

Figure 19. Location of surface-water and water-quality stations in the Columbia River between Bonneville Dam and confluence with the Willamette River and the Sandy River Basin.

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR

LOCATION.--Lat 45°38'00", long 121°57'33", in sec.21, T.2 N., R.7 E., Multnomah County, Hydrologic Unit 17080001, on left bank 0.9 mi downstream from Bonneville Dam left bank powerhouse, 50 ft upstream from Tanner Creek, and at mile 144.5.

DRAINAGE AREA.--239,900 mi², approximately.

PERIOD OF RECORD.--May 1981 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to August 15, 1990, at a site 0.5 mi upstream at the same datum.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 35.11 ft Feb. 9, 1996; minimum, 6.06 ft Sept. 21, 2003.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 23.08 ft May 29; minimum, 6.54 ft Oct. 6.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	9.38	7.40	8.21	12.56	10.41	11.35	11.69	11.36	11.52	15.23	12.93	13.83
2	11.46	9.05	10.84	13.81	8.01	10.35	11.79	11.29	11.56	14.09	12.02	12.57
3	11.72	7.89	9.60	14.66	11.12	12.01	11.78	11.29	11.51	16.11	12.03	12.97
4	9.96	6.77	8.04	12.01	10.98	11.48	12.09	11.33	11.55	15.53	14.08	14.53
5	7.93	6.73	7.35	13.24	11.09	11.79	14.60	11.46	11.97	17.49	11.95	15.03
6	8.65	6.54	7.40	13.20	11.29	11.98	14.95	11.36	13.01	16.46	12.05	14.61
7	11.08	6.65	9.36	13.71	11.11	12.10	15.09	11.43	13.09	16.51	15.03	16.03
8	11.45	7.96	10.02	13.29	11.11	11.54	16.77	11.31	13.62	15.06	12.85	14.20
9	12.51	8.38	10.57	11.86	11.11	11.38	18.98	11.39	14.32	15.40	13.35	14.24
10	12.47	9.54	10.42	12.02	11.10	11.46	18.43	11.56	14.07	13.68	11.97	12.38
11	11.77	8.56	10.11	11.93	11.21	11.44	18.81	11.52	14.40	12.50	11.84	12.15
12	11.62	7.41	8.80	11.58	11.15	11.33	18.40	11.49	14.44	14.43	11.83	12.53
13	10.60	7.16	8.83	11.69	11.17	11.41	18.18	11.66	14.67	14.55	12.02	13.38
14	10.86	8.07	9.45	11.69	11.16	11.43	18.27	11.69	14.67	13.81	12.03	12.46
15	10.74	9.23	10.21	11.74	11.25	11.44	19.45	11.67	14.94	14.26	12.10	12.76
16	12.66	9.51	10.60	11.76	11.22	11.43	20.08	11.73	15.40	14.65	12.37	13.69
17	11.66	9.73	10.58	11.64	11.24	11.44	20.94	11.96	15.53	14.07	11.74	12.20
18	10.84	7.64	8.52	11.78	11.36	11.53	18.91	11.88	15.47	14.11	11.87	12.84
19	8.22	7.16	7.72	11.77	11.35	11.50	18.98	11.69	14.93	14.04	11.87	12.74
20	10.50	7.26	8.77	11.71	11.34	11.49	18.71	12.02	14.55	14.07	11.94	13.11
21	11.70	8.45	9.63	15.12	11.36	12.14	18.23	11.90	13.90	14.91	12.21	13.23
22	12.19	8.51	10.02	16.77	11.42	13.43	14.63	11.74	12.50	12.98	12.10	12.43
23	11.91	8.26	10.19	17.14	11.42	13.45	16.38	11.72	13.44	14.93	12.07	12.90
24	12.57	11.34	12.05	14.62	11.28	11.93	16.65	11.82	13.70	14.96	13.79	14.30
25	12.59	11.92	12.24	13.15	11.30	11.74	15.95	11.73	13.16	14.33	12.16	12.91
26	12.67	11.34	12.04	12.18	11.27	11.56	14.21	11.73	12.64	15.94	11.92	13.87
27	12.67	11.02	11.90	11.54	11.25	11.39	14.48	11.70	12.18	16.24	12.47	14.88
28	12.64	10.55	11.47	11.80	11.17	11.44	15.27	11.75	13.13	16.99	12.71	15.00
29	14.28	10.37	11.46	11.85	11.34	11.48	17.33	11.78	13.74	17.96	16.06	17.11
30	13.42	10.75	11.98	11.65	11.32	11.46	17.24	11.71	14.08	18.78	16.45	17.65
31	12.92	10.82	11.43	---	---	---	17.72	11.81	15.39	18.92	16.57	18.09
MONTH	14.28	6.54	9.99	17.14	8.01	11.66	20.94	11.29	13.65	18.92	11.74	13.89

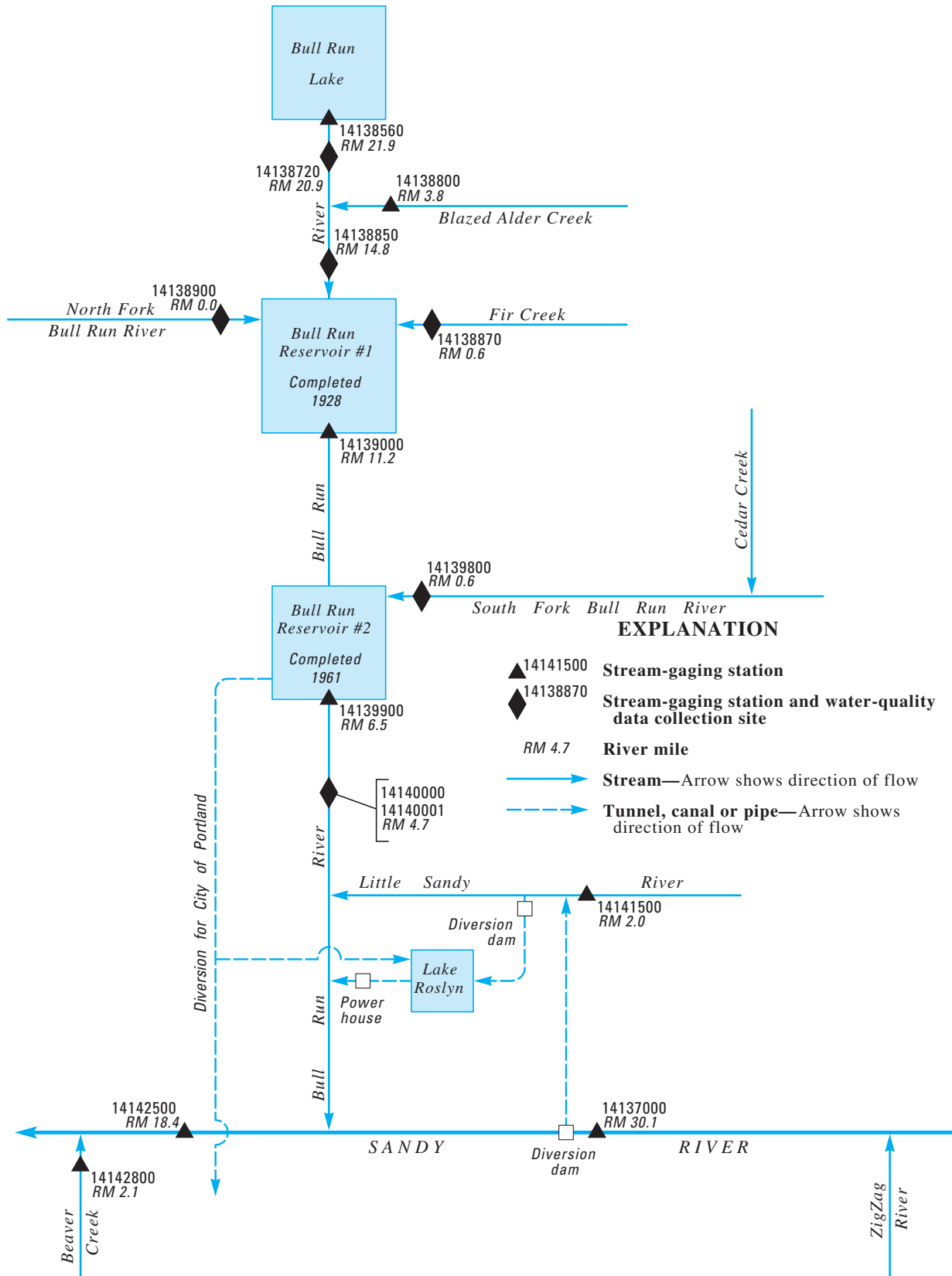


Figure 20. Schematic diagram showing gaging stations and diversions in the Sandy River Basin.

14137000 SANDY RIVER NEAR MARMOT, OR

LOCATION.--Lat 45°23'59", long 122°08'10", in NW ¼ sec.18, T.2 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, on right bank 0.6 mi west/northwest of Marmot, 0.2 mi downstream from Marmot Dam of Portland General Electric Co., 7.7 mi downstream from Salmon River, and at mile 29.8.

DRAINAGE AREA.--263 mi², at dam.

PERIOD OF RECORD.--August 1911 to current year. Monthly discharges only, January to September 1916, October 1918 to June 1919, published in WSP 1318. Published as "at Marmot" October 1912 to September 1913. Records for January 1916 to June 1919, published as "below dam, near Marmot," obtained by combining records for Sandy River below dam, near Marmot, with records for Sandy River Canal near Marmot. Records for October 2002 to current year obtained by combining records for Sandy River Diversion above Marmot Dam (14137001) with records for Sandy River below Marmot Dam, near Marmot (14137002).

REVISED RECORDS.--WSP 594: Drainage area. WSP 1288: 1912(M), 1915, 1922, 1924, 1934(M). WSP 1318: 1932(M), WDR OR-97-1: Drainage Area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by Portland General Electric). Aug. 15, 1911, to Dec. 20, 1915, and July 2, 1919, to Oct. 19, 1933, nonrecording gage at site 1.5 mi upstream at different datum. Oct. 20, 1933, to Sept. 30, 1958, water-stage recorder at site 1.1 mi upstream at different datum. Sept. 30, 1958 to Mar. 11, 1997, water-stage recorder at site 0.6 mi upstream, at different datum. March 11, 1997 to Oct. 1, 2002 water-stage recorder at site 0.5 mi upstream, at same datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Streamflow values include diversion at Marmot Dam. No other regulation or diversion upstream from station.

AVERAGE DISCHARGE.--91 years (water years 1912-15, 1917-18, 1920-2004), 1,345 ft³/s, 69.47 in/yr, 974,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,400 ft³/s Dec. 22, 1964, gage height, 17.05 ft, site and datum then in use, from rating curve extended above 7,000 ft³/s; maximum gage height, 20.40 ft, Feb. 7, 1996, site and datum then in use; minimum, 190 ft³/s Oct. 13, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 6,510 ft³/s Jan. 29; minimum daily discharge, 252 ft³/s Oct. 2, 3.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	253	365	e1,990	887	e2,570	1,240	1,290	1,110	1,660	678	429	543
2	252	344	1,880	825	e2,230	1,160	1,190	1,130	1,460	660	432	554
3	252	e320	e2,040	788	e2,180	1,140	1,210	1,150	1,320	650	411	560
4	257	e301	e1,740	741	1,910	1,650	1,280	1,120	1,230	637	414	493
5	257	e292	1,860	588	1,710	1,880	1,240	1,080	1,210	609	414	466
6	256	e282	e1,950	562	1,660	e2,070	1,180	992	1,340	601	423	439
7	299	e281	1,820	431	1,760	1,730	1,180	946	1,690	628	467	423
8	285	277	1,720	566	1,660	1,680	1,160	959	2,210	578	405	416
9	360	276	1,510	1,140	1,480	1,910	1,160	912	2,300	564	396	415
10	494	318	1,320	1,220	1,360	e1,820	1,180	891	2,200	549	408	395
11	409	1,450	1,150	1,340	1,280	1,650	1,250	1,240	2,030	526	408	618
12	488	882	e1,170	1,380	1,200	1,580	1,300	1,140	e1,820	527	413	517
13	505	684	e3,950	1,410	1,120	1,500	1,320	1,040	e1,630	553	411	667
14	461	549	e2,960	1,820	1,110	1,410	1,350	951	e1,470	559	424	1,360
15	519	501	e2,060	e2,210	1,120	1,360	1,310	911	e1,340	557	408	1,360
16	581	606	e1,950	e2,540	1,370	1,320	1,270	939	e1,230	535	405	1,430
17	450	1,730	e2,020	e2,190	1,780	1,340	1,230	888	1,140	544	390	1,420
18	370	1,470	1,800	1,970	2,110	1,410	1,170	863	1,090	537	371	1,540
19	354	1,130	1,590	2,030	e2,400	1,410	1,120	977	1,030	557	368	1,280
20	365	1,050	1,470	e1,940	e1,980	1,270	1,310	908	961	533	369	1,080
21	395	876	1,450	1,670	1,730	1,210	1,490	879	925	496	358	914
22	335	727	1,380	1,430	1,500	1,260	1,400	927	916	476	846	816
23	413	650	1,250	e2,130	1,330	1,390	1,290	1,800	963	474	801	738
24	338	785	1,250	e4,010	1,240	1,460	1,210	1,600	923	483	761	674
25	307	832	1,260	e2,420	1,190	1,430	1,140	1,300	865	487	1,410	626
26	297	988	1,140	e2,160	1,170	1,460	1,150	1,470	814	451	1,400	590
27	283	850	1,090	e1,990	1,170	1,480	1,240	2,330	768	443	1,260	567
28	379	804	1,180	e2,360	1,350	1,420	1,260	2,840	737	454	855	543
29	707	e2,200	1,110	e6,510	1,340	1,380	1,140	2,760	717	446	690	520
30	573	e1,940	979	e4,150	---	1,500	1,100	2,310	710	436	594	494
31	424	---	935	e3,020	---	1,430	---	1,960	---	431	540	---
TOTAL	11,918	23,760	50,974	58,428	46,010	45,950	37,120	40,323	38,699	16,659	17,681	22,458
MEAN	384	792	1,644	1,885	1,587	1,482	1,237	1,301	1,290	537	570	749
MAX	707	2,200	3,950	6,510	2,570	2,070	1,490	2,840	2,300	678	1,410	1,540
MIN	252	276	935	431	1,110	1,140	1,100	863	710	431	358	395
AC-FT	23,640	47,130	101,100	115,900	91,260	91,140	73,630	79,980	76,760	33,040	35,070	44,550
CFSM	1.46	3.01	6.25	7.17	6.03	5.64	4.70	4.95	4.90	2.04	2.17	2.85
IN.	1.69	3.36	7.21	8.26	6.51	6.50	5.25	5.70	5.47	2.36	2.50	3.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 2004, BY WATER YEAR (WY)

MEAN	647	1,583	2,075	2,010	1,868	1,656	1,862	1,789	1,217	641	429	416
MAX	2,168	4,777	6,278	4,752	4,971	3,983	3,134	3,443	3,457	1,385	663	1,056
(WY)	(1960)	(1996)	(1965)	(1953)	(1996)	(1972)	(1962)	(1949)	(1917)	(1917)	(1974)	(1959)
MIN	239	236	445	498	464	631	658	743	420	354	268	244
(WY)	(1988)	(1937)	(1977)	(1937)	(1977)	(1941)	(1941)	(1992)	(1992)	(1992)	(1940)	(1994)

14137000 SANDY RIVER NEAR MARMOT, OR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1912 - 2004	
ANNUAL TOTAL	429,899		409,980			
ANNUAL MEAN	1,178		1,120		1,345	
HIGHEST ANNUAL MEAN					2,018	1996
LOWEST ANNUAL MEAN					766	1977
HIGHEST DAILY MEAN	9,760	Jan 31	6,510	Jan 29	41,400	Dec 22, 1964
LOWEST DAILY MEAN	250	Sep 25	252	Oct 2	193	Oct 13, 1994
ANNUAL SEVEN-DAY MINIMUM	257	Sep 30	261	Oct 1	196	Oct 7, 1994
ANNUAL RUNOFF (AC-FT)	852,700		813,200		974,100	
ANNUAL RUNOFF (CFSM)	4.48		4.26		5.11	
ANNUAL RUNOFF (INCHES)	60.81		57.99		69.47	
10 PERCENT EXCEEDS	2,270		1,960		2,600	
50 PERCENT EXCEEDS	917		1,120		996	
90 PERCENT EXCEEDS	290		402		350	

e Estimated



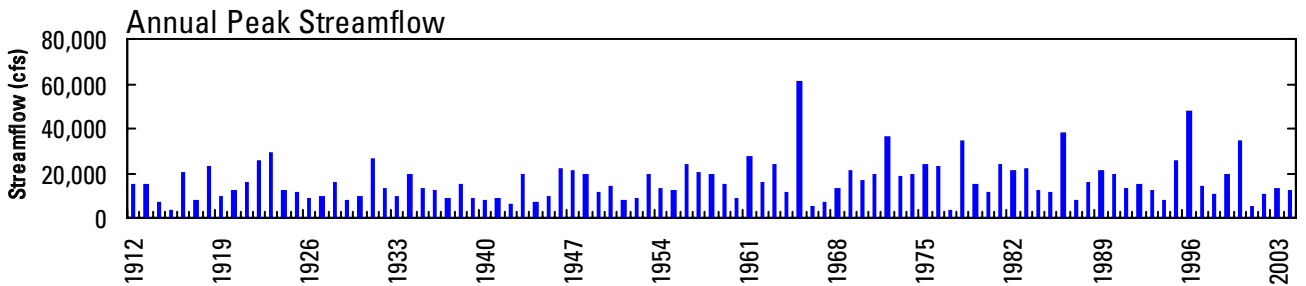
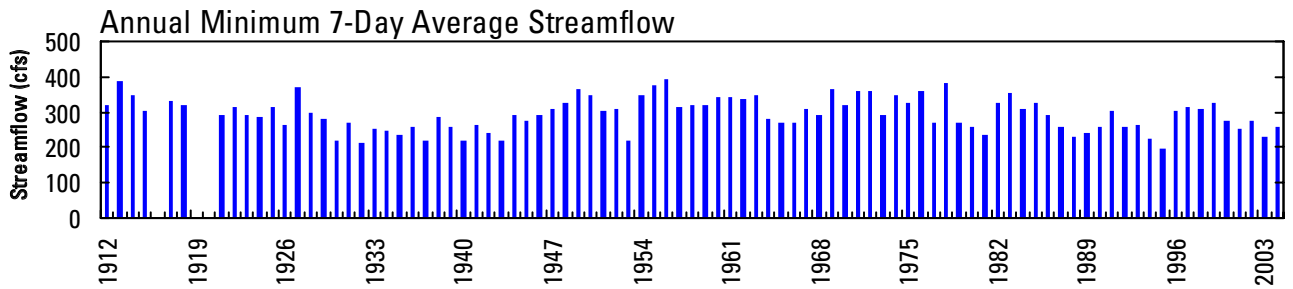
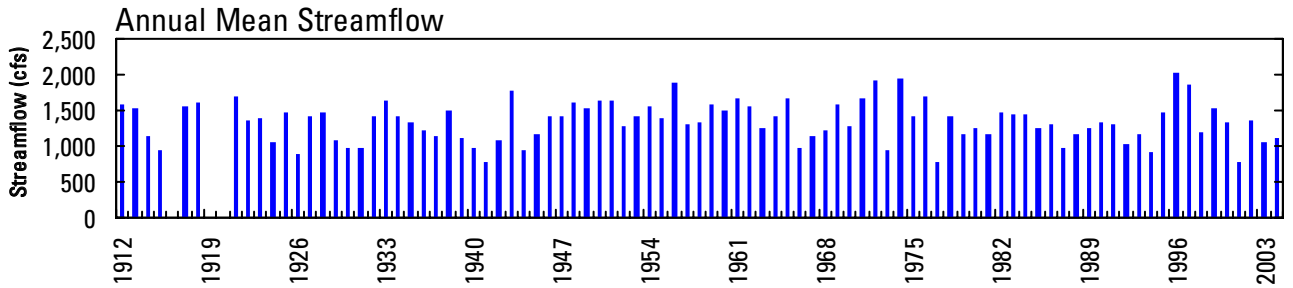
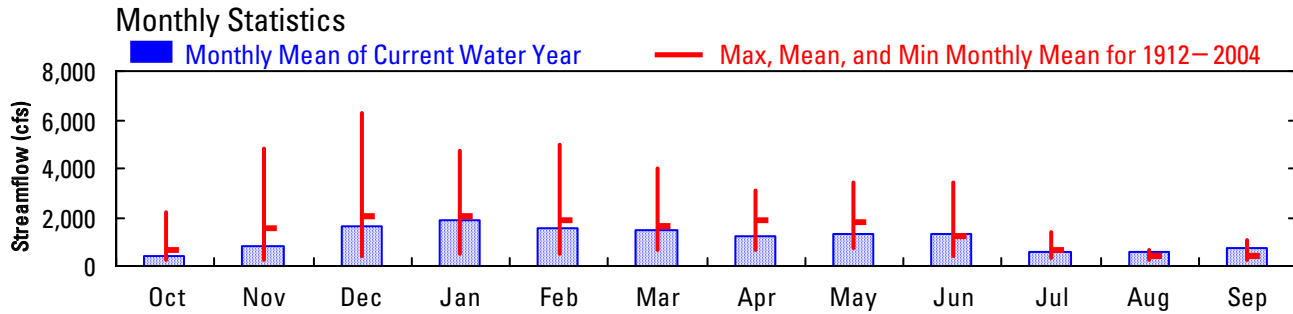
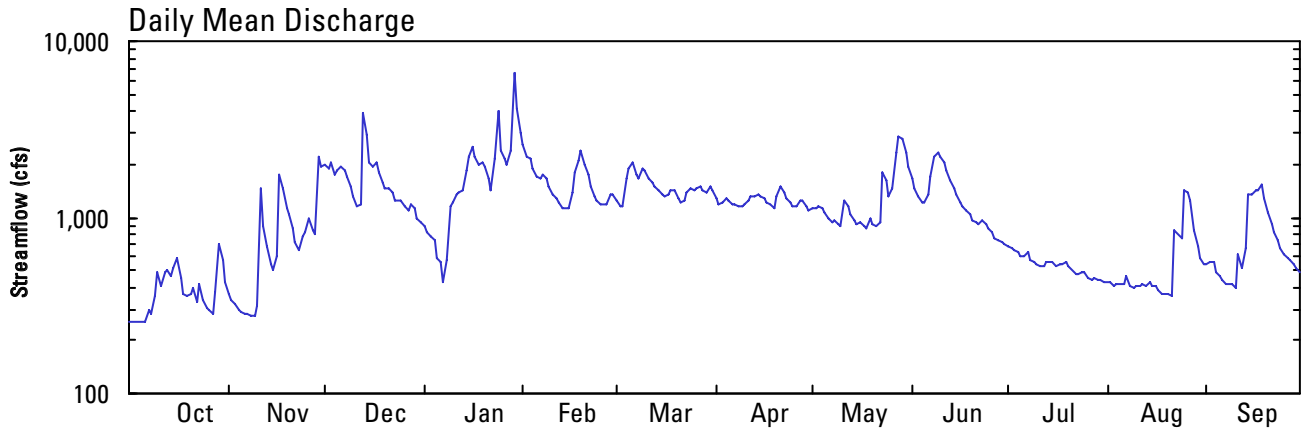
2004 Water Year
SANDY RIVER BASIN

14137000 SANDY RIVER NEAR MARMOT, OR

Latitude: 45° 23 ' 59"
Clackamas County

Longitude: 122° 08 ' 10"
Datum: 0 feet

Hydrologic Unit Code: 17080001
Drainage Area: 263 square miles



14138560 BULL RUN LAKE NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°27'40", long 121°50'37", in SE ¼ SE ¼ sec.20, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, in main cabin on northwest side of Bull Run Lake, near outlet structure, 10.7 mi northeast of Brightwood, and at mile 21.9.

DRAINAGE AREA.--3.5 mi².

PERIOD OF RECORD.--October 1992 to current year.

REVISED RECORDS.--WDR OR-95-1: 1993, 1994.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929, Portland Water Bureau datum.

REMARKS.--Bull Run Lake was formed by natural processes, including a large landslide. A temporary log crib dam was constructed in 1917 to increase the capacity of the lake. In 1920 the log crib dam was reconstructed. A concrete dam and improved outlet valve were constructed in 1958. A lower outlet and tunnel was constructed in 1961. Portland Water Bureau releases water from the lake to augment streamflows during periods of low flow.

COOPERATION.--Capacity table provided by Portland Water Bureau, extended above 3,180 ft by U.S. Geological Survey, Oct. 1, 1996.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 48,340 acre-ft Feb. 9, 1996, elevation, 3,185.02 ft; minimum contents observed, 31,080 acre-ft Oct. 29, 1992, elevation, 3,143.97 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 43,570 acre-ft June 13, 14, 16, elevation, 3,174.39 ft; minimum contents, 38,250 acre-ft Nov. 10, elevation, 3,162.08 ft.

Capacity Table (elevation, in feet and contents, in acre-feet)

2,905	0	3,140	29,510
2,940	229	3,150	33,410
2,980	1,270	3,160	37,380
3,020	3,740	3,180	46,080
3,060	8,880	3,186	48,780
3,100	17,280		

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3,164.10	3,162.72	3,164.01	3,166.40	3,170.00	3,169.62	3,170.61	3,171.70	3,173.84	3,172.96	3,169.67	3,167.88
2	3,164.01	3,162.66	3,164.14	3,166.37	3,170.09	3,169.57	3,170.53	3,171.77	3,173.84	3,172.84	3,169.55	3,167.88
3	3,163.92	3,162.57	3,164.27	3,166.39	3,170.09	3,169.60	3,170.63	3,171.82	3,173.82	3,172.76	3,169.45	3,167.80
4	3,163.83	3,162.49	3,164.33	3,166.35	3,170.10	3,169.66	3,170.65	3,171.89	3,173.78	3,172.64	3,169.35	3,167.72
5	3,163.75	3,162.40	3,164.54	3,166.30	3,170.07	3,169.74	3,170.66	3,171.92	3,173.82	3,172.54	3,169.24	3,167.64
6	3,163.69	3,162.28	3,164.70	3,166.38	3,170.10	3,169.72	3,170.66	3,171.92	3,173.93	3,172.42	3,169.22	3,167.54
7	3,163.67	3,162.25	3,164.80	3,166.38	3,170.12	3,169.70	3,170.67	3,171.94	3,173.97	3,172.34	3,169.13	3,167.45
8	3,163.64	3,162.11	3,164.86	3,166.38	3,170.08	3,169.69	3,170.67	3,171.94	3,174.15	3,172.23	3,169.00	3,167.38
9	3,163.64	3,162.09	3,164.87	3,166.32	3,170.03	3,169.75	3,170.68	3,171.94	3,174.22	3,172.12	3,168.92	3,167.27
10	3,163.63	3,162.19	3,164.87	3,166.29	3,170.00	3,169.80	3,170.76	3,171.98	3,174.32	3,172.01	3,168.81	3,167.19
11	3,163.63	3,162.31	3,164.87	3,166.22	3,169.94	3,169.82	3,170.79	3,172.05	3,174.32	3,171.92	3,168.70	3,167.23
12	3,163.68	3,162.33	3,165.09	3,166.17	3,169.88	3,169.84	3,170.87	3,172.07	3,174.29	3,171.80	3,168.60	3,167.16
13	3,163.61	3,162.24	3,165.71	3,166.11	3,169.82	3,169.84	3,170.95	3,172.06	3,174.37	3,171.70	3,168.50	3,167.27
14	3,163.58	3,162.20	3,165.93	3,166.11	3,169.80	3,169.85	3,171.07	3,172.04	3,174.36	3,171.59	3,168.40	3,167.30
15	3,163.59	3,162.20	3,166.00	3,166.26	3,169.76	3,169.85	3,171.15	3,172.05	3,174.32	3,171.49	3,168.30	3,167.44
16	3,163.56	3,162.41	3,166.12	3,166.35	3,169.80	3,169.85	3,171.18	3,172.04	3,174.24	3,171.39	3,168.20	3,167.49
17	3,163.50	3,162.71	3,166.13	3,166.37	3,169.83	3,169.89	3,171.21	3,172.01	3,174.21	3,171.28	3,168.10	3,167.59
18	3,163.42	3,162.92	3,166.10	3,166.41	3,169.91	3,169.95	3,171.23	3,172.02	3,174.13	3,171.18	3,168.00	3,167.63
19	3,163.39	3,163.24	3,166.11	3,166.47	3,169.91	3,169.99	3,171.24	3,172.01	3,174.07	3,171.10	3,167.89	3,167.65
20	3,163.35	3,163.31	3,166.14	3,166.47	3,169.89	3,170.02	3,171.37	3,171.99	3,173.98	3,170.98	3,167.79	3,167.61
21	3,163.27	3,163.34	3,166.17	3,166.46	3,169.86	3,169.98	3,171.43	3,171.95	3,173.91	3,170.88	3,167.72	3,167.57
22	3,163.29	3,163.33	3,166.17	3,166.45	3,169.81	3,170.00	3,171.42	3,172.19	3,173.80	3,170.74	3,167.82	3,167.53
23	3,163.20	3,163.35	3,166.14	3,166.79	3,169.77	3,170.03	3,171.46	3,172.44	3,173.74	3,170.64	3,167.72	3,167.47
24	3,163.12	3,163.39	3,166.24	3,167.19	3,169.72	3,170.13	3,171.43	3,172.49	3,173.65	3,170.54	3,167.87	3,167.41
25	3,163.04	3,163.49	3,166.29	3,167.38	3,169.72	3,170.21	3,171.42	3,172.50	3,173.56	3,170.43	3,168.11	3,167.34
26	3,162.96	3,163.53	3,166.30	3,167.45	3,169.68	3,170.25	3,171.46	3,172.77	3,173.45	3,170.32	3,168.28	3,167.28
27	3,162.89	3,163.48	3,166.38	3,167.52	3,169.72	3,170.41	3,171.53	3,173.10	3,173.36	3,170.20	3,168.25	3,167.19
28	3,162.94	3,163.56	3,166.44	3,168.03	3,169.71	3,170.44	3,171.61	3,173.40	3,173.27	3,170.10	3,168.20	3,167.12
29	3,162.94	3,163.84	3,166.44	3,169.12	3,169.68	3,170.50	3,171.61	3,173.60	3,173.16	3,170.00	3,168.12	3,167.05
30	3,162.91	3,163.93	3,166.38	3,169.73	---	3,170.59	3,171.64	3,173.78	3,173.06	3,169.88	3,168.04	3,166.98
31	3,162.80	---	3,166.38	3,169.92	---	3,170.62	---	3,173.84	---	3,169.77	3,167.96	---
MAX	3,164.10	3,163.93	3,166.44	3,169.92	3,170.12	3,170.62	3,171.64	3,173.84	3,174.37	3,172.96	3,169.67	3,167.88
MIN	3,162.80	3,162.09	3,164.01	3,166.11	3,169.68	3,169.57	3,170.53	3,171.70	3,173.06	3,169.77	3,167.72	3,166.98
(†)	38,550	39,020	40,070	41,600	41,500	41,910	42,350	43,320	42,980	41,540	40,750	40,330
(‡)	-580	+470	+1,050	+1,530	-100	+410	+440	+970	-340	-1,440	-790	-420

CAL YR2003 MAX 3,175.74 MIN 3162.09 AC-FT‡ +1180
WTR YR2004 MAX 3,174.37 MIN 3162.09 AC-FT‡ +1200

† Contents, in acre-feet, at 2400, on last day of month.

‡ Change in contents, in acre-feet.

14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°28'16", long 121°51'51", in SE ¼ NE ¼ sec.19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, at flume, 1.0 mi downstream from outlet structure at Bull Run Lake, 10.4 mi northeast of Brightwood, and at mile 20.9.

