05059000 SHEYENNE RIVER NEAR KINDRED, ND

Devils Lake-Sheyenne Basin
Lower Sheyenne Subbasin

LOCATION.--Lat 46°37′54″, long 97°00′01″ referenced to North American Datum of 1927, in SE ¼ SE ¼ SW ¼ sec.33, T.137 N., R.50 W., Cass County, ND, Hydrologic Unit 09020204, on left bank 100 ft downstream from North Dakota State Highway 46 bridge crossing, 1.5 mi southeast of Kindred, and at mile 67.9.

DRAINAGE AREA.--8,800 mi² of which 5,780 mi² probably is noncontributing, including 3,800 mi² in closed basins.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--DAILY DISCHARGE--August 1949 to current year.

PERIOD OF RECORD.--DAILY GAGE HEIGHT--October 2000 to current year.

REVISED RECORDS.--WSP 1728: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 925.55 ft above National Geodetic Vertical Datum of 1929. From October 1, 1962, to September 30, 1989, gage was located at site 1,500 ft upstream. July 1949 to September 30, 1962, nonrecording gage at same site and datum.

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

REGULATION.--Flow regulated to a large degree by Lake Ashtabula (station 05057500), 202 mi upstream, and several small reservoirs.

EXTREMES OUTSIDE PERIOD OF RECORD.--Spring flood in 1947 or 1948 reached a stage of 22.1 ft from floodmarks, discharge about 3,600 ft³/s.

05059000 SHEYENNE RIVER NEAR KINDRED, ND—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	221	614	375	e150	e392	e305	4,010	2,340	2,010	968	368	318
2	295	594	372	e146	e382	e307	3,910	2,320	2,010	880	389	282
3	342	593	e334	e141	e378	e312	3,760	2,290	2,000	812	382	261
4	357	571	e317	e138	e368	e323	3,570	2,210	1,960	e773	411	267
5	358	547	e308	e137	e368	e339	3,370	1,970	1,830	e679	422	344
6	383	529	e297	e137	e372	e358	3,220	1,660	1,740	e639	413	283
7	472	516	e293	e135	e375	e372	3,120	1,490	1,640	e628	446	319
8	552	505	e290	e135	e378	e387	3,050	1,490	1,410	e619	478	486
9	583	497	e284	e133	e378	e406	2,980	1,380	1,230	e608	470	545
10	626	475	e280	e133	e375	e439	2,930	1,160	1,070	603	463	687
11	650	484	e277	e133	e370	e489	2,880	1,120	958	636	469	851
12	528	491	e266	e137	e372	e549	2,840	1,260	889	636	508	834
13	480	488	e264	e143	e370	e661	2,780	1,310	840	622	656	785
14	501	484	e253	e148	e372	e875	2,770	1,360	813	678	765	766
15	528	480	e247	e154	e370	e1,180	2,690	1,340	820	753	774	740
16	564	476	e244	e159	e370	e1,550	2,600	1,310	821	766	679	688
17	601	470	e244	e161	e364	e2,000	2,480	1,250	826	836	637	658
18	598	444	e244	e161	e359	e2,400	2,240	1,150	831	926	593	629
19	586	409	e236	e164	e353	e2,730	2,270	1,080	803	888	550	611
20	556	435	e233	e207	e348	e3,160	2,370	1,030	788	797	525	601
21	567	421	e216	e287	e344	e3,650	2,400	1,000	788	729	510	596
22	570	417	e207	e349	e344	e4,170	2,400	968	765	694	513	588
23	558	400	e207	e399	e338	e4,800	2,390	930	739	665	524	595
24	547	368	e207	e421	e326	5,540	2,370	915	716	650	496	787
25	542	338	e207	e421	e316	5,620	2,370	915	718	642	477	910
26	531	351	e207	e425	e311	5,780	2,370	883	765	634	465	984
27	516	380	e207	e425	e311	5,730	2,350	885	944	637	451	1,080
28	501	382	e194	e417	e306	5,470	2,320	1,230	1,100	613	426	1,160
29	508	381	e179	e406	---	5,030	2,310	1,720	1,140	535	404	1,180
30	558	378	e167	e399	---	4,500	2,330	1,860	1,080	467	389	1,150
31	626	---	e157	e396	---	4,170	---	1,950	---	362	352	---
Total	15,805	13,918	7,813	7,297	10,010	73,602	83,450	43,776	34,044	21,375	15,405	19,985
Mean	510	464	252	235	358	2,374	2,782	1,412	1,135	690	497	666
Max	650	614	375	425	392	5,780	4,010	2,340	2,010	968	774	1,180
Min	221	338	157	133	306	305	2,240	883	716	362	352	261
Ac-ft	31,350	27,610	15,500	14,470	19,850	146,000	165,500	86,830	67,530	42,400	30,560	39,640

