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Water-Data Report OR-98-1

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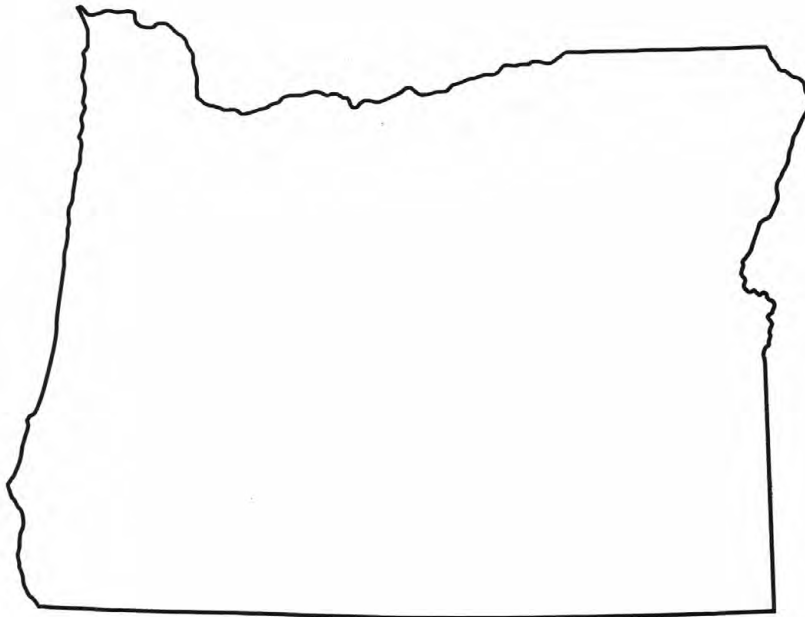
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Water Resources Data Oregon Water Year 1998

By L.E. Hubbard, T.A. Herrett, J.E. Poole, G.P. Ruppert, and M.L. Courts

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U.S. DEPARTMENT OF THE INTERIOR

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1999

PREFACE

The annual Oregon hydrologic data report is one of a series of annual reports that document hydrologic data gathered from the U.S. Geological Survey's surface- and ground-water data-collection networks in each State, Puerto Rico, and the Trust Territories. These records of streamflow, ground-water levels, and quality of water provide the hydrologic information needed by State, local and Federal agencies, and the private sector for developing and managing our Nation's land and water resources.

The report is the culmination of a concerted effort by dedicated personnel of the U.S. Geological Survey who collected, compiled, analyzed, verified, and organized the data, and who edited and assembled the reports. In addition to the authors, who had primary responsibility for assuring that the information contained herein is accurate, complete, and adheres to Geological Survey policy and established guidelines, the following individuals contributed significantly to the collection, processing, and tabulation of the data:

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NOTE.--Data for chemical quality of precipitation and miscellaneous sites are published in separate sections of the data report. See references at the end of this list of page numbers for these sections.

Letter after station name designates type of data: (at) air temperature; (c) chemical, including periodic biological, microbiological, sediment, pesticide, and radio-chemical where applicable; (d) discharge; (do) dissolved oxygen; (e) elevation; (g) gage height; (k) specific conductance; (li) light incident; (ph) pH; (s) daily suspended sediment; (t) water temperature; (tb) turbidity; and (v) contents..

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Boulder Creek near Toketee Falls (d)	14316495	315
North Umpqua River, above Copeland Creek, near Toketee Falls (d,k,ph,t,do)	14316500	316
Steamboat Creek near Glide (d)	14316700	319
North Umpqua near Idleyld (k,ph,t,do)	14317450	320
North Umpqua River above Rock Creek, near Glide (k,ph,t,do)	14317500	325
North Umpqua River at Winchester (d)	14319500	328
Calapooya Creek:		
Gassy Creek near Nonpareil (d)	14319850	329
Calapooya Creek near Oakland (d)	14320700	330
Umpqua River near Elkton (d)	14321000	331
Elk Creek near Elkhead (d)	14321400	332
COOS RIVER BASIN		
Pony Creek at Coos Bay (d)	14324580	334
COQUILLE RIVER BASIN		
South Fork Coquille River at Powers (d)	14325000	335
Elk River above Anvil Creek, near Port Orford (d)	14327250	336
ROGUE RIVER BASIN		
Rogue River above Prospect (d)	14328000	339
Rogue River below Prospect (d,t)	14330000	340
South Fork Rogue River near Prospect (d)	14332000	343
Lost Creek Lake near McLeod (e)	14335040	345
Rogue River at McLeod (t)	14335075	346
Big Butte Creek near McLeod (d,t)	14337500	348
Rogue River near McLeod (d,t)	14337600	351
Elk Creek near Cascade Gorge (d,t)	14337800	354
Elk Creek below Alco Creek, near Trail (d,t)	14337830	357
West Branch Elk Creek near Trail (d,t)	14337870	360
Elk Creek near Trail (d,t)	14338000	363
Rogue River at Trail (t)	14338100	366
Rogue River at Dodge Bridge, near Eagle Point (d,t)	14339000	368
Bear Creek below Ashland Creek, at Ashland (d)	14354200	371
Bear Creek at Medford (d)	14357500	372
Rogue River at Raygold, near Central Point (d,t)	14359000	373
Rogue River at Grants Pass (d)	14361500	376
Applegate River:		
Applegate Lake near Copper (e)	14361900	377
Applegate River near Copper (d,t)	14362000	378
Star Gulch near Ruch (d)	14362250	381
Applegate River near Applegate (d,t)	14366000	382
Applegate River near Wilderville (d,t)	14369500	385
Rogue River near Agness (d,t)	14372300	388
Illinois River near Kerby (d)	14377100	391
CHETCO RIVER BASIN		
Chetco River near Brookings (d)	14400000	392
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Miscellaneous sites and special investigations		398

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

The following continuous-record surface-water discharge or stage-only stations (gaging stations) in Oregon have been discontinued. Daily streamflow or stage records were collected and published for the period of record, expressed in water years, shown for each station. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page of this report.

