Water-Data Report 2008

12439500 OKANOGAN RIVER AT OROVILLE, WA

Upper Columbia Basin
Okanogan Subbasin

LOCATION.--Lat 48°55′51″, long 119°25′09″ referenced to North American Datum of 1927, in SE ¼ SW ¼ sec.27, T.40 N., R.27 E., Okanogan County, WA, Hydrologic Unit 17020006, base gage on left bank in Oroville, 20 ft downstream from Burlington Northern trestle, 0.5 mi downstream from Tonasket Creek, 1.7 mi downstream from Osoyoos Lake, 3.2 mi upstream from Similkameen River, and at mile 77.3. The auxillary gage is located 0.5 mi downstream at mile 76.8.

DRAINAGE AREA.--3,195 mi^2.

SURFACE-WATER RECORDS

PERIOD OF RECORD.--October 1942 to current year.

REVISED RECORDS.--WDR WA-75-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Oct. 26, 1944, nonrecording gage at Zosel Mill dam 200 ft upstream, Oct. 26, 1944, to Mar. 6, 1948, water-stage recorder on railroad trestle 20 ft upstream, both at same datum. Auxiliary water-stage recorder 0.5 mi downstream used during high-water periods; May 15, 1946, to Apr. 9, 1948, nonrecording gage at same site, both at datum 900.00 ft above NGVD of 1929. To convert to 1947 joint adjustment of U.S. Coast and Geodetic Survey and Geodetic Survey of Canada, subtract 0.26 ft.

COOPERATION.--This station is maintained by the United States under agreement with Canada.

REMARKS.--No estimated daily discharges. Records good except for backwater periods May 16 to June 24 which are fair. Diversions made to irrigate approximately 44,000 acres in Canada and minor diversions in the United States upstream from station. Natural regulation in several large lakes and artificial regulation in Okanagan Lake 46.7 mi upstream for flood control and irrigation; also regulated by Zosel dam at Oroville, 500 ft upstream from gage. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE FOR PERIOD OF RECORD.--66 years (water years 1943-2008), 677 ft^3/s, 490,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,770 ft^3/s June 7, 1997; maximum elevation, 916.89 ft June 2, 1972, at datum then in use, backwater from Similkameen River; minimum daily discharge, -2,270 ft^3/s reverse flow May 29, 1948; minimum elevation, 903.98 ft Mar. 1, 1948, at datum then in use.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,160 ft^3/s, June 11; maximum elevation, 912.48 ft, May 21, result of backwater from Similkameen River and regulation at Zosel Dam; minimum discharge, 97 ft^3/s, Mar. 11; minimum elevation 905.91 ft, result of regulation at Zosel Dam.

