

Figure 26. Location of surface-water and water-quality stations in the Puyallup River Basin.

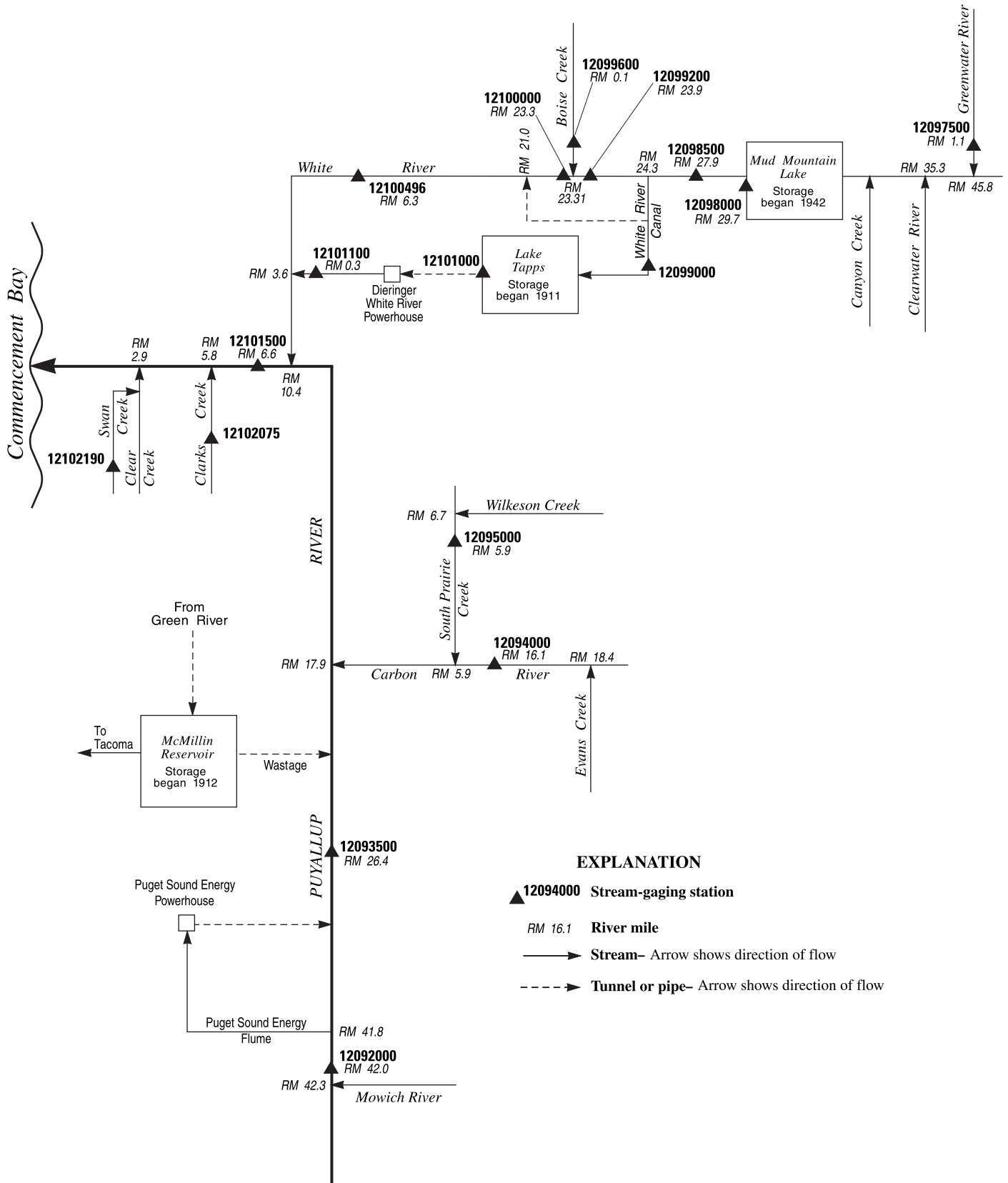


Figure 27. Schematic diagram showing surface-water stations in the Puyallup River Basin.



12093500 PUYALLUP RIVER NEAR ORTING, WA

LOCATION.--Lat 47°02'22", long 122°12'24", in SW ¼ SW ¼ sec.17, T.18 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 600 ft downstream from highway bridge, 4.0 mi south of Orting, 8.5 mi upstream from Carbon River, and at mile 26.4.

DRAINAGE AREA.--172 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1931 to current year.

REVISED RECORDS.--WSP 932: 1937-39, WSP 962: 1934, WSP 1246: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 352.5 ft above NGVD of 1929. Prior to Feb. 6, 1946, at site 600 ft upstream at datum 8.93 ft higher. Supplementary water-stage recorder 200 ft upstream at datum 7.1 ft higher than present gage datum, used at times during period in 1942-46, Feb. 6, 1946, to Mar. 12, 1965, at present site at datum 5.0 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Up to 400 ft<sup>3</sup>/s diverted for Electron powerplant of Puget Sound Energy, which is returned to river 4.8 mi upstream from gage. Minor regulation by Electron powerplant. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--72 years (water years 1932-2003), 714 ft<sup>3</sup>/s, 56.42 in/yr, 517,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,300 ft<sup>3</sup>/s Feb. 8, 1996, from slope area measurement, gage height, 11.37 ft; minimum discharge, 25 ft<sup>3</sup>/s Nov. 28, 1952; minimum daily, 59 ft<sup>3</sup>/s Nov. 29, 1952.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan 31	0930	*10,600	*9.85	No other peak greater than base discharge.			

Minimum daily discharge, 122 ft<sup>3</sup>/s, Oct. 31.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	195	123	e189	561	3,760	467	963	631	830	625	702	494
2	180	124	e183	922	2,190	453	805	630	732	498	688	541
3	410	126	e180	1,070	1,710	496	710	620	648	455	590	692
4	468	127	e180	1,320	1,330	458	640	613	662	475	512	719
5	324	131	e170	1,290	1,090	513	593	634	742	535	575	631
6	359	147	157	893	920	692	581	592	893	608	568	599
7	324	156	151	726	809	707	563	535	997	589	528	581
8	279	170	146	628	723	687	586	502	995	546	510	410
9	267	174	144	555	655	998	790	472	851	514	558	295
10	232	173	195	489	602	1,190	736	456	754	607	647	e270
11	195	166	376	447	556	1,110	781	451	664	751	527	495
12	177	323	703	561	523	1,810	729	459	645	766	391	437
13	179	393	807	508	495	2,700	816	464	625	725	e380	326
14	197	325	986	514	473	1,930	811	517	586	597	461	354
15	207	239	1,020	448	449	1,420	715	572	509	629	604	302
16	229	245	938	407	453	1,140	653	587	527	623	630	271
17	237	368	767	380	489	958	693	547	615	537	596	e238
18	226	277	597	361	456	826	680	502	740	588	651	e230
19	234	1,030	487	349	442	726	611	478	676	655	643	328
20	266	761	419	331	536	700	577	472	583	752	546	283
21	229	577	379	349	974	746	631	481	507	766	594	274
22	216	448	343	542	1,070	1,400	653	529	481	732	585	313
23	221	363	312	773	836	1,240	646	648	406	753	e484	337
24	147	297	296	696	688	952	740	1,000	379	712	e466	395
25	166	e253	285	646	602	832	713	1,030	351	629	536	413
26	170	e237	299	2,090	550	820	697	847	472	628	609	615
27	156	e224	407	1,430	503	778	654	780	620	630	503	638
28	157	e218	395	1,030	490	723	604	965	710	655	448	563
29	147	e208	377	986	---	665	592	967	779	671	499	509
30	e131	e199	372	1,720	---	707	630	1,010	813	696	549	420
31	e122	---	506	7,890	---	998	---	902	---	707	543	---
TOTAL	7,047	8,602	12,766	30,912	24,374	29,842	20,593	19,893	19,792	19,654	17,123	12,973
MEAN	227	287	412	997	870	963	686	642	660	634	552	432
MAX	468	1,030	1,020	7,890	3,760	2,700	963	1,030	997	766	702	719
MIN	122	123	144	331	442	453	563	451	351	455	380	230
AC-FT	13,980	17,060	25,320	61,310	48,350	59,190	40,850	39,460	39,260	38,980	33,960	25,730
CFSM	1.32	1.67	2.39	5.80	5.06	5.60	3.99	3.73	3.84	3.69	3.21	2.51
IN.	1.52	1.86	2.76	6.69	5.27	6.45	4.45	4.30	4.28	4.25	3.70	2.81

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 2003, BY WATER YEAR (WY)

MEAN	474	818	952	891	770	620	652	785	877	728	563	444
MAX	1,291	2,149	3,015	2,314	2,291	1,619	1,038	1,282	1,470	1,239	881	748
(WY)	(1960)	(1996)	(1934)	(1934)	(1996)	(1972)	(1991)	(1936)	(1974)	(1933)	(1983)	(1968)
MIN	210	92.8	205	205	280	266	303	494	311	483	373	283
(WY)	(1953)	(1953)	(1953)	(1937)	(1977)	(1941)	(1975)	(1941)	(1934)	(1977)	(1957)	(1936)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1932 - 2003

ANNUAL TOTAL	239,660	223,571	
ANNUAL MEAN	657	613	
HIGHEST ANNUAL MEAN			714
LOWEST ANNUAL MEAN			1,174
HIGHEST DAILY MEAN	4,320	Jan 8	7,890
LOWEST DAILY MEAN	122	Oct 31	122
ANNUAL SEVEN-DAY MINIMUM	126	Oct 30	126
ANNUAL RUNOFF (AC-FT)	475,400		443,500
ANNUAL RUNOFF (CFSM)	3.82		3.56
ANNUAL RUNOFF (INCHES)	51.83		48.35
10 PERCENT EXCEEDS	1,080		966
50 PERCENT EXCEEDS	588		561
90 PERCENT EXCEEDS	204		204
			1,180
			588
			309

e Estimated

PUYALLUP RIVER BASIN  
12094000 CARBON RIVER NEAR FAIRFAX, WA

LOCATION.--Lat 47°01'41", long 122°01'53", in SW 1/4 SW 1/4 sec.22, T.18 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank, 1.1 mi upstream from State Highway 165 (Fairfax) bridge, 1.2 mi northwest of Fairfax, 2.3 mi downstream from Evans Creek, 4 mi south of Carbonado, and at mile 16.1.

DRAINAGE AREA.--78.9 mi<sup>2</sup>.

PERIOD OF RECORD.--December 1910 to June 1912, April 1929 to September 1965, October 1965 to May 1978, October 1991 to current year. Published as "at Fairfax" 1910-12, 1966-78.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,201.7 ft above NGVD of 1929 (USGS National Mapping Division). Prior to July 12, 1912, nonrecording gage at railroad crossing 1.7 mi upstream at different datum. March 1929 to September 1965, recording gage 350 ft upstream at datum 1,212.6 ft above NGVD of 1929. October 1965 to May 1978, recording gage 1.7 mi upstream at datum then in use.

