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DEPARTMENT OF ENERGY AND NATURAL RESOURCES

Illinois Benchmark Network Instream Suspended Sediment Monitoring Program, Water Year 1986

by D. Kevin Davie

ILLINOIS STATE WATER SURVEY
CHAMPAIGN
1990

CIRCULAR 171-86

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Abstract: Beginning in Water Year 1981, the Water Survey's suspended sediment monitoring program evolved from the effort to gather data on sediment transport and sedimentation in Illinois waterways. In Water Year 1981, the program consisted of 50 stations throughout the state. However, by Water Year 1983 a series of cuts in funding reduced the number of stations to 18. In 1983, the suspended sediment monitoring program was combined with two other Water Survey monitoring programs under the program name of the Illinois Benchmark Network (IBN). Since that time, the IBN has continued to maintain suspended sediment stations statewide. This report, which presents the suspended sediment data collected during Water Year 1986, is a continuation of the Water Survey's Circular 171 series presenting data collected in the suspended sediment monitoring program. In Water Year 1986, 16 stations were maintained. All the techniques used in the data collection process and the laboratory analyses were based upon those used by the U.S. Geological Survey. All the data for Water Year 1986, including those pertaining to water discharge, sediment concentration, sediment load, and particle size distribution of the suspended sediment samples, are given in the appendices to this report. The appendices also include the statistical parameters for the regression equations relating water discharge and suspended sediment load data for Water Year 1986.

Reference: Davie, D. Kevin. Illinois Benchmark Network Instream Suspended Sediment Monitoring Program, Water Year 1986. Illinois Stale Water Survey, Champaign, Circular 171-86, 1990.

Indexing Terms: Data collection, Illinois Benchmark Network, particle size distribution, regression equations, rivers, sediment concentrations, streams, suspended sediment load.

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CONTENTS

ILLINOIS BENCHMARK NETWORK
INSTREAM SUSPENDED SEDIMENT MONITORING PROGRAM, WATER YEAR 1986

by D. Kevin Davie

INTRODUCTION

Beginning in Water Year 1981, the Illinois State Water Survey's instream suspended sediment monitoring program has provided a means for gathering data on sediment transport and sedimentation in Illinois waterways. In Water Year 1981, the program consisted of 50 stations throughout the state. However, by Water Year 1983, a series of cuts in funding reduced the number of stations to 18. In 1983, the suspended sediment monitoring program was combined with two other Water Survey monitoring programs under the program name of the Illinois Benchmark Network (IBN). Since that time the IBN has continued to maintain suspended sediment stations statewide.

This report presents the suspended sediment data collected during Water Year 1986. This publication is a continuation of the Water Survey's Circular 171 series presenting data collected by the Illinois Benchmark Network's instream suspended sediment monitoring program. Further details regarding the operation and methods of this monitoring program can be found in Water Survey Circular 171-84 (Davie, 1988).

Acknowledgments

This report was prepared as part of the author's regular duties at the Illinois State Water Survey under the administrative guidance of Richard G. Semonin (Chief) and Michael L. Terstriep (Head of the Surface Water Section). The author expresses his sincere thanks to the Illinois District, Water Resources Division, U.S. Geological Survey, which provided all the necessary streamgaging data and water discharge rating tables. Chris Svec, Director of the Project Development, Management and Evaluation Office, College of Technical Careers, Southern Illinois University-Carbondale, supplied support services. The report was reviewed by Nani Bhowmik and edited by Gail Taylor.

DATA COLLECTION AND ANALYSIS

The 16 stations monitored in Water Year 1986 were maintained by regional offices at Batavia (northern region), Peoria (west-central), Champaign (east-central), and Carbondale (southern region). Each station was maintained by an IBN technician, and each location was sampled on a weekly basis by a locally hired observer. Locations of the 16 stations are shown in figure 1, and additional information on the stations is given in table 1.

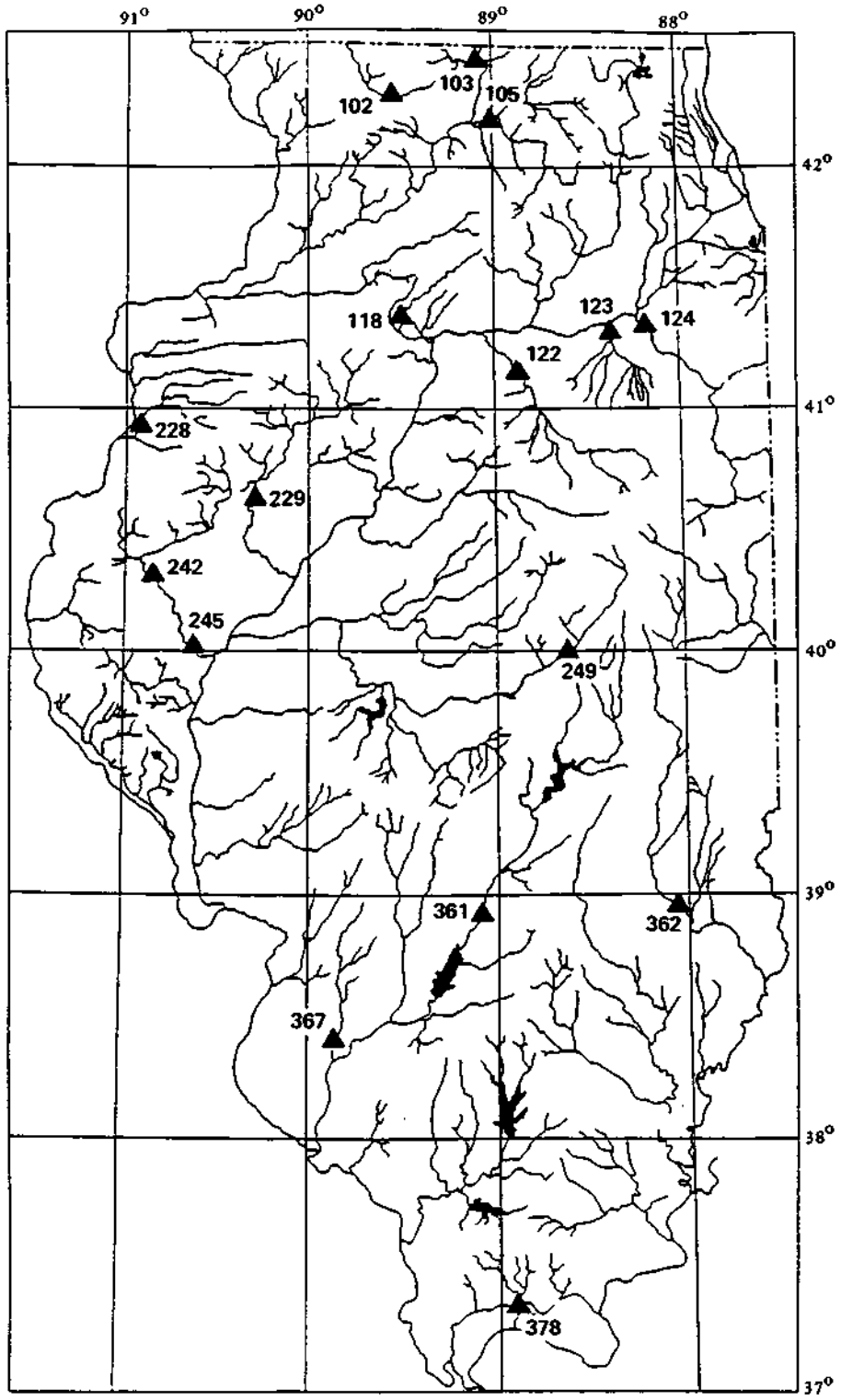

Figure 1. Illinois Benchmark Network suspended sediment stations for Water Year 1986 (October 1985 through September 1986)

Table 1. Illinois Benchmark Network Instream Suspended Sediment Monitoring Program, Water Year 1986