DRAINAGE AREA.--5.08 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1992 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,840 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Regulation at times by Bull Run Lake. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--12 years (water years 1993-2004), 26.0 ft³/s, 18,840 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 148 ft³/s Feb. 7, 1996, gage height, 3.05 ft, from rating curve extended above 63 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 8.2 ft³/s Oct. 28, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 52 ft³/s Jan. 29, gage height, 2.04 ft; minimum discharge, 14 ft³/s Nov. 8-10.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	15	19	22	39	26	31	29	32	28	22	20
2	16	15	20	21	38	26	31	29	32	27	22	20
3	16	15	21	21	37	25	31	29	32	27	22	20
4	16	15	21	21	37	26	31	29	32	27	22	20
5	16	15	21	21	36	27	31	29	32	26	22	20
6	15	15	23	21	35	27	31	29	32	26	21	20
7	15	15	23	20	34	27	30	29	32	26	21	20
8	15	15	22	20	33	27	30	28	33	26	21	20
9	16	15	22	20	32	27	30	28	33	25	21	20
10	16	14	22	20	31	28	30	28	33	25	21	20
11	15	15	21	20	30	28	30	28	33	25	21	20
12	16	15	23	20	29	28	30	28	33	25	21	20
13	16	15	28	19	29	28	30	28	33	25	21	20
14	15	15	29	19	28	27	31	27	32	24	21	20
15	15	15	27	20	28	27	31	27	32	24	20	21
16	15	15	26	21	28	27	31	27	32	24	20	21
17	15	17	26	21	28	28	31	27	32	24	20	22
18	15	19	25	20	28	28	31	26	31	24	20	22
19	15	19	25	20	29	29	30	26	31	24	20	22
20	15	18	25	20	29	28	30	26	31	23	20	22
21	15	18	25	20	28	28	31	26	31	23	20	22
22	15	17	24	20	28	28	31	26	30	23	20	22
23	15	17	24	22	27	29	30	29	30	23	20	21
24	15	17	24	27	27	29	30	28	30	23	20	21
25	15	17	24	27	26	30	30	28	29	23	22	21
26	15	17	23	26	26	30	30	28	29	23	22	21
27	15	16	23	26	26	31	29	29	29	23	22	21
28	15	16	23	30	26	31	30	32	28	22	21	21
29	15	20	22	49	26	31	30	33	28	22	21	21
30	15	20	22	45	---	31	30	33	28	22	21	21
31	15	---	22	41	---	31	---	32	---	22	21	---
TOTAL	474	487	725	740	878	873	912	881	935	754	649	622
MEAN	15.3	16.2	23.4	23.9	30.3	28.2	30.4	28.4	31.2	24.3	20.9	20.7
MAX	16	20	29	49	39	31	31	33	33	28	22	22
MIN	15	14	19	19	26	25	29	26	28	22	20	20
AC-FT	940	966	1,440	1,470	1,740	1,730	1,810	1,750	1,850	1,500	1,290	1,230

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 2004, BY WATER YEAR (WY)

MEAN	15.9	20.4	27.6	31.0	30.6	31.2	31.8	33.0	29.0	22.5	20.5	18.9
MAX	22.8	37.0	49.1	67.3	55.8	62.7	57.6	67.0	42.7	28.3	40.0	32.4
(WY)	(2000)	(1996)	(1996)	(1996)	(1996)	(1997)	(1997)	(1997)	(1999)	(2002)	(2000)	(2000)
MIN	10.5	11.9	16.0	15.3	15.6	18.2	21.5	21.2	18.5	16.2	13.4	11.6
(WY)	(1993)	(1994)	(2003)	(1993)	(1993)	(2001)	(2001)	(1994)	(1994)	(1994)	(1994)	(1994)

14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1993 - 2004	
ANNUAL TOTAL	8,919		8,930			
ANNUAL MEAN	24.4		24.4		26.0	
HIGHEST ANNUAL MEAN					37.5	1997
LOWEST ANNUAL MEAN					17.4	2001
HIGHEST DAILY MEAN	48	Jan 31	49	Jan 29	130	Feb 7, 1996
LOWEST DAILY MEAN	14	Nov 10	14	Nov 10	8.4	Oct 27, 1992
ANNUAL SEVEN-DAY MINIMUM	15	Nov 4	15	Nov 4	8.6	Oct 22, 1992
ANNUAL RUNOFF (AC-FT)	17,690		17,710		18,840	
10 PERCENT EXCEEDS	34		31		38	
50 PERCENT EXCEEDS	23		24		24	
90 PERCENT EXCEEDS	15		15		15	



2004 Water Year
SANDY RIVER BASIN

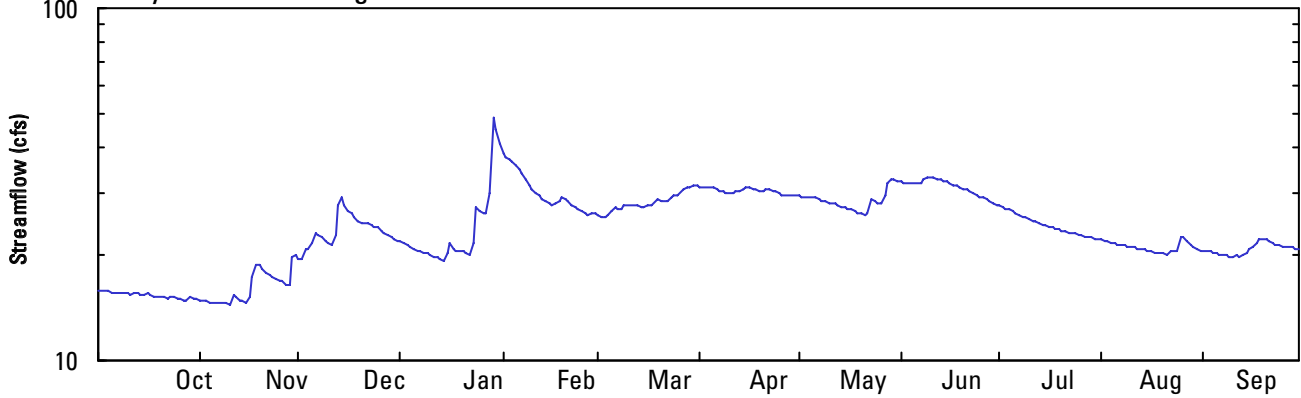
14138720 BULL RUN RIVER AT LOWER FLUME, NR BRIGHTWOOD, OR

Latitude: 45° 28 ' 16"
Multnomah County

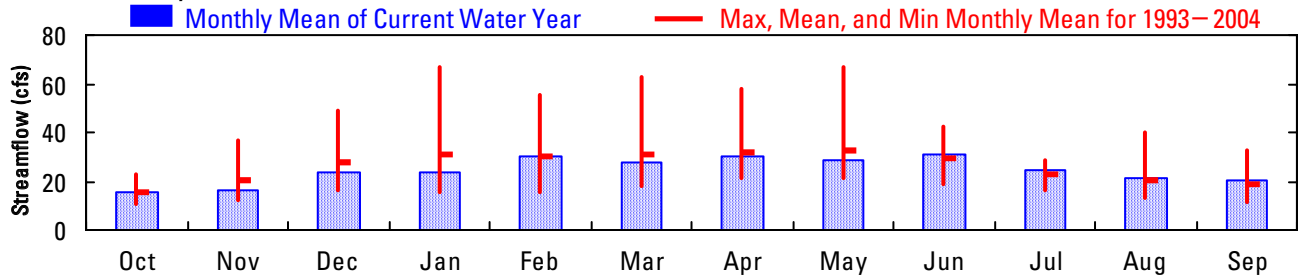
Longitude: 121° 51 ' 51"
Datum: 2,840 feet

Hydrologic Unit Code: 17080001
Drainage Area: 5.08 square miles

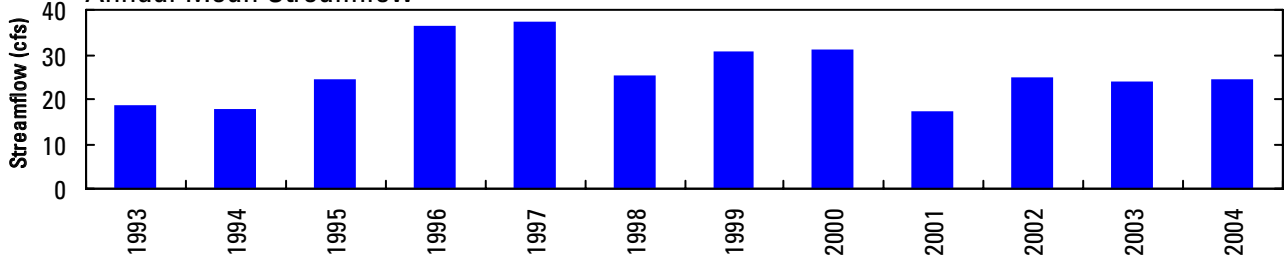
Daily Mean Discharge



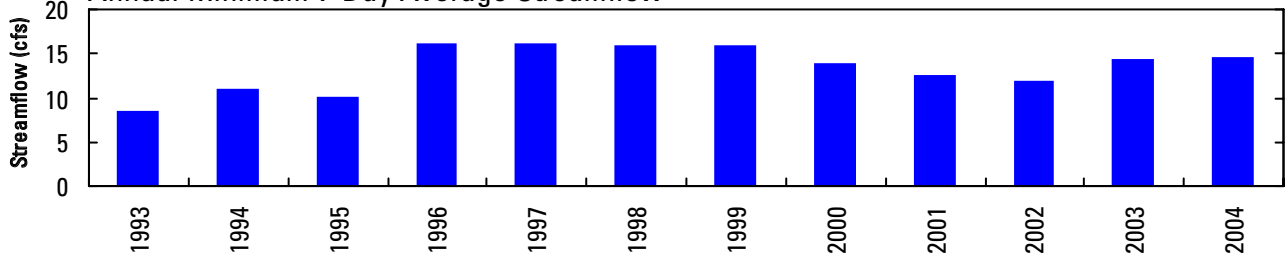
Monthly Statistics



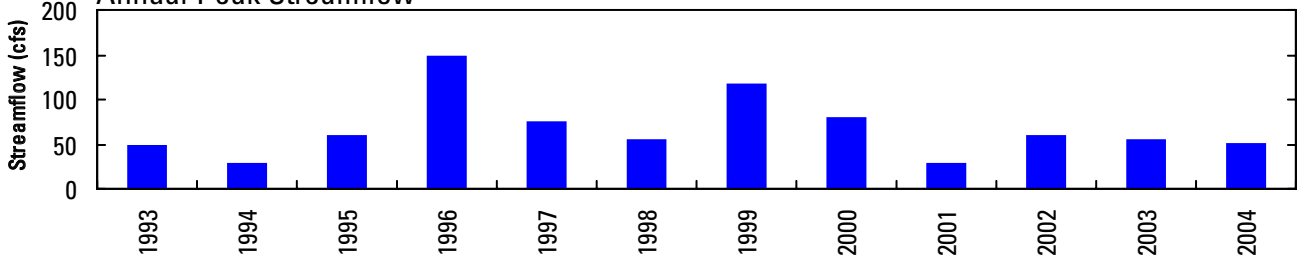
Annual Mean Streamflow



Annual Minimum 7-Day Average Streamflow



Annual Peak Streamflow



14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1996 to current year.

WATER TEMPERATURE: October 1995 to current year.

INSTRUMENTATION.--Water-quality monitor and data logger.

REMARKS.--Specific conductance and water temperature records excellent.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 33 microsiemens Jan. 14, Mar. 26, 2004; minimum, 18 microsiemens Dec. 27, 1998.

WATER TEMPERATURE: Maximum 9.0°C several days in September, 2000; minimum, 3.0°C Feb. 6, 1996.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 33 microsiemens Jan. 14, Mar. 26; minimum, 24 microsiemens Jan. 29.

WATER TEMPERATURE: Maximum, 6.9°C Feb. 16, Feb. 22 to Mar. 4; minimum, 4.5°C Jan. 29.

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	30	30	30	30	29	29	29	29	29	30	28	29
2	30	30	30	29	29	29	29	29	29	30	28	30
3	31	30	30	29	29	29	29	29	29	31	29	30
4	30	30	30	29	29	29	29	29	29	30	28	29
5	30	30	30	29	29	29	29	29	29	30	28	29
6	30	30	30	29	29	29	29	29	29	31	28	28
7	30	30	30	29	29	29	30	29	29	29	28	28
8	30	30	30	29	29	29	30	29	29	29	28	28
9	30	30	30	29	29	29	30	29	29	29	28	28
10	30	30	30	29	29	29	30	29	29	29	28	28
11	30	29	30	30	29	29	29	29	29	29	28	29
12	30	30	30	29	29	29	29	29	29	29	28	29
13	30	30	30	29	29	29	29	27	28	29	28	29
14	30	29	30	29	29	29	29	27	29	33	28	30
15	30	29	30	29	29	29	30	29	29	32	29	30
16	30	29	30	29	29	29	30	29	30	29	28	29
17	30	29	29	29	29	29	30	29	29	32	29	29
18	30	29	30	30	29	30	31	29	30	32	29	29
19	30	30	30	30	30	30	30	29	29	30	29	29
20	30	30	30	30	29	30	30	29	29	32	28	30
21	30	30	30	30	29	29	31	29	30	32	28	30
22	30	30	30	29	29	29	31	29	29	29	28	29
23	30	30	30	29	29	29	31	28	30	29	28	28
24	30	30	30	29	29	29	30	28	29	28	28	28
25	30	30	30	29	29	29	30	28	30	28	28	28
26	30	29	30	29	29	29	30	28	29	29	28	28
27	30	29	30	29	29	29	31	28	30	29	28	28
28	30	29	30	29	29	29	31	28	30	30	26	28
29	30	30	30	29	29	29	30	28	29	27	24	25
30	30	30	30	29	29	29	31	28	28	29	26	28
31	30	29	30	---	---	---	31	28	30	28	28	28
MONTH	31	29	30	30	29	29	31	27	29	33	24	29

14138720 BULL RUN RIVER AT LOWER FLUME, NEAR BRIGHTWOOD, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	6.4	6.4	6.4	6.6	6.5	6.5	6.5	6.5	6.5	6.6	6.4	6.6
2	6.4	6.4	6.4	6.6	6.5	6.5	6.5	6.4	6.5	6.6	6.5	6.6
3	6.5	6.4	6.4	6.6	6.5	6.5	6.5	6.4	6.4	6.6	6.5	6.6
4	6.5	6.4	6.4	6.7	6.6	6.6	6.5	6.4	6.4	6.6	6.6	6.6
5	6.5	6.4	6.4	6.7	6.6	6.6	6.5	6.4	6.4	6.6	6.5	6.6
6	6.5	6.4	6.4	6.7	6.6	6.6	6.4	6.3	6.4	6.6	6.4	6.5
7	6.5	6.4	6.4	6.6	6.6	6.6	6.5	6.4	6.4	6.7	6.5	6.6
8	6.5	6.4	6.4	6.6	6.6	6.6	6.5	6.4	6.4	6.6	6.5	6.6
9	6.5	6.4	6.4	6.6	6.6	6.6	6.5	6.4	6.4	6.6	6.5	6.5
10	6.5	6.4	6.4	6.7	6.6	6.6	6.5	6.4	6.5	6.6	6.5	6.6
11	6.5	6.4	6.5	6.7	6.6	6.6	6.5	6.5	6.5	6.6	6.5	6.6
12	6.5	6.5	6.5	6.6	6.6	6.6	6.5	6.4	6.5	6.7	6.6	6.6
13	6.5	6.5	6.5	6.6	6.6	6.6	6.4	6.0	6.3	6.7	6.6	6.6
14	6.5	6.5	6.5	6.7	6.6	6.6	6.4	6.2	6.3	6.7	6.6	6.7
15	6.5	6.5	6.5	6.7	6.6	6.6	6.4	6.3	6.4	6.7	6.5	6.6
16	6.5	6.5	6.5	6.6	6.6	6.6	6.4	6.4	6.4	6.5	6.4	6.5
17	6.5	6.5	6.5	6.6	6.6	6.6	6.4	6.4	6.4	6.6	6.5	6.6
18	6.5	6.5	6.5	6.6	6.6	6.6	6.5	6.4	6.4	6.6	6.6	6.6
19	6.5	6.5	6.5	6.6	6.5	6.6	6.5	6.4	6.5	6.6	6.5	6.6
20	6.6	6.5	6.5	6.6	6.5	6.6	6.6	6.5	6.5	6.6	6.5	6.6
21	6.5	6.5	6.5	6.6	6.5	6.5	6.6	6.5	6.5	6.6	6.5	6.6
22	6.5	6.5	6.5	6.6	6.5	6.5	6.5	6.5	6.5	6.7	6.6	6.6
23	6.5	6.5	6.5	6.6	6.5	6.5	6.6	6.5	6.6	6.7	6.3	6.6
24	6.5	6.5	6.5	6.6	6.4	6.5	6.6	6.5	6.6	6.4	6.2	6.3
25	6.6	6.5	6.5	6.6	6.4	6.5	6.6	6.5	6.6	6.5	6.4	6.5
26	6.6	6.5	6.5	6.6	6.5	6.5	6.6	6.5	6.6	6.5	6.4	6.5
27	6.6	6.5	6.5	6.6	6.5	6.6	6.6	6.5	6.6	6.6	6.5	6.5
28	6.6	6.5	6.5	6.6	6.5	6.6	6.6	6.5	6.6	6.5	5.3	6.3
29	6.5	6.4	6.5	6.6	6.4	6.4	6.6	6.4	6.6	5.5	4.5	5.1
30	6.6	6.5	6.5	6.5	6.4	6.5	6.6	6.6	6.6	5.8	5.4	5.6
31	6.5	6.5	6.5	---	---	---	6.6	6.5	6.6	6.1	5.8	6.0
MONTH	6.6	6.4	6.5	6.7	6.4	6.6	6.6	6.0	6.5	6.7	4.5	6.5
DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	6.4	6.1	6.2	6.9	6.8	6.8	6.7	6.6	6.7	6.7	6.6	6.6
2	6.5	6.3	6.4	6.9	6.8	6.8	6.7	6.6	6.7	6.6	6.5	6.5
3	6.6	6.5	6.5	6.9	6.8	6.8	6.7	6.6	6.7	6.6	6.5	6.5
4	6.6	6.5	6.6	6.9	6.8	6.8	6.7	6.6	6.7	6.6	6.5	6.5
5	6.7	6.6	6.6	6.8	6.7	6.8	6.7	6.6	6.7	6.6	6.5	6.5
6	6.7	6.7	6.7	6.8	6.7	6.7	6.7	6.6	6.7	6.6	6.4	6.5
7	6.8	6.7	6.7	6.8	6.7	6.8	6.7	6.7	6.7	6.5	6.5	6.5
8	6.8	6.7	6.7	6.8	6.7	6.8	6.7	6.7	6.7	6.5	6.4	6.5
9	6.8	6.7	6.8	6.7	6.7	6.7	6.8	6.7	6.7	6.5	6.4	6.5
10	6.8	6.7	6.8	6.7	6.7	6.7	6.7	6.7	6.7	6.5	6.4	6.5
11	6.8	6.7	6.8	6.8	6.7	6.7	6.7	6.7	6.7	6.5	6.4	6.4
12	6.8	6.7	6.8	6.8	6.7	6.7	6.7	6.7	6.7	6.5	6.4	6.4
13	6.8	6.7	6.8	6.8	6.7	6.7	6.7	6.7	6.7	6.5	6.4	6.4
14	6.8	6.7	6.8	6.8	6.7	6.7	6.7	6.3	6.7	6.5	6.4	6.4
15	6.8	6.7	6.8	6.8	6.7	6.7	6.7	6.6	6.7	6.4	6.4	6.4
16	6.9	6.7	6.8	6.8	6.7	6.7	6.7	6.6	6.6	6.4	6.4	6.4
17	6.8	6.8	6.8	6.8	6.7	6.7	6.7	6.4	6.6	6.5	6.4	6.4
18	6.8	6.7	6.8	6.8	6.7	6.7	6.7	6.6	6.6	6.4	6.4	6.4
19	6.8	6.7	6.7	6.7	6.7	6.7	6.7	6.6	6.6	6.4	6.4	6.4
20	6.8	6.7	6.8	6.8	6.7	6.7	6.6	6.6	6.6	6.5	6.3	6.4
21	6.8	6.7	6.8	6.8	6.7	6.7	6.6	6.5	6.6	6.4	6.4	6.4
22	6.9	6.8	6.8	6.7	6.7	6.7	6.6	6.5	6.5	6.4	6.3	6.4
23	6.9	6.8	6.8	6.7	6.7	6.7	6.6	6.5	6.6	6.4	6.3	6.3
24	6.9	6.8	6.8	6.7	6.7	6.7	6.6	6.5	6.6	6.4	6.3	6.3
25	6.9	6.8	6.9	6.7	6.7	6.7	6.6	6.5	6.6	6.4	6.3	6.3
26	6.9	6.8	6.9	6.7	6.7	6.7	6.6	6.5	6.6	6.3	6.3	6.3
27	6.9	6.8	6.9	6.7	6.6	6.6	6.7	6.5	6.6	6.3	6.2	6.3
28	6.9	6.8	6.8	6.7	6.6	6.6	6.6	6.4	6.6	6.3	6.2	6.3
29	6.9	6.8	6.8	6.7	6.6	6.6	6.7	6.6	6.6	6.3	6.2	6.2
30	---	---	---	6.7	6.6	6.6	6.7	6.6	6.6	6.2	6.2	6.2
31	---	---	---	6.7	6.6	6.6	---	---	---	6.2	6.2	6.2
MONTH	6.9	6.1	6.7	6.9	6.6	6.7	6.8	6.3	6.6	6.7	6.2	6.4

14138800 BLAZED ALDER CREEK NEAR RHODODENDRON, OR

LOCATION.--Lat 45°27'10", long 121°53'23", in NW ¼ SE ¼ sec.25, T.1 S., R.7 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 600 ft downstream from the confluence of Bedrock and Hickman Creeks and 8.6 mi north of Rhododendron, and at mile 3.78.

DRAINAGE AREA.--8.17 mi².

PERIOD OF RECORD.--October 1963 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,540 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--41 years (water years 1964-2004), 57.6 ft³/s, 95.82 in/yr, 41,740 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,610 ft³/s Dec. 22, 1964, gage height, 8.25 ft, from rating curve extended above 330 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 1.0 ft³/s Sept. 2-7, 2003.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec 13	1430	717	4.26	Jan 29	0430	*1,190	*5.35

Minimum discharge, 1.9 ft³/s, Oct. 3, 4, 5, 6.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	14	94	e20	82	47	55	42	65	9.9	3.3	16
2	2.0	13	86	18	60	40	48	42	50	9.4	3.3	19
3	2.0	12	145	e17	47	37	57	40	40	9.0	3.2	17
4	1.9	11	90	e16	42	88	60	38	34	8.6	3.1	14
5	1.9	9.9	145	e14	36	108	54	35	34	8.1	3.1	12
6	1.9	9.0	169	e15	43	105	48	30	54	7.8	4.7	10
7	3.5	8.6	100	e22	52	69	48	27	65	7.8	6.6	9.4
8	4.9	8.2	82	e26	44	68	48	28	108	7.6	3.7	8.7
9	8.0	7.8	59	e36	37	103	48	25	99	7.0	3.2	8.2
10	16	20	45	e40	32	96	53	25	97	6.9	3.1	7.7
11	13	152	39	35	30	74	58	40	79	6.6	3.0	24
12	28	69	151	34	28	68	58	35	60	6.4	2.9	15
13	28	41	384	32	26	64	55	29	59	6.1	2.8	33
14	21	30	185	46	30	58	67	25	51	5.8	2.7	78
15	26	29	90	158	36	57	67	24	42	5.7	2.5	93
16	27	78	70	186	56	59	58	23	36	5.4	2.4	79
17	18	260	85	98	77	62	49	21	31	5.1	2.4	95
18	14	155	62	71	111	71	46	20	26	5.0	2.2	95
19	13	117	48	86	130	73	45	25	23	5.6	2.2	73
20	12	75	47	78	83	57	65	21	21	4.8	2.2	52
21	10	51	57	58	59	51	77	20	19	4.7	2.1	39
22	10	39	53	47	46	57	63	44	17	4.4	1.9	31
23	19	32	46	166	38	71	55	132	16	4.2	1.2	26
24	13	33	47	340	34	85	49	76	15	4.1	3.8	22
25	10	31	45	134	32	78	45	50	14	3.9	105	19
26	9.0	30	37	80	31	72	49	79	13	3.9	141	16
27	8.1	25	32	65	47	113	55	183	12	3.9	75	15
28	16	31	29	374	67	85	51	198	12	3.8	41	13
29	31	187	26	900	56	75	42	162	11	3.6	28	12
30	24	128	23	296	---	82	40	121	10	3.6	20	12
31	17	---	21	135	---	72	---	89	---	3.5	16	---
TOTAL	411.2	1,706.5	2,592	3,643	1,492	2,245	1,613	1,749	1,213	182.2	559.7	964.0
MEAN	13.3	56.9	83.6	118	51.4	72.4	53.8	56.4	40.4	5.88	18.1	32.1
MAX	31	260	384	900	130	113	77	198	108	9.9	141	95
MIN	1.9	7.8	21	14	26	37	40	20	10	3.5	2.1	7.7
AC-FT	816	3,380	5,140	7,230	2,960	4,450	3,200	3,470	2,410	361	1,110	1,910
CFSM	1.62	6.96	10.2	14.4	6.30	8.86	6.58	6.91	4.95	0.72	2.21	3.93
IN.	1.87	7.77	11.80	16.59	6.79	10.22	7.34	7.96	5.52	0.83	2.55	4.39

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 2004, BY WATER YEAR (WY)

MEAN	29.8	87.8	105	102	82.5	69.9	78.8	72.2	38.6	10.7	5.59	10.5
MAX	82.5	218	288	207	221	167	150	165	115	35.4	27.6	35.5
(WY)	(1968)	(1996)	(1965)	(1974)	(1996)	(1972)	(1990)	(1969)	(1964)	(1983)	(1968)	(1977)
MIN	1.57	12.5	22.6	19.2	17.5	17.7	33.1	18.1	4.74	3.38	1.53	1.67
(WY)	(1988)	(1994)	(1977)	(1985)	(1969)	(1992)	(1983)	(1992)	(1992)	(2003)	(2003)	(1991)

SANDY RIVER BASIN

14138800 BLAZED ALDER CREEK NEAR RHODODENDRON, OR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1964 - 2004	
ANNUAL TOTAL	18,666.8		18,370.6			
ANNUAL MEAN	51.1		50.2		57.6	
HIGHEST ANNUAL MEAN					88.1	1974
LOWEST ANNUAL MEAN					33.5	1977
HIGHEST DAILY MEAN	548	Jan 31	900	Jan 29	1,810	Nov 25, 1999
LOWEST DAILY MEAN	1.0	Sep 3	1.9	Oct 4	1.0	Sep 3, 2003
ANNUAL SEVEN-DAY MINIMUM	1.0	Aug 31	2.2	Oct 1	1.0	Aug 31, 2003
ANNUAL RUNOFF (AC-FT)	37,030		36,440		41,740	
ANNUAL RUNOFF (CFSM)	6.26		6.14		7.05	
ANNUAL RUNOFF (INCHES)	84.99		83.65		95.82	
10 PERCENT EXCEEDS	133		99		131	
50 PERCENT EXCEEDS	28		35		31	
90 PERCENT EXCEEDS	1.9		4.6		3.3	

e Estimated



2004 Water Year
SANDY RIVER BASIN

14138800 BLAZED ALDER CREEK NEAR RHODODENDRON, OR

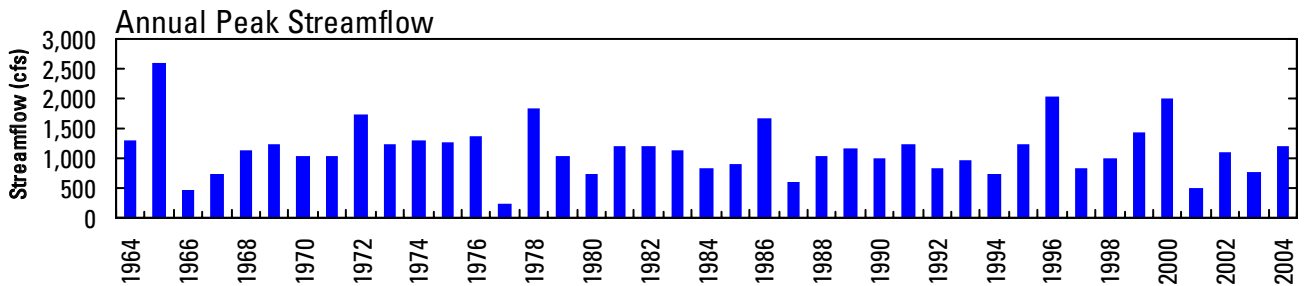
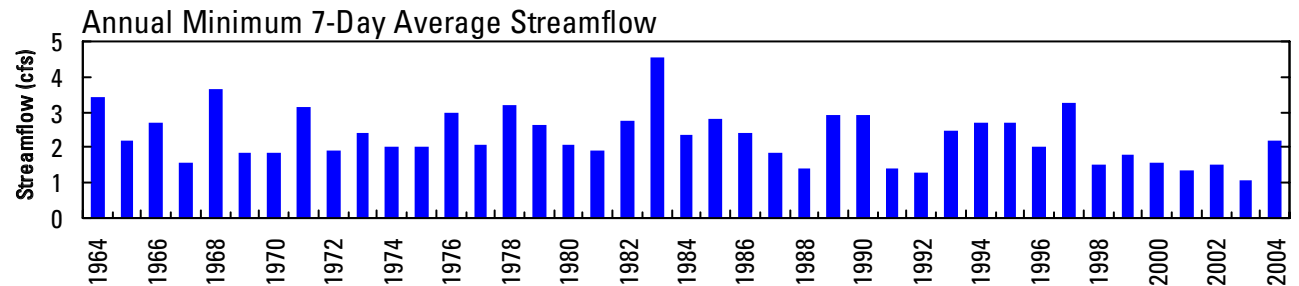
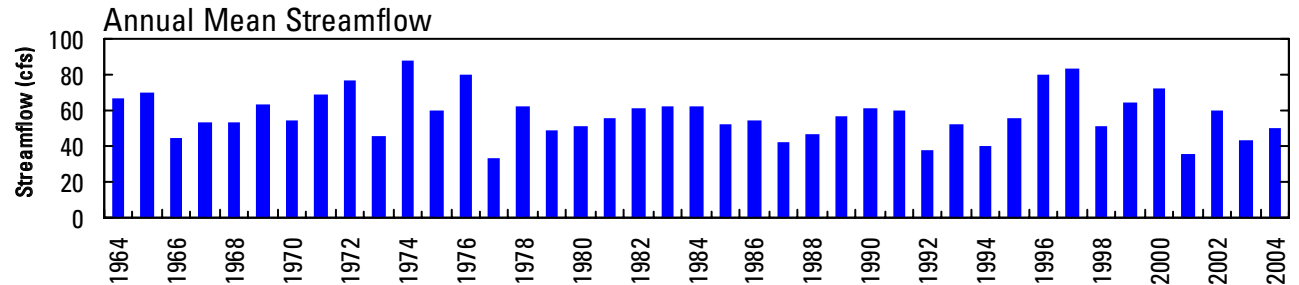
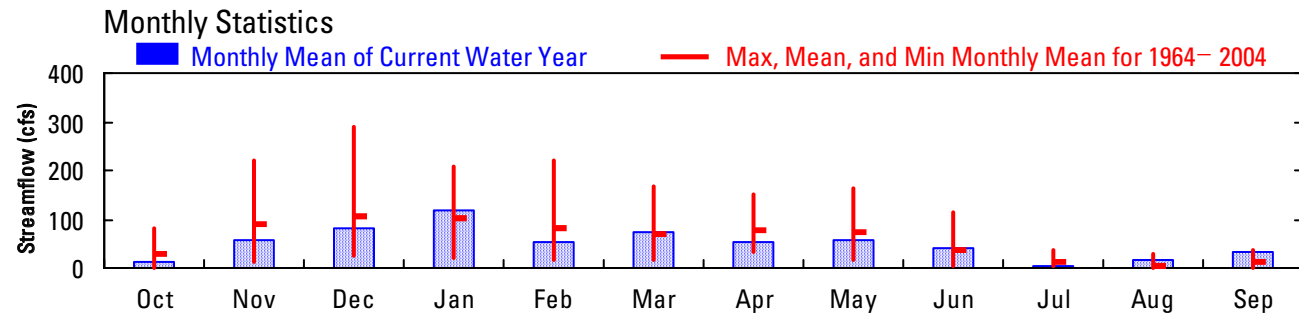
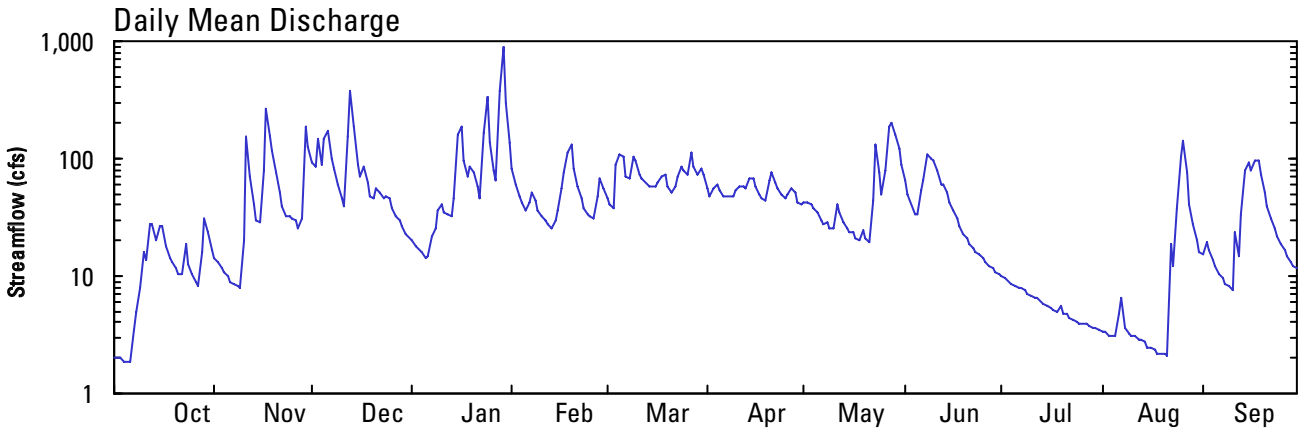
Latitude: 45° 27 ' 10"

Longitude: 121° 53 ' 25"

Hydrologic Unit Code: 17080001

Clackamas County

Datum: 2,540.00 feet Drainage Area: 8.17 square miles



14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

LOCATION.--Lat 45°29'54", long 122°00'40", near center of sec.12, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 1.2 mi upstream from North Fork, 7.0 mi southeast of Multnomah Falls, and at mile 14.8.

DRAINAGE AREA.--47.9 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1966 to current year.

