

Water-Data Report 2008

06813500 Missouri River at Rulo, NE

Missouri-Nishnabotna Basin
Tarkio-Wolf Subbasin

LOCATION.--Lat 40°03'13", long 95°25'19" referenced to North American Datum of 1927, in NW ¼ NW ¼ sec.17, T.1 N., R.18 E., Richardson County, NE, Hydrologic Unit 10240005, on right bank at downstream side of bridge on U.S. Highway 159 in Rulo, 3.2 mi upstream from Big Nemaha River, and 498.0 mi upstream from mouth.

DRAINAGE AREA.--414,900 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1949 to current year in reports of U.S. Geological Survey. Gage-height record collected at site 80 ft upstream January 1886 to December 1899, published in reports of Missouri River Commission. September 1929 to September 1950 in files of Kansas City office of U.S. Army Corps of Engineers.

GAGE.--Water-stage recorder. Datum of gage is 837.23 ft above NGVD of 1929. October 1949 to September 12, 1950, nonrecording gage at site 80 ft upstream, and September 13, 1950 to April 19, 1983, recording gage on downstream end of middle pier, all at same datum.

REMARKS.--Records are considered good, except for those estimated daily discharges, which are poor. Flow regulated by upstream main-stem reservoirs. Fort Randall Dam was completed in July 1952, with storage beginning in December 1952. Gavins Point Dam was completed in July 1955, with storage beginning in December 1955. U.S. Army Corps of Engineers data collection platform with satellite telemetry at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 358,000 ft³/s, April 22, 1952, gage height, 25.60 ft; minimum daily discharge, 4,420 ft³/s, January 13, 1957; minimum gage height, -0.19 ft, December 25, 1990, result of freeze-up.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in 1881 reached a stage of 22.9 ft, from floodmark, discharge not determined.

06813500 Missouri River at Rulo, NE—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
DAILY MEAN VALUES

[e, estimated]

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	30,800	34,200	23,700	24,100	26,400	33,200	36,100	44,200	116,000	51,500	37,100	33,600
2	31,600	33,700	24,200	23,400	22,700	42,700	36,900	43,500	119,000	48,800	36,400	33,000
3	33,600	32,600	25,200	22,500	20,700	67,600	36,400	42,700	111,000	45,600	35,900	32,200
4	35,500	31,600	25,300	23,400	22,500	59,800	36,000	41,600	99,100	44,300	35,100	33,000
5	36,800	30,700	25,500	23,700	25,100	49,000	36,500	40,100	104,000	42,400	34,600	33,200
6	39,300	30,400	25,700	24,200	26,100	41,500	35,400	39,800	142,000	e40,500	33,900	32,300
7	37,700	29,500	26,400	25,300	25,400	37,200	33,700	42,600	143,000	e40,900	33,800	31,500
8	36,300	29,000	26,600	26,200	24,600	33,400	33,600	43,400	131,000	42,400	33,300	31,600
9	41,500	28,800	24,400	27,000	23,800	29,700	35,400	56,000	129,000	43,900	32,400	31,900
10	40,900	28,200	24,500	27,100	22,900	26,400	35,700	60,000	130,000	44,400	32,200	31,600
11	41,500	27,900	26,600	26,900	22,800	25,900	38,600	50,800	132,000	41,500	32,900	31,300
12	39,500	27,700	28,600	26,200	23,300	28,100	43,900	48,900	146,000	39,700	33,400	32,400
13	38,400	26,900	27,000	25,000	23,200	29,600	46,100	45,700	150,000	39,700	34,200	37,400
14	43,000	26,600	27,500	24,300	21,900	32,600	47,500	43,800	160,000	38,500	34,800	35,100
15	83,900	26,800	27,900	23,900	20,900	35,500	44,700	42,100	157,000	36,700	35,500	33,000
16	77,600	26,400	26,800	23,700	20,700	37,200	43,500	40,800	139,000	36,900	35,500	32,400
17	60,800	26,300	25,900	22,700	22,400	36,600	43,100	40,000	117,000	44,000	35,200	31,100
18	69,900	26,200	25,300	23,000	26,000	35,600	44,500	38,800	97,100	49,000	35,100	29,100
19	64,600	25,600	25,000	23,300	23,900	33,700	51,500	37,700	80,800	47,400	34,500	27,900
20	61,500	25,800	25,000	24,400	23,000	32,700	51,300	36,700	83,300	44,100	33,800	27,000
21	62,100	25,600	25,400	23,900	23,100	32,400	47,100	36,000	78,300	43,500	33,600	e25,900
22	57,500	25,300	26,100	23,200	22,500	31,800	44,700	35,700	69,100	43,100	33,200	25,100
23	51,500	25,400	26,200	23,000	21,700	31,600	43,000	39,400	62,900	43,100	32,700	24,800
24	47,800	25,900	25,700	22,800	22,200	32,300	42,500	42,400	57,000	43,100	32,600	26,400
25	44,800	25,100	25,500	22,800	24,400	32,500	48,600	46,900	70,600	43,200	33,100	26,100
26	43,000	24,500	25,600	22,900	27,700	32,200	52,600	66,600	67,000	51,700	33,100	25,900
27	41,100	24,800	25,900	22,800	30,400	31,200	50,100	65,300	71,900	48,200	32,700	26,700
28	39,200	24,900	26,100	23,600	34,000	31,400	48,700	56,900	68,600	43,200	33,600	28,500
29	37,500	24,700	26,200	29,600	32,100	32,000	46,200	60,800	65,800	40,800	35,300	30,000
30	35,900	24,400	24,900	30,100	---	33,100	45,000	77,900	56,600	39,400	36,000	30,400
31	35,000	---	24,100	28,700	---	34,500	---	110,000	---	38,900	36,000	---
Total	1,440,100	825,500	798,800	763,700	706,400	1,103,000	1,278,900	1,517,100	3,154,100	1,340,400	1,061,500	910,400
Mean	46,450	27,520	25,770	24,640	24,360	35,580	42,630	48,940	105,100	43,240	34,240	30,350
Max	83,900	34,200	28,600	30,100	34,000	67,600	52,600	110,000	160,000	51,700	37,100	37,400
Min	30,800	24,400	23,700	22,500	20,700	25,900	33,600	35,700	56,600	36,700	32,200	24,800
Ac-ft	2,856,000	1,637,000	1,584,000	1,515,000	1,401,000	2,188,000	2,537,000	3,009,000	6,256,000	2,659,000	2,105,000	1,806,000
Cfsm	0.11	0.07	0.06	0.06	0.06	0.09	0.10	0.12	0.25	0.10	0.08	0.07
In.	0.13	0.07	0.07	0.07	0.06	0.10	0.11	0.14	0.28	0.12	0.10	0.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 2008, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	43,400	39,350	26,730	22,720	28,090	40,110	50,110	51,800	56,580	49,370	43,780	43,810
Max	80,050	83,880	57,380	42,280	53,140	79,590	106,100	97,280	130,600	164,800	78,730	76,410
(WY)	(1998)	(1998)	(1998)	(1973)	(1997)	(1979)	(1997)	(1997)	(1984)	(1993)	(1996)	(1997)
Min	24,520	17,000	9,953	10,800	13,220	15,380	21,820	33,790	33,710	29,650	29,320	30,350
(WY)	(2007)	(1962)	(1956)	(1957)	(1957)	(1957)	(1957)	(1956)	(1956)	(2002)	(2003)	(2008)

