



**Figure 30.** Location of surface-water stations in the Okanogan River Basin and on the Columbia River from Coulee Dam to Wells Dam.

## 12436500 COLUMBIA RIVER AT GRAND COULEE DAM, WA

LOCATION.--Lat 47°57'56", long 118°58'54", in SW $\frac{1}{4}$ SE $\frac{1}{4}$ , sec.36, T.29 N., R.30 E., Douglas County, Hydrologic Unit 17020005, in pier 3 on west side of bridge on State Highway 155, 3,200 ft downstream from Grand Coulee Dam, 14.2 mi upstream from Nespelem River, and at mile 596.3.

DRAINAGE AREA.--74,700 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--April 1913 to June 1923 (monthly discharge only), July to December 1923, January 1924 to May 1928 (monthly discharge only), June 1928 to current year. Published as "at Grand Coulee near Nespelem" prior to 1936 and as "at Grand Coulee" 1936-42.

REVISED RECORDS.--WSP 1286: 1942, 1947. WSP 1933: Drainage area.

GAGE.--Daily discharge determined from flow through turbines plus spillway flow when present. Datum of gage is NGVD of 1929, adjustment of 1937 (Bureau of Reclamation datum). June 27 to Dec. 31, 1923, June 12, 1928, to Mar. 31, 1931, nonrecording gage at site 0.5 mi upstream at datum 2.4 ft lower. Apr. 1, 1931, to Dec. 31, 1935, water-stage recorder 850 ft downstream at present datum. Jan. 1, 1936, to June 11, 1955, water-stage recorder at present site and datum. June 12, 1955, to July 18, 1988, water-stage recorder at present site and datum with auxiliary water-stage recorder 5.3 mi downstream at datum 1.42 ft lower.

REMARKS.--Flow is regulated by numerous reservoirs. Feeder Canal diversion (station 12435500) for Columbia Basin project is used to irrigate approximately 600,000 acres in the United States. An additional 66,500 acres in Canada are irrigated by other diversions.

COOPERATION.--Discharge records provided by Bureau of Reclamation at Grand Coulee Dam through the Corps of Engineers, Northwestern Division, Reservoir Control Center. The U.S. Geological Survey made three discharge measurements at this site during the year.

AVERAGE DISCHARGE.--91 years (water years 1914-2004), 108,300 ft<sup>3</sup>/s, 78,460,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 637,800 ft<sup>3</sup>/s, June 12, 1948, elevation, 987.90 ft; minimum discharge, 14,900 ft<sup>3</sup>/s, Dec. 17, 1956, elevation, 934.37 ft; minimum daily discharge, 15,300 ft<sup>3</sup>/s, Feb. 1, 1937.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in June 1894 reached a discharge of 725,000 ft<sup>3</sup>/s, estimated.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 158,000 ft<sup>3</sup>/s, Aug. 31; minimum daily discharge, 26,400 ft<sup>3</sup>/s, Apr. 11.

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	73,800	81,100	105,000	75,900	57,800	83,000	71,700	82,900	101,000	93,300	76,100	83,400
2	65,000	52,900	102,000	104,000	104,000	76,200	62,800	80,700	121,000	107,000	77,600	71,200
3	68,000	100,000	104,000	98,800	98,400	101,000	65,000	108,000	138,000	95,400	89,600	71,000
4	44,400	110,000	114,000	115,000	78,300	99,200	36,300	88,500	126,000	82,800	96,300	51,800
5	48,900	119,000	111,000	143,000	107,000	69,400	64,600	74,500	90,100	90,900	72,300	60,600
6	84,400	102,000	76,300	142,000	95,400	53,300	67,200	83,500	84,100	135,000	57,300	64,800
7	63,900	100,000	56,200	116,000	66,700	39,700	54,500	105,000	89,900	126,000	54,800	92,600
8	56,800	72,500	114,000	110,000	46,900	74,500	67,200	80,500	101,000	126,000	64,400	89,700
9	99,100	55,400	120,000	106,000	99,700	78,800	56,900	89,400	110,000	105,000	99,300	89,300
10	62,700	91,900	113,000	85,300	100,000	79,700	57,900	121,000	143,000	88,800	102,000	75,500
11	59,900	93,200	106,000	72,300	92,600	63,500	26,400	105,000	130,000	105,000	104,000	70,900
12	56,300	99,400	113,000	109,000	102,000	61,300	68,300	109,000	127,000	124,000	103,000	44,800
13	86,100	98,900	116,000	111,000	107,000	49,600	74,900	116,000	121,000	115,000	104,000	66,900
14	75,300	97,500	91,200	93,600	54,300	35,500	73,200	127,000	157,000	107,000	81,900	50,600
15	72,900	87,000	138,000	87,800	45,500	66,400	76,400	112,000	125,000	89,600	80,200	61,100
16	67,600	63,600	118,000	81,700	98,400	73,700	98,000	95,200	119,000	90,600	104,000	66,600
17	65,200	109,000	107,000	73,400	91,900	82,700	86,600	114,000	133,000	80,000	113,000	68,100
18	49,600	88,200	116,000	60,400	66,300	78,900	72,300	127,000	134,000	89,200	108,000	51,200
19	48,500	103,000	120,000	91,600	72,800	67,700	127,000	103,000	124,000	82,200	106,000	40,000
20	75,200	105,000	97,500	77,600	70,300	54,400	117,000	95,000	128,000	70,500	105,000	67,000
21	84,600	103,000	69,500	98,600	56,700	38,400	96,400	104,000	149,000	84,800	74,700	89,300
22	73,700	91,800	125,000	119,000	41,600	67,200	98,900	80,300	129,000	76,900	36,800	93,300
23	79,000	68,800	123,000	81,600	69,100	68,800	96,100	72,800	93,900	85,900	84,300	106,000
24	86,900	108,000	103,000	77,200	69,300	77,900	91,000	100,000	92,100	79,800	87,800	79,900
25	65,300	95,700	37,900	83,400	100,000	76,400	77,000	106,000	121,000	54,200	105,000	62,500
26	56,400	88,500	104,000	98,600	102,000	63,100	117,000	120,000	115,000	95,000	106,000	52,600
27	97,600	42,600	106,000	93,800	71,800	51,000	110,000	113,000	93,000	97,100	109,000	95,200
28	96,000	51,000	101,000	93,500	64,000	43,000	84,800	87,700	147,000	102,000	100,000	83,400
29	84,800	57,200	134,000	88,000	56,800	70,800	83,200	92,600	146,000	114,000	97,100	74,700
30	108,000	66,800	123,000	75,800	---	70,000	85,800	99,900	144,000	105,000	138,000	92,000
31	113,000	---	102,000	73,700	---	56,500	---	82,200	---	104,000	158,000	---
TOTAL	2,268,900	2,603,000	3,266,600	2,937,600	2,286,600	2,071,600	2,364,400	3,075,700	3,632,100	3,002,000	2,895,500	2,166,000
MEAN	73,190	86,770	105,400	94,760	78,850	66,830	78,810	99,220	121,100	96,840	93,400	72,200
MAX	113,000	119,000	138,000	143,000	107,000	101,000	127,000	127,000	157,000	135,000	158,000	106,000
MIN	44,400	42,600	37,900	60,400	41,600	35,500	26,400	72,800	84,100	54,200	36,800	40,000
AC-FT	4,500,000	5,163,000	6,479,000	5,827,000	4,535,000	4,109,000	4,690,000	6,101,000	7,204,000	5,954,000	5,743,000	4,296,000
CAL YR	2003	TOTAL	33,189,700	MEAN	90,930	MAX	161,000	MIN	23,200	AC-FT	65,830,000	
WTR YR	2004	TOTAL	32,570,000	MEAN	88,990	MAX	158,000	MIN	26,400	AC-FT	64,600,000	