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2010, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	115	134	116	96.3	105	384	971	589	375	286	158	117
Max	693	589	400	259	358	2,374	5,159	3,184	1,938	1,466	2,231	666
(WY)	(1995)	(1995)	(2001)	(2006)	(2010)	(2010)	(2009)	(2009)	(1950)	(1975)	(1993)	(2010)
Min	24.6	22.7	17.6	17.5	21.7	35.1	71.7	53.6	48.4	26.7	17.5	25.1
(WY)	(1957)	(1956)	(1956)	(1991)	(1956)	(1956)	(1991)	(1990)	(1961)	(1988)	(1988)	(1959)

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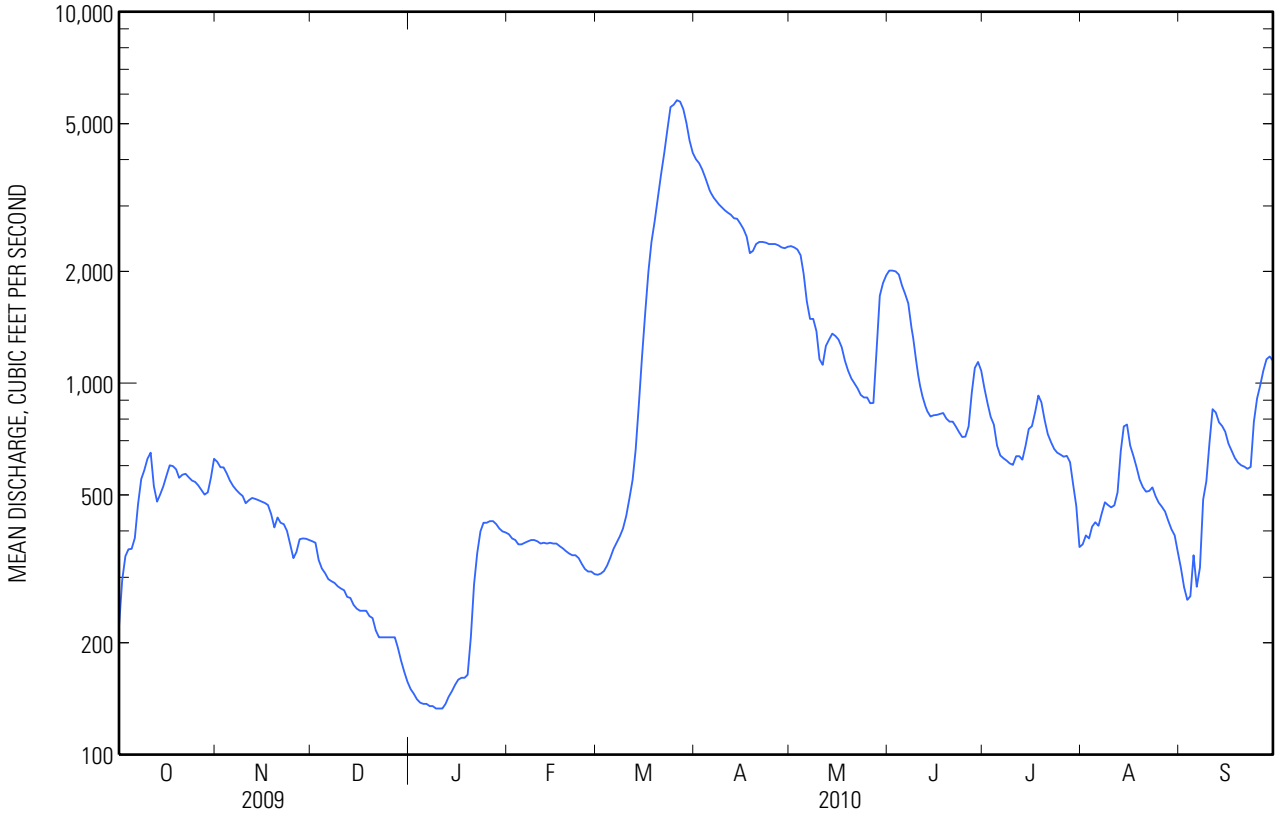
SUMMARY STATISTICS

