

Water-Data Report 2011

14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR

Willamette Basin
Mckenzie Subbasin

LOCATION.--Lat 44°08'10", long 122°14'50" referenced to North American Datum of 1927, in NE ¼ sec.31, T.16 S., R.5 E., Lane County, OR, Hydrologic Unit 17090004, Willamette National Forest, on right bank, 0.2 mi upstream from Cougar Creek, 0.6 mi downstream from Cougar Dam, 2.1 mi south of Rainbow and at mile 3.9.

DRAINAGE AREA.--208 mi².

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1947 to current year.

REVISED RECORDS.--WSP 1638: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,236.42 ft above NGVD of 1929 (Federal Highway Administration bench mark). Oct. 1 to Nov. 4, 1947, nonrecording gage at site 40 ft upstream at datum 0.80 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Cougar Lake (active capacity, 164,800 acre-ft). No diversion upstream from station.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--64 years (water years 1948-2011), 853 ft³/s, 55.69 in/yr, 618,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft³/s Dec. 11, 1956, gage height, 8.66 ft, from rating curve extended above 8,100 ft³/s; maximum gage height, 8.90 ft Dec. 22, 1955 (backwater from debris); minimum discharge, 17 ft³/s Nov. 18, 1965; minimum daily, 85 ft³/s Apr. 26-28, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s Dec. 28, 1945, gage height, 8.8 ft, from floodmarks, at U.S. Army Corps of Engineers site 40 ft upstream, at datum 0.80 ft higher (computed by U.S. Army Corps of Engineers).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,170 ft³/s Jan. 21, gage height, 4.40 ft; minimum discharge, 282 ft³/s Sept. 28.

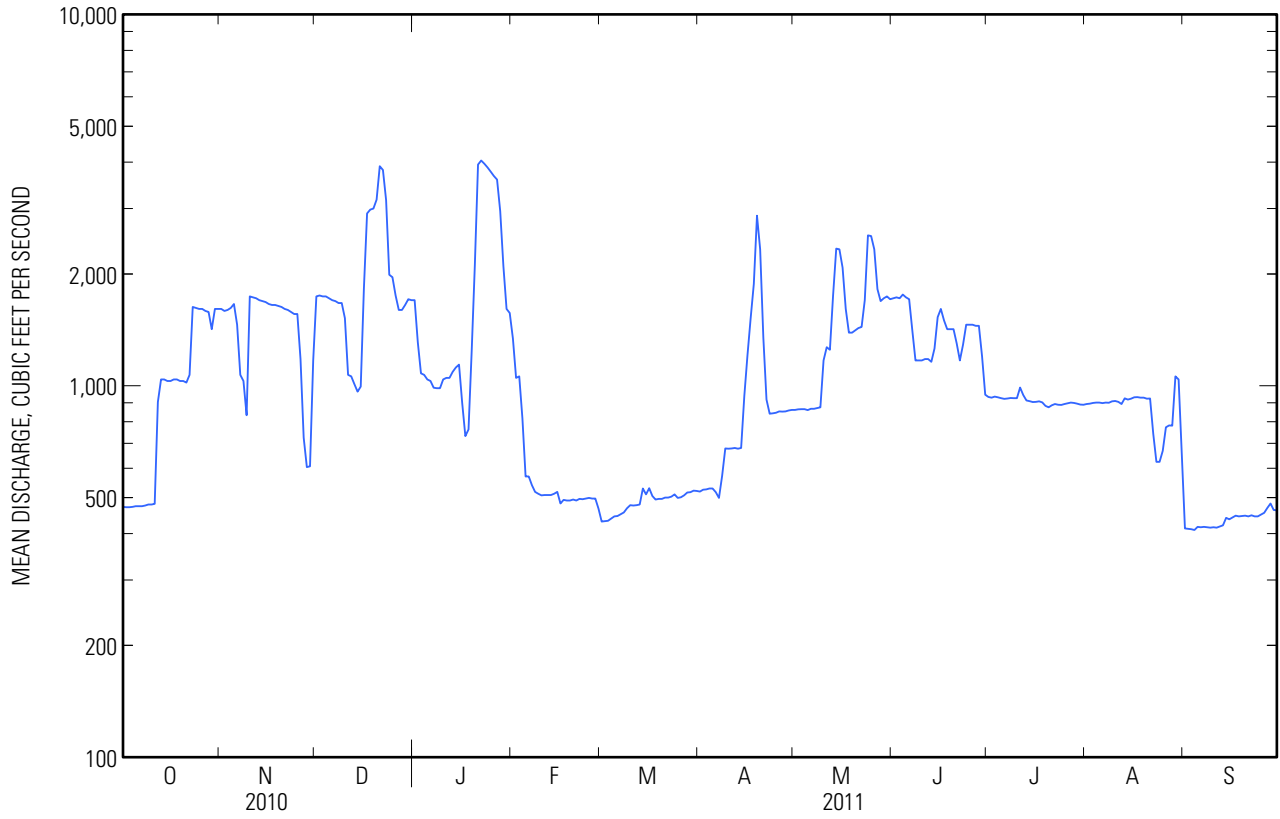
14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011
DAILY MEAN VALUES

