

STREAMS TRIBUTARY TO LAKE SUPERIOR

04010500 PIGEON RIVER AT MIDDLE FALLS, NEAR GRAND PORTAGE, MN

LOCATION.--Lat 48°00'44", long 89°36'58", in SW¹/₄NE¹/₄ sec. 24, T.64 N., R.6 E., Cook County, Hydrologic Unit 04010101, on the Grand Portage Indian Reservation, on right bank 400 ft upstream from Middle Falls, 2.5 mi upstream from Grand Portage Port of Entry, 3.5 mi upstream from mouth, and 4.7 mi northeast of city of Grand Portage.

DRAINAGE AREA.--609 mi².

PERIOD OF RECORD.--June to October 1921, April to November 1922, March 1923 to current year. Published as "at International Bridge" April 1924 to September 1940; as "below International Bridge" October 1940 to September 1965. Monthly discharge only for some periods, published in WSP 1307.

REVISED RECORDS.--WSP 744:1927-28. WSP 804: 1934(M). WSP 974: Drainage area. WSP 1337:1924(M), 1925, 1926-28(M), 1931(M), 1938(M), 1941(M), 1945-46(M), 1947, 1948(M), 1950(M).

GAGE.--Water-stage recorder. Datum of gage is 787.58 ft above sea level (NGVD of 1929). Prior to Sept. 30, 1940, nonrecording gage at International Bridge, 5.8 mi upstream at datum 102.24 ft higher. Oct. 1, 1940 to Dec. 31, 1975, at present site at datum 2.00 ft higher.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr 9	0400	2,760	7.90	Jun 1	0300	3,450	8.56
Apr 19	1730	*3,680	*8.77				

Minimum discharge, 66 ft³/s, Sept. 14, gage height, 2.30 ft.

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	139	222	e240	e180	e162	e139	e440	1,470	3,300	510	207	90
2	140	222	e233	e179	e160	e139	e600	1,390	2,690	491	196	88
3	144	214	e227	e178	e159	e139	e750	1,320	2,050	474	187	87
4	145	e205	e222	e177	e158	e140	e900	1,260	1,630	573	179	84
5	141	e185	e220	e176	e158	e141	e990	1,210	1,400	782	170	81
6	135	e165	e214	e175	e157	e142	e1,130	1,170	1,280	729	161	92
7	128	e145	e210	e174	e156	e142	e1,520	1,110	1,370	619	152	87
8	122	e133	e204	e173	e155	e141	e2,300	1,080	1,620	557	145	84
9	120	e145	e200	e172	e153	e141	e2,630	1,030	1,650	505	149	88
10	119	e165	e185	e171	e151	e140	2,130	1,010	1,420	463	161	90
11	120	e170	e168	e172	e150	e140	1,650	977	1,230	447	176	82
12	152	e175	e169	e172	e149	e140	1,370	937	1,120	440	176	74
13	191	e208	e170	e171	e148	e141	1,240	914	1,070	428	174	70
14	207	e199	e171	e171	e147	e142	1,290	927	1,070	421	167	68
15	192	e175	e173	e171	e146	e143	1,360	909	1,020	401	158	104
16	180	e170	e175	e172	e145	e144	1,470	873	960	384	148	186
17	171	176	e176	e172	e145	e145	1,770	999	916	378	142	158
18	162	234	e177	e172	e146	e144	2,110	1,230	869	365	139	148
19	153	e285	e178	e171	e147	e143	3,510	1,160	819	369	135	135
20	145	e310	e179	e171	e148	e142	3,460	1,070	776	366	134	113
21	143	e325	e180	e172	e147	e141	2,970	997	746	349	136	106
22	141	e305	e179	e172	e146	e141	2,490	957	702	328	131	107
23	142	e280	e177	e171	e144	e140	2,170	960	668	316	121	104
24	141	e245	e175	e171	e142	e140	1,940	923	644	297	110	102
25	141	e260	e173	e170	e140	e139	1,800	885	627	276	103	98
26	142	e280	e174	e170	e140	e145	1,750	859	608	260	97	93
27	145	e270	e178	e169	e139	e170	1,650	906	588	248	90	95
28	162	e260	e183	e168	e139	e210	1,550	959	570	235	87	88
29	176	e250	e183	e167	e139	e235	1,530	888	559	227	87	81
30	187	e245	e182	e165	---	e270	1,540	836	541	220	97	79
31	217	---	e181	e163	---	e327	---	2,390	---	215	95	---
TOTAL	4,743	6,623	5,856	5,328	4,316	4,886	52,010	33,606	34,513	12,673	4,410	2,962
MEAN	153	221	189	172	149	158	1,734	1,084	1,150	409	142	98.7
MAX	217	325	240	180	162	327	3,510	2,390	3,300	782	207	186
MIN	119	133	168	163	139	139	440	836	541	215	87	68
AC-FT	9,410	13,140	11,620	10,570	8,560	9,690	103,200	66,660	68,460	25,140	8,750	5,880
CFSM	0.25	0.36	0.31	0.28	0.24	0.26	2.85	1.78	1.89	0.67	0.23	0.16
IN.	0.29	0.40	0.36	0.33	0.26	0.30	3.18	2.05	2.11	0.77	0.27	0.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 2004, BY WATER YEAR (WY)

MEAN	354	351	207	150	125	174	1,205	1,587	835	416	240	282
MAX	2,095	1,461	720	431	300	1,169	2,724	4,016	2,801	1,127	1,029	2,985
(WY)	(1978)	(1971)	(1978)	(1975)	(1969)	(1945)	(2001)	(1950)	(1947)	(1968)	(1950)	(1977)
MIN	17.4	11.4	2.85	2.18	8.02	60.0	290	138	125	78.0	46.5	40.2
(WY)	(1977)	(1977)	(1977)	(1977)	(1977)	(1941)	(1977)	(1977)	(1977)	(1958)	(1998)	(1976)

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SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1921 - 2004	
ANNUAL TOTAL	110,832		171,926		496	
ANNUAL MEAN	304		470		840	
HIGHEST ANNUAL MEAN					1971	
LOWEST ANNUAL MEAN					158	
HIGHEST DAILY MEAN	3,390	Apr 22	3,510	Apr 19	10,700	May 5, 1934
LOWEST DAILY MEAN	25	Jan 21	68	Sep 14	a1.0	Jan15-21,1977
ANNUAL SEVEN-DAY MINIMUM	25	Jan 20	79	Sep 8	1.0	Jan 15, 1977
MAXIMUM PEAK FLOW			3,680	Apr 19	b11,000	May 5, 1934
MAXIMUM PEAK STAGE			8.77	Apr 19	c12.37	Sep 24, 1977
INSTANTANEOUS LOW FLOW			66	Sep 14	a1.0	Jan 15, 1977
ANNUAL RUNOFF (AC-FT)	219,800		341,000		359,600	
ANNUAL RUNOFF (CFSM)	0.499		0.771		0.815	
ANNUAL RUNOFF (INCHES)	6.77		10.50		11.07	
10 PERCENT EXCEEDS	689		1,280		1,270	
50 PERCENT EXCEEDS	180		176		221	
90 PERCENT EXCEEDS	27		120		84	

- a Minimum observed.
- b Gage height 7.60 ft, site and datum then in use.
- c At present site and datum, discharge 10,500 ft³/s.
- e Estimated.