REMARKS.--No estimated daily discharges. Records fair. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--60 years (water years 1930-77, 1992-2003), 427 ft<sup>3</sup>/s, 73.56 in/yr, 309,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft<sup>3</sup>/s Feb. 8, 1996, gage height, 15.85 ft; minimum discharge, 32 ft<sup>3</sup>/s Nov. 24, 1993.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 24, 1990, reached a stage of 8.68 ft, from floodmark at former site and datum 350 ft upstream, discharge, 13,000 ft<sup>3</sup>/s, from rating extended above 6,200 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan 26	1345	3,560	10.99	Mar 13	0300	1,890	9.52
Jan 31	1045	*7,310	*13.34				

Minimum discharge, 53 ft<sup>3</sup>/s, Nov. 3, gage height, 6.53 ft.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	57	96	248	2,500	213	795	411	654	403	327	203
2	90	55	92	594	1,250	211	531	420	625	332	307	203
3	152	54	89	631	871	213	415	423	530	288	270	248
4	168	54	89	621	607	192	362	403	477	290	237	300
5	179	56	87	626	465	235	320	382	552	319	241	275
6	164	60	84	439	399	259	305	354	693	344	246	258
7	151	62	82	379	349	257	305	310	784	331	226	258
8	134	64	79	333	309	241	311	280	804	328	235	206
9	122	69	77	296	275	366	430	258	684	311	241	151
10	114	76	98	262	249	486	415	247	558	314	271	131
11	102	79	200	234	232	554	413	253	483	368	219	211
12	94	132	409	238	217	1,040	398	279	470	403	195	322
13	92	188	408	226	209	1,660	441	303	481	410	187	200
14	96	160	411	240	202	1,210	427	368	447	338	209	168
15	93	119	413	204	191	849	385	414	368	335	258	169
16	94	120	371	184	197	635	357	376	380	321	269	149
17	98	159	298	171	207	494	387	339	421	283	232	143
18	97	130	245	163	184	407	361	298	464	294	267	124
19	100	873	211	158	187	359	326	274	442	340	277	137
20	108	523	186	149	269	334	311	272	380	378	233	154
21	105	370	168	171	668	405	360	301	331	409	238	147
22	98	268	152	318	767	747	378	380	292	372	250	135
23	92	210	138	444	470	650	380	553	259	382	189	136
24	87	166	130	399	373	467	419	949	239	328	177	147
25	82	137	126	405	316	416	394	884	251	291	208	164
26	77	122	128	2,210	275	399	388	623	295	298	245	207
27	77	115	164	1,500	244	372	366	577	358	305	216	225
28	83	109	165	880	233	342	337	769	393	300	204	216
29	75	105	155	838	---	320	344	779	449	301	213	219
30	67	100	159	1,860	---	382	410	781	477	319	229	201
31	60	---	198	5,350	---	935	---	734	---	333	222	---
TOTAL	3,248	4,792	5,708	20,771	12,715	15,650	11,771	13,994	14,041	10,368	7,338	5,807
MEAN	105	160	184	670	454	505	392	451	468	334	237	194
MAX	179	873	413	5,350	2,500	1,660	795	949	804	410	327	322
MIN	60	54	77	149	184	192	305	247	239	283	177	124
AC-FT	6,440	9,500	11,320	41,200	25,220	31,040	23,350	27,760	27,850	20,560	14,550	11,520
CFSM	1.33	2.02	2.33	8.49	5.76	6.40	4.97	5.72	5.93	4.24	3.00	2.45
IN.	1.53	2.26	2.69	9.79	5.99	7.38	5.55	6.60	6.62	4.89	3.46	2.74

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 2003, BY WATER YEAR (WY)

MEAN	310	491	539	470	383	315	385	555	646	483	315	242
MAX	830	1,732	1,952	948	1,301	879	577	854	1,083	828	500	538
(WY)	(1960)	(1996)	(1934)	(1934)	(1996)	(1972)	(1938)	(1936)	(1964)	(1972)	(1964)	(1959)
MIN	105	59.0	110	110	131	143	134	346	306	264	201	158
(WY)	(2003)	(1930)	(1953)	(1937)	(1966)	(1941)	(1975)	(1941)	(1992)	(1940)	(1994)	(1930)

SUMMARY STATISTICS

	FOR 2002 CALENDAR YEAR	FOR 2003 WATER YEAR	WATER YEARS 1930 - 2003
ANNUAL TOTAL	141,419	126,203	
ANNUAL MEAN	387	346	427
HIGHEST ANNUAL MEAN			664
LOWEST ANNUAL MEAN			276
HIGHEST DAILY MEAN	3,210	5,350	9,020
LOWEST DAILY MEAN	54	54	40
ANNUAL SEVEN-DAY MINIMUM	57	57	42
ANNUAL RUNOFF (AC-FT)	280,500	250,300	309,500
ANNUAL RUNOFF (CFSM)	4.91	4.38	5.41
ANNUAL RUNOFF (INCHES)	66.68	59.50	73.56
10 PERCENT EXCEEDS	826	622	768
50 PERCENT EXCEEDS	278	275	336
90 PERCENT EXCEEDS	97	97	157

12095000 SOUTH PRAIRIE CREEK AT SOUTH PRAIRIE, WA

LOCATION.--Lat 47°08'23", long 122°05'29", in the NE 1/4 NW 1/4 sec.18, T.19 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 300 ft upstream from bridge on State Highway 162, 0.8 mi downstream from Wilkeson Creek, 0.3 mi east of South Prairie, and at mile 5.9.

DRAINAGE AREA.--79.5 mi<sup>2</sup>.

PERIOD OF RECORD.--June 1949 to September 1971, October 1987 to current year.

REVISED RECORDS.--WSP 1932: Drainage area. WDR WA-96-1: 1980(M), 1991(P).

GAGE.--Water-stage recorder. Datum of gage is 400.0 ft above NGVD of 1929. June 1949 to June 1969, water-stage recorder at site 400 ft downstream at different datum. June 1969 to September 1971, at present site at different datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--38 years (water years 1950-71, 1988-2003), 234 ft<sup>3</sup>/s, 39.93 in/yr, 169,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,170 ft<sup>3</sup>/s Feb. 8, 1996, gage height, 35.14 ft, on basis of contracted-opening measurement of peak flow; minimum discharge, 20 ft<sup>3</sup>/s Sept. 23, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,400 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan 31	1545	*3,390	*31.61	No other peak greater than base discharge.			

Minimum daily discharge, 22 ft<sup>3</sup>/s, Sept. 28, 29.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	37	62	236	1,250	192	439	291	153	e65	e31	e26
2	56	37	61	381	725	182	353	269	136	e62	e32	e26
3	81	37	60	320	571	222	298	249	126	e60	e32	e25
4	148	37	60	292	449	195	260	236	122	e58	e32	e25
5	93	38	60	314	364	204	228	217	e118	e56	e32	e25
6	76	42	57	225	307	265	222	203	e114	e54	e33	e25
7	70	45	55	189	268	318	219	186	e112	e52	e33	e29
8	67	45	54	161	241	302	233	174	e107	e52	e31	e47
9	65	47	52	140	217	560	304	161	e106	e50	e32	e36
10	70	58	60	123	200	709	276	154	e108	e48	e32	e32
11	61	56	118	112	185	614	264	151	e103	e46	e35	e43
12	49	77	194	127	e173	692	247	152	e99	e46	e32	e61
13	45	132	244	123	162	846	282	154	e101	e45	e31	e38
14	41	101	178	144	154	621	269	164	e114	e44	e30	e33
15	38	79	182	124	148	443	233	185	e101	e43	e29	e30
16	37	74	241	112	159	351	224	188	e96	e42	e30	e37
17	35	95	204	105	174	298	310	183	e94	e40	e30	e51
18	34	78	158	100	165	257	311	174	e93	e38	e30	e31
19	35	187	131	96	159	229	273	163	e96	e37	e30	e36
20	52	185	114	91	216	216	251	164	e117	e37	e30	e30
21	52	126	100	108	457	239	267	179	e150	e36	e30	e27
22	43	104	92	216	638	524	280	197	e125	e37	e29	e25
23	39	94	85	242	435	516	267	222	e110	e36	e29	e23
24	36	86	80	215	328	375	379	272	e100	e35	e29	e23
25	35	79	80	210	275	322	371	251	e90	e35	e28	e23
26	35	74	83	721	244	327	341	195	e85	e35	e30	e23
27	35	71	98	544	216	301	331	179	e80	e34	e29	e23
28	39	69	107	332	205	300	286	212	e75	e33	e28	e22
29	40	67	111	281	---	271	263	189	e70	e33	e27	e22
30	38	65	118	446	---	283	313	188	e67	e32	e26	e23
31	37	---	211	2,120	---	516	---	176	---	e31	e26	---
TOTAL	1,639	2,322	3,510	8,950	9,085	11,690	8,594	6,078	3,168	1,352	938	920
MEAN	52.9	77.4	113	289	324	377	286	196	106	43.6	30.3	30.7
MAX	148	187	244	2,120	1,250	846	439	291	153	65	35	61
MIN	34	37	52	91	148	182	219	151	67	31	26	22
AC-FT	3,250	4,610	6,960	17,750	18,020	23,190	17,050	12,060	6,280	2,680	1,860	1,820
CFSM	0.67	0.97	1.42	3.63	4.08	4.74	3.60	2.47	1.33	0.55	0.38	0.39
IN.	0.77	1.09	1.64	4.19	4.25	5.47	4.02	2.84	1.48	0.63	0.44	0.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 2003, BY WATER YEAR (WY)

MEAN	138	307	357	380	348	276	291	257	216	109	63.3	67.8
MAX	349	723	728	732	966	527	517	463	439	270	193	233
(WY)	(1960)	(1991)	(1956)	(1997)	(1996)	(1950)	(1991)	(1960)	(1964)	(1993)	(1968)	(1968)
MIN	26.4	35.2	61.5	126	112	138	157	131	59.1	43.6	30.3	30.7
(WY)	(1988)	(1953)	(1953)	(1957)	(1993)	(1992)	(1995)	(1992)	(1992)	(2003)	(2003)	(2003)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1949 - 2003

ANNUAL TOTAL	67,583	58,246	
ANNUAL MEAN	185	160	234
HIGHEST ANNUAL MEAN			338
LOWEST ANNUAL MEAN			141
HIGHEST DAILY MEAN	1,530	Apr 14	6,700
LOWEST DAILY MEAN	34	Oct 18	22
ANNUAL SEVEN-DAY MINIMUM	37	Oct 24	23
ANNUAL RUNOFF (AC-FT)	134,100		169,300
ANNUAL RUNOFF (CFSM)	2.33		2.94
ANNUAL RUNOFF (INCHES)	31.62		27.25
10 PERCENT EXCEEDS	359		448
50 PERCENT EXCEEDS	162		175
90 PERCENT EXCEEDS	43		46

e Estimated

PUYALLUP RIVER BASIN

12097500 GREENWATER RIVER AT GREENWATER, WA

LOCATION.--Lat 47°09'13", long 121°38'10", in NE ¼ NE ¼ sec.10, T.19 N., R.9 E., Pierce County, Hydrologic Unit 17110014, on left bank at bridge crossing, 0.7 mi east of Greenwater, and at mile 1.1.

DRAINAGE AREA.--73.5 mi<sup>2</sup>.

PERIOD OF RECORD.--September 1911 to August 1912 (fragmentary), May 1929 to September 1977, June 1980 to September 1993 (seasonal records), October 1993 to current year. Published as "near Enumclaw" 1911-12.

REVISED RECORDS.--WSP 1716: 1947(M). WA-94-1: 1990(M), 1993(M). WSP 1932: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,720 ft above NGVD of 1929, from river-profile survey. Prior to Aug. 10, 1912, nonrecording gages at sites approximately 500 ft upstream at different datums. May 1, 1929, to Aug. 14, 1934, water-stage recorder at site 1,400 ft upstream at different datum. Aug. 17, 1934, to Sept. 30, 1977, water-stage recorder at site 500 ft upstream at different datum. U.S. Geological Survey satellite telemeter at station.

REMARKS.--Records good. No regulation upstream from station.

