

04092677 GRAND CALUMET RIVER AT INDUSTRIAL HWY AT GARY, IN

LOCATION.--Lat 41°36'28", long 87°23'39", in NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.6, T.37 N., R.8W., Lake County, Hydrologic Unit 04040001, (HIGHLAND, IN quadrangle), on left bank, 30 feet upstream of U.S. 12 (Industrial Highway), 100 feet streamward of the centerline of Interstate 90, 2,000 feet downstream of Norfolk and Western railroad bridge, 6,000 feet southeast of Gary Airport terminal.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1991 to September 1994, (gage heights only), October 1994 to current year.

GAGE.--Water-stage recorder and Acoustic Doppler Velocity Meter. Datum of gage is 580.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. Discharge is primarily from industrial and city effluent. Gage sensors were removed and gage temporarily shutdown from May 2, 2001 through December 5, 2001, due to bridge replacement.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	565	541	476	456	423	495	502	538	558	569	490	591
2	572	589	479	461	430	485	490	534	546	565	533	582
3	571	558	471	464	435	477	501	530	541	589	528	583
4	564	569	470	462	426	490	494	526	549	618	581	582
5	563	573	479	443	433	520	501	512	549	577	528	590
6	573	542	474	439	434	492	513	519	556	578	547	584
7	558	535	461	429	433	479	509	532	560	582	552	573
8	573	524	471	441	438	479	513	540	566	571	561	553
9	580	520	467	428	434	475	522	557	558	591	561	575
10	580	511	475	437	421	475	512	571	548	584	559	591
11	580	524	462	431	433	473	513	576	567	598	553	590
12	572	518	457	439	436	463	511	574	578	609	535	597
13	582	498	453	442	442	477	506	586	543	600	547	590
14	605	512	448	436	441	480	523	604	525	570	548	581
15	574	505	439	431	432	484	533	560	522	597	555	566
16	569	513	458	435	426	455	545	568	514	601	567	550
17	573	512	440	448	434	468	556	581	531	594	557	513
18	576	573	441	432	433	476	547	591	531	595	576	583
19	573	533	445	417	450	476	548	571	500	580	569	590
20	580	510	453	425	467	478	551	585	499	584	574	580
21	575	524	454	437	459	475	556	597	501	638	572	567
22	565	538	448	420	466	475	531	601	513	642	582	557
23	569	551	451	436	465	475	545	628	530	585	575	555
24	580	543	449	432	453	493	553	585	535	571	575	549
25	587	526	447	428	443	493	563	586	532	569	601	546
26	556	517	448	425	452	537	537	588	536	566	621	576
27	567	511	450	428	461	516	534	562	546	549	601	578
28	555	492	459	424	466	525	535	562	550	547	598	564
29	531	496	420	427	476	526	551	554	538	544	597	603
30	540	488	445	416	---	511	555	580	550	524	594	608
31	548	---	458	415	---	508	---	593	---	505	588	---
TOTAL	17,656	15,846	14,148	13,484	12,842	15,131	15,850	17,591	16,172	17,992	17,525	17,247
MEAN	570	528	456	435	443	488	528	567	539	580	565	575
MAX	605	589	479	464	476	537	563	628	578	642	621	608
MIN	531	488	420	415	421	455	490	512	499	505	490	513

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2004, BY WATER YEAR (WY)

MEAN	511	489	467	458	474	490	509	523	544	550	548	542
MAX	591	528	523	515	534	548	579	608	662	711	711	625
(WY)	(2003)	(2004)	(2000)	(1999)	(1999)	(1999)	(1999)	(2002)	(2002)	(2002)	(2003)	(2002)
MIN	454	438	425	416	419	404	381	400	459	434	469	478
(WY)	(1995)	(1996)	(1996)	(2002)	(1996)	(1996)	(1996)	(1996)	(1995)	(1995)	(1995)	(1995)

SUMMARY STATISTICS

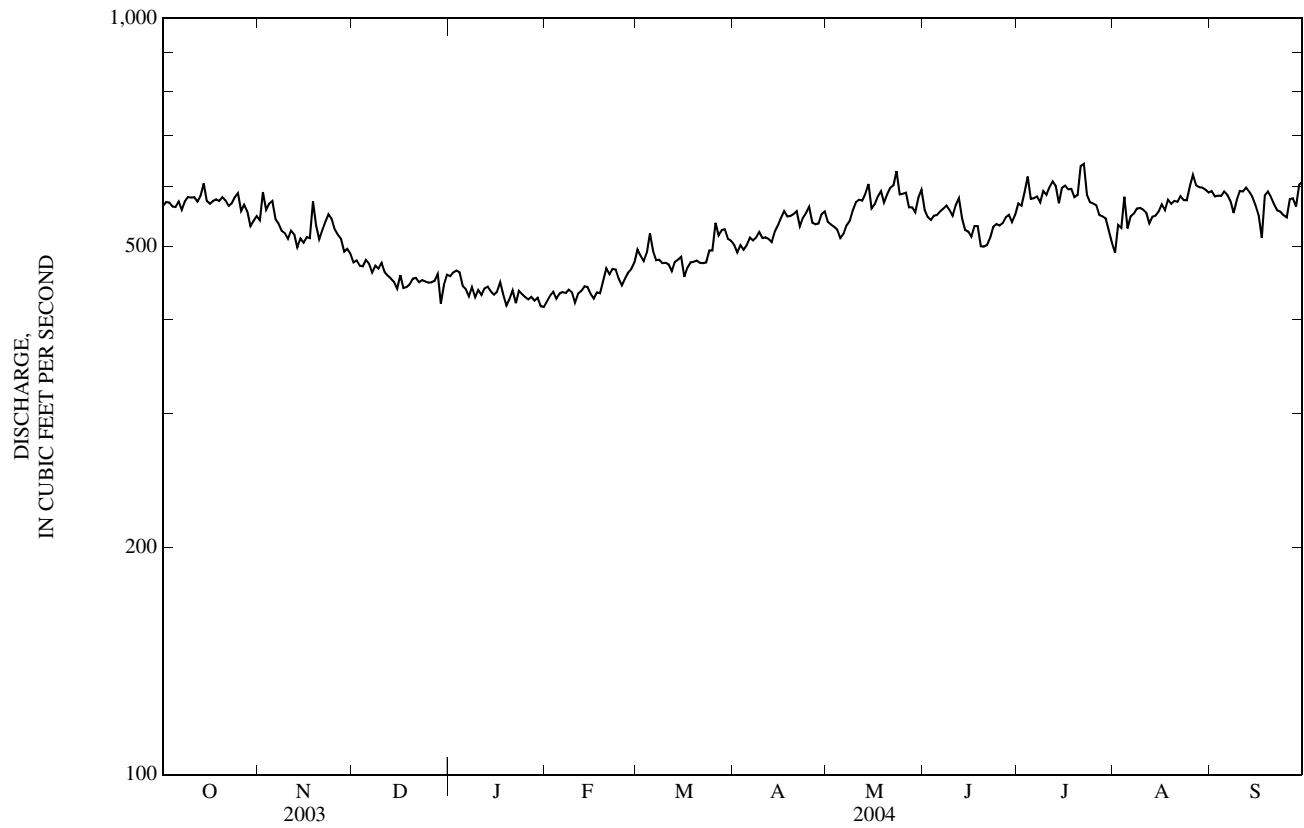
FOR 2003 CALENDAR YEAR

FOR 2004 WATER YEAR

WATER YEARS 1995 - 2004

ANNUAL TOTAL	200,865	191,484		
ANNUAL MEAN	550	523		509
HIGHEST ANNUAL MEAN				556
LOWEST ANNUAL MEAN				444
HIGHEST DAILY MEAN	783	Jul 27	642	Jul 22
LOWEST DAILY MEAN	414	Feb 16	415	Jan 31
ANNUAL SEVEN-DAY MINIMUM	424	Feb 12	423	Jan 26
MAXIMUM PEAK FLOW			934	Jul 21
MAXIMUM PEAK STAGE			4.26	Jul 21
10 PERCENT EXCEEDS	700		588	598
50 PERCENT EXCEEDS	542		535	502
90 PERCENT EXCEEDS	436		437	432

04092677 GRAND CALUMET RIVER AT INDUSTRIAL HWY AT GARY, IN—Continued



04092750 INDIANA HARBOR CANAL AT EAST CHICAGO, IN

LOCATION.--Lat 41°38'57", long 87°28'07", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.20, T.37N., R.9W., Lake County, Hydrologic Unit 04040001, (WHITING, IN quadrangle), on left bank at the site of the former Canal Street drawbridge, 3,200 ft east of U.S. Highway 20, 3,500 ft north of U.S. Highway 12, 4,300 ft south of 129th Street, and 1,000 ft west of the crossing of the centerlines of Cline Avenue and the Indiana Harbor Canal.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1991 to current year.

REVISED RECORDS.--WDR IN-96-1: Instantaneous peak flow date.

GAGE.--Water-stage recorder, Acoustic Doppler Velocity Meter. Datum of gage not established. Prior to Sept. 22, 2000, gage was located 0.8 mi downstream.

REMARKS.--Records fair. Positive discharges indicate flow towards Lake Michigan; negative discharges indicate flow away from Lake Michigan.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	460	512	620	540	484	601	518	536	567	327	418	443
2	529	854	512	553	485	597	502	441	522	440	427	421
3	562	735	518	601	562	585	454	429	506	470	502	469
4	486	627	491	590	528	636	505	394	454	568	633	462
5	430	809	574	561	530	797	440	428	435	524	546	441
6	446	626	585	536	523	671	475	536	387	449	512	513
7	427	549	525	503	505	591	502	587	388	483	393	517
8	468	460	501	495	578	603	444	607	405	391	426	563
9	460	464	479	543	522	563	480	543	415	568	443	545
10	490	541	593	550	495	596	442	449	497	511	513	452
11	458	584	604	543	503	532	516	482	585	402	537	449
12	658	513	562	530	489	512	474	394	721	442	490	419
13	547	576	535	544	534	511	541	581	555	475	487	412
14	735	541	493	491	424	542	428	666	576	552	404	416
15	547	444	570	576	442	536	421	e572	565	519	454	486
16	527	438	578	521	456	539	390	508	484	431	417	641
17	526	444	551	522	482	515	631	471	404	480	465	464
18	564	799	489	534	571	540	600	667	437	394	552	529
19	637	764	514	484	519	580	483	518	487	400	549	429
20	526	e639	640	502	559	519	508	547	358	391	506	460
21	551	599	550	547	585	549	517	674	381	550	494	434
22	585	551	517	526	484	503	461	885	430	625	422	476
23	592	697	511	551	461	441	402	813	372	527	401	465
24	600	787	516	518	516	541	419	633	584	500	528	481
25	729	645	581	508	540	544	527	642	473	445	638	490
26	550	529	494	541	511	518	425	611	385	502	612	453
27	582	532	529	514	548	482	449	467	363	448	633	421
28	562	597	571	547	515	538	493	447	373	405	830	498
29	502	671	530	541	513	579	397	461	330	426	712	538
30	485	585	553	556	---	521	391	644	317	468	545	519
31	500	---	498	506	---	582	---	750	---	475	484	---
TOTAL	16,721	18,112	16,784	16,574	14,864	17,364	14,235	17,383	13,756	14,588	15,973	14,306
MEAN	539	604	541	535	513	560	474	561	459	471	515	477
MAX	735	854	640	601	585	797	631	885	721	625	830	641
MIN	427	438	479	484	424	441	390	394	317	327	393	412

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2004, BY WATER YEAR (WY)

MEAN	583	592	614	613	615	636	605	630	585	571	583	562
MAX	752	916	1,094	963	843	1,111	922	1,016	724	761	759	759
(WY)	(1997)	(1997)	(1997)	(1997)	(1997)	(1999)	(1999)	(1999)	(1996)	(1996)	(1996)	(1996)
MIN	418	407	429	467	470	481	474	508	439	471	467	416
(WY)	(1998)	(1998)	(1998)	(1998)	(2003)	(2003)	(2004)	(1998)	(1998)	(2004)	(1998)	(1997)