[Letters after station name designate type of data collected: (d) discharge, (e) elevation, (g) gage height]

Station name	Station number	Drainage area (mi ²)	Period of record
WARNER LAKES BASIN			
Twentymile Creek near Adel (d)	10366000	194	1910-16;1918-19;1921-22;1941-44;1945-91
Deep Creek above Dismal Creek, near Warner Lake (d)	10366500	13.0	1918-19
Dismal Creek above Big Valley, near Warner Lake (d)	10367000	12.5	1913
Dismal Creek near Warner Lake (d)	10367500	14.0	1919
Deep Creek below Dismal Creek, near Warner Lake (d)	10368000	27	1913;1918-19
Deep Creek at Big Valley, near Lakeview (d)	10368500	76	1912-15
Camas Creek near Plush (d)	10369000	32.0	1912
Mud Creek near Plush (d)	10369500	18.0	1912;1915;1928-30
Camas Creek near Lakeview (d)	10370000	63.0	1913-15;1951-73
Crane Creek near Lakeview (d)	10370500	7.00	1914
Drake Creek near Adel (d)	10371000	67.0	1915;1923;1951-64;1966-73
Deep Creek above Adel (d)	10371500	249	1923;1930-91
Givan Canal near Adel (d)	10373000	--	1915
Deep Creek at Adel (d)	10374500	274	1910-16;1918-19;1921-22
Mud Creek Ditch at Adel (d)	10375000	--	1915
Fish Creek near Plush (d)	10376500	38.0	1914
Honey Creek at Chalstrand's ranch, near Plush (d)	10377000	56.0	1911
Snyder Creek near Plush (d)	10377500	--	1911
Twelvemile Creek near Plush (d)	10378000	37.0	1911
Honey Creek near Plush (d)	10378500	170	1911-14;1915;1921;1922; 1930-91
ABERT LAKE BASIN			
Chewaucan River at damsite, near Paisley (d)	10382500	158	1913-16
Chewaucan River near Buck Mountain, near Paisley (d)	10382550	157	1983-86
Chewaucan River below Coffeepot Creek, near Paisley (d)	10382600	216	1983-86
Conn Ditch near Paisley (d)	10383500	--	1915-20
Chewaucan River near Paisley (d)	10384000	275	1912-21;1924-91
Chewaucan River at Paisley (d)	10384100	278	1905-07;1909-12
Smalls Canal at Paisley (d)	10384500	--	1914-21
Jones-Innis-ZX Ditch near Paisley (d)	10385500	--	1915-20
Chewaucan River at narrows, near Paisley (d)	10386000	380	1914-21
Chewaucan River at Hotchkiss Ford, near Paisley (d)	10386500	430	1914-20
Crooked Creek near Valley Falls (d)	10387000	--	1912-13
Ana River plus Summer Lake Canal, near Summer Lake (d)	10388001	--	1930-39;1940-42;1951-91
SUMMER LAKE BASIN			
West Fork Silver Creek near Silver Lake (d)	10389000	27	1919-23;1925-32
Silver Creek plus Silver Lake Ir Canal, near Silver Lake (d)	10390001	180	1905-07;1909-27;1928; 1929-91
Bridge Creek near Silver Lake (d)	10390500	30	1922-23
Buck Creek above Timothy Creek, near Silver Lake (d)	10390800	250	1922-23
Buck Creek near Silver Lake (d)	10391000	290	1905-06;1909-10;1919-21
Duncan Creek near Silver Lake (d)	10392000	58	1922-23
MALHEUR AND HARNEY LAKES BASIN			
Silvies River near Silvies (d)	10392500	510	1904;1909-11;1916;1921-23
Emigrant Creek near Burns (d)	10393000	240	1921
Silvies River near Burns (d)	10393500	934	1903-06;1909-12;1913-17; 1918-20;1921-22;1923-91
Poison Creek near Burns (d)	10394000	81	1921
Prater Creek near Burns (d)	10394500	20	1921-23
East Fork Silvies River near Lawen (d)	10395000	--	1916;1973-77
West Fork Silvies River near Lawen (d)	10395500	--	1916-17;1919;1922; 1973-77
Flood Bypass Silvies River near Burns (d)	10395505	--	1976
Rock Creek near Burns (d)	10395600	--	1976
Mud Creek near Diamond (d)	10396500	30	1911-16;1930
Bridge Creek near Frenchglen (d)	10397000	30.0	1911-16;1930;1938-70

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
MALHEUR AND HARNEY LAKES BASIN-Continued			
Krumbo Creek near Diamond (d)	10397500	37	1911;1930
Donner und Blitzen River near Narrows (d)	10398500	420	1915-20
Kiger Creek near Diamond (d)	10399000	75	1911-13;1916-21;1930; 1941
Cucamonga Creek near Diamond (d)	10399500	15	1916;1930
McCoy Creek near Diamond (d)	10400000	45	1910-11;1914;1916-21; 1930;1941
Riddle Creek near Smith (d)	10400500	60	1911
Riddle Creek near Diamond (d)	10401000	120	1917-21
Donner Und Blitzen River near Voltage (d)	10401500	760	1938-46;1973-77
Malheur Lake near Voltage (e)	10401800	2,150	1976-80;1983-89
Malheur Lake on west side Cole Island dike, at Voltage (e)	10401810	--	1983-84
Malheur Lake at break in Cole Island dike, near Voltage (e)	10401830	2,150	1972-79
Malheur Lake Outlet at Narrows (d)	10402000	2,150	1916;1973-77
Mud Lake Outlet near Narrows (d)	10402500	2,160	1916-18;1921-22
Silver Creek near Riley (d)	10403000	228	1952-80
Silver Creek above Suintex (d)	10403500	260	1904-06;1909-12;1914-23; 1925-26
Chickahominy Creek near Suintex (d)	10404000	90	1917;1922
Rock Quarry Creek near Suintex (d)	10404500	--	1921;1922
Silver Creek below Suintex (d)	10405000	550	1912-13;1921-23
Silver Creek near Narrows (d)	10406000	630	1917;1919-23
ALVORD LAKE BASIN			
Trout Creek near Denio, NV (d)	10406500	88	1911-12;1922-23;1925-31; 1932-91
CATLOW VALLEY BASIN			
Home Creek near Beckley (Narrows) (d)	10406300	38	1911-12;1915-17;1930
ALVORD LAKE BASIN			
Little Cottonwood Creek near Denio, NV (d)	10407000	8	1911-12
GOOSE LAKE (CLOSED BASIN)			
Dog Creek near Lakeview (d)	11338000	27	1912-13
North Drews Canal near Lakeview (d)	11339000	--	1976-81
Drews Creek near Lakeview (d)	11339500	212	1909-81
Cottonwood Creek near Lakeview (d)	11340500	32.9	1909-19;1924-81
Thomas Creek near Lakeview (d)	11341000	30	1912-17;1919;1927-31
LOST RIVER BASIN			
Miller Creek at Gerber Reservoir, near Lorella (d)	11483500	220	1905-08;1925-50
Miller Creek near Lorella (d)	11484000	270	1909-20
Lost River above Olene (d)	11484500	1,410	1915-17
Lost River at Olene (d)	11485000	1,590	1904;1907-12
Lost River Diversion Canal near Olene (d)	11486000	--	1961-68
Lost River at Wilson Bridge, near Olene (d)	11487000	1,620	1912-20
Lost River near Merrill (d)	11487500	1,670	1904-07
Lost River at Merrill (d)	11488000	1,680	1916
KLAMATH RIVER BASIN			
Williamson River below Sheep Creek, near Lenz (d)	11491400	205	1980-91
Williamson River near Silver Lake (d)	11491500	220	1917-18;1920-21
Miller Creek near Crescent (d)	11492000	23.7	1912;1914
Big Springs Creek blw Lenz Ranch, near Lenz (d)	11492400	--	1992-95
Sand Creek near Fort Klamath (d)	11492500	35	1917-22
Scott Creek near Fort Klamath (d)	11493000	10	1917-20
Williamson River near Klamath Agency (d)	11493500	1,290	1955-95
Williamson River above Spring Creek, near Klamath Agency (d)	11494000	1,330	1912-13;1918-25
Williamson River at Chiloquin (d)	11494500	1,400	1911-16;1917
South Fork Sprague River near Bly (d)	11495500	110	1925-26
North Fork Sprague River near Bly (d)	11496500	45	1917-18;1925-26
Fivemile Creek near Bly (d)	11497000	40	1917-20
Sprague River near Beatty (d)	11497500	513	1912-26;1953-91
Sycan River near Silver Lake (d)	11498000	100	1918-20
Sycan River at Sycan Marsh, near Silver Lake (d)	11498100	220	1905
Long Creek near Silver Lake (d)	11498500	40	1918-24;1927-29