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	472	1,610	1,740	1,700	1,340	431	519	861	1,720	933	893	413
2	471	1,590	1,750	1,310	1,050	432	525	864	1,730	929	895	412
3	471	1,600	1,740	1,080	1,060	433	526	865	1,720	935	899	411
4	472	1,620	1,740	1,070	817	439	529	865	1,760	931	901	409
5	474	1,660	1,720	1,040	570	445	529	860	1,730	926	901	417
6	474	1,460	1,700	1,030	570	446	517	867	1,710	922	898	416
7	474	1,070	1,690	988	540	451	499	867	1,410	924	901	417
8	476	1,030	1,670	985	518	456	572	871	1,170	927	900	416
9	479	833	1,670	985	512	468	678	875	1,170	926	908	415
10	479	1,740	1,520	1,040	507	477	677	1,170	1,170	926	910	416
11	481	1,730	1,070	1,050	508	476	678	1,270	1,180	989	905	415
12	904	1,720	1,060	1,050	508	477	680	1,250	1,180	944	893	418
13	1,040	1,700	1,010	1,090	508	479	677	1,750	1,160	913	925	421
14	1,040	1,690	964	1,120	512	529	680	2,340	1,260	909	918	441
15	1,030	1,680	995	1,140	518	510	939	2,330	1,530	904	923	437
16	1,030	1,660	1,830	899	482	530	1,210	2,080	1,610	905	931	442
17	1,040	1,650	2,910	732	493	505	1,520	1,610	1,500	908	932	447
18	1,040	1,650	2,980	763	491	494	1,880	1,390	1,420	902	929	445
19	1,030	1,640	3,000	1,240	491	496	2,870	1,390	1,420	883	929	446
20	1,030	1,630	3,170	2,120	494	496	2,330	1,410	1,420	875	923	447
21	1,020	1,610	3,900	3,940	491	500	1,350	1,430	1,300	886	924	445
22	1,070	1,600	3,810	4,040	496	500	918	1,440	1,170	893	743	448
23	1,630	1,580	3,160	3,960	495	503	841	1,700	1,290	889	624	445
24	1,620	1,560	1,990	3,870	497	510	843	2,540	1,460	888	624	445
25	1,610	1,560	1,960	3,770	499	499	846	2,530	1,460	893	668	450
26	1,610	1,180	1,750	3,670	497	501	853	2,330	1,460	897	773	455
27	1,590	725	1,600	3,590	497	507	852	1,820	1,450	901	782	469
28	1,580	604	1,600	2,950	467	516	853	1,690	1,450	899	781	482
29	1,420	607	1,650	2,100	---	517	858	1,720	1,200	895	1,060	463
30	1,610	1,170	1,710	1,610	---	522	861	1,740	946	890	1,040	462
31	1,610	---	1,700	1,570	---	521	---	1,710	---	889	656	---
Total	30,777	43,159	60,759	57,502	16,428	15,066	28,110	46,435	42,156	28,231	26,889	13,065
Mean	993	1,439	1,960	1,855	587	486	937	1,498	1,405	911	867	436
Max	1,630	1,740	3,900	4,040	1,340	530	2,870	2,540	1,760	989	1,060	482
Min	471	604	964	732	467	431	499	860	946	875	624	409
Ac-ft	61,050	85,610	120,500	114,100	32,580	29,880	55,760	92,100	83,620	56,000	53,330	25,910
Mean adjusted for change in contents, in Cougar Lake	370	759	1,987	2,028	711	1,325	1,738	1,595	1,463	618	377	253
CFSM adjusted for change in contents, in Cougar Lake	2.95	3.65	9.55	9.75	3.42	6.37	8.35	7.67	7.03	2.97	1.81	1.21
In. adjusted for change in contents, in Cougar Lake	3.40	4.07	11.02	11.24	3.56	7.34	9.32	8.85	7.85	3.42	2.09	1.36
Ac-ft. adjusted for change in contents, in Cougar Lake	22,760	45,180	122,200	124,700	39,500	81,450	103,400	98,100	87,060	37,970	23,180	15,030

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	Calendar Year 2010	Water Year 2011
Total	323,187	408,577
Mean	885	1,119
Max	3,900	4,040
Min	391	409
Ac-ft	641,000	810,400
Mean adjusted for change in contents, in Cougar Lake	885	1,106
CFSM adjusted for change in contents, in Cougar Lake	4.25	5.32
In. adjusted for change in contents, in Cougar Lake	57.92	72.18
Ac-ft. adjusted for change in contents, in Cougar Lake	642,400	800,500



14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1955 to November 1999, December 2000 to current year.