AVERAGE DISCHARGE.--58 years (water years 1930-77, 1994-2003), 212 ft<sup>3</sup>/s, 39.10 in/yr, 153,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,900 ft<sup>3</sup>/s Feb. 8, 1996, gage height, 8.94 ft, from rating curve extended above 2,400 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow; minimum discharge, 22 ft<sup>3</sup>/s Oct. 27-31, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 2, 1977, reached a stage of 9.8 ft former site and datum, from floodmarks, discharge, about 10,500 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 638 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan 31	1415	*3,110	*7.43	No other peak greater than base discharge.			

Minimum discharge, 27 ft<sup>3</sup>/s, Dec. 9, and Sept. 5, 26-30, gage height, 2.74 ft.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	33	29	30	60	1,330	125	420	255	414	110	46	30
2	33	29	29	92	741	121	362	266	393	106	46	30
3	43	29	29	105	552	120	315	278	368	102	45	29
4	46	29	29	107	429	115	275	275	345	98	44	29
5	40	29	29	144	353	119	252	262	334	94	e43	29
6	37	29	29	111	298	126	237	253	337	92	e43	28
7	36	29	28	93	259	126	221	237	345	88	42	29
8	35	31	28	83	232	119	215	225	347	86	42	32
9	35	34	28	78	208	140	228	215	339	82	41	32
10	38	36	31	72	186	190	226	209	322	79	41	32
11	39	34	55	68	173	246	237	208	297	77	41	39
12	36	39	71	77	161	331	255	210	273	75	40	41
13	34	48	76	74	153	471	316	219	263	75	40	35
14	34	46	92	76	143	477	341	233	252	72	39	32
15	33	40	102	72	137	427	327	246	228	70	37	31
16	32	37	98	68	132	392	304	245	214	67	37	34
17	32	38	84	65	131	336	296	231	203	65	37	41
18	32	37	67	63	125	288	274	221	195	63	36	35
19	32	59	59	61	120	256	256	213	190	61	35	33
20	33	58	54	60	124	235	245	208	183	60	35	32
21	32	45	51	63	161	245	248	206	175	58	34	31
22	32	41	47	89	243	308	247	210	169	57	34	31
23	31	38	45	122	213	337	244	230	161	56	34	30
24	31	36	43	131	181	303	269	304	148	55	33	29
25	30	34	42	147	163	290	264	368	140	53	33	28
26	30	33	41	419	151	293	270	362	132	52	32	28
27	30	32	43	427	139	281	270	359	126	51	33	28
28	34	31	41	311	132	262	265	392	122	50	33	27
29	34	31	41	277	---	249	261	420	117	48	32	27
30	31	30	42	587	---	269	258	427	114	48	31	27
31	30	---	44	2,040	---	392	---	429	---	47	30	---
TOTAL	1,058	1,091	1,528	6,242	7,370	7,989	8,198	8,416	7,246	2,197	1,169	939
MEAN	34.1	36.4	49.3	201	263	258	273	271	242	70.9	37.7	31.3
MAX	46	59	102	2,040	1,330	477	420	429	414	110	46	41
MIN	30	29	28	60	120	115	215	206	114	47	30	27
AC-FT	2,100	2,160	3,030	12,380	14,620	15,850	16,260	16,690	14,370	4,360	2,320	1,860
CFSM	0.46	0.49	0.67	2.74	3.58	3.51	3.72	3.69	3.29	0.96	0.51	0.43
IN.	0.54	0.55	0.77	3.16	3.73	4.04	4.15	4.26	3.67	1.11	0.59	0.48

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 2003, BY WATER YEAR (WY)

MEAN	73.2	181	255	248	221	196	284	429	362	145	65.1	51.6
MAX	347	784	1,116	597	899	640	457	833	900	371	133	128
(WY)	(1960)	(1996)	(1934)	(1934)	(1996)	(1972)	(1956)	(1949)	(1950)	(1950)	(1976)	(1959)
MIN	24.1	29.7	35.0	45.3	70.3	77.5	124	158	83.0	51.6	36.5	30.9
(WY)	(1988)	(1937)	(1953)	(1937)	(1936)	(1941)	(1973)	(1941)	(1992)	(1934)	(1934)	(1987)

SUMMARY STATISTICS

	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1929 - 2003	
ANNUAL TOTAL	74,029		53,443			
ANNUAL MEAN	203		146		212	
HIGHEST ANNUAL MEAN					328	
LOWEST ANNUAL MEAN					92.4	
HIGHEST DAILY MEAN	1,430	Apr 14	2,040	Jan 31	4,800	Nov 29, 1995
LOWEST DAILY MEAN	28	Dec 7	27	Sep 28	22	Oct 28, 1987
ANNUAL SEVEN-DAY MINIMUM	29	Dec 3	28	Sep 24	23	Oct 24, 1987
ANNUAL RUNOFF (AC-FT)	146,800		106,000		153,200	
ANNUAL RUNOFF (CFSM)	2.76		1.99		2.88	
ANNUAL RUNOFF (INCHES)	37.47		27.05		39.10	
10 PERCENT EXCEEDS	499		329		460	
50 PERCENT EXCEEDS	126		77		146	
90 PERCENT EXCEEDS	33		30		44	

e Estimated

12098000 MUD MOUNTAIN LAKE NEAR BUCKLEY, WA

LOCATION.--Lat 47°08'27", long 121°55'48", in NE ¼ NE ¼ sec.17, T.19 N., R.7 E., Pierce County, Hydrologic Unit 17110014, on left bank of reservoir just upstream from Mud Mountain Dam on White River, 5 mi southeast of Buckley, 5.6 mi downstream from Clearwater River, and at mile 29.7.

DRAINAGE AREA.--400 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1943 to current year. Daily elevation at 0800 hours only October 1988 to September 1992. Month-end contents only October 1943 to September 1944, published in WSP 1316. Prior to October 1970, published as Mud Mountain Reservoir near Buckley.

GAGE.--Nonrecording gage. Datum of gage is NGVD of 1929 (levels by Corps of Engineers).

REMARKS.--Lake, for flood control, is formed by earth fill dam. Embankment completed and storage began on small scale in 1942. Capacity, 106,000 acre-ft between elevations 895 ft, invert of outlet tunnel, and 1,215 ft, spillway crest. Storage is dissipated as soon after a flood as is possible, without creating damaging flows downstream, in order to have the maximum capacity available for any following flood which might develop.

COOPERATION.--Records of lake elevations and capacity table furnished by Corps of Engineers (revised by USGS below 917 ft). Table uncertain below about 970 ft, due to siltation. Mud Mountain Lake is considered to have no appreciable storage below 917 ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed since dam was completed, 89,245 acre-ft Feb. 9, 1996, elevation, 1,196.1 ft; no contents at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 24,777 acre-ft Feb. 2, elevation, 1,090.2 ft; no contents many days during the year.

RESERVOIR STORAGE, ACRE FEET  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY OBSERVATION AT 0800 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	0.00	0.00	0.00	0.00	22,422	0.00	103	0.00	90	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00	24,777	0.00	92	0.00	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00	23,083	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00	22,966	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00	23,083	0.00	0.00	0.00	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00	22,653	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00	20,086	0.00	0.00	0.00	102	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00	14,483	0.00	0.00	0.00	112	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	8,184	0.00	2,740	0.00	111	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00	5,551	0.00	2,194	0.00	94	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00	3,435	0.00	1,755	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	1,472	105	1,642	0.00	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00	100	983	1,885	0.00	0.00	0.00	378	0.00
14	0.00	0.00	0.00	0.00	0.00	1,054	2,668	0.00	0.00	0.00	1,119	0.00
15	0.00	0.00	0.00	0.00	0.00	539	2,208	0.00	0.00	0.00	1,630	0.00
16	0.00	0.00	0.00	0.00	0.00	380	1,786	0.00	0.00	0.00	2,069	0.00
17	0.00	0.00	0.00	0.00	0.00	279	1,584	0.00	0.00	0.00	2,428	0.00
18	0.00	0.00	0.00	0.00	0.00	239	962	0.00	0.00	0.00	2,700	0.00
19	0.00	0.00	0.00	0.00	0.00	96	0.00	0.00	0.00	0.00	3,444	0.00
20	0.00	0.00	0.00	0.00	0.00	94	0.00	0.00	0.00	0.00	3,818	0.00
21	0.00	0.00	0.00	0.00	0.00	94	0.00	0.00	0.00	0.00	3,969	0.00
22	0.00	0.00	0.00	0.00	107	94	0.00	0.00	0.00	0.00	3,604	0.00
23	0.00	0.00	0.00	0.00	0.00	105	0.00	0.00	0.00	0.00	2,938	0.00
24	0.00	0.00	0.00	0.00	0.00	93	0.00	0.00	0.00	0.00	2,180	0.00
25	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1,489	0.00
26	0.00	0.00	0.00	105	0.00	0.00	0.00	0.00	0.00	0.00	1,283	0.00
27	0.00	0.00	0.00	212	0.00	0.00	0.00	0.00	0.00	0.00	715	0.00
28	0.00	0.00	0.00	107	0.00	0.00	0.00	0.00	0.00	0.00	176	0.00
29	0.00	0.00	0.00	0.00	---	0.00	0.00	103	0.00	0.00	104	0.00
30	0.00	0.00	0.00	233	---	0.00	0.00	100	0.00	0.00	0.00	0.00
31	0.00	---	0.00	3,435	---	99	---	106	---	0.00	0.00	---
MAX	0.00	0.00	0.00	3,435	24,777	1,054	2,740	106	112	0.00	3,969	0.00
MIN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
††	899.1	899.1	901.1	1,054.8	907.2	919.1	906.3	918.0	908.1	905.6	904.3	902.8
†	0.00	0.00	0.00	13,021	0.00	102	0.00	91	0.00	0.00	0.00	0.00
‡	0.00	0.00	0.00	+13,021	-13,021	+102	-102	+91	-91	0.00	0.00	0.00

CAL YR 2002 AC-FT‡ 0  
WTR YR 2003 AC-FT‡ 0

†† Monthend elevation, in feet, at 2400 hours.  
† Monthend contents, in acre-feet.  
‡ Change in contents, in acre-feet.



## PUYALLUP RIVER BASIN

## 12098500 WHITE RIVER NEAR BUCKLEY, WA

LOCATION.--Lat 47°09'05", long 121°56'55", in SW ¼ NW ¼ sec.8, T.19 N., R.7 E., King County, Hydrologic Unit 17110014, on right bank 0.4 mi upstream from Red Creek, 1.7 mi downstream from Mud Mountain Dam, 3.8 mi east of Buckley, 7.4 mi downstream from Clearwater River and at mile 27.9.

DRAINAGE AREA.--401 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1928 to November 1933, October 1938 to current year.

REVISED RECORDS.--WSP 1247: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929 (Corps of Engineers bench mark). Oct. 26 to Dec. 9, 1928, nonrecording gage, and Dec. 9, 1928, to Nov. 30, 1933, water-stage recorder at site 3.0 mi upstream at different datum. Nov. 26, 1938, to Feb. 14, 1939, nonrecording gage at present site and datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by Mud Mountain Lake (station 12098000) for flood control. Storage is not retained and observed annual runoff closely represents natural runoff of the basin. No diversion upstream from station. Chemical analyses July 1981; water temperatures March 1971 to September 1972; sediment records November 1971 to November 1972. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Water-stage recorder inspected by employees of Corps of Engineers.