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
KLAMATH RIVER BASIN-Continued			
Sycan River near Beatty (d)	11499000	540	1912-25
Sycan River below Snake Creek, near Beatty (d)	11499100	568	1980-91
Sprague River near Yainax (d)	11500000	1,270	1904
Sprague River at Chiloquin (d)	11502000	1,600	1911-19;1923;1925
Anna Creek near Fort Klamath (d)	11503500	40	1923-27
Wood River at Fort Klamath (d)	11504000	90.0	1911-36
Wood River near Fort Klamath (d)	11504100	87.7	1965-67
Crooked Creek near Fort Klamath (d)	11504200	5.68	1965-67
Fourmile Creek near Odessa (d)	11505500	10.6	1912-17
Fourmile Creek near Rocky Point (d)	11505600	105	1965-67
Varney Creek near Rocky Point (d)	11505700	7.43	1965-67
"A" Canal at Klamath Falls (d)	11507200	--	1911-50;1961-81
Keno Canal at Klamath Falls (d)	11507400	--	1967-83
Diversion from Klamath River to Lost River, near Olene (d)	11508500	--	1931-68
Spencer Creek near Keno (d)	11510000	90	1929-32
Klamath River at Spencer Bridge, near Keno (d)	11510500	4,050	1914-31
Howard Prairie Lake Outlet near Pinehurst (d)	11512920	--	1961-65
Keene Creek near Ashland (d)	11514500	12.1	1917-22;1949-65
Green Springs Powerplant Diversion near Ashland (d)	11516100	--	1961-65
OWYHEE RIVER BASIN			
Jordan Creek at DeLamar Mine, near Jordan Valley (d)	13177985	---	1994-96
Crooked Creek near Rome (d)	13181500	1,700	1950
Owyhee River above Owyhee Reservoir (d)	13182000	10,400	1929-51
Lake Owyhee near Nyssa (e)	13182500	11,160	1933-96
Owyhee River at Owyhee (d)	13184000	11,300	1890-96;1904-16; 1920-29;1980-86
MALHEUR RIVER BASIN			
Malheur River at Jones' Ranch, near Drewsey (d)	13213500	530	1914
Malheur River near Drewsey (d)	13214000	910	1920-23;1926-94
Warm Springs Reservoir near Riverside (e)	13214500	1,100	1920-91
South Fork Malheur River at Riverside (d)	13215500	630	1910-14;1919-20; 1927-29;1938
Malheur River at Riverside (d)	13216000	1,750	1909-15
North Fork Malheur River abv Beulah Reservoir, nr Beulah (d)	13216500	355	1914;1936-94
Beulah Reservoir at Beulah (e)	13217000	440	1936-96
North Fork Malheur River at Foley's Ranch, near Beulah (d)	13218000	470	1909-12;1914
North Fork Malheur River at Juntura (d)	13218500	530	1919-22;1926-32;1935-40
Malheur River near Namorf (d)	13219000	2,590	1913-23;1926-31
Malheur River near Westfall (d)	13219500	2,970	1904-05
Malheur River at Little Valley, near Hope (d)	13220000	3,010	1949-79
Malheur River near Hope (d)	13220500	3,030	1919-49
Malheur River near Little Valley (d)	13221500	3,030	1914
Malheur River at McLaughlin Bridge, near Vale (d)	13223500	3,060	1905-06
Bully Creek near Westfall (d)	13225500	160	1912-13;1923
Cottonwood Creek near Westfall (d)	13226000	82	1922-23
Bully Creek at Warm Springs, near Vale (d)	13226500	539	1903-07;1910-17; 1922-23;1964-86
Bully Creek Reservoir near Vale (e)	13226800	547	1964-96
Bully Creek near Vale (d)	13227000	570	1934-62
Bully Creek at Vale (d)	13227500	620	1904
Malheur River at Vale (d)	13228000	3,880	1890-91;1895-97; 1903-14;1919
Willow Creek near Malheur (d)	13229500	250	1912-15;1921-29
Willow Creek below reservoir, near Malheur (d)	13230500	290	1905-06;1911;1921-29
Cow Creek near Brogan (d)	13231000	75	1912-14
Willow Creek near Brogan (d)	13231500	420	1912-14
Willow Creek at Cole's Ranch, near Brogan (d)	13232000	455	1904-06
Pole Creek near Brogan (d)	13232500	14	1912
Pole Creek below Black Creek feed canal, near Brogan (d)	13233000	14	1913
Malheur River at Halliday Bridge, near Ontario (d)	13233500	4,620	1905
Malheur River near Ontario (d)	13234000	4,680	1904
BURNT RIVER BASIN			
North Fork Burnt River near Whitney (d)	13269300	110	1965-80
North Fork Burnt River at Audrey (d)	13269500	139	1915-16