REVISED RECORDS.--WDR OR-91-I: 1990.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,080 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. Regulation at times since 1915 by Bull Run Lake, usable capacity, 12,270 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--38 years (water years 1967-2004), 407 ft³/s, 115.46 in/yr, 294,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,800 ft³/s Nov. 25, 1999, gage height, 14.46 ft; minimum discharge, 30 ft³/s Oct. 28-31, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec 13	1400	4,680	9.50	Jan 29	0500	*8,080	*11.45

Minimum discharge, 43 ft³/s, Aug. 20, 21.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	185	725	221	657	429	397	242	442	87	50	147
2	47	161	637	207	513	377	351	244	356	84	50	172
3	47	142	992	195	420	355	370	236	300	82	50	158
4	46	126	627	174	405	796	376	235	256	79	50	130
5	46	115	1,080	151	363	836	338	234	255	77	52	118
6	46	105	1,240	174	394	778	298	201	381	74	57	106
7	57	99	764	193	487	543	278	188	434	73	68	97
8	69	94	743	250	435	524	270	198	629	73	53	92
9	124	90	548	331	368	642	268	182	587	71	50	89
10	199	139	421	338	338	588	283	176	626	69	49	85
11	147	905	363	341	318	494	304	273	509	67	48	212
12	308	458	986	322	298	465	305	245	410	65	47	149
13	325	315	2,470	316	276	435	292	218	392	64	47	224
14	234	250	1,280	445	300	408	353	193	361	63	46	405
15	238	234	708	1,040	346	402	368	184	311	62	46	458
16	267	455	570	1,110	510	407	357	184	274	60	46	433
17	209	1,330	688	676	649	416	305	166	247	59	45	687
18	162	1,060	520	540	847	454	287	160	218	59	45	694
19	155	946	437	710	973	461	283	193	194	60	44	534
20	138	621	424	611	638	393	388	173	172	58	44	411
21	125	448	617	472	477	369	500	163	157	57	44	324
22	125	338	521	392	398	391	409	395	145	56	161	271
23	323	290	435	1,240	353	439	353	1,140	139	54	132	226
24	199	349	437	2,350	334	486	313	584	131	54	340	195
25	156	359	451	972	325	494	282	392	121	53	1,280	171
26	131	400	379	651	326	486	282	560	110	53	1,140	153
27	116	344	340	568	444	687	296	1,130	104	52	589	140
28	203	337	332	2,610	585	551	289	1,410	99	52	360	126
29	350	1,530	296	5,880	489	494	258	1,130	95	52	264	117
30	303	976	258	2,310	---	525	245	818	91	51	202	110
31	225	---	241	1,040	---	480	---	597	---	51	159	---
TOTAL	5,168	13,201	20,530	26,830	13,266	15,605	9,698	12,444	8,546	1,971	5,658	7,234
MEAN	167	440	662	865	457	503	323	401	285	63.6	183	241
MAX	350	1,530	2,470	5,880	973	836	500	1,410	629	87	1,280	694
MIN	46	90	241	151	276	355	245	160	91	51	44	85
AC-FT	10,250	26,180	40,720	53,220	26,310	30,950	19,240	24,680	16,950	3,910	11,220	14,350
CFSM	3.48	9.19	13.8	18.1	9.55	10.5	6.75	8.38	5.95	1.33	3.81	5.03
IN.	4.01	10.25	15.94	20.84	10.30	12.12	7.53	9.66	6.64	1.53	4.39	5.62

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 2004, BY WATER YEAR (WY)

MEAN	236	602	712	688	604	513	511	437	280	113	82.8	119
MAX	535	1,325	1,434	1,238	1,216	1,120	834	885	699	292	231	294
(WY)	(1968)	(1996)	(1978)	(1975)	(1996)	(1972)	(1993)	(1969)	(1974)	(1983)	(1968)	(1977)
MIN	36.5	72.4	193	177	167	148	242	150	54.8	54.0	43.7	39.9
(WY)	(1988)	(1994)	(1977)	(1985)	(1993)	(1992)	(1967)	(1992)	(1992)	(1977)	(1967)	(2001)

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1967 - 2004	
ANNUAL TOTAL	142,495		140,151			
ANNUAL MEAN	390		383		407	
HIGHEST ANNUAL MEAN					643	
LOWEST ANNUAL MEAN					249	
HIGHEST DAILY MEAN	4,360	Jan 31	5,880	Jan 29	11,900	Nov 25, 1999
LOWEST DAILY MEAN	39	Sep 3	44	Aug 19	30	Oct 29, 1987
ANNUAL SEVEN-DAY MINIMUM	39	Aug 31	45	Aug 15	31	Oct 25, 1987
ANNUAL RUNOFF (AC-FT)	282,600		278,000		294,900	
ANNUAL RUNOFF (CFSM)	8.15		7.99		8.50	
ANNUAL RUNOFF (INCHES)	110.66		108.84		115.46	
10 PERCENT EXCEEDS	958		714		857	
50 PERCENT EXCEEDS	250		299		260	
90 PERCENT EXCEEDS	47		57		58	



2004 Water Year
SANDY RIVER BASIN

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

Latitude: 45° 29 ' 54"

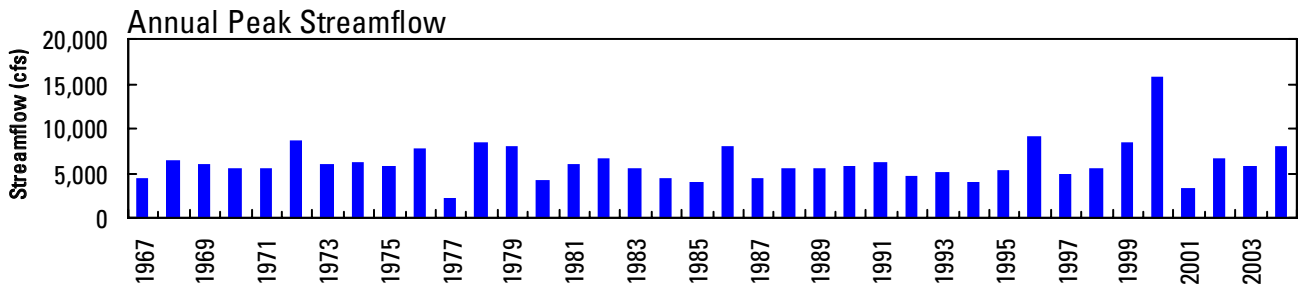
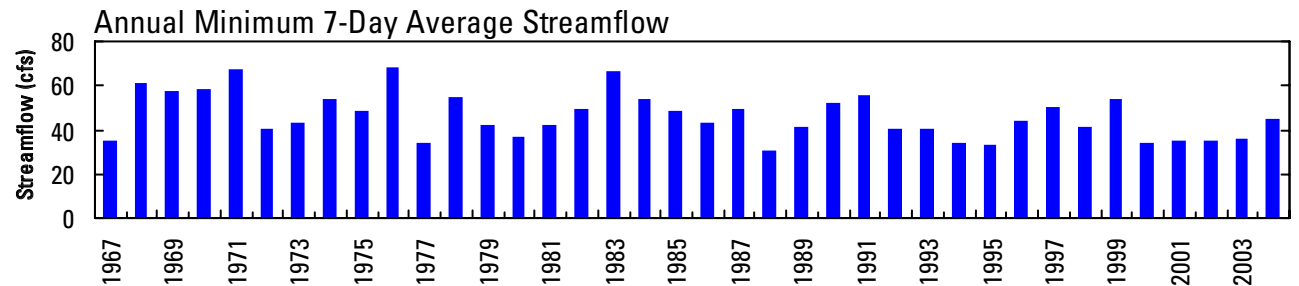
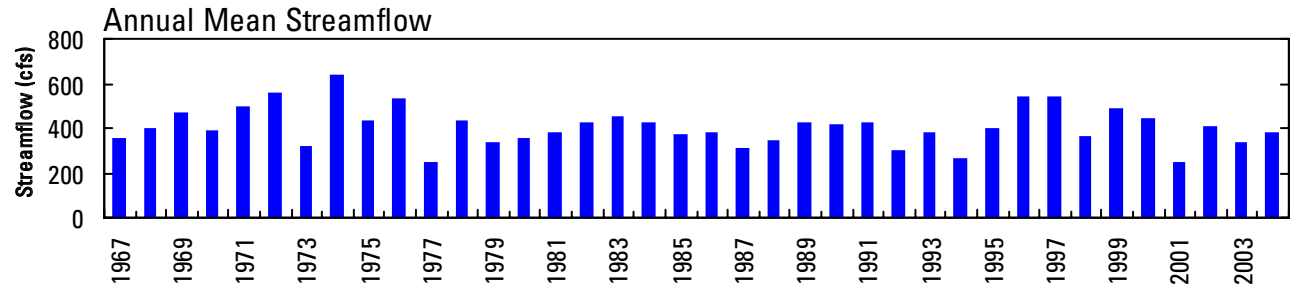
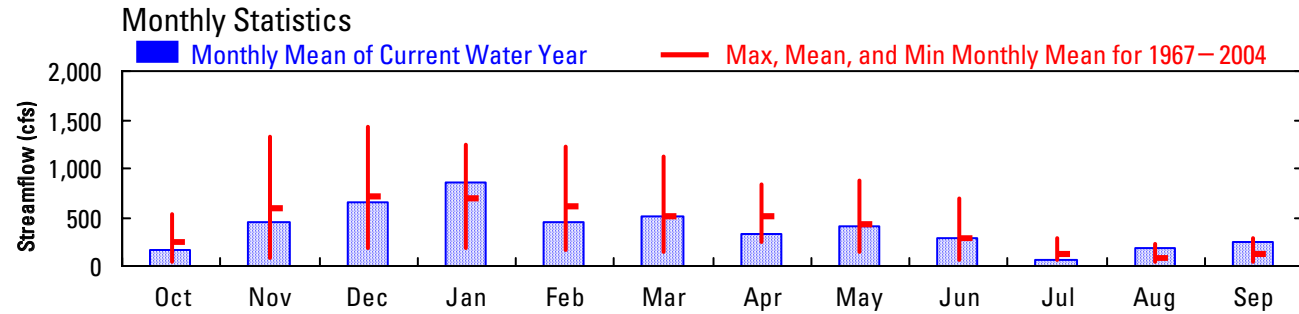
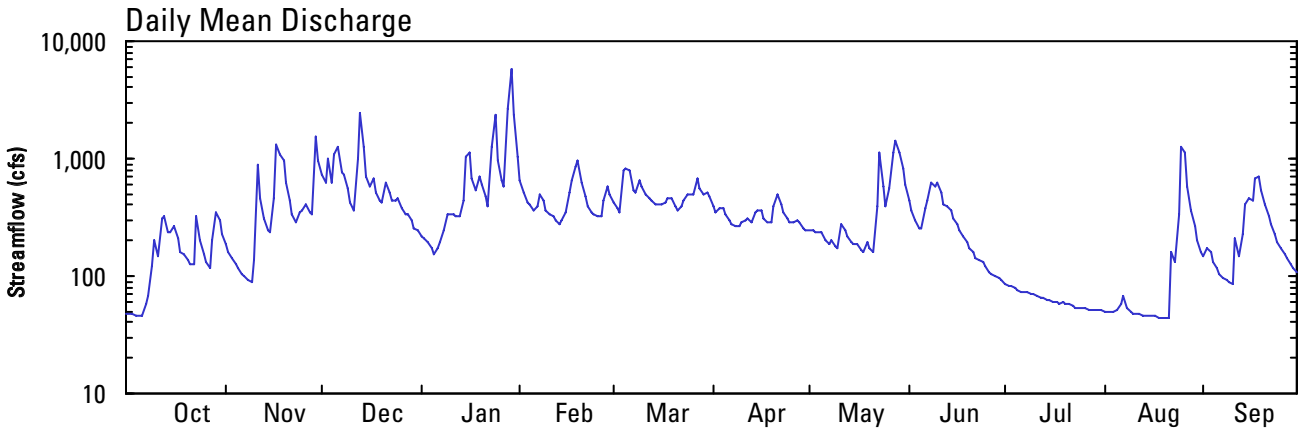
Longitude: 122° 00 ' 40"

Hydrologic Unit Code: 17080001

Multnomah County

Datum: 1,080.00 feet

Drainage Area: 47.9 square miles



14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.
 pH: August 1990 to September 1992.
 WATER TEMPERATURE: October 1977 to current year.
 TURBIDITY: August 1990 to July 1994.
 SUSPENDED SEDIMENT DISCHARGE: October 1977 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Specific conductance and water temperature records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 44 microsiemens Sept. 17, 1988; minimum recorded, 9 microsiemens Jan. 23, 1982, Feb. 23, 1986, Dec. 4, 1989, Apr. 14, 2002.
 pH: Maximum recorded, 8.1 units Aug. 30, Sept. 1, 1990; minimum recorded, 5.7 units Jan. 18, 1991.
 WATER TEMPERATURE: Maximum, 18.0°C June 22-25, 1992, July 23, 1994; minimum, 0.0°C on many days during winter periods.
 TURBIDITY: Maximum recorded, 44 NTU Jan. 15, 1991; minimum recorded, 0.08 NTU Aug. 30, 31, 1992.
 SEDIMENT CONCENTRATION: Maximum daily, 290 mg/L Dec. 2, 1977; minimum, 0 mg/L on many days.
 SEDIMENT DISCHARGE: Maximum daily, 5,930 tons Dec. 2, 1977; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 31 microsiemens Aug. 1; minimum, 13 microsiemens Jan. 29-31.
 WATER TEMPERATURE: Maximum, 17.3°C July 24 minimum, 0.2°C Jan. 5-8.

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
 WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	29	27	27	23	21	22	18	18	18	23	20	22
2	29	26	28	26	21	24	18	18	18	23	21	22
3	29	27	28	25	22	22	18	17	17	23	21	22
4	29	27	28	22	22	22	18	17	18	25	22	23
5	29	27	29	23	22	22	18	16	17	24	18	18
6	29	27	27	23	22	23	17	16	17	19	18	19
7	29	27	27	23	22	23	18	17	17	21	19	20
8	28	26	27	23	23	23	18	17	18	21	19	20
9	26	25	26	23	23	23	18	17	18	19	18	19
10	25	23	24	23	22	23	19	18	19	19	18	18
11	24	23	24	22	19	20	19	19	19	18	18	18
12	24	22	23	19	19	19	21	16	18	18	18	18
13	24	22	22	20	19	20	17	14	16	19	18	18
14	25	22	23	21	20	20	17	15	16	18	17	18
15	24	21	23	21	20	20	18	17	17	17	16	16
16	24	22	23	21	18	20	18	18	18	18	16	17
17	24	22	23	19	18	18	18	17	17	18	18	18
18	25	22	23	18	18	18	18	18	18	18	18	18
19	25	22	23	18	17	18	19	18	18	18	17	18
20	26	23	24	19	18	18	19	18	19	18	18	18
21	26	24	25	19	19	19	18	18	18	19	18	19
22	26	22	24	20	19	19	18	18	18	19	19	19
23	25	21	23	20	20	20	19	18	19	19	15	17
24	25	22	22	20	19	19	19	18	19	18	17	17
25	26	22	23	20	19	19	19	18	18	19	18	19
26	27	23	25	19	19	19	23	19	20	20	19	19
27	26	23	24	20	19	19	22	19	20	20	19	20
28	26	21	24	20	19	20	22	20	21	20	16	18
29	25	21	23	19	17	17	22	20	20	18	13	15
30	25	21	22	18	17	17	23	20	21	14	13	13
31	23	21	22	---	---	---	23	20	21	15	13	14
MONTH	29	21	24	26	17	20	23	14	18	25	13	18

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	11.0	10.3	10.7	3.5	2.6	3.1	5.9	5.4	5.6	2.8	1.3	2.0
2	11.4	11.0	11.2	3.8	3.5	3.6	6.0	5.4	5.7	2.4	1.3	2.1
3	11.4	10.6	10.8	3.5	2.9	3.1	6.0	4.9	5.4	2.4	1.7	2.0
4	11.2	10.6	10.8	3.5	2.9	3.3	5.1	4.7	4.8	2.0	0.3	1.5
5	11.4	11.0	11.1	3.4	2.8	3.0	5.9	5.1	5.6	0.3	0.2	0.3
6	11.0	10.3	10.6	2.9	2.5	2.7	6.1	4.9	5.7	0.3	0.2	0.3
7	11.3	10.7	11.0	3.7	2.8	3.2	5.4	4.9	5.1	0.3	0.2	0.2
8	11.1	10.0	10.4	4.2	3.5	3.8	5.5	4.9	5.2	0.3	0.2	0.3
9	10.0	9.2	9.7	4.7	4.2	4.5	5.1	4.7	5.0	2.1	0.3	1.2
10	9.2	8.6	8.9	5.9	4.7	5.1	4.7	4.4	4.6	2.5	2.1	2.3
11	8.6	8.0	8.3	7.1	5.9	6.7	5.2	4.6	4.9	3.1	2.4	2.8
12	9.2	8.6	8.8	6.9	5.7	6.2	5.4	4.9	5.2	3.4	2.8	3.0
13	9.6	8.8	9.1	6.0	5.5	5.8	5.5	4.3	5.0	3.9	3.4	3.7
14	9.2	8.6	9.0	7.1	5.8	6.4	4.4	4.1	4.3	4.0	3.6	3.9
15	8.6	7.9	8.1	6.9	6.5	6.6	4.7	4.3	4.4	4.0	3.6	3.7
16	9.2	8.2	8.5	6.5	6.4	6.5	4.7	4.3	4.5	4.2	3.6	3.9
17	10.5	9.2	9.9	7.1	6.4	6.5	5.1	4.4	4.7	4.2	3.6	3.9
18	10.3	9.1	9.6	8.0	7.1	7.6	4.7	4.4	4.6	4.4	3.9	4.1
19	10.3	9.5	9.9	7.9	4.8	6.2	4.6	4.2	4.4	4.5	4.1	4.3
20	11.4	10.3	10.7	5.1	4.8	5.0	5.3	4.6	4.9	4.1	3.6	3.8
21	12.3	11.4	11.8	4.8	4.2	4.5	5.4	4.8	5.1	3.6	3.0	3.4
22	12.3	11.6	11.8	4.3	3.7	3.9	4.8	4.2	4.5	3.6	2.9	3.2
23	11.6	8.9	10.1	4.5	3.7	4.2	4.5	4.0	4.3	4.2	3.6	4.0
24	8.9	7.6	8.0	4.5	4.0	4.3	5.0	4.3	4.7	4.1	3.0	3.6
25	8.1	7.4	7.7	4.5	3.7	4.1	4.3	3.3	3.6	3.6	2.7	3.3
26	8.7	7.8	8.2	4.8	4.0	4.5	3.6	3.1	3.4	3.8	3.0	3.5
27	9.5	8.5	8.8	5.1	4.6	4.9	3.6	2.4	3.0	4.2	3.6	4.0
28	10.6	9.5	9.9	5.4	5.0	5.1	3.3	2.4	2.8	4.1	3.3	4.0
29	10.0	7.1	8.3	5.6	5.0	5.2	3.0	2.2	2.7	4.4	3.3	4.0
30	7.1	4.9	6.0	6.0	5.1	5.6	2.4	1.7	2.0	4.4	3.5	3.8
31	4.9	3.1	3.7	---	---	---	2.7	2.1	2.3	4.1	3.5	3.7
MONTH	12.3	3.1	9.4	8.0	2.5	4.8	6.1	1.7	4.5	4.5	0.2	2.9
	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	4.1	3.6	3.8	5.2	4.3	4.7	5.8	4.2	4.9	10.2	7.9	9.0
2	3.9	3.5	3.7	5.1	3.8	4.4	6.5	3.9	5.1	11.1	8.4	9.5
3	4.2	3.5	3.8	4.3	2.8	3.3	8.0	6.0	6.7	10.9	8.4	9.6
4	4.4	3.9	4.1	4.0	3.1	3.7	7.0	5.1	6.1	9.8	8.4	9.0
5	4.2	3.5	3.9	4.3	3.4	3.8	6.2	4.8	5.5	9.2	7.7	8.2
6	4.5	4.1	4.2	4.8	3.7	4.1	7.2	5.3	6.1	9.3	7.0	8.0
7	4.2	3.9	4.0	5.6	4.3	4.8	6.9	6.0	6.5	9.1	8.2	8.7
8	4.2	3.8	4.0	5.9	4.1	4.9	7.6	5.8	6.6	9.1	8.0	8.5
9	3.9	3.3	3.6	5.7	4.4	4.9	7.8	5.3	6.5	9.9	8.0	8.7
10	4.2	3.3	3.7	5.2	3.5	4.4	8.3	6.0	7.1	8.7	7.6	7.9
11	4.2	3.8	3.9	5.8	4.0	4.8	8.7	6.2	7.3	7.6	6.9	7.1
12	3.8	3.2	3.5	5.6	4.0	4.8	7.8	6.0	7.0	8.0	7.2	7.5
13	3.6	2.7	3.2	5.6	3.8	4.8	7.4	6.5	6.8	9.7	6.4	7.8
14	4.7	3.6	4.1	5.6	4.8	5.2	6.7	5.5	5.9	10.7	7.6	9.0
15	4.7	4.1	4.3	6.1	4.4	5.2	5.6	4.8	5.2	9.7	8.2	8.5
16	4.1	3.8	4.0	6.1	4.6	5.3	6.5	5.0	5.7	9.1	8.0	8.4
17	4.3	3.7	4.1	6.1	4.6	5.3	6.6	5.6	6.0	9.9	7.4	8.6
18	4.6	4.1	4.3	5.4	4.3	4.9	6.6	5.4	6.0	9.5	8.7	8.9
19	4.6	3.7	4.1	4.8	3.8	4.2	6.6	5.4	6.0	8.9	8.5	8.7
20	4.4	3.4	3.8	5.6	3.7	4.5	6.4	5.4	5.7	10.5	7.8	9.1
21	4.4	3.8	4.1	6.5	4.7	5.5	6.3	4.9	5.5	10.1	9.1	9.4
22	4.9	4.0	4.3	6.9	4.8	5.8	8.1	5.1	6.3	9.1	7.8	8.3
23	5.1	4.1	4.5	6.5	5.5	5.9	7.1	5.7	6.4	8.3	7.4	7.8
24	4.9	4.1	4.5	5.6	5.0	5.3	7.3	4.8	6.0	9.7	6.7	8.1
25	4.4	3.8	4.1	5.1	4.5	4.8	9.0	5.7	7.1	10.4	7.6	8.9
26	4.8	3.8	4.3	5.0	4.2	4.6	10.2	7.0	8.4	9.6	8.8	9.2
27	4.8	4.3	4.5	5.2	4.7	4.9	9.4	7.3	8.4	9.2	8.1	8.6
28	4.6	4.1	4.3	6.2	3.7	5.0	8.4	6.3	7.3	8.1	7.3	7.6
29	4.9	4.0	4.4	7.0	5.0	5.9	9.0	5.9	7.4	7.5	7.2	7.3
30	---	---	---	6.2	4.5	5.5	10.2	7.0	8.4	8.3	7.3	7.8
31	---	---	---	5.1	3.9	4.5	---	---	---	8.4	7.5	8.0
MONTH	5.1	2.7	4.0	7.0	2.8	4.8	10.2	3.9	6.5	11.1	6.4	8.4

14138870 FIR CREEK NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°28'49", long 122°01'28", in NE ¼ SE ¼ sec.14, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, on right bank, 6.4 mi north of Brightwood and 0.6 mi above Bull Run Reservoir Number One.

DRAINAGE AREA.--5.46 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1975 to current year.

REVISED RECORDS.--WDR OR-78-1: 1976. WDR OR-82-2: 1976(P), 1978-79(P), 1981, WDR OR-91-1: 1976.

GAGE.--Water-stage recorder. Elevation of gage is 1,440 ft above NGVD of 1929, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--29 years (water years 1976-2004), 34.6 ft³/s, 86.12 in/yr, 25,070 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,690 ft³/s Nov. 25, 1999, gage height, 5.01 ft; minimum discharge, 1.4 ft³/s Sept. 5-7, 2003.

REVISIONS.--End of year extremes and daily values discharge tables for water years 2000-2002 have been revised and are published below in addition to the current 2004 water year extremes and daily values table.

EXTREMES FOR WATER YEAR 2000.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov 25	0500	*1,690	*5.01	Feb 1	1730	519	3.85
Dec 16	1230	402	3.62				

Minimum discharge, 1.8 ft³/s, Oct. 23.

EXTREMES FOR WATER YEAR 2001.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 30	1400	*272	*3.36				

Minimum discharge, 1.8 ft³/s, Sept. 21-25.

EXTREMES FOR WATER YEAR 2002.--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec 13	2130	*409	*3.63				
				No other peak greater than base discharge.			

Minimum discharge, 1.9 ft³/s, Oct. 4-8.

EXTREMES FOR CURRENT YEAR (2004).--Peak discharges greater than base discharge of 400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan 29	0230	*692	*4.09				
				No other peak greater than base discharge.			

Minimum discharge, 2.5 ft³/s, Oct. 6.

SANDY RIVER BASIN

14138870 FIR CREEK NEAR BRIGHTWOOD, OR—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 1999 TO SEPTEMBER 2000
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	18	54	26	303	50	25	19	21	7.6	3.6	2.6
2	2.0	14	160	22	225	43	27	23	19	7.1	3.5	2.7
3	1.9	16	91	33	99	38	33	33	17	7.3	3.4	2.8
4	1.9	34	61	127	66	39	45	34	16	7.5	3.4	2.9
5	1.9	33	61	84	52	35	42	44	15	6.8	3.3	2.7
6	2.4	61	111	57	46	30	34	41	13	6.5	3.2	2.9
7	2.1	35	104	63	44	26	35	33	13	6.1	3.2	2.7
8	10	33	72	100	82	23	31	38	13	6.0	3.3	4.0
9	8.9	31	68	113	89	21	28	73	14	5.8	3.2	3.5
10	3.3	43	65	81	58	21	26	92	17	5.8	3.2	7.7
11	2.7	47	162	55	48	25	26	90	34	5.4	3.2	7.4
12	2.5	56	150	42	47	21	31	78	162	5.3	3.0	4.0
13	2.4	69	106	35	43	23	45	61	88	5.0	2.9	3.3
14	2.3	44	86	47	57	44	55	52	53	5.0	2.9	3.0
15	2.2	34	188	51	71	33	60	45	38	4.7	2.9	2.8
16	2.2	31	298	41	56	49	47	37	29	4.7	2.9	2.8
17	2.0	52	209	34	45	44	38	31	23	4.8	3.0	2.8
18	2.0	41	176	29	36	53	34	26	20	4.6	3.0	2.6
19	2.0	41	104	25	30	62	28	30	18	4.5	3.1	2.6
20	2.0	49	69	25	26	49	25	26	16	4.4	3.1	2.6
21	1.9	48	55	27	26	43	23	24	15	4.3	2.9	2.6
22	1.9	48	44	27	37	56	32	23	14	4.3	2.8	2.6
23	1.9	45	37	25	40	67	30	21	12	4.4	2.8	2.5
24	3.0	253	30	23	33	52	26	19	12	4.2	2.7	2.3
25	7.7	1,150	26	34	31	41	28	17	11	4.2	2.6	2.3
26	15	355	23	37	50	34	27	18	9.9	4.0	2.6	2.3
27	18	116	21	31	74	32	25	25	9.2	3.8	2.6	2.3
28	40	68	19	27	63	32	24	23	8.5	3.8	2.6	2.3
29	27	52	18	23	64	27	22	26	8.0	3.8	2.5	2.3
30	18	50	17	21	---	25	20	22	7.7	3.6	2.4	38
31	25	---	17	21	---	24	---	24	---	3.7	2.5	---
TOTAL	218.1	2,967	2,702	1,386	1,941	1,162	972	1,148	746.3	159.0	92.3	127.9
MEAN	7.04	98.9	87.2	44.7	66.9	37.5	32.4	37.0	24.9	5.13	2.98	4.26
MAX	40	1,150	298	127	303	67	60	92	162	7.6	3.6	38
MIN	1.9	14	17	21	26	21	20	17	7.7	3.6	2.4	2.3
AC-FT	433	5,890	5,360	2,750	3,850	2,300	1,930	2,280	1,480	315	183	254
CFSM	1.29	18.1	16.0	8.19	12.3	6.87	5.93	6.78	4.56	0.94	0.55	0.78
IN.	1.49	20.21	18.41	9.44	13.22	7.92	6.62	7.82	5.08	1.08	0.63	0.87

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 2000, BY WATER YEAR (WY)

MEAN	19.4	57.8	66.3	55.4	58.1	44.9	46.4	34.3	23.1	9.54	5.15	8.42
MAX	44.8	110	133	96.9	126	91.5	73.2	53.0	58.6	27.3	13.0	27.7
(WY)	(1996)	(1996)	(1978)	(1976)	(1982)	(1997)	(1993)	(1977)	(1981)	(1983)	(1978)	(1977)
MIN	1.97	6.09	15.3	16.6	16.9	14.0	24.9	14.6	3.80	3.50	2.95	2.57
(WY)	(1988)	(1994)	(1977)	(1979)	(1977)	(1992)	(1998)	(1992)	(1992)	(1992)	(1996)	(1991)

SUMMARY STATISTICS

FOR 1999 CALENDAR YEAR

FOR 2000 WATER YEAR

WATER YEARS 1976 - 2000

ANNUAL TOTAL	15,273.0											
ANNUAL MEAN	41.8						13,621.6					
HIGHEST ANNUAL MEAN							37.2			35.6		
LOWEST ANNUAL MEAN										53.5		1997
HIGHEST DAILY MEAN	1,150	Nov 25					1,150	Nov 25		23.4		1977
LOWEST DAILY MEAN	1.9	Oct 3					1.9	Oct 3		1.5		Oct 19, 1991
ANNUAL SEVEN-DAY MINIMUM	2.0	Oct 17					2.0	Oct 17		1.6		Oct 10, 1991
ANNUAL RUNOFF (AC-FT)	30,290						27,020			25,790		
ANNUAL RUNOFF (CFSM)	7.66						6.82			6.52		
ANNUAL RUNOFF (INCHES)	104.06						92.81			88.58		
10 PERCENT EXCEEDS	82						70			76		
50 PERCENT EXCEEDS	30						25			23		
90 PERCENT EXCEEDS	2.9						2.6			3.6		

14138870 FIR CREEK NEAR BRIGHTWOOD, OR—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2000 TO SEPTEMBER 2001
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	134	9.2	20	19	11	7.8	64	96	8.6	11	5.1	2.7
2	41	8.4	22	18	22	9.6	47	65	11	10	4.6	2.7
3	20	7.7	21	17	26	8.1	36	50	27	9.2	4.3	2.6
4	14	15	18	17	68	8.0	30	40	18	8.5	4.4	2.6
5	11	15	16	22	94	8.4	28	34	17	8.0	4.2	2.6
6	8.5	25	14	18	53	9.9	32	28	29	7.7	4.0	2.6
7	7.0	21	13	16	36	11	28	23	20	7.1	3.8	2.4
8	6.0	48	12	15	27	14	24	21	17	6.6	3.7	2.4
9	5.7	56	13	14	22	16	21	19	24	6.5	3.5	2.3
10	8.6	36	12	13	19	15	28	18	20	6.1	3.4	2.3
11	12	25	11	12	17	14	52	16	38	5.8	3.2	2.2
12	8.0	20	9.7	12	15	14	39	16	64	5.4	3.2	2.2
13	14	17	9.5	14	13	15	31	15	47	5.2	3.2	2.2
14	17	15	30	19	12	16	25	32	34	5.1	3.1	2.1
15	13	13	52	16	12	19	22	73	25	5.0	3.1	2.1
16	10	11	41	14	12	20	24	78	20	5.6	2.9	2.1
17	8.8	10	51	12	11	25	34	51	18	5.5	2.9	2.0
18	12	9.4	37	12	10	93	38	37	16	5.2	2.8	2.0
19	9.5	8.7	30	16	9.7	161	32	28	14	5.0	2.8	2.0
20	25	8.0	26	17	9.2	73	29	23	12	4.6	2.7	1.9
21	58	7.5	23	22	10	45	26	20	11	4.5	2.7	1.9
22	35	7.0	50	27	11	33	24	18	9.9	4.3	3.3	1.8
23	23	15	82	21	9.5	26	24	16	9.2	4.2	8.1	1.8
24	18	28	68	18	9.0	24	25	15	11	4.1	4.1	1.8
25	15	21	47	16	8.5	31	29	13	11	3.9	3.3	3.4
26	12	23	36	14	8.0	33	32	12	8.8	3.8	3.2	4.8
27	11	58	31	13	7.5	40	28	11	17	3.5	3.0	3.3
28	17	36	26	12	7.1	84	30	12	19	5.2	2.8	2.6
29	13	28	22	12	---	64	29	11	15	4.5	2.8	2.4
30	11	25	23	11	---	46	139	9.4	13	11	2.7	2.3
31	9.7	---	22	11	---	67	---	8.6	---	6.2	2.7	---
TOTAL	607.8	626.9	888.2	490	569.5	1,050.8	1,050	909.0	604.5	188.3	109.6	72.1
MEAN	19.6	20.9	28.7	15.8	20.3	33.9	35.0	29.3	20.1	6.07	3.54	2.40
MAX	134	58	82	27	94	161	139	96	64	11	8.1	4.8
MIN	5.7	7.0	9.5	11	7.1	7.8	21	8.6	8.6	3.5	2.7	1.8
AC-FT	1,210	1,240	1,760	972	1,130	2,080	2,080	1,800	1,200	373	217	143
CFSM	3.59	3.83	5.25	2.89	3.73	6.21	6.41	5.37	3.69	1.11	0.65	0.44
IN.	4.14	4.27	6.05	3.34	3.88	7.16	7.15	6.19	4.12	1.28	0.75	0.49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 2001, BY WATER YEAR (WY)

MEAN	19.4	56.4	64.9	53.9	56.7	44.5	46.0	34.1	23.0	9.41	5.08	8.19
MAX	44.8	110	133	96.9	126	91.5	73.2	53.0	58.6	27.3	13.0	27.7
(WY)	(1996)	(1996)	(1978)	(1976)	(1982)	(1997)	(1993)	(1977)	(1981)	(1983)	(1978)	(1977)
MIN	1.97	6.09	15.3	15.8	16.9	14.0	24.9	14.6	3.80	3.50	2.95	2.40
(WY)	(1988)	(1994)	(1977)	(2001)	(1977)	(1992)	(1998)	(1992)	(1992)	(1992)	(1996)	(2001)

SUMMARY STATISTICS

FOR 2000 CALENDAR YEAR

FOR 2001 WATER YEAR

WATER YEARS 1976 - 2001

ANNUAL TOTAL	9,857.4	7,166.7		
ANNUAL MEAN	26.9	19.6	35.0	
HIGHEST ANNUAL MEAN			53.5	1997
LOWEST ANNUAL MEAN			19.6	2001
HIGHEST DAILY MEAN	303	Feb 1	1,150	Nov 25, 1999
LOWEST DAILY MEAN	2.3	Sep 24	1.8	Sep 22
ANNUAL SEVEN-DAY MINIMUM	2.3	Sep 23	1.9	Sep 18
ANNUAL RUNOFF (AC-FT)	19,550		14,220	25,340
ANNUAL RUNOFF (CFSM)	4.93		3.60	6.41
ANNUAL RUNOFF (INCHES)	67.16		48.83	87.05
10 PERCENT EXCEEDS	56		40	74
50 PERCENT EXCEEDS	22		14	22
90 PERCENT EXCEEDS	2.9		2.9	3.6

14138870 FIR CREEK NEAR BRIGHTWOOD, OR—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2001 TO SEPTEMBER 2002
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	88	113	35	21	27	33	28	39	26	5.8	3.6
2	2.1	92	111	55	20	23	33	29	34	21	5.6	3.5
3	2.0	56	73	48	24	21	33	28	29	18	5.4	3.6
4	2.0	39	53	42	25	20	38	25	28	16	5.5	3.5
5	1.9	40	43	38	23	21	45	26	33	15	5.9	3.5
6	1.9	30	98	84	26	48	55	27	30	14	6.1	3.4
7	1.9	24	109	129	46	43	73	23	25	13	5.4	3.4
8	2.8	20	70	155	52	32	61	22	22	13	5.3	3.3
9	2.7	17	61	89	44	27	63	20	19	12	5.2	3.2
10	8.8	15	50	58	35	28	115	19	19	11	5.2	3.2
11	20	14	46	46	31	123	127	19	19	11	5.1	3.1
12	8.2	15	50	68	27	145	144	23	20	10	4.9	3.1
13	15	56	234	59	23	76	143	28	22	9.6	4.8	2.9
14	16	100	189	47	20	54	248	33	23	9.0	4.7	2.9
15	13	60	92	37	19	43	110	29	21	8.9	4.6	2.9
16	9.4	58	211	31	19	35	77	27	19	8.3	4.6	3.2
17	8.8	54	154	27	19	29	64	30	21	8.0	4.6	6.0
18	6.7	41	89	25	24	25	52	30	43	7.9	4.6	3.8
19	5.7	38	65	31	44	55	46	29	30	7.7	4.4	3.3
20	5.0	39	53	50	47	64	41	29	23	7.3	4.4	3.1
21	5.8	45	43	65	79	51	36	29	21	7.1	4.4	3.0
22	43	139	35	42	101	40	33	42	19	6.9	4.4	2.9
23	61	131	30	33	153	34	30	37	18	6.6	4.2	2.8
24	40	67	25	46	126	41	28	32	16	6.6	4.2	2.8
25	25	48	22	130	68	44	27	31	15	6.5	4.0	2.8
26	19	38	20	72	49	39	27	33	15	6.5	4.0	2.7
27	16	31	19	46	38	41	28	34	14	6.4	4.0	2.7
28	15	101	24	34	31	40	27	49	15	6.1	3.9	2.6
29	13	134	21	28	---	39	27	94	66	6.0	3.8	3.8
30	54	87	19	24	---	36	29	64	37	5.8	3.7	10
31	129	---	19	22	---	34	---	48	---	5.8	3.7	---
TOTAL	556.9	1,717	2,241	1,696	1,234	1,378	1,893	1,017	755	317.0	146.4	104.6
MEAN	18.0	57.2	72.3	54.7	44.1	44.5	63.1	32.8	25.2	10.2	4.72	3.49
MAX	129	139	234	155	153	145	248	94	66	26	6.1	10
MIN	1.9	14	19	22	19	20	27	19	14	5.8	3.7	2.6
AC-FT	1,100	3,410	4,450	3,360	2,450	2,730	3,750	2,020	1,500	629	290	207
CFSM	3.29	10.5	13.2	10.0	8.07	8.14	11.6	6.01	4.61	1.87	0.86	0.64
IN.	3.79	11.70	15.27	11.56	8.41	9.39	12.90	6.93	5.14	2.16	1.00	0.71