12437940 EAST FOSTER CREEK AT BELL BUTTE ROAD, NEAR LEAHY, WA

## WATER-QUALITY RECORDS

LOCATION.--Lat 47°56'40", long 119°34'27", in NW<sup>1</sup>/<sub>4</sub>NW<sup>1</sup>/<sub>4</sub>, sec.9, T.28 N., R.27 E., Douglas County, Hydrologic Unit 17020005, 0.2 mi downstream of Hwy 17 bridge, 5 mi east-southeast of Bridgeport.

DRAINAGE AREA.--281 mi<sup>2</sup>.

PERIOD OF RECORD.--July and September 2003 (discontinued).

## WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Instantaneous discharge, cfs (00061)	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Alkalinity, wat flt inc tit field, mg/L as CaCO3 (39086)	Bicarbonate, wat flt incrm. titr., field, mg/L (00453)	Carbonate, wat flt incrm. titr., field, mg/L (00452)	Ammonia + org-N, water, unfltrd mg/L as N (00625)
JUL 07...	1850	--	714	6.5	74	8.2	736	22.1	18.4	--	--	--	.26
SEP 03...	1000	.44	723	8.9	90	8.2	743	22.5	13.4	295	354	.0	.24
03...	1000	--	--	--	--	--	--	--	--	--	--	--	--
03...	1020	--	--	--	--	--	--	--	--	--	--	--	--

## WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water, fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Particulate nitrogen, susp, water, mg/L (49570)	Orthophosphate, water, fltrd, mg/L as P (00671)	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)	Total carbon, suspnd sedimnt total, mg/L (00694)	Inorganic carbon, suspnd sedimnt total, mg/L (00688)	Organic carbon, suspnd sedimnt total, mg/L (00689)	Organic carbon, water, fltrd, mg/L (00681)	Biomass periphyton, ashfree drymass g/m2 (49954)	Biomass periphyton, ashfree dry wt, DTH, g/m2 (63766)
JUL 07...	<.04	.35	<.008	--	.06	.095	.61	--	--	--	--	--	--
SEP 03...	<.04	.66	<.008	.06	.06	.089	.90	.6	<.1	.6	2.2	--	--
03...	--	--	--	--	--	--	--	--	--	--	--	184.0	--
03...	--	--	--	--	--	--	--	--	--	--	--	--	133

## WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Biomass periphyton, ash weight, DTH, g/m2 (63765)	Periphyton biomass ash weight, g/m2 (00572)	Biomass periphyton, dry weight, DTH, g/m2 (63767)	Periphyton biomass dry weight, g/m2 (00573)	Chlorophyll a periphyton, DTH, CF meth mg/m2 (63763)	Pheophytin a periphyton, DTH, CF meth mg/m2 (63764)	Pheophytin a, periphyton, mg/m2 (62359)	Pheophytin a, phytoplankton, ug/L (62360)	Chlorophyll a periphyton, chromo-fluoro, mg/m2 (70957)	Chlorophyll a phytoplankton, fluoro, ug/L (70953)	Suspended sediment concentration, mg/L (80154)	Suspended sediment discharge, tons/d (80155)
JUL 07...	--	--	--	--	--	--	--	--	--	--	--	--
SEP 03...	--	--	--	--	--	--	--	1.9	--	.6	12	.01
03...	--	1,600	--	1,749	--	--	120	--	250	--	--	--
03...	1,480	--	1,620	--	21.9	50.4	--	--	--	--	--	--

12437980 WEST FORK FOSTER CREEK ABOVE EAST FORK, NEAR BRIDGEPORT, WA

WATER-QUALITY RECORDS

LOCATION.--Lat 47°57'04", long 119°39'35", in NW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, sec.9, T.28 N., R.25 E., Douglas County, Hydrologic Unit 17020005, downstream of confluence with Chapman Draw, 4 mi south of Bridgeport.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--July 2003 (discontinued).

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Time	Barometric pressure, mm Hg (00025)	Dissolved oxygen, mg/L (00300)	Dissolved oxygen, percent of saturation (00301)	pH, water, unfltrd field, std units (00400)	Specific conductance, wat unfltrd uS/cm 25 degC (00095)	Temperature, air, deg C (00020)	Temperature, water, deg C (00010)	Ammonia + org-N, water, unfltrd mg/L as N (00625)	Ammonia water, fltrd, mg/L as N (00608)	Nitrite + nitrate water fltrd, mg/L as N (00631)	Nitrite water, fltrd, mg/L as N (00613)	Ortho-phosphate, water, fltrd, mg/L as P (00671)
JUL 07...	1740	720	8.4	81	8.0	1,010	28.4	11.5	.21	<.04	.13	<.008	.07

WATER-QUALITY DATA, WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Phosphorus, water, unfltrd mg/L (00665)	Total nitrogen, water, unfltrd mg/L (00600)
JUL 07...	.084	.34

## 12438000 COLUMBIA RIVER AT BRIDGEPORT, WA

LOCATION.--Lat 48°00'24", long 119°39'51", in SW<sup>1</sup>/<sub>4</sub>SW<sup>1</sup>/<sub>4</sub>, sec.14, T.29 N., R.25 E., Douglas County, Hydrologic Unit 17020005, on left bank at Bridgeport, 1.0 mi downstream from Foster Creek, 1.6 mi downstream from Chief Joseph Dam, and at mile 543.9.