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
BURNT RIVER BASIN-Continued			
Middle Fork Burnt River near Audrey (d)	13270000	9.54	1915-16
South Fork Burnt River near Unity (d)	13270500	30.9	1915-16
South Fork Burnt River above Barney Creek, near Unity (d)	13270800	38.5	1963-81
South Fork Burnt River at Hardman Ranch, near Unity (d)	13271000	44.4	1916-20;1938-41
Fleetwood Ditch near Unity (d)	13271500	--	1918-20
Sawmill Creek near Unity (d)	13272000	--	1915
Burnt River near Hereford (d)	13273000	309	1929-97
Burnt River at Bridgeport (d)	13274000	600	1915-16;1931-36
Burnt River near Bridgeport (d)	13274200	650	1957-80
Burnt River near Durkee (d)	13274500	700	1931-38
Burnt River at Huntington (d)	13275000	1,093	1929-32;1957-59;1962-80
POWDER RIVER BASIN			
Powder River near Sumpter (d)	13275300	168	1966-97
Powder River near Baker (d)	13275500	219	1904-14;1929-68
Old Settlers Slough at Baker (d)	13276000	--	1913-14
Baldock Slough at Baker (d)	13276500	--	1913-14
Powder River at Baker City (d)	13277000	352	1972-97
Pine Creek near Baker (d)	13277500	8.8	1913-14;1929-30
Goodrich Creek near Baker (d)	13278000	3.1	1913
Mill Creek near Baker (d)	13279000	3.9	1913-14;1929-30
Marble Creek near Baker (d)	13279500	3.9	1913-14;1929-30
Salmon Creek near Baker (d)	13280000	4.4	1913-14;1929
Willow Creek near Haines (d)	13280500	2.4	1913
Powder River at Haines (d)	13281000	539	1914
Powder River near Haines (d)	13281500	572	1947-53
North Powder River near North Powder (d)	13282000	47.7	1912
Anthony Fork near North Powder (d)	13282500	37	1912
North Powder River at North Powder (d)	13283000	129	1912-14
Wolf Creek at Bauer's Ranch, near North Powder (d)	13283500	30	1913-14
Wolf Creek near North Powder (d)	13284000	32.9	1947-53
Powder River near North Powder (d)	13284500	860	1913-16;1920-25
Thief Valley Reservoir near North Powder (e)	13285000	910	1980-96
Powder River below Thief Valley Reservoir (d)	13285500	910	1910-11;1979-97
Big Creek near Medical Springs (d)	13286000	35.5	1913-14
Goose Creek near Keating (d)	13286500	41.9	1913-14
Powder River near Richland (d)	13286700	1,310	1958-96
Eagle Creek above West Fork, near Baker (d)	13287000	18	1911
West Fork Eagle Creek near Baker (d)	13287500	15	1911
Eagle Creek near Baker (d)	13288000	42	1909-10
Eagle Creek near Newbridge (d)	13288500	170	1910-11;1914
Daly Creek near Richland (d)	13289000	40.5	1913
Powder River near Robinette (d)	13289500	1,660	1929-57
PINE CREEK BASIN			
Pine Creek near Oxbow (d)	13290190	230	1967-95
IMNAHA RIVER BASIN			
Imnaha River above Gumboot Creek (d)	13291000	99.6	1945-53
Big Sheep Creek near Joseph (d)	13291500	12.5	1920
GRANDE RONDE RIVER BASIN			
Meadow Creek near Starkey (d)	13318000	140	1932-35
Meadow Creek below Smith Creek, near Starkey (d)	13318050	33.2	1978-79
Meadow Creek above Bear Creek, near Starkey (d)	13318060	48.2	1978-79
Grande Ronde River near Hilgard (d)	13318500	505	1938-56
Grande Ronde River at Hilgard (d)	13318800	555	1967-81
Grande Ronde River at La Grande (d)	13319000	678	1904-15;1918-23;1926-89
Catherine Creek near Union (d)	13320000	105	1926-96
Little Creek near Union (d)	13321000	30.4	1918
Ladd Creek near Hot Lake (d)	13321500	40	1918
Mill Creek near Cove (d)	13322000	11.6	1918;1920-21
Mill Creek near Summerville (d)	13322500	--	1914-15
Grande Ronde River near Elgin (d)	13323500	1,250	1956-81
Indian Creek near Imbler (d)	13323600	22.0	1938-50
Grande Ronde River at Elgin (d)	13324000	1,400	1903-12;1918-19
Wallowa Falls powerplant tailrace near Joseph (d)	13324500	--	1925-52;1967-83
East Fork Wallowa River near Joseph (d)	13325000	10.3	1925-52;1967-82

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
GRANDE RONDE RIVER BASIN-Continued			
Wallowa River above Wallowa Lake, near Joseph (d)	13325500	43.0	1924-33;1937-38;1940-41
Wallowa Lake near Joseph (g)	13326000	50.8	1904-06;1912-15;1926-91
Joseph powerplant tailrace at Joseph (d)	13326500	--	1951-56
Wallowa River at Joseph (d)	13327500	50.9	1904-07;1908-14;1915; 1927-91
Hurricane Creek near Joseph (d)	13329500	29.6	1915;1924-78
Wallowa River at Wallowa (d)	13329900	--	1976-77
Wallowa River near Wallowa (d)	13331000	520	1904-07
Wallowa River at Minam (d)	13332000	880	1904-14
Grande Ronde River at Rondowa (d)	13332500	2,550	1927-91
Joseph Creek at Chico (d)	13333500	280	1931-33
WALLA WALLA RIVER BASIN			
South Fork Walla Walla River near Milton-Freewater (d)	14010000	63.0	1903;1906-17;1931-91
South Fork Walla Walla River blw PP&L plant, near Milton (d)	14010500	80.0	1904-06;1931-45
North Fork Walla Walla River near Milton-Freewater (d)	14010800	34.4	1970-91
North Fork Walla Walla River near Milton (d)	14011000	43.8	1930-69
Walla Walla River near Milton (d)	14011500	130	1905-06;1918-29
Walla Walla River at Milton (d)	14012000	155	1903-05
Walla Walla River below Freewater (d)	14012500	160	1941-48
COLUMBIA RIVER MAIN STEM			
Columbia River at McNary Dam, near Umatilla (d)	14019200	214,000	1951-81
UMATILLA RIVER BASIN			
North Fork Umatilla River near Gibbon (d)	14019500	31	1912-15;1940-43
Umatilla River at Gibbon (d)	14020500	310	1896-99;1900-01;1902-12
Umatilla River near Cayuse (d)	14020700	384	1969-75
Cottonwood Creek near Mission (d)	14020760	4.01	1992-97
Umatilla River at Pendleton (d)	14021000	637	1891-92;1904-05;1935-89
Umatilla River above McKay Creek, near Pendleton (d)	14022000	700	1921-34
McKay Creek near Pilot Rock (d)	14022500	180	1921;1927-89
McKay Reservoir near Pendleton (g)	14023000	186	1927-92
McKay Creek near Pendleton (d)	14023500	186	1919-23;1925-91
McKay Creek at mouth, near Pendleton (d)	14024000	190	1903-04;1922-24
East Birch Creek near Pilot Rock (d)	14024200	69.7	1968-73
Birch Creek near Pilot Rock (d)	14024500	240	1920-26
Birch Creek at Rieth (d)	14025000	291	1921-23;1927-76
Umatilla River near Yoakum (d)	14025500	1,260	1915-36
Umatilla River at Yoakum (d)	14026000	1,280	1903-91
Butter Creek near Pine City (d)	14032000	291	1928-88
WILLOW CREEK BASIN			
Rhea Creek near Heppner (d)	14034800	120	1960-91
Willow Creek near Morgan (d)	14035000	630	1921;1929-31
Willow Creek above Eightmile Canyon, near Arlington (d)	14035500	680	1905
Willow Creek near Arlington (d)	14036000	850	1906;1961-79
JOHN DAY RIVER BASIN			
Strawberry Creek above Slide Creek, near Prairie City (d)	14037500	7.00	1931-91
Strawberry Creek near Prairie City (d)	14038000	15	1916-17;1925-30
John Day River at Prairie City (d)	14038500	231	1916-17;1925-68
John Day River near John Day (d)	14038530	386	1969-94
John Day River near Dayville (d)	14039000	960	1909-14;1920-21;1925-26
South Fork John Day River near Dayville (d)	14039500	590	1952-56
South Fork John Day at Dayville (d)	14040000	600	1909-14;1920-21;1925-26
John Day River at Picture Gorge, near Dayville (d)	14040500	1,680	1986-91
Mountain Creek near Mitchell (d)	14040600	20.0	1986-89
Desolation Creek near Dale (d)	14041000	108	1915-17;1949-58
North Fork John Day River near Dale (d)	14041500	525	1930-58
Camas Creek near Lehman (d)	14042000	60.7	1951-70
Camas Creek near Ukiah (d)	14042500	121	1914-17;1920-24;1932-91
Cable Creek near Ukiah (d)	14043000	39	1914-17;1919-24;1932-37; 1939
Snipe Creek near Ukiah (d)	14043560	37.0	1968-73
Fox Creek at gorge, near Fox (d)	14044500	90.2	1931-58
Cottonwood Creek near Monument (d)	14045000	210	1926-31
Cottonwood Creek at Monument (d)	14045500	232	1925