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 2002, BY WATER YEAR (WY)

MEAN	19.4	56.4	65.1	54.0	56.2	44.5	46.6	34.1	23.0	9.44	5.07	8.02
MAX	44.8	110	133	96.9	126	91.5	73.2	53.0	58.6	27.3	13.0	27.7
(WY)	(1996)	(1996)	(1978)	(1976)	(1982)	(1997)	(1993)	(1977)	(1981)	(1983)	(1978)	(1977)
MIN	1.97	6.09	15.3	15.8	16.9	14.0	24.9	14.6	3.80	3.50	2.95	2.40
(WY)	(1988)	(1994)	(1977)	(2001)	(1977)	(1992)	(1998)	(1992)	(1992)	(1992)	(1996)	(2001)

SUMMARY STATISTICS

FOR 2001 CALENDAR YEAR

FOR 2002 WATER YEAR

WATER YEARS 1976 - 2002

ANNUAL TOTAL	9,558.7	13,055.9		
ANNUAL MEAN	26.2	35.8		
HIGHEST ANNUAL MEAN			35.0	
LOWEST ANNUAL MEAN			53.5	1997
HIGHEST DAILY MEAN	234	Dec 13	19.6	2001
LOWEST DAILY MEAN	1.8	Sep 22	1.5	Oct 19, 1991
ANNUAL SEVEN-DAY MINIMUM	1.9	Sep 18	1.6	Oct 10, 1991
ANNUAL RUNOFF (AC-FT)	18,960		25,360	
ANNUAL RUNOFF (CFSM)	4.80		6.55	
ANNUAL RUNOFF (INCHES)	65.13		88.95	
10 PERCENT EXCEEDS	64		81	
50 PERCENT EXCEEDS	16		27	
90 PERCENT EXCEEDS	2.7		3.7	

14138870 FIR CREEK NEAR BRIGHTWOOD, OR—Continued

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.8	13	66	18	63	34	25	17	37	8.8	3.7	12
2	2.7	12	55	16	51	30	23	17	30	8.5	3.6	15
3	2.7	11	88	15	41	29	23	16	25	8.3	3.5	13
4	2.6	9.8	53	14	41	70	22	16	22	8.0	3.5	11
5	2.6	8.9	107	13	36	76	21	16	22	7.8	3.7	11
6	2.6	8.2	118	20	41	72	19	14	31	7.4	4.2	9.5
7	3.2	7.7	68	19	48	52	19	14	33	7.4	5.1	8.7
8	4.5	7.3	63	28	42	46	19	14	50	6.9	3.8	8.2
9	7.1	6.9	52	41	36	48	18	13	48	6.7	3.6	7.8
10	11	9.8	41	49	33	41	19	13	57	6.5	3.5	7.3
11	7.7	56	35	46	31	35	19	22	46	6.3	3.4	17
12	16	30	96	40	28	32	19	20	36	6.1	3.2	12
13	16	21	204	38	25	29	19	18	34	5.9	3.2	14
14	12	17	117	56	26	27	23	16	31	5.8	3.1	20
15	14	17	64	107	29	26	24	15	26	5.6	3.1	26
16	16	30	53	105	49	26	25	15	23	5.5	3.1	26
17	12	72	61	60	60	25	21	14	20	5.3	3.0	51
18	10	63	49	51	74	28	20	13	18	5.2	2.9	49
19	9.6	58	40	63	83	27	20	17	17	5.1	2.8	38
20	8.5	42	38	51	57	24	29	15	15	5.1	2.8	29
21	7.7	31	60	39	44	23	39	14	14	4.8	2.9	22
22	8.7	24	49	32	35	24	33	25	13	4.6	13	18
23	25	21	39	114	30	26	27	81	13	4.6	9.6	16
24	15	27	37	195	27	29	24	47	12	4.3	23	15
25	12	31	37	85	26	30	21	32	12	4.3	91	14
26	10	36	32	57	26	30	20	41	11	4.1	68	13
27	8.8	30	27	60	35	40	20	86	10	4.1	42	12
28	14	32	26	263	46	33	20	110	9.9	4.1	25	11
29	25	158	23	456	40	30	18	88	9.6	4.0	18	11
30	21	96	20	175	---	33	17	64	9.2	3.8	15	10
31	16	---	19	95	---	30	---	48	---	3.8	13	---
TOTAL	326.8	986.6	1,837	2,421	1,203	1,105	666	951	734.7	178.7	389.3	527.5
MEAN	10.5	32.9	59.3	78.1	41.5	35.6	22.2	30.7	24.5	5.76	12.6	17.6
MAX	25	158	204	456	83	76	39	110	57	8.8	91	51
MIN	2.6	6.9	19	13	25	23	17	13	9.2	3.8	2.8	7.3
AC-FT	648	1,960	3,640	4,800	2,390	2,190	1,320	1,890	1,460	354	772	1,050
CFSM	1.93	6.02	10.9	14.3	7.60	6.53	4.07	5.62	4.49	1.06	2.30	3.22
IN.	2.23	6.72	12.52	16.49	8.20	7.53	4.54	6.48	5.01	1.22	2.65	3.59

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 2004, BY WATER YEAR (WY)

MEAN	18.5	54.0	63.8	55.1	55.6	45.4	45.7	33.6	22.6	9.11	5.23	8.24
MAX	44.8	110	133	96.9	126	91.5	73.2	53.0	58.6	27.3	13.0	27.7
(WY)	(1996)	(1996)	(1978)	(1976)	(1982)	(1997)	(1993)	(1977)	(1981)	(1983)	(1978)	(1977)
MIN	1.97	6.09	15.3	15.8	16.9	14.0	22.2	14.6	3.80	3.50	2.13	2.40
(WY)	(1988)	(1994)	(1977)	(2001)	(1977)	(1992)	(2004)	(1992)	(1992)	(1992)	(2003)	(2001)

SUMMARY STATISTICS

FOR 2003 CALENDAR YEAR

FOR 2004 WATER YEAR

WATER YEARS 1976 - 2004

ANNUAL TOTAL	11,781.8	11,326.6	
ANNUAL MEAN	32.3	30.9	34.6
HIGHEST ANNUAL MEAN			53.5
LOWEST ANNUAL MEAN			19.6
HIGHEST DAILY MEAN	352	456	1,150
LOWEST DAILY MEAN	1.4	2.6	1.4
ANNUAL SEVEN-DAY MINIMUM	1.5	2.7	1.5
ANNUAL RUNOFF (AC-FT)	23,370	22,470	25,070
ANNUAL RUNOFF (CFSM)	5.91	5.67	6.34
ANNUAL RUNOFF (INCHES)	80.27	77.17	86.12
10 PERCENT EXCEEDS	77	63	74
50 PERCENT EXCEEDS	20	21	22
90 PERCENT EXCEEDS	2.6	4.6	3.5



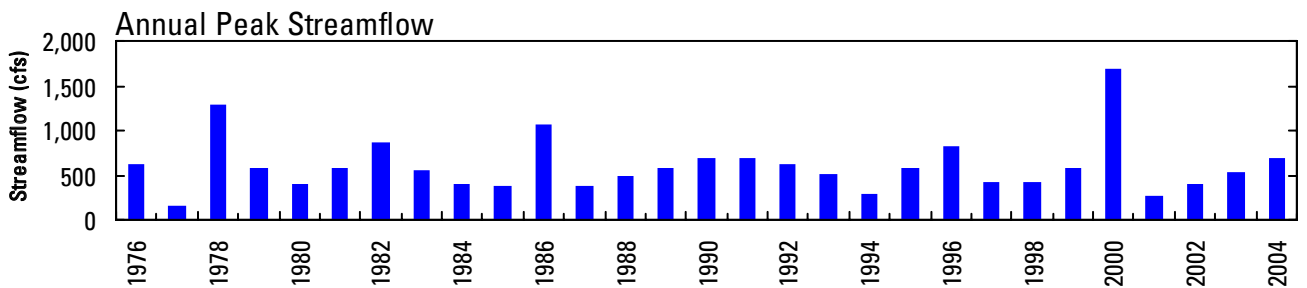
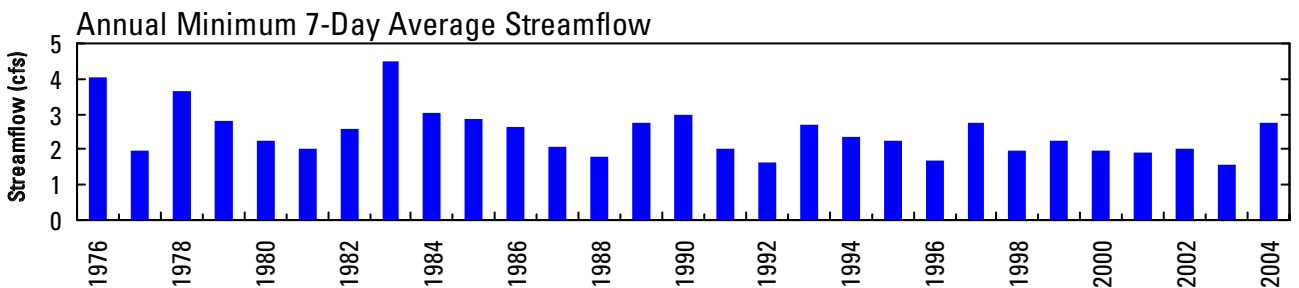
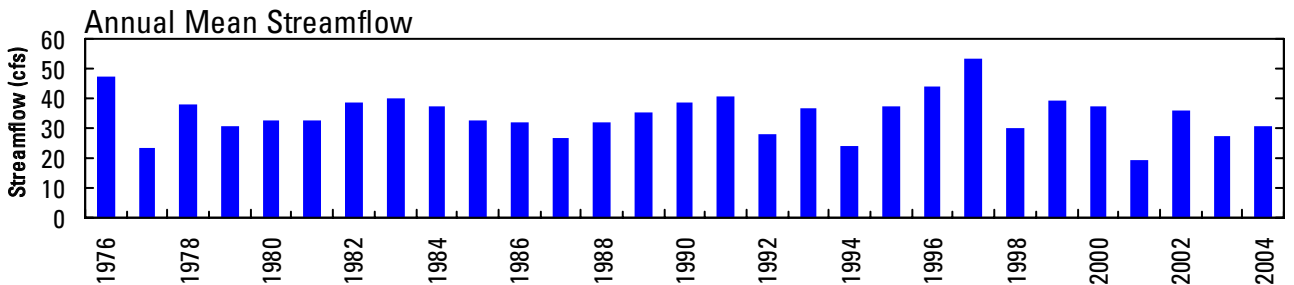
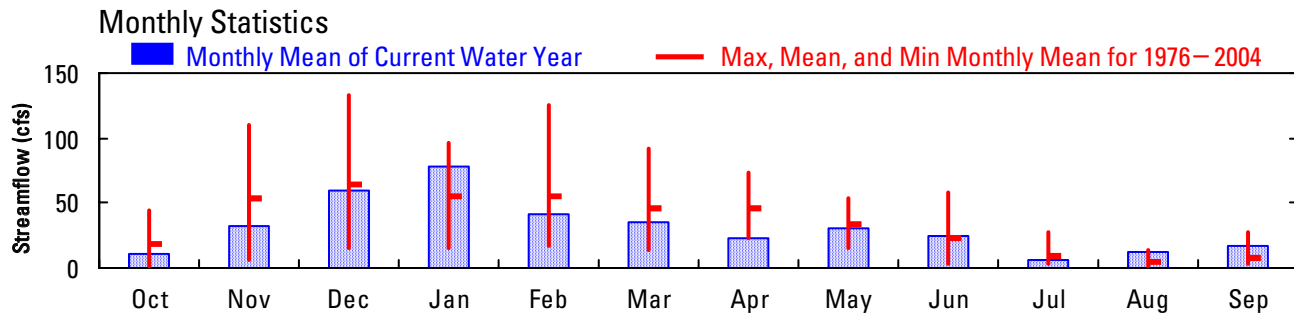
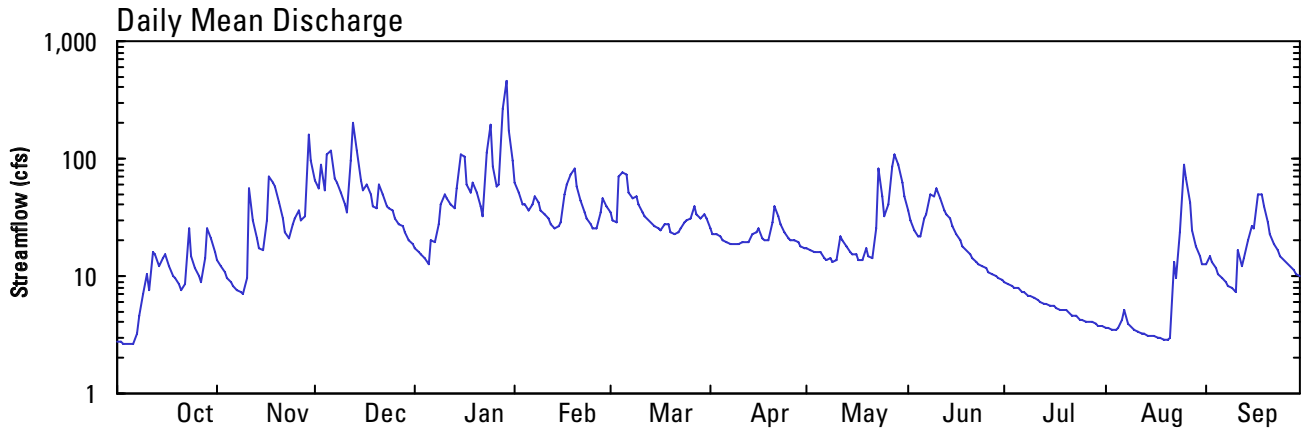
2004 Water Year
SANDY RIVER BASIN

14138870 FIR CREEK NEAR BRIGHTWOOD, OR

Latitude: 45° 28 ' 49"
Multnomah County

Longitude: 122° 01 ' 28"
Datum: 1,440.00 feet

Hydrologic Unit Code: 17080001
Drainage Area: 5.46 square miles



14138870 FIR CREEK NEAR BRIGHTWOOD, OR Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

pH: August 1990 to September 1992.

WATER TEMPERATURE: October 1977 to current year.

TURBIDITY: August 1990 to September 1994.

SUSPENDED SEDIMENT DISCHARGE: October 1977 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Specific conductance records good for the period Oct. 1 to Jan. 8, May 1 to Sept. 30, records fair the period Jan. 9 to Apr. 30. Water temperature record good. Turbidity data prior to October 1990 are available in the files of the Portland field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 49 microsiemens May 6, 1988, Aug. 13, 1990; minimum, 7 microsiemens Nov. 30, 1994.

pH: Maximum recorded, 7.7 units Sept. 13, 1990, but may have been higher during periods of missing record; minimum recorded, 6.0 units Sept. 5, 6, 8, 1991, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum recorded, 16.0°C Sept. 1, 1987, June 23, 24, July 18, 19, 1992; minimum recorded, 0.0°C on several days during winter periods most years.

TURBIDITY: Maximum recorded, 11 NTU Nov. 25, 1991; minimum recorded, 0.04 NTU Feb. 15, 16, 1993.

SEDIMENT CONCENTRATION: Maximum, 200 mg/L Jan. 23, Feb. 20, 1982; minimum, 0 mg/L on many days.

SEDIMENT DISCHARGE: Maximum, 345 tons Dec. 2, 1977; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 28 microsiemens many days in August; minimum, 13 microsiemens Jan. 28, 29.

WATER TEMPERATURE: Maximum, 15.3°C July 24, Aug. 12, 13; minimum, 0.2°C Jan. 6, 7.

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	27	26	26	22	22	22	20	19	19	21	21	21
2	27	26	26	23	22	22	20	19	20	22	21	21
3	27	26	26	23	22	22	20	18	18	22	21	22
4	27	26	26	23	22	23	20	19	19	22	21	21
5	27	26	27	23	22	22	19	17	18	22	22	22
6	27	26	26	23	22	22	18	17	18	22	20	21
7	27	26	26	23	22	22	19	18	19	22	20	21
8	27	26	26	22	22	22	19	19	19	21	19	20
9	27	26	27	23	22	22	20	19	20	19	19	19
10	27	27	27	23	23	23	21	20	20	19	18	18
11	27	26	26	23	22	22	21	20	21	19	18	19
12	26	25	26	22	21	21	21	17	19	20	19	19
13	26	24	25	22	21	21	19	15	17	20	19	19
14	24	24	24	22	22	22	19	17	18	19	18	19
15	24	23	24	22	22	22	20	19	19	18	16	17
16	24	23	24	22	21	22	20	19	20	18	16	17
17	24	23	24	21	20	21	20	19	19	19	17	18
18	24	23	23	20	20	20	20	20	20	19	18	18
19	24	24	24	20	19	20	20	19	20	18	17	18
20	25	24	24	21	20	20	20	19	20	19	18	18
21	25	24	25	21	20	20	20	19	19	19	18	19
22	25	23	25	21	21	21	20	19	20	20	19	19
23	25	23	24	21	20	21	20	19	19	19	15	17
24	23	23	23	21	20	21	20	19	19	16	14	15
25	23	22	23	21	20	21	20	19	19	18	16	17
26	23	23	23	21	21	21	20	19	20	19	18	18
27	24	23	23	22	21	21	20	20	20	19	18	18
28	24	23	23	22	20	21	20	20	20	18	13	15
29	23	22	23	20	18	19	21	20	20	15	13	14
30	23	22	22	19	19	19	21	20	21	17	15	16
31	23	22	22	---	---	---	21	21	21	19	17	18
MONTH	27	22	25	23	18	21	21	15	19	22	13	19

14138870 FIR CREEK NEAR BRIGHTWOOD, OR Continued—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	11.0	10.3	10.8	4.1	3.3	3.8	5.9	5.6	5.8	3.8	2.5	3.1
2	11.0	10.7	10.9	4.4	3.8	4.1	5.9	5.6	5.8	3.5	2.8	3.3
3	10.8	10.3	10.6	3.8	3.5	3.6	5.9	5.1	5.2	3.4	2.8	3.0
4	10.8	10.3	10.6	3.9	3.5	3.7	5.4	5.1	5.2	3.1	1.5	2.5
5	11.0	10.5	10.8	3.6	3.3	3.4	5.8	5.4	5.5	1.5	0.5	0.9
6	10.6	10.1	10.4	3.3	3.2	3.2	5.8	5.3	5.5	0.6	0.2	0.4
7	10.8	10.3	10.6	4.1	3.2	3.7	5.6	5.3	5.4	1.7	0.2	0.9
8	10.3	9.7	10	4.4	3.6	4.1	5.8	5.3	5.5	2.8	1.7	2.2
9	9.7	8.7	9.3	4.7	4.4	4.5	5.4	5.3	5.4	3.8	2.8	3.4
10	8.8	8.2	8.6	5.7	4.7	5.1	5.3	5.0	5.2	4.3	3.8	4.1
11	8.6	8.2	8.3	6.5	5.7	6.2	5.6	5.1	5.4	4.6	4.3	4.4
12	8.6	8.2	8.5	6.3	5.8	6.0	5.4	5.3	5.3	4.6	4.3	4.5
13	8.8	8.4	8.6	5.8	5.7	5.8	5.6	4.3	5.0	4.7	4.6	4.6
14	8.6	8.0	8.5	6.7	5.8	6.4	4.8	4.3	4.7	4.7	4.4	4.7
15	8.2	7.8	7.9	6.7	6.3	6.5	5.1	4.8	5.0	4.6	4.1	4.4
16	8.6	8.0	8.2	6.3	6.2	6.3	5.1	5.0	5.0	4.7	4.1	4.5
17	9.3	8.6	9.1	6.8	6.2	6.3	5.3	4.8	5.1	4.9	4.4	4.7
18	9.2	8.9	9.1	7.5	6.8	7.2	5.1	5.0	5.1	4.9	4.7	4.7
19	9.6	9.0	9.3	7.7	4.6	6.0	5.3	4.8	5.1	4.9	4.6	4.7
20	10.4	9.6	10.0	5.4	5.3	5.3	5.4	5.1	5.3	4.6	4.3	4.4
21	11.1	10.4	10.8	5.3	4.6	4.9	5.4	5.1	5.3	4.3	4.1	4.2
22	11.1	10.6	10.9	4.6	4.2	4.4	5.1	4.8	5.0	4.3	4.0	4.1
23	10.6	8.7	9.4	4.6	4.3	4.5	5.3	4.6	4.9	4.6	4.3	4.4
24	8.7	7.9	8.1	5.0	4.2	4.5	5.4	4.8	5.3	4.3	3.8	4.1
25	8.1	7.7	7.9	5.1	4.6	4.8	4.8	4.0	4.3	4.3	3.8	4.1
26	8.7	8.1	8.4	5.4	4.8	5.2	4.5	4.2	4.3	4.4	4.0	4.3
27	9.1	8.7	8.9	5.6	5.3	5.4	4.5	3.4	3.9	4.7	4.4	4.6
28	9.8	9.0	9.3	5.6	5.3	5.5	4.2	3.3	3.8	4.4	4.0	4.3
29	9.0	7.0	8.0	5.6	4.8	5.2	3.7	3.0	3.5	4.9	4.1	4.5
30	7.0	5.3	6.1	5.9	5.4	5.7	3.4	2.8	3.1	4.9	4.0	4.3
31	5.3	3.8	4.4	---	---	---	3.8	3.1	3.3	4.7	4.1	4.4
MONTH	11.1	3.8	9.1	7.7	3.2	5.0	5.9	2.8	4.9	4.9	0.2	3.8
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	4.6	4.5	4.5	4.9	4.4	4.7	4.7	3.9	4.3	9.1	7.6	8.4
2	4.6	4.2	4.3	4.9	4.3	4.5	5.2	3.8	4.6	9.5	8.0	8.7
3	4.6	4.2	4.4	4.3	3.2	3.7	6.2	5.2	5.8	9.5	8.2	8.9
4	4.6	4.5	4.5	4.1	3.7	4.0	5.9	5.0	5.5	9.0	8.0	8.5
5	4.8	4.2	4.4	4.6	3.8	4.1	5.5	4.9	5.2	8.2	7.6	7.9
6	4.8	4.5	4.6	4.8	4.0	4.4	6.0	5.0	5.6	8.6	7.1	7.9
7	4.6	4.5	4.5	5.2	4.6	4.9	6.2	5.5	5.9	8.4	7.8	8.1
8	4.6	4.3	4.5	5.4	4.6	5.0	6.4	5.5	6.0	8.4	7.5	8.0
9	4.3	4.0	4.2	5.2	4.6	4.9	6.7	5.4	6.1	8.4	7.5	7.9
10	4.5	4.0	4.2	4.8	3.8	4.4	7.1	5.7	6.4	7.8	7.3	7.5
11	4.5	4.1	4.3	5.2	4.3	4.8	7.4	6.2	6.8	7.3	6.6	6.8
12	4.1	3.6	3.9	5.2	4.4	4.9	7.1	6.0	6.6	7.3	6.8	7.0
13	4.2	3.5	3.8	5.4	4.3	4.9	6.7	6.0	6.4	7.9	6.2	7.1
14	4.7	4.2	4.4	5.4	4.9	5.1	6.0	5.2	5.6	8.9	7.0	7.9
15	4.7	4.4	4.5	5.5	4.7	5.1	5.5	4.9	5.1	8.1	7.6	7.7
16	4.5	4.1	4.3	5.3	4.7	5.0	5.6	4.8	5.3	7.9	7.4	7.7
17	4.5	4.1	4.3	5.3	4.5	4.9	5.8	5.1	5.4	8.3	7.0	7.7
18	4.5	4.4	4.4	5.1	4.0	4.8	5.8	5.0	5.4	7.9	7.7	7.8
19	4.5	4.1	4.3	4.2	3.7	3.9	6.0	5.1	5.5	8.1	7.7	7.9
20	4.5	3.9	4.2	4.8	3.6	4.2	5.6	5.0	5.2	9.2	7.4	8.2
21	4.7	4.2	4.4	5.8	4.7	5.2	5.5	4.7	5.1	8.5	8.1	8.3
22	4.9	4.5	4.7	5.8	4.8	5.4	6.3	5.0	5.6	8.1	7.6	7.8
23	5.2	4.7	4.9	5.8	5.3	5.5	6.1	5.6	5.9	7.6	7.2	7.4
24	5.2	4.4	4.8	5.3	4.8	5.1	6.1	4.7	5.6	7.9	6.7	7.4
25	4.7	4.4	4.5	5.0	4.5	4.8	7.2	5.5	6.4	8.9	7.2	8.1
26	5.0	4.4	4.7	4.7	4.2	4.4	8.3	6.7	7.5	8.5	8.1	8.3
27	4.9	4.3	4.6	4.8	4.3	4.6	8.5	7.0	7.7	8.5	7.8	8.1
28	4.4	4.1	4.3	5.1	4.0	4.6	7.2	6.3	6.7	7.8	7.1	7.4
29	4.8	4.1	4.5	6.0	4.8	5.4	7.8	6.0	7.0	7.1	7.0	7.1
30	---	---	---	5.6	4.3	5.2	8.8	6.7	7.8	7.5	7.1	7.3
31	---	---	---	4.4	3.8	4.1	---	---	---	7.7	7.1	7.4
MONTH	5.2	3.5	4.4	6.0	3.2	4.7	8.8	3.8	5.9	9.5	6.2	7.8

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

LOCATION.--Lat 45°29'40", long 122°02'05", near line between SE ¼ and SW ¼ sec.11, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, Mount Hood National Forest, on left bank 7.0 mi southeast of Multnomah Falls and at mouth.

DRAINAGE AREA.--8.32 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1965 to current year.

REVISED RECORDS.--WDR OR-91-1: 1976.

GAGE.--Water-stage recorder. Elevation of gage is 1,060 ft above NGVD of 1929, from topographic map. Prior to Oct. 1, 1978, and from June 13, 1989 to July 1990 (during bridge construction), at site 700 ft upstream at datum 18.7 ft higher. From Oct. 1, 1978 to June 13, 1989, and July 1990 to present, site located 5 ft upstream from bridge, on left bank wing wall.

REMARKS.--No estimated daily discharges. Records fair. Regulation at times since 1958 by North Fork Reservoir, capacity, about 1,030 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--39 years (water years 1966-2004), 73.3 ft³/s, 119.62 in/yr, 53,070 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,700 ft³/s, probably affected by surge from release of water temporarily impounded by landslide upstream from station, Jan. 20, 1972, gage height, 9.89 ft, from floodmark, from rating curve extended above 850 ft³/s on basis of estimate of peak flow from slope-area survey; minimum discharge, 8.6 ft³/s Oct. 19-29, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan 28	2330	*987	*5.53	No other peak greater than base discharge.			

Minimum discharge, 10 ft³/s, on several days.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	27	132	38	132	79	65	41	81	21	14	30
2	10	25	116	37	101	71	59	39	67	20	14	34
3	10	23	179	35	80	69	63	38	57	20	13	31
4	10	22	113	31	84	160	60	38	50	19	14	27
5	10	21	262	28	72	170	55	39	55	19	14	25
6	10	20	244	29	81	147	51	34	105	19	15	24
7	13	19	155	31	96	102	49	34	93	19	15	22
8	17	19	153	43	81	91	48	39	125	18	14	21
9	28	18	111	63	70	90	47	33	99	18	13	20
10	34	28	89	74	63	80	48	34	120	18	13	20
11	28	170	80	67	59	74	51	53	88	18	13	41
12	60	66	210	60	54	70	51	41	71	17	13	27
13	50	47	377	61	50	67	52	35	64	17	13	38
14	34	39	229	91	59	64	82	32	56	17	13	47
15	38	43	139	193	68	65	77	32	49	16	13	48
16	44	100	112	173	101	63	73	33	43	16	13	42
17	33	217	126	114	115	64	63	30	39	16	13	103
18	26	210	92	105	165	70	61	29	35	16	12	120
19	28	212	76	162	180	67	61	30	33	16	12	84
20	25	132	79	121	121	59	88	28	31	15	12	65
21	23	88	115	88	91	62	104	27	29	15	12	53
22	23	67	86	73	75	63	77	91	27	15	34	45
23	43	58	71	241	68	67	67	198	27	15	26	39
24	27	75	79	392	64	73	60	90	27	14	82	35
25	24	79	83	196	61	77	55	64	26	14	297	32
26	21	84	68	139	64	77	52	104	24	14	219	30
27	20	69	61	122	107	122	51	194	23	14	100	28
28	33	69	63	488	121	88	50	250	23	14	63	26
29	49	260	53	793	93	82	45	213	22	14	48	25
30	40	161	46	384	---	85	43	153	21	14	39	24
31	30	---	42	205	---	75	---	111	---	14	33	---
TOTAL	852	2,468	3,841	4,677	2,576	2,593	1,808	2,207	1,610	512	1,219	1,206
MEAN	27.5	82.3	124	151	88.8	83.6	60.3	71.2	53.7	16.5	39.3	40.2
MAX	60	260	377	793	180	170	104	250	125	21	297	120
MIN	10	18	42	28	50	59	43	27	21	14	12	20
AC-FT	1,690	4,900	7,620	9,280	5,110	5,140	3,590	4,380	3,190	1,020	2,420	2,390
CFSM	3.30	9.89	14.9	18.1	10.7	10.1	7.24	8.56	6.45	1.99	4.73	4.83
IN.	3.81	11.03	17.17	20.91	11.52	11.59	8.08	9.87	7.20	2.29	5.45	5.39

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR—Continued

DISCHARGE, CUBIC FEET PER SECOND—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2004, BY WATER YEAR (WY)												
MEAN	42.4	106	130	129	109	90.5	87.6	73.1	48.2	24.4	17.6	23.3
MAX	95.9	222	285	309	231	200	147	137	111	62.7	39.3	54.4
(WY)	(1998)	(1996)	(1976)	(1975)	(1996)	(1972)	(1993)	(1972)	(1974)	(1983)	(2004)	(1977)
MIN	9.08	16.9	33.4	32.1	35.2	28.8	49.5	28.3	14.6	12.6	10.6	10.9
(WY)	(1988)	(1994)	(1977)	(1979)	(1993)	(1992)	(1967)	(1992)	(1992)	(1992)	(1994)	(1987)
SUMMARY STATISTICS												
	FOR 2003 CALENDAR YEAR				FOR 2004 WATER YEAR				WATER YEARS 1966 - 2004			
ANNUAL TOTAL	26,316.9				25,569							
ANNUAL MEAN	72.1				69.9				73.3			
HIGHEST ANNUAL MEAN									121			
LOWEST ANNUAL MEAN									44.3			
HIGHEST DAILY MEAN	727				Jan 31				793			
LOWEST DAILY MEAN	9.5				Sep 6				10			
ANNUAL SEVEN-DAY MINIMUM	9.7				Aug 31				11			
ANNUAL RUNOFF (AC-FT)	52,200				50,720				53,070			
ANNUAL RUNOFF (CFSM)	8.67				8.40				8.80			
ANNUAL RUNOFF (INCHES)	117.67				114.32				119.62			
10 PERCENT EXCEEDS	176				141				152			
50 PERCENT EXCEEDS	42				51				47			
90 PERCENT EXCEEDS	11				15				14			



2004 Water Year
SANDY RIVER BASIN

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

Latitude: 45° 29 ' 40"

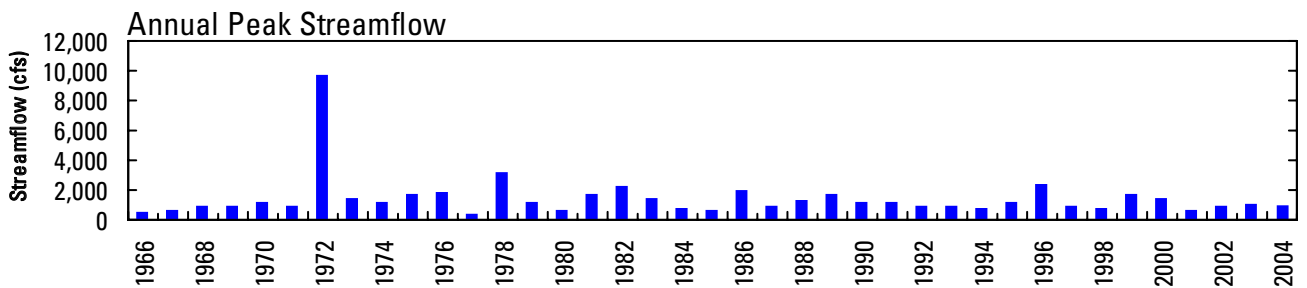
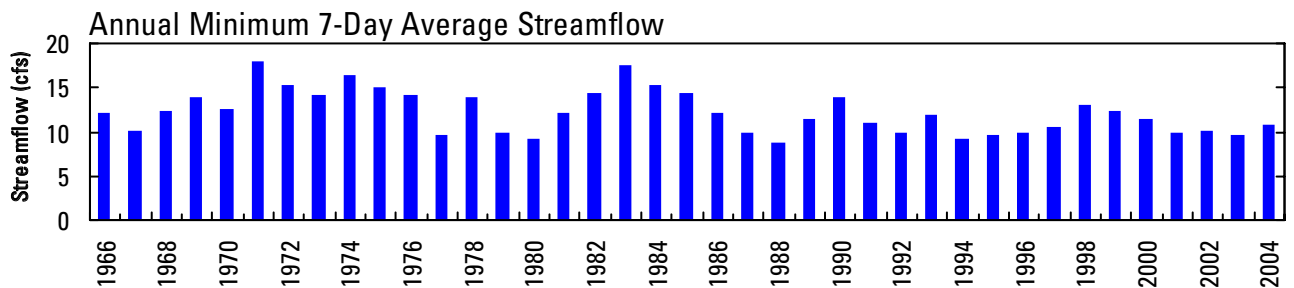
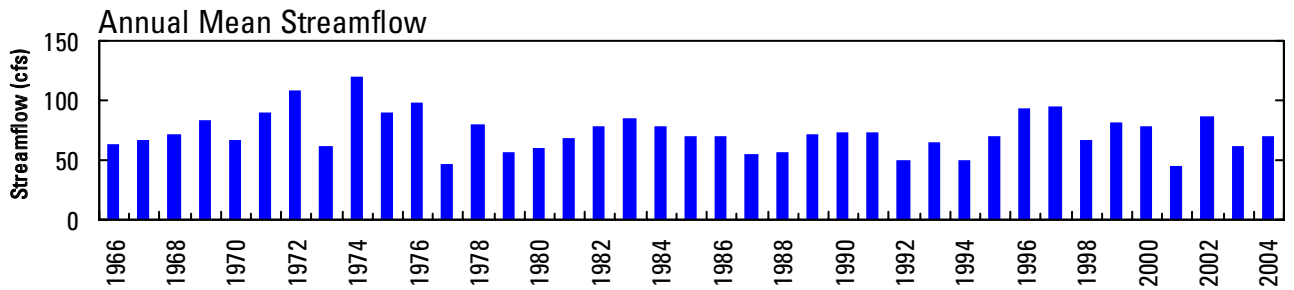
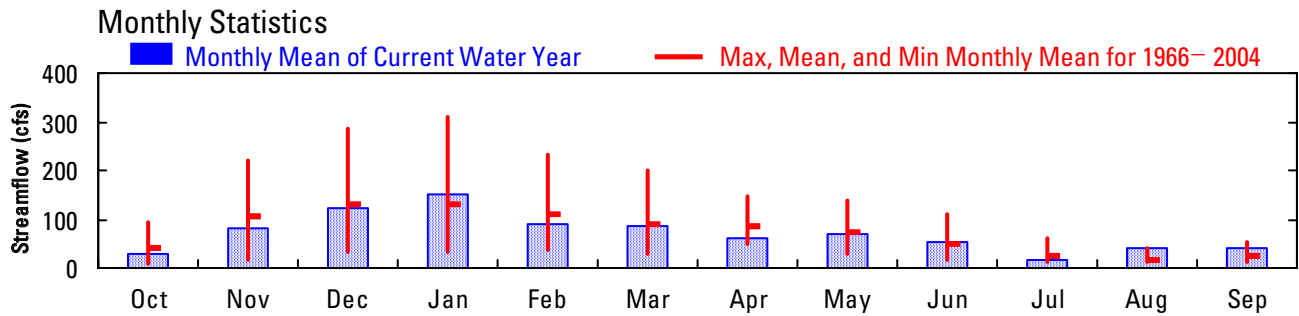
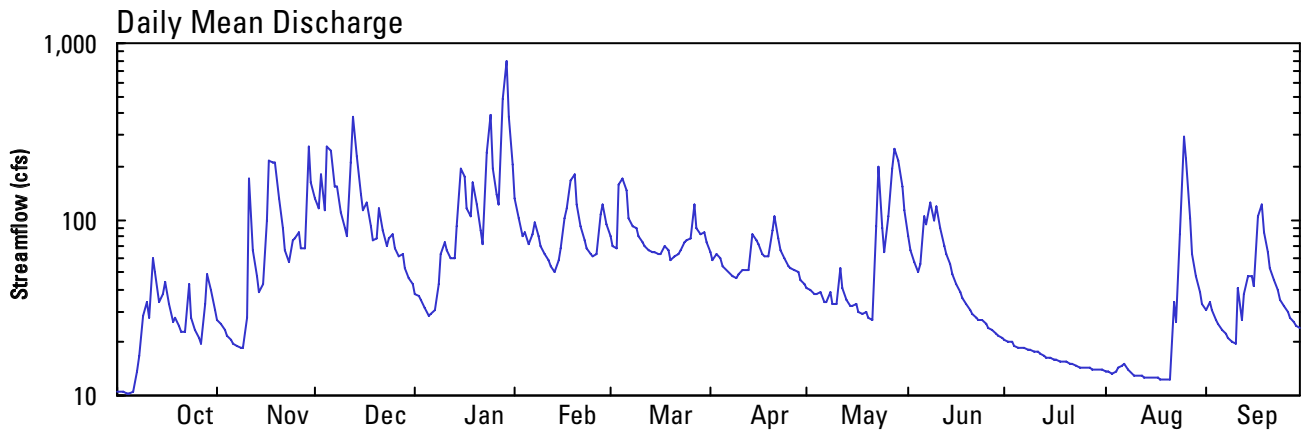
Longitude: 122° 02 ' 05"

Hydrologic Unit Code: 17080001

Multnomah County

Datum: 1,060.00 feet

Drainage Area: 8.32 square miles



14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to current year.
 pH: October 1980 to September 1981, August 1990 to September 1992.
 WATER TEMPERATURE: October 1978 to current year.
 TURBIDITY: August 1990 to September 1994.
 SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Turbidity data prior to October 1990 are available in the files of the Portland field office.