DRAINAGE AREA.--75,700 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--April 1952 to current year.

REVISED RECORDS.--WSP 1933: Drainage area.

GAGE.--Daily discharge determined from flow through turbines plus spillway flow when present. Datum of gage is NGVD of 1929 (levels by Corps of Engineers). Apr. 4, 1952, to Aug. 4, 1988, water-stage recorder; May 26, 1967, to Aug. 4, 1988, auxiliary water-stage recorder 4,800 ft upstream from base gage at same datum.

REMARKS.--Flow regulated by numerous reservoirs. Feeder Canal diversion (station 12435500) for Columbia Basin project is used to irrigate approximately 600,000 acres in the United States. An additional 66,500 acres in Canada are irrigated by other diversions.

COOPERATION.--Discharge records provided by Corps of Engineers at Chief Joseph Dam through the Corps of Engineers, Northwestern Division, Reservoir Control Center. The U.S. Geological Survey made six discharge measurements at this site during the year.

AVERAGE DISCHARGE.--52 years (water years 1953-2004), 109,400 ft<sup>3</sup>/s, 79,260,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 495,800 ft<sup>3</sup>/s, June 11, 1961; maximum elevation, 792.20 ft, June 7, 1956; minimum observed discharge, 4,220 ft<sup>3</sup>/s, Mar. 22, 1966, elevation, 746.91 ft; minimum daily discharge, 22,300 ft<sup>3</sup>/s, Nov. 11, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 157,000 ft<sup>3</sup>/s, Aug. 31; minimum daily discharge, 34,200 ft<sup>3</sup>/s, Apr. 11.

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	78,700	82,100	106,000	79,400	55,800	83,100	67,000	82,800	102,000	100,000	78,700	90,600
2	67,400	53,000	102,000	104,000	103,000	74,600	73,700	81,200	120,000	106,000	84,000	84,600
3	68,900	96,500	107,000	99,400	101,000	103,000	58,300	109,000	134,000	94,900	88,800	64,100
4	46,600	110,000	114,000	108,000	78,800	99,100	34,900	92,500	132,000	79,800	93,500	52,700
5	51,400	119,000	110,000	146,000	110,000	76,400	73,000	77,500	97,000	106,000	77,800	59,900
6	80,500	104,000	85,800	144,000	96,100	54,700	67,600	86,700	81,500	124,000	59,500	68,700
7	65,700	104,000	56,700	119,000	70,500	41,600	57,000	103,000	96,100	126,000	54,200	94,800
8	65,600	69,800	110,000	113,000	47,200	71,400	67,000	84,400	101,000	124,000	61,800	89,200
9	90,800	61,100	122,000	114,000	101,000	79,000	61,800	86,500	104,000	107,000	100,000	94,400
10	65,400	90,800	118,000	84,200	100,000	80,700	53,200	126,000	142,000	88,700	107,000	78,900
11	60,900	94,800	109,000	72,800	93,400	68,100	34,200	107,000	131,000	105,000	105,000	70,200
12	55,700	102,000	114,000	116,000	102,000	67,100	63,000	107,000	129,000	123,000	103,000	49,000
13	82,800	97,700	112,000	105,000	106,000	49,000	77,800	120,000	122,000	120,000	102,000	65,600
14	79,600	98,800	97,200	99,000	57,200	41,200	77,900	126,000	153,000	110,000	82,600	56,000
15	72,800	86,400	137,000	91,200	47,200	60,400	74,000	111,000	138,000	89,000	83,200	58,400
16	67,500	73,200	124,000	83,700	98,200	72,300	106,000	97,300	119,000	88,500	109,000	67,600
17	67,500	102,000	108,000	71,200	90,000	83,800	85,000	121,000	133,000	80,700	107,000	68,300
18	51,500	94,100	111,000	64,600	71,800	80,100	72,900	124,000	134,000	88,500	109,000	53,400
19	48,900	102,000	123,000	89,900	72,000	73,600	120,000	116,000	120,000	86,000	107,000	40,200
20	76,300	109,000	101,000	80,700	75,100	57,700	117,000	95,400	126,000	70,300	112,000	68,000
21	81,700	108,000	66,800	102,000	51,500	37,100	105,000	99,600	150,000	83,900	69,700	91,000
22	76,500	88,200	125,000	118,000	42,700	66,700	93,800	87,600	134,000	77,900	42,000	93,000
23	79,000	69,300	127,000	86,500	70,000	68,100	95,100	71,600	94,600	87,300	86,500	105,000
24	90,900	108,000	105,000	76,600	74,500	79,200	92,600	99,500	99,400	76,800	83,300	88,000
25	65,500	98,900	45,500	79,100	96,100	77,000	81,200	107,000	117,000	59,800	103,000	62,500
26	54,500	90,600	101,000	104,000	102,000	68,800	113,000	113,000	114,000	95,700	108,000	54,000
27	100,000	44,200	106,000	96,700	75,300	50,800	108,000	118,000	92,000	94,100	113,000	92,600
28	95,900	61,800	101,000	93,200	66,900	43,700	91,100	95,500	141,000	110,000	104,000	87,300
29	90,800	52,800	133,000	93,600	60,000	71,800	88,000	92,900	154,000	109,000	91,600	74,000
30	103,000	60,800	126,000	74,900	---	70,000	87,400	94,500	139,000	106,000	134,000	94,900
31	116,000	---	103,000	76,700	---	63,800	---	86,100	---	99,600	157,000	---
TOTAL	2,298,300	2,632,900	3,307,000	2,986,400	2,315,300	2,113,900	2,396,500	3,119,600	3,649,600	3,017,500	2,917,200	2,216,900
MEAN	74,140	87,760	106,700	96,340	79,840	68,190	79,880	100,600	121,700	97,340	94,100	73,900
MAX	116,000	119,000	137,000	146,000	110,000	103,000	120,000	126,000	154,000	126,000	157,000	105,000
MIN	46,600	44,200	45,500	64,600	42,700	37,100	34,200	71,600	81,500	59,800	42,000	40,200
AC-FT	4,559,000	5,222,000	6,559,000	5,924,000	4,592,000	4,193,000	4,753,000	6,188,000	7,239,000	5,985,000	5,786,000	4,397,000
CAL YR	2003	TOTAL 33,562,300	MEAN 91,950	MAX 154,000	MIN 31,100	AC-FT 66,570,000						
WTR YR	2004	TOTAL 32,971,100	MEAN 90,080	MAX 157,000	MIN 34,200	AC-FT 65,400,000						

12438700 OKANAGAN RIVER NEAR OLIVER, BRITISH COLUMBIA  
(International gaging station)

LOCATION.--Lat 49°06'53", long 119°33'50", approximately 75 ft upstream from drop structure No. 3, 0.8 mi downstream from Testalinden Creek, 4.2 mi south of Oliver, and at mile 93.4.