Station name	*USGS ID*	*ISWS ID*	*Drainage area (square miles)*	*ISWS period of record (water years)*	*County*
Northern District					
Pecatonica R. at Freeport	05435500	102	1326	1981 to Present	Stephenson
Rock R. at Rockton	05437500	103	6363	1981 to Present	Winnebago
Kishwaukee R. near Perryville	05438600	105	655	1983 to Present	Winnebago
Big Bureau Cr. at Princeton	05556500	118	196	1981 to Present	Bureau
Mazon R. near Coal City	05542000	123	455	1981 to Present	Grundy
Kankakee R. near Wilmington	05527500	124	5150	1983 to Present	Will
West-Central District					
Henderson Cr. near Oquawka	05469000	228	432	1983 to Present	Henderson
Spoon R. at London Mills	05569500	229	1062	1981 to Present	Fulton
La Moine R. at Colmar	05584500	242	655	1981 to Present	McDonough
La Moine R. at Ripley	05585000	245	1293	1983 to Present	Brown
East-Central District					
Vermilion R. near Leonore	05555300	122	1251	1981 to Present	La Salle
Sangamon R. at Monticello	05572000	249	550	1981 to Present	Piatt
Southern District					
Kaskaskia R. at Vandalia	05592500	361	1940	1981 to Present	Fayette
Embarras R. at Ste. Marie	03345500	362	1516	1981 to Present	Jasper
Silver Cr. near Freeburg	05594800	367	464	1981 to Present	St. Clair
Cache R. at Forman	03612000	378	244	1981 to Present	Johnson

The suspended sediment samples collected at each location were transported to the Inter-Survey Geotechnical Laboratory, Champaign. The laboratory analyzed 817 samples for sediment concentration in pans per million and 43 samples for particle size distribution. All the techniques used in the data collection process and the laboratory analyses were based on those used by the U.S. Geological Survey. Descriptions of these methods are contained in the U.S. Department of the Interior's series of publications entitled *Techniques of Water-Resources Investigations of the United States Geological Survey* (Buchanan and Somers, 1969; Guy, 1969; Guy and Norman, 1970; Porterfield, 1972).

Instrumentation

Three types of suspended sediment samplers were used in this program. All of them have been approved by the Federal Inter-Agency Sedimentation Project of the Inter-Agency Committee on Water Resources, located at the St. Anthony Falls Hydraulic Laboratory in Minneapolis, Minnesota. The three samplers are 1) the depth-integrating suspended sediment wading-type hand sampler, US DH-48; 2) the depth-integrating suspended sediment hand-type sampler, US DH-59; and 3) the point-integrating suspended sediment cable and reel sampler, also used for depth integration, US P-72. More detailed information on these sediment samplers and on the methods used for collecting suspended sediment is provided by Davie (1988).

Data Analysis

After suspended sediment samples were analyzed at the Inter-Survey Geotechnical Laboratory, the data were transferred to a computer format, and a computer printout was sent to each technician. The format allowed the technicians to check the data for errors by making comparisons with the information on their field sheets. The technician's printout was returned to the supervisor, and any errors were corrected on a master copy. After all errors were corrected, the data were designated as "provisional data."

Data were extracted from the provisional data for statistical analysis and were formatted according to date, time, stage, temperature, concentration of suspended sediments, and instantaneous water discharge (Qw), taken from records supplied by the USGS.

Instantaneous suspended sediment load (Qs) was computed by the following equation:

$$Qs = Cs(Qw)k \qquad (1)$$

where Cs is the suspended sediment sample concentration (ppm), Qw is the instantaneous water discharge (cfs), and k is a coefficient with the value 0.0027. Instantaneous suspended sediment load (Qs) was calculated for each sample collected within the water year.

The computed values of Qs and the values of Qw for Water Year 1986 for all the stations are given in Appendix A. Appendix B shows the total number of samples collected for analyses of suspended sediment concentration and particle size distribution.

Linear regression equations relating Qs and Qw for each station were developed for the data collected in Water Year 1986. The statistical parameters for the equations are given in Appendix C. The general regression equation is:

$$Qs = a\ (Qw)^{b} \qquad (2)$$

where a is a coefficient and b is slope.

Appendix D presents the results of the particle size analyses for the data collected in Water Year 1986. The results are listed as the total number of bottles composited for analysis, the percent of suspended sediment finer than 62.5 microns in size, and the average suspended sediment concentration in parts per million for the respective number of composited samples.

SUMMARY

In Water Year 1986, 16 instream suspended sediment monitoring stations were maintained by the Illinois Benchmark Network (IBN). The samples were collected weekly by locally hired observers and were transferred by IBN technicians to the Inter-Survey Geotechnical Laboratory, Champaign. The laboratory analyzed the samples for sediment concentration in parts per million, as well as for particle size distribution.

Instantaneous values for water discharge (Qw) and sediment discharge (Qs) were used to develop an annual regression equation for each suspended sediment station.

All the data, including those pertaining to water discharge (Qw), suspended sediment load (Qs), and particle size distribution of the suspended sediment samples, are given in the appendices to this report. The appendices also include the statistical parameters for the regression equations relating water discharge and suspended sediment load data for Water Year 1986.

BIBLIOGRAPHY

Buchanan, T. J., and W. P. Somers. 1969. Discharge measurements at gaging stations. Book 3, Chapter A8 in Techniques of Water-Resources Investigations of the United States Geological Survey, United States Government Printing Office, Washington, D.C.

Davie, D. K. 1988. Illinois Benchmark Network instream suspended sediment monitoring program, Water Year 1984. Illinois State Water Survey Circular 171-84.

Davie, D. K. 1989. Illinois Benchmark Network instream suspended sediment monitoring program, Water Year 1985. Illinois State Water Survey Circular 171-85.

Guy, H. P. 1969. Laboratory theory and methods for sediment analysis. Book 5, Chapter C1 in Techniques of Water-Resources Investigations of the United States Geological Survey, United States Government Printing Office, Washington, D.C.

Guy, H. P., and V. W. Norman. 1970. Field methods for measurement of fluvial sediment. Book 3, Chapter C2 in Techniques of Water-Resources Investigations of the United States Geological Survey, United States Government Printing Office, Washington, D.C.

Porterfield, G. 1972. Computation of fluvial-sediment discharge. Book 3, Chapter C3 in Techniques of Water-Resources Investigations of the United States Geological Survey, United States Government Printing Office, Washington, D.C.

U.S. Geological Survey. 1978. National handbook of recommended methods for water data acquisition. Chapter 3: Sediment; Appendices 3.L.6 and 3.L.7: Laboratory procedure for pipet methods and Laboratory procedure for sieving. U.S. Geological Survey, Reston, Virginia.

U.S. Geological Survey. 1987. Water resources data for Illinois, Water Year 1986. Volumes 1 and 2. U.S. Geological Survey, Water Resources Division, Urbana, Illinois.

Appendix A. Suspended-Sediment Data and Statistical Parameters, Water Year 1986

Explanation of data set:

Date	Day the sample was taken
Time	Time of sample in 24-hour clock
Stage	Gage height of stream at time of sampling, feet (ft)
Temp	Temperature of water in degrees celsius at time of sampling
Cs	Concentration of suspended sediment, milligrams per liter (mg/l)
Qw	Instantaneous water discharge, cubic feet per second (cfs)
Qs	Instantaneous sediment load, tons/day (t/d)

(Note: station locations can be found on figure 1, and additional information on the stations is given in table 1.)