AVERAGE DISCHARGE.--70 years (water years 1929-33, 1939-2003), 1,435 ft<sup>3</sup>/s, 48.60 in/yr, 1,040,000 acre-ft/yr, adjusted for storage since December 1943.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,000 ft<sup>3</sup>/s Feb. 26, 1932, gage height, 17.5 ft, site and datum then in use, from rating curve extended above 3,500 ft<sup>3</sup>/s; probably no flow for part of each day Oct. 1, 2, 7, 8, Nov. 14, Dec. 1, 5, 15, 1958; Jan. 3, Mar. 24, June 8, Aug. 19, 1959; minimum daily discharge, 59 ft<sup>3</sup>/s June 25, 1957, Mar. 26, 1958.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1933 reached a stage of 23.4 ft, from floodmarks, at former site, discharge, 28,000 ft<sup>3</sup>/s, from rating curve extended above 3,500 ft<sup>3</sup>/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,160 ft<sup>3</sup>/s Jan. 31, elevation, 805.31 ft; minimum daily discharge 267 ft<sup>3</sup>/s Nov. 2-4.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e393	e268	e298	580	5,000	1,220	2,640	1,440	2,430	1,360	963	e560
2	e391	e267	e293	1,140	5,540	1,200	2,290	1,490	2,190	1,230	931	e547
3	e485	e267	e290	1,340	4,210	1,230	2,050	1,520	2,060	1,190	882	e640
4	e597	e267	e291	1,390	2,710	1,170	1,860	1,510	1,960	1,180	836	e634
5	e452	e270	e289	1,770	2,460	1,200	1,730	1,450	2,040	1,190	843	e613
6	e450	e278	e285	1,270	2,870	1,270	1,690	1,410	2,340	1,190	858	e569
7	e437	e283	e284	1,050	4,130	1,300	1,630	1,340	2,660	1,190	834	e524
8	e418	e303	e279	940	4,270	1,240	1,410	1,300	2,800	1,170	e800	e549
9	e417	e311	e276	877	3,130	1,490	1,170	1,260	2,630	1,120	e755	e542
10	e461	e317	e299	796	2,070	1,980	1,800	1,240	2,330	1,120	e797	e522
11	e424	e303	e394	746	2,070	2,230	1,520	1,240	2,060	1,170	e756	e544
12	e395	e346	682	898	1,830	2,730	1,510	1,260	1,950	1,210	e663	e494
13	e380	e464	755	885	1,300	3,860	1,560	1,280	1,930	1,220	e514	e534
14	e370	e390	798	889	1,250	3,860	1,830	1,340	1,860	1,120	e462	e552
15	e380	e348	1,020	822	1,210	3,070	1,860	1,420	1,670	1,100	e507	e523
16	e370	e335	980	757	1,210	2,650	1,740	1,450	1,640	1,110	e561	e532
17	e360	e369	828	712	1,220	2,320	1,840	1,380	1,700	1,050	e578	e539
18	e360	e342	650	686	1,190	2,070	1,910	1,330	1,900	1,020	e508	e544
19	e350	e618	550	675	1,160	1,860	1,580	1,290	1,830	1,050	e640	e520
20	e340	e631	489	655	1,230	1,760	1,490	1,280	1,600	1,050	e623	e528
21	e330	e472	446	698	1,910	1,850	1,510	1,280	1,440	1,060	e560	e488
22	e320	e412	417	965	2,540	2,600	1,500	1,310	1,330	1,050	e656	e515
23	e320	e379	393	1,410	2,030	2,690	1,470	1,430	1,270	1,070	e598	e563
24	e310	e350	371	1,320	1,670	2,280	1,640	1,900	1,230	1,040	e607	e587
25	e310	e329	364	1,300	1,500	2,130	1,610	2,410	1,250	989	e576	e634
26	e300	e318	372	3,770	1,400	2,110	1,590	2,200	1,300	962	e595	e678
27	e300	e312	391	3,960	1,310	1,990	1,560	2,060	1,460	956	e631	e583
28	e290	e307	400	2,580	1,270	1,880	1,490	2,370	1,550	941	e530	e535
29	e280	e304	391	2,280	---	1,770	1,460	2,570	1,530	947	e581	e639
30	e280	e300	412	3,810	---	1,820	1,470	2,590	1,550	955	e568	e559
31	e272	---	499	4,820	---	2,590	---	2,620	---	965	e504	---
TOTAL	11,542	10,460	14,486	45,791	63,690	63,420	50,410	49,970	55,490	33,975	20,717	16,791
MEAN	372	349	467	1,477	2,275	2,046	1,680	1,612	1,850	1,096	668	560
MAX	597	631	1,020	4,820	5,540	3,860	2,640	2,620	2,800	1,360	963	678
MIN	272	267	276	580	1,160	1,170	1,170	1,240	1,230	941	462	488
AC-FT	22,890	20,750	28,730	90,830	126,300	125,800	99,990	99,120	110,100	67,390	41,090	33,300
MEAN†	372	349	467	1,689	2,041	2,047	1,679	1,613	1,849	1,096	668	560
CFSM†	0.93	0.87	1.16	4.21	5.09	5.10	4.19	4.02	4.61	2.73	1.67	1.40
IN.†	1.07	0.97	1.34	4.86	5.30	5.89	4.67	4.64	5.14	3.15	1.92	1.56
AC-FT†	22,890	20,750	28,730	103,900	113,300	125,900	99,890	99,220	110,000	67,390	41,090	33,300
CAL YR	2002	TOTAL 503,257	MEAN 1,379	MAX 6,880	MIN 267	AC-FT 998,200	MEAN† 1,379	CFSM† 3.44	IN.† 46.67	AC-FT† 998,200		
WTR YR	2003	TOTAL 436,742	MEAN 1,197	MAX 5,540	MIN 267	AC-FT 866,300	MEAN† 1,196	CFSM† 2.98	IN.† 40.51	AC-FT† 866,300		

† Adjusted for change in contents in Mud Mountain Lake.

e Estimated

12099000 WHITE RIVER CANAL AT BUCKLEY, WA

LOCATION.--Lat 47°10'19", long 122°01'13", in SE ¼ SE ¼ sec.34, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on right bank 0.8 mi downstream from diversion dam, and 0.8 mi northwest of Buckley.

PERIOD OF RECORD.--February 1913 to September 1938 (monthly runoff only, published in WSP 1316), October 1981 to current year. Records for September 1958 to September 1981 available in files of the U.S. Geological Survey. Records prior to October 1961, published as White River flume near Buckley, at site 0.5 mi downstream from White River diversion dam. September 1959 to September 1992 station at site 4.0 mi downstream from diversion dam.

GAGE.--Water-stage recorder. Elevation of gage is 650 ft above NGVD of 1929, from topographic map.

REMARKS.--Records poor. Flow completely regulated at White River diversion dam about 0.8 mi upstream from gage. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,340 ft<sup>3</sup>/s Dec. 17, 2001; no flow on many days during most years.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 2,210 ft<sup>3</sup>/s May 31; minimum daily discharge, no flow Nov. 3-6, July 16 to Aug. 14.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	165	e11	213	621	357	203	179	966	2,110	1,020	0.00	261
2	181	0.84	214	1,240	266	287	209	996	2,080	851	0.00	248
3	259	0.00	206	1,620	347	203	243	1,020	1,980	891	0.00	339
4	363	0.00	176	1,470	183	227	194	1,020	1,780	769	0.00	330
5	184	0.00	194	2,000	229	233	188	955	1,890	856	0.00	326
6	262	0.00	214	1,390	255	205	182	915	1,290	833	0.00	275
7	207	45	209	974	301	288	171	921	1,660	841	0.00	252
8	213	268	197	785	275	261	177	774	2,110	835	0.00	270
9	322	207	191	671	235	267	271	786	2,130	779	0.00	260
10	241	216	197	588	284	285	379	806	2,120	745	0.00	246
11	261	232	317	562	276	214	948	843	1,960	810	0.00	294
12	190	281	562	717	285	188	882	748	1,760	884	0.00	222
13	162	396	632	679	304	224	429	861	1,710	885	0.00	258
14	123	427	836	677	184	222	1,070	880	1,640	699	0.00	279
15	155	408	854	590	194	207	1,130	951	1,340	34	100	243
16	189	370	844	539	201	238	1,410	1,010	1,320	0.00	257	245
17	e113	484	713	434	288	256	1,460	940	1,410	0.00	297	254
18	e87	400	606	392	171	220	1,510	884	1,700	0.00	220	255
19	e60	503	450	431	272	194	1,100	841	1,240	0.00	351	229
20	e44	482	425	364	253	154	1,070	837	1,290	0.00	326	241
21	e39	605	316	295	269	144	1,060	822	1,040	0.00	279	207
22	e36	469	284	210	322	246	1,040	859	944	0.00	381	250
23	e31	400	227	240	299	205	1,040	1,060	910	0.00	340	281
24	e27	280	269	251	264	171	1,320	1,630	800	0.00	349	299
25	e26	220	246	255	241	254	1,160	2,060	698	0.00	319	335
26	e23	208	254	797	205	264	1,160	1,980	966	0.00	339	391
27	e21	225	284	1,120	230	248	1,100	1,890	1,120	0.00	376	293
28	e21	209	307	440	204	297	1,090	2,000	1,200	0.00	276	242
29	e18	216	295	262	---	277	987	2,170	1,180	0.00	323	352
30	e16	235	347	353	---	245	1,040	2,180	1,240	0.00	295	263
31	e14	---	490	317	---	277	---	2,210	---	0.00	223	---
TOTAL	4,053	7,797.84	11,569	21,284	7,194	7,204	24,199	36,815	44,618	11,732.00	5,051.00	8,240
MEAN	131	260	373	687	257	232	807	1,188	1,487	378	163	275
MAX	363	605	854	2,000	357	297	1,510	2,210	2,130	1,020	381	391
MIN	14	0.00	176	210	171	144	171	748	698	0.00	0.00	207
AC-FT	8,040	15,470	22,950	42,220	14,270	14,290	48,000	73,020	88,500	23,270	10,020	16,340
CAL YR	2002	TOTAL 333,227.84	MEAN 913	MAX 2,320	MIN 0.00	AC-FT 661,000						
WTR YR	2003	TOTAL 189,756.84	MEAN 520	MAX 2,210	MIN 0.00	AC-FT 376,400						

e Estimated

## 12099200 WHITE RIVER ABOVE BOISE CREEK AT BUCKLEY, WA

LOCATION.--Lat 47°10'26", long 122°00'29", in SE ¼ SW ¼ sec.35, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 1500 ft downstream from diversion dam, 1.5 mi northeast of Buckley, and at mile 23.9.

DRAINAGE AREA.--411 mi<sup>2</sup>

PERIOD OF RECORD.--July to September 2003. Prior to July 2003 records for "White River above Boise Creek at Buckley, WA" (station 12099100) published for station 1200 ft upstream are not equivalent because of inflows between sites.

GAGE.--Water-stage recorder. Elevation of gage is 650 ft above NGVD of 1929, from topographic map.

REMARKS.--Records good. Since November 1911, White River Canal has diverted water from left bank, 1500 feet upstream, for storage in Lake Tapps. Water is returned to the White River 20.3 miles downstream via Lake Tapps Diversion, after power development at Dieringer Powerplant. Since 1942, flows have been regulated by Mud Mountain Dam for flood control. U.S. Geological Survey telemeter at station.

EXTREMES FOR CURRENT YEAR.--Maximum discharge during the period July to September, 1,370 ft<sup>3</sup>/s July 23, gage height, 41.65 ft; minimum discharge, 251 ft<sup>3</sup>/s Aug. 29.