DRAINAGE AREA.--2,930 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1961 to current year in reports of U.S. Geological Survey. March 1944 to December 1948 and April 1952 to current year in reports of Water Survey of Canada.

GAGE.--Water-stage recorder.

REMARKS.--Regulation by control dams at outlets of Okanagan and Skaha Lakes. Diversion for irrigation.

COOPERATION.--Discharge records furnished by Water Survey of Canada. This station is maintained by Canada under agreement with the United States subsequent to Feb. 14, 1965.

AVERAGE DISCHARGE.--54 years (water years 1945-47, 1953-56, 1958-2004), 657 ft<sup>3</sup>/s, 476,000 acre-ft/yr. 43 years (water years 1962-2004), 646 ft<sup>3</sup>/s, 467,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,740 ft<sup>3</sup>/s, June 11, 1990, gage height, 7.52 ft; minimum, 55.9 ft<sup>3</sup>/s, Jan. 30, 1963, gage height, 0.63 ft.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 1,220 ft<sup>3</sup>/s Sep. 24, 25; minimum daily discharge, 177 ft<sup>3</sup>/s Dec. 15-18.

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	300	e201	181	187	187	186	189	364	551	473	360	413
2	230	e201	181	185	186	184	203	392	410	424	347	413
3	224	e201	182	180	186	184	209	388	287	385	338	410
4	224	e201	182	329	185	184	209	431	286	367	353	413
5	224	e185	184	347	185	184	207	477	310	353	374	410
6	221	e185	190	255	184	184	206	431	378	352	417	403
7	214	e185	188	206	184	184	214	374	339	360	441	396
8	215	e185	187	190	184	184	234	378	326	357	438	396
9	226	e185	186	191	184	185	242	378	311	343	424	410
10	228	e185	183	192	184	185	252	360	367	335	410	403
11	228	185	180	188	184	187	264	371	448	349	403	403
12	228	185	180	184	184	185	288	434	424	332	392	399
13	227	185	179	184	184	182	318	448	417	322	385	396
14	224	188	178	184	183	181	351	445	406	322	357	403
15	217	185	177	184	183	181	319	438	378	353	353	410
16	226	184	177	184	184	181	283	438	322	347	353	410
17	226	185	177	184	185	181	266	431	294	346	364	417
18	227	188	177	184	185	180	254	336	286	346	381	452
19	227	189	178	186	185	180	251	260	280	347	385	494
20	222	187	178	193	185	180	278	225	272	344	388	530
21	218	186	178	194	186	180	323	238	272	341	396	639
22	212	185	180	195	186	180	360	291	281	337	410	823
23	203	185	188	195	186	181	313	335	283	333	413	1,140
24	204	184	190	197	186	181	327	298	320	337	413	1,220
25	202	184	190	195	187	181	318	284	309	333	441	1,220
26	204	183	189	194	189	183	331	456	327	333	452	1,210
27	205	182	189	193	188	182	352	622	470	341	448	1,200
28	203	180	188	193	189	183	290	664	452	345	438	1,110
29	207	182	188	190	191	183	272	682	396	341	424	837
30	206	182	188	190	---	183	289	625	374	341	406	689
31	e201	---	188	188	---	183	---	597	---	353	403	---
TOTAL	6,823	5,608	5,681	6,241	5,379	5,662	8,212	12,891	10,576	10,892	12,307	18,469
MEAN	220	187	183	201	185	183	274	416	353	351	397	616
MAX	300	201	190	347	191	187	360	682	551	473	452	1,220
MIN	201	180	177	180	183	180	189	225	272	322	338	396
AC-FT	13,530	11,120	11,270	12,380	10,670	11,230	16,290	25,570	20,980	21,600	24,410	36,630

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 2004, BY WATER YEAR (WY)

MEAN	409	339	304	370	509	654	756	1,153	1,113	855	727	553
MAX	689	1,029	688	932	1,221	1,965	2,248	2,832	3,099	2,715	2,665	2,232
(WY)	(1998)	(1979)	(1977)	(1996)	(1997)	(1983)	(1983)	(1997)	(1990)	(1997)	(1997)	(1997)
MIN	160	122	112	107	85.6	124	142	267	228	209	187	205
(WY)	(1971)	(1971)	(1968)	(1971)	(1971)	(1968)	(1968)	(1992)	(1963)	(1963)	(1963)	(1988)

## OKANAGAN RIVER BASIN

12438700 OKANAGAN RIVER NEAR OLIVER, BRITISH COLUMBIA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1962 - 2004	
ANNUAL TOTAL	104,402		108,741			
ANNUAL MEAN	286		297		646	
HIGHEST ANNUAL MEAN					1,714	1997
LOWEST ANNUAL MEAN					235	1988
HIGHEST DAILY MEAN	667	Jun 4	1,220	Sep 24	3,660	Jun 11, 1990
LOWEST DAILY MEAN	177	Dec 15	177	Dec 15	79	Jan 29, 1971
ANNUAL SEVEN-DAY MINIMUM	177	Dec 14	177	Dec 14	80	Jan 28, 1971
ANNUAL RUNOFF (AC-FT)	207,100		215,700		467,800	
10 PERCENT EXCEEDS	406		432		1,590	
50 PERCENT EXCEEDS	239		228		388	
90 PERCENT EXCEEDS	185		183		194	

e Estimated





12439500 OKANOGAN RIVER AT OROVILLE, WA  
(International gaging station)

LOCATION.--Lat 48°55'51", long 119°25'09", in SE $\frac{1}{4}$ SW $\frac{1}{4}$ , sec.27, T.40 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, 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.

DRAINAGE AREA.--3,195 mi<sup>2</sup>.

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.

REMARKS.--Records good except for estimated daily discharges and backwater periods Oct. 21-22, May 1-12, May 18-June 1, 5-7, and 10-14, 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 Okanogan Lake 46.7 mi upstream for flood control and irrigation; also regulated by Zosel dam at Oroville, 500 ft upstream from gage. Water temperature April 1986 to September 1987. U.S. Geological Survey satellite telemeter at station.

