln Q$
16	Busseron Creek near Carlisle	17	29.0	11	.85	$a0 + a1 \ln Q + a2 \ln Q^2$
19	Maumee River at New Haven	16	7.54	13	2.60	$a0 + a1 \ln Q$
20	Fish Creek near Artic	15	2.60	—	—	$a0 + a1 \ln Q$
21	St. Joseph River at Elkhart	16	1.19	—	—	$a0 + a1 \ln Q$
23	Deep River at Lake George at Hobart	16	1.26	9	1.99	$a0 + a1 \ln Q$
24	Kankakee River at Shelby	15	1.49	—	—	$a0 + a1 \ln Q$

[1]Stream loads and stream yields for total mercury and methylmercury were not calculated for stations 6, 10, 15, 17, 18, 22, 25, and 26 because of insufficient data.

[2]Average standard error of prediction for stream load of mercury is the average of the annual standard error of prediction values divided by the average annual stream load of mercury, expressed as a percentage.

[3]Models from Runkel and others (2004).

Table 1–5. Number of stationary sources of mercury emissions to the atmosphere and annual mercury emissions in 2002 and 2005 for watersheds upstream from monitoring stations on Indiana streams.

[kg, kilogram]

Station number	Station name for upstream watershed	2002		2005	
		Number of stationary sources of mercury emissions	Annual mercury emissions (kg)	Number of stationary sources of mercury emissions	Annual mercury emissions (kg)
1	Fall Creek near Fortville	1	0.04	0	0
2	Eel River near Logansport	2	208	2	81.9
3	Tippecanoe River at Winimac	5	28.3	4	31.5
4	Wildcat Creek near Lafayette	6	10.3	6	1.49
5	Wabash River at Terre Haute	25	1,097	22	376
6	Mills Creek at Cagles Mill Dam	0	0	0	0
7	White River near Centerton	20	152	13	189
8	White River at Nora	4	5.7	4	7.74
9	Sugar Creek near New Palestine	0	0	0	0
10	East Fork Whitewater River near Brookville	1	17.4	2	11.3
11	Vernon Fork Muscatatuck River at Vernon	0	0	0	0
12	East Fork White River at Seymour	8	25.8	5	32.2
13	Blue River at Fredericksburg	0	0	0	0
14	Patoka River at Winslow	4	7.63	2	.73
15	White River at Petersburg	20	617	18	586
16	Busseron Creek near Carlisle	0	0	0	0
17	Mississinewa River near Peoria	3	2.44	0	0
18	Wabash River near Huntington	1	1.47	0	0
19	Maumee River at New Haven	7	339	5	250
20	Fish Creek near Artic	0	0	0	0
21	St. Joseph River at Elkhart	5	15.3	2	6.41
22	Trail Creek at Michigan City	2	59.8	2	61.3
23	Deep River at Lake George at Hobart	0	0	0	0
24	Kankakee River at Shelby	8	187	7	197
25	Wabash River at Vincennes	5	55.9	4	73.6
26	Wabash River at Mt. Carmel, Ill.	1	.05	1	.06

Table 1–6. Percentages of land-cover classes in watersheds upstream from monitoring stations on Indiana streams.

[Percentages computed as land are in watershed in each land-cover class divided by the total watershed upstream drainage area, multiplied by 100; —, no area in land-cover class; <, less than]