SUMMARY STATISTICS

FOR 2003 CALENDAR YEAR

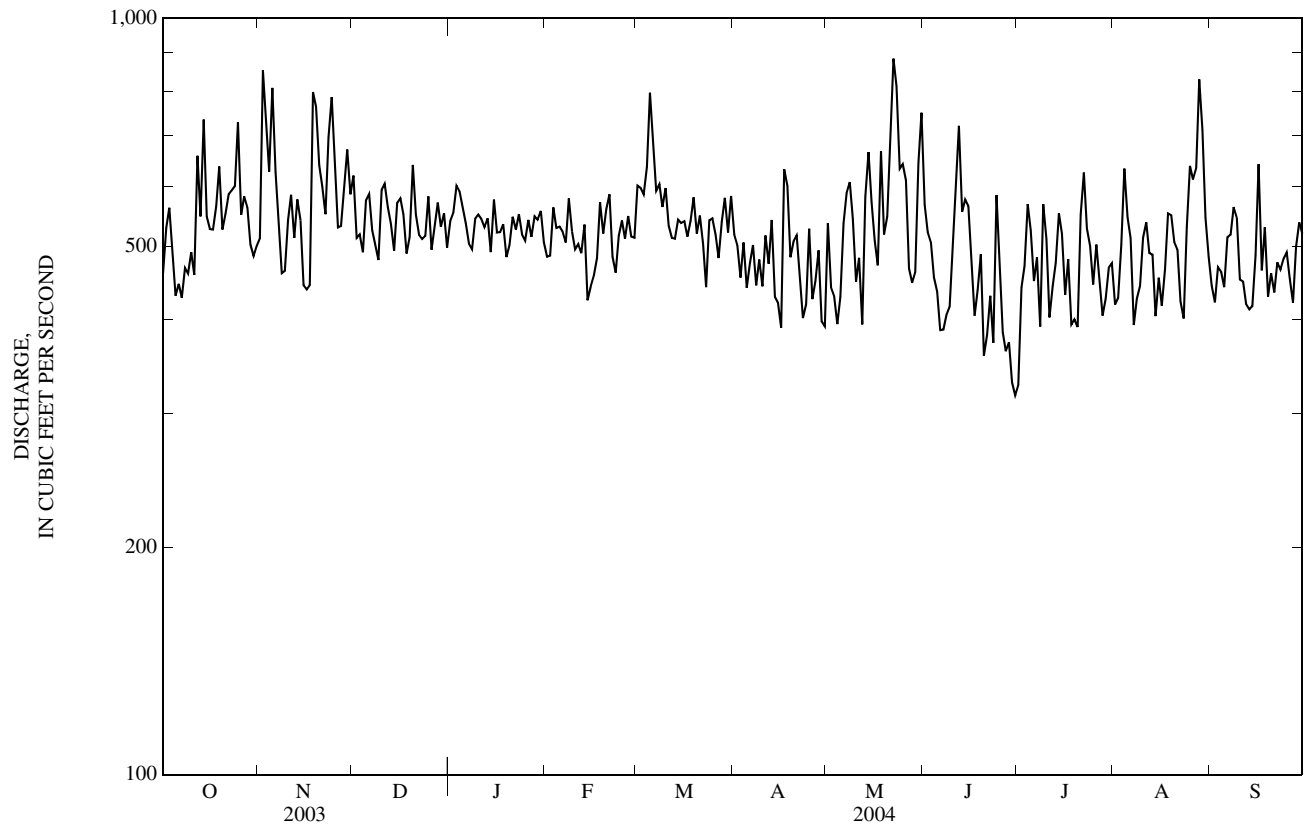
FOR 2004 WATER YEAR

WATER YEARS 1994 - 2004

ANNUAL TOTAL	195,000	190,660	
ANNUAL MEAN	534	521	599
HIGHEST ANNUAL MEAN			727
LOWEST ANNUAL MEAN			462
HIGHEST DAILY MEAN	938	Jul 27	2,120
LOWEST DAILY MEAN	332	Mar 17	-641
ANNUAL SEVEN-DAY MINIMUM	420	Apr 23	362
MAXIMUM PEAK FLOW			7,070
MAXIMUM PEAK STAGE			10.51
10 PERCENT EXCEEDS	653	626	756
50 PERCENT EXCEEDS	524	516	571
90 PERCENT EXCEEDS	433	421	441

e Estimated

04092750 INDIANA HARBOR CANAL AT EAST CHICAGO, IN—Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04093000 DEEP RIVER AT LAKE GEORGE OUTLET AT HOBART, IN

LOCATION.--Lat 41°32'10", long 87°15'25", in NW $\frac{1}{4}$ NW $\frac{1}{4}$ sec.32, T.36 N., R.7 W., Lake County, Hydrologic Unit 04040001, (GARY, IN quadrangle), on left bank at upstream side of bridge on Ridge Road in Hobart, 300 ft upstream from Duck Creek, and 400 ft downstream from Lake George Dam, 3.3 mi north of Ainsworth, IN.

DRAINAGE AREA.--124 mi².

PERIOD OF RECORD.--April 1947 to current year.

REVISED RECORDS.--WSP 1337: 1953. WSP 1507: 1956. WDR IN-72-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 588.17 ft above National Geodetic Vertical Datum of 1929 (levels by State of Indiana, Department of Natural Resources). Prior to July 29, 1952, nonrecording gage, and July 30, 1952, to July 20, 1955, water-stage recorder at site 400 ft upstream at datum 11.80 ft higher.

REMARKS.--Records fair. Flow subject to regulation by operation of Lake George Dam.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

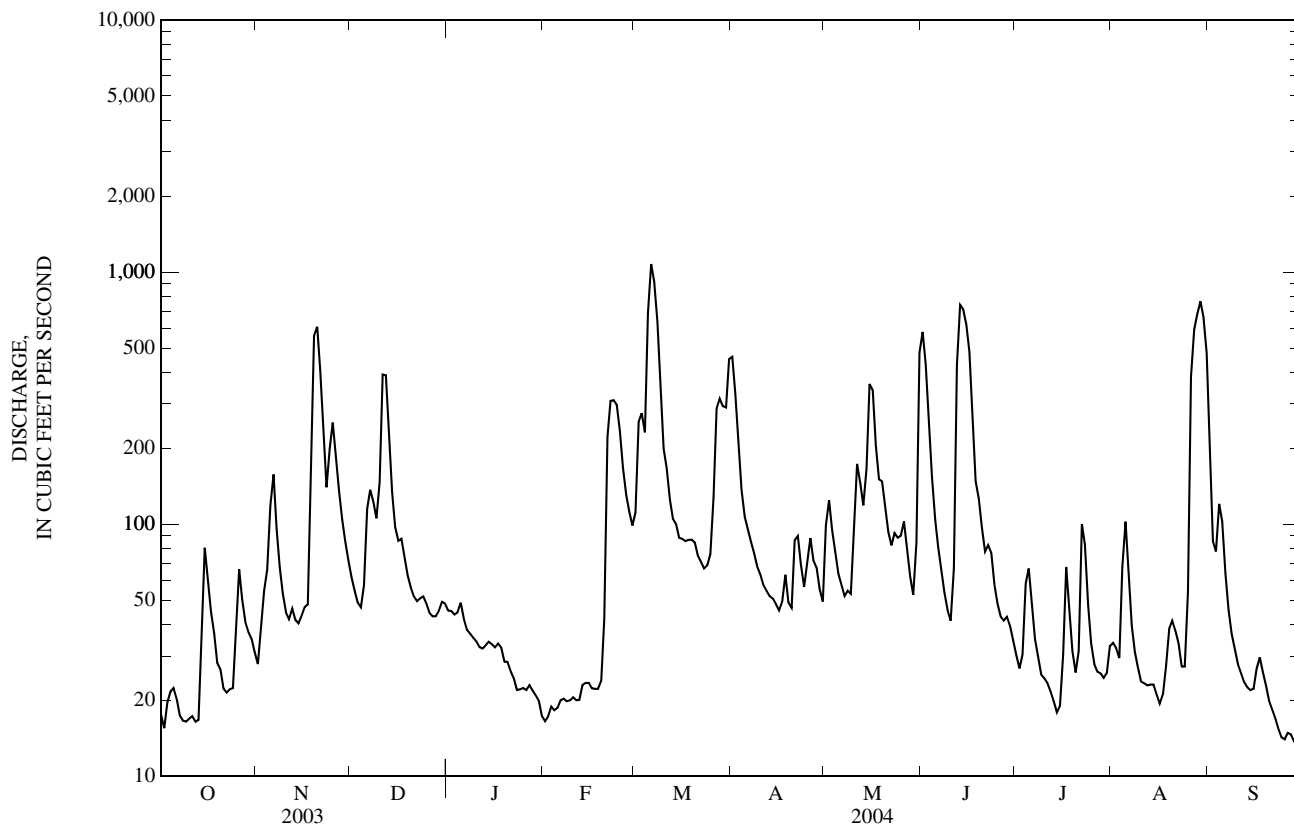
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	28	62	45	17	111	461	99	579	30	34	167
2	16	39	54	45	17	255	329	125	431	27	32	86
3	20	54	49	44	19	275	207	95	270	30	29	78
4	22	66	47	45	18	231	136	77	154	58	68	120
5	22	118	57	49	19	689	107	64	105	67	102	103
6	20	158	115	42	20	1,080	95	57	81	47	60	64
7	17	96	137	38	20	917	85	52	65	35	39	46
8	17	67	122	37	20	637	77	55	54	29	31	37
9	16	53	106	35	20	350	68	53	46	25	27	32
10	17	45	147	34	21	199	63	88	41	24	24	28
11	17	42	392	33	20	167	57	174	67	23	23	26
12	16	46	390	32	20	125	54	145	428	22	23	24
13	17	42	238	33	23	105	52	119	741	20	23	23
14	43	40	134	34	23	100	51	166	713	18	23	22
15	81	43	98	33	23	88	48	360	619	19	21	22
16	61	47	86	32	22	87	45	340	484	30	19	27
17	45	48	87	34	22	86	49	206	256	68	21	30
18	37	129	74	32	22	87	63	151	148	47	27	26
19	28	558	63	29	24	87	49	148	126	31	39	23
20	27	607	56	28	42	85	47	118	97	26	41	20
21	22	404	52	26	223	75	86	93	78	31	38	18
22	21	219	50	24	309	71	90	82	83	100	34	17
23	22	140	51	22	311	67	69	92	77	83	27	15
24	22	199	52	22	298	69	56	88	57	48	27	14
25	39	253	49	22	233	76	70	90	48	34	54	14
26	66	186	45	22	167	128	88	102	43	28	385	15
27	50	136	43	23	131	287	72	82	41	26	592	15
28	41	104	43	22	112	315	67	62	43	26	680	14
29	37	86	45	21	99	294	55	52	40	25	766	14
30	35	72	49	20	---	290	49	85	34	26	663	14
31	31	---	48	17	---	451	---	479	---	33	477	---
TOTAL	943	4,125	3,041	975	2,315	7,884	2,845	3,999	6,049	1,136	4,449	1,154
MEAN	30.4	138	98.1	31.5	79.8	254	94.8	129	202	36.6	144	38.5
MAX	81	607	392	49	311	1,080	461	479	741	100	766	167
MIN	16	28	43	17	17	67	45	52	34	18	19	14
CFSM	0.25	1.11	0.79	0.25	0.64	2.05	0.76	1.04	1.63	0.30	1.16	0.31
IN.	0.28	1.24	0.91	0.29	0.69	2.37	0.85	1.20	1.81	0.34	1.33	0.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2004, BY WATER YEAR (WY)

MEAN	57.2	90.8	108	115	149	213	208	153	118	68.1	50.5	46.6
MAX	433	499	393	475	456	688	477	454	557	394	427	312
(WY)	(1955)	(1986)	(1983)	(1993)	(1997)	(1979)	(1950)	(1970)	(1993)	(2003)	(1990)	(1993)
MIN	6.42	10.7	12.5	10.8	14.7	38.3	23.1	21.8	16.4	10.7	8.81	6.91
(WY)	(1957)	(1957)	(1963)	(1977)	(1964)	(1957)	(1963)	(1958)	(1988)	(1988)	(1964)	(1948)

04093000 DEEP RIVER AT LAKE GEORGE OUTLET AT HOBART, IN—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1948 - 2004	
ANNUAL TOTAL	39,088		38,915		115	
ANNUAL MEAN	107		106		234	
HIGHEST ANNUAL MEAN					35.3	
LOWEST ANNUAL MEAN					1993	
HIGHEST DAILY MEAN	1,560	Jul 22	1,080	Mar 6	3,900	Nov 28, 1990
LOWEST DAILY MEAN	12	Sep 20	14	Sep 24	0.00	Nov 5, 1978
ANNUAL SEVEN-DAY MINIMUM	14	Jan 23	14	Sep 24	0.04	Aug 29, 1996
MAXIMUM PEAK FLOW			1,160	Mar 6	4,230	Nov 28, 1990
MAXIMUM PEAK STAGE			10.35	Mar 6	19.48	Oct 11, 1954
ANNUAL RUNOFF (CFSM)	0.864		0.857		0.924	
ANNUAL RUNOFF (INCHES)	11.73		11.67		12.55	
10 PERCENT EXCEEDS	274		279		272	
50 PERCENT EXCEEDS	42		50		48	
90 PERCENT EXCEEDS	18		20		14	



STREAMS TRIBUTARY TO LAKE MICHIGAN

04094000 LITTLE CALUMET RIVER AT PORTER, IN

LOCATION.--Lat 41°37'18", long 87°05'13", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.34, T.37 N., R.6 W., Porter County, Hydrologic Unit 04040001, (CHESTERTON, IN quadrangle), on right bank at downstream end of county road bridge, 200 ft upstream from bridge on U.S. Highway 20, 0.8 mi northwest of Porter, and 4.5 mi upstream from Salt Creek.

DRAINAGE AREA.--66.2 mi².

PERIOD OF RECORD.--May 1945 to current year.

REVISED RECORDS.--WSP 1084: 1945. WSP 1337: 1946-47. WDR IN-72-1: Drainage area. WDR IN-83-1: 1982.