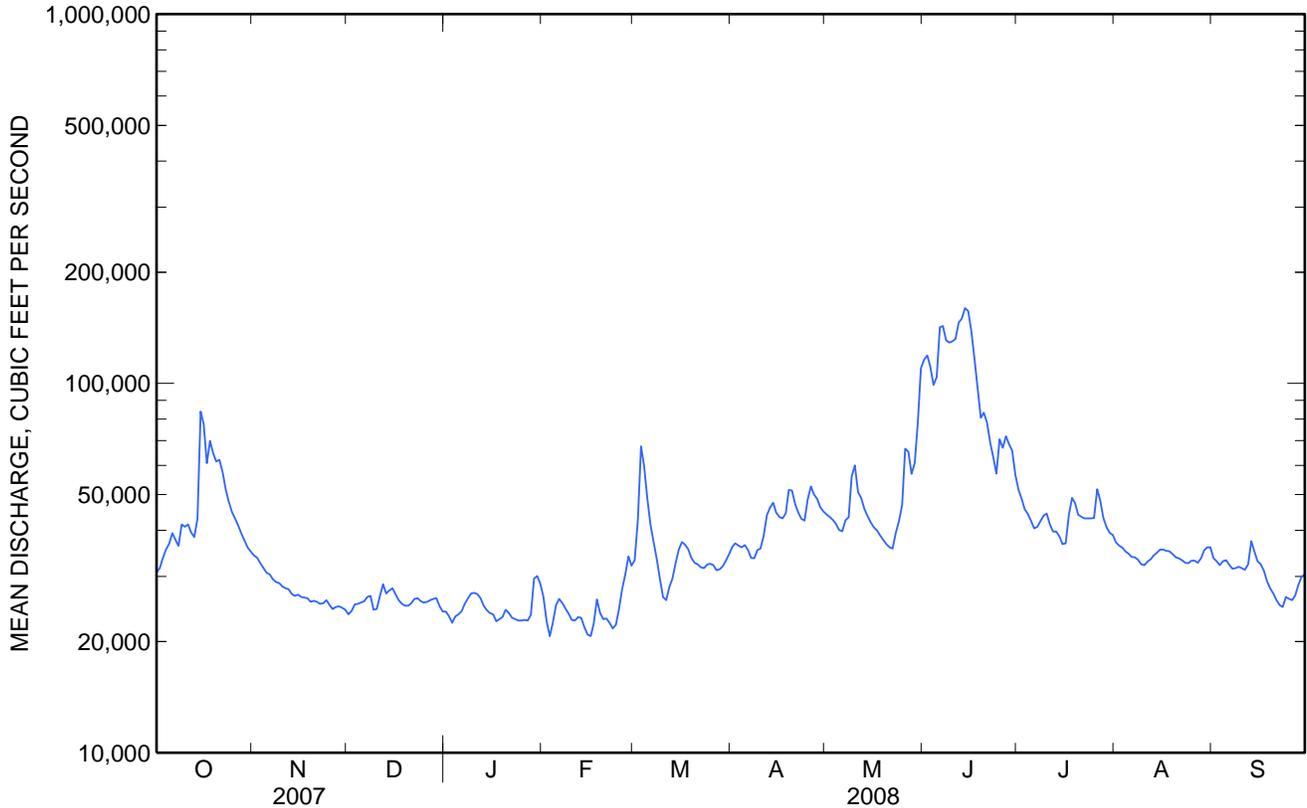
06813500 Missouri River at Rulo, NE—Continued