DISSOLVED OXYGEN: December 2000 to September 2006.

TURBIDITY: December 2000 to September 2006.

INSTRUMENTATION.--Temperature probe and data logger.

REMARKS.--Water-quality data collected at this location may not always provide a representative value of the cross section due to inadequate mixing of flow between the dam (0.6 mi upstream) and probe.

WATER TEMPERATURE: Records good.

EXTREMES FOR PERIOD OF RECORD.--

WATER TEMPERATURE: Maximum, 20.0°C July 28, 1958; minimum, 0.5°C Jan. 20-23, 1962.

DISSOLVED OXYGEN: Maximum, 14.5 mg/L Feb. 23, 2002, result of Cougar Lake tunnel tap; minimum, 7.4 mg/L Sept. 15, 2001.

TURBIDITY: Maximum, 1,410 FNU Feb. 23, 2002, result of Cougar Lake tunnel tap; minimum, <1 FNU on many days each year.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 15.1°C Sept. 11; minimum, 3.9°C Feb. 28.

14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	October			November			December			January		
1	13.4	10.9	12.3	8.0	7.7	7.8	5.4	5.3	5.3	4.6	4.6	4.6
2	11.9	10.4	11.2	8.2	7.8	7.9	5.4	5.2	5.4	4.6	4.5	4.5
3	12.2	10.7	11.6	8.3	8.0	8.1	5.3	5.2	5.2	4.5	4.4	4.4
4	12.3	10.0	11.2	8.5	8.0	8.2	5.3	5.2	5.2	4.5	4.4	4.4
5	11.4	9.4	10.6	8.3	7.9	8.1	5.2	5.1	5.2	4.5	4.4	4.4
6	12.5	10.4	11.4	8.5	7.9	8.2	5.2	5.1	5.1	4.5	4.4	4.4
7	11.2	8.9	10.4	8.2	7.4	7.9	5.3	5.2	5.2	4.5	4.4	4.4
8	10.5	8.6	9.5	8.0	7.3	7.7	5.3	5.2	5.2	4.6	4.4	4.5
9	9.7	8.9	9.3	7.8	7.0	7.4	5.4	5.3	5.3	4.7	4.5	4.6
10	9.6	8.9	9.3	7.8	7.5	7.6	5.5	5.4	5.4	4.6	4.3	4.4
11	9.9	8.9	9.4	7.9	7.4	7.7	5.9	5.5	5.6	4.3	4.2	4.3
12	10.9	9.6	10.2	7.7	7.3	7.5	6.1	5.8	5.9	4.3	4.2	4.3
13	10.4	9.0	9.7	7.8	7.2	7.5	6.4	6.1	6.3	4.4	4.3	4.3
14	9.7	8.9	9.3	7.4	7.2	7.3	6.5	6.2	6.3	4.5	4.4	4.4
15	9.8	8.7	9.3	7.5	7.3	7.4	6.2	6.0	6.1	4.7	4.4	4.5
16	9.8	9.0	9.3	7.9	7.1	7.6	6.0	5.9	6.0	6.1	4.7	5.5
17	9.6	8.6	9.1	7.7	7.3	7.5	5.9	5.8	5.8	6.0	5.1	5.5
18	9.4	8.9	9.1	7.7	7.2	7.5	5.8	5.6	5.7	5.3	5.0	5.2
19	9.7	8.8	9.3	7.4	7.1	7.2	5.6	5.6	5.6	5.3	4.8	5.1
20	9.8	8.7	9.2	7.1	6.9	7.0	5.6	5.4	5.5	5.1	4.8	5.0
21	9.5	8.2	8.9	6.9	6.6	6.8	5.4	5.3	5.4	5.2	5.0	5.2
22	9.1	8.0	8.5	6.7	6.5	6.6	5.4	5.3	5.3	5.3	5.1	5.2
23	8.9	8.4	8.6	6.5	6.1	6.2	5.3	5.2	5.2	5.3	5.1	5.2
24	9.2	8.4	8.8	6.1	5.8	6.0	5.2	5.2	5.2	5.2	5.2	5.2
25	9.0	8.1	8.5	5.8	5.6	5.7	5.2	5.1	5.2	5.2	5.1	5.2
26	8.5	7.6	8.1	5.8	5.6	5.7	5.2	5.0	5.1	5.2	5.1	5.1
27	8.3	7.9	8.1	5.8	5.6	5.6	5.0	5.0	5.0	5.1	5.0	5.1
28	8.2	7.8	8.0	5.8	5.6	5.7	5.2	5.0	5.1	5.1	5.0	5.0
29	8.2	7.5	7.9	5.8	5.6	5.7	5.2	4.8	5.0	5.1	5.0	5.0
30	8.1	7.8	8.0	5.7	5.3	5.5	4.9	4.7	4.8	5.2	5.0	5.0
31	8.1	7.6	7.8	---	---	---	4.7	4.6	4.6	5.1	5.0	5.1
Month	13.4	7.5	9.4	8.5	5.3	7.1	6.5	4.6	5.4	6.1	4.2	4.8