GAGE.--Water-stage recorder. Datum of gage is 603.48 ft above National Geodetic Vertical Datum of 1929. Prior to June 26, 1952, nonrecording gage at same site and datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	46	42	45	e30	77	157	53	513	30	33	62
2	27	59	41	46	e30	163	98	52	255	29	30	51
3	28	64	40	45	e30	147	82	49	104	31	28	46
4	30	63	39	43	e30	99	69	45	74	51	54	43
5	32	94	46	44	e30	325	61	41	62	40	51	40
6	29	91	63	42	e29	494	e57	40	53	34	36	38
7	30	70	60	44	e29	192	53	38	50	30	32	38
8	33	64	57	40	e29	113	51	40	45	29	31	36
9	34	61	51	39	e29	91	48	37	42	28	29	35
10	28	52	73	37	e29	77	46	37	41	29	28	33
11	27	51	114	37	e29	71	45	40	65	30	27	31
12	28	52	89	39	e29	63	45	40	142	29	32	30
13	30	52	63	41	e28	61	44	42	292	29	40	30
14	47	49	53	41	e28	62	43	73	116	31	36	29
15	65	51	49	40	e28	61	42	125	94	32	32	29
16	51	54	49	38	e28	57	43	88	68	28	29	33
17	42	50	49	38	e28	55	44	60	57	29	34	32
18	39	71	49	38	e28	57	45	78	53	28	84	29
19	39	160	49	34	e28	57	41	113	46	26	61	28
20	37	119	45	e33	50	55	40	76	46	26	47	28
21	36	74	42	e33	135	54	44	62	44	35	41	27
22	39	59	43	e33	137	50	42	58	44	127	36	26
23	38	54	45	e33	152	49	40	71	39	224	33	26
24	40	92	47	e32	153	51	40	108	35	93	37	25
25	48	94	44	e32	116	58	55	110	35	49	91	25
26	54	71	42	e32	87	78	55	98	33	39	467	26
27	49	63	43	e31	72	113	47	68	32	36	393	26
28	49	52	43	e31	64	89	43	54	32	33	133	29
29	48	47	51	e31	61	85	41	45	32	31	140	32
30	50	44	55	e31	---	90	40	84	30	31	127	33
31	49	---	49	e31	---	223	---	563	---	33	78	---
TOTAL	1,205	2,023	1,625	1,154	1,576	3,317	1,601	2,488	2,574	1,350	2,350	996
MEAN	38.9	67.4	52.4	37.2	54.3	107	53.4	80.3	85.8	43.5	75.8	33.2
MAX	65	160	114	46	153	494	157	563	513	224	467	62
MIN	27	44	39	31	28	49	40	37	30	26	27	25
CFSM	0.59	1.02	0.79	0.56	0.82	1.62	0.81	1.21	1.30	0.66	1.15	0.50
IN.	0.68	1.14	0.91	0.65	0.89	1.86	0.90	1.40	1.45	0.76	1.32	0.56

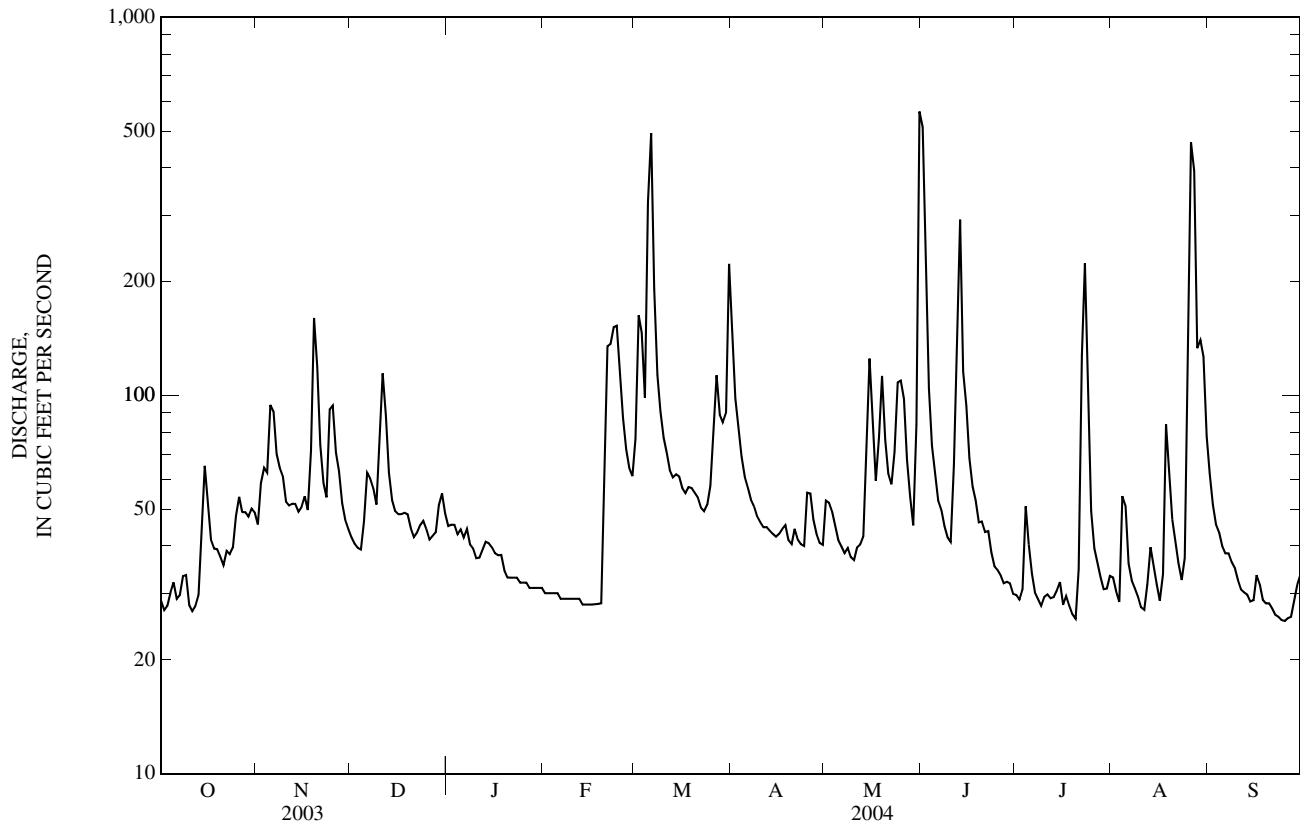
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2004, BY WATER YEAR (WY)

	MEAN	MAX	MIN	CFSM	IN.
MEAN	58.7	74.8	78.1	78.6	94.7
MAX	414	285	186	202	208
(WY)	(1955)	(1991)	(1966)	(1993)	(1997)
MIN	22.3	27.4	24.5	27.0	30.9
(WY)	(1964)	(1954)	(1964)	(1977)	(1964)
CFSM	0.59	1.02	0.79	0.56	0.82
IN.	0.68	1.14	0.91	0.65	0.89
(WY)	(1955)	(1991)	(1966)	(1993)	(1997)
MEAN	88.7	73.9	47.9	43.0	42.7
MAX	277	272	190	277	143
(WY)	(1947)	(1996)	(1981)	(1990)	(1972)
MIN	44.6	33.5	22.2	23.1	21.4
(WY)	(1963)	(1958)	(1988)	(1964)	(1953)

04094000 LITTLE CALUMET RIVER AT PORTER, IN—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1946 - 2004	
ANNUAL TOTAL	19,319		22,259		76.2	
ANNUAL MEAN	52.9		60.8		124	
HIGHEST ANNUAL MEAN					36.5	
LOWEST ANNUAL MEAN					1991	
HIGHEST DAILY MEAN	609	May 10	563	May 31	3,040	Nov 28, 1990
LOWEST DAILY MEAN	25	Sep 19	25	Sep 24	17	Aug 24, 1965
ANNUAL SEVEN-DAY MINIMUM	27	Sep 16	26	Sep 21	19	Aug 20, 1965
MAXIMUM PEAK FLOW			740	May 31	3,880	Nov 28, 1990
MAXIMUM PEAK STAGE			7.75	May 31	11.66	Oct 10, 1954
ANNUAL RUNOFF (CFSM)	0.800		0.919		1.15	
ANNUAL RUNOFF (INCHES)	10.86		12.51		15.63	
10 PERCENT EXCEEDS	75		98		138	
50 PERCENT EXCEEDS	43		44		49	
90 PERCENT EXCEEDS	29		29		28	

e Estimated



04095090 BURNS DITCH AT PORTAGE, IN

LOCATION.--Lat 41°37'20", long 87°10'35", in NE¼NW¼ sec. 36, T.37 N., R.7 W., Porter County, Hydrologic Unit 04040001, (PORTAGE, IN quadrangle), on right bank at an industrial road bridge, 1,300 feet north of U.S. Highway 12, 0.7 mi south of the mouth, 1.2 mi west of the State Road 249 overpass over U.S. Highway 12, 2.4 mi east of County Line Road, 3.2 mi north of the intersection of Central Avenue and Willow Creek Road in Portage.

DRAINAGE AREA.--331 mi².

PERIOD OF RECORD.--February 2, 1995 to current year.

REVISED RECORDS.--WDR IN-01-1: 1998-2000 (M).

GAGE.--Water-stage recorder and Acoustic Doppler Velocity Meter. Datum of gage is 575 ft above National Geodetic Vertical Datum of 1929 from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Peak stage and peak flow for the period of record probably occurred on May 10, 1996 during period of missing record.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	216	e316	e460	e412	325	628	1,270	502	1,990	321	293	665
2	e274	e446	412	489	334	837	1,060	570	e1,550	313	308	506
3	e271	543	472	388	338	872	785	543	1,070	370	218	492
4	e316	565	460	359	312	797	699	487	837	523	372	463
5	258	673	460	397	343	1,580	664	412	675	490	475	461
6	263	750	625	e467	391	2,420	595	543	606	448	443	400
7	e315	e594	669	e398	372	2,100	539	524	571	413	341	312
8	321	e490	643	e310	e361	1,540	523	744	532	371	329	292
9	305	e490	599	366	e355	1,180	519	597	477	e461	298	342
10	289	e322	647	e382	e349	859	471	548	494	e398	268	318
11	e294	e389	938	e387	e308	758	451	616	568	e298	267	304
12	e188	e419	959	383	e344	693	383	538	1,230	e333	270	260
13	e368	e434	806	348	e308	638	403	610	1,800	e364	319	283
14	359	e393	664	e396	e312	e587	400	750	1,600	e445	289	296
15	e534	e361	e614	331	316	537	450	1,090	1,370	e408	277	294
16	e430	367	e554	370	e326	539	437	1,000	1,150	e322	284	303
17	e400	403	560	355	e308	539	524	829	929	e374	282	311
18	e401	590	518	295	e345	533	569	786	715	e282	314	305
19	299	1,190	437	309	e382	568	434	844	657	e290	371	283
20	e348	e1,300	e502	339	428	479	371	791	583	e281	349	274
21	267	1,090	e459	e353	744	415	435	874	525	380	329	248
22	e223	908	e419	331	867	e480	443	1,010	458	752	314	244
23	273	816	411	e292	915	e478	422	799	495	744	264	263
24	297	e888	448	344	931	483	396	811	602	541	302	259
25	e296	e846	421	340	837	528	521	770	437	379	538	234
26	400	e804	e432	332	725	657	524	761	420	340	1,240	240
27	e410	709	e437	359	655	896	487	644	385	298	1,610	237
28	e356	628	e447	354	635	916	464	613	368	287	1,320	223
29	e370	e649	414	289	624	861	438	534	396	317	1,350	272
30	e392	e462	e470	e313	---	865	385	736	325	303	1,320	286
31	343	---	e387	e320	---	1,270	---	1,670	---	291	997	---
TOTAL	10,076	18,835	16,744	11,108	13,790	26,533	16,062	22,546	23,815	12,137	15,951	9,670
MEAN	325	628	540	358	476	856	535	727	794	392	515	322
MAX	534	1,300	959	489	931	2,420	1,270	1,670	1,990	752	1,610	665
MIN	188	316	387	289	308	415	371	412	325	281	218	223

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2004, BY WATER YEAR (WY)

MEAN	353	388	414	409	568	578	603	736	645	457	377	277
MAX	976	628	569	587	1,305	981	1,094	1,539	1,187	1,041	515	398
(WY)	(2002)	(2004)	(2002)	(1998)	(2001)	(2002)	(2002)	(2002)	(2000)	(2003)	(2004)	(1995)
MIN	107	144	179	231	255	321	358	288	237	214	205	147
(WY)	(1996)	(1999)	(1999)	(1996)	(1996)	(1996)	(1997)	(1999)	(1999)	(1997)	(1999)	(1997)