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

AVERAGE DISCHARGE.--62 years (water years 1943-2004), 684 ft<sup>3</sup>/s, 495,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,770 ft<sup>3</sup>/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<sup>3</sup>/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, 1,340 ft<sup>3</sup>/s, July 23; maximum elevation, 908.26 ft, Oct. 22, result of backwater from Similkameen River; minimum discharge, 53 ft<sup>3</sup>/s, May 22, result of regulation at Zosel Dam and backwater from Similkameen River; minimum elevation, 905.68 ft, Apr. 30, result of regulation at Zosel Dam.

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	364	447	239	217	239	178	126	112	621	375	368	344
2	364	444	254	220	218	133	126	97	301	419	264	342
3	361	436	254	e220	205	113	126	119	248	359	264	342
4	358	430	245	e220	205	113	126	138	264	205	264	342
5	357	424	229	e220	205	113	115	149	267	205	264	342
6	351	417	229	e230	205	113	105	172	260	205	264	342
7	348	412	229	e225	205	113	106	163	284	287	386	280
8	346	406	230	e230	205	114	105	150	305	261	448	249
9	342	395	233	e238	205	116	109	184	305	224	446	249
10	342	386	233	e243	205	116	110	206	307	227	262	285
11	338	384	230	e245	205	116	111	212	301	229	297	306
12	337	378	229	e250	205	118	110	159	324	229	295	305
13	337	288	229	261	205	119	110	158	446	284	309	305
14	337	244	229	252	205	119	176	178	593	311	332	305
15	337	244	229	250	205	119	293	195	533	311	331	304
16	337	244	229	250	205	121	337	213	283	355	328	395
17	338	244	229	249	189	123	336	216	126	386	306	498
18	342	244	229	249	181	121	332	169	109	386	219	503
19	342	245	229	249	181	122	281	251	140	454	183	502
20	342	245	229	249	186	123	244	199	142	627	214	498
21	343	247	229	249	186	123	245	120	144	809	250	501
22	358	240	229	249	186	123	213	278	179	896	254	769
23	337	239	225	250	186	123	126	596	195	1,120	393	1,020
24	330	187	229	249	186	123	113	268	195	369	532	1,230
25	323	160	229	249	186	123	113	259	195	325	523	1,280
26	317	193	229	249	188	124	112	254	195	167	521	1,270
27	313	210	229	249	190	126	109	368	272	133	431	1,270
28	309	210	229	243	191	126	105	668	491	116	352	1,250
29	385	210	229	239	191	125	103	847	480	116	353	1,030
30	460	210	229	239	---	125	115	846	321	116	353	550
31	454	---	229	239	---	126	---	844	---	196	351	---
TOTAL	10,849	9,063	7,181	7,471	5,754	3,790	4,838	8,788	8,826	10,702	10,357	17,208
MEAN	350	302	232	241	198	122	161	283	294	345	334	574
MAX	460	447	254	261	239	178	337	847	621	1,120	532	1,280
MIN	309	160	225	217	181	113	103	97	109	116	183	249
AC-FT	21,520	17,980	14,240	14,820	11,410	7,520	9,600	17,430	17,510	21,230	20,540	34,130

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 2004, BY WATER YEAR (WY)

MEAN	506	475	462	480	567	638	759	1,147	1,142	809	653	568
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	149	162	140	74.1	115	180	111	126	150	81.7
(WY)	(1989)	(1971)	(1971)	(1968)	(1971)	(1977)	(1968)	(1992)	(1992)	(1947)	(1963)	(1944)

## 12439500 OKANOGAN RIVER AT OROVILLE, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1943 - 2004	
ANNUAL TOTAL	94,276		104,827			
ANNUAL MEAN	258		286		684	
HIGHEST ANNUAL MEAN					1,691	1997
LOWEST ANNUAL MEAN					213	1988
HIGHEST DAILY MEAN	1,250	May 6	1,280	Sep 25	3,680	Jun 14, 1972
LOWEST DAILY MEAN	102	Jun 18	97	May 2	-2,270	May 29, 1948
ANNUAL SEVEN-DAY MINIMUM	102	Jun 18	108	Apr 26	-1,080	May 24, 1948
ANNUAL RUNOFF (AC-FT)	187,000		207,900		495,600	
10 PERCENT EXCEEDS	386		446		1,500	
50 PERCENT EXCEEDS	229		244		493	
90 PERCENT EXCEEDS	129		120		198	

e Estimated

## OKANOGAN RIVER BASIN

12442500 SIMILKAMEEN RIVER NEAR NIGHTHAWK, WA  
(International gaging station)

LOCATION.--Lat 48°59'05", long 119°37'02", in NW<sup>1</sup>/<sub>4</sub>, sec.7, T.40 N., R.26 E., Okanogan County, Hydrologic Unit 17020007, on left bank 1,000 ft upstream from Oroville-Tonasket Irrigation District canal intake, 1.6 mi northeast of Nighthawk, 3.8 mi downstream from Palmer Creek, and at mile 15.8.

DRAINAGE AREA.--3,550 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--May 1911 to current year (prior to September 1928, mean monthly discharge included Oroville-Tonasket Irrigation District canal).  
Published as "near Oroville" 1911-28.

REVISED RECORDS.--WSP 1183: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,137.70 ft above NGVD of 1929. Prior to Sept. 11, 1928, staff gages at sites 7 mi downstream (below Oroville-Tonasket Irrigation District canal) at various datums.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow at high stages regulated by natural diversion into and release from Palmer Lake of about 6,000 acre-ft. Several small diversions upstream from station for irrigation of about 2,900 acres in the United States in 1946 and approximately 10,500 acres in Canada in 1957. National Weather Service satellite telemeter at station. Water temperature April 1986 to September 1987.

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

AVERAGE DISCHARGE.--93 years (water years 1912-2004), 2,279 ft<sup>3</sup>/s, 1,651,000 acre-ft/yr. 76 years (water years 1929-2004), 2,304 ft<sup>3</sup>/s, 1,669,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,800 ft<sup>3</sup>/s, June 1, 1972; maximum gage height, 18.78 ft, May 31, 1972; minimum discharge, 65 ft<sup>3</sup>/s, Jan. 3, 1974; minimum gage height, 1.55 ft, Jan. 31, 1988, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,000 ft<sup>3</sup>/s, Oct. 21, gage height, 10.14 ft; minimum discharge, 156 ft<sup>3</sup>/s, Oct. 8, gage height, 1.83 ft.