	Calendar Year 2009		Water Year 2010		Water Years 1949 - 2010	
Annual total	385,889		346,480			
Annual mean	1,057		949		288	
Highest annual mean					1,045	2009
Lowest annual mean					48.0	1991
Highest daily mean	5,890	Apr 13	5,780	Mar 26	5,890	Apr 13, 2009
Lowest daily mean	134	Aug 15	133	Jan 9	9.2	Aug 16, 1990
Annual seven-day minimum	156	Aug 10	135	Jan 5	11	Dec 26, 1990
Maximum peak flow			[a]5,830	Mar 26	5,970	Apr 27, 1997
Maximum peak stage			[b]21.44	Mar 21	[b]22.33	Apr 8, 1997
Annual runoff (ac-ft)	765,400		687,200		208,300	
10 percent exceeds	4,020		2,370		612	
50 percent exceeds	363		552		111	
90 percent exceeds	192		244		36	

[a] Gage height, 21.11 ft.
[b] Backwater from ice.

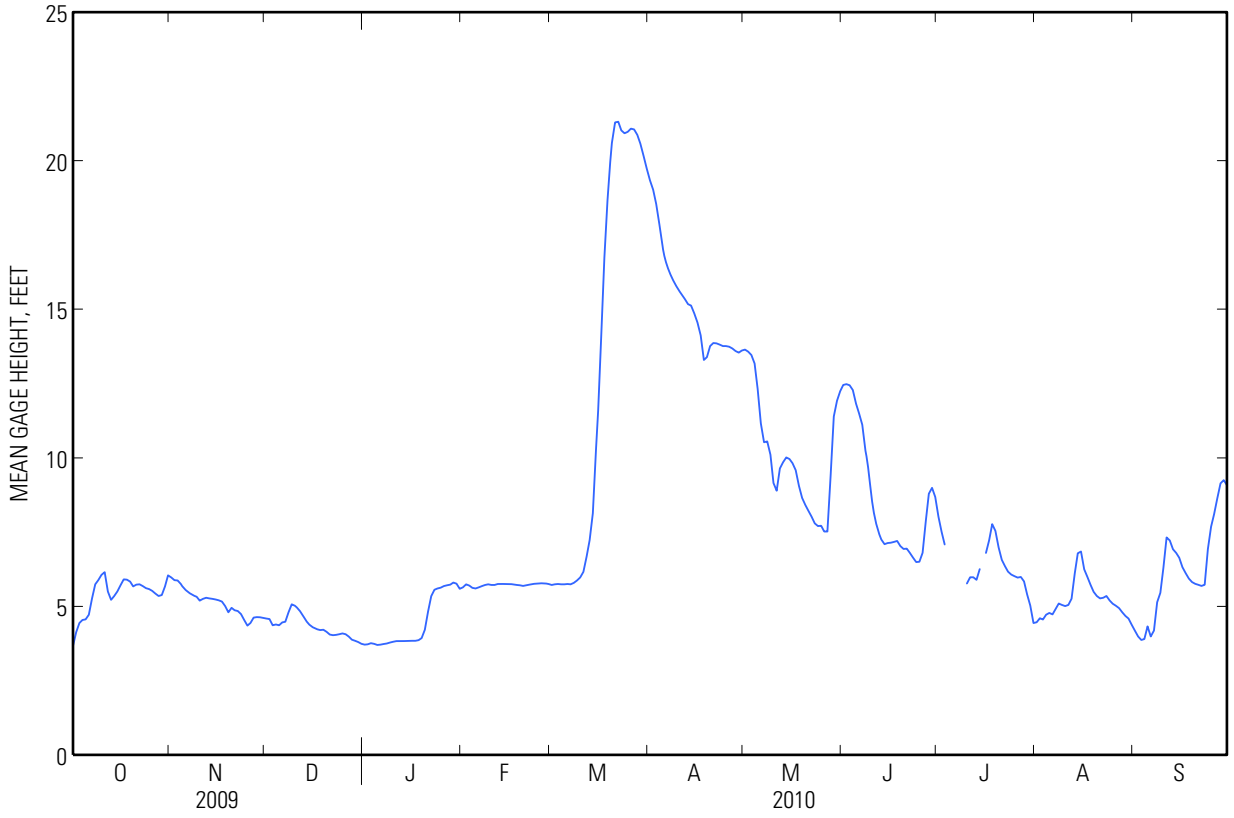


05059000 SHEYENNE RIVER NEAR KINDRED, ND—Continued

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	3.67	5.97	4.59	3.71	5.64	5.72	19.34	13.64	12.45	8.02	4.47	4.18
2	4.13	5.88	4.57	3.72	5.74	5.74	19.02	13.57	12.48	7.50	4.60	3.99
3	4.44	5.87	4.36	3.76	5.70	5.75	18.54	13.46	12.44	7.08	4.56	3.87
4	4.54	5.75	4.39	3.74	5.62	5.74	17.85	13.17	12.28	---	4.72	3.90
5	4.56	5.61	4.36	3.70	5.60	5.74	17.12	12.32	11.82	---	4.78	4.33
6	4.72	5.51	4.46	3.71	5.64	5.75	16.59	11.16	11.49	---	4.73	3.99
7	5.27	5.43	4.48	3.73	5.68	5.74	16.29	10.52	11.11	---	4.92	4.19
8	5.74	5.37	4.80	3.75	5.72	5.79	16.06	10.55	10.23	---	5.10	5.14
9	5.88	5.32	5.07	3.78	5.74	5.87	15.83	10.10	9.50	---	5.05	5.46
10	6.06	5.19	5.02	3.81	5.72	5.97	15.65	9.15	8.62	5.77	5.01	6.30
11	6.15	5.25	4.91	3.83	5.72	6.16	15.50	8.89	7.96	5.98	5.05	7.32