SUMMARY STATISTICS

FOR 2003 CALENDAR YEAR

FOR 2004 WATER YEAR

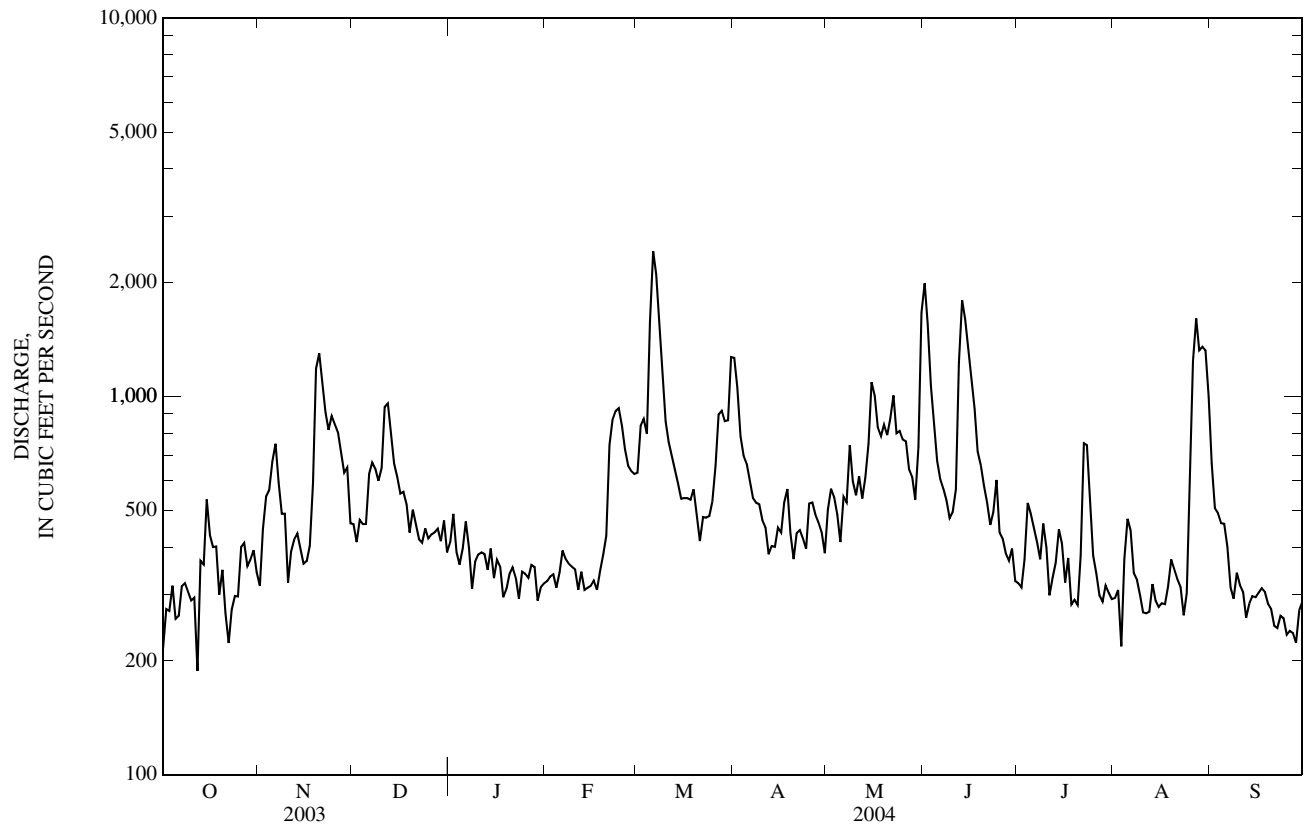
WATER YEARS 1995 - 2004

ANNUAL TOTAL	187,708	197,267	
ANNUAL MEAN	514	539	483
HIGHEST ANNUAL MEAN			702
LOWEST ANNUAL MEAN			288
HIGHEST DAILY MEAN	2,780	May 10	e 8,000
LOWEST DAILY MEAN	183	Feb 16	83
ANNUAL SEVEN-DAY MINIMUM	256	Jan 16	95
MAXIMUM PEAK FLOW		3,160	unknown
MAXIMUM PEAK STAGE		5.53	unknown
10 PERCENT EXCEEDS	941	900	831
50 PERCENT EXCEEDS	371	437	380
90 PERCENT EXCEEDS	281	289	198

e Estimated

STREAM TRIBUTARY TO LAKE MICHIGAN
04095090 BURNS DITCH AT PORTAGE, IN—Continued

345



04095380 TRAIL CREEK AT MICHIGAN CITY HARBOR, IN

LOCATION.--Lat 41°43'22", long 86°54'15", sec. 29, T.38 N., R.4 W., LaPorte County, Hydrologic Unit 04040001, (MICHIGAN CITY WEST, IN quadrangle), on right bank in the northeast drawbridge tower, 2000 ft north of Michigan Street, 2,600 ft southeast of lake end of west breakwater, 0.5 mi southwest of Washington Park, 3000 ft downstream of U.S. Hwy 12 bridge in Michigan City.

DRAINAGE AREA.--59.1 mi².

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorder and Acoustic Velocity Meter. Datum of gage is 575 ft above National Geodetic Vertical Datum of 1929 from topographic map.

REMARKS.--Records poor. Positive discharges indicate flow towards Lake Michigan; negative discharges indicate flow away from Lake Michigan.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

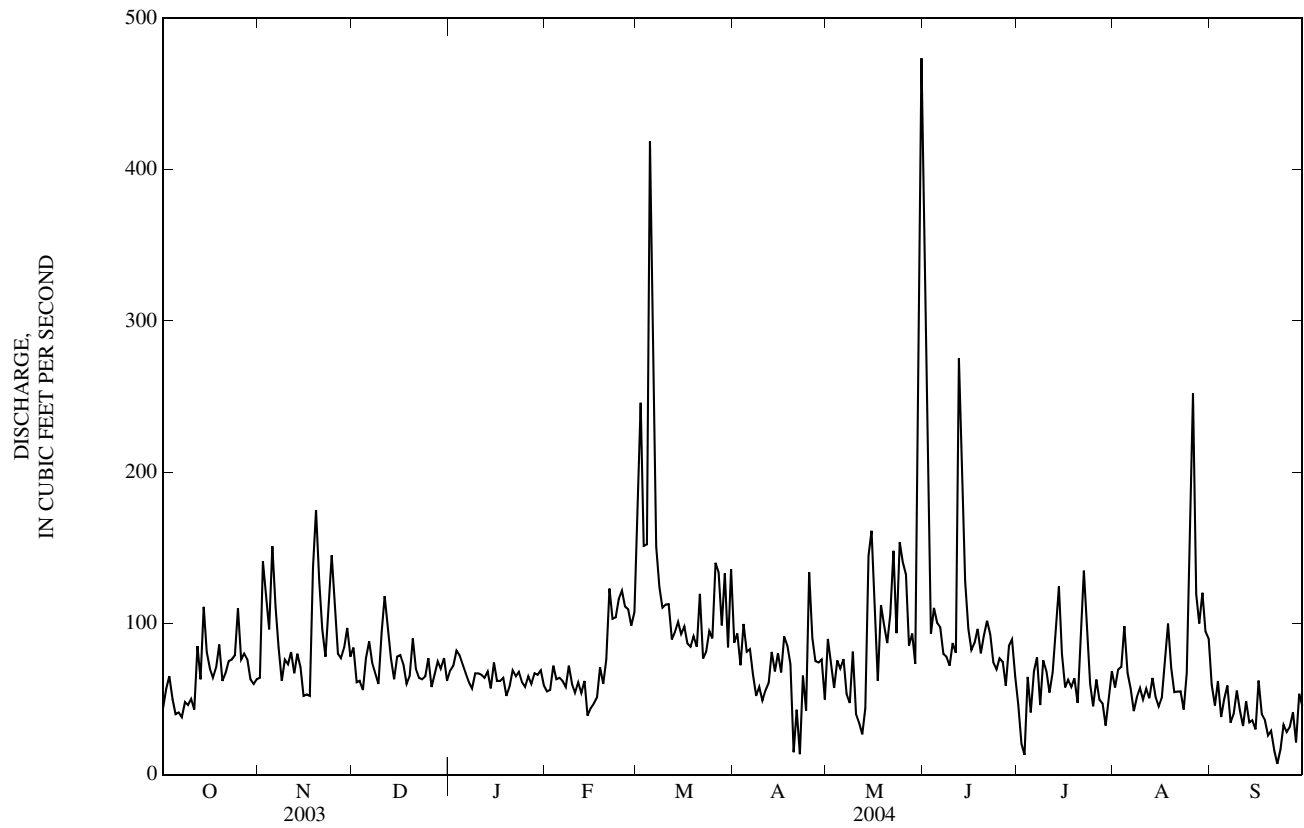
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e44	e64	e84	e69	e55	170	87	90	304	46	58	59
2	e57	e141	e61	e72	e56	246	93	73	e174	20	69	46
3	e65	e120	e62	e82	e72	151	72	57	e93	13	71	62
4	e50	e96	e56	e79	e63	152	100	75	110	65	98	38
5	e40	e151	e77	e73	e64	419	81	70	100	41	67	50
6	e41	e111	e88	e67	e62	270	83	76	98	68	57	59
7	e38	e84	e74	e61	e58	151	e66	53	80	78	42	34
8	e48	e62	e67	e57	e72	124	e52	47	78	46	51	40
9	e46	e76	e60	e67	e60	110	e58	81	72	76	57	55
10	e50	e73	e94	e67	e54	112	e49	40	87	68	49	43
11	e43	e81	e118	e66	e61	113	56	34	81	54	57	32
12	e85	e67	e96	e64	e54	89	61	27	275	68	50	49
13	e63	e80	e77	e68	e62	94	81	44	180	96	64	34
14	e111	e71	e63	e57	e39	101	68	145	128	124	52	36
15	e81	e52	e78	e74	e44	93	80	161	96	80	45	30
16	e70	e53	e79	e62	e47	98	68	107	82	58	51	62
17	e64	e52	e73	e62	e51	87	91	e62	87	63	78	40
18	e71	e137	e60	e64	e71	84	85	e112	96	58	100	36
19	e86	e175	e65	e52	e60	91	73	e99	80	64	70	26
20	e62	e128	e90	e58	e76	85	15	e87	92	47	55	29
21	e67	e96	e70	e69	e123	120	43	e106	102	91	55	16
22	e75	e78	e64	e65	e103	77	14	e148	93	135	55	7.2
23	e76	e106	e63	e68	e104	81	65	93	74	102	43	17
24	e79	e145	e65	e61	e116	95	42	154	70	60	67	33
25	e110	e116	e77	e58	122	90	134	141	77	45	147	28
26	e76	e80	e58	e65	111	140	90	132	75	63	252	32
27	e80	e77	e66	e60	109	134	75	85	59	50	119	41
28	e76	e84	e75	e67	98	99	74	93	85	47	100	21
29	e63	e97	e70	e66	107	133	76	73	89	33	120	54
30	e60	e78	e77	e69	---	84	50	240	65	51	95	45
31	e63	---	e62	e59	---	136	---	474	---	68	90	---
TOTAL	2,040	2,831	2,269	2,028	2,174	4,029	2,082	3,279	3,182	1,978	2,384	1,154.2
MEAN	65.8	94.4	73.2	65.4	75.0	130	69.4	106	106	63.8	76.9	38.5
MAX	111	175	118	82	123	419	134	474	304	135	252	62
MIN	38	52	56	52	39	77	14	27	59	13	42	7.2

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 2004, BY WATER YEAR (WY)

	101	110	117	117	127	134	140	141	116	99.4	91.6	82.0
MEAN	127	173	185	176	208	191	201	216	192	150	126	113
MAX	(1998)	(1995)	(1997)	(1995)	(2001)	(2002)	(2002)	(2002)	(2000)	(1998)	(1995)	(2000)
MIN	50.7	49.4	61.8	59.4	61.8	58.0	69.4	106	60.3	57.1	63.9	38.5
(WY)	(2003)	(2003)	(2003)	(2003)	(2003)	(2003)	(2004)	(2004)	(2003)	(2003)	(2003)	(2004)

e Estimated

04095380 TRAIL CREEK AT MICHIGAN CITY HARBOR, IN—Continued



04099510 PIGEON CREEK NEAR ANGOLA, IN

LOCATION.--Lat 41°38'04", long 85°06'35", in NW $\frac{1}{4}$ SE $\frac{1}{4}$ sec.26, T.37 N., R.12 E., Steuben County, Hydrologic Unit 04050001, (ANGOLA WEST, IN quadrangle), on left bank 5 ft upstream from bridge on U.S. Highway 20, 1.3 mi downstream from outlet of Hogback Lake, 1.3 mi southeast of Flint, and 5.8 mi west of Angola.

DRAINAGE AREA.--106 mi², of which 22.5 mi² does not contribute directly to surface runoff.

PERIOD OF RECORD.--October 1945 to current year. Prior to October 1947, published as "near Flint". Published as Pigeon Creek at Hogback Lake Outlet near Angola, October 1947 to September 1971, and Pigeon Creek and Hogback Lake near Angola, October 1971 to September 1974.

REVISED RECORDS.--WSP 1144: 1948. WSP 2111: Drainage area. WDR IN 92-1: 1991.