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
JOHN DAY RIVER BASIN-Continued			
John Day River at Clarno (d)	14047000	5,940	1914-15;1920-21
Lone Rock Creek near Lonerock (d)	14047380	69	1966-74;1976-91
Rock Creek above Whyte Park near Condon (d)	14047390	297	1976-89
Rock Creek at Rock Creek (d)	14047500	500	1905;1911
DESCHUTES RIVER BASIN			
Deschutes River above Snow Creek, near La Pine (d)	14049000	109	1922-25
Snow Creek above Crane Prairie, near La Pine (d)	14049500	23.0	1922-25
Deschutes River below Snow Creek, near La Pine (d)	14050000	32	1938-91
Cultus River above Cultus Creek, near La Pine (d)	14050500	16.5	1923-25;1938-91
Cultus Creek abv Crane Prairie Reservoir, nr La Pine(d)	14051000	33.2	1924;1938-91
Cultus River below Cultus Creek, near La Pine (d)	14051500	52.8	1922
Deer Creek above Crane Prairie Reservoir, near La Pine (d)	14052000	21.5	1924;1938-91
Quinn River near La Pine (d)	14052500	--	1922-25;1938-91
Charlton Creek above Crane Prairie Reservoir, nr La Pine(d)	14053000	15.6	1923-24;1938-79
Crane Prairie Reservoir near La Pine (e)	14053500	254	1923-91
Deschutes River blw Crane Prairie Reservoir, nr La Pine (d)	14054000	254	1907-08;1912-17;1922-91
Brown Creek near La Pine (d)	14054500	21.0	1922-25;1938-91
Deschutes River above Davis Creek, near La Pine (d)	14055000	290	1925-32
Odell Creek near Crescent (d)	14055500	39.0	1912-14;1924;1933-76
Deschutes River below Wickiup Reservoir, near La Pine (d)	14056500	483	1938-91
Deschutes River at Pringle Falls, near La Pine (d)	14057000	507	1916-17;1922-60
Fall River near La Pine (d)	14057500	45.1	1938-91
Deschutes River near La Pine (d)	14058000	600	1910-17;1920;1922
Deschutes River near Lava (d)	14058500	659	1905-07;1909-12
Little Deschutes River at Crescent (d)	14059000	109	1905-08;1911-14
Crescent Lake near Crescent (e)	14059500	60.7	1922-91
Crescent Creek at Crescent lake, near Crescent (d)	14060000	60.7	1911;1912-15;1927;1928-91
Crescent Creek below Cold Creek, near Crescent (d)	14060500	77.0	1922-26;1931-32
Big Marsh Creek at Hoey Ranch, near Crescent (d)	14061000	51.5	1912-14;1924;1928-58
Crescent Creek near Crescent (d)	14061500	137	1912-14
Little Deschutes R above Walker Basin intake, nr La Pine(d)	14062000	307	1914-17;1919-26;1931-22
Little Deschutes River near La Pine	14063000	859	1911;1913-20;1924-94
East Lake near La Pine (e)	14063200	7.08	1992-95
Paulina Lake near La Pine (e)	14063250	10.1	1991-95
Paulina Creek near La Pine (d)	14063300	10.1	1982-89;1991-95
Little Deschutes River at Allen's Ranch, near La Pine (d)	14063500	1,020	1905-12;1913-15;1931-32 1943-44
Deschutes River at Benham Falls, near Bend (d)	14064500	1,759	1906-14;1921;1924-91
Deschutes River above Lava Island, near Bend (d)	14065000	1,790	1915-16;1943-50
Arnold Canal near Bend (d)	14065500	--	1913-90
Deschutes River below Lava Island, near Bend (d)	14066000	1,829	1926-65
Central Oregon Canal above Pilot Butte Canal (d)	14066500	--	1933-90
Deschutes County Mncpl Improvement Dist Canal at Bend (d)	14068500	--	1923-90
North Unit Main Canal near Bend (d)	14069000	--	1946-90
North Canal near Bend (d)	14069500	--	1913-90
Swalley Canal near Bend (d)	14070000	--	1913-90
Deschutes River below Bend (d)	14070500	1,899	1915-91
Bridge Creek near Bend (d)	14070700	6.58	1981-85
Tumalo Creek near Tumalo (d)	14071500	30.9	1906-14
Tumalo Creek near Bend (d)	14073000	47.3	1913-21;1922;1923-87
Deschutes River at Tumalo (d)	14074000	1,983	1910-12;1914-15
Deschutes River at Cline Falls, near Redmond (d)	14074500	2,080	1910-13;1928-46
Deschutes River at Lower Bridge, near Terrebonne (d)	14074630	2,160	1995-97
Snow Creek near Sisters (d)	14074900	1.65	1986-91
Squaw Creek near Sisters (d)	14075000	45.2	1906-18;1919-94
South Fork Beaver Creek near Paulina (d)	14077000	95	1944-53
North Fork Beaver Creek near Paulina (d)	14077500	64.4	1942-54
Beaver Creek near Paulina (d)	14078000	450	1943-75
North Fork Crooked River above Deep Creek (d)	14078500	159	1942-54
North Fork Crooked River below Deep Creek (d)	14079000	264	1947-53
Crooked River near Post (d)	14079500	2,160	1909-11;1940-62;1969-73
Crooked River above Prineville Reservoir, near Post (d)	14079800	2,400	1961-68
Bear Creek at Rickman Ranch, near Roberts (d)	14080000	44	1920-23
Bear Creek near Prineville (d)	14080250	205	1976-81
Prineville Reservoir near Prineville (e)	14080400	2,700	1961-91