PECATONICA RIVER at FREEPORT

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/01/85	1630	3.81	14	146	780	307
10/08/85	1530	3.59	12	145	729	285
10/15/85	1530	6.62	12	203	1428	783
10/22/85	1530	5.12	13	163	1082	476
10/29/85	1530	5.26	11	141	1115	424
11/03/85	1000	11.32	08	145	2832	1109
11/06/85	1320	10.08	08	141	2390	910
11/12/85	1530	7.74	04	65	1684	295
11/19/85	1630	10.43	07	152	2507	1029
11/29/85	1100	7.27	0	106	1577	451
01/10/86	1200	5.70	2	16	1216	52
03/08/86	1530	12.68	2	137	3608	1335
03/19/86	1700	12.64	3	117	3572	1128
03/25/86	1715	13.24	8	118	4246	1353
04/03/86	1600	9.70	11	128	2265	783
04/10/86	1200	8.32	12	192	1837	952
04/15/86	1545	7.98	9	209	1739	981
04/18/86	1245	7.84	10	120	1707	553
04/23/86	1500	6.89	10	95	1490	382
04/29/86	1430	6.51	15	233	1402	882
05/09/86	1600	5.73	16	239	1223	789
05/14/86	1530	6.62	15	265	1428	1022
05/19/86	1525	10.42	14	120	2503	811
05/20/86	1500	9.90	14	121	2331	761
05/30/86	1530	6.76	18	255	1460	1005
06/07/86	0700	5.97	16	436	1278	1504
06/16/86	1530	6.38	18	290	1373	1075
06/23/86	1200	5.16	22	441	1092	1300
06/30/86	1100	5.09	19	454	1076	1319
07/09/86	1530	5.75	22	404	1228	1339
07/15/86	1600	4.91	23	228	1034	636
07/23/86	1500	3.98	25	199	819	440
07/28/86	1200	4.14	24	215	856	497
08/05/86	1200	3.60	20	136	731	268
08/15/86	1250	3.97	21	152	817	335
08/16/86	1000	3.91	19	247	803	535
08/23/86	1000	3.51	19	137	710	263
08/30/86	0930	4.20	16	146	870	343

PECATONICA RIVER at FREEPORT (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
09/06/86	1200	3.96	15	139	814	305
09/11/86	1500	5.78	16	298	1235	994
09/15/86	1710	5.13	17	216	1085	633
09/20/86	1230	4.24	15	261	879	619
09/25/86	0600	11.39	17	1349	2859	10413

ROCK RIVER at ROCKTON

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/03/85	0925	3.99	13	24	3610	234
10/10/85	1135	4.73	12	36	4793	466
10/17/85	1515	5.31	14	56	5784	874
10/24/85	1000	5.49	14	70	6103	1153
11/01/85	0845	5.79	12	48	6643	861
11/07/85	1330	8.20	09	64	11420	1973
11/08/85	1430	8.00	07	68	11000	2020
11/15/85	0800	7.73	06	30	10430	845
11/21/85	1430	8.80	04	70	12720	2404
11/27/85	1430	8.06	03	67	11120	2012
12/05/85	1415	8.02	01	64	11040	1908
12/12/85	1500	6.79	2	25	8537	576
01/23/86	0810	5.76	1	25	6589	445
01/30/86	1145	6.07	0	12	7160	232
02/13/86	1030	6.40	0	14	7782	294
02/27/86	1145	5.22	2	28	5627	425
03/07/86	1345	5.43	0	73	5996	1182
03/10/86	1400	8.23	2	228	11490	7073
03/13/86	0825	8.81	2	64	12740	2201
03/20/86	1500	10.27	3	35	16110	1522
03/27/86	1450	10.42	6	34	16470	1512
04/03/86	0940	9.56	10	64	14440	2495
04/10/86	1510	8.22	12	86	11460	2661
04/17/86	1330	7.37	9	50	9694	1309
04/22/86	1245	6.75	10	87	8458	1987
04/24/86	1440	6.45	13	68	7878	1446
05/01/86	1100	6.11	15	81	7235	1582
05/10/86	0700	5.28	16	77	5732	1192
05/16/86	1015	5.37	16	72	5890	1145
05/21/86	1300	6.51	15	99	7993	2136
05/22/86	1010	6.45	15	120	7878	2552
05/30/86	1445	5.41	20	106	5961	1706
06/05/86	0930	4.62	18	147	4611	1830
06/12/86	0930	4.05	19	224	3702	2239
06/20/86	1330	4.21	23	249	3951	2656
06/26/86	1400	4.95	24	282	5163	3931
07/02/86	1500	4.19	22	140	3920	1482
07/10/86	1100	4.66	22	136	4677	1717

ROCK RIVER at ROCKTON (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
07/17/86	1400	4.31	27	121	4110	1343
07/23/86	1315	4.63	28	80	4628	1000
07/24/86	1400	5.00	27	49	5248	694
07/31/86	1330	4.43	25	48	4302	557
08/07/86	1500	4.05	22	65	3702	650
08/14/86	1030	4.11	20	42	3795	430
08/21/86	1500	3.81	23	59	3337	532
08/28/86	1330	3.76	18	32	3262	282
09/04/86	1430	3.96	23	83	3564	799
09/11/86	1500	4.46	18	50	4350	587
09/12/86	1500	5.04	20	61	5316	875
09/18/86	1315	5.74	15	58	6552	1026
09/26/86	1330	9.07	20	196	13330	7054

KISHWAUKEE RIVER near PERRYVILLE

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/03/85	1700	5.14	15	73	140	28
10/15/85	1340	6.17	24	119	608	195
10/23/85	0925	6.80	23	152	990	406
11/01/85	1300	7.36	11	151	1405	573
11/06/85	1630	8.35	09	165	2251	1003
11/11/85	1415	8.97	09		2836	
11/23/85	0900	9.77	03	89	3622	870
11/26/85	1010	7.90	03	71	1851	355
12/03/85	1215	10.37	0	49	4227	559
12/12/85	1630	7.16	0	82	1246	276
12/23/85	1005	8.46	01	55	2353	349
12/26/85	1610	7.65	02	67	1641	297
01/02/86	1100	7.15	2	36	1239	120
01/10/86	0950	7.10	1	28	1200	91
01/17/86	1530	6.94	2	31	1084	91
01/23/86	1625	7.40	2	35	1437	136
01/28/86	1100	8.17	1	18	2087	101
02/07/86	1110	9.26	1	62	3117	522
02/14/86	1000	8.06	0	16	1990	86
02/22/86	1420	7.39	1	29	1429	112
02/28/86	1240	6.03	2	29	532	42
03/10/86	1720	11.86	2	265	5760	4121
03/21/86	1430	7.77	4	37	1741	174
03/26/86	1030	7.04	11	108	1155	337
04/03/86	1330	6.50	11	39	800	84
04/12/86	1015	6.15	10	51	597	82
04/18/86	1815	6.15	13	44	597	71
04/24/86	1200	5.98	15	42	505	57
04/30/86	1140	6.14	15	54	591	86
05/08/86	1440	5.86	20	46	444	55
05/15/86	1300	5.95	21	42	490	56
05/19/86	1250	10.89	-	128	4751	1642
05/30/86	1300	6.98	20	116	1111	348
06/06/86	0745	6.51	15	94	806	205
06/13/86	1030	6.24	18	53	647	93
06/16/86	1515	6.37	19	53	722	103
06/25/86	1230	5.84	20	30	434	35
06/30/86	1300	6.03	20	46	532	66

KISHWAUKEE RIVER near PERRYVILLE (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
07/08/86	1600	6.64	24	108	887	259
07/16/86	1030	6.59	25	131	856	303
07/23/86	1535	5.92	27	37	474	47
08/01/86	1500	5.62	26	25	330	22
08/07/86	1400	5.62	21	82	330	73
08/15/86	1000	5.51	21	76	282	58
08/22/86	1610	5.59	24	76	317	65
08/28/86	1110	5.37	16	131	225	80
09/04/86	1445	5.20	24	60	161	26
09/12/86	1745	5.40	22	74	236	47
09/19/86	1615	5.26	16	41	183	20
09/25/86	1730	9.05	20	260	2913	2045
09/30/86	1615	10.31	17	86	4166	967