12	5.50	5.29	4.79	3.83	5.75	6.67	15.34	9.64	7.55	5.98	5.26	7.22
13	5.22	5.27	4.60	3.83	5.75	7.23	15.17	9.85	7.25	5.89	6.11	6.92
14	5.34	5.25	4.46	3.84	5.75	8.13	15.12	10.01	7.09	6.25	6.79	6.80
15	5.50	5.23	4.34	3.83	5.75	10.30	14.86	9.96	7.13	---	6.85	6.64
16	5.71	5.20	4.27	3.84	5.75	12.44	14.55	9.82	7.14	6.80	6.25	6.32
17	5.91	5.16	4.24	3.84	5.73	15.14	14.12	9.58	7.17	7.23	5.99	6.12
18	5.90	5.01	4.20	3.86	5.72	17.44	13.29	9.06	7.20	7.77	5.72	5.94
19	5.83	4.80	4.21	3.93	5.71	19.27	13.39	8.65	7.03	7.54	5.49	5.82
20	5.67	4.95	4.14	4.21	5.69	20.59	13.76	8.41	6.93	6.99	5.35	5.76
21	5.73	4.87	4.05	4.82	5.71	21.29	13.86	8.22	6.94	6.57	5.27	5.73
22	5.74	4.84	4.03	5.34	5.73	21.31	13.85	8.02	6.80	6.35	5.29	5.69
23	5.68	4.74	4.04	5.56	5.75	21.02	13.81	7.79	6.64	6.17	5.35	5.73
24	5.61	4.54	4.06	5.60	5.76	20.92	13.76	7.70	6.49	6.07	5.20	6.93
25	5.58	4.35	4.09	5.63	5.77	20.97	13.76	7.71	6.50	6.02	5.09	7.68
26	5.52	4.44	4.06	5.68	5.78	21.08	13.74	7.52	6.80	5.97	5.02	8.11
27	5.43	4.62	3.98	5.71	5.77	21.05	13.68	7.52	7.87	5.99	4.94	8.64
28	5.35	4.64	3.88	5.73	5.75	20.87	13.59	9.38	8.79	5.84	4.80	9.14
29	5.38	4.63	3.84	5.80	---	20.57	13.54	11.39	8.99	5.41	4.68	9.25
30	5.67	4.61	3.80	5.76	---	20.16	13.61	11.92	8.68	5.03	4.59	9.08
31	6.04	---	3.74	5.59	---	19.73	---	12.24	---	4.44	4.38	---
Mean	5.40	5.12	4.32	4.43	5.72	13.23	15.15	10.03	8.65	---	5.21	6.21
Max	6.15	5.97	5.07	5.80	5.78	21.31	19.34	13.64	12.48	---	6.85	9.25
Min	3.67	4.35	3.74	3.70	5.60	5.72	13.29	7.52	6.49	---	4.38	3.87