SUMMARY STATISTICS

	Calendar Year 2007		Water Year 2008		Water Years 1953 - 2008 ^a	
Annual total	14,869,200		14,899,900			
Annual mean	40,740		40,710		41,350	
Highest annual mean					71,880 1997	
Lowest annual mean					26,340 1957	
Highest daily mean	201,000	May 7	160,000	Jun 14	289,000	Jul 24, 1993
Lowest daily mean	12,900	Jan 17	20,700	Feb 3 ^b	4,420	Jan 13, 1957
Annual seven-day minimum	16,000	Jan 15	22,200	Feb 11	5,560	Nov 30, 1955
Maximum peak flow			167,000	Jun 14	307,000	Jul 24, 1993
Maximum peak stage			24.98	Jun 14	25.37	Jul 24, 1993
Instantaneous low flow			20,400	Feb 3		
Annual runoff (ac-ft)	29,490,000		29,550,000		29,960,000	
Annual runoff (cfsm)	0.098		0.098		0.100	
Annual runoff (inches)	1.33		1.34		1.35	
10 percent exceeds	63,200		63,400		65,600	
50 percent exceeds	35,600		33,700		37,900	
90 percent exceeds	23,200		24,000		19,200	

^aPost regulation.

^bAlso Feb 16.



06813500 Missouri River at Rulo, NE—Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 2008.

REMARKS.--Water-quality samples were collected in June 2008 to assess the impact of historic flooding on surface-water quality. For samples collected in this time period, flow-integrating sample-collection techniques were not always possible due to safety and equipment considerations.

WATER-QUALITY DATA
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 1 of 7

[Remark codes: <, less than.]

Date	Time	Gage height, feet (00065)	Instantaneous discharge, ft ³ /s (00061)	Velocity at point in stream, ft/s (81904)	Stream width, feet (00004)	Temperature, water, deg C (00010)	Chloride, water, ftrd, mg/L (00940)	Sulfate, water, ftrd, mg/L (00945)	Ammonia water, ftrd, mg/L as N (00608)	Nitrate + nitrite, water, ftrd, mg/L as N (00631)	Nitrite, water, ftrd, mg/L as N (00613)	Total nitrogen, wat unf by analysis, mg/L (62855)	Orthophosphate, water, ftrd, mg/L as P (00671)
Jun 18...	1500	19.12	94,100	4.77	875	24.0	14.7	95.3	.051	4.83	.055	6.38	.192

WATER-QUALITY DATA
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 2 of 7

[Remark codes: <, less than.]

Date	Phosphorus, water, unfltrd mg/L as P (00665)	1-Methylnaphthalene, water, unfltrd µg/L (81696)	2,6-Dimethylnaphthalene, water, unfltrd µg/L (62805)	2-Methylnaphthalene, water, unfltrd µg/L (30194)	3,4-Dichlorophenyl isocyanate, wat unf µg/L (63145)	3-beta-Coprotanol, water, unfltrd µg/L (62806)	3-Methyl-1H-indole, water, unfltrd µg/L (62807)	3-tert-Butyl-4-hydroxyanisole, wat unf µg/L (61702)	4-Cumylphenol, water, unfltrd µg/L (62808)	4-n-Octylphenol, water, unfltrd µg/L (62809)	4-Nonylphenol, all isomers, wat unf µg/L (62829)	4-Nonylphenol diethoxylate, wat unf µg/L (61703)	4-Nonylphenol monoethoxylate, wat unf µg/L (61704)
Jun 18...	.67	<.2	<.2	<.2	<2.0	<.8	<.2	<.2	<.2	<.2	<.2	<3	<2.0

WATER-QUALITY DATA
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 3 of 7

[Remark codes: <, less than.]