GAGE.--Water-stage recorder. Datum of gage is 940.00 ft above National Geodetic Vertical Datum of 1929. Prior to October 1947, nonrecording gage at site 0.3 mi downstream at different (unknown) datum. Oct. 1947 to Aug. 3, 1953, nonrecording gage at site 1.2 mi upstream at same datum. Aug. 4, 1953, to Apr. 3, 1974, recording gage at site 1.3 mi upstream at same datum. Apr. 18, 1974, to Sept. 2, 1974, nonrecording gage at same site and datum.

REMARKS.--Records good.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

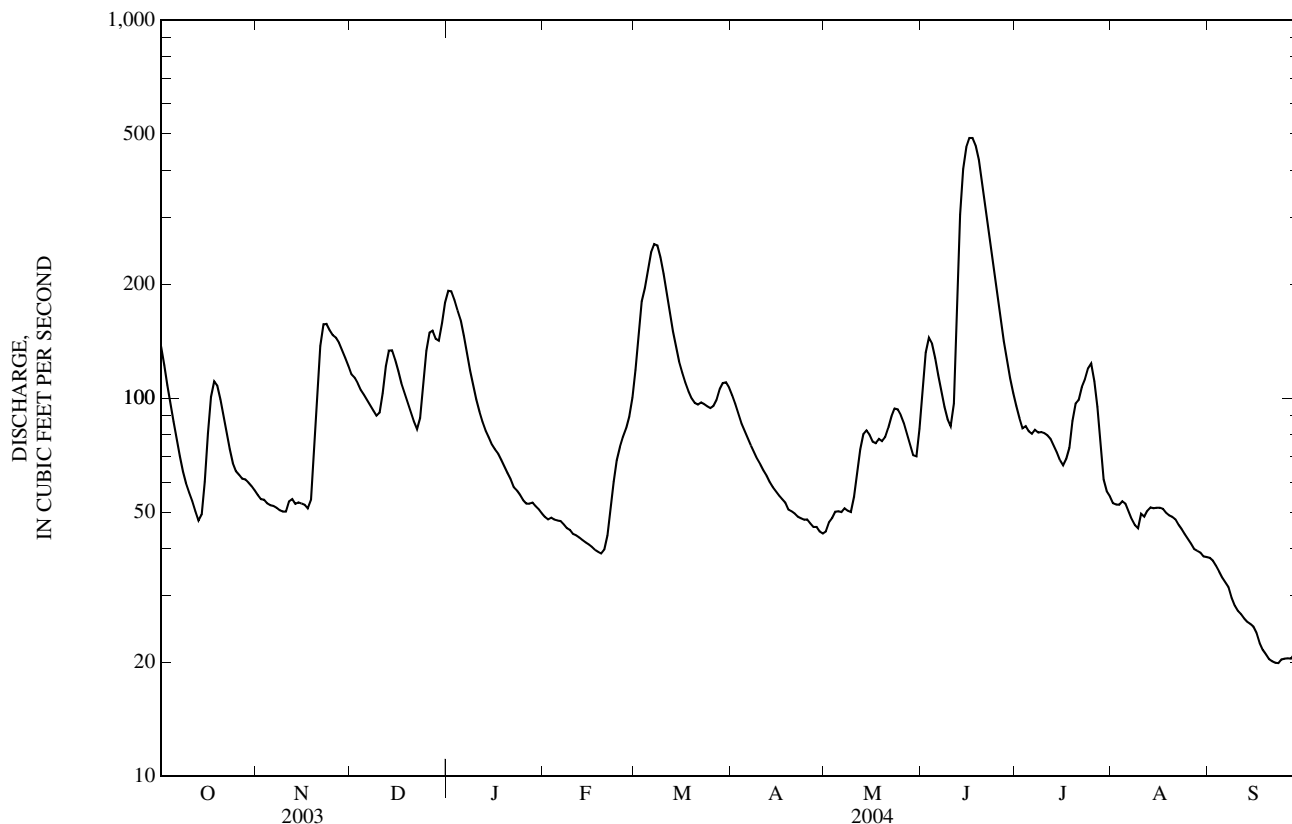
DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	55	116	192	49	119	102	44	106	95	53	38
2	122	54	113	192	48	149	97	47	132	89	52	37
3	108	54	110	182	48	180	91	48	145	83	52	36
4	97	53	105	171	48	196	86	50	140	84	53	35
5	87	52	102	161	47	218	82	50	128	82	53	34
6	78	52	99	146	47	243	78	50	115	81	50	33
7	70	51	96	131	46	255	75	51	104	82	48	32
8	64	51	93	118	45	253	72	50	95	81	46	30
9	60	50	90	108	45	236	69	50	88	81	45	28
10	56	50	92	99	44	213	67	55	84	81	49	27
11	53	53	103	92	43	189	64	63	97	80	49	27
12	50	54	122	87	43	167	62	73	165	78	50	26
13	47	53	134	82	42	150	60	80	306	75	51	26
14	49	53	134	79	42	137	58	82	403	72	51	25
15	60	53	126	75	41	125	57	80	461	69	51	25
16	81	52	118	73	40	117	55	77	488	66	51	24
17	101	51	110	71	40	110	54	76	488	69	51	22
18	111	54	103	69	39	104	53	78	466	74	50	22
19	108	71	97	66	39	100	51	77	428	87	49	21
20	99	103	92	63	40	97	50	79	382	97	49	20
21	90	137	87	61	43	96	50	83	335	99	48	20
22	81	157	83	58	51	97	49	90	289	107	46	20
23	73	157	89	57	60	96	48	94	248	112	45	20
24	67	151	108	55	69	95	48	93	213	120	44	20
25	64	147	133	54	74	94	48	90	185	124	42	20
26	63	145	149	53	79	95	47	86	161	111	41	21
27	61	140	151	53	83	99	46	81	142	95	40	20
28	61	134	144	53	89	106	46	75	126	75	40	21
29	60	128	142	52	100	110	44	71	113	61	39	23
30	59	122	158	51	---	110	44	70	103	57	38	23
31	57	---	179	50	---	107	---	83	---	55	38	---
TOTAL	2,374	2,537	3,578	2,854	1,524	4,463	1,853	2,176	6,736	2,622	1,464	776
MEAN	76.6	84.6	115	92.1	52.6	144	61.8	70.2	225	84.6	47.2	25.9
MAX	137	157	179	192	100	255	102	94	488	124	53	38
MIN	47	50	83	50	39	94	44	44	84	55	38	20
CFSM	0.92	1.01	1.38	1.10	0.63	1.72	0.74	0.84	2.69	1.01	0.57	0.31
IN.	1.06	1.13	1.59	1.27	0.68	1.99	0.83	0.97	3.00	1.17	0.65	0.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 2004, BY WATER YEAR (WY)

MEAN	37.4	54.0	76.4	92.7	109	157	162	117	83.9	50.7	39.2	33.4
MAX	181	195	195	385	343	437	491	423	362	164	126	119
(WY)	(2002)	(1993)	(1968)	(1993)	(2001)	(1982)	(1950)	(1996)	(1996)	(1981)	(1981)	(1981)
MIN	4.12	4.51	7.20	7.95	8.55	20.4	48.1	29.8	21.6	10.8	8.12	5.83
(WY)	(1965)	(1965)	(1964)	(1964)	(1963)	(1964)	(1946)	(1963)	(1988)	(1963)	(1964)	(1963)

04099510 PIGEON CREEK NEAR ANGOLA, IN—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1946 - 2004	
ANNUAL TOTAL	29,010		32,957		84.2	
ANNUAL MEAN	79.5		90.0		151	
HIGHEST ANNUAL MEAN					19.5	
LOWEST ANNUAL MEAN					996	
HIGHEST DAILY MEAN	399	May 13	488	Jun 16	996	May 21, 1996
LOWEST DAILY MEAN	18	Feb 1	20	Sep 20	3.4	Oct 25, 1964
ANNUAL SEVEN-DAY MINIMUM	19	Feb 16	20	Sep 19	3.5	Oct 22, 1964
MAXIMUM PEAK FLOW			492	Jun 16	1,000	May 21, 1996
MAXIMUM PEAK STAGE			9.76	Jun 16	13.90	Mar 22, 1982
ANNUAL RUNOFF (CFSM)	0.952		1.08		1.01	
ANNUAL RUNOFF (INCHES)	12.92		14.68		13.71	
10 PERCENT EXCEEDS	150		150		188	
50 PERCENT EXCEEDS	60		74		54	
90 PERCENT EXCEEDS	21		40		17	



STREAMS TRIBUTARY TO LAKE MICHIGAN

04099750 PIGEON RIVER NEAR SCOTT, IN

LOCATION.--Lat 41°44'56", long 85°34'35", in SE $\frac{1}{4}$ NW $\frac{1}{4}$ sec.14, T.38 N., R.8 E., Lagrange County, Hydrologic Unit 04050001, (SHIPSHEWANA, IN quadrangle), on right bank 20 ft downstream from bridge on County Road 750 North, 1,200 ft downstream from Page Ditch, 0.7 mi south of Indiana-Michigan State line, and 1.2 mi northwest of Scott.

DRAINAGE AREA.--361 mi² of which 53.9 mi² does not contribute directly to surface runoff.

PERIOD OF RECORD.--June 1968 to current year.

REVISED RECORDS.--WSP 2111: Drainage area. WDR IN-92-1: 1991.

GAGE.--Water-stage recorder. Datum of gage is 815.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	291	250	399	595	e250	428	405	226	638	349	236	170
2	291	263	379	597	e247	536	392	259	543	328	212	162
3	288	258	353	607	e243	565	378	269	491	319	210	157
4	292	268	338	591	e240	566	360	238	491	376	218	153
5	280	288	342	580	e238	646	347	225	475	408	231	151
6	247	292	351	555	e236	752	336	225	444	359	234	148
7	240	280	339	507	e234	758	313	241	385	364	208	147
8	235	265	321	e470	e232	750	318	243	382	354	193	146
9	227	248	312	e450	e230	760	307	252	359	322	175	136
10	216	237	321	e420	e229	735	298	278	374	298	213	135
11	210	254	341	e390	e228	703	291	292	492	284	284	134
12	204	255	339	e374	e227	656	284	265	716	295	242	135
13	199	250	332	e360	e226	603	269	283	1,090	301	208	133
14	216	244	337	e350	e225	565	265	309	1,330	255	197	130
15	281	239	345	e340	e224	531	263	321	1,360	231	211	130
16	289	234	359	e330	e223	501	257	309	1,380	230	203	131
17	275	235	350	e325	e222	475	254	300	1,350	252	194	128
18	287	262	323	e320	e221	455	251	e350	1,330	289	185	126
19	321	396	313	e312	e220	443	242	e370	1,280	285	195	126
20	322	464	308	e305	219	432	238	385	1,210	261	207	123
21	331	424	294	e300	266	424	235	387	1,140	254	204	120
22	320	418	285	e293	285	409	237	481	1,040	398	193	121
23	286	452	326	e289	298	386	238	529	929	476	178	122
24	274	504	417	e284	311	389	229	486	804	418	174	123
25	289	525	436	e280	322	395	229	464	690	326	170	124
26	304	485	442	e275	335	425	223	438	605	318	176	125
27	294	450	456	e270	362	439	219	410	542	290	174	126
28	285	447	471	e265	374	432	216	370	478	291	173	127
29	281	433	523	e260	385	427	209	358	444	261	192	138
30	272	416	613	e257	---	422	207	383	404	249	201	140
31	260	---	619	e252	---	414	---	572	---	251	184	---
TOTAL	8,407	10,036	11,684	11,803	7,552	16,422	8,310	10,518	23,196	9,692	6,275	4,067
MEAN	271	335	377	381	260	530	277	339	773	313	202	136
MAX	331	525	619	607	385	760	405	572	1,380	476	284	170
MIN	199	234	285	252	219	386	207	225	359	230	170	120
CFSM	0.88	1.09	1.23	1.24	0.85	1.73	0.90	1.11	2.52	1.02	0.66	0.44
IN.	1.02	1.22	1.42	1.43	0.92	1.99	1.01	1.27	2.81	1.17	0.76	0.49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 2004, BY WATER YEAR (WY)