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
DESCHUTES RIVER BASIN--Continued			
Crooked River near Prineville (d)	14080500	2,700	1909-14;1941-91
Crooked River at Prineville (d)	14081500	2,820	1914
Marks Creek near Prineville (d)	14082500	61.0	1916
Ochoco Creek above Mill Creek, near Prineville (d)	14083000	200	1918-22;1924-33
Mill Creek near Prineville (d)	14083500	78.8	1916-18;1920-22;1924-33
Ochoco Creek at Elliott Ranch, near Prineville (d)	14085000	300	1909-10;1915-17
Ochoco Creek at Prineville (d)	14085500	358	1912;1914-15
McKay Creek near Prineville (d)	14086000	76.6	1925-32
McKay Creek above Old Dry Creek, near Prineville (d)	14086500	86.2	1918-19;1920
McKay Creek below Old Dry Creek, near Prineville (d)	14087000	103	1915
Crooked River near Terrebonne (d)	14087300	4,240	1968-73
Crooked River near Culver (d)	14087500	4,330	1918-63
Lake Creek near Sisters (d)	14088000	22.2	1912-13;1915-91
Metolius River at Allingham ranger station, near Sisters (d)	14088500	81.5	1911-13;1915-17
First Creek near Sisters (d)	14089000	12.2	1915-17;1924-28
Jack Creek near Sisters (d)	14089500	16.0	1915-16
Canyon Creek near Sisters (d)	14090000	32.5	1915-16
Whitewater River near Grandview (d)	14090500	30.6	1911-13
Metolius River at Riggs Ranch, near Sisters (d)	14092000	347	1909-12
Seekseequa Creek near Warm Springs (d)	14092150	47.3	1987-93
Shitike Creek below Wolford Canyon, near Warm Springs (d)	14092885	75.8	1975-96
Deschutes River at Mecca (d)	14093500	7,940	1911-27
Trout Creek near Antelope (d)	14094000	220	1915-17
Trout Creek near Gateway (d)	14094500	--	1915-16
Hay Creek near Hay Creek (d)	14095000	78	1915-16
Mill Creek at outlet of Olallie Lake (d)	14096000	5.6	1915-16
Mill Creek near Warm Springs (d)	14096500	28.8	1915
Warm Springs River near Warm Springs (d)	14097000	517	1911-19
White River near Government Camp (d)	14097200	40.7	1970-1980
Clear Creek below Clear Lake, near Govt Camp (d)	14097400	8.32	1969-73
Clear Creek near Government Camp (d)	14097500	9.94	1941-41;1947-53
Clear Creek above intake, near Wapinitia (d)	14098000	17.7	1918-21;1934-35
Clear Creek Ditch near Government Camp (d)	14098100	--	1969-73
Clear Creek near Pine Grove (d)	14098600	38.3	1968-73
Gate Creek at Purcell Ranch, near Wamic (d)	14099500	23.9	1921-23
Gate Creek near Wamic (d)	14100000	28.3	1918
White River near Tygh Valley (d)	14100500	221	1911-18
White River below Tygh Valley (d)	14101500	417	1918-90
Deschutes River at Sherars Bridge (d)	14102000	10,200	1923-32
FIFTEENMILE CREEK BASIN			
Fifteenmile Creek near Dufur (d)	14104000	19.6	1918-19
Fifteenmile Creek near Wrentham (d)	14104500	171	1947-53
Eightmile Creek near Boyd (d)	14105000	56	1947-53
Fivemile Creek near The Dalles (d)	14105500	32.4	1926;1928;1930-31;1949-50
MILL CREEK BASIN			
South Fork Mill Creek near The Dalles (d)	14105850	28.0	1961-75
MOSIER CREEK BASIN			
Mosier Creek near Mosier (d)	14113200	41.5	1964-81
HOOD RIVER BASIN			
Dog River near Parkdale (d)	14113400	4.50	1961-71
East Fork Hood River above intake, near Mount Hood (d)	14113500	77.2	1915-22
East Fork Hood River near Mount Hood (d)	14115000	78.8	1913-14
East Fork Hood River near Dee (d)	14115500	108	1917
Clear Branch below Laurance Lake, near Parkdale (d)	14115815	8.62	1987-95
Hood River at Dee (d)	14116000	155	1913-17
Green Point Creek near Dee (d)	14116500	10.0	1919-21
North Fork Green Point Creek near Dee (d)	14117500	7.6	1919;1921
Green Point below North Fork, near Dee (d)	14118000	20.0	1950-54
West Fork Hood River near Dee (d)	14118500	95.6	1914-16;1932-91
Hood River at Winans (d)	14119000	259	1906-07;1910-12;1913
Hood River near Hood River (d)	14121000	329	1913-64

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
COLUMBIA RIVER MAIN STEM			
Columbia River at Stevenson (g)	14128600	239,800	1974-97
Columbia River at Bonneville Dam (g)	14128860	239,900	1981-87
Columbia River at Warrendale (g)	14128910	240,000	1972-87
Columbia River at Washougal (g)	14129400	240,000	1972-81;1990-93
SANDY RIVER BASIN			
Lost Creek near Brightwood (d)	14130000	11.2	1913-18
Little Zigzag River at Twin Bridges, near Rhododendron (d)	14131000	3.70	1926-36
Zigzag River near Rhododendron (d)	14131400	14.8	1981-93
Zigzag River at Rhododendron (d)	14131500	31.0	1920-21;1926-30
Sandy River above Salmon River, at Brightwood (d)	14133500	117	1910-14;1926-31
Salmon River near Government Camp (d)	14134000	8.00	1910-12;1926-91
Salmon River below Linney Creek (d)	14134500	54.0	1928-50
Salmon River at Welches (d)	14135000	100	1913-14;1920-21;1925-36
Salmon River above Boulder Creek, near Brightwood (d)	14135500	106	1936-52
Bull Run River below Lake Ben Morrow (d)	14139500	74.0	1930-54
Little Sandy River near Marmot (d)	14140500	17.9	1913-19
WILLAMETTE RIVER BASIN			
Middle Fork Willamette River near Oakridge (d)	14144800	258	1959-97
Hills Creek above Hills Creek Reservoir, near Oakridge (d)	14144900	52.7	1959-81
Hills Creek near Oakridge (d)	14145000	59.0	1935-43
Salt Creek near Oakridge (d)	14146000	113	1913-14;1934-51
Salmon Creek near Oakridge (d)	14146500	117	1910;1913-19;1934-85;1987-94
Gray Creek near Oakridge (d)	14146700	5.06	1979-86
Waldo Lake Outlet near Oakridge (d)	14147000	30.5	1937-53;1970-82;1984
N.Fork of Middle Fork Willamette River, nr Oakridge (d)	14147500	246	1910-16;1936-85;1987-94
Fall Creek above Winberry Creek, near Lowell (d)	14150500	127	1936-43
Winberry Creek near Lowell (d)	14150800	43.9	1964-81
Little Fall Creek near Fall Creek (d)	14151500	52.5	1936-48
Coast Fork Willamette River at London (d)	14152500	72.1	1936-87
Mosby Creek near Cottage Grove (d)	14156000	85.0	1936-46
Mosby Creek at mouth, near Cottage Grove (d)	14156500	95.3	1947-68;1970-81
Coast Fork Willamette River at Saginaw (d)	14157000	529	1924-26;1928-51
Willamette River at Springfield (d)	14158000	2,030	1912-13;1920-57
McKenzie River near Belknap Springs (d)	14158700	146	1958-62
Smith River near Belknap Springs (D)	14158800	23.7	1958-60
Budworm Creek near Belknap Springs (d)	14158930	3.00	1979-83;1984-86
McKenzie River above Boulder Creek, near Belknap Springs (d)	14158955	--	1983
McKenzie River at McKenzie Bridge (d)	14159000	348	1910-94
Horse Creek near McKenzie Bridge (d)	14159100	149	1963-69
South Fork McKenzie River above Cougar Lake, nr Rainbow (d)	14159200	160	1958-87
Blue River above Quentin Creek (d)	14161000	11.5	1948-55
Blue River near Blue River (d)	14162000	75.0	1936-64
Gate Creek at Vida (d)	14163000	47.6	1952-57;1967-90
McKenzie River near Springfield (d)	14164000	1,066	1906-15
Mohawk River near Springfield (d)	14165000	177	1936-52;1964-97
McKenzie River near Coburg (d)	14165500	1,337	1945-72
Coyote Creek near Crow (d)	14167000	95.1	1941-87
Amazon Creek at Eugene (d)	14169300	3.35	1963-75
Amazon Creek near Eugene (d)	14169500	21.3	1955-68;1980-82
Rock Creek near Philomath (d)	14170500	14.6	1946-52;1975-79
Marys River near Philomath (d)	14171000	159	1941-85
Muddy Creek near Corvallis (d)	14171500	107	1964-68
Calapooia River at Holley (d)	14172000	105	1936-90
Calapooia River at Albany (d)	14173500	372	1941-81
East Humbug Creek near Detroit (d)	14178700	7.32	1978-94
Breitenbush River above French Creek, near Detroit (d)	14179000	106	1933-87
Middle Santiam River near Upper Soda (d)	14185700	74.6	1981-94
Middle Santiam River near Cascadia (d)	14185800	104	1963-81
Packers Gulch near Cascadia (d)	14185880	7.45	1984-86;1988
Middle Santiam River near Foster (d)	14186000	271	1932-47
Middle Santiam River at mouth, near Foster (d)	14186500	287	1951-66
South Santiam River at Foster (d)	14186700	493	1967-73
Wiley Creek at Foster (d)	14187100	62.3	1974-88