12439500 OKANOGAN RIVER AT OROVILLE, WA—Continued

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

Day	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
1	434	371	284	215	209	240	218	480	1,660	875	211	882
2	486	370	281	215	214	240	265	479	1,260	870	210	882
3	486	364	283	216	215	216	336	476	1,060	872	210	884
4	482	361	284	217	215	201	434	473	1,150	873	210	883
5	441	358	300	219	233	198	521	473	848	932	210	883
6	416	354	312	217	260	148	556	474	620	969	208	885
7	417	352	312	215	270	108	548	484	661	953	206	884
8	417	348	310	215	280	108	557	497	659	621	206	884
9	416	344	303	219	286	108	557	496	600	421	206	886
10	417	344	301	220	286	108	557	495	711	395	206	882
11	425	340	300	220	286	108	557	497	1,700	229	206	882
12	425	334	291	221	286	108	556	498	2,100	126	250	793
13	389	333	279	225	286	105	557	497	2,090	129	345	638
14	370	333	276	224	286	105	558	517	1,940	155	365	716
15	377	328	275	225	283	105	557	584	1,760	197	311	963
16	380	327	275	223	281	105	546	714	1,460	219	233	978
17	385	322	262	220	281	107	504	964	944	222	206	746
18	390	322	255	220	281	108	382	1,090	1,080	225	206	548
19	391	314	255	222	281	108	328	552	847	221	188	480
20	387	312	255	225	281	108	328	433	754	220	168	553
21	387	312	251	225	281	109	311	556	757	221	222	737
22	387	294	250	210	281	110	301	1,260	748	222	393	798
23	384	286	250	205	277	110	301	2,030	749	222	829	726
24	382	286	250	201	275	110	302	2,020	759	220	1,150	602
25	382	286	250	201	275	110	304	1,610	751	216	1,150	550
26	382	279	250	204	275	111	303	1,080	790	215	1,100	422
27	377	288	249	206	276	113	305	867	871	215	1,030	324
28	376	290	231	206	253	113	321	905	868	215	879	328
29	376	287	219	206	240	113	366	1,210	870	210	810	328
30	376	286	216	206	---	115	458	1,380	875	211	886	386
31	371	---	215	206	---	136	---	1,580	---	211	885	---
Total	12,511	9,725	8,324	6,669	7,733	3,992	12,694	25,671	31,942	12,102	13,895	21,333
Mean	404	324	269	215	267	129	423	828	1,065	390	448	711
Max	486	371	312	225	286	240	558	2,030	2,100	969	1,150	978
Min	370	279	215	201	209	105	218	433	600	126	168	324
Ac-ft	24,820	19,290	16,510	13,230	15,340	7,920	25,180	50,920	63,360	24,000	27,560	42,310

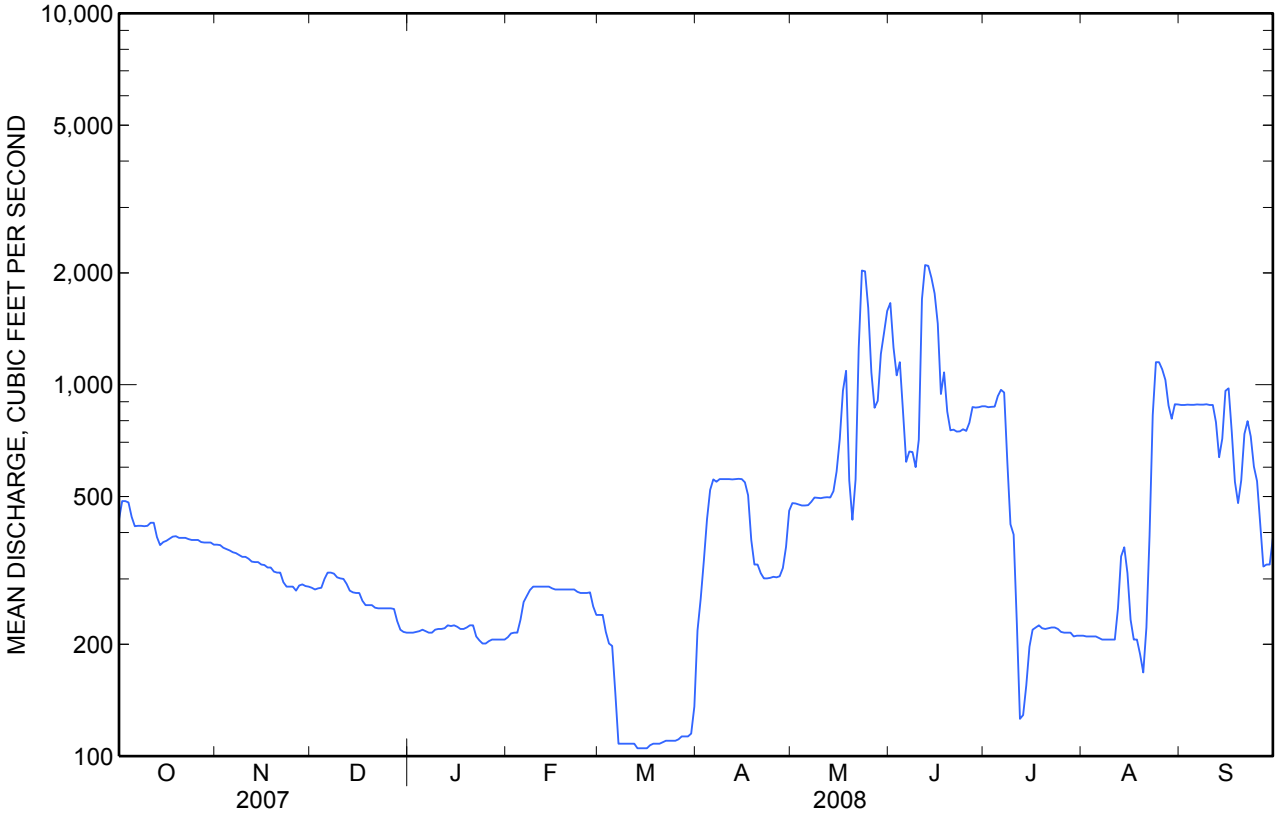
STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2008, BY WATER YEAR (WY)