SPECIFIC CONDUCTANCE: Records good.
 WATER TEMPERATURE: Records good.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 103 microsiemens Jan. 13, 1981 (cement spill); minimum, 7 microsiemens Jan. 31, 1995, Feb. 19, 1995.
 pH: Maximum recorded, 9.8 units Jan. 13, 1981 (cement spill); minimum recorded, 6.3 units June 19, 1981.
 WATER TEMPERATURE: Maximum, 15.0°C July 28, 1998; minimum, 0.0°C on several days during winter periods.
 TURBIDITY: Maximum recorded, 25 NTU Nov. 24, 1990; minimum recorded, 0.06 NTU Sept. 7, 13, 14, 1992.
 SEDIMENT CONCENTRATION: Maximum daily, 205 mg/L Dec. 25, 1980; minimum, 0 mg/L on many days.
 SEDIMENT DISCHARGE: Maximum daily, 765 tons Feb. 23, 1986; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 43 microsiemens Oct. 1; minimum, 14 microsiemens Dec. 13, but may have been less during period of missing record.
 WATER TEMPERATURE: Maximum, 13.8°C July 24; minimum, 0.1°C Jan. 6.

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
 WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	43	40	41	29	28	28	19	18	18	24	23	24
2	42	41	41	29	29	29	19	18	19	24	24	24
3	42	41	41	30	29	29	18	17	17	25	24	24
4	42	41	41	31	30	30	18	18	18	26	25	25
5	42	41	41	31	30	31	18	15	16	27	26	26
6	42	41	41	31	31	31	16	15	15	27	27	27
7	42	39	41	32	31	32	17	16	17	27	26	27
8	41	38	40	32	32	32	18	17	17	26	23	25
9	39	35	38	33	32	32	19	17	18	23	22	22
10	36	33	34	33	27	32	19	19	19	22	20	21
11	36	32	35	27	20	21	20	19	19	---	---	---
12	32	28	30	23	21	22	19	15	17	---	---	---
13	28	28	28	25	23	24	17	14	15	---	---	---
14	30	28	29	26	25	25	16	15	16	---	---	---
15	30	28	29	26	24	25	18	16	17	---	---	---
16	28	27	28	24	19	22	18	17	18	---	---	---
17	30	28	29	20	18	19	18	17	17	---	---	---
18	31	29	30	18	18	18	19	18	18	---	---	---
19	31	30	31	18	16	17	20	19	19	---	---	---
20	32	31	31	19	17	18	20	19	19	---	---	---
21	32	32	32	20	19	19	19	18	18	---	---	---
22	33	30	33	21	20	20	19	18	19	---	---	---
23	30	28	28	22	21	21	20	19	20	---	---	---
24	30	29	30	21	20	20	20	19	19	---	---	---
25	31	30	30	21	20	21	20	19	19	---	---	---
26	32	31	31	21	20	20	21	19	20	---	---	---
27	33	32	32	23	21	21	21	20	21	---	---	---
28	33	27	32	22	20	22	21	20	21	---	---	---
29	28	26	27	20	17	18	22	21	21	---	---	---
30	27	26	27	18	17	18	23	22	22	---	---	---
31	28	27	27	---	---	---	23	23	23	---	---	---
MONTH	43	26	33	33	16	24	23	14	18	27	20	24

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	20	19	19	21	19	20	25	24	24
2	---	---	---	20	19	20	21	20	21	25	25	25
3	---	---	---	20	19	20	21	20	20	26	25	25
4	---	---	---	19	16	17	21	20	21	26	25	25
5	---	---	---	18	16	17	22	20	21	26	25	25
6	---	---	---	18	16	17	22	22	22	27	26	26
7	---	---	---	18	18	18	22	22	22	28	26	27
8	---	---	---	19	18	18	23	22	23	26	25	26
9	---	---	---	19	18	19	23	22	23	27	26	27
10	---	---	---	20	18	19	23	22	23	28	26	27
11	---	---	---	20	19	19	23	22	22	26	23	24
12	23	22	23	20	19	20	23	22	22	26	25	25
13	23	22	22	21	20	20	22	22	22	27	26	26
14	23	21	22	21	20	21	22	18	20	28	27	27
15	21	20	21	21	20	20	19	19	19	28	28	28
16	21	17	20	21	20	21	20	19	19	28	27	27
17	18	17	18	21	20	21	21	20	20	29	28	28
18	18	16	17	21	19	20	21	20	21	29	29	29
19	17	16	16	20	19	20	22	21	21	29	28	29
20	18	17	17	21	20	21	21	18	19	30	29	29
21	19	18	18	21	20	21	18	18	18	30	30	30
22	20	19	19	21	20	21	20	18	19	30	18	25
23	21	20	20	22	20	20	21	20	20	18	16	17
24	21	20	20	20	19	19	22	20	21	21	18	19
25	21	21	21	20	18	19	22	21	22	22	21	21
26	21	20	21	19	18	19	22	22	22	23	17	20
27	20	17	19	19	16	17	23	22	22	17	16	17
28	18	17	17	18	17	18	23	22	23	16	15	16
29	19	18	18	19	18	18	24	23	23	17	15	16
30	---	---	---	19	18	18	24	24	24	17	17	17
31	---	---	---	19	18	19	---	---	---	19	17	18
MONTH	23	16	19	22	16	19	24	18	21	30	15	24
	JUNE			JULY			AUGUST			SEPTEMBER		
1	20	19	19	34	33	34	40	39	39	29	28	29
2	22	20	21	35	33	34	40	39	39	29	28	29
3	23	22	22	35	34	34	40	39	39	30	28	29
4	24	23	23	35	34	35	40	39	39	31	30	30
5	24	22	23	36	34	35	40	39	40	32	31	31
6	22	18	19	36	35	35	41	39	40	32	31	32
7	20	18	19	36	35	35	40	39	39	33	32	33
8	20	17	18	36	35	35	41	40	40	34	33	33
9	19	19	19	36	35	36	41	40	41	34	33	34
10	19	18	18	36	35	36	42	41	41	34	34	34
11	20	19	19	37	36	36	42	41	41	35	27	30
12	21	20	21	37	36	37	42	41	41	32	30	31
13	22	21	21	38	36	37	42	41	41	32	27	30
14	23	22	22	38	37	37	42	41	41	29	27	27
15	24	23	23	38	37	37	42	41	41	28	27	27
16	25	24	24	38	37	38	42	41	41	28	27	27
17	26	25	25	39	37	38	42	41	41	28	21	23
18	27	26	26	39	37	38	42	41	41	21	20	21
19	28	27	27	38	37	38	42	41	42	22	21	21
20	29	27	28	39	37	38	42	41	42	23	22	23
21	30	28	29	39	38	38	42	41	41	24	23	24
22	30	29	29	39	38	38	41	33	36	25	24	25
23	30	29	30	39	38	39	36	33	35	27	25	26
24	31	30	30	40	39	39	37	23	29	28	26	27
25	31	30	31	40	38	39	24	17	18	28	28	28
26	32	31	31	39	38	39	19	17	18	29	28	28
27	32	31	32	39	39	39	22	19	21	30	29	29
28	33	32	32	40	39	39	24	22	23	31	30	30
29	33	32	33	40	39	39	26	24	25	31	30	31
30	34	33	33	40	39	39	28	26	27	32	31	31
31	---	---	---	40	39	39	29	28	28	---	---	---
MONTH	34	17	25	40	33	37	42	17	36	35	20	28

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	10.0	9.2	9.6	4.4	3.4	4.0	5.5	5.0	5.2	3.1	2.2	2.5
2	9.8	9.4	9.6	4.5	4.0	4.3	5.6	5.1	5.3	2.8	2.2	2.5
3	10.2	9.0	9.5	4.5	3.8	4.1	5.6	4.5	4.7	2.5	2.1	2.2
4	9.6	9.2	9.4	4.3	3.8	4.2	4.8	4.3	4.6	2.3	1.1	2.0
5	10.2	9.2	9.5	4.3	3.7	4.0	5.1	4.6	4.9	1.1	0.4	0.7
6	9.8	8.8	9.3	4.3	3.7	3.9	5.3	4.5	5.0	0.4	0.1	0.3
7	10.2	9.4	9.6	5.1	4.0	4.6	4.8	4.5	4.5	1.8	0.3	1.1
8	9.4	9.0	9.2	5.3	4.6	5.0	5.3	4.6	5.0	2.2	1.8	2.0
9	9.4	9.0	9.2	5.8	5.3	5.5	4.8	4.6	4.7	2.8	2.1	2.4
10	9.2	8.4	8.9	6.1	5.5	5.8	4.8	4.3	4.6	3.2	2.8	3.0
11	8.8	8.2	8.4	7.0	6.0	6.7	5.3	4.5	4.8	3.5	2.9	3.3
12	9.2	8.6	8.9	6.8	6.1	6.5	5.1	4.8	5.0	3.7	3.2	3.5
13	9.6	9.0	9.3	6.5	6.0	6.2	5.1	3.7	4.5	4.0	3.7	3.8
14	9.2	8.2	9.0	7.2	6.3	6.7	3.8	3.4	3.7	4.2	3.8	3.9
15	8.6	8.0	8.2	6.8	6.5	6.7	4.3	3.8	4.1	4.0	3.8	3.8
16	9.2	8.2	8.7	6.5	6.3	6.5	4.5	4.1	4.3	4.2	3.7	3.9
17	10.2	9.2	9.7	6.8	6.3	6.5	4.6	4.2	4.4	4.2	3.5	3.9
18	9.6	9.0	9.4	7.7	6.8	7.4	4.6	4.3	4.4	4.2	3.8	4.0
19	9.8	9.4	9.6	7.7	4.6	6.0	4.8	4.3	4.5	4.2	3.8	4.0
20	10.6	9.8	10.1	5.0	4.6	4.8	5.0	4.6	4.8	4.0	3.4	3.7
21	11.5	10.6	11.0	4.6	4.2	4.4	5.1	4.6	4.9	3.8	3.2	3.5
22	11.3	10.4	10.8	4.3	3.8	4.1	4.8	4.5	4.6	3.8	3.1	3.4
23	10.6	9.0	10	4.5	4.0	4.3	4.8	4.3	4.5	4.0	3.8	3.9
24	9.0	8.0	8.5	4.6	4.3	4.4	5.0	4.2	4.7	4.0	2.6	3.3
25	8.6	7.6	8.2	4.8	4.3	4.5	4.3	3.4	3.6	3.4	2.3	2.9
26	9.2	8.0	8.7	5.1	4.3	4.8	3.8	3.4	3.6	3.5	2.9	3.3
27	9.4	8.6	9.0	5.3	4.6	5.0	3.7	2.6	3.2	4.2	3.5	3.9
28	9.8	9.2	9.4	5.4	5.0	5.2	3.7	2.8	3.2	4.0	3.2	3.7
29	9.4	7.5	8.3	5.3	5.0	5.1	3.2	2.5	3.0	3.7	3.2	3.4
30	7.5	5.5	6.5	5.4	4.8	5.2	2.6	2.2	2.4	3.7	2.6	3.1
31	5.5	4.0	4.7	---	---	---	3.1	2.5	2.7	3.5	3.1	3.2
MONTH	11.5	4.0	9.0	7.7	3.4	5.2	5.6	2.2	4.3	4.2	0.1	3.0
DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	3.8	3.4	3.6	5.2	4.2	4.7	5.8	4.5	5.1	10.0	8.4	9.2
2	3.8	3.4	3.6	5.3	4.2	4.7	6.1	4.3	5.3	10.8	9.0	9.7
3	4.0	3.4	3.7	4.4	3.1	3.6	7.6	6.0	6.8	10.8	9.2	9.8
4	4.0	3.8	3.9	4.2	3.4	3.8	7.4	6.1	6.7	9.8	9.0	9.4
5	4.2	3.4	3.8	4.2	3.6	3.8	6.7	6.0	6.2	9.4	8.2	8.8
6	4.3	3.8	4.1	4.5	3.6	4.1	7.0	5.8	6.3	9.4	7.7	8.5
7	4.2	3.7	3.9	5.5	4.2	4.8	7.2	6.5	6.8	9.2	8.2	8.7
8	4.0	3.7	3.8	6.0	4.4	5.1	7.6	6.3	6.9	9.2	8.2	8.7
9	4.0	3.4	3.7	5.5	4.7	5.1	8.1	6.1	7.0	9.8	8.0	8.7
10	4.5	3.4	3.9	5.3	3.7	4.6	8.5	6.8	7.5	8.4	7.8	8.0
11	4.5	3.7	4.0	5.7	4.1	4.9	8.9	7.0	8.0	7.9	7.5	7.7
12	4.3	3.4	3.8	5.4	4.3	4.9	8.3	7.4	7.9	8.2	7.5	7.8
13	4.3	3.4	3.8	5.4	4.1	4.9	7.9	7.4	7.6	9.2	6.8	7.9
14	4.8	4.0	4.4	5.6	4.9	5.2	7.4	6.0	6.6	9.8	7.5	8.5
15	4.8	4.1	4.5	6.1	4.9	5.4	6.0	5.1	5.6	8.8	8.0	8.2
16	4.5	4.0	4.3	5.9	4.7	5.4	6.8	5.5	6.1	8.6	8.0	8.2
17	4.3	3.7	4.0	6.2	5.1	5.6	6.8	6.1	6.4	9.2	7.5	8.2
18	4.3	4.0	4.2	5.6	4.3	5.2	6.7	6.0	6.3	8.4	8.0	8.2
19	4.6	3.7	4.3	4.6	3.8	4.3	6.7	6.0	6.4	8.8	8.0	8.3
20	4.5	3.4	3.9	5.4	3.9	4.6	6.5	5.5	5.9	9.9	7.8	8.7
21	4.5	3.8	4.2	6.4	4.7	5.6	6.0	5.0	5.5	9.1	8.5	8.8
22	4.7	4.2	4.4	6.8	5.2	6.1	7.6	5.3	6.4	8.5	8.1	8.3
23	5.0	4.2	4.6	6.6	5.9	6.3	6.8	6.1	6.7	8.8	8.0	8.2
24	5.0	4.0	4.6	6.1	5.1	5.7	7.0	5.1	6.1	9.4	7.5	8.4
25	4.4	3.9	4.1	5.2	4.6	4.9	8.5	6.1	7.3	10.2	8.0	9.0
26	4.7	4.0	4.3	4.7	4.3	4.5	9.7	7.4	8.5	9.9	9.2	9.5
27	4.4	4.0	4.2	4.9	4.3	4.6	9.7	7.9	8.7	9.9	8.9	9.3
28	4.4	3.9	4.1	6.1	3.9	5.1	8.8	7.5	8.0	8.9	7.8	8.2
29	4.8	4.0	4.4	7.0	5.2	6.2	9.2	6.8	7.9	7.8	7.6	7.7
30	---	---	---	6.8	4.6	5.8	10.0	7.7	8.7	8.4	7.8	8.1
31	---	---	---	5.0	4.0	4.6	---	---	---	8.8	8.1	8.4
MONTH	5.0	3.4	4.1	7.0	3.1	5.0	10.0	4.3	6.8	10.8	6.8	8.6

14139000 BULL RUN RESERVOIR NUMBER ONE NEAR BULL RUN, OR

LOCATION.--Lat 45°28'58", long 122°04'56", in NW ¼ SW ¼ sec.16, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, in control house of Bear Creek Dam on Bull Run River, 8.2 mi northeast of Bull Run, and at mile 11.2.

DRAINAGE AREA.--74.6 mi².

PERIOD OF RECORD.--October 1928 to current year. Prior to October 1937, published as Bull Run Reservoir. October 1937 to September 1967, published as Lake Ben Morrow. Prior to October 1975, monthend contents only.

REVISED RECORDS.--WSP 814: 1935(M). WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by Portland Water Bureau). Prior to Oct. 9, 1930, Oct. 1, 1962 to Dec. 31, 1975, nonrecording gage. Oct. 9, 1930 to Sept. 30, 1962, water-stage recorder at present site and datum.

REMARKS.--Midnight elevations Oct. 29, 30, Nov. 2, furnished by Portland General Electric. Lake is formed by concrete dam completed in March 1929 for water supply of city of Portland. Storage began about Apr. 29, 1929; first filling occurred May 15, 1929. Capacity, 26,930 acre-ft at crest of spillway, elevation, 1,036.0 ft; capacity increased in October 1954 to 30,140 acre-ft at elevation 1,044.0 ft by installation of three gates 40 ft wide and 8 ft high. No dead storage. Water is used for power generation by Portland General Electric Co. and municipal supply for city of Portland.

COOPERATION.--Capacity table furnished by Portland Water Bureau.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 31,600 acre-ft Mar. 31, 1931, elevation, 1,047.40 ft; minimum contents observed, 169 acre-ft Jan. 10, 1960, elevation, 887.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 30,800 acre-ft June 4, elevation, 1,045.60 ft; minimum contents, 11,200 acre-ft Oct. 8, elevation, 984.92 ft.

Capacity Table (elevation, in feet and contents, in acre-feet)

870	0	970	8,050
890	213	990	12,370
910	1,130	1,010	17,950
930	2,680	1,030	24,680
950	4,900	1,048	31,860

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	990.28	990.45	1,035.57	1,034.73	1,035.52	1,034.95	1,034.90	1,040.97	1,044.70	1,044.75	1,036.43	1,037.95
2	990.07	990.61	1,035.38	1,034.68	1,034.80	1,035.01	1,034.71	1,041.01	1,045.06	1,044.70	1,035.93	1,038.11
3	990.54	991.16	1,035.59	1,034.76	1,034.88	1,034.89	1,034.88	1,040.97	1,044.94	1,044.80	1,035.47	1,037.20
4	991.02	990.88	1,034.55	1,034.61	1,034.45	1,035.54	1,035.02	1,040.80	1,045.47	1,044.92	1,035.00	1,037.32
5	990.07	990.90	1,035.83	1,033.81	1,034.69	1,035.74	1,035.26	1,040.84	1,044.59	1,044.83	1,034.66	1,037.58
6	990.59	990.86	1,035.54	1,033.45	1,035.15	1,035.57	1,035.13	1,040.83	1,045.38	1,044.90	1,034.60	1,038.32
7	988.88	990.43	1,035.60	1,034.68	1,035.22	1,035.03	1,035.03	1,040.74	1,044.57	1,044.85	1,035.09	1,037.19
8	985.32	990.35	1,035.78	1,035.42	1,035.10	1,034.97	1,034.79	1,040.92	1,045.19	1,044.90	1,034.64	1,037.84
9	986.82	990.29	1,034.45	1,034.57	1,034.88	1,035.29	1,035.10	1,040.83	1,044.93	1,044.84	1,033.72	1,036.31
10	987.74	990.34	1,034.92	1,034.76	1,034.92	1,035.02	1,034.38	1,041.09	1,045.18	1,045.05	1,032.73	1,033.04
11	988.38	993.74	1,034.26	1,034.84	1,034.90	1,034.96	1,034.54	1,042.26	1,044.79	1,045.03	1,031.70	1,033.48
12	990.37	994.08	1,035.66	1,035.38	1,034.92	1,035.11	1,035.06	1,043.00	1,045.06	1,044.98	1,030.91	1,033.19
13	990.63	990.21	1,038.80	1,034.95	1,034.79	1,034.96	1,036.16	1,043.29	1,044.94	1,044.97	1,030.06	1,032.65
14	990.79	990.54	1,035.89	1,035.16	1,034.70	1,035.08	1,037.33	1,043.64	1,044.94	1,044.96	1,028.91	1,033.97
15	990.29	990.84	1,035.39	1,035.96	1,034.71	1,034.88	1,038.34	1,043.78	1,044.72	1,044.94	1,028.27	1,035.23
16	990.70	990.76	1,035.23	1,035.51	1,035.34	1,035.14	1,039.12	1,043.73	1,045.05	1,044.72	1,027.44	1,035.81
17	990.54	998.40	1,034.90	1,034.84	1,035.11	1,035.11	1,039.41	1,043.67	1,044.85	1,045.13	1,026.33	1,036.89
18	990.54	1,008.49	1,034.56	1,034.55	1,035.70	1,035.20	1,040.08	1,043.71	1,044.89	1,045.00	1,025.49	1,036.04
19	990.36	1,017.15	1,034.55	1,035.41	1,035.58	1,035.02	1,040.02	1,044.09	1,044.99	1,045.00	1,023.69	1,035.21
20	990.37	1,020.54	1,034.80	1,035.38	1,035.07	1,035.14	1,041.19	1,044.31	1,045.05	1,044.97	1,020.69	1,033.87
21	990.24	1,021.38	1,035.40	1,034.90	1,034.74	1,034.82	1,041.19	1,043.75	1,044.98	1,043.84	1,016.75	1,034.04
22	990.42	1,021.01	1,035.11	1,034.84	1,034.73	1,035.21	1,041.14	1,044.68	1,044.98	1,042.82	1,014.93	1,034.98
23	990.82	1,019.67	1,034.64	1,037.19	1,034.80	1,035.05	1,041.02	1,045.35	1,044.75	1,041.67	1,015.38	1,035.34
24	991.23	1,019.51	1,034.94	1,037.40	1,035.03	1,035.01	1,041.03	1,044.87	1,044.60	1,040.08	1,017.71	1,034.62
25	991.00	1,019.87	1,034.85	1,035.51	1,034.92	1,035.00	1,040.84	1,045.13	1,044.95	1,038.91	1,028.19	1,034.75
26	990.47	1,021.74	1,034.73	1,035.22	1,034.54	1,035.24	1,040.72	1,045.47	1,045.06	1,038.81	1,033.56	1,034.75
27	990.23	1,022.58	1,034.79	1,035.40	1,035.43	1,035.48	1,040.79	1,045.38	1,045.14	1,038.59	1,035.50	1,034.49
28	990.54	1,022.76	1,034.89	1,041.79	1,035.33	1,034.97	1,040.42	1,044.61	1,044.97	1,038.39	1,036.97	1,034.44
29	990.73	1,033.85	1,034.87	1,040.47	1,034.82	1,035.18	1,040.53	1,044.87	1,045.32	1,037.89	1,038.67	1,034.39
30	991.26	1,035.43	1,034.97	1,037.46	---	1,035.47	1,041.22	1,045.26	1,045.33	1,037.44	1,039.05	1,034.29
31	990.64	---	1,035.00	1,035.46	---	1,035.18	---	1,044.69	---	1,036.93	1,038.74	---
MAX	991.26	1,035.43	1,038.80	1,041.79	1,035.70	1,035.74	1,041.22	1,045.47	1,045.47	1,045.13	1,039.05	1,038.32
MIN	985.32	990.21	1,034.26	1,033.45	1,034.45	1,034.82	1,034.38	1,040.74	1,044.57	1,036.93	1,014.93	1,032.65
†	12,500	26,700	26,600	26,700	26,500	26,600	29,000	30,400	30,700	27,300	28,000	26,300
‡	+200	+14,200	-100	+100	-200	+100	+2,400	+1,400	+300	-3,400	+700	-1,700

CAL YR 2003 MAX 1,045.26 MIN 985.32 AC-FT‡ -200

WTR YR 2004 MAX 1,045.47 MIN 985.32 AC-FT‡ +14,000

† Contents, in acre-feet, at 2400, on last day of month.

‡ Change in contents, in acre-feet.

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°26'41", long 122°06'30", in NE ¼ NE ¼ sec.31, T.1 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 6.2 mi northeast of Bull Run, and at mile 0.6.

DRAINAGE AREA.--15.4 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR OR-91-1: 1989.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 990 ft above NGVD of 1929, from topographic map.

REMARKS.--Records fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--30 years (water years 1975-2004), 110 ft³/s, 97.43 in/yr, 80,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,630 ft³/s Feb. 7, 1996, gage height, 9.54 ft, from rating curve extended above 1,800 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 5.4 ft³/s Oct. 13, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan 29	0100	*2,430	*8.86	No other peak greater than base discharge.			

Minimum discharge, 8.8 ft³/s, Oct. 2, 4-6.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.2	35	208	57	212	e125	73	38	e129	23	13	45
2	9.1	31	179	50	173	e105	65	35	104	22	12	57
3	9.1	28	230	47	138	e100	63	33	85	22	12	52
4	9.0	25	174	42	143	e270	60	32	71	21	12	41
5	9.0	23	265	35	124	e300	55	32	71	20	13	36
6	9.2	22	293	37	142	e260	51	29	113	19	e15	32
7	11	21	220	70	190	e190	48	27	121	19	20	28
8	12	19	219	84	169	e160	46	31	e175	19	14	26
9	20	19	178	142	135	e155	43	27	e179	18	13	25
10	29	25	147	156	111	e135	42	28	e230	e18	12	23
11	23	181	122	143	96	e115	42	55	e183	e18	12	58
12	49	112	250	130	85	101	41	47	e139	17	12	41
13	43	79	582	125	77	89	40	42	e129	17	12	52
14	33	62	357	154	86	81	55	37	e107	17	12	94
15	42	58	221	272	101	75	64	35	e88	16	12	122
16	48	89	173	309	189	71	66	36	77	16	12	118
17	36	210	187	213	246	68	54	33	67	16	12	207
18	29	180	153	176	269	76	53	32	58	15	11	225
19	29	163	130	199	338	82	54	43	52	15	11	177
20	26	128	126	174	236	70	88	e37	47	15	11	134
21	24	100	170	138	173	64	140	35	42	15	11	103
22	22	80	150	111	134	65	115	e43	39	15	38	83
23	58	69	125	277	108	68	92	e233	37	14	32	69
24	36	94	121	609	93	80	77	e164	34	14	74	59
25	30	105	126	278	e85	79	66	125	32	14	224	51
26	26	129	104	204	e85	83	59	133	29	14	237	45
27	23	112	91	189	e130	110	54	e258	27	14	168	40
28	29	106	92	822	e180	90	50	e348	26	13	104	35
29	60	338	80	1,660	e155	83	45	e280	25	13	74	32
30	50	270	68	583	---	91	41	e213	24	13	57	30
31	39	---	62	311	---	88	---	e163	---	13	47	---
TOTAL	881.6	2,913	5,603	7,797	4,403	3,529	1,842	2,704	2,540	515	1,319	2,140
MEAN	28.4	97.1	181	252	152	114	61.4	87.2	84.7	16.6	42.5	71.3
MAX	60	338	582	1,660	338	300	140	348	230	23	237	225
MIN	9.0	19	62	35	77	64	40	27	24	13	11	23
AC-FT	1,750	5,780	11,110	15,470	8,730	7,000	3,650	5,360	5,040	1,020	2,620	4,240
CFSM	1.85	6.31	11.7	16.3	9.86	7.39	3.99	5.66	5.50	1.08	2.76	4.63
IN.	2.13	7.04	13.53	18.83	10.64	8.52	4.45	6.53	6.14	1.24	3.19	5.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 2004, BY WATER YEAR (WY)

MEAN	60.1	162	198	185	178	148	141	102	70.5	31.4	21.5	30.5
MAX	146	313	413	321	353	275	215	163	180	91.2	53.2	93.4
(WY)	(1997)	(1996)	(1997)	(1997)	(1996)	(1997)	(1976)	(1999)	(1981)	(1983)	(1978)	(1977)
MIN	8.31	23.3	50.4	56.5	54.7	53.8	61.4	47.1	15.4	14.3	10.1	9.03
(WY)	(1988)	(1994)	(1977)	(2001)	(1977)	(1992)	(2004)	(1992)	(1992)	(2003)	(2003)	(1994)