BIG BUREAU CREEK at PRINCETON

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/01/85	1630	1.99	16	25	30	2
10/15/85	1630	2.40	18	19	69	3
10/22/85	1700	2.53	17	87	86	20
10/29/85	1630	2.44	22	68	74	14
11/05/85	1700	3.24	08	129	226	79
11/12/85	1630	3.74	09	167	385	174
11/14/85	1515	4.15	09	225	537	326
11/19/85	1630	6.35	13	4258	1788	20556
12/04/85	1630	3.75	03	153	388	160
12/11/85	1630	3.14	3	105	201	57
01/22/86	1630	2.93	02	93	154	39
02/20/86	1115	4.23	01	1404	570	2161
02/27/86	1300	2.46	02	47	76	10
03/23/86	1730	2.63	6	85	101	23
04/05/86	0700	2.41	8	27	70	5
04/17/86	1500	2.29	15	28	56	4
04/26/86	0700	2.17	11	31	45	4
05/03/86	0700	2.15	21	11	43	1
05/09/86	1650	2.08	21	9	37	1
05/14/86	1420	3.31	22	3602	244	2373
05/25/86	0800	3.00	8	107	169	49
06/14/86	0630	2.52	10	89	84	20
06/24/86	0700	2.52	11	116	84	26
06/30/86	1630	3.51	10	1014	307	840
07/13/86	0700	3.61	11	262	343	243
07/27/86	0800	2.31	15	35	59	6
08/02/86	0730	2.17	12	35	45	4
08/08/86	1330	2.11	27	79	39	8
08/09/86	0630	2.07	17	115	36	11
08/16/86	0800	1.95	22	131	27	9
08/23/86	0800	1.85	23	69	21	4
08/29/86	0730	1.85	16	74	21	4
09/06/86	0730	1.81	16	60	19	3
09/14/86	1000	1.97	18	112	29	9
09/18/86	1500	1.84	20	49	20	3
09/20/86	0930	1.86	19	115	22	7
09/27/86	0800	2.75	22	559	120	181

VERMILION RIVER near LEONORE

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/03/85	1200	3.08	14	17	51	2
10/12/85	1400	3.86	17	15	219	9
10/15/85	1200	4.01	15	14	265	10
10/16/85	1130	4.06	14	11	282	8
11/02/85	1500	10.70	11	344	4699	4364
11/09/85	1200	6.05	11	173	1275	596
11/12/85	1230	10.21	9	147	4252	1688
11/14/85	1000	10.19	09	191	4235	2184
11/21/85	1200	18.20	07	256	14290	9877
11/26/85	1000	7.75	07	246	2302	1529
12/01/85	1300	8.02	06	183	2497	1234
12/14/85	1000	7.81	07	101	2344	639
01/25/86	1000	5.25	0	9	820	20
02/04/86	1100	6.01	0	284	1255	962
02/06/86	1000	5.23	01	423	809	924
02/20/86	1030	13.48	0	605	7734	12633
02/25/86	1000	6.48	0	27	1502	109
03/08/86	0930	9.16	0	180	3374	1640
03/12/86	1200	8.89	2	299	3166	2556
03/15/86	1100	8.16	7	87	2603	611
03/22/86	1700	6.92	8	58	1757	275
03/29/86	1400	4.58	16	62	501	84
04/05/86	0900	5.58	15	18	1012	49
04/12/86	1000	5.12	12	46	749	93
04/19/86	1000	5.09	14	13	733	26
04/20/86	0900	5.09	14	11	733	22
04/22/86	1300	5.09	9	38	733	75
04/25/86	1000	3.84	20	139	214	80
05/02/86	1200	13.69	19	114	7999	2462
05/07/86	1500	6.47	18	144	1496	582
05/14/86	1800	7.24	20	129	1957	682
05/20/86	1430	7.13	17	107	1886	545
05/30/86	0930	5.73	20	104	1093	307
06/03/86	1400	4.75	23	78	571	120
06/09/86	1145	6.74	19	182	1650	811
06/12/86	1200	8.32	-	74	2726	545
06/20/86	1100	4.21	-	133	338	121
06/27/86	1600	5.14	-	133	760	273

VERMILION RIVER near LEONORE (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
06/29/86	1600	4.10	-	138	296	110
07/06/86	1200	6.27	-	336	1388	1259
07/11/86	1800	9.81	-	760	3905	8013
07/19/86	1200	5.17	28	148	776	310
07/21/86	2000	4.25	27	166	354	159
08/02/86	0930	3.33	24	66	96	17
08/05/86	1830	3.16	21	96	63	16
08/11/86	1430	3.16	22	61	63	10
08/12/86	1000	2.99	24	110	38	11
08/19/86	1100	2.85	22	99	23	6
08/25/86	0900	2.80	22	170	19	9
09/06/86	1000	2.52	18	77	8	2
09/13/86	1000	2.80	19	106	19	5
09/14/86	0900	2.80	19	163	19	8
09/23/86	0900	3.44	19	18	120	6
09/30/86	1100	4.87	20	144	625	243

MAZON RIVER near COAL CITY

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/03/85	1230	0.94	14	57	8	1
10/11/85	1000	1.29	12	46	33	4
10/17/85	1300	1.69	17	106	88	25
10/28/85	1712	1.84	12	132	118	42
11/02/85	1100	5.52	11	486	1914	2512
11/07/85	1340	3.95	11	100	962	260
11/12/85	1600	5.12	10	135	1631	594
11/13/85	1230	5.70	11	166	2043	916
11/19/85	1245	15.65	15	688	14710	27325
11/27/85	1500	3.92	6	105	949	269
12/06/85	1545	4.01	2	92	990	246
12/20/85	1100	4.17	0	135	1072	391
01/16/86	1130	1.71	0	71	92	17
02/07/86	1450	2.60	2	96	335	87
02/20/86	1530	7.02	2	524	3078	4355
02/24/86	1200	2.42	2	30	273	22
03/11/86	1200	5.30	5	557	1756	2641
03/15/86	1630	3.78	8	39	880	93
03/23/86	1515	2.90	9	61	455	75
03/30/86	1715	2.12	17	24	185	12
04/20/86	1420	1.63	14	8	78	2
04/23/86	1300	1.57	11	4	68	1
05/09/86	1140	1.99	18	93	152	38
05/16/86	1500	2.58	18	154	328	136
05/20/86	1300	2.56	14	121	321	105
05/30/86	1200	3.12	21	137	555	205
06/04/86	1843	2.20	21	155	207	87
06/12/86	1345	2.93	19	197	468	249
06/20/86	1240	2.03	26	186	162	81
06/28/86	1730	2.09	26	134	177	64
07/02/86	0830	6.29	22	570	2486	3826
07/12/86	1850	7.53	21	233	3524	2217
07/19/86	1730	2.30	26	165	236	105
07/24/86	1330	1.71	28	77	92	19
07/26/86	2025	1.65	24	46	81	10
08/01/86	1835	1.25	25	17	29	1

MAZON RIVER near COAL CITY (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
08/09/86	1520	1.25	25	31	29	2
08/16/86	1730	1.05	26	24	13	1
08/30/86	1900	0.87	20	31	6	0
09/05/86	1400	0.86	24	35	5	0
09/06/86	1530	0.80	21	48	4	0
09/08/86	1500	0.83	19	29	4	0
09/14/86	1900	1.04	19	36	12	1
09/21/86	1735	1.51	20	38	59	6
09/28/86	1330	1.64	22	61	80	13
09/30/86	1145	2.65	20	61	354	58

KANKAKEE RIVER near WILMINGTON

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/06/85	1130	1.06	13	51	1205	166
10/13/85	1640	0.99	18	77	1051	218
10/19/85	1445	1.51	16	65	2449	430
10/27/85	1355	1.84	16	25	3639	246
11/04/85	1555	2.00	10	97	4300	1126
11/10/85	1405	2.15	08	74	4914	982
11/12/85	1300	3.10	09	147	9654	3832
11/18/85	1150	4.80	10	163	21630	9519
11/24/85	1110	5.92	5	137	31850	11781
12/01/85	1223	4.50	7	63	19200	3266
12/08/85	1540	3.00	4	64	9087	1570
12/14/85	1530	4.73	0	185	21050	10514
02/24/86	1300	3.49	3	33	12010	1070
02/25/86	1355	3.06	3	25	9425	636
03/08/86	1420	3.47	1	85	11890	2729
03/15/86	1445	3.33	7	68	11020	2023
03/22/86	1450	3.14	7	49	9885	1308
03/29/86	1800	2.46	16	45	6300	765
04/06/86	1740	2.11	17	32	4747	410
04/13/86	1705	1.98	15	26	4214	296
04/20/86	1815	1.97	14	29	4172	327
04/23/86	1500	1.95	13	23	4087	254
04/27/86	1651	1.82	24	19	3560	183
05/04/86	1555	4.32	17	290	17810	13945
05/11/86	1410	2.50	19	200	6491	3505
05/18/86	1550	2.79	18	270	7948	5794
05/20/86	1450	2.99	16	240	9031	5852
05/25/86	1515	2.17	21	157	4999	2119
06/01/86	1400	3.75	24	726	13720	26894
06/08/86	1745	4.25	23	428	17280	19969
06/16/86	1555	3.40	23	112	11450	3462
06/22/86	1815	2.52	27	207	6587	3681
06/30/86	1653	2.33	23	154	5700	2370
07/07/86	1645	2.81	28	108	8053	2348
07/14/86	1712	3.87	26	237	14540	9304
07/21/86	1606	1.94	29	133	4045	1453
07/22/86	1500	1.81	30	69	3521	656
07/29/86	0954	1.51	30	45	2449	297