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	172	1,810	1,040	e380	569	483	1,700	6,580	6,280	3,410	659	623
2	170	1,740	909	e410	553	475	1,690	8,240	5,860	3,240	630	573
3	165	1,670	1,010	e420	544	472	1,700	9,310	5,700	2,920	605	582
4	163	1,520	974	e260	538	462	1,790	9,330	5,890	2,690	630	745
5	163	1,310	883	e200	519	466	2,050	9,450	6,470	2,510	680	764
6	162	1,090	976	e215	529	471	2,390	8,780	6,920	2,340	817	691
7	162	952	964	e235	509	460	2,720	8,060	6,470	2,180	892	642
8	161	963	864	e295	518	461	3,100	8,030	6,110	2,160	850	598
9	162	1,030	813	479	529	505	3,280	8,440	5,850	2,090	776	562
10	168	1,160	766	722	523	679	3,390	7,950	6,330	1,950	700	533
11	198	1,200	700	787	508	914	3,620	7,440	9,570	2,090	642	522
12	230	1,190	716	758	502	947	4,200	7,020	8,010	1,980	597	695
13	234	1,090	753	720	490	957	5,140	6,460	7,120	1,830	562	1,040
14	233	1,010	770	683	483	947	6,240	6,070	6,550	1,710	532	885
15	271	960	744	671	482	949	6,100	5,920	6,100	1,600	506	937
16	305	957	737	651	507	965	5,530	5,970	5,550	1,520	486	1,200
17	287	932	740	642	513	966	5,140	6,140	5,160	1,450	489	1,390
18	2,840	932	734	681	497	997	4,890	6,570	4,980	1,360	565	1,430
19	2,280	1,170	712	673	501	1,030	4,660	6,990	4,830	1,310	613	1,530
20	1,500	1,420	694	644	495	1,040	4,490	7,810	4,560	1,280	553	1,520
21	6,310	e1,480	712	632	490	997	4,330	8,110	4,330	1,210	509	1,390
22	8,430	e1,280	734	609	471	1,010	4,110	8,780	4,250	1,140	514	1,270
23	4,730	e1,180	695	590	458	1,020	4,040	9,570	4,170	1,080	609	1,220
24	3,970	1,140	663	597	470	1,170	4,160	8,950	3,990	1,010	726	1,180
25	3,240	1,160	682	584	491	1,300	4,040	8,190	3,880	950	712	1,130
26	2,830	1,070	677	569	511	1,350	4,060	7,810	3,830	890	694	1,060
27	2,540	1,050	616	547	495	1,350	4,880	8,320	4,190	845	713	989
28	2,280	994	524	501	490	1,320	5,960	8,100	4,060	804	704	939
29	2,250	979	449	501	484	1,310	5,910	7,610	3,590	768	668	893
30	2,390	1,100	e260	565	---	1,400	5,900	6,900	3,290	726	675	844
31	2,070	---	e300	581	---	1,630	---	6,620	---	688	681	---
TOTAL	51,066	35,539	22,811	16,802	14,669	28,503	121,210	239,520	163,890	51,731	19,989	28,377
MEAN	1,647	1,185	736	542	506	919	4,040	7,726	5,463	1,669	645	946
MAX	8,430	1,810	1,040	787	569	1,630	6,240	9,570	9,570	3,410	892	1,530
MIN	161	932	260	200	458	460	1,690	5,920	3,290	688	486	522
AC-FT	101,300	70,490	45,250	33,330	29,100	56,540	240,400	475,100	325,100	102,600	39,650	56,290

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2004, BY WATER YEAR (WY)

MEAN	697	932	788	640	667	735	2,086	7,874	8,676	2,985	923	599
MAX	2,265	4,531	3,480	2,067	2,235	2,206	13,510	15,360	24,910	8,495	2,625	1,614
(WY)	(1960)	(1991)	(1996)	(1981)	(1935)	(1934)	(1934)	(1972)	(1972)	(1972)	(1948)	(1954)
MIN	239	254	231	215	217	341	427	2,788	2,508	665	279	191
(WY)	(1988)	(1988)	(1988)	(1930)	(1929)	(1988)	(1929)	(1984)	(1992)	(1940)	(2003)	(2003)

## 12442500 SIMILKAMEEN RIVER NEAR NIGHTHAWK, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1929 - 2004	
ANNUAL TOTAL	557,832		794,107			
ANNUAL MEAN	1,528		2,170		2,304	
HIGHEST ANNUAL MEAN					4,831	
LOWEST ANNUAL MEAN					1,038	
HIGHEST DAILY MEAN	9,930	Jun 1	9,570	May 23	44,800	Jun 1, 1972
LOWEST DAILY MEAN	161	Oct 8	161	Oct 8	120	Jan 4, 1988
ANNUAL SEVEN-DAY MINIMUM	163	Oct 3	163	Oct 3	141	Jan 5, 1974
ANNUAL RUNOFF (AC-FT)	1,106,000		1,575,000		1,669,000	
10 PERCENT EXCEEDS	3,720		6,320		6,730	
50 PERCENT EXCEEDS	695		975		790	
90 PERCENT EXCEEDS	206		472		368	

e Estimated

## 12445000 OKANOGAN RIVER NEAR TONASKET, WA

LOCATION.--Lat 48°37'57", long 119°27'38", in lot 3, sec.8, T.36 N., R.27 E., Okanogan County, Hydrologic Unit 17020006, on right bank 1,000 ft upstream from Chewiliken Creek, 5.2 mi south of Tonasket, and at mile 50.8.

DRAINAGE AREA.--7,260 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--April 1929 to current year.

REVISED RECORDS.--WSP 862: 1937. WSP 1316: 1934(M), 1938(M). WSP 1933: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 860.78 ft above NGVD of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair. Diversions upstream from station for irrigation of about 10,700 acres in the United States and 55,000 acres in Canada. Flow affected by regulation of Okanogan and Skaha Lakes and by natural storage in other lakes. U.S. Geological Survey satellite telemeter at station. Water temperature April 1986 to September 1987.