	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Mean	502	472	455	476	568	629	754	1,139	1,136	797	635	564
Max	1,430	1,551	1,404	1,190	1,214	1,918	2,475	2,870	3,165	2,598	2,570	2,279
(WY)	(1949)	(1949)	(1949)	(1949)	(1997)	(1983)	(1983)	(1983)	(1997)	(1997)	(1997)	(1997)
Min	179	148	146	162	140	74.1	115	180	111	126	150	81.7
(WY)	(1989)	(1971)	(2007)	(1968)	(1971)	(1977)	(1968)	(1992)	(1992)	(1947)	(1963)	(1944)

12439500 OKANOGAN RIVER AT OROVILLE, WA—Continued

SUMMARY STATISTICS

	Calendar Year 2007		Water Year 2008		Water Years 1943 - 2008	
Annual total	144,795		166,591			
Annual mean	397		455		677	
Highest annual mean					1,691	1997
Lowest annual mean					213	1988
Highest daily mean	1,200	Apr 10	2,100	Jun 12	3,680	Jun 14, 1972
Lowest daily mean	104	Jul 11	105	Mar 13	-2,270	May 29, 1948
Annual seven-day minimum	108	Jul 11	106	Mar 11	-1,080	May 24, 1948
Annual runoff (ac-ft)	287,200		330,400		490,700	
10 percent exceeds	746		884		1,470	
50 percent exceeds	337		318		490	
90 percent exceeds	162		203		199	



12439500 OKANOGAN RIVER AT OROVILLE, WA—Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: April 1986 to September 1987 (at base gage), March 2005 to July 2007 (at auxillary gage), July 2007 to current year (at base gage).

INSTRUMENTATION.--Water temperature recorder with 15-minute logging interval since March, 2005.

REMARKS.--Records excellent except for May 12-21, Aug. 7-12, Aug. 27 to Sept. 30, good; May 22-28, July 29 to Aug. 6, fair, and May 29 to July 28, which are poor.

EXTREMES FOR PERIOD OF DAILY RECORD.--
WATER TEMPERATURE: Maximum, 30.1°C, July 23, 2006; minimum, 0.0°C, occurs during most winters.

EXTREMES FOR CURRENT YEAR.--
WATER TEMPERATURE: Maximum, 26.8°C, Aug. 17, 18; minimum, 0.2°C, Dec. 31, Jan. 1, Jan, 15, 16.