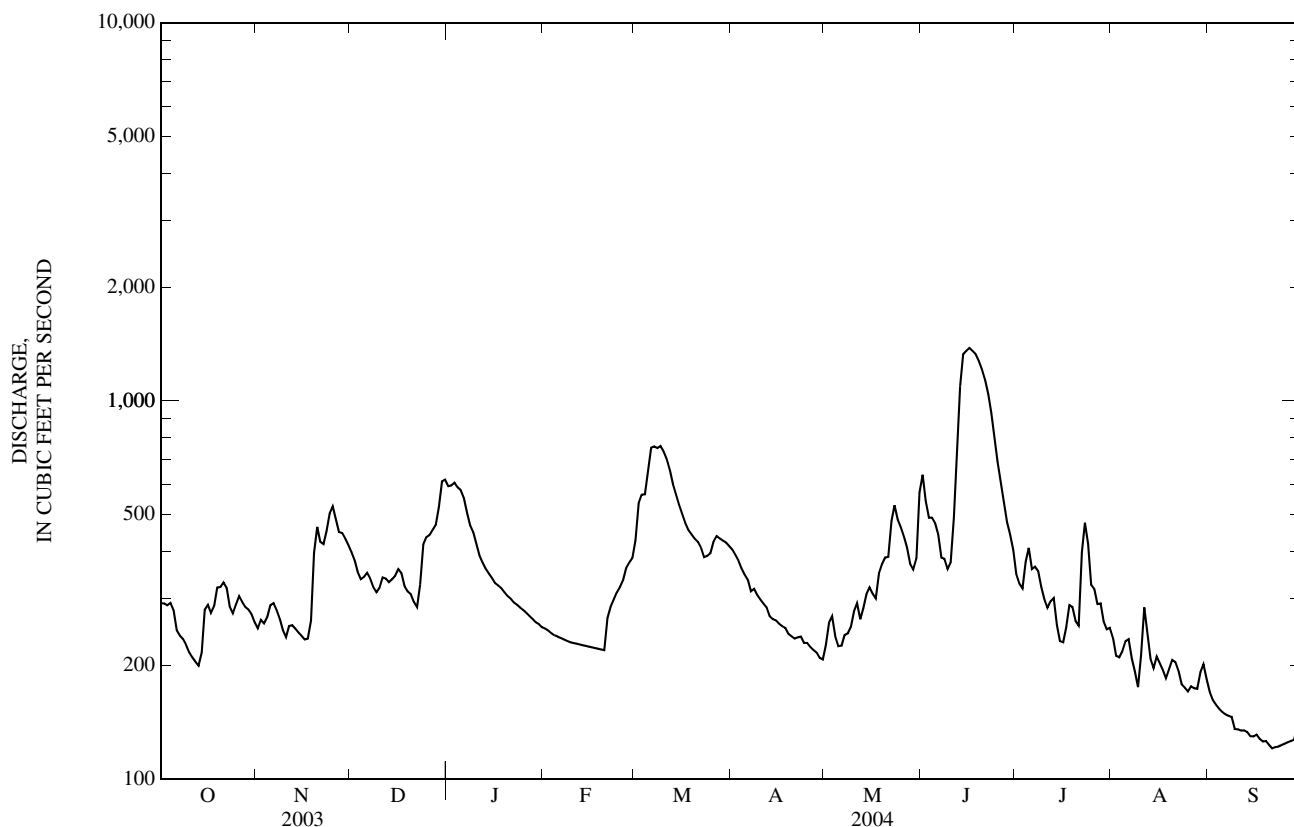
	MEAN	224	291	354	383	438	578	579	462	392	258	219	201
MAX	575	684	719	1,169	875	1,389	1,089	976	1,103	654	516	538	
(WY)	(1987)	(1993)	(1983)	(1993)	(2001)	(1982)	(1978)	(1996)	(1981)	(1981)	(1981)	(1981)	(1981)
MIN	96.3	96.7	134	113	124	218	277	233	132	104	92.5	85.8	
(WY)	(1972)	(1972)	(2003)	(2003)	(2003)	(2003)	(2004)	(1971)	(1988)	(1988)	(1988)	(1971)	

STREAMS TRIBUTARY TO LAKE MICHIGAN
04099750 PIGEON RIVER NEAR SCOTT, IN—Continued

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SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1968 - 2004	
ANNUAL TOTAL	96,179		127,962		363	
ANNUAL MEAN	264		350		545	
HIGHEST ANNUAL MEAN					207	
LOWEST ANNUAL MEAN					1972	
HIGHEST DAILY MEAN	884	May 16	1,380	Jun 16	2,340	Mar 21, 1982
LOWEST DAILY MEAN	66	Mar 5	120	Sep 21	42	Oct 21, 1971
ANNUAL SEVEN-DAY MINIMUM	68	Mar 2	123	Sep 20	e 68	Mar 2, 2003
MAXIMUM PEAK FLOW			1,390	Jun 16	2,370	Mar 21, 1982
MAXIMUM PEAK STAGE			6.33	Jun 16	7.85	Mar 21, 1982
ANNUAL RUNOFF (CFSM)	0.858		1.14		1.18	
ANNUAL RUNOFF (INCHES)	11.65		15.51		16.08	
10 PERCENT EXCEEDS	429		558		676	
50 PERCENT EXCEEDS	237		292		290	
90 PERCENT EXCEEDS	120		177		145	

e Estimated



04100222 NORTH BRANCH ELKHART RIVER AT COSPERVILLE, IN

LOCATION.--Lat 41°28'54", long 85°28'32", in NE¼NW¼ sec.22, T.35 N., R.9 E., Noble County, Hydrologic Unit 04050001, (ALBION, IN quadrangle), on right bank at downstream side of bridge on County Road 900 North at Cosperville, 1,300 ft downstream from Boyd Ditch, 1.7 mi upstream from Hustin Ditch, and 3.1 mi downstream from Waldron Lake.

DRAINAGE AREA.--142 mi².

PERIOD OF RECORD.--October 1971 to current year.

GAGE.--Water-stage recorder. Datum of gage is 880.12 ft above National Geodetic Vertical Datum of 1929 (levels by State of Indiana, Department of Natural Resources). Prior to August 14, 1975 datum of gage was 880.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated at times by dam at Waldron Lake.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	90	160	222	e88	141	126	55	137	136	92	43
2	102	89	161	222	e86	154	123	62	137	124	87	41
3	99	90	159	222	e84	160	118	64	136	114	81	39
4	99	89	156	223	e81	169	115	e65	133	121	82	37
5	98	87	154	222	e79	212	111	e65	130	127	80	35
6	95	87	153	e210	e76	240	108	e64	126	119	75	33
7	90	86	151	e190	e74	248	105	e63	123	137	71	32
8	86	83	149	e175	e72	250	101	62	119	125	67	30
9	82	81	146	e164	e71	250	98	61	116	117	61	28
10	77	78	149	e154	e69	246	96	70	117	109	60	26
11	75	77	151	e151	e66	235	93	77	132	104	54	24
12	78	76	153	e152	e64	225	91	83	191	102	51	23
13	77	69	152	e151	e61	218	88	86	228	97	47	22
14	80	72	150	e149	e58	204	84	89	261	91	45	21
15	88	73	146	e145	e57	196	82	79	291	85	42	20
16	90	73	142	e139	e56	189	78	68	307	80	41	19
17	90	73	139	e136	e54	178	75	88	312	77	39	19
18	90	81	138	e132	e54	167	72	106	313	74	38	18
19	90	109	134	e128	e55	160	67	110	307	71	39	17
20	90	125	131	e124	68	156	69	109	297	67	42	17
21	90	133	127	e120	83	152	67	114	294	65	44	16
22	89	137	124	e117	97	149	66	123	284	119	44	16
23	87	139	142	e113	111	144	64	127	266	123	43	15
24	84	148	165	e109	119	141	63	129	248	123	42	14
25	86	155	176	e105	123	139	61	130	230	120	40	13
26	87	157	179	e102	126	138	57	129	211	116	40	13
27	90	157	178	e99	128	138	55	128	193	114	39	12
28	91	157	177	e96	129	137	54	125	177	110	40	12
29	91	159	196	e94	132	134	50	121	162	106	45	12
30	91	159	215	e92	---	132	50	122	149	102	46	11
31	90	---	221	e90	---	129	---	133	---	97	45	---
TOTAL	2,757	3,189	4,874	4,548	2,421	5,531	2,487	2,907	6,127	3,272	1,662	678
MEAN	88.9	106	157	147	83.5	178	82.9	93.8	204	106	53.6	22.6
MAX	105	159	221	223	132	250	126	133	313	137	92	43
MIN	75	69	124	90	54	129	50	55	116	65	38	11
CFSM	0.63	0.75	1.11	1.03	0.59	1.26	0.58	0.66	1.44	0.74	0.38	0.16
IN.	0.72	0.84	1.28	1.19	0.63	1.45	0.65	0.76	1.61	0.86	0.44	0.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1972 - 2004, BY WATER YEAR (WY)

	MEAN	79.7	111	136	153	157	242	233	170	142	82.3	60.3	61.3
MAX	272	314	341	542	307	553	530	354	405	211	171	161	
(WY)	(1987)	(1973)	(1986)	(1993)	(2001)	(1985)	(1985)	(1996)	(1996)	(1981)	(1997)	(1972)	
MIN	17.8	17.8	40.1	42.2	41.2	87.2	82.9	67.2	18.1	16.4	18.3	9.59	
(WY)	(1975)	(1972)	(2003)	(1977)	(2003)	(2000)	(2004)	(1988)	(1988)	(1988)	(1978)	(1999)	

SUMMARY STATISTICS

FOR 2003 CALENDAR YEAR

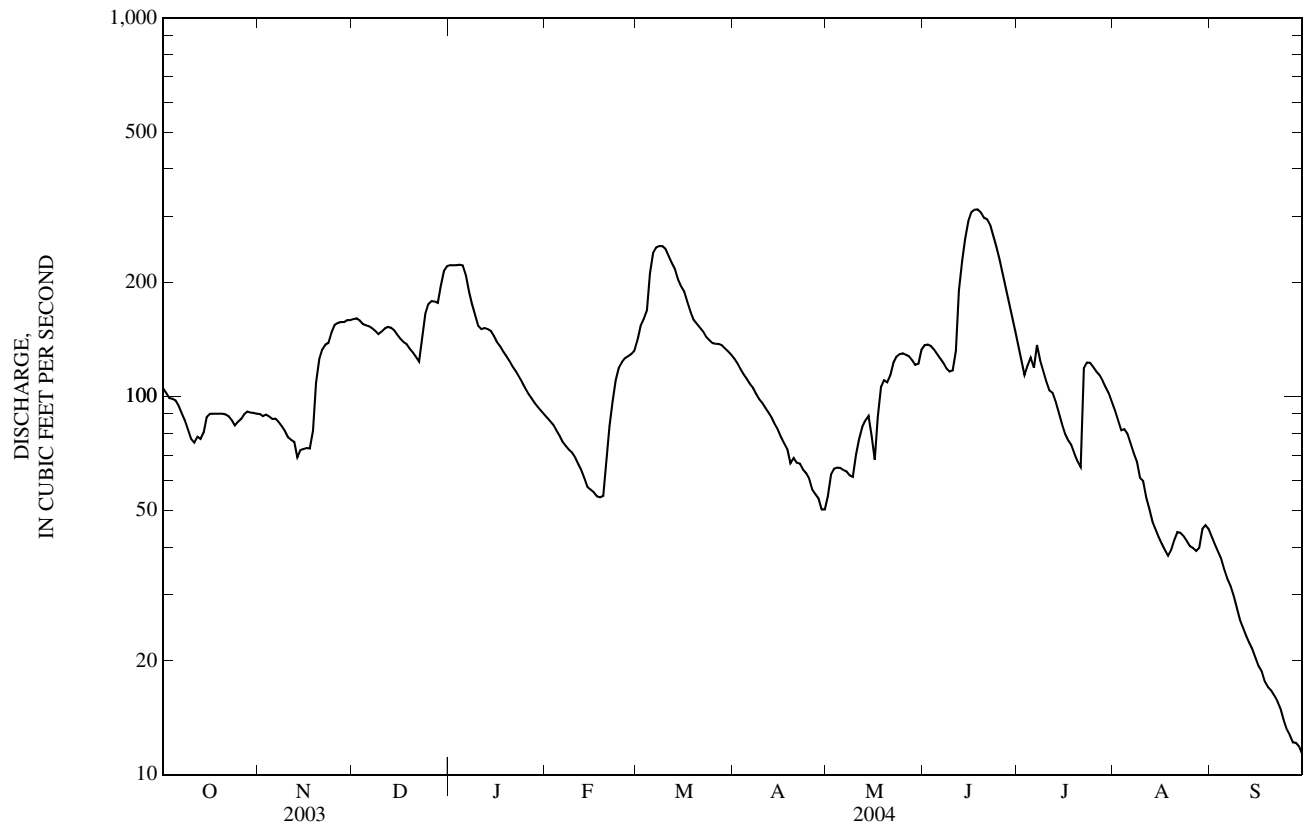
FOR 2004 WATER YEAR

WATER YEARS 1972 - 2004

ANNUAL TOTAL	33,447		40,453										
ANNUAL MEAN	91.6		111										
HIGHEST ANNUAL MEAN										136			
LOWEST ANNUAL MEAN										222			1993
HIGHEST DAILY MEAN	266	May 16					313	Jun 18		69.4			2003
LOWEST DAILY MEAN	23	Aug 21					11	Sep 30		916			Mar 22, 1982
ANNUAL SEVEN-DAY MINIMUM	28	Aug 20					12	Sep 24		2.2			Jul 7, 1988
MAXIMUM PEAK FLOW							316	Jun 18		2.8			Jul 3, 1988
MAXIMUM PEAK STAGE							5.63	Jun 18		919			Mar 23, 1982
ANNUAL RUNOFF (CFSM)	0.645						0.778			8.12			Mar 23, 1982
ANNUAL RUNOFF (INCHES)	8.76						10.60			0.955			
10 PERCENT EXCEEDS	158						190			12.98			
50 PERCENT EXCEEDS	81						99			287			
90 PERCENT EXCEEDS	38						41			105			
										29			

e Estimated

04100222 NORTH BRANCH ELKHART RIVER AT COSPERVILLE, IN—Continued



STREAMS TRIBUTARY TO LAKE MICHIGAN

04100500 ELKHART RIVER AT GOSHEN, IN

LOCATION.--Lat 41°35'36", long 85°50'55", in NE $\frac{1}{4}$ NE $\frac{1}{4}$ sec.8, T.36 N., R.6 E., Elkhart County, Hydrologic Unit 04050001, (GOSHEN, IN quadrangle), on right bank 20 ft downstream from River Avenue bridge at Goshen, 0.4 mi upstream from Rock Run, 9.1 mi northwest of Millersburg and at mile 16.1.