AVERAGE DISCHARGE.--75 years (water years 1930-2004), 2,937 ft<sup>3</sup>/s, 2,128,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 44,700 ft<sup>3</sup>/s, June 2, 1972, gage height, 22.54 ft; minimum discharge recorded, 126 ft<sup>3</sup>/s, Sept. 5, 1931, gage height, 3.43 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,300 ft<sup>3</sup>/s, Oct. 22, gage height, 11.34 ft; minimum daily discharge, 460 ft<sup>3</sup>/s, Jan. 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	501	2,440	1,370	e560	901	725	1,770	5,860	6,840	3,390	848	949
2	498	2,240	1,310	e640	859	702	1,810	6,990	6,070	3,590	909	898
3	492	2,200	1,230	e680	811	649	1,800	8,510	5,600	3,270	798	865
4	493	2,090	1,320	e690	802	641	1,840	8,830	5,610	2,900	799	890
5	495	1,950	1,270	e520	791	622	1,960	8,970	5,980	2,670	832	1,040
6	508	1,730	1,190	e460	777	631	2,210	8,800	6,670	2,520	904	1,040
7	489	1,530	1,280	e480	782	633	2,510	8,010	6,560	2,380	1,080	966
8	482	1,460	1,230	e500	764	624	2,840	7,580	6,150	2,350	1,270	843
9	493	1,470	1,140	e560	776	631	3,100	8,020	5,850	2,270	1,220	801
10	501	1,550	1,100	e730	783	674	3,230	7,960	5,820	2,150	1,110	769
11	506	1,610	1,030	1,060	774	859	3,360	7,430	8,020	2,120	831	799
12	537	1,660	990	1,140	763	1,070	3,680	7,020	8,570	2,190	881	816
13	573	1,590	1,010	1,150	754	1,090	4,350	6,430	7,470	2,050	787	1,050
14	572	1,390	1,040	1,100	747	1,110	5,560	6,030	6,890	1,980	800	1,260
15	568	1,310	1,030	1,040	740	1,100	6,110	5,750	6,470	1,880	777	1,150
16	632	1,290	1,040	1,010	746	1,120	5,740	5,780	5,790	1,790	749	1,290
17	671	1,280	1,010	972	778	1,130	5,260	5,850	5,150	1,790	729	1,680
18	1,060	1,240	1,020	978	754	1,120	4,990	6,120	4,810	1,720	713	1,900
19	3,150	1,270	1,010	1,020	736	1,170	4,770	6,530	4,740	1,660	697	1,950
20	2,230	1,550	990	1,020	736	1,200	4,530	7,110	4,540	1,720	714	2,000
21	2,380	1,760	975	984	729	1,190	4,410	7,710	4,290	1,860	706	1,960
22	9,240	1,610	997	968	719	1,150	4,190	7,990	4,130	1,890	701	1,880
23	5,800	1,630	1,010	956	703	1,170	3,970	9,550	4,110	1,960	733	2,140
24	4,360	1,350	985	934	704	1,190	3,980	9,030	3,990	1,790	1,040	2,250
25	3,710	1,370	951	945	716	1,350	3,970	8,360	3,840	1,300	1,200	2,370
26	3,250	e1,330	968	e920	750	1,470	3,850	7,710	3,800	1,130	1,180	2,330
27	2,950	e1,310	948	e890	757	1,510	4,140	7,910	3,970	968	1,160	2,250
28	2,720	1,300	891	e840	737	1,480	5,270	8,350	4,380	884	1,050	2,180
29	2,520	1,270	796	e820	731	1,470	5,690	8,250	4,050	838	998	2,100
30	2,810	1,270	e680	e810	---	1,470	5,500	7,630	3,580	799	958	1,700
31	2,680	---	e530	e880	---	1,600	---	7,070	---	759	952	---
TOTAL	57,871	47,050	32,341	26,257	22,120	32,551	116,390	233,140	163,740	60,568	28,126	44,116
MEAN	1,867	1,568	1,043	847	763	1,050	3,880	7,521	5,458	1,954	907	1,471
MAX	9,240	2,440	1,370	1,150	901	1,600	6,110	9,550	8,570	3,590	1,270	2,370
MIN	482	1,240	530	460	703	622	1,770	5,750	3,580	759	697	769
AC-FT	114,800	93,320	64,150	52,080	43,880	64,560	230,900	462,400	324,800	120,100	55,790	87,500

## STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2004, BY WATER YEAR (WY)

MEAN	1,208	1,456	1,320	1,170	1,278	1,410	2,757	8,525	9,668	3,691	1,458	1,091
MAX	2,849	4,618	4,252	2,564	2,964	3,131	13,220	16,190	27,720	10,210	4,095	3,039
(WY)	(1960)	(1991)	(1996)	(1981)	(1991)	(1991)	(1934)	(1972)	(1972)	(1972)	(1993)	(1948)
MIN	403	413	399	360	532	525	770	3,790	2,650	605	231	231
(WY)	(1932)	(1930)	(1930)	(1930)	(1937)	(1931)	(1931)	(1941)	(1992)	(1940)	(1931)	(1940)

## 12445000 OKANOGAN RIVER NEAR TONASKET, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1929 - 2004	
ANNUAL TOTAL	637,496		864,270			
ANNUAL MEAN	1,747		2,361		2,937	
HIGHEST ANNUAL MEAN					6,019	
LOWEST ANNUAL MEAN					1,142	
HIGHEST DAILY MEAN	9,910	Jun 1	9,550	May 23	44,200	Jun 2, 1972
LOWEST DAILY MEAN	325	Aug 26	460	Jan 6	132	Sep 5, 1931
ANNUAL SEVEN-DAY MINIMUM	339	Aug 21	493	Oct 3	146	Aug 31, 1931
ANNUAL RUNOFF (AC-FT)	1,264,000		1,714,000		2,128,000	
10 PERCENT EXCEEDS	3,880		6,110		7,560	
50 PERCENT EXCEEDS	945		1,270		1,450	
90 PERCENT EXCEEDS	436		695		648	

e Estimated

## 12447200 OKANOGAN RIVER AT MALOTT, WA

LOCATION.--Lat 48°16'53", long 119°42'12", in SW $\frac{1}{4}$ , sec.9, T.32 N., R.25 E., Okanogan County, Hydrologic Unit 17020006, on right bank 75 ft upstream from highway bridge at Malott, 0.1 mi upstream from Loup Loup Creek, and at mile 17.0.

DRAINAGE AREA.--8,080 mi<sup>2</sup>, approximately.

PERIOD OF RECORD.--April 1958 to current year. April 1958 to September 1965, published as "near Malott." Records published for both sites December 1965 to July 1967.

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

GAGE.--Water-stage recorder. Datum of gage is 783.55 ft above NGVD of 1929. April 1958 to November 1965, water-stage recorder at site 3.9 mi downstream at NGVD of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair. Diversions upstream from station for irrigation of about 22,000 acres in the United States and 55,000 acres in Canada. Flow regulated by Okanogan and Skaha Lakes and by natural storage in other lakes. U.S. Geological Survey satellite telemeter at station. Daily water temperature records November 1969 to June 1971. Chemical analyses 1959-62, 1963-70 (partial record station), 1972, 1975-94. Published as "near Brewster" prior to 1964 and as "near Malott" 1963-66 (station 12447300).