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
WILLAMETTE RIVER BASIN--Continued			
Crabtree Creek near Crabtree (d)	14188700	111	1964-70
Thomas Creek near Scio (d)	14188800	109	1963-87
Luckiamute River near Hoskins (d)	14189500	34.3	1935-78
Luckiamute River at Pedee (d)	14190000	115	1940-70
Little Luckiamute River at Falls City (d)	14190100	22.7	1965-71
Rickreall Creek near Dallas (d)	14190700	27.4	1957-78
Mill Creek at Penitentiary Annex, near Salem (d)	14191500	104	1940-56
Mill Creek at Salem (d)	14192000	110	1940-78
South Yamhill River near Willamina (d)	14192500	133	1934-93
Willamina Creek near Willamina (d)	14193000	64.7	1934-91
Mill Creek near Willamina (d)	14193300	27.4	1958-73
South Yamhill River near Whiteson (d)	14194000	502	1940-91
North Yamhill River near Fairdale (d)	14194300	9.03	1959-66;1968-91
Haskins Creek near McMinnville (d)	14195000	6.48	1928-51
North Yamhill River near Pike (d)	14196500	47.8	1940-51
North Yamhill River at Pike (d)	14197000	66.8	1948-73
Willamette River at Wilsonville (d)	14198000	8,400	1948-73
Molalla River above Pine Creek, near Wilhoit (d)	14198500	97.0	1936-93
Molalla River near Molalla (d)	14199000	201	1906-09;1947-51
Molalla River near Canby (d)	14200000	323	1929-59;1964-78
Silver Creek at Silverton (d)	14200300	47.9	1964-68;1971-79
Pudding River near Mount Angel (d)	14201000	204	1940-66
Butte Creek at Monitor (d)	14201500	58.7	1936;1941-52;1967-85
Pudding River at Aurora (d)	14202000	479	1929-64;1994-97
Tualatin River near Gaston (d)	14202500	48.5	1941-56;1973-76;1979-84
Scoggins Creek above Henry Hagg Lake, near Gaston (d)	14202850	15.9	1973-76
Sain Creek near Gaston (d)	14202920	10.3	1973-76
Henry Hagg Lake near Gaston (e)	14202965	38.7	1976-97
Scoggins Creek near Gaston (d)	14203000	43.3	1941-74
Gales Creek near Glenwood (d)	14203750	7.3	1994-95
Gales Creek near Gales Creek (d)	14204000	33.2	1936-45;1964-70
Gales Creek near Forest Grove (d)	14204500	66.1	1941-56;1971-81
East Fork Dairy Creek at Mountindale (d)	14205500	43.0	1941-51
Dairy Creek near Cornelius (d)	14205800	147	1974-76
McKay Creek near North Plains (d)	14206000	27.6	1941-43;1949-56
McKay Creek near Hillsboro (d)	14206180	61.0	1973-76
Bronson Creek at 185th Ave, near Aloha (d)	14206298	4.15	1995-96
Tualatin River at Farmington (d)	14206500	568	1940-58;1973-76
Fanno Creek at Durhanm (d)	14206950	31.5	1994-96
Oswego Canal near Lake Oswego (d)	14207000	--	1929-91
Clackamas River at Big Bottom (d)	14208000	136	1920-70
Collawash River near Breitenbush (d)	14208300	142	1966-68
Oak Grove Fork at Timothy Meadows (d)	14208500	54.0	1913-14;1916-29
Roaring River near Estacada (d)	14209600	42.4	1966-68
Clackamas River near Clackamas (d,g)	14211000	930	(d)1963-83;(g)1988-89
Willamette River at Portland (d)	14211720	11,100	1973-94
COLUMBIA RIVER MAIN STEM			
Columbia River at Columbia City (g)	14222880	254,000	1971-81
Columbia River at Longview, WA (g)	14245300	256,700	1984-90
Columbia River at Wauna (g)	14247295	257,000	1971-81
Bear Creek near Svensen (d)	14248700	3.33	1966-75
Youngs River near Astoria (d)	14251500	40.1	1928-58
NESTUCCA RIVER BASIN			
Trask River near Tillamook (d)	14302500	145	1932-55;1962-72
Nestucca River near McMinnville (d)	14303000	12.0	1929-44
Nestucca River near Beaver (d)	14303600	180	1965-91
SILETZ RIVER BASIN			
Sunshine Creek near Valsetz (d)	14304350	6.70	1973-91
Big Rock Creek near Valsetz (d)	14304850	6.90	1986-89
YAQUINA RIVER BASIN			
Yaquina River near Chitwood (d)	14306030	71.0	1973-91
Mill Creek near Toledo (d)	14306036	4.18	1961-73