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

DAY	JUL	AUG	SEP
1	---	1,080	319
2	---	1,020	322
3	---	924	318
4	---	837	320
5	---	846	311
6	---	887	308
7	---	835	308
8	---	814	306
9	---	762	314
10	---	809	307
11	---	775	322
12	---	678	308
13	---	534	307
14	---	e450	307
15	---	425	311
16	---	322	318
17	---	297	310
18	1,100	302	309
19	1,160	304	303
20	1,170	311	302
21	1,190	296	304
22	1,200	292	301
23	1,230	274	317
24	1,190	273	311
25	1,090	272	322
26	1,030	273	321
27	1,030	273	318
28	1,010	271	312
29	1,030	280	312
30	1,060	286	317
31	1,080	299	---
TOTAL	---	16,301	9,365
MEAN	---	526	312
MAX	---	1,080	322
MIN	---	271	301
AC-FT	---	32,330	18,580

e Estimated

12099600 BOISE CREEK AT BUCKLEY, WA

LOCATION.--Lat 47°10'34", long 122°01'02", in NE ¼ SE ¼ sec.34, T.20 N., R.6 E., King County, Hydrologic Unit 17110014, on left bank at downstream side of county road bridge, 1.0 mi northeast of Buckley, and at mile 0.1.

DRAINAGE AREA.--15.4 mi<sup>2</sup>.

PERIOD OF RECORD.--March 1977 to September 1981, December 1981 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 640 ft above NGVD of 1929, from topographic map. Prior to January 25, 1984, at site 25 ft upstream at datum 0.91 ft higher. Prior to March 27, 1996, at site 10 ft downstream, at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records fair except for discharges above 200 ft<sup>3</sup>/s, which are poor. Flow partly regulated by millpond at mile 5.6. Diversions upstream from station for domestic and industrial use. Interbasin diversion from Scatter Creek of about 2 ft<sup>3</sup>/s during low-flow periods enters Boise Creek upstream from millpond. U.S. Geological Survey satellite telemeter at station. Chemical analyses November 1961 to July 1964.

AVERAGE DISCHARGE.--25 years (water years 1978-81, 1983-2003), 32.3 ft<sup>3</sup>/s, 23,420 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,200 ft<sup>3</sup>/s Feb. 8, 1996, gage height, 4.26 ft from rating curve extended above 180 ft<sup>3</sup>/s on basis of slope-area measurement of peak flow 0.94 mi upstream from station; minimum discharge, 1.7 ft<sup>3</sup>/s Sept. 19, 1979.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft<sup>3</sup>/s and maximum (\*):

Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)	Date	Time	Discharge (ft <sup>3</sup> /s)	Gage height (ft)
Jan 31	1500	*277	*2.93	Feb 21	2300	207	2.57

Minimum discharge, 2.5 ft<sup>3</sup>/s, Aug. 14, 15, gage height, 0.92 ft.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.4	4.2	5.3	46	152	25	48	29	10	7.4	4.0	3.0
2	5.2	4.3	5.3	53	110	27	40	27	10	6.7	4.3	3.1
3	22	4.3	5.0	45	113	42	37	26	9.9	7.3	4.0	2.9
4	16	4.3	5.1	55	86	30	34	27	9.2	7.2	4.1	3.0
5	8.7	4.4	5.0	58	65	33	30	26	9.4	6.9	3.7	2.9
6	7.6	5.1	4.7	37	51	50	38	29	8.4	6.8	4.1	2.9
7	6.5	4.5	4.6	26	43	78	42	25	8.3	6.5	3.9	3.5
8	5.7	4.4	4.5	21	38	52	42	23	7.7	7.1	3.8	6.1
9	6.6	5.7	4.4	17	33	117	48	22	7.7	6.7	3.8	4.1
10	19	7.1	5.3	15	31	121	38	20	8.6	6.5	4.3	3.9
11	9.9	5.3	14	15	28	97	34	20	8.1	6.3	4.1	8.4
12	7.3	11	23	24	26	107	31	19	8.3	6.3	3.8	15
13	6.4	8.3	26	21	25	105	50	18	8.6	7.9	3.4	5.7
14	6.0	10	14	30	24	77	40	17	8.1	6.9	3.0	4.9
15	5.4	7.2	12	20	23	60	32	20	7.4	6.2	3.1	4.1
16	5.1	8.4	34	17	27	50	33	24	7.2	5.4	3.3	5.9
17	4.8	7.4	24	16	28	45	58	25	7.6	5.0	3.3	6.8
18	4.7	6.6	18	15	27	39	54	23	7.3	5.1	3.3	4.3
19	4.7	10	13	14	27	35	44	21	8.6	5.2	3.4	6.4
20	7.4	12	12	14	35	33	37	18	7.3	5.1	3.3	5.1
21	5.8	8.8	10	30	92	43	38	19	10	5.2	3.6	4.1
22	5.2	7.7	9.8	52	121	89	38	16	11	5.3	3.8	3.7
23	5.1	6.9	8.8	39	71	67	34	15	11	5.1	4.0	3.7
24	4.6	6.4	8.8	38	49	50	75	14	9.7	4.9	4.0	3.8
25	4.5	6.2	8.7	32	40	52	57	17	8.2	4.8	3.6	3.7
26	4.5	5.8	10	115	34	57	55	14	8.6	4.8	3.5	3.6
27	4.5	5.7	14	99	28	46	48	13	7.8	4.4	3.7	3.6
28	5.6	5.6	12	74	28	39	40	12	7.8	4.2	3.4	3.5
29	5.2	5.3	15	68	---	34	35	11	7.3	4.1	3.3	3.6
30	4.5	5.3	20	79	---	31	32	12	6.9	4.2	3.1	3.6
31	4.4	---	37	215	---	56	---	11	---	4.2	3.0	---
TOTAL	218.3	198.2	393.3	1,400	1,455	1,787	1,262	613	256.0	179.7	113.0	138.9
MEAN	7.04	6.61	12.7	45.2	52.0	57.6	42.1	19.8	8.53	5.80	3.65	4.63
MAX	22	12	37	215	152	121	75	29	11	7.9	4.3	15
MIN	4.4	4.2	4.4	14	23	25	30	11	6.9	4.1	3.0	2.9
AC-FT	433	393	780	2,780	2,890	3,540	2,500	1,220	508	356	224	276

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2003, BY WATER YEAR (WY)

MEAN	13.5	45.0	50.8	54.8	55.8	45.2	40.0	30.6	23.1	14.5	8.95	9.20
MAX	29.8	124	96.2	162	145	76.7	69.3	57.5	55.1	35.5	16.3	29.5
(WY)	(1986)	(1991)	(1978)	(1984)	(1996)	(1997)	(1991)	(1984)	(1990)	(1983)	(1993)	(1978)
MIN	4.65	6.61	12.7	20.9	17.0	25.1	16.5	15.6	8.45	5.80	3.65	3.37
(WY)	(1990)	(2003)	(2003)	(2001)	(2001)	(1978)	(1995)	(1982)	(1982)	(2003)	(2003)	(1989)

SUMMARY STATISTICS

	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1977 - 2003	
ANNUAL TOTAL	9,356.9		8,014.4			
ANNUAL MEAN	25.6		22.0		32.3	
HIGHEST ANNUAL MEAN					50.4	
LOWEST ANNUAL MEAN					21.3	
HIGHEST DAILY MEAN	211	Mar 20	215	Jan 31	898	Feb 8, 1996
LOWEST DAILY MEAN	4.2	Nov 1	2.9	Sep 3	2.0	Sep 23, 1989
ANNUAL SEVEN-DAY MINIMUM	4.3	Oct 30	3.0	Aug 31	2.4	Sep 20, 1989
ANNUAL RUNOFF (AC-FT)	18,560		15,900		23,420	
10 PERCENT EXCEEDS	55		52		65	
50 PERCENT EXCEEDS	16		9.9		23	
90 PERCENT EXCEEDS	5.3		3.8		6.7	

## 12100000 WHITE RIVER AT BUCKLEY, WA

LOCATION.--Lat 47°10'28", long 122°01'09", in NE ¼ SE ¼ sec.34, T.20 N., R.6 E., Pierce County, Hydrologic Unit 17110014, on left bank 500 ft upstream from State Highway 410 bridge, 200 ft downstream from Boise Creek, 1.0 mi northeast of Buckley, and at mile 23.3

DRAINAGE AREA.--427 mi<sup>2</sup>.

PERIOD OF RECORD.--July 1910 to November 1911, April 1977 to September 2003 (discontinued). February 1913 to September 1938 (records not equivalent as they include flow of White River flume, see REMARKS).

REVISED RECORDS.--WSP 1316: Drainage area.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 620 ft above NGVD of 1929, from topographic map. June 8, 1910, to Nov. 30, 1911, nonrecording gage at site 150 ft upstream at different datum, and Jan. 18, 1913, to Sept. 30, 1938, water-stage recorder at site 100 ft upstream at datum NGVD of 1929 (levels by Puget Sound Energy).

REMARKS.--Records fair. Since November 1911, White River Canal (station 12099000) has diverted from left bank 1.0 mi upstream for storage in Lake Tapps (station 12101000). Water is returned to White River 19.7 mi downstream via the Lake Tapps Diversion (station 12101100) after power development at White River Powerplant at Dieringer. Since 1942, flow regulated by Mud Mountain Lake (station 12098000) for flood control. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--26 years (water years 1978-2003), 554 ft<sup>3</sup>/s, 401,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--During water years 1911-12, 1914-19, 1921-23, 1935-38, maximum discharge, 23,100 ft<sup>3</sup>/s Dec. 18, 1917, during period of combined flows; minimum, not determined. River, excluding canal, since April 1977, maximum discharge, 14,900 ft<sup>3</sup>/s Nov. 24, 1986, gage height, 8.48 ft; minimum discharge, 25 ft<sup>3</sup>/s Nov. 19, 1979, gage height, 2.41 ft; minimum daily discharge, 31 ft<sup>3</sup>/s July 30, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,240 ft<sup>3</sup>/s Feb. 2, gage height, 6.17 ft; minimum discharge, 121 ft<sup>3</sup>/s Dec. 11; minimum daily discharge, 129 ft<sup>3</sup>/s Nov. 26.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	295	284	136	166	4,550	945	2,650	390	617	300	e1,090	e322
2	299	281	132	172	4,990	910	2,240	411	337	299	e1,020	e322
3	314	281	131	177	4,180	969	1,970	406	295	300	e930	e318
4	287	281	136	200	2,660	884	1,760	393	298	305	e842	e325
5	284	281	144	335	2,370	901	1,620	393	292	304	e851	e315
6	289	285	137	156	2,680	1,030	1,590	394	1,170	302	e888	e315
7	285	259	132	147	3,660	1,110	1,530	390	1,190	303	e836	e309
8	284	180	130	153	3,880	1,010	1,300	393	983	303	e815	e311
9	285	190	134	153	2,970	1,380	742	390	792	305	e767	e315
10	289	196	140	149	1,890	1,930	1,450	391	482	304	e811	e311
11	275	175	143	147	1,850	2,190	712	389	297	308	e776	e327
12	280	174	212	171	1,600	2,690	647	378	290	307	e683	e322
13	279	162	180	170	1,050	3,620	1,290	388	293	308	e535	e311
14	280	154	171	162	980	3,710	933	385	287	404	e477	e308
15	280	148	180	158	927	3,130	962	394	284	1,080	e425	e313
16	287	154	176	155	934	2,710	426	379	289	e1,150	e323	e322
17	307	171	156	173	936	2,320	475	386	299	e1,130	e295	e320
18	338	160	158	205	897	2,030	508	379	432	e1,130	e304	e315
19	341	176	172	248	860	1,790	406	378	630	e1,170	e306	e315
20	355	132	173	231	952	1,670	398	378	289	e1,180	e315	e309
21	355	133	173	324	1,740	1,740	409	382	293	e1,200	e297	e311
22	345	132	172	692	2,470	2,560	398	382	295	e1,220	e297	e308
23	340	135	175	1,280	1,880	2,770	397	389	293	e1,240	e276	e320
24	338	140	169	1,300	1,520	2,290	403	446	296	e1,190	e276	e318
25	326	133	143	1,280	1,320	2,110	395	708	308	e1,090	e274	e329
26	314	129	149	2,220	1,170	2,090	398	521	307	e1,030	e276	e325
27	309	144	149	3,560	1,060	1,940	393	399	317	e1,030	e274	e322
28	322	143	149	2,660	1,010	1,800	391	668	311	e1,010	e274	e318
29	328	142	151	2,320	---	1,670	393	748	319	e1,030	e280	e316
30	310	138	156	3,160	---	1,700	392	739	313	e1,060	e288	e325
31	288	---	151	4,310	---	2,560	---	823	---	e1,080	e301	---
TOTAL	9,508	5,493	4,810	26,734	56,986	60,159	27,578	13,990	12,898	23,372	16,402	9,517
MEAN	307	183	155	862	2,035	1,941	919	451	430	754	529	317
MAX	355	285	212	4,310	4,990	3,710	2,650	823	1,190	1,240	1,090	329
MIN	275	129	130	147	860	884	391	378	284	299	274	308
AC-FT	18,860	10,900	9,540	53,030	113,000	119,300	54,700	27,750	25,580	46,360	32,530	18,880

