

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 (*):

Time	Discharge (ft ³ /s)	Gage height (ft)	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar 31 1030	(ice jam)	*9.08	0730	*1,760	6.25
No peak greater than base discharge.					

Minimum discharge, 0.76 ft³/s, Sept. 9, gage height, 1.99 ft.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2004 TO SEPTEMBER 2005
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	92	154	e31	e13	e14	e14	1,140	70	80	157	6.9	3.8
2	158	117	e27	e14	e14	e13	857	63	65	84	6.6	3.7
3	90	95	e26	e14	e15	e12	814	57	52	54	6.4	3.6
4	61	79	e24	e14	e15	e13	840	52	67	42	7.2	3.5
5	49	67	e24	e14	e16	e13	904	49	378	31	7.5	3.5
6	43	61	e23	e14	e18	e14	1,030	78	320	27	6.1	3.8
7	31	54	e22	e14	e20	e14	772	79	171	24	5.1	3.7
8	25	47	e22	e15	e22	e15	651	77	156	21	4.5	3.5
9	21	42	e21	e15	e23	e15	554	85	168	20	4.8	3.4
10	19	40	e21	e15	e23	e16	461	119	248	19	5.4	10
11	17	35	e20	e15	e22	e16	434	135	296	16	5.7	12
12	16	30	e20	e15	e22	e16	355	117	288	15	5.0	11
13	15	33	e19	e15	e22	e15	254	95	158	14	4.5	49
14	20	35	e18	e15	e22	e14	189	104	1,200	12	4.1	36
15	25	29	e17	e14	e23	e13	150	102	964	11	3.9	19
16	21	27	e16	e14	e21	e13	128	82	354	15	3.8	13
17	19	28	e14	e14	e20	e13	113	67	176	28	3.7	9.5
18	17	30	e12	e14	e19	e13	98	63	109	22	4.6	7.8
19	17	29	e10	e14	e17	e13	174	446	79	18	7.2	11
20	22	44	e8.0	e14	e16	e13	305	313	73	14	7.1	47
21	25	50	e9.0	e15	e15	e13	194	190	96	12	5.8	28
22	25	41	e12	e15	e16	e13	151	150	67	9.9	5.0	18
23	709	36	e12	e15	e15	e16	131	139	51	8.6	4.0	13
24	520	38	e12	e15	e15	e18	104	104	41	8.8	3.8	12
25	275	e37	e11	e15	e14	e25	95	88	32	8.4	3.8	15
26	163	e35	e11	e15	e14	e34	135	426	27	8.6	4.3	19
27	116	e34	e11	e14	e13	e51	130	299	25	9.7	5.4	19
28	92	e33	e11	e14	e14	e221	110	267	30	9.2	5.9	16
29	148	e33	e12	e14	---	e510	93	169	28	9.2	4.8	13
30	397	e32	e12	e14	---	e845	79	145	224	8.0	4.2	11
31	226	---	e13	e14	---	e1,150	---	106	---	7.2	4.0	---
TOTAL	3,474	1,445	521.0	446	500	3,174	11,445	4,336	6,023	743.6	161.1	421.8
MEAN	112	48.2	16.8	14.4	17.9	102	382	140	201	24.0	5.20	14.1
MAX	709	154	31	15	23	1,150	1,140	446	1,200	157	7.5	49
MIN	15	27	8.0	13	13	12	79	49	25	7.2	3.7	3.4
AC-FT	6,890	2,870	1,030	885	992	6,300	22,700	8,600	11,950	1,470	320	837
CFSM	1.34	0.58	0.20	0.17	0.21	1.22	4.56	1.67	2.40	0.29	0.06	0.17
IN.	1.55	0.64	0.23	0.20	0.22	1.41	5.09	1.93	2.68	0.33	0.07	0.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 2005, BY WATER YEAR (WY)

MEAN	88.0	78.1	23.2	10.9	12.8	60.3	375	155	91.6	84.4	34.1	74.5
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	0.00	0.00	0.00	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 2004 CALENDAR YEAR		FOR 2005 WATER YEAR		WATER YEARS 1974 - 2005	
ANNUAL TOTAL	24,996.6		32,690.5		90.9	
ANNUAL MEAN	68.3		89.6		164	
HIGHEST ANNUAL MEAN					1999	
LOWEST ANNUAL MEAN					1977	
HIGHEST DAILY MEAN	1,450	May 31	1,200	Jun 14	4,840	Jul 5, 1999
LOWEST DAILY MEAN	3.0	Jan 17	3.4	Sep 9	a0.00	Dec 2, 1976
ANNUAL SEVEN-DAY MINIMUM	3.1	Jan 13	3.6	Sep 3	0.00	Dec 2, 1976
MAXIMUM PEAK FLOW			b1,760	Jun 14	9,100	Jul 5, 1999
MAXIMUM PEAK STAGE			c9.08	Mar 31	12.14	Jul 5, 1999
INSTANTANEOUS LOW FLOW			e0.76	Sep 9	a0.00	Dec 2, 1976
ANNUAL RUNOFF (AC-FT)	49,580		64,840		65,880	
ANNUAL RUNOFF (CFSM)	0.817		1.07		1.09	
ANNUAL RUNOFF (INCHES)	11.12		14.55		14.78	
10 PERCENT EXCEEDS	172		222		220	
50 PERCENT EXCEEDS	19		21		22	
90 PERCENT EXCEEDS	3.3		7.0		4.9	

- a Many days in 1977 and 2003.
- b Gage height, 6.25 ft.
- c Backwater from ice.
- e Estimated.