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
[e, estimated]

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		October			November			December			January	
1	16.6	15.4	15.9	10.4	9.5	10.0	3.4	2.7	2.9	0.6	0.2	0.4
2	16.0	15.0	15.5	10.3	9.2	9.6	3.3	2.8	3.0	0.9	0.3	0.6
3	15.9	14.9	15.4	9.8	9.4	9.6	4.3	3.2	3.8	0.9	0.5	0.7
4	15.6	14.5	15.0	9.9	9.2	9.6	4.8	4.1	4.5	1.1	0.6	0.9
5	15.2	13.9	14.6	9.7	8.8	9.3	4.6	3.9	4.1	1.4	0.9	1.1
6	15.2	13.7	14.5	9.6	8.9	9.3	4.1	3.6	3.8	1.1	0.4	0.7
7	15.0	14.1	14.6	9.6	9.1	9.3	3.6	2.2	2.8	1.2	0.7	1.0
8	14.9	13.8	14.5	9.4	9.1	9.2	2.3	1.1	1.5	1.1	0.6	0.9
9	14.8	13.9	14.4	9.8	9.0	9.3	1.9	1.2	1.6	1.3	0.8	1.0
10	14.9	14.4	14.6	10.0	9.3	9.6	2.4	1.6	2.0	1.2	0.4	0.8
11	14.8	13.9	14.4	9.5	8.6	8.9	2.0	1.6	1.8	1.4	0.8	1.1
12	14.8	14.0	14.4	8.9	8.4	8.6	2.4	1.8	2.1	1.2	0.8	1.0
13	14.6	13.3	14.0	8.8	8.0	8.4	2.3	2.0	2.1	1.5	0.9	1.2
14	14.6	13.7	14.3	8.5	7.6	7.8	2.4	1.9	2.1	1.3	0.8	1.1
15	14.4	13.2	13.8	8.2	7.6	7.9	2.3	1.7	2.0	0.9	0.2	0.6
16	14.5	13.9	14.2	8.7	7.9	8.3	2.3	1.9	2.1	0.7	0.2	0.5
17	14.0	12.9	13.3	8.6	7.9	8.2	2.3	1.8	2.1	0.8	0.3	0.6
18	13.3	12.3	12.6	8.0	7.4	7.7	2.2	1.8	2.0	1.1	0.6	0.8
19	13.2	12.4	12.7	7.6	6.7	7.2	2.5	2.0	2.2	1.1	0.6	0.9
20	12.8	11.9	12.3	6.8	6.0	6.4	2.6	2.1	2.3	1.5	0.8	1.1
21	12.5	11.4	11.8	6.5	5.9	6.2	2.2	1.5	1.8	0.9	0.3	0.6
22	12.4	11.5	12.0	6.2	5.1	5.7	1.9	1.3	1.5	0.9	0.4	0.6
23	12.7	11.6	12.2	5.9	5.2	5.5	1.9	1.5	1.7	0.8	0.3	0.6
24	12.6	11.7	12.1	5.6	5.2	5.4	1.8	1.4	1.6	0.8	0.3	0.5
25	12.2	11.3	11.8	5.4	4.9	5.2	1.5	0.8	1.0	0.7	0.3	0.5
26	11.8	10.7	11.3	5.0	4.6	4.8	1.5	1.0	1.2	0.7	0.3	0.5
27	11.5	10.6	11.1	5.2	4.5	4.9	1.1	0.6	0.9	0.8	0.4	0.6
28	11.4	10.9	11.1	4.9	4.0	4.3	1.2	0.7	1.0	0.8	0.4	0.6
29	11.0	10.5	10.8	4.6	4.1	4.3	1.3	0.9	1.1	0.7	0.4	0.5
30	10.8	10.1	10.5	4.3	3.3	3.7	1.0	0.4	0.8	1.0	0.5	0.7
31	10.7	10.0	10.2	---	---	---	0.8	0.2	0.5	1.2	0.5	0.8
Month	16.6	10.0	13.2	10.4	3.3	7.5	4.8	0.2	2.1	1.5	0.2	0.8