SANDY RIVER BASIN

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1975 - 2004	
ANNUAL TOTAL	35,597.7		36,186.6		110	
ANNUAL MEAN	97.5		98.9		171	
HIGHEST ANNUAL MEAN					1997	
LOWEST ANNUAL MEAN					2001	
HIGHEST DAILY MEAN	1,180	Mar 7	1,660	Jan 29	2,880	Nov 25, 1999
LOWEST DAILY MEAN	8.3	Sep 5	9.0	Oct 4	5.6	Oct 11, 1994
ANNUAL SEVEN-DAY MINIMUM	8.5	Aug 31	9.4	Oct 1	5.7	Oct 7, 1994
ANNUAL RUNOFF (AC-FT)	70,610		71,780		80,000	
ANNUAL RUNOFF (CFSM)	6.33		6.42		7.17	
ANNUAL RUNOFF (INCHES)	85.99		87.41		97.43	
10 PERCENT EXCEEDS	229		213		235	
50 PERCENT EXCEEDS	57		64		73	
90 PERCENT EXCEEDS	10		15		15	

e Estimated



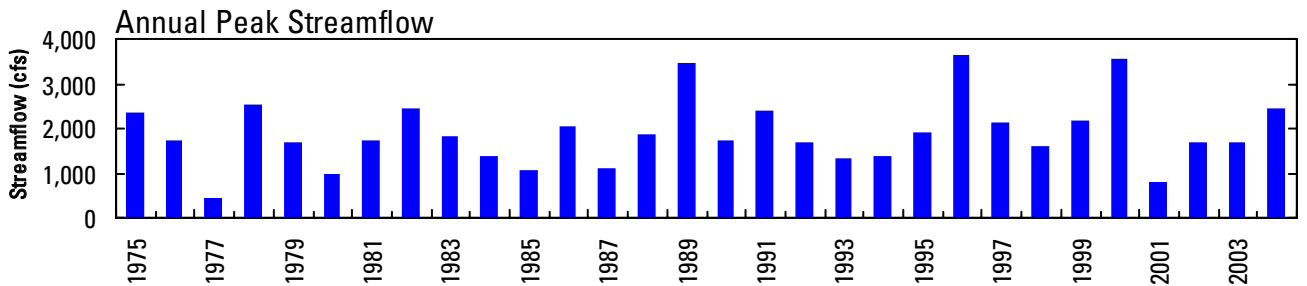
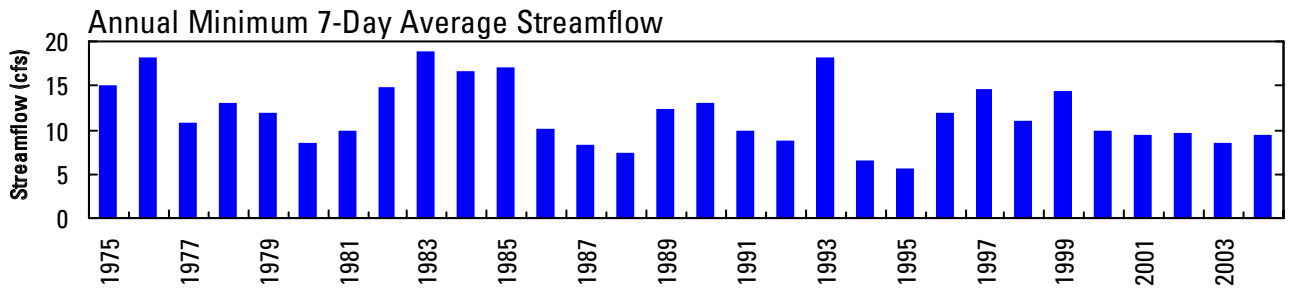
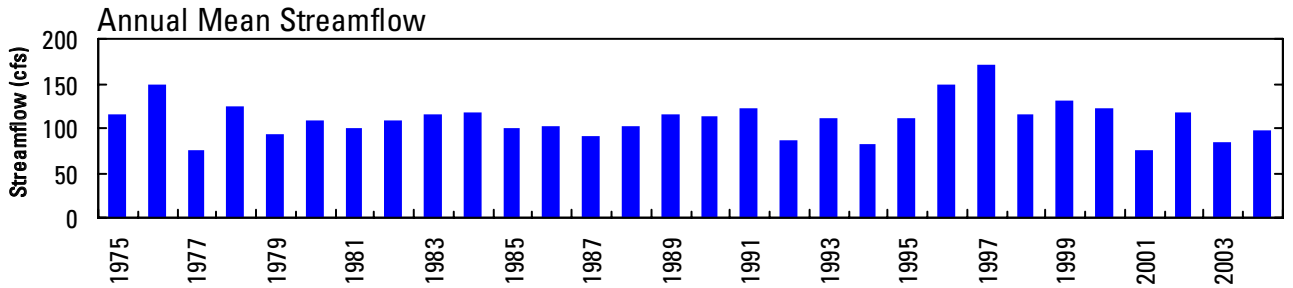
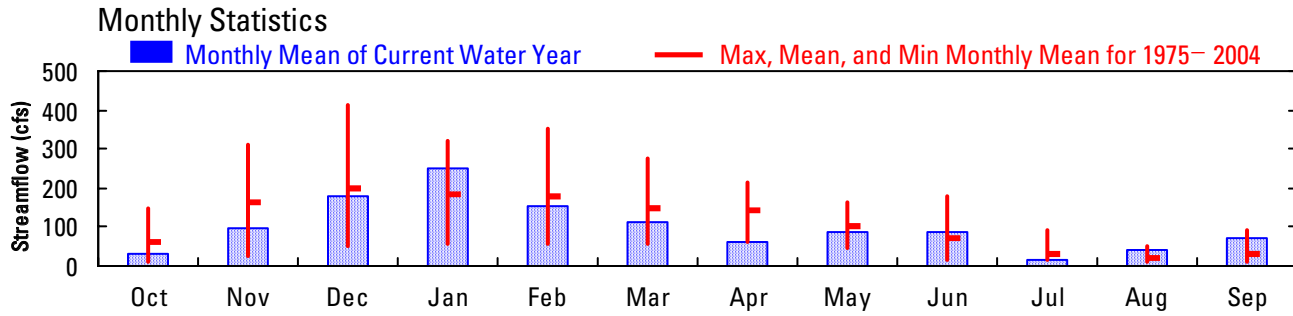
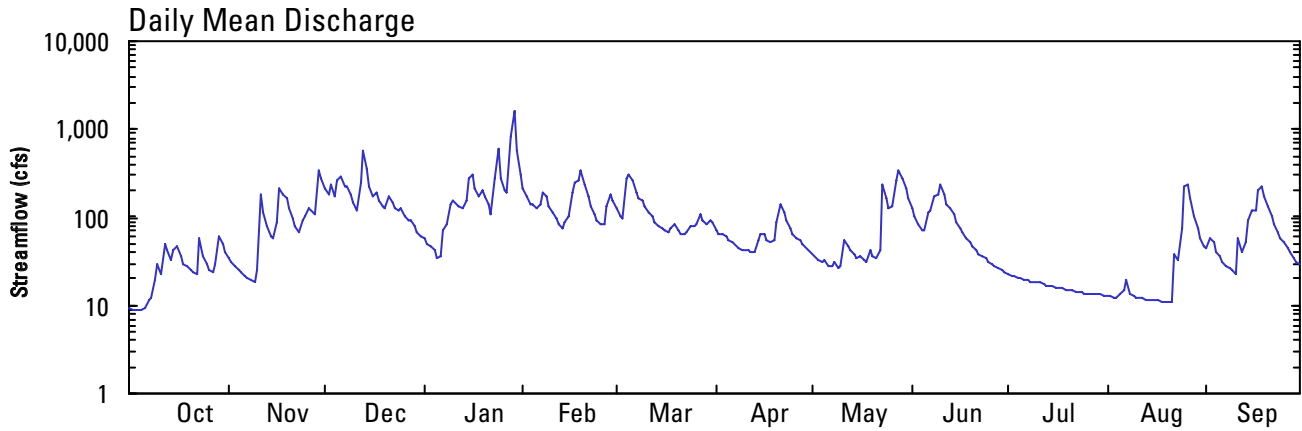
2004 Water Year
SANDY RIVER BASIN

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR

Latitude: 45° 26 ' 41"
Clackamas County

Longitude: 122° 06 ' 30"
Datum: 990.00 feet

Hydrologic Unit Code: 17080001
Drainage Area: 15.4 square miles



14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to current year.
 pH: November 1980 to September 1981, June 1990 to September 1992.
 WATER TEMPERATURE: October 1978 to current year.
 TURBIDITY: June 1990 to September 1994.
 SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Specific conductance records good except those for the period Dec. 3 to Apr. 8, which are fair. Water temperature records excellent. Turbidity data prior to October 1990 are available in the files of the Portland field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 56 microsiemens Oct. 31, 1988; minimum, 9 microsiemens Jan. 4, 1983.
 pH: Maximum recorded, 8.0 units Aug. 17, Oct. 2, 1990, but may have been higher in water year 1990, 1992 during period of missing record; minimum recorded, 6.4 units Dec. 6, 1991, but may have been lower during period of missing record.
 WATER TEMPERATURE: Maximum, 18.0°C June 23, 24, July 18, 19, 1992; minimum, 0.0°C on many days during winter periods.
 TURBIDITY: Maximum recorded, 16 NTU Oct. 16, 1993; minimum recorded, 0.08 NTU Sept. 2, 1994.
 SEDIMENT CONCENTRATION: Maximum daily, 212 mg/L Nov. 7, 1985; minimum, 0 mg/L on many days.
 SEDIMENT DISCHARGE: Maximum daily, 794 tons Nov. 7, 1985; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 43 microsiemens many days in August; minimum, 10 microsiemens Jan. 28, 29.
 WATER TEMPERATURE: Maximum, 16.8°C July 24; minimum, 0.1°C Jan. 6, 7.

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	41	40	41	27	26	26	20	19	19	23	22	23
2	41	41	41	27	26	27	20	20	20	23	23	23
3	42	41	41	27	27	27	20	18	19	24	23	23
4	42	41	41	27	27	27	21	19	20	24	24	24
5	42	41	42	28	27	28	20	18	19	25	24	25
6	42	41	41	28	28	28	19	18	18	26	24	25
7	42	40	41	29	27	28	19	19	19	24	21	22
8	41	40	41	28	28	28	19	19	19	22	20	21
9	40	37	38	29	28	28	20	19	19	20	19	19
10	37	34	35	29	28	29	20	19	19	19	19	19
11	35	34	34	28	22	24	20	20	20	20	19	19
12	34	31	32	22	21	22	20	16	18	20	18	19
13	31	30	31	22	21	22	17	15	16	20	18	19
14	31	29	30	23	22	22	18	16	17	19	18	19
15	30	28	29	23	23	23	19	18	18	18	16	17
16	28	28	28	23	22	23	20	19	19	16	15	16
17	29	28	28	22	20	21	19	19	19	17	16	17
18	29	29	29	21	20	20	20	19	19	17	17	17
19	30	29	29	21	20	20	20	20	20	17	17	17
20	31	30	30	21	20	21	20	20	20	18	17	17
21	32	31	31	22	21	21	20	19	19	18	18	18
22	32	30	31	22	22	22	20	19	19	19	18	19
23	30	28	28	23	22	22	20	19	20	19	14	17
24	28	28	28	23	22	22	20	20	20	15	13	14
25	28	28	28	23	22	22	20	19	20	17	15	16
26	29	28	29	22	21	22	20	19	20	18	17	17
27	30	29	30	22	22	22	21	20	20	18	16	18
28	31	29	30	22	21	22	22	20	21	16	10	14
29	29	27	27	21	18	19	22	21	21	15	10	13
30	27	26	26	20	19	19	22	22	22	15	13	14
31	27	26	26	---	---	---	23	22	22	17	15	16
MONTH	42	26	33	29	18	24	23	15	19	26	10	19

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR—Continued

SPECIFIC CONDUCTANCE, WATER, UNFILTERED, MICROSIEMENS PER CENTIMETER AT 25 DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	18	17	17	---	---	---	22	21	22	27	26	27
2	18	18	18	---	---	---	23	22	22	28	27	27
3	19	18	19	---	---	---	23	22	23	29	28	28
4	19	18	18	---	---	---	23	22	23	29	28	28
5	19	18	19	---	---	---	24	23	23	29	28	28
6	19	17	19	---	---	---	25	24	24	30	28	29
7	18	17	17	---	---	---	25	24	24	30	29	29
8	18	17	18	---	---	---	26	24	25	29	28	29
9	19	18	18	---	---	---	26	25	26	30	29	29
10	19	19	19	---	---	---	26	25	26	30	29	30
11	21	19	20	20	20	20	26	25	26	29	26	27
12	21	21	21	21	20	20	27	25	26	27	26	27
13	22	21	21	21	21	21	26	26	26	27	26	27
14	22	21	21	22	21	21	27	24	25	28	27	27
15	21	19	20	22	21	22	24	23	24	28	27	28
16	22	16	19	22	22	22	24	23	23	28	27	28
17	17	16	16	22	22	22	25	24	24	29	27	28
18	17	16	16	23	22	22	25	24	24	29	29	29
19	16	15	16	22	21	22	25	24	24	29	27	28
20	17	16	17	23	22	22	24	22	23	28	27	28
21	18	17	18	23	22	23	22	20	21	29	28	28
22	20	18	18	23	23	23	21	20	21	29	---	---
23	20	20	20	23	22	23	22	21	21	---	20	---
24	21	20	21	23	21	22	23	22	22	22	---	---
25	22	21	21	22	22	22	24	22	23	22	21	22
26	---	---	---	22	21	22	24	23	24	22	20	22
27	---	---	---	22	20	21	25	24	24	20	---	---
28	---	---	---	22	21	21	26	24	25	19	---	---
29	---	---	---	22	21	21	26	25	25	---	---	---
30	---	---	---	22	21	21	26	25	26	---	---	---
31	---	---	---	22	21	21	---	---	---	21	---	---
MONTH	22	15	19	23	20	22	27	20	24	30	20	28
	JUNE			JULY			AUGUST			SEPTEMBER		
1	22	21	22	33	32	33	41	40	40	28	27	27
2	23	22	23	34	32	33	41	40	40	28	26	27
3	24	23	24	35	33	34	41	40	40	28	26	27
4	25	24	24	35	33	34	41	40	41	28	28	28
5	25	24	25	35	34	34	40	39	40	29	28	29
6	24	22	23	35	34	34	41	---	---	30	29	29
7	23	22	22	35	33	34	40	37	38	30	29	30
8	23	21	22	36	33	34	40	39	40	31	30	30
9	---	---	---	36	34	34	41	40	41	31	31	31
10	---	---	---	36	34	35	42	41	41	32	31	32
11	21	---	---	36	34	35	42	41	42	32	27	30
12	22	---	---	37	35	35	42	41	42	29	28	28
13	23	22	22	37	35	36	42	41	42	29	27	28
14	23	---	---	38	36	37	43	42	42	27	25	26
15	24	23	23	37	36	36	43	41	42	25	23	24
16	25	24	24	37	36	37	43	41	42	23	23	23
17	25	23	24	38	36	37	43	42	43	23	21	22
18	25	24	24	38	37	37	43	42	43	21	20	21
19	26	25	25	38	37	38	43	42	43	21	21	21
20	27	26	26	39	37	38	43	42	43	23	21	22
21	28	27	27	39	38	38	43	41	42	24	23	23
22	28	27	28	39	38	39	42	32	38	24	23	24
23	29	28	28	40	39	39	35	32	33	25	24	25
24	30	28	29	40	39	40	36	26	32	27	25	26
25	31	29	29	39	38	38	26	20	22	30	27	28
26	31	29	30	39	38	38	21	20	21	30	27	28
27	31	30	30	39	38	39	22	20	21	30	28	28
28	31	31	31	39	38	39	24	22	23	30	28	29
29	32	31	31	40	39	39	26	24	24	30	29	29
30	32	32	32	40	39	39	27	25	26	29	28	29
31	---	---	---	40	39	40	28	27	27	---	---	---
MONTH	32	21	26	40	32	37	43	20	36	32	20	27

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	11.7	11.1	11.4	3.7	3.1	3.5	6.4	5.9	6.1	3.4	2.3	2.9
2	11.5	11.3	11.4	4.2	3.7	3.9	6.4	5.9	6.1	3.1	2.6	2.9
3	11.3	10.8	11.1	3.7	3.3	3.5	6.4	5.4	5.7	2.9	2.6	2.7
4	11.5	10.9	11.2	3.7	3.3	3.5	6.0	5.4	5.6	2.6	1.5	2.2
5	11.7	11.3	11.4	3.4	3.1	3.2	6.2	6.0	6.1	1.5	0.4	0.7
6	11.3	10.6	11.0	3.1	2.8	3.0	6.2	5.5	6.0	0.4	0.1	0.1
7	11.5	11.1	11.2	4.0	3.1	3.7	5.9	5.5	5.6	0.9	0.1	0.5
8	11.1	10.4	10.7	4.5	3.9	4.2	5.9	5.4	5.8	2.5	0.9	1.8
9	10.4	9.6	10.1	4.9	4.5	4.6	5.7	5.4	5.5	3.7	2.3	3.1
10	9.7	9.3	9.5	6.0	4.8	5.3	5.7	5.4	5.5	4.1	3.7	3.9
11	9.3	8.9	9.1	7.0	6.0	6.7	5.9	5.4	5.6	4.3	3.8	4.1
12	9.5	8.9	9.3	7.0	6.1	6.5	5.9	5.7	5.8	4.5	4.0	4.2
13	9.7	9.3	9.5	6.1	5.8	5.9	6.2	4.6	5.5	4.6	4.3	4.4
14	9.7	9.1	9.5	7.0	6.1	6.6	5.0	4.7	4.9	4.6	4.3	4.5
15	9.1	8.7	8.7	7.0	6.8	6.9	5.4	5.0	5.1	4.4	4.0	4.3
16	9.3	8.7	8.9	7.0	6.8	6.8	5.4	5.0	5.2	4.7	3.9	4.3
17	9.9	9.3	9.7	7.2	6.8	6.9	5.4	4.9	5.2	4.8	4.2	4.6
18	9.9	9.3	9.5	7.9	7.2	7.7	5.1	4.8	4.9	4.8	4.7	4.7
19	10.1	9.5	9.8	7.9	4.9	6.3	5.4	4.8	5.1	5.0	4.7	4.8
20	11.0	10.1	10.5	5.4	4.9	5.3	5.8	5.4	5.6	4.7	4.0	4.3
21	11.6	11.0	11.3	5.1	4.6	4.8	6.0	5.3	5.7	4.0	3.7	3.9
22	11.6	11.4	11.5	4.6	4.1	4.3	5.4	4.9	5.2	4.0	3.6	3.7
23	11.4	9.5	10.4	4.6	4.1	4.5	5.6	4.9	5.3	4.4	4.0	4.3
24	9.5	8.3	8.7	4.8	4.5	4.6	5.8	5.1	5.6	4.0	3.7	3.8
25	8.4	7.9	8.1	4.8	4.3	4.7	5.1	3.8	4.4	4.0	3.3	3.8
26	8.8	8.2	8.5	5.2	4.6	4.9	4.3	3.8	4.1	4.2	3.7	4.1
27	9.2	8.6	8.9	5.5	5.0	5.3	4.3	3.7	3.9	4.8	4.2	4.6
28	10.0	9.2	9.6	5.9	5.5	5.6	4.0	3.1	3.6	4.5	3.0	4.0
29	9.8	7.8	8.8	5.9	5.2	5.6	3.4	2.8	3.2	4.7	3.0	4.1
30	7.8	5.7	6.7	6.0	5.5	5.8	2.9	2.3	2.7	4.8	3.9	4.2
31	5.7	3.7	4.7	---	---	---	3.2	2.9	3.1	4.6	4.1	4.4
MONTH	11.7	3.7	9.7	7.9	2.8	5.1	6.4	2.3	5.1	5.0	0.1	3.5
DAY	FEBRUARY			MARCH			APRIL			MAY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	4.8	4.5	4.6	5.4	---	---	6.0	5.0	5.4	10.4	9.0	9.8
2	4.9	4.4	4.6	---	---	---	6.4	4.5	5.4	11.1	9.8	10.3
3	5.0	4.4	4.7	---	---	---	7.8	6.2	6.9	11.3	10.2	10.7
4	4.9	4.7	4.8	---	---	---	7.6	6.5	7.0	11.1	9.8	10.4
5	4.9	4.1	4.5	---	---	---	6.9	6.0	6.4	9.8	9.2	9.5
6	5.0	4.7	4.8	5.3	---	---	7.3	6.2	6.7	9.6	8.6	9.2
7	4.7	4.6	4.6	5.9	5.1	5.6	7.6	6.9	7.2	9.8	9.2	9.6
8	4.7	4.4	4.6	6.1	---	---	7.8	7.1	7.4	9.8	9.0	9.4
9	4.6	3.9	4.2	---	5.4	---	8.0	6.5	7.4	9.8	9.0	9.5
10	4.4	3.8	4.1	5.6	---	---	8.4	7.1	7.8	9.6	8.6	9.0
11	4.6	4.1	4.3	5.9	4.6	5.3	9.0	7.6	8.3	8.6	7.8	8.1
12	4.2	3.6	3.9	6.0	4.8	5.5	9.0	8.2	8.4	8.6	8.0	8.2
13	4.7	3.6	4.1	6.0	4.8	5.5	8.4	7.8	8.1	9.0	7.3	8.2
14	5.2	4.6	4.9	6.3	5.6	6.0	7.8	6.7	7.3	10.0	8.4	9.1
15	5.2	4.7	4.9	6.5	5.4	6.0	6.7	6.2	6.5	9.6	8.6	9.1
16	5.0	4.6	4.8	6.3	5.6	5.9	7.1	6.2	6.6	9.2	8.4	8.8
17	5.0	4.4	4.7	6.3	5.4	5.9	7.1	6.4	6.7	9.2	8.2	8.7
18	5.2	4.9	5.0	6.1	5.1	5.7	7.1	6.2	6.7	9.0	8.8	8.8
19	5.0	4.3	4.8	5.1	4.6	4.8	7.1	6.4	6.7	9.0	8.6	8.8
20	4.9	4.0	4.4	5.8	4.1	4.9	6.9	6.2	6.4	9.6	8.4	9.2
21	5.1	4.1	4.6	6.8	5.4	6.1	6.7	5.7	6.1	9.6	9.2	9.4
22	5.3	4.8	5.0	7.0	6.1	6.6	7.8	5.7	6.7	9.2	8.6	9.0
23	5.4	4.9	5.2	7.1	6.5	6.8	7.3	6.5	6.8	---	---	---
24	5.4	4.8	5.1	6.7	6.0	6.4	7.4	5.5	6.5	9.0	---	---
25	---	4.5	---	6.0	5.5	5.8	8.8	6.2	7.4	10.0	7.6	8.7
26	---	---	---	5.7	5.2	5.4	9.8	7.6	8.7	9.4	8.8	9.0
27	---	---	---	5.9	5.5	5.6	9.6	8.8	9.2	9.0	---	---
28	---	---	---	6.4	4.8	5.6	9.0	7.8	8.5	---	---	---
29	---	---	---	7.4	5.7	6.5	9.2	7.3	8.3	---	7.4	---
30	---	---	---	7.3	5.5	6.5	10.0	8.0	9.0	8.2	---	---
31	---	---	---	5.7	4.8	5.3	---	---	---	8.6	---	---
MONTH	5.4	3.6	4.6	7.4	4.1	5.8	10.0	4.5	7.2	11.3	7.3	9.2

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	9.8	7.3	8.7	14.5	12.8	13.6	15.7	14.4	15.1	12.8	12.1	12.5
2	10.8	8.2	9.4	14.0	13.2	13.6	15.7	14.4	15.1	12.1	11.6	11.7
3	11.5	9.0	10.2	14.2	13.2	13.6	15.5	14.4	14.9	12.1	11.4	11.7
4	11.9	9.8	10.9	14.0	12.5	13.2	14.9	13.9	14.5	11.8	11.6	11.7
5	11.5	10.0	10.5	14.0	12.3	13.3	14.4	13.6	14.0	12.1	11.4	11.7
6	10.0	9.0	9.4	14.5	13.0	13.7	---	---	---	11.8	10.7	11.3
7	9.6	8.6	9.0	13.7	12.5	13.0	13.9	12.4	13.2	11.4	10.7	11.1
8	9.2	8.6	8.8	13.2	12.1	12.5	14.7	12.9	13.9	11.6	10.7	11.2
9	---	---	---	12.5	11.8	12.1	15.5	13.6	14.6	12.1	11.6	11.8
10	---	---	---	12.3	---	---	16.0	14.7	15.3	11.8	10.9	11.5
11	---	---	---	13.2	---	---	16.3	14.7	15.5	12.5	11.8	12.2
12	9.0	---	---	14.2	12.1	13.2	16.3	15.2	15.8	12.3	11.6	11.9
13	8.8	8.4	8.6	15.3	13.5	14.3	16.3	15.2	15.8	11.6	11.4	11.5
14	9.4	---	---	15.8	14.0	14.8	16.0	15.5	15.8	11.6	10.9	11.3
15	10.6	---	---	15.6	14.2	15.0	16.0	14.9	15.6	11.4	10.9	11.1
16	11.3	8.4	9.8	15.6	13.7	14.8	16.3	15.2	15.7	11.2	10.7	10.9
17	12.2	9.6	10.9	15.8	14.2	15.0	16.0	15.2	15.6	10.9	10.1	10.6
18	12.9	10.8	11.8	15.8	14.8	15.3	15.7	14.7	15.4	10.1	9.7	9.8
19	12.4	10.8	11.5	15.6	14.8	15.1	16.0	14.9	15.4	9.7	9.3	9.6
20	12.5	10.3	11.5	15.3	14.5	14.9	16.0	14.9	15.5	9.9	9.5	9.6
21	13.5	11.4	12.4	15.5	13.7	14.7	15.8	14.9	15.4	9.8	9.0	9.4
22	13.0	11.6	12.2	16.0	14.1	15.0	15.6	14.0	14.7	9.6	8.6	9.1
23	11.6	11.4	11.5	16.6	14.4	15.5	14.0	13.5	13.7	10.2	9.2	9.7
24	11.4	10.9	11.3	16.8	15.2	16.1	13.7	13.0	13.4	10.4	9.4	9.9
25	12.3	11.2	11.6	16.6	15.5	16.0	13.2	12.3	12.8	10.6	10.0	10.3
26	12.8	11.4	12.2	15.7	14.6	15.3	12.3	12.1	12.2	11.3	10.6	10.9
27	13.7	12.1	12.8	16.0	14.4	15.3	12.5	11.6	12.0	11.0	10.4	10.8
28	13.7	12.1	13.0	16.3	14.7	15.5	12.5	11.2	11.7	11.3	10.6	11.0
29	14.0	12.5	13.3	16.3	14.9	15.6	12.5	11.2	11.8	11.3	11.0	11.3
30	14.2	12.8	13.5	16.0	14.9	15.5	12.5	11.2	11.9	11.0	10.8	10.9
31	---	---	---	15.7	14.1	15.1	13.0	11.8	12.4	---	---	---
MONTH	14.2	7.3	11.0	16.8	11.8	14.5	16.3	11.2	14.3	12.8	8.6	10.9

14139900 BULL RUN RESERVOIR NUMBER TWO NEAR BULL RUN, OR

LOCATION.--Lat 45°26'52", long 122°08'52", on line between secs.25 and 26, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on headworks dam on Bull Run River, 4.1 mi northeast of Bull Run, and at mile 6.5.

DRAINAGE AREA.--102 mi².

PERIOD OF RECORD.--December 1961 to current year. Prior to October 1975, month end contents only.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (levels by Portland Water Bureau). Prior to Dec. 31, 1975, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earth and rockfill dam with concrete spillway built by Portland Water Bureau. Storage began about Dec. 20, 1961; first filling occurred Dec. 24, 1961. Capacity, 20,990 acre-ft at crest of spillway, elevation, 860.0 ft. Dead storage negligible. Water is used as municipal supply for city of Portland and for power generation by Portland General Electric Co.

COOPERATION.--Capacity table furnished by Portland Water Bureau.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 23,660 acre-ft Dec. 22, 1964, elevation, 866.00 ft; no contents at times during low-flow periods.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,650 acre-ft Jan. 29, elevation, 863.75 ft; minimum contents, 11,970 acre-ft Oct. 4-6, elevation, 836.10 ft.

Capacity Table (elevation, in feet and contents, in acre-feet)

752	0	830	10,000
770	234	850	16,800
790	1,860	870	25,500
810	5,070		

ELEVATION ABOVE NGVD 1929, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	837.87	845.03	859.65	859.51	860.00	859.20	859.08	859.25	859.47	857.34	841.97	854.53
2	837.27	844.84	859.57	859.13	859.24	859.34	859.34	859.06	859.61	856.96	841.64	853.97
3	836.18	844.12	859.54	858.82	858.95	859.57	859.49	858.85	859.64	856.48	841.27	854.68
4	836.10	843.81	858.55	858.67	859.47	859.79	859.72	858.92	858.41	856.01	840.98	854.78
5	836.10	843.28	860.35	858.78	859.15	860.35	859.63	858.94	859.31	855.78	840.88	854.67
6	836.11	842.51	860.32	858.59	859.58	859.75	859.44	858.91	859.07	855.25	840.70	853.91
7	836.11	841.92	859.54	856.96	859.66	859.31	859.05	859.05	859.04	854.78	839.91	854.80
8	836.80	841.11	859.53	856.50	859.51	859.28	858.92	859.05	859.28	854.25	839.73	853.90
9	836.11	840.26	859.45	857.88	859.56	859.19	858.50	859.26	859.54	853.88	839.75	855.13
10	836.20	839.83	859.14	858.80	859.33	858.84	859.02	859.28	859.75	853.18	839.78	857.71
11	836.25	844.13	859.73	859.78	859.16	859.18	859.09	859.11	859.47	852.64	839.89	858.21
12	836.67	846.23	860.40	859.41	859.31	859.61	859.40	859.07	859.22	851.94	839.73	858.79
13	838.29	849.16	861.74	859.58	859.10	859.60	859.32	859.09	859.76	851.09	839.63	859.65
14	839.13	849.00	860.73	859.81	859.22	858.87	859.49	858.91	859.85	850.26	839.85	859.63
15	840.63	849.19	859.74	860.58	859.63	859.02	859.41	858.85	859.73	849.40	839.68	859.78
16	841.27	851.31	859.26	860.30	859.82	859.15	859.43	859.05	859.22	848.75	839.67	859.54
17	841.73	854.89	859.04	859.89	859.60	859.53	859.54	859.09	859.49	847.36	839.76	860.60
18	841.64	854.31	858.95	859.48	859.82	859.73	859.23	858.99	859.66	846.64	839.66	860.57
19	841.63	853.90	858.86	859.56	860.04	859.45	859.58	858.77	859.77	845.72	840.55	860.40
20	841.32	854.18	859.26	859.36	859.20	859.23	859.68	858.51	859.79	844.87	842.58	860.26
21	841.05	854.11	859.72	859.69	858.87	859.58	859.76	858.96	859.68	845.20	845.49	859.47
22	840.78	853.99	859.25	859.81	859.29	859.49	859.17	859.86	859.50	845.17	847.87	859.18
23	842.06	854.27	859.44	860.89	859.76	859.72	859.23	859.87	859.61	845.13	847.79	859.06
24	842.07	854.41	859.46	861.16	859.22	859.80	859.23	859.38	859.80	845.55	847.92	859.69
25	842.09	854.62	859.30	860.21	858.61	859.70	859.29	859.05	859.47	845.67	848.45	859.45
26	842.12	854.20	859.62	859.42	859.31	859.31	859.48	859.69	859.19	844.71	851.95	859.40
27	841.80	854.20	859.68	858.76	859.79	859.25	859.44	860.42	858.75	843.91	854.17	859.64
28	841.83	854.64	859.11	862.84	859.14	859.04	859.50	860.78	858.44	843.28	854.77	859.72
29	843.34	855.64	858.95	862.40	859.42	859.02	859.59	860.11	857.67	842.96	854.29	859.31
30	844.06	859.77	859.20	861.24	---	859.50	859.20	859.81	857.24	842.59	854.52	858.62
31	845.04	---	859.52	860.45	---	859.16	---	859.84	---	842.30	854.50	---
MAX	845.04	859.77	861.74	862.84	860.04	860.35	859.76	860.78	859.85	857.34	854.77	860.60
MIN	836.10	839.83	858.55	856.50	858.61	858.84	858.50	858.51	857.24	842.30	839.63	853.90
†	15,010	20,900	20,790	21,200	20,740	20,630	20,650	20,930	19,790	14,080	18,600	20,390
‡	+2,080	+5,890	-110	+410	-460	-110	+20	+280	-1,140	-5,710	+4,520	+1,790
CAL YR 2003	MAX 862.87	MIN 836.10	AC-FT‡	-340								
WTR YR 2004	MAX 862.84	MIN 836.10	AC-FT‡	+7,460								

† Contents, in acre-feet, at 2400, on last day of month.

‡ Change in contents, in acre-feet.

14140000 BULL RUN RIVER NEAR BULL RUN, OR

WATER-QUALITY RECORDS

LOCATION.--Lat 45°26'15", long 122°10'42", in NE ¼ SW ¼ sec.34, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on left bank 1.8 mi downstream from Bull Run Reservoir Number Two, 2.7 mi northeast of Bull Run, and at mile 4.7.

DRAINAGE AREA.--107 mi².

PERIOD OF DAILY RECORD.--December 2000 to current year.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Record fair.

EXTREMES FOR PERIOD OF RECORD.--Maximum, 21.8°C July 10, 2002; minimum, 1.5°C Jan. 6, 2004.