DRAINAGE AREA.--594 mi².

PERIOD OF RECORD.--April 1931 to current year.

REVISED RECORDS.--WSP 1337: 1939(M). WSP 1557: 1954. WSP 2111: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 769.43 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 20, 1931, nonrecording gage at same site and datum.

REMARKS.--Records fair except estimated daily discharges, which are poor. Occasional low-flow regulation at Goshen Dam, 3.4 mi upstream.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	425	384	656	1,040	e290	829	500	240	2,000	443	326	e343
2	433	382	645	981	e285	1,190	490	275	1,370	408	297	e330
3	439	377	623	958	e285	1,050	474	258	950	380	264	e322
4	459	391	600	939	e280	904	429	245	689	424	297	e319
5	460	435	608	926	e280	1,260	412	241	586	465	319	e308
6	432	489	619	855	e275	1,530	405	244	533	436	291	e296
7	424	452	601	661	e275	1,210	401	247	491	505	275	e298
8	420	427	582	704	e270	1,060	395	254	460	496	261	e282
9	369	416	588	e710	e270	1,020	379	245	449	418	248	e269
10	362	416	650	e660	e265	1,000	365	313	472	382	258	e260
11	347	428	790	e610	e265	992	364	338	751	361	251	e250
12	329	395	694	e570	e265	958	359	309	2,260	354	241	e242
13	324	332	623	e540	e260	900	352	317	3,510	346	236	e237
14	347	317	604	e505	e260	863	341	361	2,670	341	221	e232
15	413	322	590	e480	e255	821	333	422	2,060	326	214	e231
16	430	333	585	e460	e255	772	324	387	1,700	300	208	e228
17	376	343	585	e430	e260	711	301	338	1,410	306	203	e223
18	373	401	563	e410	e270	678	294	418	1,250	e300	219	e214
19	375	936	533	e390	e285	651	275	406	1,150	e280	242	e206
20	382	1,090	528	e370	324	626	271	377	1,080	e256	278	e201
21	366	724	507	e360	498	617	278	385	1,040	233	308	e197
22	345	577	502	e350	521	592	279	557	996	1,020	290	e187
23	337	549	701	e340	578	567	269	591	913	1,030	278	e183
24	339	828	1,190	e330	615	550	268	780	819	612	280	e177
25	371	1,020	1,030	e325	599	549	256	691	755	468	283	e169
26	395	784	822	e320	648	582	249	542	686	418	312	e165
27	415	713	749	e315	665	613	241	485	625	398	301	e162
28	436	687	747	e310	672	592	232	448	575	383	343	e160
29	428	676	1,020	e305	703	548	219	406	532	365	405	e165
30	415	668	1,470	e300	---	512	212	503	487	351	e413	e164
31	397	---	1,280	e295	---	508	---	1,680	---	347	e368	---
TOTAL	12,163	16,292	22,285	16,749	10,973	25,255	9,967	13,303	33,269	13,152	8,730	7,020
MEAN	392	543	719	540	378	815	332	429	1,109	424	282	234
MAX	460	1,090	1,470	1,040	703	1,530	500	1,680	3,510	1,030	413	343
MIN	324	317	502	295	255	508	212	240	449	233	203	160
CFSM	0.66	0.91	1.21	0.91	0.64	1.37	0.56	0.72	1.87	0.71	0.47	0.39
IN.	0.76	1.02	1.40	1.05	0.69	1.58	0.62	0.83	2.08	0.82	0.55	0.44

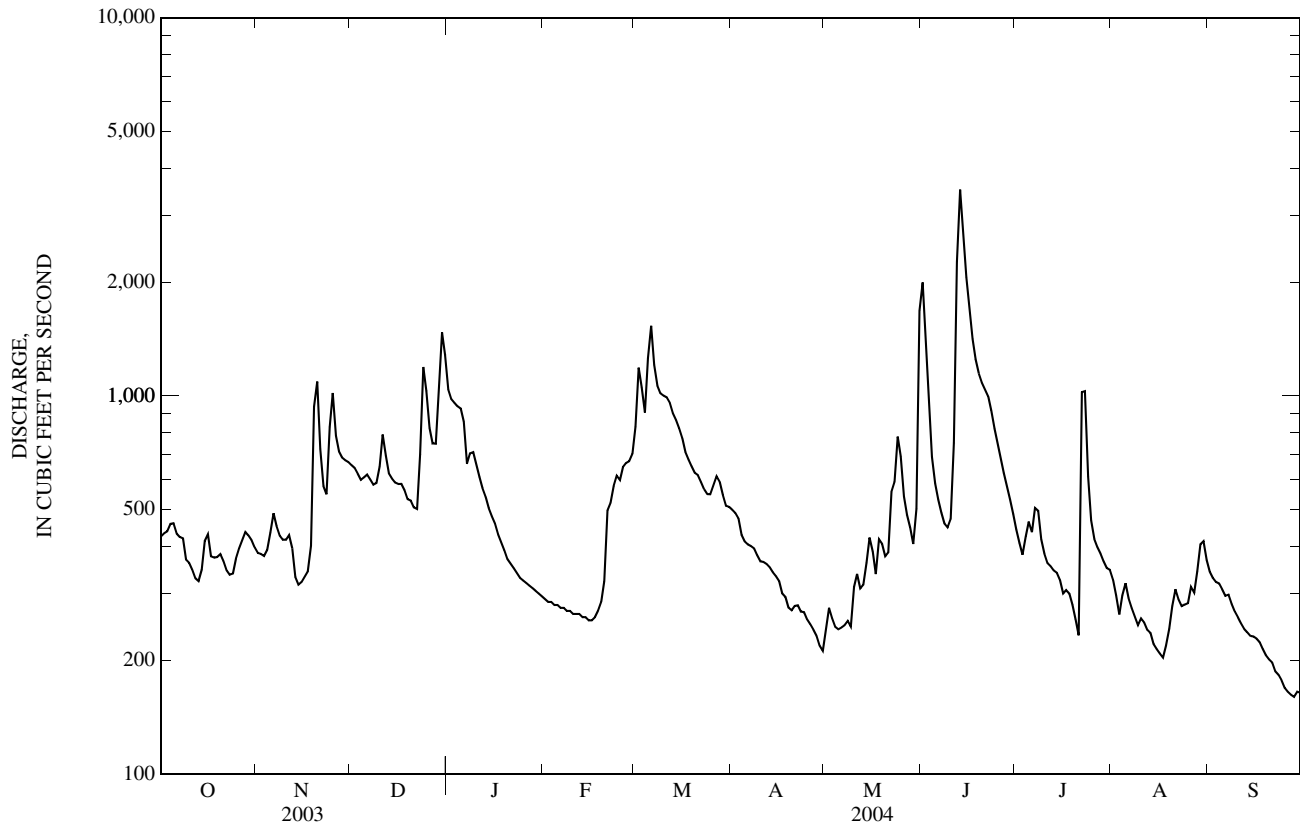
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2004, BY WATER YEAR (WY)

MEAN	319	394	498	589	697	929	933	715	522	358	271	253
MAX	1,652	1,132	1,276	2,058	1,657	2,497	2,424	2,354	1,521	1,079	712	784
(WY)	(1955)	(1973)	(1983)	(1993)	(1959)	(1982)	(1950)	(1943)	(1996)	(1951)	(1958)	(1958)
MIN	75.9	95.9	122	122	108	301	332	222	101	94.0	73.0	58.5
(WY)	(1965)	(1965)	(1964)	(1963)	(1963)	(1964)	(2004)	(1958)	(1934)	(1934)	(1941)	(1941)

04100500 ELKHART RIVER AT GOSHEN, IN—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1932 - 2004	
ANNUAL TOTAL	148,278		189,158		539	
ANNUAL MEAN	406		517		197	1964
HIGHEST ANNUAL MEAN					1,005	1950
LOWEST ANNUAL MEAN					197	1964
HIGHEST DAILY MEAN	1,470	Dec 30	3,510	Jun 13	6,010	Feb 24, 1985
LOWEST DAILY MEAN	115	Jul 4	e 160	Sep 28	7.0	Aug 11, 1964
ANNUAL SEVEN-DAY MINIMUM	138	Feb 25	e 166	Sep 24	50	Sep 21, 1941
MAXIMUM PEAK FLOW			3,610	Jun 13	6,360	Feb 24, 1985
MAXIMUM PEAK STAGE			8.24	Jun 13	11.94	Mar 14, 1982
INSTANTANEOUS LOW FLOW					7.0	Aug 11, 1964
ANNUAL RUNOFF (CFSM)	0.684		0.870		0.907	
ANNUAL RUNOFF (INCHES)	9.29		11.85		12.33	
10 PERCENT EXCEEDS	703		952		1,110	
50 PERCENT EXCEEDS	362		406		390	
90 PERCENT EXCEEDS	155		245		156	

e Estimated



STREAMS TRIBUTARY TO LAKE MICHIGAN

04101000 ST. JOSEPH RIVER AT ELKHART, IN

LOCATION.--Lat 41°41'30", long 85°58'30", in SW $\frac{1}{4}$ NE $\frac{1}{4}$ sec.5, T.37 N., R.5 E., Elkhart County, Hydrologic Unit 04050001, (ELKHART, IN quadrangle), on left bank 200 ft downstream from Elkhart River, 200 ft upstream from Main Street bridge in Elkhart, 2,000 ft downstream from Christiana Creek, 0.5 mi downstream from Elkhart Hydroelectric Plant, and at mile 76.5.

DRAINAGE AREA.--3,370 mi².

PERIOD OF RECORD.--August 1947 to current year. Gage heights at site 0.8 mi downstream at different datum from September 1924 to March 1926 are available from the district office.

REVISED RECORDS.--WSP 2111: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 700.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor. The flow is regulated by Elkhart Hydroelectric Plant.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,230	2,080	3,840	4,550	3,360	3,800	4,360	2,320	6,170	3,150	2,670	2,270
2	2,120	2,050	3,700	4,600	3,080	4,700	4,210	2,430	5,800	3,070	2,680	2,140
3	2,100	2,250	3,580	4,700	3,030	4,900	3,900	2,480	5,240	2,980	2,480	1,950
4	2,160	2,370	3,540	4,440	2,950	4,980	3,670	2,530	4,680	3,040	2,460	2,130
5	1,910	2,690	3,470	4,390	2,830	5,770	3,610	2,540	4,060	3,170	2,500	1,870
6	1,960	2,860	3,370	4,270	2,870	6,140	3,530	2,500	3,870	3,330	2,330	1,750
7	2,070	2,870	3,310	3,580	2,870	5,930	3,420	2,590	3,690	3,450	2,300	1,890
8	1,970	2,800	3,390	3,550	2,740	5,850	3,110	2,520	3,280	3,510	2,230	1,730
9	1,870	2,720	3,440	3,820	2,600	5,680	3,190	2,460	3,290	3,470	2,250	1,700
10	1,810	2,670	3,460	3,620	2,570	5,550	3,140	2,580	3,470	3,390	2,080	1,670
11	1,680	2,600	3,660	3,620	2,610	5,370	2,990	2,910	4,130	3,220	2,150	1,640
12	1,600	2,580	3,490	3,750	2,540	5,190	2,890	3,210	6,550	3,370	2,150	1,580
13	1,670	2,550	3,380	3,640	2,540	4,890	2,840	3,320	8,990	3,220	2,120	1,550
14	2,020	2,360	3,280	3,530	2,520	4,600	2,820	3,730	8,840	3,130	2,040	1,530
15	2,180	2,310	3,220	3,410	2,430	4,420	2,820	3,750	8,410	2,750	1,980	1,500
16	2,240	2,320	3,190	3,220	2,230	4,250	2,750	3,620	7,910	2,710	1,960	1,630
17	2,230	2,260	3,200	2,970	2,380	4,130	2,660	3,540	7,550	2,670	1,850	1,540
18	2,170	2,550	3,190	3,170	2,360	4,070	2,570	3,370	7,340	2,720	1,890	1,540
19	2,190	3,800	3,190	3,100	2,490	3,960	2,580	3,530	7,020	2,620	1,990	1,500
20	2,250	4,150	3,130	3,010	2,600	3,770	2,470	3,440	6,610	e2,720	1,910	1,550
21	2,280	3,880	3,000	2,670	2,890	3,750	2,530	3,160	6,110	2,860	1,790	1,550
22	2,150	3,770	2,980	2,520	2,730	3,590	2,520	3,840	5,980	4,210	1,740	1,440
23	2,070	3,680	3,340	2,430	3,070	3,620	2,400	4,170	5,710	4,550	1,900	1,450
24	2,030	4,330	3,990	2,690	3,230	3,820	2,420	4,420	5,340	3,970	1,910	1,420
25	2,120	4,460	3,950	2,480	3,180	3,900	2,320	4,920	4,980	3,650	1,900	1,420
26	2,150	4,290	3,750	2,460	3,310	4,230	2,410	4,260	4,560	3,440	1,740	1,400
27	2,230	4,230	3,700	2,780	3,340	4,440	2,360	3,930	4,350	3,260	1,560	1,390
28	2,250	4,140	3,640	e3,090	3,380	4,540	2,230	3,680	4,090	3,120	1,970	1,440
29	2,170	3,990	4,150	e2,890	3,470	4,530	2,210	3,490	3,890	2,840	2,310	1,490
30	2,120	3,900	4,820	2,990	---	4,470	2,230	3,590	3,540	2,590	2,390	1,460
31	2,070	---	4,770	3,270	---	4,440	---	5,320	---	2,660	2,300	---
TOTAL	64,070	93,510	110,120	105,210	82,200	143,280	87,160	104,150	165,450	98,840	65,530	49,120
MEAN	2,067	3,117	3,552	3,394	2,834	4,622	2,905	3,360	5,515	3,188	2,114	1,637
MAX	2,280	4,460	4,820	4,700	3,470	6,140	4,360	5,320	8,990	4,550	2,680	2,270
MIN	1,600	2,050	2,980	2,430	2,230	3,590	2,210	2,320	3,280	2,590	1,560	1,390
CFSM	0.61	0.92	1.05	1.01	0.84	1.37	0.86	1.00	1.64	0.95	0.63	0.49
IN.	0.71	1.03	1.22	1.16	0.91	1.58	0.96	1.15	1.83	1.09	0.72	0.54