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1977 - 2003, BY WATER YEAR (WY)

MEAN	190	658	884	713	916	505	473	553	681	461	372	211
MAX	510	2,557	4,014	2,888	3,789	1,941	1,171	2,165	1,898	1,473	825	511
(WY)	(1986)	(1996)	(1978)	(1984)	(1996)	(2003)	(1989)	(1997)	(1984)	(1982)	(1978)	(1988)
MIN	48.4	40.9	135	69.8	130	122	89.9	67.6	172	58.2	57.4	45.2
(WY)	(1980)	(1980)	(2001)	(1979)	(1985)	(1985)	(1982)	(1977)	(1992)	(1978)	(1977)	(1979)

SUMMARY STATISTICS

	FOR 2002 CALENDAR YEAR		FOR 2003 WATER YEAR		WATER YEARS 1977 - 2003	
ANNUAL TOTAL	191,522		267,447			
ANNUAL MEAN	525		733			
HIGHEST ANNUAL MEAN					554	
LOWEST ANNUAL MEAN					1,228	
HIGHEST DAILY MEAN	5,370		4,990		200	
LOWEST DAILY MEAN	129		129		13,500	
ANNUAL SEVEN-DAY MINIMUM	133		133		31	
ANNUAL RUNOFF (AC-FT)	379,900		530,500		37	
10 PERCENT EXCEEDS	1,050		1,880		401,400	
50 PERCENT EXCEEDS	322		327		1,340	
90 PERCENT EXCEEDS	157		155		206	
					78	

e Estimated

12100496 WHITE RIVER NEAR AUBURN, WA

LOCATION.--Lat 47°15'58", long 122°13'43", in SE ¼ NE ¼ sec.36, T.21 N., R.4 E., King County, Hydrologic Unit 17110014, on left bank 100 ft downstream from railroad bridge, 2.7 mi upstream from the White River Power Plant tailrace, 2.9 mi south of Auburn, and at mile 6.3.

DRAINAGE AREA.--464 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1987 to September 1989, October 1990 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is NGVD of 1929.

REMARKS.--Records fair except estimated daily discharges, which are poor. Since November 1911, White River Canal (station 12099000) has diverted from left bank 18.0 mi upstream for storage in Lake Tapps (station 12101000). Water is returned to White River 2.7 mi downstream via the Lake Tapps Diversion (station 12101100) after power development at White River Powerplant at Dieringer. Since 1942, flow regulated by Mud Mountain Lake (station 12098000) for flood control. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--15 years (water years 1988-89, 1991-2003), 692 ft<sup>3</sup>/s, 501,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,000 ft<sup>3</sup>/s Feb. 10, 1996, elevation, 83.15 ft; minimum discharge, 89 ft<sup>3</sup>/s Feb. 17, 18, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,750 ft<sup>3</sup>/s Jan. 31, elevation, 82.54 ft; minimum daily discharge, 174 ft<sup>3</sup>/s Dec. 8.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e385	e330	e186	e215	5,830	1,160	2,890	463	701	e341	e1,150	374
2	e387	e326	e182	e219	6,280	1,120	2,400	480	410	e341	e1,090	380
3	e395	e323	e182	e222	5,480	1,180	2,080	469	327	e341	e1,000	380
4	e362	e321	e187	e247	3,060	1,110	1,850	465	324	e347	e904	379
5	e355	e323	e191	e389	2,580	1,090	1,700	458	e319	e342	e915	372
6	e358	e330	e186	e215	2,770	1,220	1,660	463	e1,250	e341	e948	362
7	e350	e320	e178	e199	4,130	1,340	1,610	451	e1,290	e341	e915	375
8	e348	e225	e174	e206	4,560	1,240	1,540	450	e1,040	e342	e889	372
9	e349	e234	e180	e204	3,530	1,520	753	443	e864	e345	e846	379
10	e352	e238	e185	e200	1,950	2,020	1,670	443	e565	e344	e889	376
11	e332	e218	e185	e198	1,940	2,170	909	441	e353	e348	e848	393
12	e335	e217	e230	e223	1,790	2,750	710	432	e335	e347	e774	400
13	e331	e204	e200	e221	1,180	4,390	1,430	436	e338	e351	e667	370
14	e330	e196	e191	e212	1,080	4,850	1,100	432	e335	e482	e556	366
15	e328	e189	e203	e211	998	3,800	1,130	446	e332	e1,160	e497	375
16	e334	e195	e201	e205	1,000	3,120	643	437	e335	e1,200	e423	391
17	e356	e211	e188	e220	987	2,610	587	429	e353	e1,170	e356	388
18	e388	e195	e190	e255	952	2,240	667	430	e497	e1,170	e367	377
19	e390	e223	e207	e290	902	1,960	543	420	e710	e1,210	e367	380
20	e405	e190	e209	e277	945	1,820	521	421	e335	e1,230	e375	371
21	e406	e190	e210	e368	1,520	1,880	535	427	e338	e1,240	e357	370
22	e399	e189	e212	e700	2,710	2,980	523	428	e344	e1,260	e352	365
23	e390	e191	e219	e1,490	1,980	3,260	521	433	e344	e1,300	324	381
24	e388	e198	e210	e1,510	1,610	2,520	557	473	e347	e1,260	318	385
25	e374	e190	e190	e1,490	1,450	2,210	519	706	e350	e1,170	309	391
26	e361	e183	e196	2,980	1,350	2,240	512	599	e350	e1,100	313	391
27	e355	e200	e199	4,100	1,260	2,060	499	450	e359	e1,100	321	386
28	e363	e196	e198	3,150	1,210	1,910	485	633	e356	e1,070	308	380
29	e368	e188	e199	2,810	---	1,770	476	801	e362	e1,090	316	384
30	e353	e187	e207	4,390	---	1,760	472	742	e356	e1,120	328	391
31	e337	---	e200	5,940	---	2,600	---	858	---	e1,140	336	---
TOTAL	11,264	6,920	6,075	33,556	65,034	67,900	31,492	15,459	14,519	24,943	18,358	11,384
MEAN	363	231	196	1,082	2,323	2,190	1,050	499	484	805	592	379
MAX	406	330	230	5,940	6,280	4,850	2,890	858	1,290	1,300	1,150	400
MIN	328	183	174	198	902	1,090	472	420	319	341	308	362
AC-FT	22,340	13,730	12,050	66,560	129,000	134,700	62,460	30,660	28,800	49,470	36,410	22,580

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1988 - 2003, BY WATER YEAR (WY)

MEAN	298	945	1,052	855	1,168	649	715	678	727	451	474	329
MAX	537	2,835	3,794	2,371	4,575	2,190	1,415	2,200	1,798	1,277	873	560
(WY)	(1998)	(1996)	(1996)	(1997)	(1996)	(2003)	(1991)	(1997)	(1997)	(1988)	(1991)	(1988)
MIN	165	168	188	202	176	193	188	170	189	214	246	160
(WY)	(1992)	(1994)	(1994)	(2001)	(1994)	(1992)	(1995)	(1992)	(1992)	(1998)	(1994)	(1989)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1988 - 2003

ANNUAL TOTAL	232,952	306,904		
ANNUAL MEAN	638	841	692	
HIGHEST ANNUAL MEAN			1,411	1996
LOWEST ANNUAL MEAN			243	1994
HIGHEST DAILY MEAN	6,820	Jan 9	6,280	Feb 2
LOWEST DAILY MEAN	174	Dec 8	174	Dec 8
ANNUAL SEVEN-DAY MINIMUM	183	Dec 3	183	Dec 3
ANNUAL RUNOFF (AC-FT)	462,100		608,700	501,200
10 PERCENT EXCEEDS	1,160		1,970	1,540
50 PERCENT EXCEEDS	421		391	310
90 PERCENT EXCEEDS	201		200	171

e Estimated

## PUYALLUP RIVER BASIN

## 12101000 LAKE TAPPS NEAR SUMNER, WA

LOCATION.--Lat 47°14'28", long 122°11'26", in NE ¼ NE ¼ sec.8, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, 1.7 mi east of Dieringer, and 3.5 mi northeast of Sumner.

PERIOD OF RECORD.--November 1911 to current year. October 1934 to October 1950, change in contents published with records for Puyallup River at Puyallup. Monthend contents only November 1911 to September 1950, published in WSP 1316.

GAGE.--Water-stage recorder. Datum of gage is 0.7 ft above NGVD of 1929 (levels by Puget Sound Energy).

REMARKS.--Reservoir is formed by a diked natural lake into which a large part of the low-water flow of White River is diverted. Construction of dike began June 1910; storage began in 1911. Usable capacity (based on 1959 resurvey; capacity table dated July 28, 1959, put into use Oct. 1, 1958), 46,600 acre-ft between gage heights of 515 ft, normal minimum pool, and 543 ft, normal maximum pool. Storage below 515 feet unknown. Figures given herein represent usable contents. Reservoir is used for power development at the White River Powerplant at Dieringer. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Prior to October 1, 1990, and July 1996 to May 1997, gage-height record furnished by Puget Sound Energy. Contents curve furnished by Puget Sound Energy.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 51,710 acre-ft June 30, 1958, gage height, 541.57 ft, capacity table dated Jan. 19, 1920; maximum gage height observed, 543.07 ft July 8, 1990; minimum contents observed, not determined (below normal minimum pool) Jan. 23 to Apr. 16, 2003; minimum gage height, 498.91 ft Mar. 14, 2003.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 46,630 acre-ft June 17, 19, gage height, 542.99 ft; minimum contents unknown, Jan. 23 to April 16; minimum gage height, 498.91 ft Mar. 14, 2003.

MONTH-END GAGE HEIGHT AND CONTENTS AT 2400  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003

Date	Gage height (feet)	Contents (acre- feet)	Change in contents (acre- feet)
September 30	540.81	41,241	--
October 31	533.70	25,418	-15,823
November 30	525.74	11,976	-13,442
December 31	525.23	11,255	-721
Calendar Year 2002	--	--	-1,661
January 31	512.44	--	-11,255
February 28	502.07	--	--
March 31	501.17	--	--
April 30	522.14	7,283	+7,283
May 31	542.58	45,598	+38,315
June 30	542.44	45,245	-353
July 31	542.06	44,288	-957
August 31	542.11	44,414	+126
September 30	539.79	38,816	-5,598
Water Year 2003	--	--	-2,425

12101100 LAKE TAPPS DIVERSION AT DIERINGER, WA

LOCATION.--Lat 47°14'18", long 122°13'37", in SW ¼ NW ¼ sec.7, T.20 N., R.5 E., Pierce County, Hydrologic Unit 17110014, on right bank 850 ft downstream from White River Powerplant at Dieringer, and 1,400 ft upstream from mouth.