12439500 OKANOGAN RIVER AT OROVILLE, WA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
[e, estimated]

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		February			March			April			May	
1	1.3	0.7	0.9	4.5	3.5	3.9	6.9	5.5	6.2	11.7	9.2	10.4
2	1.1	0.5	0.9	4.4	3.0	3.8	7.7	6.0	6.8	11.7	8.9	10.3
3	1.6	0.8	1.2	4.3	3.8	4.1	7.7	6.6	7.1	12.3	9.1	10.6
4	1.3	0.7	1.0	5.0	3.7	4.3	6.8	5.7	6.3	14.2	10.9	12.5
5	1.1	0.7	0.9	5.0	3.4	4.3	7.8	6.0	6.8	14.1	11.7	12.9
6	1.5	0.7	1.1	5.6	3.8	4.7	7.7	5.8	6.7	15.3	13.2	14.2
7	1.9	1.0	1.5	6.5	4.5	5.4	7.9	5.9	6.8	15.6	13.4	14.5
8	1.9	1.1	1.5	7.6	5.3	6.2	7.6	5.9	6.7	14.5	12.6	13.4
9	2.0	1.2	1.6	7.1	5.7	6.3	8.4	6.0	7.2	14.7	12.1	13.4
10	2.2	1.3	1.7	6.9	5.7	6.3	9.2	7.5	8.3	13.5	11.4	12.0
11	1.9	1.2	1.6	7.4	5.9	6.5	9.9	7.9	8.8	12.0	11.0	11.4
12	2.2	1.4	1.8	6.9	5.3	6.1	10.6	7.8	8.9	14.4	11.2	12.7
13	2.5	1.5	2.0	6.3	4.7	5.4	9.4	6.5	8.0	13.9	12.0	12.7
14	2.4	1.4	1.9	7.1	5.2	5.9	9.0	7.2	8.0	14.0	11.9	12.8
15	2.2	1.6	1.9	7.3	5.5	6.2	9.0	7.5	8.2	16.9	13.3	14.9
16	2.5	1.4	2.0	7.2	5.3	6.0	10.3	7.5	8.8	19.0	15.9	17.2
17	2.7	1.5	2.1	7.9	5.6	6.6	10.8	8.0	9.4	17.9	14.2	16.2
18	2.7	1.6	2.2	7.6	5.8	6.6	10.0	8.6	9.3	17.7	13.5	15.2
19	2.9	1.6	2.3	7.3	5.3	6.2	9.4	8.0	8.4	18.3	16.0	17.7
20	3.0	1.8	2.4	7.7	5.6	6.5	8.6	6.8	7.8	16.0	8.7	10.1
21	3.0	1.9	2.6	8.0	6.0	6.8	8.8	7.3	8.2	14.1	8.6	9.9
22	3.1	2.1	2.6	7.6	5.8	6.6	9.6	7.9	8.8	17.8	14.1	16.5
23	3.5	2.3	2.9	7.7	6.1	6.8	9.6	8.4	8.9	17.4	16.7	17.1
24	3.3	2.5	2.9	7.5	5.6	6.5	8.9	8.1	8.6	17.8	16.3	17.1
25	3.9	2.8	3.3	7.6	5.4	6.4	10.6	8.0	9.2	18.4	16.8	17.6
26	3.5	2.9	3.3	7.1	6.0	6.5	11.4	9.6	10.5	18.3	17.5	17.9
27	3.6	2.9	3.3	6.8	5.3	6.0	11.2	8.8	9.8	19.0	17.0	17.9
28	4.4	3.0	3.7	6.3	5.3	5.7	11.1	8.7	10	19.6	17.3	18.3
29	4.5	3.3	4.0	6.8	4.9	5.7	10.9	8.9	10	20.3	19.0	19.6
30	---	---	---	8.1	5.4	6.6	11.2	9.0	10.1	19.9	18.8	19.3
31	---	---	---	7.4	6.1	6.7	---	---	---	19.3	18.0	18.6
Month	4.5	0.5	2.1	8.1	3.0	5.9	11.4	5.5	8.3	20.3	8.6	14.7

12439500 OKANOGAN RIVER AT OROVILLE, WA—Continued

TEMPERATURE, WATER, DEGREES CELSIUS
WATER YEAR OCTOBER 2007 TO SEPTEMBER 2008
[e, estimated]