14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	February			March			April			May		
1	5.1	4.9	5.0	4.6	4.4	4.4	6.5	5.1	5.6	7.5	6.5	7.0
2	5.0	4.8	4.9	4.5	4.4	4.5	6.0	4.9	5.5	7.5	6.7	7.2
3	4.9	4.8	4.8	4.6	4.2	4.4	6.4	5.5	5.9	7.2	6.3	6.8
4	5.0	4.8	4.9	4.6	4.4	4.4	6.2	5.6	5.9	7.9	6.4	7.4
5	5.1	4.9	5.0	4.7	4.4	4.5	6.5	5.5	6.1	7.5	6.8	7.1
6	5.2	4.9	5.1	4.8	4.4	4.5	6.4	5.8	6.2	7.4	6.6	7.0
7	5.2	5.0	5.0	4.8	4.4	4.5	6.1	5.3	5.8	7.2	6.9	7.0
8	5.5	5.1	5.3	4.5	4.3	4.4	6.1	5.3	5.6	7.4	6.7	7.1
9	5.4	5.1	5.2	5.5	4.3	4.5	6.2	5.4	5.9	7.9	6.9	7.2
10	5.5	5.2	5.3	4.7	4.4	4.6	6.3	5.5	6.0	7.7	6.6	7.1
11	5.4	5.2	5.3	4.9	4.5	4.6	6.1	5.5	5.8	7.6	6.3	7.0
12	5.4	5.0	5.2	4.7	4.4	4.5	6.9	5.6	6.2	7.2	6.3	6.7
13	5.2	4.9	5.0	4.8	4.5	4.6	6.4	5.4	5.7	7.7	6.0	7.2
14	5.3	4.8	5.1	5.1	4.6	4.8	6.4	5.6	6.1	7.2	6.7	7.0
15	4.9	4.5	4.8	4.7	4.6	4.6	6.2	5.6	5.8	7.7	6.9	7.3
16	5.0	4.6	4.7	4.8	4.5	4.6	6.0	5.5	5.8	7.9	7.3	7.5
17	4.9	4.7	4.7	4.7	4.5	4.6	5.7	5.2	5.5	7.9	7.2	7.5
18	4.9	4.7	4.7	4.8	4.5	4.6	5.7	5.2	5.4	7.9	7.2	7.5
19	4.8	4.7	4.7	5.0	4.5	4.6	5.9	5.2	5.6	7.9	6.9	7.4
20	4.8	4.6	4.7	4.8	4.5	4.6	6.4	5.6	6.0	8.1	7.0	7.7
21	4.9	4.6	4.7	5.2	4.5	4.7	6.3	5.6	6.0	7.8	7.0	7.4
22	4.8	4.6	4.7	5.3	4.5	4.8	6.9	5.6	6.2	7.9	6.9	7.5
23	4.6	4.2	4.4	5.2	4.6	4.9	7.3	6.0	6.7	8.0	6.9	7.3
24	4.3	4.1	4.2	5.2	4.9	5.0	6.9	6.0	6.4	8.0	6.9	7.4
25	4.5	4.1	4.2	5.1	4.7	4.9	7.3	6.7	7.0	7.7	7.0	7.5
26	4.4	4.0	4.2	5.2	4.7	4.9	7.2	6.5	6.9	7.9	7.0	7.5
27	4.4	4.1	4.3	4.8	4.6	4.8	6.6	6.0	6.4	8.0	7.3	7.6
28	4.5	3.9	4.3	5.1	4.7	4.9	7.4	6.2	6.8	7.9	7.0	7.3
29	---	---	---	5.1	4.7	5.0	7.0	6.3	6.6	7.8	7.0	7.4
30	---	---	---	5.3	5.0	5.1	6.8	6.1	6.5	7.8	7.1	7.4
31	---	---	---	5.8	5.1	5.4	---	---	---	7.8	7.0	7.3
Month	5.5	3.9	4.8	5.8	4.2	4.7	7.4	4.9	6.1	8.1	6.0	7.3