PERIOD OF RECORD.--April 1958 to current year.

GAGE.--Water-stage recorder. Datum of gage is 42.36 ft above NGVD of 1929 (levels by Puget Sound Power and Light Co.). Prior to September 30, 1990, at same site at datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Records good except for discharges below 15 ft<sup>3</sup>/s, which are fair. Flow regulated by White River Powerplant. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--45 years (water years 1959-2003), 934 ft<sup>3</sup>/s, 676,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft<sup>3</sup>/s Jan. 29, 1965, gage height, 6.23 ft, datum then in use; maximum gage height, 12.44 ft Dec. 1, 1995 (backwater from White River); no flow many days in July and August 1990, Sept. 29, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,100 ft<sup>3</sup>/s June 13, gage height, 9.54 ft; minimum discharge, 4.6 ft<sup>3</sup>/s Mar. 19-21, Apr. 1.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1,340	227	27	309	759	9.2	25	1,290	1,890	1,310	29	340
2	1,300	267	600	991	624	9.3	23	393	1,980	949	29	202
3	1,100	27	509	1,480	589	9.7	23	24	2,000	825	29	398
4	484	658	173	1,570	522	9.7	23	22	1,800	774	29	215
5	449	29	27	1,570	416	9.7	23	855	1,930	755	29	169
6	448	188	199	1,570	220	10	24	354	1,540	810	29	31
7	995	204	206	1,570	104	12	24	27	1,570	872	29	323
8	27	328	327	1,570	127	13	24	26	1,930	977	29	310
9	27	709	362	1,490	149	14	68	26	1,930	647	30	259
10	29	696	240	1,290	119	377	232	26	2,050	671	30	442
11	27	1,130	64	966	52	766	390	26	2,060	599	30	141
12	27	1,130	225	962	5.6	494	437	26	2,090	716	29	30
13	752	652	82	845	219	259	440	26	2,060	585	29	29
14	323	30	29	946	766	78	425	26	1,070	484	29	173
15	482	29	1,060	1,200	582	14	17	27	1,640	60	29	270
16	28	29	627	641	294	14	16	26	1,170	59	29	215
17	28	28	436	832	22	16	25	27	1,500	59	30	129
18	28	1,170	694	1,070	292	16	309	26	1,200	39	30	132
19	29	1,110	665	965	319	13	687	26	1,720	23	30	157
20	29	1,080	749	842	247	13	684	26	1,630	23	31	31
21	76	1,170	406	620	210	13	1,280	26	1,460	23	31	138
22	78	1,230	618	687	141	16	1,670	26	1,280	23	31	31
23	116	28	446	509	17	17	1,170	27	1,020	23	389	31
24	79	298	622	553	23	19	1,340	29	954	23	704	110
25	31	1,060	536	388	22	19	1,510	342	925	23	704	345
26	31	542	571	415	22	21	1,320	1,290	545	21	496	697
27	356	147	539	677	15	22	1,390	1,560	1,090	21	401	331
28	28	201	639	902	9.1	22	1,300	1,790	1,410	21	447	427
29	294	27	492	943	---	22	1,280	1,910	1,300	25	321	962
30	1,420	27	551	829	---	22	1,280	1,990	1,190	29	31	1,400
31	1,020	---	436	353	---	22	---	1,900	---	29	428	---
TOTAL	11,481	14,451	13,157	29,555	6,886.7	2,371.6	17,459	14,195	45,934	11,498	4,571	8,468
MEAN	370	482	424	953	246	76.5	582	458	1,531	371	147	282
MAX	1,420	1,230	1,060	1,570	766	766	1,670	1,990	2,090	1,310	704	1,400
MIN	27	27	27	309	5.6	9.2	16	22	545	21	29	29
AC-FT	22,770	28,660	26,100	58,620	13,660	4,700	34,630	28,160	91,110	22,810	9,070	16,800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 2003, BY WATER YEAR (WY)

MEAN	614	886	1,069	1,179	1,083	1,045	1,078	1,041	1,251	917	568	521
MAX	1,443	1,516	1,719	1,939	1,819	1,545	1,716	1,715	1,925	1,807	1,018	1,251
(WY)	(1960)	(1959)	(1967)	(1967)	(1970)	(1961)	(1966)	(1961)	(2000)	(1999)	(1983)	(1974)
MIN	163	200	135	480	159	76.5	298	261	415	6.09	5.88	8.11
(WY)	(1988)	(1988)	(2001)	(1993)	(2001)	(2003)	(1971)	(1972)	(1972)	(1988)	(1988)	(1988)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1958 - 2003

ANNUAL TOTAL	328,125.9	180,027.3	
ANNUAL MEAN	899	493	934
HIGHEST ANNUAL MEAN			1,232
LOWEST ANNUAL MEAN			493
HIGHEST DAILY MEAN	2,070	2,090	2,210
LOWEST DAILY MEAN	2.2	5.6	0.00
ANNUAL SEVEN-DAY MINIMUM	2.5	9.5	0.00
ANNUAL RUNOFF (AC-FT)	650,800	357,100	676,800
10 PERCENT EXCEEDS	1,760	1,360	1,640
50 PERCENT EXCEEDS	1,020	294	950
90 PERCENT EXCEEDS	27	22	55



PUYALLUP RIVER BASIN

12101500 PUYALLUP RIVER AT PUYALLUP, WA

LOCATION.--Lat 47°12'31", long 122°19'33", in SE 1/4 NW 1/4 sec.20, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, on left bank 0.8 mi upstream from bridge at Clark Creek, 2.0 mi northwest of Puyallup City Hall, and at mile 6.6.

DRAINAGE AREA.--948 mi<sup>2</sup>.

PERIOD OF RECORD.--May 1914 to current year.

REVISED RECORDS.--WSP 832: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is NGVD of 1929. Prior to Dec. 3, 1919, at sites 1.2 mi upstream and 900 ft upstream at different datums. Dec. 3, 1919, to Nov. 9, 1935, at site 500 ft upstream at datum 9.61 ft higher.

REMARKS.--Records fair. All diverted water returned to river upstream from gage. Large part of flow of White River (a tributary) diverted through Lake Tapps (station 12101000). Flood flow regulated by Mud Mountain Lake (station 12098000) on White River. Some pondage on tributaries and upper Puyallup River. Diurnal fluctuations caused by powerplants and glacial melt upstream from station. U.S. Geological Survey satellite telemeter at station. Chemical analyses October 1958 to September 1968, October 1970 to September 1972, October 1974 to September 1994. Water temperatures July 1959 to September 1961, August 1965 to September 1966. Since 1912 the City of Tacoma pipeline diversion from Green River has released as much as 123 ft<sup>3</sup>/s daily, and from 1957-1990 an average of about 15 ft<sup>3</sup>/s per month into Puyallup River 0.5 mi east of McMillin. Since 1990 releases have been minimal.

AVERAGE DISCHARGE.--89 years (water years 1915-2003), 3,323 ft<sup>3</sup>/s, 2,408,000 acre-ft/yr, adjusted for storage in Lake Tapps since October 1934, and Mud Mountain Lake, October 1944 to September 1947.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,000 ft<sup>3</sup>/s Dec. 10, 1933, elevation, 31.0 ft, present datum; minimum discharge, 306 ft<sup>3</sup>/s Sept. 25, 1955, elevation, 8.23 ft; minimum daily discharge, 400 ft<sup>3</sup>/s Nov. 30, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 21,100 ft<sup>3</sup>/s Jan. 31, elevation, 21.50 ft; minimum discharge, 644 ft<sup>3</sup>/s Dec. 8, 9, elevation 8.90 ft; minimum daily discharge 713 ft<sup>3</sup>/s Dec. 5.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2,140	1,010	735	1,840	15,100	2,370	5,740	3,460	4,680	3,140	2,280	1,650
2	2,150	969	1,250	3,370	10,500	2,190	5,310	3,030	4,330	2,570	2,270	1,520
3	2,160	741	1,140	4,160	8,670	2,370	4,750	2,520	4,130	2,110	2,090	1,760
4	1,940	1,330	867	4,100	6,010	2,210	4,330	2,440	3,830	2,100	1,890	1,820
5	1,590	759	713	4,890	4,940	2,150	3,960	2,840	4,080	2,140	1,860	1,720
6	1,570	955	847	3,690	4,510	2,800	3,790	2,760	4,300	2,310	1,960	1,470
7	2,040	992	836	3,310	4,810	3,190	3,670	2,190	4,630	2,380	1,890	1,750
8	1,070	1,000	891	3,100	5,340	3,220	3,730	2,030	5,120	2,380	1,830	1,610
9	1,020	1,370	1,030	2,890	5,170	3,530	3,330	1,940	4,850	2,210	1,830	1,320
10	989	1,420	921	2,610	3,640	4,720	4,000	1,870	4,280	2,060	2,000	1,400
11	940	1,830	1,050	2,200	3,510	5,570	3,810	1,850	4,040	2,280	1,930	1,320
12	1,010	1,900	2,100	2,350	3,210	6,190	3,610	1,860	4,020	2,420	1,650	1,560
13	1,500	1,910	2,400	2,360	2,710	7,090	4,010	1,880	4,030	2,280	1,470	1,200
14	1,240	1,090	2,100	2,300	3,110	7,790	4,170	1,950	2,730	2,100	1,380	1,200
15	1,260	927	3,290	2,520	2,960	7,490	3,750	2,140	3,430	2,340	1,570	1,340
16	957	871	3,030	1,900	2,770	6,220	3,210	2,240	2,760	2,380	1,600	1,250
17	934	1,120	2,430	2,000	2,440	5,340	3,050	2,140	2,920	2,190	1,500	1,220
18	966	2,040	2,270	2,230	2,550	4,750	3,340	2,060	3,080	2,130	1,410	1,100
19	961	3,180	1,970	2,190	2,530	4,320	3,550	1,930	3,790	2,230	1,520	1,200
20	1,060	3,220	1,860	2,040	2,620	4,070	3,430	1,850	3,390	2,360	1,390	1,120
21	1,090	2,650	1,530	1,940	3,120	4,070	3,660	1,890	3,070	2,530	1,360	1,130
22	1,040	2,390	1,550	2,920	3,980	4,990	4,370	1,990	2,850	2,430	1,410	1,010
23	1,070	1,270	1,430	3,930	4,380	6,030	4,080	2,260	2,530	2,470	1,530	1,000
24	922	1,250	1,480	3,700	3,790	5,620	4,170	2,880	2,170	2,410	1,800	1,180
25	868	1,830	1,380	3,470	3,160	5,010	4,510	3,460	2,070	2,230	1,920	1,460
26	856	1,330	1,420	7,010	2,910	4,900	4,150	3,990	1,830	2,130	1,850	2,060
27	1,160	974	1,570	8,630	2,650	4,670	4,010	3,810	2,390	2,130	1,730	1,840
28	863	961	1,720	6,390	2,450	4,410	3,770	4,270	3,120	2,150	1,560	1,790
29	1,090	780	1,580	5,500	---	4,160	3,510	4,800	3,170	2,170	1,550	2,250
30	1,970	754	1,590	7,570	---	4,090	3,440	4,850	3,210	2,220	1,340	2,600
31	1,820	---	1,900	16,200	---	4,750	---	4,890	---	2,280	1,640	---
TOTAL	40,246	42,823	48,880	123,310	123,540	140,280	118,210	84,070	104,830	71,260	53,010	44,850
MEAN	1,298	1,427	1,577	3,978	4,412	4,525	3,940	2,712	3,494	2,299	1,710	1,495
MAX	2,160	3,220	3,290	16,200	15,100	7,790	5,740	4,890	5,120	3,140	2,280	2,600
MIN	856	741	713	1,840	2,440	2,150	3,050	1,850	1,830	2,060	1,340	1,000
AC-FT	79,830	84,940	96,950	244,600	245,000	278,200	234,500	166,800	207,900	141,300	105,100	88,960
MEAN†	1,041	1,202	1,565	3,793	4,412	4,524	4,065	3,335	3,488	2,281	1,711	1,401
CFSM†	1.10	1.27	1.65	4.00	4.65	4.77	4.29	3.52	3.68	2.41	1.80	1.48
IN.†	1.27	1.41	1.90	4.61	4.85	5.50	4.78	4.06	4.10	2.77	2.08	1.65
AC-FT†	64,010	71,500	96,230	233,300	245,000	278,200	241,800	205,100	207,500	140,300	105,200	83,360