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
		June			July			August			September	
1	18.9	18.1	18.5	24.4	23.2	23.7	22.9	22.5	22.7	20.9	18.5	19.6
2	19.3	18.5	18.8	24.4	23.4	23.9	22.7	21.9	22.4	20.2	19.0	19.6
3	18.8	18.2	18.5	24.3	23.4	23.7	23.0	22.2	22.6	20.1	18.4	19.2
4	19.2	18.0	18.4	24.3	23.8	24.0	23.6	22.5	23.0	20.3	18.6	19.4
5	19.1	18.1	18.7	24.3	23.7	24.0	24.3	23.3	23.7	20.1	18.8	19.4
6	18.6	16.6	17.6	24.4	23.5	23.9	24.8	23.9	24.3	20.2	18.8	19.5
7	18.7	17.6	18.1	24.4	23.5	24.0	24.7	24.1	24.4	20.2	18.5	19.3
8	19.1	17.9	18.4	24.7	23.7	24.1	24.2	22.6	23.3	20.0	18.4	19.2
9	19.2	18.5	18.8	25.0	24.2	24.6	23.2	22.5	22.8	20.0	18.4	19.2
10	18.9	17.6	18.0	24.9	24.4	24.7	23.0	22.4	22.7	20.0	17.6	18.8
11	18.5	17.6	18.0	24.6	23.2	23.7	23.1	22.2	22.7	20.4	18.5	19.4
12	18.9	18.0	18.4	24.1	23.2	23.6	23.6	22.6	23.0	19.6	18.1	18.8
13	19.5	18.4	18.8	23.9	23.2	23.6	24.4	22.6	23.5	19.1	17.1	18.2
14	19.8	18.8	19.3	23.8	23.2	23.5	25.3	23.2	24.2	19.7	17.7	18.7
15	19.9	19.2	19.5	24.2	23.3	23.6	25.4	24.1	24.8	20.2	18.2	19.2
16	19.8	19.1	19.4	24.9	24.0	24.3	25.5	24.1	25.0	20.3	18.3	19.3
17	19.6	18.4	18.9	25.3	24.6	24.9	26.8	25.3	25.9	20.1	18.2	19.2
18	19.9	19.0	19.4	25.3	24.2	24.7	26.8	25.7	26.2	20.2	18.7	19.5
19	19.9	19.4	19.6	24.6	24.0	24.3	25.9	23.9	25.0	20.4	19.0	19.8
20	20.3	19.2	19.6	24.8	24.2	24.5	24.2	22.8	23.6	20.3	19.0	19.7
21	20.6	20.0	20.3	24.7	24.0	24.3	22.8	21.9	22.3	19.0	18.0	18.4
22	21.2	20.4	20.7	25.0	24.5	24.7	22.7	21.2	22.0	18.3	17.2	17.8
23	21.4	20.8	21.1	24.8	24.3	24.5	22.6	20.7	21.5	18.0	16.4	17.2
24	21.3	20.4	20.8	24.7	23.7	24.2	22.0	20.7	21.2	17.3	16.6	16.9
25	21.5	20.8	21.1	25.1	24.5	24.8	21.6	20.6	21.1	17.5	16.4	17.0
26	21.8	21.1	21.4	25.1	24.5	24.8	21.8	20.0	20.7	17.4	16.3	16.9
27	22.3	21.1	21.6	25.0	24.4	24.7	21.7	19.6	20.6	17.3	16.1	16.6
28	22.7	21.8	22.2	24.8	24.1	24.4	21.6	20.2	20.9	17.2	15.8	16.5
29	22.6	21.6	22.0	24.8	23.9	---	22.2	19.6	21.1	17.5	16.3	17.0
30	23.5	22.2	22.6	23.7	22.8	23.3	20.6	19.0	19.7	17.9	16.5	17.2
31	---	---	---	23.3	22.8	23.0	20.1	18.7	19.4	---	---	---
Month	23.5	16.6	19.6	25.3	22.8	---	26.8	18.7	22.8	20.9	15.8	18.6