Date	4t-Octylphenol diethoxylate, wat flt µg/L (61705)	4t-Octylphenol monoethoxylate, wat flt µg/L (61706)	4-tert-Octylphenol, water, unfltrd µg/L (62810)	5-Methyl-1H-benzotriazole, wat unf µg/L (61944)	Acetophenone, water, unfltrd µg/L (62811)	AHTN, water, unfltrd µg/L (62812)	Anthracene, water, unfltrd µg/L (34220)	9,10-Anthraquinone, water, unfltrd µg/L (62813)	Atrazine, water, unfltrd µg/L (39630)	BDE congenr 47, water, unfltrd µg/L (63147)	Benzo[a]pyrene, water, unfltrd µg/L (34247)	Benzo-phenone, water, unfltrd µg/L (62814)	beta-Sitosterol, water, unfltrd µg/L (62815)
Jun 18...	<.32	<1	<.2	<.2	<.3	<.2	<.2	<.2	1.9	<.2	<.2	<.2	<.8

06813500 Missouri River at Rulo, NE—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 4 of 7

[Remark codes: <, less than.]

Date	beta-Stigmas- tanol, water, unfltrd µg/L (61948)	Bis(2-ethyl- phthal- ate, wat unf µg/L (39100)	Bisphe- nol A, water, unfltrd µg/L (62816)	Broma- cil, water, unfltrd µg/L (30234)	Caf- feine, water, unfltrd µg/L (81436)	Camphor water, unfltrd µg/L (62817)	Car- baryl, water, unfltrd µg/L (39750)	Carba- zole, water, unfltrd µg/L (77571)	Chlor- pyrifos water, unfltrd µg/L (38932)	Choles- terol, water, unfltrd µg/L (62818)	Coti- nine, water, unfltrd µg/L (61945)	DEET, water, unfltrd µg/L (61947)	Diazi- non, water, unfltrd µg/L (39570)	
Jun 18...	<.8	<2	<.4	<.3	<.2	<.2	<.2	<.2	<.2	<.2	<.8	<.8	<.2	<.2

WATER-QUALITY DATA
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 5 of 7

[Remark codes: <, less than.]

Date	Di- chlor- vos, water, unfltrd µg/L (30218)	Di- ethyl- phthal- ate, water, unfltrd µg/L (34336)	D-Limo- nene, water, unfltrd µg/L (62819)	Fluor- anthene water, unfltrd µg/L (34376)	HHCB, water, unfltrd µg/L (62823)	Indole, water, unfltrd µg/L (62824)	Isobor- neol, water, unfltrd µg/L (62825)	Iso- phorone water, unfltrd µg/L (34408)	Iso- quin- oline, water, unfltrd µg/L (62826)	Menthol water, unfltrd µg/L (62827)	Metal- axyl, water, unfltrd µg/L (04254)	Methyl salicy- late, water, unfltrd µg/L (62828)	Metola- chlor, water, unfltrd µg/L (82612)
Jun 18...	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	.7

WATER-QUALITY DATA
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 6 of 7

[Remark codes: <, less than.]

Date	p- Cresol, water, unfltrd µg/L (77146)	Penta- chloro- phenol, water, unfltrd µg/L (39032)	Phenan- threne, water, unfltrd µg/L (34461)	Phenol, water, unfltrd µg/L (34694)	Prome- ton, water, unfltrd µg/L (39056)	Pyrene, water, unfltrd µg/L (34469)	Tri- butyl phos- phate, water, unfltrd µg/L (62832)	Tri- closan, water, unfltrd µg/L (61708)	Tri- ethyl citrate water, unfltrd µg/L (62833)	Tri- phenyl phos- phate, water, unfltrd µg/L (62834)	Tris(2- butoxy- ethyl) phos- phate, wat unf µg/L (62830)	Tris(2- chloro- ethyl) phos- phate, wat unf µg/L (62831)	Tris- (diCl- i-Pr) phos- phate, wat unf µg/L (61707)
Jun 18...	<.2	<.8	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2	<.2

06813500 Missouri River at Rulo, NE—Continued

WATER-QUALITY DATA
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008

Part 7 of 7

[Remark codes: <, less than.]

Date	1,4-Di- chloro- benzene	Tri- bromo- methane	Iso- propyl- benzene	Naphth- alene,	Tetra- chloro- ethene,
	water, unfitrd µg/L (34571)	water, unfitrd µg/L (32104)	water, unfitrd µg/L (77223)	water, unfitrd µg/L (34696)	water, unfitrd µg/L (34475)
Jun 18...	<.2	<.2	<.2	<.2	<.4