CAL YR 2002 TOTAL 1,107,169 MEAN 3,033 MAX 14,100 MIN 713 AC-FT 2,196,000 MEAN† 3,030 CFSM† 3.20 IN.† 43.39 AC-FT† 2,194,000  
WTR YR 2003 TOTAL 995,309 MEAN 2,727 MAX 16,200 MIN 713 AC-FT 1,974,000 MEAN† 2,723 CFSM† 2.87 IN.† 39.00 AC-FT† 1,972,000

† Adjusted for change in contents in Lake Tapps.

e Estimated

12102075 CLARKS CREEK AT TACOMA ROAD, NEAR PUYALLUP, WA

LOCATION.--Lat 47°11'52", long 122°20'10", in NE ¼ NE ¼ sec.30, T.20 N., R.4 E., Pierce County, Hydrologic Unit 17110014, at private bridge at end of Tacoma Road, 1.0 mi northwest of Puyallup, and at mile 1.5.

DRAINAGE AREA.--13.0 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1992 to September 1995 (discharge measurements only). March 1995 to current year.

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

REMARKS.--Records fair except estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--8 years (water year 1996-2003), 61.6 ft<sup>3</sup>/s, 64.33 in/yr, 44,590 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 190 ft<sup>3</sup>/s Nov. 14, 2001, elevation 23.13 ft, but was likely exceeded Feb. 8 or 9, 1996; maximum elevation, 25.60 ft Feb. 8 or 9, 1996, from inside high-water mark, affected by backwater from the Puyallup River; minimum daily discharge, 33 ft<sup>3</sup>/s June 26-29, 1995.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 114 ft<sup>3</sup>/s Jan. 31, elevation, 21.14 ft from peak stage indicator, minimum discharge, 37 ft<sup>3</sup>/s June 3, 4, 6, 7, 9, 17.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO SEPTEMBER 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	55	50	68	e58	50	e51	51	40	46	48	55
2	49	55	50	63	e54	50	51	51	40	46	48	55
3	53	54	51	59	e53	51	52	50	38	46	49	56
4	51	55	52	66	52	50	51	50	39	46	49	55
5	50	56	51	55	52	51	51	49	40	47	49	55
6	50	60	51	52	51	53	54	49	39	49	51	54
7	50	58	50	51	e51	56	53	48	38	47	49	55
8	51	59	51	51	e52	54	52	48	39	49	50	60
9	50	58	52	51	e53	74	58	48	39	50	51	57
10	50	57	58	51	e53	58	52	48	41	49	56	57
11	50	56	64	52	e52	56	52	47	40	48	54	60
12	50	61	66	61	51	66	52	46	41	51	53	61
13	50	51	61	55	e53	67	60	46	42	51	52	57
14	49	53	69	58	e52	55	55	46	41	51	52	56
15	49	51	59	53	e54	53	53	49	41	51	51	56
16	50	56	74	52	e53	53	52	47	40	51	53	60
17	50	52	60	51	e51	52	54	46	40	49	53	62
18	51	53	55	52	52	52	53	45	40	49	52	57
19	52	56	53	51	e54	53	52	45	41	48	52	57
20	52	53	51	51	e53	54	52	45	41	49	52	57
21	53	52	50	58	e56	59	58	44	43	48	52	57
22	53	51	50	e65	e52	77	53	44	43	50	52	57
23	53	50	49	e56	52	e66	55	44	e42	49	54	57
24	52	50	51	50	51	e59	58	43	43	49	54	57
25	52	50	51	e51	51	e65	54	45	42	49	53	56
26	53	51	54	e74	51	e62	55	43	42	49	54	55
27	53	50	58	e60	49	e58	52	42	42	49	55	55
28	53	51	53	e53	50	e56	52	42	43	48	55	54
29	54	51	54	58	---	e55	51	41	43	48	54	54
30	54	51	56	e61	---	e58	51	41	46	46	55	56
31	55	---	58	e81	---	e55	---	41	---	47	55	---
TOTAL	1,592	1,616	1,712	1,770	1,466	1,778	1,599	1,424	1,229	1,505	1,617	1,700
MEAN	51.4	53.9	55.2	57.1	52.4	57.4	53.3	45.9	41.0	48.5	52.2	56.7
MAX	55	61	74	81	58	77	60	51	46	51	56	62
MIN	49	50	49	50	49	50	51	41	38	46	48	54
AC-FT	3,160	3,210	3,400	3,510	2,910	3,530	3,170	2,820	2,440	2,990	3,210	3,370
CFSM	3.95	4.14	4.25	4.39	4.03	4.41	4.10	3.53	3.15	3.73	4.01	4.36
IN.	4.56	4.62	4.90	5.06	4.20	5.09	4.58	4.07	3.52	4.31	4.63	4.86

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 2003, BY WATER YEAR (WY)

MEAN	57.5	67.5	70.0	67.0	65.5	61.7	61.3	57.5	53.8	53.4	55.7	55.3
MAX	68.0	75.9	84.3	83.3	88.8	87.6	82.3	77.6	67.9	66.2	66.3	64.6
(WY)	(1998)	(1999)	(1997)	(1997)	(1996)	(1997)	(1997)	(1997)	(1998)	(1999)	(1997)	(1997)
MIN	46.9	53.9	55.2	57.1	52.4	42.3	46.7	41.0	37.6	42.1	42.8	42.2
(WY)	(1996)	(2003)	(2003)	(2001)	(2003)	(1995)	(2002)	(1995)	(1995)	(1996)	(1995)	(1995)

SUMMARY STATISTICS

FOR 2002 CALENDAR YEAR

FOR 2003 WATER YEAR

WATER YEARS 1995 - 2003

ANNUAL TOTAL	18,828	19,008		
ANNUAL MEAN	51.6	52.1	61.6	
HIGHEST ANNUAL MEAN			73.8	1997
LOWEST ANNUAL MEAN			52.1	2003
HIGHEST DAILY MEAN	110	Jan 25	81	Jan 31
LOWEST DAILY MEAN	38	Apr 7	38	Jun 3
ANNUAL SEVEN-DAY MINIMUM	39	Apr 2	39	Jun 3
ANNUAL RUNOFF (AC-FT)	37,350	37,700	44,590	
ANNUAL RUNOFF (CFSM)	3.97	4.01	4.73	
ANNUAL RUNOFF (INCHES)	53.88	54.39	64.33	
10 PERCENT EXCEEDS	64	58	77	
50 PERCENT EXCEEDS	50	52	61	
90 PERCENT EXCEEDS	44	44	47	

e Estimated

## PUYALLUP RIVER BASIN

## 12102190 SWAN CREEK AT 80TH STREET EAST, NEAR TACOMA, WA

LOCATION.--Lat 47°11'05", long 122°23'33", in SE ¼ SW ¼ sec.26, T.20 N., R.3 E., Pierce County, Hydrologic Unit 17110014, on right bank, downstream from 80th Street East crossing, 5.1 mi south-southeast of Tacoma.

DRAINAGE AREA.--2.35 mi<sup>2</sup>.

PERIOD OF RECORD.--October 1989 to September 1991, October 1994 to September 1997, October 1997 to current year (seasonal records).

REVISED RECORDS.--WDR WA-97-1: 1996 (M).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 395 ft above NGVD of 1929, from topographic map. Prior to November 1994, at datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Records fair except those above 100 ft<sup>3</sup>/s and below 5 ft<sup>3</sup>/s, which are poor.

AVERAGE DISCHARGE.--5 years (water years 1990-91, 1995-97), 4.78 ft<sup>3</sup>/s, 27.66 in/yr, 3,470 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined but occurred Feb. 8, 1996, elevation, 10.85 ft, from outside high-water mark; no flow many days each year.

EXTREMES FOR PERIOD OCTOBER TO APRIL.--Maximum discharge, 52 ft<sup>3</sup>/s Jan. 31, elevation, 7.41 ft; no flow many days in October, November, December.

DISCHARGE, CUBIC FEET PER SECOND  
WATER YEAR OCTOBER 2002 TO APRIL 2003  
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR
1	0.00	0.00	0.00	9.6	14	2.1	2.0
2	0.00	0.00	0.00	9.8	7.0	1.7	2.6
3	0.00	0.00	0.00	10	5.2	2.8	2.8
4	0.03	0.00	0.01	11	4.1	2.2	3.0
5	0.00	0.00	0.03	5.3	3.5	2.1	2.3
6	0.00	0.03	0.01	3.2	3.1	3.3	3.8
7	0.00	0.05	0.00	2.5	2.7	6.6	3.8
8	0.00	0.05	0.00	2.0	2.5	5.7	4.4
9	0.00	0.08	0.00	1.6	2.3	23	7.1
10	0.00	0.28	0.34	1.4	2.4	12	3.8
11	0.00	0.04	2.4	1.2	2.2	7.8	3.6
12	0.00	0.42	3.7	6.2	1.9	18	3.5
13	0.00	0.14	3.6	3.9	1.8	19	11
14	0.00	0.15	6.1	6.2	1.6	6.5	7.1
15	0.00	0.07	4.2	3.1	1.5	4.6	3.8
16	0.00	0.47	8.2	2.3	4.8	3.8	2.8
17	0.00	0.54	4.0	1.9	6.1	3.8	2.8
18	0.00	0.13	2.8	1.6	4.1	3.3	3.4
19	0.00	0.64	2.1	1.4	3.5	3.6	2.2
20	0.00	0.23	1.4	1.2	3.8	4.9	1.9
21	0.00	0.09	0.79	4.0	5.8	7.2	4.7
22	0.00	0.06	0.49	13	5.1	23	3.7
23	0.00	0.03	0.39	10	3.6	8.1	3.8
24	0.00	0.01	0.51	8.9	2.8	4.4	7.9
25	0.00	0.00	0.93	6.0	2.3	3.4	7.7
26	0.00	0.00	2.2	26	2.1	3.8	4.2
27	0.00	0.00	4.1	16	1.8	2.9	3.0
28	0.00	0.00	2.5	8.9	2.1	2.4	2.3
29	0.00	0.00	2.5	11	---	2.0	1.8
30	0.00	0.00	3.8	15	---	1.9	1.4
31	0.00	---	5.1	41	---	2.2	---
TOTAL	0.03	3.51	62.20	245.2	103.7	198.1	118.2
MEAN	0.001	0.12	2.01	7.91	3.70	6.39	3.94
MAX	0.03	0.64	8.2	41	14	23	11
MIN	0.00	0.00	0.00	1.2	1.5	1.7	1.4
AC-FT	0.06	7.0	123	486	206	393	234
CFSM	0.00	0.05	0.85	3.37	1.58	2.72	1.68
IN.	0.00	0.06	0.98	3.88	1.64	3.14	1.87

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