

04015330 KNIFE RIVER NEAR TWO HARBORS, MN

LOCATION.--Lat 46°56'49", long 91°47'32", in SW¹/₄NW¹/₄ sec. 31, T.52 N., R.11 W., Lake County, Hydrologic Unit 04010102, on right bank 600 ft downstream from bridge on U.S. Highway 61, 0.5 mi upstream from bridge on County Highway 102, in town of Knife River, 0.8 mi upstream from Lake Superior, and 7.8 mi southwest of Two Harbors.

DRAINAGE AREA.--83.6 mi².

PERIOD OF RECORD.--July 1974 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 640 ft above sea level (from topographic map).

REMARKS.--Records good except those for estimated daily discharges, which are poor. Flow regulated intermittently by fish ladder operation just upstream of gage.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr 10	1030	*1,780	*6.09	No peak greater than base discharge.			

Minimum discharge, 0.00 ft³/s, many days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	43	e18	e4.3	0.00	0.00	e21	60	51	22	29	8.6
2	18	38	e13	e4.0	0.00	0.00	e25	60	42	19	29	7.7
3	15	37	e11	e3.7	e0.00	0.00	e29	49	35	91	25	7.2
4	119	33	e9.2	e3.5	e0.00	0.00	e70	44	30	83	21	6.9
5	180	30	e9.9	e3.4	e0.00	0.00	e170	43	25	49	14	6.4
6	116	29	e10	e3.2	e0.00	0.00	e400	44	23	40	12	6.1
7	116	27	e12	e2.9	e0.00	0.00	e530	45	23	68	11	5.7
8	84	28	e14	e2.7	e0.00	0.00	852	45	22	80	9.7	5.5
9	65	28	e15	e2.6	e0.00	0.00	1,070	471	30	49	9.7	5.3
10	59	28	e16	e2.5	e0.00	0.00	1,280	753	56	59	10	4.8
11	47	28	e16	e2.2	e0.00	0.00	749	401	117	101	10	4.9
12	68	26	e16	e1.7	0.00	0.00	463	221	78	71	9.1	6.8
13	95	e28	e17	e1.0	0.00	0.00	218	142	56	48	7.9	11
14	70	e29	e17	e0.70	0.00	e0.01	216	110	40	34	7.3	9.3
15	55	e30	e17	e0.20	0.00	e0.05	212	89	30	35	7.0	7.7
16	46	e29	e17	e0.05	0.00	e0.60	125	75	28	33	6.4	6.7
17	40	e28	e17	e0.00	0.00	e4.0	78	64	24	29	5.6	5.7
18	41	e27	e17	e0.00	0.00	e21	84	57	20	25	5.3	6.4
19	73	27	e17	e0.00	0.00	e50	397	402	17	19	4.9	46
20	65	25	e17	e0.10	0.00	e150	521	631	14	22	4.7	68
21	61	24	e17	e0.05	0.00	e260	660	265	12	24	6.4	40
22	56	e24	e17	e0.00	0.00	e370	329	164	11	22	11	26
23	51	23	e15	e0.00	0.00	e500	169	238	21	16	8.7	19
24	52	e23	e13	e0.00	0.00	e300	126	155	35	14	9.9	15
25	48	e23	e10	e0.00	0.00	e170	110	113	39	12	11	12
26	54	e25	e8.0	e0.00	0.00	e126	89	87	56	11	25	11
27	59	e24	e6.6	0.00	0.00	e60	83	69	47	10	33	11
28	56	e24	e6.0	0.00	0.00	e18	84	63	36	9.0	20	11
29	55	e26	e5.4	0.00	---	e22	79	64	37	8.6	15	12
30	57	e22	e5.0	0.00	---	e23	67	57	29	8.7	12	9.8
31	52	---	e4.6	0.00	---	e22	---	59	---	8.9	9.9	---
TOTAL	1,992	836	403.7	38.80	0.00	2,096.66	9,306	5,140	1,084	1,121.2	400.5	403.5
MEAN	64.3	27.9	13.0	1.25	0.000	67.6	310	166	36.1	36.2	12.9	13.4
MAX	180	43	18	4.3	0.00	500	1,280	753	117	101	33	68
MIN	15	22	4.6	0.00	0.00	0.00	21	43	11	8.6	4.7	4.8
AC-FT	3,950	1,660	801	77	0.00	4,160	18,460	10,200	2,150	2,220	794	800
CFSM	0.77	0.33	0.16	0.01	0.00	0.81	3.71	1.98	0.43	0.43	0.15	0.16
IN.	0.89	0.37	0.18	0.02	0.00	0.93	4.14	2.29	0.48	0.50	0.18	0.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2003, BY WATER YEAR (WY)

MEAN	89.8	81.0	24.0	11.1	12.9	60.3	377	155	87.4	88.8	35.9	77.6
MAX	267	238	75.1	31.4	79.2	204	889	427	240	402	163	314
(WY)	(1996)	(1999)	(1999)	(1975)	(1998)	(1998)	(2001)	(1979)	(1984)	(1999)	(1988)	(1977)
MIN	3.06	1.58	0.000	0.000	0.000	6.30	73.6	16.0	13.0	4.87	2.95	1.43
(WY)	(1977)	(1977)	(1977)	(1977)	(1977)	(2002)	(1977)	(1976)	(1995)	(1988)	(1976)	(1976)

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SUMMARY STATISTICS	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1974 - 2003	
ANNUAL TOTAL	24,511.6		22,822.36		92.2	
ANNUAL MEAN	67.2		62.5		44.2	
HIGHEST ANNUAL MEAN					164	1999
LOWEST ANNUAL MEAN					44.2	1977
HIGHEST DAILY MEAN	1,510	Jun 23	1,280	Apr 10	4,840	Jul 5, 1999
LOWEST DAILY MEAN	2.8	Mar 6	a0.00	Jan 17	b0.00	Dec 2, 1976
ANNUAL SEVEN-DAY MINIMUM	2.9	Mar 2	0.00	Jan 22	0.00	Dec 2, 1976
MAXIMUM PEAK FLOW			1,780	Apr 10	9,100	Jul 5, 1999
MAXIMUM PEAK STAGE			6.09	Apr 10	12.14	Jul 5, 1999
INSTANTANEOUS LOW FLOW			c0.00	Jan 17	b0.00	Dec 2, 1976
ANNUAL RUNOFF (AC-FT)	48,620		45,270		66,770	
ANNUAL RUNOFF (CFSM)	0.80		0.75		1.10	
ANNUAL RUNOFF (INCHES)	10.91		10.16		14.98	
10 PERCENT EXCEEDS	118		125		224	
50 PERCENT EXCEEDS	19		22		23	
90 PERCENT EXCEEDS	4.4		0.00		4.9	

a Also occurred Jan, 18, 19, Jan. 22 to Mar. 13.
 b Many days in 1977 and 2003.
 c Many days.
 e Estimated.