Land cover class[1]	Monitoring station number for upstream watershed												
	1	2	3	4	5	6	7	8	9	10	11	12	13
Low intensity residential	4.15	0.61	0.92	2.21	1.02	0.54	8.31	4.50	1.55	1.84	0.74	1.85	0.84
High intensity residential	.22	.06	.14	.21	.27	.03	1.07	.49	.05	.48	.05	.20	.06
Commercial/ industrial/transportation	.87	.25	.48	.87	.56	.23	3.19	1.45	.35	1.23	.30	.84	.16
Bare rock/sand/clay	—	—	—	—	.01	—	—	—	—	—	—	—	—
Quarries/strip mines/ gravel pits	.11	—	< .01	< .01	.05	.07	.06	.07	—	—	.03	.01	.06
Coal mine lands[2]	—	—	—	—	.32	—	—	—	—	—	—	—	—
Transitional	—	< .01	—	< .01	.01	.16	.05				.31	.05	
Deciduous forest	5.45	8.25	8.79	3.09	8.17	15.20	6.23	4.05	4.96	17.03	33.02	8.66	24.66
Evergreen forest	< .01	.03	.12	.01	.29	.11	.03	.02	.01	.28	1.20	.08	2.77
Mixed forest	< .01	< .01	.01	< .01	.17	< .01	.01	< .01	< .01	.05	.10	.01	.18
Shrubland	—	—	—	—	.01	—	—	—	—	—	—	—	—
Grassland/herbaceous	—	< .01	.01		.39	—	—	—	—	—	—	—	—
Orchards/vineyards/ other	—	—	—	—	.02	.02	.02	—	—	.03	—	.01	—
Pasture/hay	19.54	15.73	1.66	1.66	1.53	18.28	16.67	13.27	16.44	16.37	38.94	2.09	4.42
Rowcrop	66.43	72.81	72.80	8.24	75.29	64.00	6.16	72.26	75.45	59.57	24.33	66.45	3.51
Small grains	—	—	—	—	.01	—	—	—	—	—	—	—	—
Fallow	2.20	.03	.14	1.18	.45	.15	2.47	2.01	.23	.30	.12	.59	.06
Woody wetlands	.75	1.37	3.02	1.12	1.48	.11	.75	1.09	.69	.61	.42	.74	.07
Emergent herbaceous wetlands	.12	.26	.83	.07	.22	.01	.05	.06	.03	.03	.01	.02	.01
Open water	.17	.59	2.09	.34	.81	1.06	.94	.72	.23	2.18	.44	.39	—

Table 1–6. Percentages of land-cover classes in watersheds upstream from monitoring stations on Indiana streams. —Continued

[Percentages computed as land are in watershed in each land-cover class divided by the total watershed upstream drainage area, multiplied by 100; —, no area in land-cover class; <, less than]

Land cover class[1]	Monitoring station number for upstream watershed												
	14	15	16	17	18	19	20	21	22	23	24	25	26
Low intensity residential	.66	2.80	1.35	2.04	.76	2.54	.38	1.31	6.24	8.70	1.06	1.02	1.65
High intensity residential	.09	.33	.16	.24	.14	.47	.06	.15	3.40	6.40	.29	.28	.29
Commercial/ industrial/transportation	.26	1.09	.60	.63	.41	1.16	.19	.64	3.69	3.57	.58	.58	.76
Bare rock/sand/clay	—	< .01	< .01	—	—	—	—	—	.08	< .01	.03	.01	.01
Quarries/strip mines/ gravel pits	.24	.12	1.70	.04	.06	.02	—	.01	—	< .01	.03	.08	.10
Coal mine lands[2]	5.38	1.27	19.61	—	—	—	—	—	—	—	—	.79	1.24
Transitional	.31	.25	.21		.02	.02	.11	.03	—	—	.01	.01	.12
Deciduous forest	37.15	23.21	2.36	7.32	5.55	9.84	17.82	14.64	27.07	14.29	9.34	9.05	15.39
Evergreen forest	2.09	.66	1.18	.04	.05	.10	.15	.32	9.00	3.31	1.70	.33	.54
Mixed forest	.06	.04	3.42	.01	.01	.03	.11	.03	2.35	—	.17	.29	.18
Shrubland	—	—	.49	—	—	—	—	—	—	.51	—	.02	.01
Grassland/herbaceous	—	.00	4.63	—	—	.04	.44	.01	6.21	4.16	2.08	.48	.28
Orchards/vineyards/ other	—	.01	.03	—	—	—	—	.04	—	—	.03	.02	.02
Pasture/hay	24.08	21.01	11.22	11.64	9.35	16.23	29.61	16.19	14.63	14.48	11.91	11.84	16.92
Rowcrop	26.72	47.16	31.81	75.47	79.88	66.54	45.41	57.45	16.94	33.79	68.22	71.87	59.57
Small grains		< .01	.08	—	—	—	—	—	.12	.08	.04	.03	.04
Fallow	.06	.75	1.08	.66	.10	.32	—	.34	1.66	5.61	.38	.49	.58
Woody wetlands	.64	.68	5.94	.99	.62	1.71	2.97	4.91	6.36	2.60	2.28	1.74	1.42
Emergent herbaceous wetlands	.11	.04	.40	.09	.12	.25	.70	1.11	1.37	1.16	.77	.23	.15
Open water	2.70	.95	2.20	.84	2.92	.74	2.04	2.82	.89	1.34	1.04	.94	.96

[1]Land-cover class description from National Land-Cover Dataset (Multi-Resolution Land Characteristics Consortium, 1992).

[2]Coal mine lands supplemental data for active and abandoned (reclaimed/unreclaimed) aboveground coal mines (Eaton, 2002 and Indiana Geological Survey, 2002)