AVERAGE DISCHARGE.--46 years (water years 1959-2004), 3,054 ft<sup>3</sup>/s, 2,213,000 acre-ft/yr, includes records for "near Malott" site located 3.9 mi downstream, water years 1959-65. 39 years (water years 1966-2004), 3,061 ft<sup>3</sup>/s, 2,217,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 45,600 ft<sup>3</sup>/s, June 3, 1972, gage height, 22.16 ft; minimum observed, 288 ft<sup>3</sup>/s, Sept. 4, 1970, gage height, 2.03 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,400 ft<sup>3</sup>/s, May 23, gage height, 9.11 ft; minimum discharge, 459 ft<sup>3</sup>/s, Oct. 9, gage height, 2.58 ft.

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	472	2,570	1,360	e580	e970	817	1,670	5,920	7,500	3,430	772	930
2	476	2,350	1,410	e660	984	804	1,770	6,810	6,840	3,520	857	921
3	480	2,240	1,340	e700	950	787	1,800	8,420	6,100	3,440	850	889
4	474	2,190	1,300	e720	897	744	1,810	9,250	5,890	3,080	786	866
5	478	2,070	1,390	e560	891	725	1,860	9,350	6,120	2,730	800	916
6	482	1,910	1,320	e480	878	712	2,020	9,450	6,840	2,560	843	1,040
7	492	1,720	1,270	e500	859	714	2,290	8,810	7,200	2,420	931	1,010
8	475	1,560	1,340	e520	855	719	2,580	8,200	6,740	2,310	1,110	934
9	465	1,530	1,270	e540	839	720	2,920	8,300	6,360	2,270	1,220	845
10	477	1,540	1,200	e600	854	724	3,130	8,610	6,180	2,200	1,120	806
11	489	1,640	1,160	e800	855	772	3,260	8,150	7,070	2,090	976	796
12	493	1,670	1,100	e1,160	846	969	3,470	7,670	9,600	2,130	779	824
13	530	1,700	1,080	e1,220	830	1,120	4,030	7,120	8,390	2,090	805	831
14	552	1,580	1,090	e1,240	829	1,140	5,080	6,540	7,680	1,990	738	1,120
15	551	1,430	1,120	e1,170	827	1,150	6,290	6,160	7,170	1,900	747	1,200
16	576	1,380	1,100	e1,120	827	1,140	6,230	6,040	6,520	1,810	741	1,120
17	631	1,370	1,110	e1,070	846	1,170	5,670	6,110	5,690	1,770	711	1,380
18	667	1,340	e1,070	e1,040	862	1,160	5,270	6,340	5,150	1,760	698	1,720
19	1,890	1,320	e1,100	e1,050	832	1,190	5,030	6,720	4,950	1,700	681	1,830
20	2,600	1,390	1,090	e1,090	819	1,210	4,780	7,320	4,810	1,680	680	1,910
21	1,960	1,660	1,060	e1,070	817	1,230	4,620	8,100	4,530	1,760	687	1,930
22	6,600	1,790	1,050	e1,050	810	1,220	4,410	8,350	4,270	1,860	688	1,860
23	7,760	1,540	1,070	e1,020	797	1,200	4,150	9,480	4,200	1,880	700	1,920
24	4,900	1,580	1,090	e1,010	800	1,220	4,010	9,990	4,120	2,000	758	2,090
25	4,120	1,470	1,050	e980	797	1,270	4,090	9,240	3,950	1,550	1,070	2,220
26	3,470	1,490	1,020	e990	830	1,430	3,990	8,500	3,850	1,290	1,180	2,260
27	3,090	1,450	1,040	e970	847	1,520	4,000	8,250	3,980	1,060	1,150	2,210
28	2,840	1,420	1,010	e960	845	1,510	4,860	8,840	4,320	943	1,120	2,140
29	2,620	1,370	943	e930	823	1,500	5,950	8,880	4,360	872	1,010	2,070
30	2,600	1,330	e660	e900	---	1,490	5,840	8,470	3,870	831	964	1,900
31	2,810	---	e560	e890	---	1,530	---	7,810	---	801	921	---
TOTAL	56,520	49,600	34,773	27,590	24,716	33,607	116,880	247,200	174,250	61,727	27,093	42,488
MEAN	1,823	1,653	1,122	890	852	1,084	3,896	7,974	5,808	1,991	874	1,416
MAX	7,760	2,570	1,410	1,240	984	1,530	6,290	9,990	9,600	3,520	1,220	2,260
MIN	465	1,320	560	480	797	712	1,670	5,920	3,850	801	680	796
AC-FT	112,100	98,380	68,970	54,720	49,020	66,660	231,800	490,300	345,600	122,400	53,740	84,270

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 2004, BY WATER YEAR (WY)

MEAN	1,154	1,453	1,284	1,220	1,385	1,671	2,872	8,528	9,999	4,028	1,627	1,157
MAX	1,847	4,747	4,402	2,970	2,979	3,946	7,015	16,420	29,290	10,990	4,150	2,963
(WY)	(1998)	(1991)	(1996)	(1984)	(1991)	(1983)	(1996)	(1972)	(1972)	(1972)	(1993)	(1997)
MIN	605	574	565	540	569	601	928	4,319	2,625	938	390	372
(WY)	(1988)	(1988)	(1971)	(1988)	(2001)	(1988)	(2001)	(1977)	(1992)	(1977)	(2003)	(1988)

## 12447200 OKANOGAN RIVER AT MALOTT, WA—Continued

SUMMARY STATISTICS	FOR 2003 CALENDAR YEAR		FOR 2004 WATER YEAR		WATER YEARS 1966 - 2004	
ANNUAL TOTAL	668,832		896,444		3,061	
ANNUAL MEAN	1,832		2,449		6,312	1972
HIGHEST ANNUAL MEAN					1,334	2001
LOWEST ANNUAL MEAN					45,300	Jun 3, 1972
HIGHEST DAILY MEAN	10,400	Jun 2	9,990	May 24	288	Sep 4, 1970
LOWEST DAILY MEAN	309	Aug 27	465	Oct 9	296	Aug 30, 1970
ANNUAL SEVEN-DAY MINIMUM	320	Aug 25	478	Oct 4	2,217,000	
ANNUAL RUNOFF (AC-FT)	1,327,000		1,778,000		7,980	
10 PERCENT EXCEEDS	4,130		6,640		1,490	
50 PERCENT EXCEEDS	1,050		1,320		690	
90 PERCENT EXCEEDS	426		712			

e Estimated