KANKAKEE RIVER near WILMINGTON (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
08/06/86	1320	1.52	23	23	2482	154
08/13/86	1639	1.20	22	44	1545	183
08/20/86	1354	1.09	26	37	1275	127
08/28/86	1119	1.02	19	44	1116	133
09/03/86	1634	0.99	26	51	1051	145
09/08/86	1320	0.91	21	50	888	120
09/11/86	1330	0.97	20	76	1009	207
09/18/86	1142	0.95	28	94	968	246
09/26/86	1107	1.37	22	63	2015	343

HENDERSON CREEK near OQUAWKA

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/06/85	1800	12.26	13	88	42	10
10/08/85	1121	12.03	13	74	26	5
10/14/85	1620	12.14	14	97	34	9
10/20/85	1300	14.05	14	586	209	331
10/25/85	1730	12.76	12	431	82	95
11/01/85	0810	14.50	10	638	258	444
11/10/85	0845	15.42	06	731	367	724
11/17/85	0900	17.72	06	273	674	497
11/19/85	1100	23.61	11	1248	2421	8158
11/24/85	1600	16.65	03	227	526	322
11/29/85	1200	15.45	0	183	371	183
12/06/85	1145	16.55	0	190	513	263
01/04/86	1600	14.10	3	44	214	25
01/22/86	1645	15.78	0	191	412	212
01/27/86	1645	14.53	1	23	262	16
02/04/86	1525	23.25	1	2334	1780	11217
02/11/86	1545	14.34	0	162	240	105
02/20/86	1415	24.77	0	2103	3376	19169
02/26/86	1520	14.28	2	72	234	45
03/28/86	1630	14.71	12	177	282	135
03/04/86	1030	17.05	03	459	580	719
03/05/86	1500	16.64	2	441	525	625
03/14/86	1630	16.69	6	419	531	601
03/20/86	1540	16.10	4	178	453	218
04/04/86	1745	14.19	15	121	224	73
04/11/86	1730	13.84	16	95	186	48
04/18/86	1730	13.65	13	121	167	55
04/24/86	1645	13.45	19	136	147	54
04/30/86	1335	13.34	16	46	136	17
05/02/86	1630	13.54	16	56	156	24
05/09/86	1715	13.23	21	96	125	32
05/16/86	1730	13.08	19	95	111	28
05/23/86	1630	15.36	21	286	360	278
05/30/86	1745	14.62	22	272	272	200
06/06/86	0900	16.37	18	1001	489	1322
06/13/86	1930	14.17	23	254	222	152
06/17/86	1015	13.88	21	184	191	95
06/20/86	1900	13.57	27	201	159	86

HENDERSON CREEK near OQUAWKA (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
06/27/86	1930	13.25	25	164	127	56
07/06/86	1930	13.38	28	155	140	59
07/13/86	0830	16.41	25	648	494	864
07/20/86	1715	13.47	28	129	149	52
07/25/86	1715	13.20	28	119	122	39
07/31/86	1045	14.90	24	1840	305	1515
08/01/86	1500	18.75	24	1671	858	3871
08/08/86	1645	17.02	21	2023	576	3146
08/15/86	1840	13.19	23	65	121	21
08/22/86	1830	12.64	26	21	72	4
08/29/86	1900	12.47	22	30	58	5
09/07/86	1830	12.25	18	29	42	3
09/14/86	1900	12.50	20	73	61	12
09/17/86	1045	12.43	15	43	55	6
09/19/86	1715	13.46	18	992	148	396
09/28/86	1720	16.12	21	288	456	355

SPOON RIVER at LONDON MILLS

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/08/85	1500	2.33	14		75	
10/14/85	1200	2.62	14	314	117	99
10/19/85	1340	3.80	15	218	339	199
10/27/85	1600	2.87	14	169	157	72
11/10/85	1600	8.61	6	1150	1952	6061
11/13/85	1045	6.67	9	788	1181	2513
11/16/85	1645	11.42	7	464	3450	4322
11/19/85	1430	19.34	12	888	11720	28100
11/24/85	1700	9.00	3	259	2142	1498
12/01/85	1300	13.85	5	1690	5173	23604
12/08/85	1715	6.99	2	192	1299	673
12/16/85	1530	7.79	0	145	1611	631
01/19/86	1700	8.97	0	271	2127	1556
01/27/86	1700	4.12	0	121	412	135
02/02/86	1700	4.04	0	194	393	206
02/19/86	0930	11.90	0	1055	3772	10744
02/25/86	1615	4.91	1	150	613	248
03/02/86	1650	5.83	2	326	885	779
03/05/86	1330	7.74	02	782	1592	3361
03/11/86	1730	8.88	6	7300	2083	41056
03/17/86	1615	5.21	6	246	695	462
03/23/86	1630	5.05	7	234	651	411
03/30/86	1745	4.44	12	211	494	281
04/06/86	1800	4.03	16	153	391	161
04/13/86	1730	3.75	15	146	328	129
04/20/86	1800	3.60	14	145	298	117
04/27/86	2015	3.37	21	168	250	113
04/30/86	0943	3.40	18	119	257	83
05/05/86	1330	3.75	18	291	328	258
05/11/86	1515	3.46	20	286	269	208
05/18/86	1220	7.96	16	3878	1678	17570
05/26/86	1600	4.50	17	440	510	606
06/02/86	0715	3.85	28	220	350	208
06/10/86	1015	3.78	23	312	335	282
06/15/86	1300	3.80	21	339	339	310
06/17/86	1315	3.69	25	275	316	235
06/24/86	0710	3.18	23	211	214	122

SPOON RIVER at LONDON MILLS (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
07/01/86	1400	7.12	22	3156	1349	11495
07/06/86	1600	3.78	28	338	335	306
07/14/86	1700	7.35	24	1098	1439	4266
07/22/86	1330	3.81	27	207	341	191
07/27/86	1440	3.34	28	73	244	48
07/31/86	1340	12.05	22	3887	3876	40678
08/06/86	1640	4.87	21	1185	603	1929
08/13/86	1830	2.97	21	51	176	24
08/17/86	1900	2.92	25	66	166	30
08/27/86	1430	2.93	22	40	168	18
09/03/86	2000	2.27	22	64	68	12
09/09/86	1050	2.15	11	59	53	8
09/17/86	1400	2.18	18	124	57	19
09/17/86	1815	2.18	17	84	57	13
09/24/86	1820	6.32	20	1684	1054	4792