EXTREMES FOR CURRENT YEAR.--Maximum, 21.1°C July 13; minimum, 1.5°C Jan. 6.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	16.8	15.2	16.1	11.5	10.8	11.1	7.0	6.6	6.9	4.9	4.1	4.6
2	16.6	16.2	16.4	10.8	10.4	10.7	6.8	6.6	6.7	4.9	4.6	4.7
3	17.6	15.9	16.6	10.6	9.9	10.3	6.6	6.4	6.5	4.8	4.5	4.6
4	16.6	16.0	16.3	10.3	9.9	10.1	6.6	6.5	6.5	4.6	3.4	4.2
5	17.1	16.0	16.5	10.2	9.7	9.9	6.6	6.5	6.5	3.4	2.7	3.1
6	17.3	15.4	16.3	9.9	9.4	9.6	6.5	6.2	6.3	2.7	1.5	2.2
7	17.6	16.1	16.8	9.8	9.3	9.5	6.3	6.2	6.3	3.1	2.0	2.9
8	16.2	15.4	15.8	9.5	9.1	9.3	6.3	6.0	6.2	3.5	3.1	3.3
9	15.8	14.6	15.3	9.5	9.2	9.3	6.2	6.0	6.1	3.8	3.3	3.5
10	15.7	14.3	14.8	9.2	8.8	9.0	6.1	6.0	6.0	3.9	3.5	3.7
11	14.5	13.9	14.3	8.9	8.6	8.8	6.1	6.0	6.0	4.1	3.5	3.7
12	14.9	14.1	14.5	8.7	8.2	8.5	6.1	6.0	6.0	3.6	3.4	3.5
13	15.4	14.3	14.7	8.5	8.0	8.2	6.1	5.8	6.0	3.6	3.4	3.5
14	15.1	13.7	14.6	8.4	7.9	8.1	5.9	5.8	5.8	3.6	3.4	3.5
15	14.0	13.3	13.5	8.0	7.7	7.8	5.8	5.7	5.8	3.7	3.4	3.5
16	14.6	13.5	14.1	7.8	7.7	7.7	5.8	5.7	5.7	3.7	3.4	3.5
17	14.8	13.9	14.3	8.0	7.7	7.8	5.8	5.6	5.7	3.7	3.5	3.6
18	14.4	13.5	13.8	8.2	8.0	8.0	5.7	5.5	5.6	3.9	3.7	3.8
19	14.4	13.7	14.0	8.0	6.5	7.5	5.7	5.5	5.6	3.9	3.8	3.9
20	14.3	13.9	14.0	7.8	7.5	7.6	5.8	5.6	5.7	3.9	3.8	3.8
21	14.6	13.9	14.1	7.7	7.5	7.6	5.8	5.6	5.7	4.0	3.7	3.9
22	14.2	13.6	13.9	7.5	7.3	7.4	5.6	5.4	5.6	4.0	3.7	3.9
23	13.8	13.0	13.4	7.4	7.2	7.3	5.6	5.4	5.5	4.1	3.9	4.0
24	13.5	12.6	13.0	7.2	6.9	7.0	5.7	5.4	5.5	4.1	4.0	4.1
25	13.6	12.7	13.0	7.0	6.7	6.9	5.5	5.2	5.4	4.2	4.1	4.2
26	13.7	12.8	13.2	6.9	6.8	6.9	5.4	5.3	5.3	4.4	4.2	4.3
27	13.7	12.8	13.2	7.1	6.7	6.9	5.3	5.0	5.3	4.4	4.3	4.4
28	13.4	12.8	13.3	7.2	7.0	7.0	5.3	5.0	5.2	4.5	4.3	4.4
29	12.8	12.2	12.5	7.1	6.8	7.0	5.2	4.8	5.0	4.5	4.3	4.5
30	12.2	11.5	11.9	7.1	6.6	6.9	4.9	4.6	4.7	4.6	4.5	4.6
31	11.5	11.0	11.2	---	---	---	5.1	4.6	4.9	4.7	4.6	4.6
MONTH	17.6	11.0	14.4	11.5	6.5	8.3	7.0	4.6	5.8	4.9	1.5	3.9

SANDY RIVER BASIN

14140000 BULL RUN RIVER NEAR BULL RUN, OR—Continued

TEMPERATURE, WATER, DEGREES CELSIUS—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	4.9	4.6	4.7	5.8	5.2	5.4	7.5	6.6	6.9	11.0	8.6	9.4
2	4.8	4.7	4.7	5.9	5.2	5.5	8.6	6.3	7.2	11.7	8.8	9.7
3	5.0	4.7	4.8	5.5	5.1	5.3	8.8	7.1	7.7	11.4	8.9	9.7
4	5.0	4.8	4.9	5.5	5.2	5.4	8.7	6.9	7.5	10.0	9.0	9.3
5	5.0	4.6	4.9	5.4	5.2	5.4	7.8	6.9	7.2	10.8	8.9	9.4
6	5.1	5.0	5.0	5.4	5.2	5.3	8.2	7.1	7.5	10.8	8.7	9.5
7	5.0	4.8	4.9	5.6	5.3	5.4	7.9	7.2	7.5	10.6	9.2	9.7
8	4.9	4.8	4.9	6.0	5.3	5.6	8.8	7.3	7.7	11.0	9.3	9.8
9	5.0	4.7	4.8	5.6	5.2	5.4	9.8	7.1	8.0	12.0	9.3	10.1
10	5.1	4.7	4.9	5.7	5.2	5.4	9.7	7.3	8.1	9.9	9.4	9.6
11	5.3	5.0	5.0	6.1	5.3	5.7	10.0	7.5	8.3	10.3	9.4	9.8
12	5.3	4.8	5.0	6.0	5.4	5.6	8.8	7.6	8.1	10.9	9.6	10.1
13	5.1	4.7	4.9	6.3	5.3	5.8	9.1	7.7	8.1	11.9	9.3	10.3
14	5.5	5.0	5.2	6.3	5.7	5.9	8.5	7.7	7.9	12.3	9.7	10.5
15	5.6	5.0	5.2	6.3	5.6	5.9	8.4	7.6	7.9	10.5	9.9	10.1
16	5.3	5.0	5.2	6.6	5.6	5.9	9.2	7.7	8.2	11.5	10.0	10.5
17	5.0	4.9	5.0	6.7	5.7	6.0	8.9	7.7	8.2	11.9	9.9	10.7
18	5.0	4.9	5.0	6.0	5.6	5.8	9.1	7.8	8.2	10.6	10.3	10.4
19	5.2	4.9	5.0	6.1	5.7	5.9	8.8	7.8	8.3	11.1	10.3	10.7
20	5.2	4.8	5.0	7.4	5.8	6.5	8.3	7.9	8.1	12.1	10.2	10.9
21	5.4	5.0	5.1	7.9	6.8	7.1	8.7	7.9	8.2	11.2	10.6	10.8
22	5.5	5.1	5.2	7.8	6.6	6.9	9.1	8.1	8.4	10.8	10.5	10.7
23	5.7	5.2	5.4	7.1	6.4	6.7	8.7	8.1	8.3	12.2	10.6	11.5
24	5.5	5.0	5.3	6.8	6.4	6.5	9.6	7.9	8.5	11.8	11.0	11.3
25	5.4	5.0	5.2	6.6	6.4	6.5	10.2	8.0	8.8	12.1	11.0	11.4
26	5.7	5.2	5.4	6.7	6.4	6.5	11.1	8.3	9.2	11.5	11.2	11.4
27	5.6	5.2	5.4	6.8	6.4	6.6	10.3	8.3	9.1	11.9	11.4	11.6
28	5.3	5.1	5.2	7.3	6.5	6.8	10.2	8.3	8.8	12.1	11.8	11.9
29	5.5	5.1	5.3	8.4	7.0	7.6	10.8	8.2	9.1	11.9	10.7	11.3
30	---	---	---	7.4	6.8	7.1	11.5	8.3	9.4	10.7	10.4	10.6
31	---	---	---	7.3	6.8	6.9	---	---	---	10.6	10.3	10.5
MONTH	5.7	4.6	5.1	8.4	5.1	6.1	11.5	6.3	8.1	12.3	8.6	10.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	11.2	10.2	10.5	17.6	12.1	14.0	19.3	14.7	16.3	16.6	15.8	16.0
2	11.8	10.1	10.7	16.2	12.6	13.9	18.8	14.6	16.2	16.2	15.6	15.8
3	11.9	10.3	10.8	16.8	13.2	14.3	18.9	14.9	16.2	16.6	15.5	15.8
4	12.2	10.3	11.0	19.0	12.8	14.9	16.8	14.6	15.7	16.3	15.2	15.6
5	11.2	10.5	10.7	19.1	13.0	15.3	18.8	14.8	16.1	18.4	14.7	15.8
6	11.1	10.4	10.7	18.7	13.5	15.4	16.0	14.6	15.1	17.9	14.1	15.5
7	11.2	10.7	10.9	15.8	13.5	14.3	19.6	14.5	16.2	18.1	14.2	15.6
8	11.1	10.8	10.9	18.8	13.5	15.3	19.2	14.5	16.1	17.8	14.4	15.7
9	11.2	11.0	11.1	16.2	13.3	14.4	19.4	14.7	16.3	17.0	15.4	16.0
10	11.3	11.1	11.2	16.7	13.3	14.5	19.4	15.0	16.5	18.1	15.5	16.6
11	11.3	11.0	11.1	19.6	13.0	15.3	19.3	14.9	16.5	17.1	15.6	16.4
12	11.7	10.9	11.1	20.4	13.8	16.2	19.0	15.1	16.5	16.4	15.0	15.6
13	11.3	10.9	11.1	21.1	15.8	17.5	18.9	14.9	16.3	15.8	14.7	15.1
14	11.6	10.7	11.0	19.6	14.8	16.4	16.9	15.1	15.8	16.3	15.0	15.4
15	12.2	10.7	11.2	18.9	14.2	15.8	18.7	14.8	16.1	15.6	15.0	15.3
16	13.2	10.6	11.5	19.4	14.1	16.0	18.4	15.1	16.2	15.7	15.2	15.4
17	14.5	10.7	12.0	18.5	14.4	15.8	18.8	15.0	16.2	16.2	15.1	15.4
18	14.8	11.1	12.3	18.4	14.6	16.0	18.8	14.9	16.2	16.2	15.6	16.0
19	13.7	11.0	11.9	18.2	14.8	16.0	19.0	15.0	16.4	15.6	15.0	15.4
20	15.1	11.0	12.4	19.1	15.0	16.4	19.0	15.2	16.5	15.3	14.6	14.9
21	15.2	11.3	12.7	19.4	14.5	16.1	17.2	15.2	16.1	14.6	13.2	14.1
22	12.2	11.6	11.9	19.6	14.5	16.3	16.0	15.1	15.6	14.1	12.6	13.2
23	12.8	11.6	12.0	19.9	14.7	16.5	16.1	14.8	15.4	14.6	12.6	13.3
24	13.0	11.6	12.2	19.7	14.8	16.5	15.8	15.0	15.3	14.8	12.7	13.4
25	14.6	11.7	12.6	18.9	14.8	16.1	15.7	14.8	15.1	14.8	13.0	13.7
26	15.0	11.6	12.9	19.5	14.3	16.1	16.2	14.7	15.3	14.8	13.5	14.0
27	16.3	11.9	13.3	19.2	14.5	16.2	18.7	14.9	16.1	15.0	13.1	13.8
28	16.6	11.7	13.4	19.4	14.6	16.2	18.8	15.0	16.1	15.3	13.2	14.0
29	16.3	11.9	13.5	19.2	14.7	16.3	18.6	15.0	16.3	14.2	13.5	13.9
30	17.0	12.0	13.7	18.6	15.0	16.2	19.1	15.0	16.4	14.9	13.4	13.9
31	---	---	---	19.2	14.6	16.1	17.2	15.5	16.2	---	---	---
MONTH	17.0	10.1	11.7	21.1	12.1	15.7	19.6	14.5	16.0	18.4	12.6	15.0

14140001 BULL RUN RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°26'15", long 122°10'42", in NE ¼ SW ¼ sec.34, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on left bank 1.8 mi downstream from Bull Run Reservoir Number Two, 2.7 mi northeast of Bull Run, and at mile 4.7.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--September 1907 to current year. Records for January 1895 to August 1907, published in WSP 370, have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1288: 1910-11, 1913, 1920-23, 1926, 1929. WSP 1318: 1919(M). WSP 1568: 1952. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 567.90 ft above NGVD of 1929 (levels by Portland Water Bureau). Prior to July 27, 1909, nonrecording gage at site 1.5 mi upstream at different datum. July 27, 1909, to Sept. 30, 1959, water-stage recorder at site 2.5 mi upstream at different datums.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1915 by Bull Run Lake capacity, 12,270 acre-ft, since 1929 by Bull Run Reservoir Number One (station 14139000), since 1958 by North Fork Reservoir, capacity, 1,030 acre-ft, and since 1961 by Bull Run Reservoir Number Two (station 14139900). All records given herein include flow diverted from Bull Run Reservoir Number Two for city of Portland, and that used by Portland General Electric Co. for power generation, which returns to Bull Run River downstream from station. Total diversion, 160,400 acre-ft of which 48,840 acre-ft were used for power generation and returned to Bull Run River.

COOPERATION.--Records of daily diversion furnished by Portland Water Bureau.

AVERAGE DISCHARGE.--97 years (water years 1908-2004), 775 ft³/s, 98.36 in/yr, 561,500 acre-ft/yr, adjusted for storage in Bull Run Reservoir Number One since 1929 and Bull Run Reservoir Number Two since 1961.

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 24,800 ft³/s Dec. 22, 1964, gage height, 17.21 ft, from rating curve extended above 8,800 ft³/s on basis of computation of peak flow over dam; minimum discharge, 1.1 ft³/s Oct. 4, 1974.

Combined flow, maximum discharge, 25,100 ft³/s Dec. 22, 1964; minimum daily, 11 ft³/s Nov. 16, 1987.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 13,200 ft³/s Jan. 29, gage height, 13.76 ft; minimum discharge, 16 ft³/s Sept. 30.

Combined flow, maximum discharge, 13,300 ft³/s (of which approximately 109 ft³/s were diverted for Portland water supply) Jan. 29; minimum daily, 141 ft³/s (of which approximately 117 ft³/s were diverted for Portland water supply) Oct. 12.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	189	268	1,440	512	1,630	866	690	418	1,030	272	241	423
2	188	276	1,320	516	1,510	684	524	413	642	260	239	413
3	186	272	1,760	459	1,020	696	493	411	630	252	238	332
4	198	267	1,660	420	891	1,420	473	383	670	231	231	196
5	197	275	1,530	426	846	1,570	482	349	528	224	186	188
6	182	294	2,440	442	700	1,790	523	324	661	242	153	199
7	177	303	1,790	478	1,030	1,380	545	306	1,070	256	164	223
8	178	296	1,570	417	1,010	1,080	523	287	1,090	243	204	221
9	154	293	1,510	539	847	1,090	463	267	1,180	228	249	206
10	147	300	1,000	527	753	1,150	466	276	1,220	229	263	200
11	143	297	825	503	686	821	423	285	1,250	246	255	180
12	141	300	1,530	649	535	671	287	267	886	278	254	171
13	162	458	3,550	693	557	764	270	295	704	290	254	247
14	162	394	3,610	851	587	816	324	294	678	282	252	356
15	151	320	2,000	1,620	560	663	450	296	687	285	222	409
16	230	331	1,470	2,240	862	565	443	285	574	279	229	591
17	238	348	1,510	1,570	1,400	566	430	293	441	284	254	729
18	247	359	1,210	1,300	1,470	636	427	304	352	268	240	1,440
19	262	362	923	1,240	1,870	816	428	299	317	280	238	1,190
20	258	462	737	1,250	1,630	649	459	301	313	268	238	1,030
21	251	696	969	958	1,160	546	885	299	339	277	226	740
22	237	717	1,180	759	759	541	929	297	323	320	177	351
23	217	721	891	1,620	589	627	659	1,750	291	335	165	348
24	237	730	773	4,350	717	724	566	1,320	247	338	170	343
25	254	729	1,000	2,760	779	779	536	794	246	308	199	328
26	254	720	721	1,820	550	815	474	796	261	290	207	286
27	265	644	710	1,510	606	969	486	1,870	295	276	196	243
28	261	639	875	3,040	1,310	1,000	532	2,630	303	247	185	229
29	233	655	699	10,900	998	708	373	2,230	287	241	191	330
30	227	734	493	5,320	---	668	430	1,620	279	241	209	377
31	240	---	442	2,860	---	874	---	1,340	---	241	329	---
TOTAL	6,466	13,460	42,138	52,549	27,862	26,944	14,993	21,299	17,794	8,311	6,858	12,519
MEAN	209	449	1,359	1,695	961	869	500	687	593	268	221	417
MAX	265	734	3,610	10,900	1,870	1,790	929	2,630	1,250	338	329	1,440
MIN	141	267	442	417	535	541	270	267	246	224	153	171
AC-FT	12,830	26,700	83,580	104,200	55,260	53,440	29,740	42,250	35,290	16,480	13,600	24,830
MEAN†	246	786	1,356	1,703	983	869	540	714	579	120	306	419
CFSM†	2.30	7.35	12.7	15.9	9.20	8.12	5.05	6.67	5.40	1.12	2.86	3.92
IN.†	2.65	8.20	14.6	18.4	9.57	9.36	5.64	7.70	6.04	1.29	3.30	4.37
AC-FT†	15,110	46,780	83,410	104,740	54,610	53,430	32,160	43,910	34,430	7,370	18,820	24,930

CAL YR 2003 TOTAL 272545 MEAN 747 MAX 7650 MIN 96 AC-FT† 540600 MEAN† 746 CFSM† 6.97 IN.† 94.66 AC-FT† 540060
WTR YR 2004 TOTAL 251193 MEAN 686 MAX 10900 MIN 141 AC-FT† 498200 MEAN† 718 CFSM† 6.71 IN.† 91.08 AC-FT† 519660

† Adjusted for change in contents in Bull Run Reservoir Number One and Bull Run Reservoir Number Two.



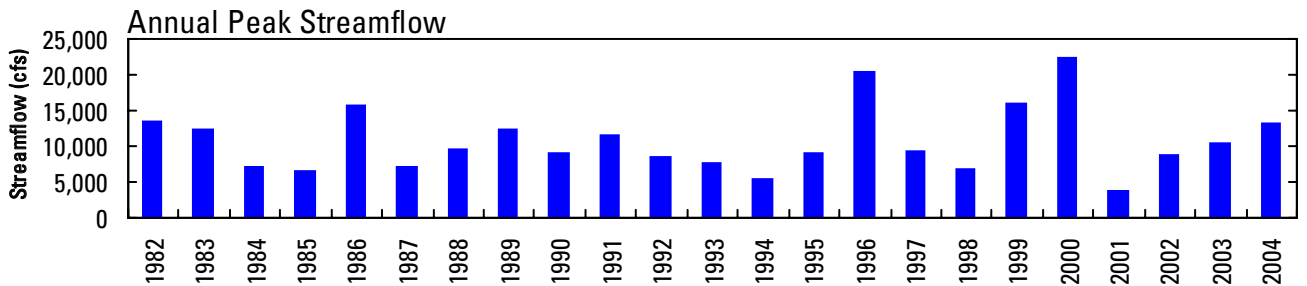
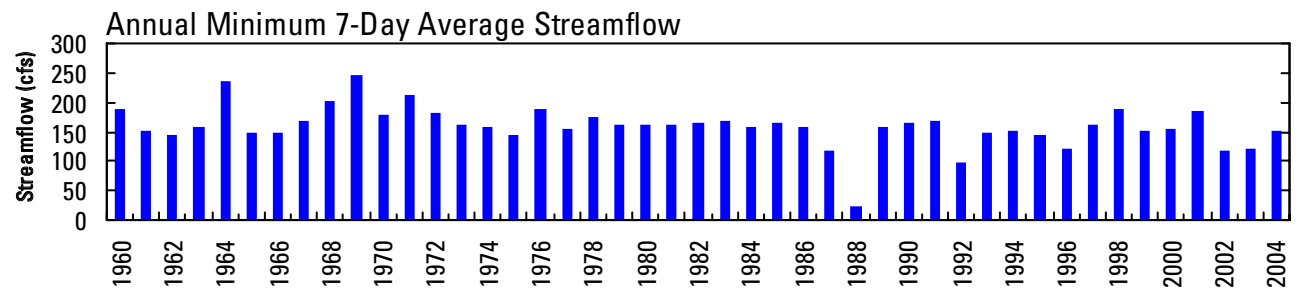
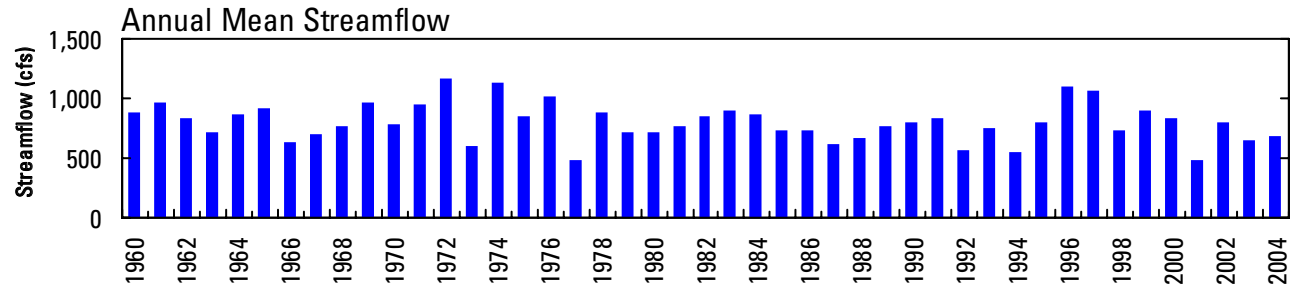
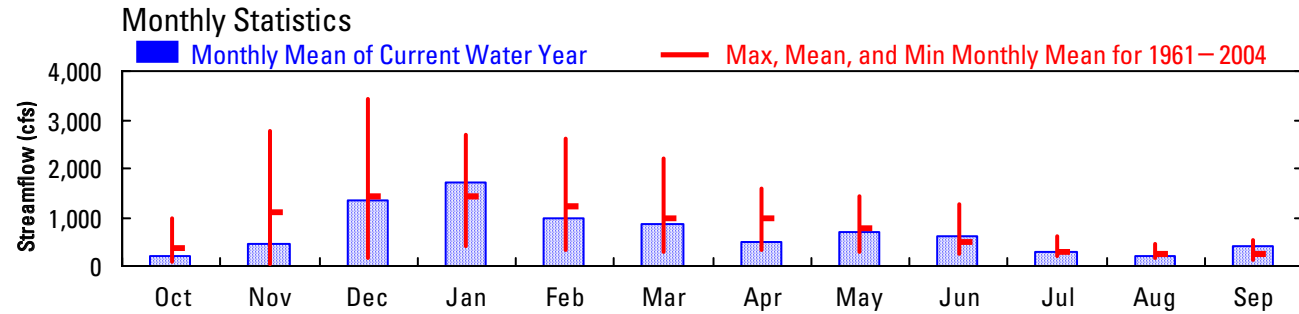
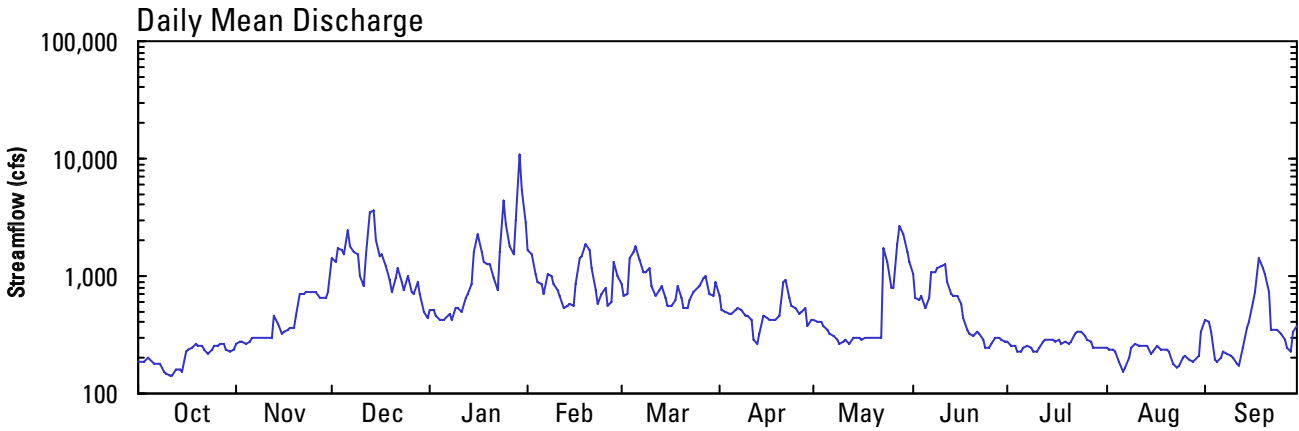
2004 Water Year
SANDY RIVER BASIN

14140001 BULL RUN RIVER NEAR BULL RUN, OR

Latitude: 45° 26 ' 15"
Multnomah County

Longitude: 122° 10 ' 42"
Datum: 567.90 feet

Hydrologic Unit Code: 17080001
Drainage Area: 107 square miles



14141500 LITTLE SANDY RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°24'56", long 122°10'13", in NE ¼ NE ¼ sec. 10, T.2 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on left bank 0.25 mi upstream from Portland General Electric Co. dam and tunnel from Sandy River, 3.0 mi east of Bull Run, and at mile 1.95.

DRAINAGE AREA.--22.3 mi².

PERIOD OF RECORD.--May to July 1911, October 1911 to March 1912, June 1912 to April 1913, July 1919 to current year. Monthly discharge only for some periods in water years 1911-13, published in WSP 1318.

REVISED RECORDS.--WSP 1154: 1949. WSP 1248: Drainage area. WSP 1288: 1912, 1920-21(M), 1922-23, 1931, 1945. WSP 1318: 1920. WDR OR-82-2: 1972(P), 1974-76(P), 1978-81(P).

GAGE.--Water-stage recorder. Elevation of gage is 720 ft above NGVD of 1929, from topographic map. May 23, 1911, to Apr. 29, 1913, nonrecording gage at site 0.85 mi downstream at different datum, 0.5 mi downstream from Sandy River diversion tunnel. July 1, 1919, to Sept. 30, 1931, water-stage recorder at site 0.1 mi downstream at different datum. Oct 1, 1931, to Nov. 3, 1967, at site 0.1 mi downstream at datum 712 ft above sea level. Nov. 4, 1967, to Aug. 8, 1971, water-stage recorder at site 0.1 mi downstream at datum 697.44 ft above NGVD of 1929 (Portland General Electric Co. bench mark).

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--85 years (water years 1920-2004), 143 ft³/s, 87.41 in/yr, 103,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,320 ft³/s Nov. 20, 1921, gage height, 9.18 ft, site and datum then in use, from rating curve extended above 2,200 ft³/s; minimum discharge, 8.0 ft³/s Aug. 20, Sept. 16, 17, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan 29	0200	*2,030	*6.10	No other peak greater than base discharge.			

Minimum discharge, 12 ft³/s, Oct. 1-6, Aug. 18-21.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	36	267	100	310	166	104	58	156	33	15	42
2	12	32	226	91	255	140	91	56	122	32	15	57
3	12	30	310	84	208	137	98	53	100	32	15	61
4	12	27	209	78	209	341	102	50	84	31	15	44
5	12	25	349	67	181	340	91	50	84	30	17	38
6	12	24	386	69	191	324	82	44	125	29	17	33
7	15	23	267	81	234	242	81	41	148	28	26	30
8	15	23	276	114	203	217	80	48	237	27	17	28
9	23	22	221	178	173	230	80	41	243	26	15	26
10	36	32	173	189	153	202	81	42	351	26	14	25
11	34	370	147	176	136	168	85	116	262	24	14	62
12	51	147	364	171	122	155	86	94	191	23	14	49
13	65	88	780	169	111	139	81	73	164	22	13	78
14	46	65	524	207	122	127	102	58	144	21	13	223
15	55	59	314	407	137	121	114	51	117	21	13	212
16	60	98	234	442	219	121	109	53	99	20	13	e180
17	41	319	260	283	271	119	88	46	88	20	13	e280
18	31	193	209	237	311	131	84	45	77	19	13	273
19	30	169	179	286	465	138	82	91	71	19	12	198
20	28	128	178	244	314	112	116	67	65	19	12	156
21	25	102	228	188	225	105	170	57	57	18	12	116
22	25	81	194	152	176	115	135	117	54	18	78	93
23	57	71	162	428	148	132	112	475	52	17	59	78
24	36	91	159	791	131	152	97	260	49	16	87	67
25	29	93	157	420	126	136	85	162	46	16	229	57
26	25	116	132	309	129	129	84	223	42	16	286	51
27	23	108	126	283	152	158	84	450	40	16	178	46
28	32	108	134	785	229	132	79	436	37	15	98	42
29	90	484	134	1,440	195	126	68	371	36	15	68	39
30	67	362	118	687	---	155	61	280	34	15	50	38
31	44	---	110	436	---	137	---	210	---	15	40	---
TOTAL	1,055	3,526	7,527	9,592	5,836	5,147	2,812	4,218	3,375	679	1,481	2,722
MEAN	34.0	118	243	309	201	166	93.7	136	112	21.9	47.8	90.7
MAX	90	484	780	1,440	465	341	170	475	351	33	286	280
MIN	12	22	110	67	111	105	61	41	34	15	12	25
AC-FT	2,090	6,990	14,930	19,030	11,580	10,210	5,580	8,370	6,690	1,350	2,940	5,400
CFSM	1.53	5.27	10.9	13.9	9.02	7.45	4.20	6.10	5.04	0.98	2.14	4.07
IN.	1.76	5.88	12.56	16.00	9.74	8.59	4.69	7.04	5.63	1.13	2.47	4.54

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 2004, BY WATER YEAR (WY)

	85.3	207	245	238	209	187	193	161	101	39.2	23.2	37.8
MEAN	85.3	207	245	238	209	187	193	161	101	39.2	23.2	37.8
MAX	271	588	585	589	452	407	325	328	268	121	96.1	184
(WY)	(1960)	(1956)	(1965)	(1953)	(1961)	(1932)	(1920)	(1945)	(1933)	(1983)	(1968)	(1927)
MIN	10.6	14.3	57.5	45.9	59.2	49.9	54.0	55.8	19.2	13.8	10.1	12.4
(WY)	(1988)	(1930)	(1977)	(1937)	(1977)	(1941)	(1941)	(1947)	(1992)	(1940)	(1940)	(1938)

SANDY RIVER BASIN

14141500 LITTLE SANDY RIVER NEAR BULL RUN, OR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1920 - 2004	
ANNUAL TOTAL	47,012		47,970			
ANNUAL MEAN	129		131		143	
HIGHEST ANNUAL MEAN					223	
LOWEST ANNUAL MEAN					87.6	
HIGHEST DAILY MEAN	1,050	Jan 31	1,440	Jan 29	3,500	Mar 31, 1931
LOWEST DAILY MEAN	10	Sep 3	12	Oct 1	8.0	Sep 16, 1940
ANNUAL SEVEN-DAY MINIMUM	10	Aug 31	12	Oct 1	9.0	Aug 16, 1940
ANNUAL RUNOFF (AC-FT)	93,250		95,150		103,900	
ANNUAL RUNOFF (CFSM)	5.78		5.88		6.43	
ANNUAL RUNOFF (INCHES)	78.42		80.02		87.41	
10 PERCENT EXCEEDS	314		283		301	
50 PERCENT EXCEEDS	80		91		96	
90 PERCENT EXCEEDS	13		17		18	

e Estimated



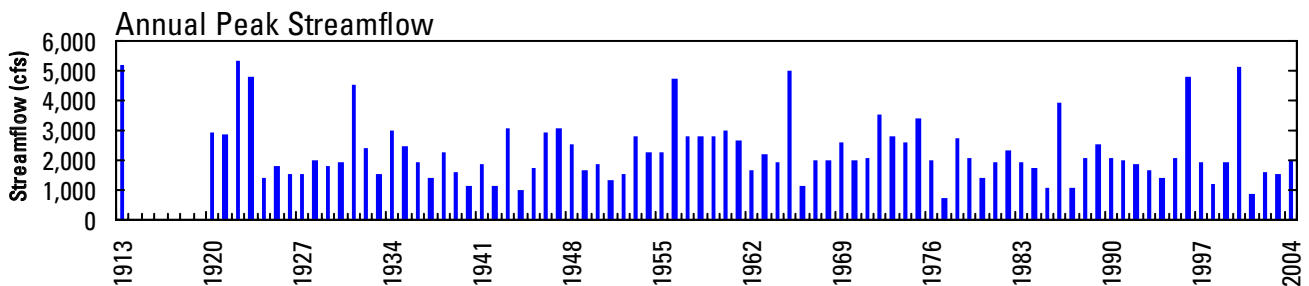
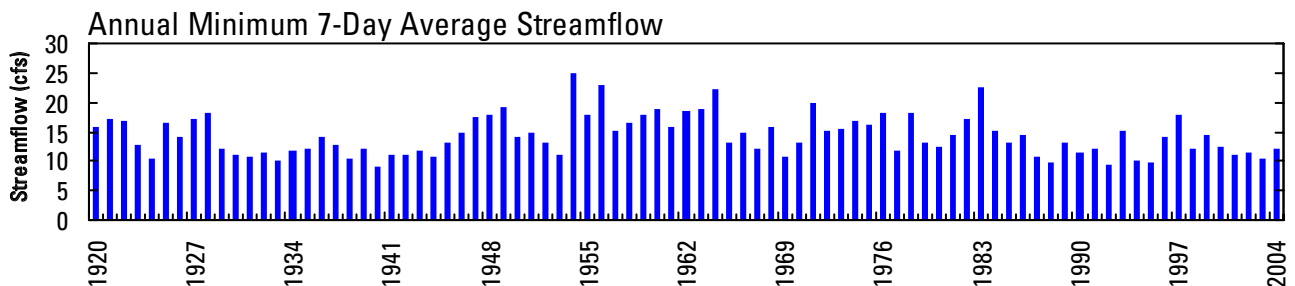
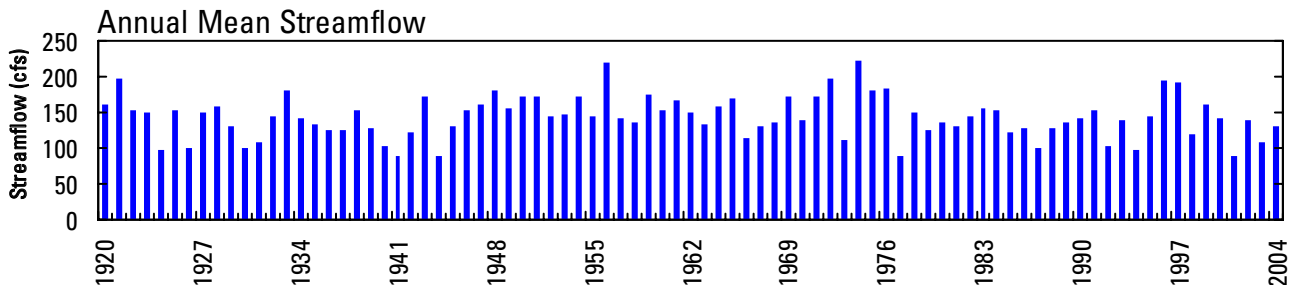
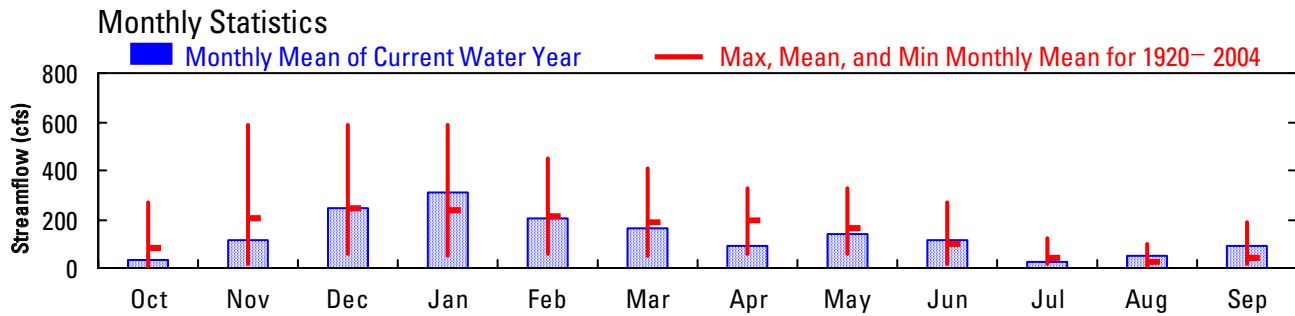
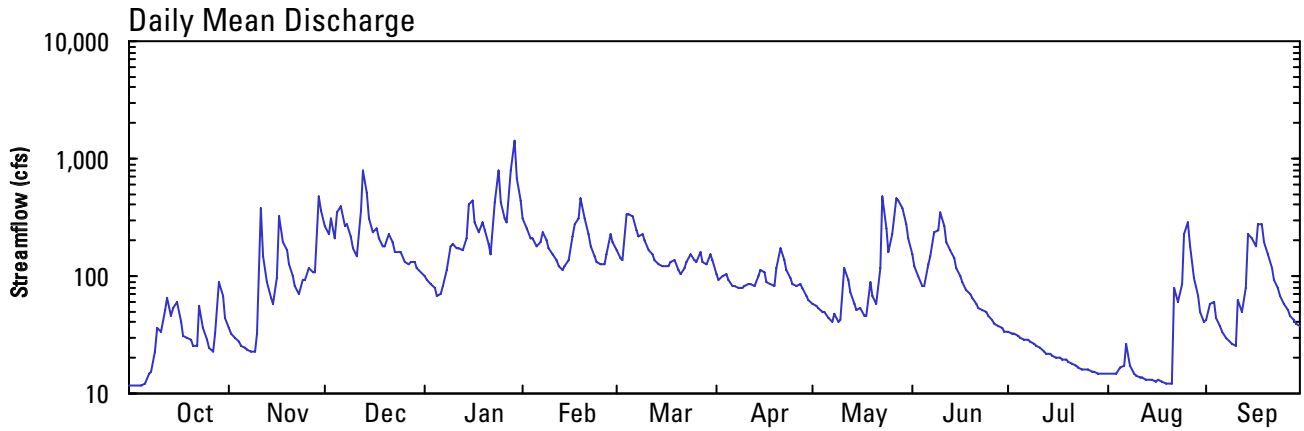
2004 Water Year
SANDY RIVER BASIN

14141500 LITTLE SANDY RIVER NEAR BULL RUN, OR

Latitude: 45° 24 ' 56"
Clackamas County

Longitude: 122° 10 ' 13"
Datum: 720.00 feet

Hydrologic Unit Code: 17080001
Drainage Area: 22.3 square miles



14142500 SANDY RIVER BELOW BULL RUN RIVER, NEAR BULL RUN, OR

LOCATION.--Lat 45°26'57", long 122°14'38", in SW $\frac{1}{4}$ sec.30, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, on left bank 0.1 mi downstream from Bull Run River, 0.2 mi downstream from Dodge Park, 400 ft downstream from city of Portland water conduit crossing Sandy River, and at mile 18.4.

DRAINAGE AREA.--436 mi².

PERIOD OF RECORD.--April 1910 to September 1914, October 1929 to September 1966, May 1984 to current year. Monthly discharge only for some periods during the 1911, 1912, and water years, published in WSP 1318.

REVISED RECORDS.--WDR OR-96-1: 1986 (P).