14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2010 TO SEPTEMBER 2011

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
	June			July			August			September		
1	8.3	7.1	7.5	10.4	9.1	9.8	13.9	12.4	13.4	14.1	12.8	13.5
2	8.3	7.2	7.6	10.6	9.2	10.0	14.0	12.6	13.3	13.7	12.8	13.3
3	7.9	7.1	7.6	10.7	9.3	9.9	14.0	11.7	13.3	14.1	12.5	13.6
4	8.2	7.1	7.6	10.9	9.7	10.3	14.8	13.6	14.1	13.7	12.7	13.3
5	8.1	7.5	7.8	11.3	10.1	10.5	14.7	13.0	13.5	13.6	12.7	13.1
6	8.1	7.3	7.6	11.6	10.2	10.7	14.8	12.6	14.1	13.8	12.9	13.4
7	8.1	7.0	7.5	11.5	9.8	10.5	14.3	12.8	13.8	14.1	13.2	13.7
8	7.9	6.9	7.4	11.5	10.1	10.7	14.1	13.0	13.5	14.2	13.1	13.7
9	8.4	6.9	7.8	11.4	10.0	10.8	14.6	12.6	13.5	14.5	13.1	13.9
10	8.3	7.2	7.9	11.5	10.0	10.9	14.9	12.5	13.9	14.7	13.6	14.2
11	8.5	7.4	8.0	11.5	10.1	10.8	14.9	12.5	13.9	15.1	13.4	14.1
12	8.8	7.6	8.2	11.4	10.4	10.8	13.9	12.3	13.2	13.6	12.0	13.0
13	8.4	7.5	8.0	11.5	10.1	10.9	14.0	11.9	12.8	13.9	12.0	13.0
14	9.4	7.3	8.4	11.5	10.3	10.8	13.8	12.6	13.2	13.1	11.3	12.5
15	8.9	7.6	8.3	11.6	10.0	11.0	13.9	12.0	13.1	12.9	12.1	12.6
16	9.2	7.6	8.5	11.7	10.4	11.2	14.1	12.9	13.5	13.4	12.0	12.7
17	9.4	7.8	8.8	11.5	10.8	11.2	14.0	12.6	13.5	12.8	11.3	12.0
18	9.5	8.1	8.8	11.9	11.1	11.5	14.3	12.6	13.6	12.7	11.7	12.1
19	9.3	8.3	8.8	12.1	11.3	11.6	13.8	12.9	13.4	13.0	11.3	12.2
20	9.4	8.0	8.8	12.0	10.5	11.3	14.3	12.8	13.5	12.9	11.7	12.5
21	9.9	8.4	9.3	12.0	10.7	11.3	14.2	13.2	13.6	13.1	11.6	12.6
22	9.8	8.2	9.1	12.5	10.9	11.6	14.0	11.5	12.7	13.2	11.8	12.5
23	9.8	8.8	9.3	12.8	12.2	12.5	14.0	12.4	13.3	12.8	11.7	12.3
24	10.1	8.3	9.1	12.9	11.6	12.5	13.8	13.0	13.4	12.8	11.7	12.3
25	10.2	8.3	9.3	14.0	7.1	12.2	13.6	11.3	13.0	12.7	11.2	12.0
26	10.3	8.7	9.6	14.6	7.1	13.3	13.8	12.2	13.2	12.7	11.2	12.0
27	10.3	8.7	9.7	14.3	13.1	13.5	15.0	13.4	13.9	13.0	10.6	12.0
28	10.3	9.3	9.7	14.0	13.3	13.6	14.4	12.0	13.6	12.4	11.0	11.6
29	10.2	9.0	9.7	14.1	12.7	13.7	14.0	11.9	12.8	12.8	11.4	12.1
30	10.2	8.9	9.4	13.9	12.3	13.5	13.7	12.3	12.9	12.5	7.8	10.1
31	---	---	---	13.9	12.3	13.4	14.0	12.3	13.1	---	---	---
Month	10.3	6.9	8.5	14.6	7.1	11.5	15.0	11.3	13.4	15.1	7.8	12.7

	Max	Min	Mean
Year	15.1	3.9	8.0