LA MOINE RIVER at COLMAR

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/07/85	1215	2.89	12	80	27	6
10/09/85	1320	3.02	14	91	34	8
10/14/85	1412	4.10	14	219	111	66
10/21/85	1238	5.13	15	155	214	90
10/28/85	0811	3.86	10	111	91	27
11/04/85	1207	6.77	8	109	423	124
11/11/85	1545	16.88	5	402	2463	2673
11/17/85	1310	19.97	9	291	4287	3368
11/25/85	1156	4.68	2	94	166	42
12/02/85	1220	20.86	0	325	5442	4775
12/09/85	1230	7.80	0	77	573	119
11/18/85	1330	20.00	10	381	4320	4444
01/20/86	1146	7.97	0	179	599	289
03/04/85	1300	15.71	02	920	2141	5318
03/10/86	0750	7.68	7	119	555	178
03/17/86	0810	7.18	7	66	482	86
03/24/86	1535	6.36	9	83	368	82
03/31/86	1450	5.40	19	93	245	61
04/06/86	1025	4.92	18	307	191	158
04/13/86	1244	4.00	11	107	103	30
04/20/86	1200	4.36	10	117	134	42
04/27/86	1505	4.14	21	117	114	36
05/01/86	1310	4.81	18	269	179	130
05/04/86	1000	4.25	19	54	124	18
05/11/86	1008	5.61	17	517	271	378
05/18/86	1036	19.13	15	1707	3551	16366
05/25/86	0700	5.45	17	216	251	146
06/01/86	1005	5.95	20	363	316	310
06/08/86	0700	22.43	19	629	8937	15178
06/15/86	1000	7.31	19	352	501	476
06/16/86	1245	8.15	23	560	627	948
06/22/86	0701	5.00	18	166	200	90
06/29/86	0700	10.81	22	5425	1097	16068
07/06/86	1900	16.15	24	597	2244	3617
07/14/86	1700	10.50	24	183	1038	513
07/20/86	1955	11.20	23	262	1174	830
07/27/86	2000	6.20	23	90	347	84
07/29/86	1310	6.42	25	4543	376	4612

LA MOINE RIVER at COLMAR (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
08/03/86	0700	4.13	22	129	114	40
08/11/86	1205	3.74	22	134	81	29
08/18/86	1435	3.37	23	79	54	11
08/25/86	1500	3.05	24	200	35	19
09/01/86	1500	2.75	20	90	20	5
09/07/86	1731	2.67	18	82	17	4
09/14/86	1210	3.04	18	147	35	14
09/15/86	1345	3.10	21	113	38	12
09/21/86	1540	6.18	20	553	345	515
09/27/86	1500	6.14	22	219	340	201

LA MOINE RIVER at RIPLEY

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/06/85	0800	5.44	11	133	69	27
10/09/85	1035	5.36	15	588	62	109
10/13/85	0800	7.30	14	107	311	100
10/20/85	0800	10.45	17	654	1039	2038
10/27/85	0800	7.50	15	422	344	435
11/03/85	0800	15.66	10	468	3074	4316
11/10/85	0800	16.82	10	1362	3641	14877
11/17/85	0800	23.46	6	250	9605	7204
11/18/85	1045	24.09	8	255	10860	8308
11/24/85	0800	23.84	3	180	10300	5562
12/08/85	0800	13.55	1	118	2119	750
12/15/85	0800	12.66	0	48	1764	254
01/26/86	0800	7.55	0	15	353	16
02/09/86	0800	8.41	0	142	523	223
03/02/86	0800	14.67	1	382	2602	2982
03/04/86	1015	16.47	02	778	3464	8085
03/09/86	0800	9.93	5	262	900	707
03/16/86	0800	10.23	7	146	980	429
03/19/86	0800	10.46	8	207	1042	647
03/30/86	0800	7.55	16	84	353	89
04/06/86	0800	7.13	17	133	284	113
04/13/86	0800	6.67	15	138	211	87
04/20/86	0800	6.45	14	132	180	71
04/27/86	0800	6.10	19	136	137	56
05/01/86	1115	11.59	17	6734	1382	27919
05/04/86	0800	6.97	17	292	260	228
05/11/86	0800	9.04	20	733	669	1471
05/18/86	0800	17.53	18	5108	4017	61556
05/25/86	0800	8.32	19	267	504	404
05/30/86	0800	11.79	19	2527	1449	10985
06/08/86	0800	18.74	24	939	4722	13302
06/15/86	0800	16.76	21	8784	3611	95157
06/16/86	1000	15.21	22	3170	2857	27170
06/22/86	0800	7.61	26	202	364	221
06/29/86	0800	10.99	25	3110	1194	11140
07/06/86	0800	7.33	26	293	316	278
07/13/86	0800	20.08	26	504	5636	8522
07/20/86	0800	8.13	27	205	465	286

LA MOINE RIVER at RIPLEY (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
07/27/86	0800	6.50	27	68	187	38
07/29/86	1000	15.06	24	3090	2785	25817
08/03/86	0800	6.33	23	112	165	55
08/10/86	0800	6.56	23	163	195	95
08/17/86	0800	5.55	22	78	78	18
08/24/86	0800	5.44	22	98	69	20
08/31/86	0800	5.23	19	79	52	12
09/07/86	0800	5.08	19	99	41	12
09/14/86	0800	5.96	18	235	121	85
09/15/86	1130	5.64	20	774	87	202
09/21/86	0800	6.12	21	169	140	71
09/28/86	0800	9.44	23	371	767	854

SANGAMON RIVER at MONTICELLO

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/03/85	1330	4.21	14	61	24	4
10/11/85	1315	4.24	14	78	26	5
10/15/85	1600	4.31	18	70	29	5
11/01/85	1000	6.85	13	74	267	53
11/08/85	1130	9.09	12	67	655	118
11/12/85	0900	11.10	10	85	1405	322
11/21/85	1415	17.32	9	289	11440	8927
12/12/85	1200	12.78	13	116	2636	826
12/15/85	1300	10.34	13	113	1033	315
12/17/85	1130	10.00	2	100	893	241
01/17/86	1330	6.30	3	72	194	38
02/07/86	1330	11.58	02	87	1688	396
02/20/86	1500	10.70	3	303	1198	980
02/28/86	0800	7.05	0	99	296	79
03/07/86	1100	11.48	0	164	1626	720
03/13/86	1000	9.76	4	150	825	334
03/21/86	0830	8.35	0	122	511	168
03/27/86	1000	7.35	7	133	343	123
04/04/86	1030	6.62	12	123	236	78
04/11/86	1000	6.17	09	60	179	29
04/17/86	0800	5.97	06	33	157	14
04/23/86	1000	5.80	08	52	139	19
05/01/86	0915	6.83	13	247	265	177
05/07/86	1530	7.63	17	460	387	481
05/16/86	0830	7.66	15	806	392	853
05/19/86	1345	7.35	13	221	343	205
05/29/86	1705	7.33	17	193	340	177
06/06/86	1000	6.98	18	274	286	212
06/13/86	1100	9.20	17	217	681	399
06/26/86	1330	5.86	21	120	145	47
07/03/86	0800	9.54	18	409	765	845
07/11/86	0945	7.02	21	313	292	247
07/16/86	1000	8.29	23	274	499	369
07/25/86	0930	5.23	23	130	85	30
07/30/86	0900	4.78	22	80	54	12
08/08/86	1000	4.40	20	36	33	3

SANGAMON RIVER at MONTICELLO (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
08/18/86	1000	4.20	21	117	24	8
08/28/86	1000	4.12	16	119	21	7
09/11/86	1000	3.78	19	173	10	5
09/18/86	1500	3.93	17	169	14	6
09/25/86	1130	4.35	21	96	30	8

KASKASKIA RIVER at VANDALIA

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/01/85	0800	4.95	-	59	591	94
10/08/85	0800	2.20	-	96	62	16
10/15/85	1500	2.95	-	103	174	48
10/21/85	1600	2.24	-	49	67	9
10/28/85	1500	2.32	-	56	78	12
11/05/85	0930	2.60	-	66	118	21
11/11/85	1450	3.80	-	279	333	251
11/18/85	1430	5.74	-	266	791	568
11/25/85	1300	16.80	-	852	5707	13128
12/02/85	1430	11.85	-	248	2839	1901
12/16/85	1330	15.25	-	164	4697	2080
12/23/85	1315	15.65	-	158	4936	2106
12/30/85	1320	15.15	-	214	4638	2680
01/06/86	1400	14.45	-	140	4215	1593
01/13/86	1400	10.25	-	96	2198	570
01/21/86	1350	10.20	-	107	2178	629
02/03/86	1415	16.75	-	837	5671	12816
02/10/86	1500	9.10	-	87	1784	419
02/19/86	1500	8.40	-	62	1558	261
02/25/86	1430	8.35	-	52	1543	217
02/26/86	1400	8.46	-	90	1577	383
03/04/86	1330	7.28	-	38	1218	125
03/11/86	1530	9.40	-	159	1888	810
03/18/86	1500	7.26	-	101	1212	330
03/25/86	1300	7.24	-	49	1206	160
04/01/86	1530	6.10	-	101	887	242
04/08/86	1500	4.45	-	97	474	124
04/16/86	1500	3.72	-	54	317	46
04/22/86	1400	3.25	-	61	227	37
04/29/86	1300	3.15	-	91	209	51
05/06/86	1600	2.95	-	114	174	54
05/12/86	1500	3.00	-	149	182	73
05/29/86	1500	4.23	-	576	425	661
06/04/86	1430	2.65	-	46	125	15
06/10/86	1500	4.70	-	262	531	376
06/17/86	1430	7.33	-	307	1233	1022
06/24/86	0810	5.74	-	143	791	305