GAGE.--Water-stage recorder. Elevation of gage is 240 ft above NGVD of 1929, from topographic map. April 1910 to September 1914, staff gage at present site at different datum. October 1929 to September 1966, water-stage recorder at site 0.8 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good except for the period Jan. 29 to Feb. 6, which is fair. Flow regulated since 1915 by Bull Run Lake, since 1929 by Bull Run Reservoir Number One (station 14139000), and since 1961 by Bull Run Reservoir Number Two (station 14139900). Some fluctuation caused by Bull Run powerplant of Portland General Electric Company. Portland Water Bureau diverted 169,100 acre-ft from Bull Run River, of which 50,540 acre-ft were used for power generation by Portland General Electric Company and returned to Bull Run River. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--4 years (water years 1911-14) 2,321 ft³/s, 1,681,000 acre-ft/yr. 57 years (water years 1930-66, 1985-2004), 2,273 ft³/s, 1,647,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 84,400 ft³/s Dec. 22, 1964, gage height, 22.3 ft, site and datum then in use; minimum discharge, 45 ft³/s Sept. 26, 1962, minimum daily, 63 ft³/s Oct. 12, Nov. 9, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,200 ft³/s Jan. 29, gage height, 17.19 ft; minimum discharge, 247 ft³/s Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	323	619	3,890	1,610	5,420	2,460	2,190	1,510	2,870	799	500	861
2	251	565	3,470	1,510	4,570	2,140	1,880	1,530	2,200	778	503	881
3	277	559	4,280	1,420	3,580	2,130	1,830	1,550	2,000	753	470	856
4	297	589	3,670	1,320	3,350	3,500	1,890	1,500	1,900	736	475	592
5	305	511	3,820	1,170	3,040	4,010	1,860	1,430	1,790	705	489	551
6	330	518	5,200	1,170	2,770	4,510	1,840	1,280	2,010	691	471	524
7	339	527	4,060	1,250	3,280	3,570	1,860	1,190	2,910	724	541	493
8	344	587	3,630	1,520	3,120	3,150	1,790	1,240	3,490	678	467	478
9	435	543	3,340	2,000	2,740	3,380	1,700	1,190	3,780	654	468	478
10	566	538	2,610	2,140	2,480	3,400	1,710	1,140	3,800	639	470	485
11	549	2,060	2,220	2,110	2,300	2,850	1,740	1,610	3,600	629	473	713
12	563	1,510	3,720	2,270	2,020	2,560	1,700	1,480	2,890	620	477	622
13	633	1,200	9,660	2,360	1,910	2,580	1,700	1,370	2,500	632	475	746
14	516	1,040	8,960	2,890	1,970	2,510	1,790	1,220	2,340	647	485	1,860
15	613	805	5,240	4,880	1,990	2,290	1,920	1,210	2,120	652	474	1,800
16	883	954	3,930	6,190	2,500	2,120	1,840	1,200	1,840	619	470	2,170
17	635	2,330	3,910	4,460	3,640	2,130	1,790	1,200	1,560	632	460	2,300
18	554	2,030	3,330	3,700	4,100	2,260	1,720	1,140	1,390	622	441	3,180
19	590	1,870	2,810	3,720	5,120	2,520	1,670	1,240	1,300	633	430	2,630
20	607	1,670	2,470	3,700	4,280	2,170	1,880	1,250	1,220	607	437	2,250
21	573	1,710	2,690	3,010	3,370	1,940	2,570	1,160	1,170	575	433	1,760
22	525	1,540	2,800	2,490	2,660	1,970	2,570	1,210	1,130	544	895	1,210
23	597	1,460	2,370	4,870	2,230	2,220	2,110	3,950	1,160	549	1,060	1,060
24	611	1,630	2,250	11,200	2,300	2,470	1,910	3,240	1,130	552	843	978
25	530	1,660	2,530	7,070	2,270	2,450	1,780	2,270	1,050	564	1,730	924
26	475	1,900	2,100	5,040	2,040	2,550	1,700	2,300	980	561	1,810	834
27	459	1,660	2,000	4,320	2,050	2,700	1,770	4,600	923	530	1,600	779
28	539	1,580	2,350	7,640	3,070	2,690	1,830	5,930	876	533	1,080	719
29	1,000	4,230	2,150	21,700	2,740	2,310	1,540	5,510	820	525	828	727
30	858	3,830	1,700	13,000	---	2,400	1,440	4,250	885	513	716	740
31	679	---	1,590	7,930	---	2,580	---	3,520	---	507	722	---
TOTAL	16,456	42,225	108,750	139,660	86,910	82,520	55,520	64,420	57,634	19,403	21,193	34,201
MEAN	531	1,408	3,508	4,505	2,997	2,662	1,851	2,078	1,921	626	684	1,140
MAX	1,000	4,230	9,660	21,700	5,420	4,510	2,570	5,930	3,800	799	1,810	3,180
MIN	251	511	1,590	1,170	1,910	1,940	1,440	1,140	820	507	430	478
AC-FT	32,640	83,750	215,700	277,000	172,400	163,700	110,100	127,800	114,300	38,490	42,040	67,840

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2004, BY WATER YEAR (WY)

MEAN	1,098	3,015	3,786	3,464	3,396	3,012	3,267	2,765	1,774	793	496	520
MAX	4,086	7,882	10,700	8,955	8,793	6,426	5,176	5,357	4,887	1,756	731	1,947
(WY)	(1960)	(1996)	(1965)	(1953)	(1996)	(1932)	(1937)	(1949)	(1933)	(1955)	(1964)	(1959)
MIN	242	294	992	791	1,196	997	980	998	479	390	308	310
(WY)	(1988)	(1953)	(1953)	(1937)	(1993)	(1941)	(1941)	(1992)	(1992)	(1992)	(1992)	(1994)

14142500 SANDY RIVER BELOW BULL RUN RIVER, NEAR BULL RUN, OR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1930 - 2004	
ANNUAL TOTAL	763,938		728,892			
ANNUAL MEAN	2,093		1,992		2,273	
HIGHEST ANNUAL MEAN					3,456	
LOWEST ANNUAL MEAN					1,334	
HIGHEST DAILY MEAN	18,800	Jan 31	21,700	Jan 29	57,800	Dec 22, 1964
LOWEST DAILY MEAN	247	Sep 26	251	Oct 2	63	Oct 12, 1952
ANNUAL SEVEN-DAY MINIMUM	293	Sep 21	303	Oct 1	228	Oct 19, 1942
ANNUAL RUNOFF (AC-FT)	1,515,000		1,446,000		1,647,000	
10 PERCENT EXCEEDS	4,310		3,810		4,680	
50 PERCENT EXCEEDS	1,510		1,680		1,600	
90 PERCENT EXCEEDS	366		510		404	



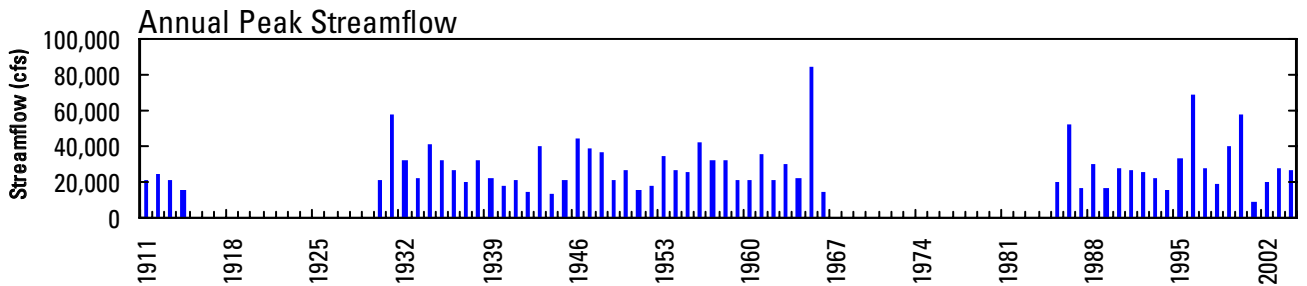
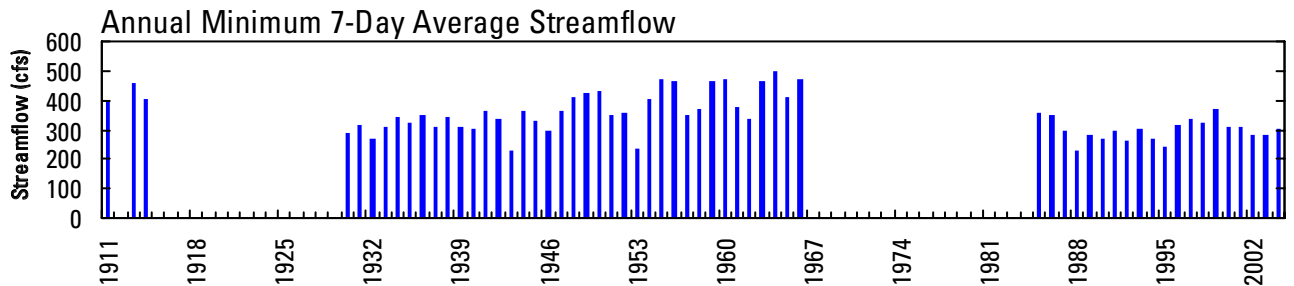
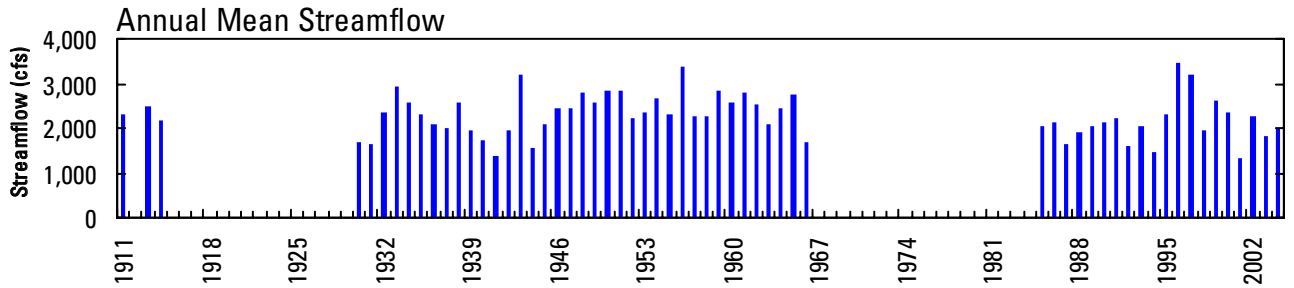
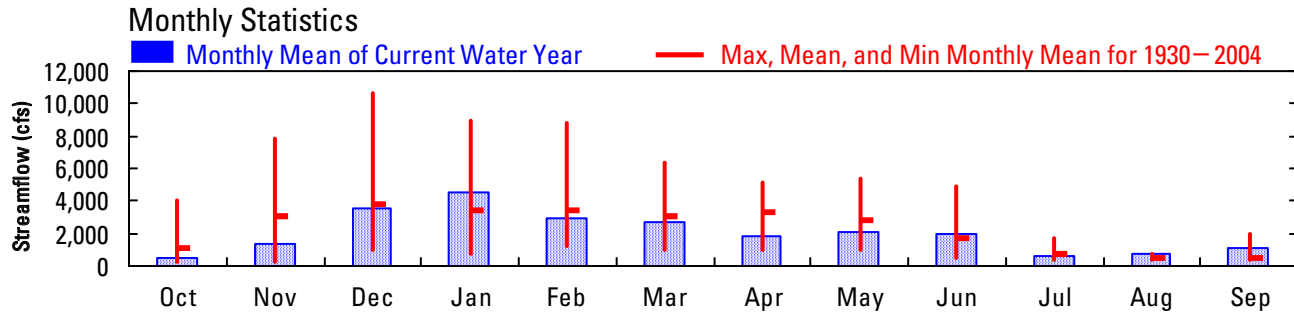
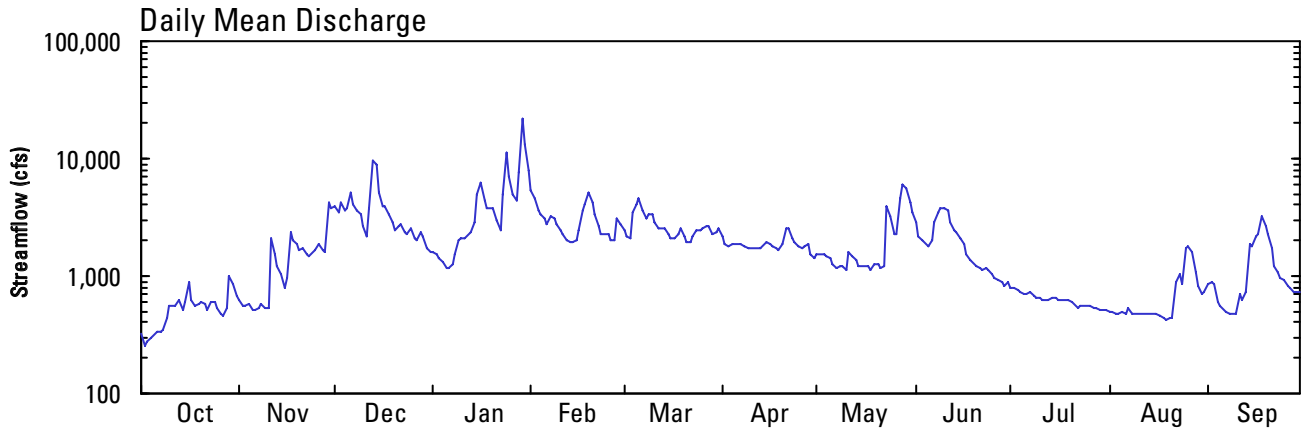
2004 Water Year
SANDY RIVER BASIN

14142500 SANDY RIVER BLW BULL RUN RIVER, NR BULL RUN, OR

Latitude: 45° 26 ' 57"
Clackamas County

Longitude: 122° 14 ' 38"
Datum: 240.00 feet

Hydrologic Unit Code: 17080001
Drainage Area: 436 square miles



SANDY RIVER BASIN

14142800 BEAVER CREEK AT TROUTDALE, OR—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 2000 - 2004	
ANNUAL TOTAL	10,835.77		8,087.79			
ANNUAL MEAN	29.7		22.1		22.2	
HIGHEST ANNUAL MEAN					27.7	
LOWEST ANNUAL MEAN					11.6	
HIGHEST DAILY MEAN	612	Jan 31	424	Dec 13	612	Jan 31, 2003
LOWEST DAILY MEAN	0.15	Oct 4	0.15	Oct 4	0.06	Sep 11, 2002
ANNUAL SEVEN-DAY MINIMUM	0.19	Sep 29	0.30	Jul 24	0.08	Sep 6, 2002
ANNUAL RUNOFF (AC-FT)	21,490		16,040		16,110	
ANNUAL RUNOFF (CFSM)	3.33		2.48		2.50	
ANNUAL RUNOFF (INCHES)	45.24		33.77		33.90	
10 PERCENT EXCEEDS	74		54		58	
50 PERCENT EXCEEDS	6.9		6.2		6.2	
90 PERCENT EXCEEDS	0.47		0.66		0.60	



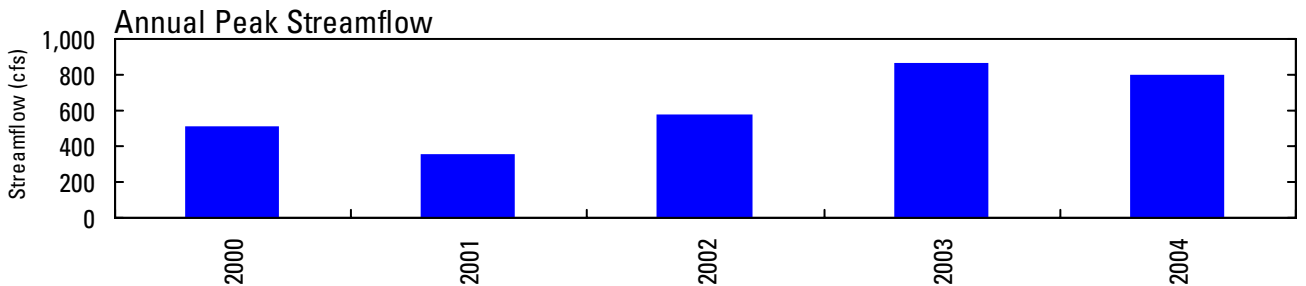
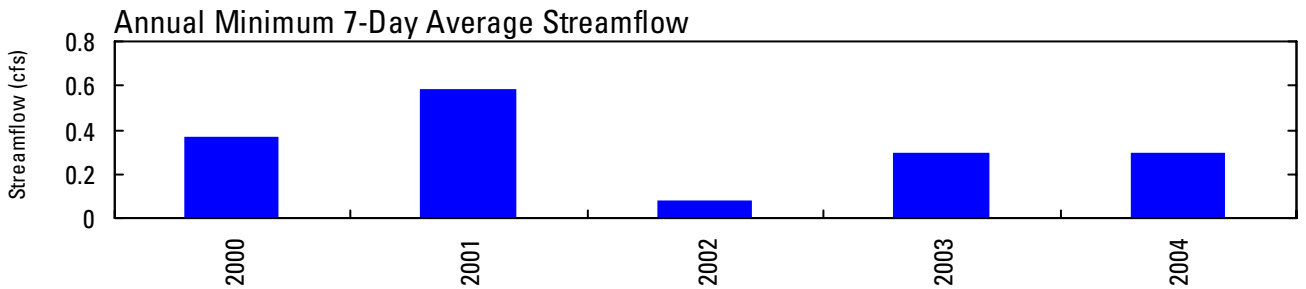
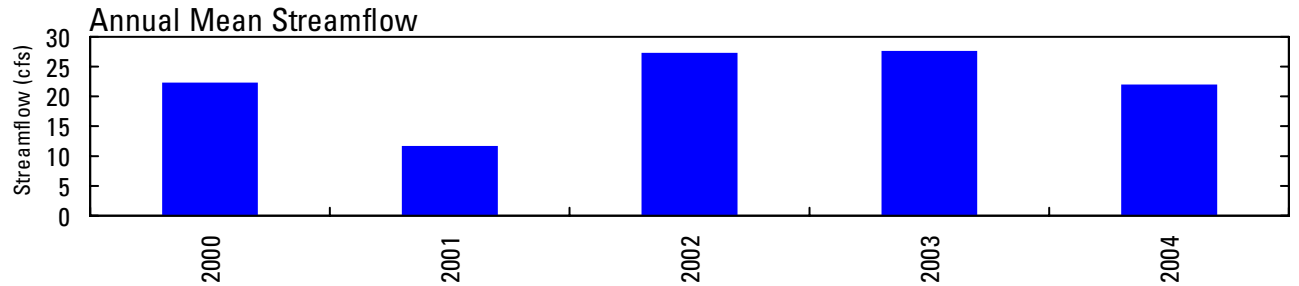
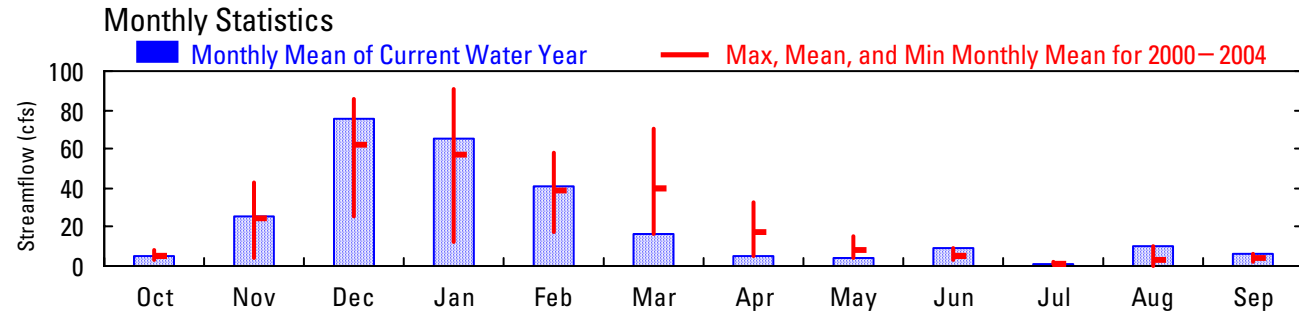
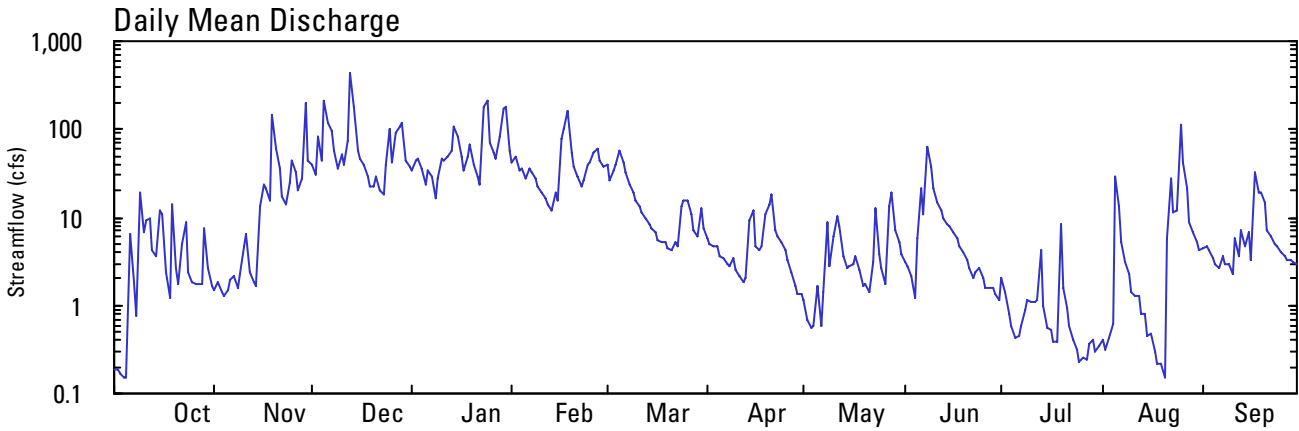
2004 Water Year
SANDY RIVER BASIN

14142800 BEAVER CREEK AT TROUTDALE, OR

Latitude: 45° 31 ' 10"
Multnomah County

Longitude: 122° 23 ' 16"
Datum: 195 feet

Hydrologic Unit Code: 17080001
Drainage Area: 8.91 square miles



COLUMBIA RIVER MAIN STEM

14144700 COLUMBIA RIVER AT VANCOUVER, WA

LOCATION.--Lat 45°37'15", long 122°40'20", in NE ¼ NW ¼ sec.34, T.2 N., R.1 E., Clark County, Hydrologic Unit 17080001, near right bank in control house of Interstate Highway 5 bridge at south edge of Vancouver, 5.0 mi upstream from Willamette River, and at mile 106.5.

DRAINAGE AREA.--241,000 mi², approximately.

PERIOD OF RECORD.--October 1963 to June 1970 (discharge), February 1998 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of the gage is Columbia River Datum, add 1.82 feet to correct to NGVD of 1929. Prior to February 1998, datum of gage was NGVD of 1929.

REMARKS.--Considerable regulation by many large reservoirs. Diurnal fluctuations caused by powerplant operations at Bonneville Dam and tides. Gage maintained by National Weather Service.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 27.60 ft Dec. 25, 1964, present datum, (backwater from Willamette River).

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a stage of 34.4 ft, present datum, from information provided by U.S. Army Corps of Engineers. Flood of June 13, 14, 1948, reached a stage of 31.0 ft, present datum, from National Weather Service records.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 10.23 ft Jan. 30; minimum recorded, -0.31 ft Oct. 5.

GAGE HEIGHT, FEET
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	3.93	0.69	2.04	3.22	1.10	2.16	4.52	2.48	3.47	6.64	4.91	5.87
2	4.27	0.58	2.02	3.19	0.34	1.84	4.55	2.33	3.35	5.73	3.97	4.90
3	4.12	1.06	2.10	3.87	1.46	2.55	4.81	2.46	3.48	5.72	3.95	4.64
4	3.65	0.28	1.65	3.83	1.06	2.36	4.73	2.48	3.42	6.13	4.35	5.31
5	3.14	-0.31	1.36	4.17	1.38	2.61	5.81	2.82	4.17	5.71	4.20	4.95
6	3.15	-0.20	1.49	4.09	1.43	2.62	6.25	3.70	5.18	5.76	4.23	5.01
7	3.89	0.31	2.09	4.50	1.59	2.85	6.35	4.69	5.42	7.02	4.71	5.84
8	4.65	0.94	2.73	4.90	1.77	3.10	5.91	4.60	5.25	6.80	5.43	5.97
9	4.72	1.53	3.06	5.02	1.78	3.16	5.97	4.74	5.34	7.08	4.94	5.91
10	4.50	1.55	2.99	5.01	1.75	3.11	5.91	4.55	5.34	6.51	5.09	5.80
11	4.58	1.15	2.67	4.88	1.86	3.17	5.94	4.50	5.30	6.22	4.68	5.45
12	4.52	1.56	2.90	4.48	1.64	2.78	6.15	4.79	5.51	5.77	4.57	5.25
13	4.10	0.81	2.19	4.34	1.39	2.61	6.75	5.23	5.90	5.83	4.36	5.24
14	3.99	0.94	2.13	4.28	1.39	2.71	7.22	6.07	6.77	5.71	4.12	4.85
15	4.41	0.89	2.30	3.91	1.47	2.72	7.26	5.97	6.81	5.86	3.91	4.81
16	4.22	1.11	2.51	4.54	1.35	2.90	7.55	6.15	7.06	6.31	4.23	5.23
17	3.92	1.65	2.70	4.10	2.07	3.03	7.80	6.13	7.10	6.18	4.19	5.16
18	3.53	1.06	2.15	4.60	1.86	3.15	7.22	6.14	6.59	6.33	4.10	4.97
19	3.10	0.22	1.66	5.18	2.46	3.59	7.10	5.83	6.46	6.70	4.25	5.18
20	3.42	-0.08	1.87	5.25	2.14	3.47	6.79	5.38	6.09	6.78	4.31	5.24
21	3.86	0.78	2.46	5.51	2.27	3.61	7.06	5.29	6.14	6.81	4.58	5.34
22	4.32	1.15	2.81	5.55	2.73	3.91	6.98	4.73	5.69	6.35	3.97	4.91
23	4.41	1.14	2.79	5.99	2.87	4.18	7.44	4.59	5.68	6.91	3.91	5.19
24	5.05	1.62	3.21	6.23	2.95	4.22	7.81	4.95	6.15	7.64	5.12	6.37
25	---	2.08	---	6.58	2.50	4.26	7.40	5.03	6.14	6.93	5.54	6.28
26	5.59	1.98	3.39	5.94	---	---	6.39	4.42	5.41	6.65	5.00	5.78
27	5.78	2.11	3.54	5.05	2.37	3.42	5.81	4.02	4.84	6.69	5.54	6.25
28	5.83	2.22	3.64	5.59	1.94	3.58	5.50	3.99	4.68	7.04	5.57	6.31
29	5.36	2.15	3.41	4.82	2.63	3.89	5.89	4.31	5.06	9.30	7.04	8.23
30	4.60	2.21	3.26	4.56	2.62	3.62	6.10	4.73	5.47	10.23	9.30	9.83
31	3.63	1.54	2.49	---	---	---	6.16	5.17	5.70	10.07	9.46	9.78
MONTH	5.83	-0.31	2.52	6.58	0.34	3.14	7.81	2.33	5.45	10.23	3.91	5.80

14144700 COLUMBIA RIVER AT VANCOUVER, WA—Continued

GAGE HEIGHT, FEET—CONTINUED
WATER YEAR OCTOBER 2003 TO SEPTEMBER 2004

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	9.70	7.58	8.65	4.62	2.99	3.72	4.67	2.78	3.90	4.53	2.61	3.79
2	8.43	7.49	7.90	4.33	2.86	3.70	4.39	2.75	3.53	5.21	3.12	4.05
3	8.03	6.96	7.72	4.86	2.86	3.83	5.10	2.73	3.82	5.45	3.00	4.17
4	7.24	6.31	6.83	5.38	3.33	4.23	5.12	3.04	4.00	6.36	3.44	5.00
5	6.83	5.93	6.34	6.33	3.29	4.53	5.06	2.63	3.73	7.21	4.80	6.10
6	6.98	5.29	6.06	5.78	4.02	4.83	5.51	2.81	3.97	7.86	5.76	6.60
7	6.63	5.10	5.84	5.42	3.59	4.57	5.74	2.93	4.21	7.74	5.64	6.45
8	6.08	4.69	5.40	5.19	3.13	4.11	6.39	3.69	4.73	7.06	5.02	5.90
9	5.23	3.81	4.52	5.33	3.07	4.05	6.14	3.45	4.53	6.87	4.85	5.78
10	5.15	3.64	4.32	5.11	2.83	3.77	5.38	2.83	3.87	5.87	4.18	5.03
11	5.19	3.32	4.16	5.22	2.89	3.79	5.05	2.71	3.75	5.64	4.64	5.16
12	5.08	3.08	3.92	5.50	2.94	3.91	4.71	2.64	3.52	5.99	4.95	5.48
13	5.29	2.97	3.83	4.97	2.65	3.49	4.78	2.72	3.76	6.21	4.96	5.68
14	5.51	2.91	3.85	4.52	2.06	3.21	5.05	2.90	4.04	5.77	4.09	4.82
15	5.63	2.85	3.88	4.06	1.86	2.82	5.58	3.55	4.73	5.94	4.11	5.03
16	5.65	2.97	4.00	4.59	2.14	3.37	6.11	4.25	5.20	5.87	3.92	4.71
17	6.01	3.05	4.47	4.76	2.36	3.63	5.99	4.38	5.14	6.10	3.88	5.16
18	7.13	3.71	5.42	5.95	2.35	4.14	6.08	3.81	4.82	6.28	4.52	5.32
19	7.29	4.81	5.90	5.67	3.72	4.63	5.71	3.46	4.55	5.98	4.29	5.12
20	7.55	5.70	6.46	5.44	3.74	4.56	6.34	3.99	5.01	6.55	4.97	5.66
21	6.35	4.41	5.44	5.10	2.72	3.96	6.62	4.48	5.70	6.68	5.38	5.93
22	6.01	4.03	4.96	5.46	2.92	4.24	6.76	5.30	5.91	6.27	4.66	5.47
23	5.79	3.76	4.75	5.53	3.22	4.29	5.66	3.84	4.73	6.38	5.08	5.65
24	5.70	3.66	4.76	6.18	3.48	4.78	4.89	3.22	4.03	6.25	5.25	5.70
25	5.96	4.12	4.99	5.32	3.33	4.40	4.36	2.78	3.59	5.85	4.53	5.22
26	6.09	3.91	4.86	5.66	3.89	4.65	3.99	2.38	3.30	5.41	4.49	5.02
27	5.42	3.60	4.40	5.57	3.51	4.47	3.80	2.38	3.14	6.45	5.38	5.75
28	5.13	3.44	4.33	4.30	2.33	3.41	3.48	2.13	2.99	7.40	6.45	7.07
29	4.35	2.72	3.60	3.78	2.67	3.11	3.64	2.28	3.14	8.10	7.07	7.76
30	---	---	---	4.39	2.58	3.62	3.93	2.42	3.34	8.45	6.96	7.85
31	---	---	---	3.98	2.87	3.42	---	---	---	8.28	6.97	7.92
MONTH	9.70	2.72	5.23	6.33	1.86	3.98	6.76	2.13	4.16	8.45	2.61	5.62
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
1	8.64	7.15	7.78	6.67	3.40	4.74	6.29	2.47	4.09	5.80	2.84	4.32
2	8.83	7.26	8.01	7.00	3.92	5.09	5.65	2.07	3.65	5.61	2.92	4.11
3	8.74	7.20	7.81	6.82	3.05	4.60	5.11	1.75	3.31	4.83	2.23	3.71
4	7.90	6.25	7.05	6.05	2.85	4.10	4.98	1.94	3.29	4.04	1.17	2.53
5	8.67	6.97	7.69	5.55	2.54	3.88	4.75	1.38	3.03	3.56	0.59	1.72
6	8.29	6.50	7.34	5.28	2.97	4.03	4.42	1.03	2.61	3.23	0.50	1.43
7	8.13	6.74	7.30	---	2.75	---	4.21	0.60	2.05	3.19	0.14	1.29
8	7.48	6.48	6.99	4.98	2.50	3.61	3.87	0.36	1.57	3.11	0.08	1.34
9	7.25	6.11	6.74	4.99	2.46	3.46	3.53	---	---	2.99	-0.11	1.45
10	6.93	5.88	6.42	4.95	2.85	3.51	3.75	0.67	1.94	3.40	0.51	2.09
11	6.82	5.96	6.33	4.89	2.02	3.07	3.97	1.16	2.56	4.77	1.77	3.05
12	7.35	6.46	6.90	4.63	2.06	2.99	---	---	---	4.59	1.31	2.78
13	7.50	6.25	6.95	5.19	2.71	3.64	---	---	---	4.57	1.52	2.97
14	7.12	5.94	6.47	4.80	1.86	3.26	---	---	---	4.63	1.50	3.00
15	7.02	5.51	6.17	5.31	2.55	3.70	---	---	---	5.26	1.88	3.38
16	6.90	5.73	6.20	4.98	1.61	3.15	---	---	---	5.00	1.80	3.36
17	6.79	4.78	5.67	5.06	1.87	3.22	---	---	---	5.47	1.65	3.17
18	6.10	4.42	5.19	5.02	1.48	3.05	---	---	---	5.72	2.09	3.52
19	6.38	4.73	5.45	4.65	1.36	2.88	---	---	---	5.38	2.25	3.66
20	5.76	3.33	4.63	4.85	1.68	3.16	4.77	1.81	3.14	5.27	1.99	3.10
21	5.66	3.80	4.81	4.34	1.19	2.80	4.96	1.64	2.98	4.75	1.54	2.76
22	5.56	4.05	4.81	3.85	0.95	2.50	4.69	1.43	2.89	4.27	1.07	2.31
23	5.14	3.68	4.45	4.27	0.76	2.28	4.56	1.01	2.32	4.35	1.05	2.49
24	4.86	2.62	3.76	4.32	1.11	2.53	4.56	1.37	2.52	4.44	1.80	2.97
25	4.49	2.13	3.13	4.32	0.43	1.99	4.88	1.73	2.84	4.56	1.33	2.92
26	4.74	2.54	3.44	4.19	0.97	2.00	4.96	1.48	3.12	4.92	1.55	3.12
27	5.21	2.63	3.76	5.02	1.65	2.84	5.72	2.64	3.96	4.71	1.54	3.15
28	5.42	3.14	3.93	5.34	1.79	3.04	6.16	3.07	4.31	5.12	2.09	3.53
29	6.01	3.13	4.22	5.62	1.98	3.44	5.88	2.74	4.06	5.00	1.90	3.36
30	6.05	3.30	4.45	5.98	2.34	3.83	5.70	2.78	4.19	5.23	1.80	3.29
31	---	---	---	6.19	2.25	3.97	5.92	3.32	4.64	---	---	---
MONTH	8.83	2.13	5.79	7.00	0.43	3.35	6.29	0.36	3.14	5.80	-0.11	2.86