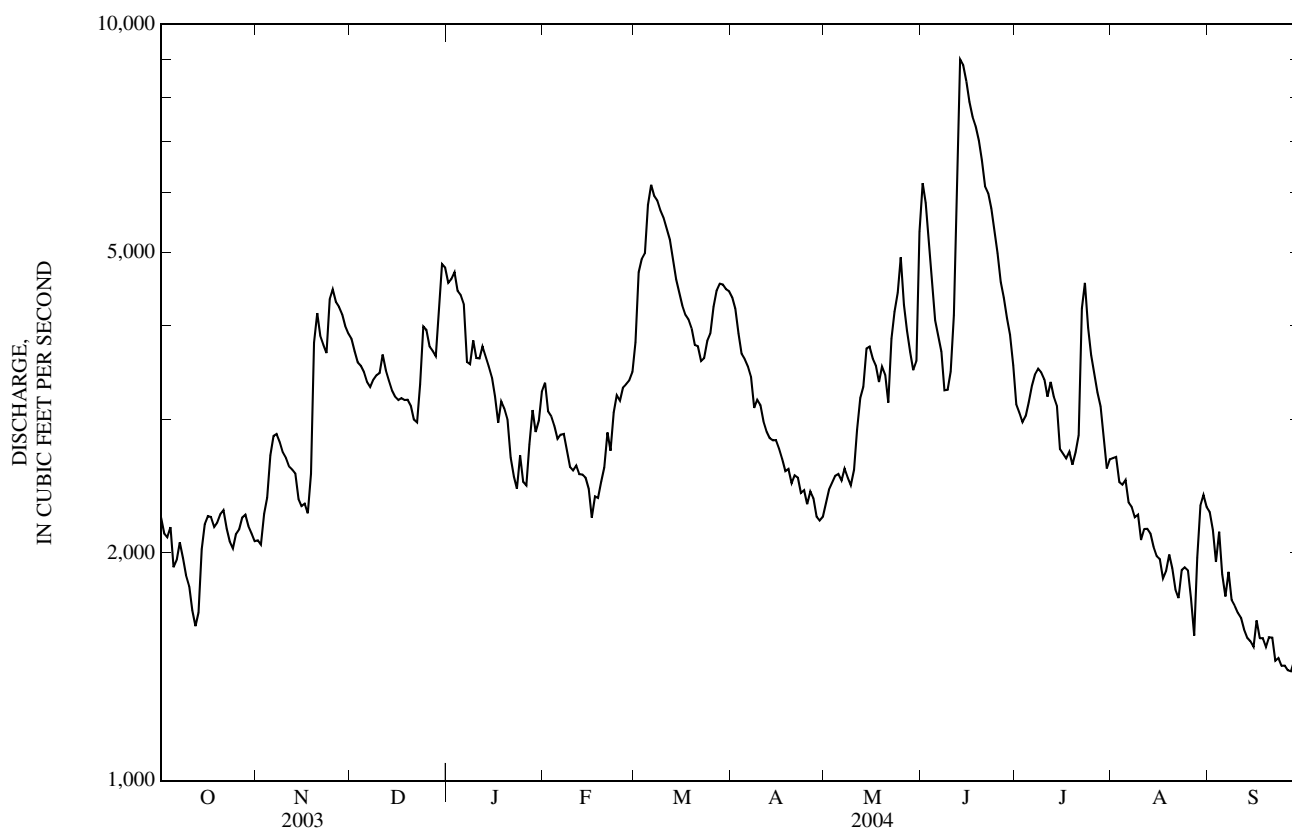
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 2004, BY WATER YEAR (WY)

MEAN	2,195	2,623	3,171	3,542	3,866	5,022	5,113	4,122	3,299	2,365	1,958	1,881
MAX	5,752	5,883	5,795	9,270	7,039	10,760	12,690	7,725	7,535	4,409	4,180	3,855
(WY)	(1987)	(1993)	(1991)	(1993)	(1968)	(1982)	(1950)	(1956)	(1989)	(1968)	(1981)	(1981)
MIN	791	856	958	1,127	1,120	1,679	2,633	1,911	1,280	898	737	721
(WY)	(1964)	(1965)	(1964)	(1964)	(1963)	(1964)	(1958)	(1958)	(1988)	(1988)	(1964)	(1964)

04101000 ST. JOSEPH RIVER AT ELKHART, IN—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1948 - 2004	
ANNUAL TOTAL	837,480		1,168,640		3,259	
ANNUAL MEAN	2,294		3,193		5,264	
HIGHEST ANNUAL MEAN					1,283	
LOWEST ANNUAL MEAN					1950	
HIGHEST DAILY MEAN	5,630	May 10	8,990	Jun 13	18,500	Mar 21, 1982
LOWEST DAILY MEAN	1,020	Jan 18	1,390	Sep 27	336	Aug 5, 1964
ANNUAL SEVEN-DAY MINIMUM	1,140	Jan 15	1,420	Sep 22	561	Aug 2, 1964
MAXIMUM PEAK FLOW			9,970	Jun 13	18,800	Feb 27, 1985
MAXIMUM PEAK STAGE			23.46	Jun 13	27.91	Mar 21, 1982
ANNUAL RUNOFF (CFSM)	0.681		0.947		0.967	
ANNUAL RUNOFF (INCHES)	9.24		12.90		13.14	
10 PERCENT EXCEEDS	3,810		4,600		5,780	
50 PERCENT EXCEEDS	2,100		3,000		2,780	
90 PERCENT EXCEEDS	1,200		1,890		1,380	

e Estimated



04101370 JUDAY CREEK NEAR SOUTH BEND, IN

LOCATION.--Lat 41°43'43", long 85°15'46", in NW¼SE¼ sec .23, T. 38 N., R. 2 E., St. Joseph County, Hydrologic Unit 04050001, (SOUTH BEND WEST, IN quadrangle), on right bank at downstream side of bridge on access road to Izaak Walton League property, 0.1 mi south of Darden Road in Roseland, 0.5 mi northeast of intersection of St. Joseph River and Interstate 80/90, 0.6 mi from mouth.

DRAINAGE AREA.--Approx. 38 mi².

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Datum of gage is about 690.00 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair except for estimated daily discharges, which are poor.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	8.3	16	13	e6.7	15	14	11	21	e16	e10	11
2	4.4	7.5	15	13	e6.8	17	14	11	19	e15	e9.8	10
3	4.6	7.1	15	12	e6.9	16	13	10	17	e15	e9.6	11
4	4.8	7.2	15	12	e6.8	17	13	9.8	15	e16	e12	12
5	4.4	13	16	12	e6.7	27	13	9.2	14	e16	e14	11
6	4.3	16	15	e10	e6.8	24	12	8.7	14	e15	e12	10
7	4.1	14	15	e9.0	e6.7	21	12	8.2	13	e15	e12	9.9
8	3.8	14	14	e8.2	e6.6	19	12	8.2	12	e16	e11	9.1
9	3.4	13	14	e8.1	e6.5	17	11	8.0	13	e16	e11	8.8
10	3.3	13	16	e8.1	e6.4	16	11	7.9	18	e15	e10	8.4
11	3.2	13	18	e8.2	e6.6	16	11	7.7	32	e15	9.8	7.9
12	3.0	12	16	e8.3	e6.5	15	10	7.0	69	e15	9.5	7.5
13	3.2	11	15	e8.4	e6.4	14	10	9.7	73	e14	9.0	7.2
14	7.4	11	14	e8.5	e6.3	12	10	13	52	e14	8.6	6.9
15	9.7	11	13	e8.3	e6.2	12	9.8	13	46	e14	8.3	6.5
16	9.1	11	13	e8.1	e6.1	12	9.5	11	42	e13	7.9	7.3
17	8.3	11	13	e8.0	e6.2	12	9.4	11	38	e14	8.0	6.6
18	8.0	17	12	e7.9	e6.3	12	9.4	11	36	e14	8.4	6.3
19	7.7	31	12	e7.8	e6.6	11	9.4	10	34	e13	8.9	6.1
20	7.2	27	12	e7.7	7.7	11	9.5	11	32	e13	8.3	5.8
21	6.9	22	11	e7.8	11	11	10	14	32	e12	8.2	5.6
22	6.9	19	11	e7.7	11	11	9.7	15	32	e14	7.6	5.4
23	6.9	20	13	e7.6	11	11	9.7	15	e29	e16	7.4	5.1
24	6.7	31	14	e7.5	12	11	9.4	14	e27	e17	7.3	4.8
25	8.8	27	14	e7.4	13	11	10	15	e25	e15	10	4.7
26	7.9	22	13	e7.3	14	15	9.6	15	e23	e14	14	4.6
27	7.9	20	13	e7.2	14	18	9.6	14	e21	e13	11	4.6
28	8.8	18	12	e7.1	14	16	9.6	13	e19	e12	13	4.7
29	8.8	17	13	e7.0	13	15	9.1	13	e18	e11	15	4.7
30	8.7	16	14	e6.9	---	14	8.9	18	e17	e10	13	4.8
31	8.7	---	14	e6.8	---	15	---	23	---	e11	12	---
TOTAL	195.6	480.1	431	266.9	244.8	464	318.6	365.4	853	439	316.6	218.3
MEAN	6.31	16.0	13.9	8.61	8.44	15.0	10.6	11.8	28.4	14.2	10.2	7.28
MAX	9.7	31	18	13	14	27	14	23	73	17	15	12
MIN	3.0	7.1	11	6.8	6.1	11	8.9	7.0	12	10	7.3	4.6

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2004, BY WATER YEAR (WY)

	MEAN	12.4	15.7	15.2	17.6	18.2	21.4	24.0	22.3	21.7	14.8	13.2	10.6
MAX	27.3	31.6	23.6	38.3	30.5	33.8	47.0	32.7	44.9	28.6	36.4	24.0	
(WY)	(1994)	(1994)	(1993)	(1993)	(1997)	(1993)	(1998)	(2002)	(1993)	(1996)	(1995)	(1993)	
MIN	3.41	3.32	4.49	5.42	5.12	5.79	10.4	11.3	10.0	7.18	3.52	3.54	
(WY)	(2003)	(2000)	(2000)	(2003)	(2003)	(2003)	(2003)	(2001)	(2003)	(2001)	(2003)	(2003)	

SUMMARY STATISTICS

FOR 2003 CALENDAR YEAR

FOR 2004 WATER YEAR

WATER YEARS 1993 - 2004

ANNUAL TOTAL	3,470.8	4,593.3	
ANNUAL MEAN	9.51	12.6	17.3
HIGHEST ANNUAL MEAN			27.7
LOWEST ANNUAL MEAN			7.54
HIGHEST DAILY MEAN	46	May 12	73
LOWEST DAILY MEAN	1.9	Aug 25	3.0
ANNUAL SEVEN-DAY MINIMUM	2.2	Aug 20	3.4
MAXIMUM PEAK FLOW			116
MAXIMUM PEAK STAGE			5.36
10 PERCENT EXCEEDS	18		18
50 PERCENT EXCEEDS	7.0		11
90 PERCENT EXCEEDS	3.3		6.6
			5.8

e Estimated

04101370 JUDAY CREEK NEAR SOUTH BEND, IN—Continued