KASKASKIA RIVER at VANDALIA (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
07/01/86	0900	9.55	-	1528	1940	8004
07/09/86	1500	4.75	-	244	543	358
07/14/86	1430	4.29	-	196	438	232
07/15/86	1300	4.82	-	258	560	390
07/22/86	1525	3.05	-	85	191	'44
07/29/86	1450	2.95	-	224	174	105
08/05/86	1430	3.49	-	82	272	60
08/12/86	1500	2.95	-	92	174	43
08/19/86	1400	2.80	-	125	149	50
08/27/86	1500	2.25	-	116	68	21
09/08/86	1530	2.03	-	P5	42	14
09/15/86	1600	1.98	-	108	37	11
09/23/86	1600	2.26	-	79	70	15
09/30/86	1100	2.16	-	80	57	1?

EMBARRAS RIVER at STE. MARIE

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/05/85	1500	0.95	-	86	39	9
10/12/85	1500	1.00	-	89	46	11
10/19/85	1600	1.00	-	108	46	13
10/26/85	1400	1.03	-	96	50	13
11/02/85	1400	2.48	-	95	333	85
11/05/85	1400	7.00	-	415	1852	2075
11/19/85	1200	18.60	-	479	8612	11138
11/22/85	1100	20.78	-	260	14250	10003
12/02/85	1200	16.20	-	258	6609	4604
12/13/85	1300	21.33	-	526	15980	22695
12/28/85	1200	4.74	-	127	1000	343
01/05/86	1400	3.47	-	128	598	207
01/15/86	1300	2.88	-	38	435	45
01/21/86	1000	3.34	-	118	561	179
01/27/86	1300	2.74	-	105	398	113
02/06/86	1400	10.47	-	746	3432	6913
02/10/86	1300	7.61	-	380	2108	2163
02/17/86	1300	4.25	-	255	837	576
02/20/86	1120	5.08	-	109	1117	329
02/26/86	1300	4.71	-	176	989	470
03/07/86	1300	5.51	-	435	1272	1494
03/15/86	1700	7.11	-	375	1897	1921
03/20/86	1700	13.43	-	895	4995	12070
03/24/86	1700	5.64	-	263	1320	937
03/29/86	1200	4.23	-	197	831	442
04/05/86	1500	3.57	-	169	627	286
04/12/86	1300	2.87	-	259	432	302
04/19/86	1100	2.62	-	141	368	140
04/26/86	1100	2.37	-	142	307	118
05/05/86	1200	3.74	-	285	678	522
05/12/86	1300	2.46	-	175	328	155
05/14/86	0800	3.38	-	923	572	1425
05/15/86	1145	4.50	19	2092	919	5191
05/19/86	1500	3.82	19	414	702	785
05/27/86	1200	2.57	24	247	355	237
06/04/86	1600	6.40	24	647	1610	2812
06/20/86	1500	3.10	33	194	494	259

EMBARRAS RIVER at STE. MARIE (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
06/27/86	1500	2.10	33	302	245	200
07/02/86	1600	3.81	27	1223	699	2308
07/08/86	1500	1.95	34	174	213	100
07/12/86	1500	5.20	26	889	1160	2784
07/14/86	1800	7.80	27	652	2189	3853
07/23/86	1600	1.87	-	73	196	39
07/30/86	1600	1.73	32	93	168	42
08/06/86	1700	1.62	26	1313	146	518
08/16/86	1500	1.14	24	107	65	19
08/22/86	1600	0.91	29	90	34	8
08/30/86	1500	0.77	-	28	19	1
09/08/86	1500	0.71	23	49	13	2
09/15/86	1500	0.71	25	48	13	2

SILVER CREEK near FREEBURG

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/04/85	1600	0.58	-	39	9	1
10/09/85	0830	0.52	-	15	7	0
10/17/85	1100	1.08	-	31	33	3
10/22/85	1300	1.34	-	78	47	10
10/30/85	1700	1.29	-	16	44	2
11/04/85	1300	1.25	-	14	42	2
11/13/85	0800	1.25	-	91	42	10
11/22/85	1630	12.70	-	178	2102	1010
12/07/85	1530	2.82	-	44	166	20
01/12/86	1300	1.93	-	18	88	4
01/17/86	1700	1.91	-	8	86	2
01/24/86	1500	1.71	-	10	71	2
01/30/86	1200	1.52	-	10	59	2
02/03/86	1200	20.20	-	799	8553	18451
02/10/86	1530	10.87	-	224	1595	965
02/17/86	1400	3.80	-	109	274	81
02/24/86	1300	3.39	-	74	226	45
02/26/86	1030	3.15	-	49	200	26
03/04/86	1200	2.37	-	40	124	13
03/11/86	1000	2.28	-	61	116	19
03/18/86	1700	2.87	-	341	171	157
03/31/86	1200	1.93	-	63	88	15
04/07/86	1800	1.63	-	145	66	26
04/14/86	1200	1.52	-	129	59	20
04/21/86	1200	1.55	-	142	61	23
04/28/86	1000	1.15	-	142	37	14
05/05/86	0900	1.10	-	123	34	11
05/12/86	0900	1.09	-	171	33	15
05/22/86	1300	1.08	-	78	33	7
05/27/86	1200	1.10	-	90	34	8
06/08/86	1300	1.64	-	365	67	66
06/10/86	1700	8.60	-	2118	1066	6096
06/19/86	2000	1.05	-	87	31	7
06/27/86	1100	0.67	-	57	13	2
07/11/86	1300	2.54	-	355	139	133
07/15/86	0800	7.38	-	549	828	1227
07/15/86	0920	7.41	24	742	834	1671

SILVER CREEK near FREEBURG (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)			Qs (t/d)
07/28/86	1900	0.66	-	40	12			1
08/03/86	0900	0.46	-	68	5			1
08/19/86	1200	0.64	-			97	11	3
08/28/86	1200	0.68	-	73	13			3
09/04/86	1400	0.49	-	50	6			1
09/08/86	1400	0.45	-	40	5			0
09/19/86	1200	2.26	-	451	114			139

CACHE RIVER at FORMAN

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
10/05/85	1310	1.38	-	20	11	1
10/14/85	1515	2.50	-	83	66	15
10/15/85	1805	4.64	-	209	251	142
10/19/85	1220	1.67	-	47	22	3
10/20/85	1620	2.74	-	78	83	17
10/23/85	1755	8.13	-	1611	705	3067
10/24/85	1700	5.88	-	170	393	180
10/28/85	1640	2.38	-	33	59	5
10/30/85	1648	8.43	-	235	753	478
10/31/85	1655	9.70	-	274	967	715
11/02/85	1630	8.52	-	124	767	257
11/11/85	1125	2.98	-	31	100	8
11/15/85	1620	6.81	-	112	511	155
11/17/85	1150	7.79	-	110	653	194
11/20/85	1700	8.88	-	164	826	366
11/25/85	1745	7.45	-	49	601	80
11/26/85	1605	10.33	-	632	1078	1839
11/27/85	1545	13.48	-	380	1759	1805
11/28/85	1430	13.25	-	190	1706	875
12/01/85	1525	10.82	-	76	1167	239
12/10/85	1605	4.35	-	21	222	13
12/11/85	1612	10.18	-	827	1052	2349
12/15/85	1445	6.53	-	44	474	56
12/24/85	1300	3.46	-	20	139	7
12/29/85	1610	2.63	-	18	75	4
01/05/86	1648	2.35	-	19	57	3
01/12/86	1530	2.03	-	9	39	1
01/19/86	1630	3.80	-	126	169	57
01/26/86	1450	2.62	-	18	74	4
02/01/86	1505	2.25	-	5	51	1
02/02/86	1645	2.45	-	85	63	14
02/03/86	1550	13.46	-	2342	1754	11091
02/04/86	1600	13.67	-	546	1802	2657
02/08/86	1029	9.88	-	140	999	378
02/15/86	1331	4.49	-	42	236	27
02/17/86	1754	6.63	-	98	487	129
02/23/86	1620	3.57	-	34	148	14
03/02/86	1606	2.67	-	20	78	4
03/09/86	1545	2.39	-	15	59	2
03/13/86	1658	9.92	-	415	1006	1127