05059000 SHEYENNE RIVER NEAR KINDRED, ND—Continued



05059000 SHEYENNE RIVER NEAR KINDRED, ND—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water year 1972 to current year.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 1 of 5

[ANC, acid neutralizing capacity; CaCO3, calcium carbonate; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Sample start time	Temperature, air, °C (00020)	Discharge, instantaneous, ft³/s (00061)	pH, water, unfiltered, field, standard units (00400)	pH, water, unfiltered, laboratory, standard units (00403)	Specific conductance, water, unfiltered, laboratory, µS/cm at 25 °C (90095)	Specific conductance, water, unfiltered, µS/cm at 25 °C (00095)	Temperature, water, °C (00010)	Dissolved solids, water, filtered, sum of constituents, milligrams per liter (70301)	Dissolved solids, water, tons per day (70302)
03-20-2010	1640	3.0	E 3,160	8.3	7.7	578	571	.1	358	E 3,050
08-04-2010	0820	--	404	8.3	8.4	1,050	1,050	25.5	651	710

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 2 of 5

[ANC, acid neutralizing capacity; CaCO3, calcium carbonate; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Sample start time	Hardness, water, mg/L as CaCO3 (00900)	Calcium, water, filtered, mg/L (00915)	Magnesium, water, filtered, mg/L (00925)	Potassium, water, filtered, mg/L (00935)	Sodium adsorption ratio, water, number (00931)	Sodium fraction of cations, water, percent in equivalents of major cations (00932)	Sodium, water, filtered, mg/L (00930)	ANC, water, unfiltered, fixed endpoint (pH 4.5) titration, laboratory, mg/L as CaCO3 (90410)	Chloride, water, filtered, mg/L (00940)
03-20-2010	1640	193	41.0	22.1	9.81	1.1	28	35.6	137	15.4
08-04-2010	0820	426	88.9	49.5	8.93	1.7	29	78.9	306	19.8

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 3 of 5

[ANC, acid neutralizing capacity; CaCO3, calcium carbonate; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Sample start time	Fluoride, water, filtered, mg/L (00950)	Silica, water, filtered, mg/L as SiO2 (00955)	Sulfate, water, filtered, mg/L (00945)	Aluminum, water, filtered, µg/L (01106)	Barium, water, filtered, µg/L (01005)	Beryllium, water, filtered, µg/L (01010)	Cadmium, water, filtered, µg/L (01025)	Chromium, water, filtered, µg/L (01030)	Copper, water, filtered, µg/L (01040)
03-20-2010	1640	.14	12.3	117	< 50	40	< 5.00	< 5.00	< 5.0	< 5.0
08-04-2010	0820	.19	21.6	247	< 50	60	< 5.00	< 5.00	5.2	< 5.0

05059000 SHEYENNE RIVER NEAR KINDRED, ND—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 4 of 5

[ANC, acid neutralizing capacity; CaCO3, calcium carbonate; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Sample start time	Iron, water, filtered, µg/L (01046)	Lead, water, filtered, µg/L (01049)	Manganese, water, filtered, µg/L (01056)	Nickel, water, filtered, µg/L (01065)	Silver, water, filtered, µg/L (01075)	Thallium, water, filtered, µg/L (01057)	Zinc, water, filtered, µg/L (01090)	Antimony, water, filtered, µg/L (01095)	Arsenic, water, filtered, µg/L (01000)
03-20-2010	**1640**	53	< 5.00	362	5.9	< 5.00	< 5.00	10.3	< 5.00	< 5.0
08-04-2010	**0820**	< 50	< 5.00	24.0	6.2	< 5.00	< 5.00	< 5.0	< 5.00	6.1

WATER-QUALITY DATA
WATER YEAR OCTOBER 2009 TO SEPTEMBER 2010

Part 5 of 5

[ANC, acid neutralizing capacity; CaCO3, calcium carbonate; SiO2, silicon dioxide; ft³/s, cubic feet per second; mg/L, milligrams per liter; °C, degrees Celsius; µS/cm, microsiemens per centimeter; µg/L, micrograms per liter; <, less than; E, estimated]

Date	Sample start time	Boron, water, filtered, µg/L (01020)	Selenium, water, filtered, µg/L (01145)
03-20-2010	**1640**	67	< 5.0
08-04-2010	**0820**	174	< 5.0