CACHE RIVER at FORMAN (continued)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
03/16/86	1645	7.25	-	165	572	255
03/23/86	1800	4.08	-	38	195	20
03/30/86	1700	2.67	-	44	78	9
04/05/86	1530	2.63	-	61	75	12
04/13/86	1705	2.55	-	52	70	10
04/20/86	1650	3.11	-	70	110	21
04/21/86	1545	5.76	-	203	378	207
04/22/86	1710	6.10	-	152	420	172
04/28/86	1811	3.75	-	109	164	48
04/29/86	1545	3.45	-	133	138	50
05/04/86	1825	2.11	-	56	44	7
05/11/86	1550	1.71	-	52	24	3
05/14/86	1650	1.81	-	43	28	3
05/15/86	1405	10.45	-	1899	1100	5640
05/16/86	1045	16.69	19	672	2691	4883
05/17/86	0715	19.44	-	291	3729	2930
05/17/86	1625	20.13	-	185	4019	2007
05/18/86	0725	21.29	-	134	4538	1642
05/18/86	1750	21.69	-	134	4733	1712
05/20/86	1502	16.40	19	156	2588	1090
05/21/86	1338	13.75	18	154	1821	757
05/24/86	0905	7.20	-	118	565	180
05/25/86	1455	8.46	-	213	758	436
05/26/86	0920	12.60	-	953	1555	4001
05/26/86	1855	12.44	-	422	1518	1730
06/01/86	1830	4.55	-	85	242	56
06/05/86	1815	5.57	-	133	355	127
06/07/86	1030	5.35	-	233	329	207
06/10/86	0730	6.67	24	159	492	211
06/10/86	1353	6.27	25	166	441	198
06/15/86	1655	2.53	-	58	68	11
06/22/86	1625	1.69	31	33	23	2
06/27/86	1103	1.45	26	43	13	2
06/29/86	1655	1.42	31	28	12	1
07/13/86	1617	1.40	30	43	12	1
07/15/86	0940	3.27	26	267	123	89
07/23/86	1449	1.37	29	75	11	2
07/27/86	1145	1.27	29	92	8	2
08/03/86	1610	1.13	-	29	5	0
08/07/86	1439	1.26	25	453	8	10
08/08/86	0930	1.29	25	49	9	1
08/10/86	1615	6.46	25	1381	465	1734
08/12/86	1122	5.37	24	324	332	290

CACHE RIVER at FORMAN (concluded)

Date	Time	Stage (ft)	Temp (° C)	Cs (mg/l)	Qw (cfs)	Qs (t/d)
08/12/86	1143	5.35	-	313	329	278
08/19/86	1750	12.02	26	85	1422	326
08/24/86	1640	1.25	28	46	8	1
08/28/86	1409	1.13	24	51	5	1
08/31/86	1515	1.09	25	30	4	0
09/04/86	1156	1.14	24	38	5	1
09/07/86	1750	1.03	20	22	3	0
09/11/86	1147	1.01	23	21	3	0
09/18/86	1640	1.29	21	92	9	2
09/19/86	1625	4.42	23	298	229	184
09/20/86	1745	3.73	24	220	163	97
09/23/86	1840	1.67	24	281	22	17
09/24/86	1830	2.59	25	181	72	35
09/26/86	1254	3.57	24	183	148	73
09/28/86	1545	1.78	28	68	27	5

Appendix B. Suspended Sediment Sample Record, Water Year 1986

ISWS ID	No. of Samples Collected: Suspended sediment	No. of Samples Collected: Particle size
102	43	3
103	51	3
105	51	3
118	37	3
122	54	4
123	46	3
124	47	3
228	54	4
229	52	4
242	48	4
245	50	4
249	41	4
361	51 -	
362	50	1
367	44 -	
378*	98 -	
Totals	817	43

* The samples for this station, and their laboratory analyses, were supplied by the Illinois State Water Survey's Cache River Project.

Appendix C. Statistical Parameters for the Annual Regression Equations, Water Year 1986

$$Qs = a\,Qw^{b}$$

Station Name	ISWS ID	Coefficient (a)	Slope (b)	Correlation coefficient (r)	Standard error of estimate
Pecatonica R. at Freeport	102	6.74579	0.60359	0.59051	0.47988
Rock R. at Rockton	103	16.64799	0.47828	0.44140	0.63071
Kishwaukee R. near Perryville	105	0.22794	0.99199	0.92957	0.40207
Big Bureau Cr. at Princeton	118	0.04149	1.33948	0.91195	0.88654
Vermilion R. near Leonore	122	0.01218	1.40580	0.92129	0.88891
Mazon R. near Coal City	123	0.03074	1.34173	0.94579	0.85767
Kankakee R. near Wilmington	124	0.01061	1.30164	0.88833	0.90399
Henderson Cr. near Oquawka	228	0.01584	1.55455	0.96530	0.67284
Spoon R. at London Mills	229	0.02107	1.48203	0.96024	0.62561
Lamoine R. at Colmar	242	0.10586	1.23890	0.91906	0.99236
Lamoine R. at Ripley	245	0.11007	1.23635	0.92270	0.89337
Sangamon R. at Monticello	249	0.02899	1.45069	0.94918	0.67277
Kaskaskia R. at Vandalia	361	0.10211	1.27915	0.95281	0.55335
Embarras R. at Ste. Marie	362	0.00484	1.72294	0.95459	0.70555
Silver Cr. near Freeburg	367	0.12652	1.20601	0.95123	0.74841
Cache R. at Forman	378	0.04372	1.35744	0.88371	0.92194

Note: Q_s in tons/day, Q_w in cfs

Appendix D. Particle Size Analyses,
Water Year 1986

ISWS ID	Date	Cs*	% < 62.5 μ **
102	11/06/85	140.62	72.73
	04/18/86	164.35	57.86
	08/15/86	151.66	73.66
103	11/08/85	68.48	86.43
	04/22/86	86.76	79.16
	07/23/86	80.23	91.12
105	11/11/85	1473.72	5.95
	04/24/86	86.75	49.96
	08/07/86	81.86	38.31
118	11/14/85	224.62	83.75
	04/17/86	76.25	73.16
	08/08/86	78.74	86.09
122	11/12/85	147.73	94.92
	03/12/86	299.02	96.30
	06/09/86	182.35	77.31
	09/30/86	144.05	93.38
123	11/13/86	165.80	74.41
	04/23/86	77.40	93.33
	07/24/86	77.48	63.79
124	11/12/85	91.49	95.52
	04/23/86	52.86	95.52
	07/22/86	68.79	72.86
228	10/08/85	286.42	94.65
	03/04/86	459.56	96.62
	06/17/86	184.27	83.01
	09/17/86	45.98	97.35
229	10/08/85	91.33	65.51
	03/05/86	781.82	98.00
	06/17/86	274.57	82.80
	09/17/86	123.66	76.32

Appendix D. Concluded

ISWS ED	Date	Cs*	% < 62.5 μ **
242	10/09/85	91.11	82.67
	03/04/86	919.65	98.46
	06/16/86	896.00	81.42
	09/15/86	579.85	37.10
245	10/09/85	587.96	96.17
	03/04/86	778.47	95.20
	06/16/86	1383.63	99.40
	09/15/86	774.43	93.32
249	11/12/85	84.84	98.23
	02/07/86	86.67	98.75
	04/23/86	52.16	58.40
	08/28/86	119.21	74.37
362	05/15/86	2097.95	99.71

* Concentration of suspended sediment in parts per million

** Percent finer than 62.5 microns