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
ALSEA RIVER BASIN			
North Fork Beaver Creek near Seal Rock (d)	14306040	10.0	1966-67
North Fork Alsea River at Alsea (d)	14306100	63.0	1958-89
South Fork Alsea River near Alsea (d)	14306200	49.5	1961-63
Fall Creek near Alsea (d)	14306300	29.4	1961-63
Five Rivers near Fisher (d)	14306400	114	1961-63; 1968-90
Drift Creek near Salado (d)	14306600	20.5	1959-63; 1966-70
Needle Branch near Salado (d)	14306700	.27	1959-73
Flynn Creek near Salado (d)	14306800	.78	1959-73
Deer Creek near Salado (d)	14306810	1.17	1959-73
BIG CREEK BASIN			
Big Creek near Roosevelt Beach (d)	14306900	11.9	1973-91
SIUSLAW RIVER BASIN			
Siuslaw River above Wildcat Creek, at Austa (d)	14307000	267	1932-40
Lake Creek at Triangle Lake (d)	14307500	52.5	1932-55
Lake Creek near Deadwood (d)	14307580	174	1968-89
Siuslaw River near Mapleton (d)	14307620	588	1968-94
North Fork Siuslaw River near Minerva (d)	14307645	41.2	1968-85
UMPQUA RIVER BASIN			
Jackson Creek near Tiller (d)	14307700	152	1956-86
South Umpqua River at Days Creek (d)	14308600	641	1975-90
Days Creek at Days Creek (d)	14308700	55.3	1956-72
South Myrtle Creek near Myrtle Creek (d)	14310700	43.9	1956-72
North Myrtle Creek near Myrtle Creek (d)	14311000	54.2	1956-86
Olalla Creek near Tenmile (d)	14311200	61.3	1957-73
Tenmile Creek at Tenmile (d)	14311300	29.6	1968-73
Deer Creek near Roseburg (d)	14312200	53.2	1956-73
Silent Creek near Diamond Lake (d)	14312400	8.24	1972-77
Lake Creek near Diamond Lake (d)	14312500	54.9	1923-29; 1930; 1931-53
			1972-84
North Umpqua River at Toketee Falls (d)	14315500	339	1926-45; 1947-48
North Umpqua River above Rock Creek, near Glide (d)	14317500	886	1925-45
North Umpqua River below Lemolo Lake, Near Toketee Falls (d)	14313501	170	1928-83
Rock Creek near Glide (d)	14317600	97.4	1958-73
Little River at Peel (d)	14318000	177	1955-89
North Umpqua River near Glide (d)	14318500	1,210	1916-18; 1928-38
Sutherlin Creek at Sutherlin (d)	14319200	16.4	1956-67
Calapooya Creek at Nonpareil (d)	14319900	88.6	1977-88
Elk Creek near Drain (d)	14322000	104	1956-73
Umpqua River near Scottsburg (d)	14322900	4,095	1967-69
Smith River near Gardiner (d)	14323100	206	1966-73
Tenmile Creek near Lakeside (d)	14323200	87.0	1958-76
COOS RIVER BASIN			
West Fork Millicoma River near Allegany (d)	14324500	46.9	1955-81
COQUILLE RIVER BASIN			
South Fork Coquille River above Panther Creek, nr Illahe (d)	14324600	31.2	1957-70
South Fork Coquille River near Illahe (d)	14324700	40.6	1957-74
South Fork Coquille River near Powers (d)	14324900	93.2	1957-70
Middle Fork Coquille River near Myrtle Point (d)	14326500	305	1931-46
North Fork Coquille River near Fairview (d)	14326800	73.9	1964-81
North Fork Coquille River near Myrtle Point (d)	14327000	282	1929-46; 1964-68
SIXES RIVER BASIN			
Sixes River at Sixes (d)	14327150	116	1968-70
Elk River near Sixes (d)	14327300	86.1	1968-70
ROGUE RIVER BASIN			
Rogue River above Bybee Creek, near Union Creek (d)	14327500	156	1930-52
Mill Creek near Prospect (d)	14329500	32.0	1926-35
South Fork Rogue River above Imnaha Creek, near Prospect (d)	14330500	52.0	1932-49
Imnaha Creek near Prospect (d)	14331000	26.0	1932-49
Middle Fork Rogue River near Prospect (d)	14333000	56.5	1926-55
Red Blanket Creek near Prospect (d)	14333500	45.5	1926-32; 1934-81
South Fork Rogue River south of Prospect (d)	14334700	246	1969-92
Rogue River below South Fork Rogue River, near Prospect (d)	14335000	650	1929-65

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
ROGUE RIVER BASIN--Continued			
Rogue River at McLeod (d)	14335075	697	1978-81
South Fk Big Butte Creek, abv Willow Cr, nr Butte Falls (d)	14335200	67.6	1986-91
South Fork Big Butte Creek near Butte Falls (d)	14335500	138	1911;1915;1918-22;1925-91
South Fork Little Butte Collect Canal near Pinehurst (d)	14339400	--	1961-65
South Fork Little Butte Creek at Big Elk Ranger Station (d)	14339500	16.6	1927-50
Dead Indian Collect Canal near Pinehurst (d)	14340400	--	1961-65
South Fork Little Butte Creek near Lakecreek (d)	14341500	138	1922-57;1961-82
North Fork Little Butte Creek at Fish Lake, nr Lakecreek(d)	14342500	20.8	1915;1917-89
North Fork Little Butte Creek near Lakecreek (d)	14343000	43.8	1912-13;1917;1923-27; 1929-64;1966-85
N F Little Butte Creek abv Intake Canal, near Lakecreek (d)	14344500	60.4	1918-19;1922-50
Little Butte Creek above Eagle Point (d)	14347000	269	1917-26;1929
Little Butte Creek below Eagle Point (d)	14348000	293	1908-16;1924-26;1946-50
Emigrant Creek near Ashland (d)	14350000	64.3	1920-86
West Fork Ashland Creek near Ashland (d)	14353000	10.5	1925-33;1975-82
East Fork Ashland Creek near Ashland (d)	14353500	8.14	1925-33;1975-82
Evans Creek near Bybee Springs, near Rogue River (d)	14359500	116	1925-27;1951-53
Middle Fork Applegate River near Copper (d)	14361590	50.7	1980-87
Elliott Creek near Copper (d)	14361600	51.8	1978-87
Carberry Creek near Copper (d)	14361700	68.9	1978-87
Applegate River near Ruch (d)	14363000	302	1912-14;1926-53
Powell Creek near Williams (d)	14368500	8.17	1947-58
Slate Creek at Wonder (d)	14370000	31.4	1944-57
Grave Creek at Pease Bridge, near Placer (d)	14371500	22.1	1941-89
Grave Creek near Placer (d)	14372000	45.6	1914;1941-50
East Fork Illinois River near Takilma (d)	14372500	42.3	1926;1927-32;1941-91
Althouse Creek near Holland (d)	14373500	24.3	1947-53
Sucker Creek near Holland (d)	14375000	76.2	1942-65
Sucker Creek below Little Grayback Creek, near Holland (d)	14375100	83.9	1966-91
Elk Creek near O'Brien (d)	14375400	26.6	1986-91
West Fork Illinois River below Rock Creek, near O'Brien (d)	14375500	42.4	1955-85
West Fork Illinois River near O'Brien (d)	14376500	49.7	1947-54
Illinois River at Kerby (d)	14377000	364	1926-61
Deer Creek near Dryden (d)	14377500	22.0	1942-56
Illinois River near Selma (d)	14378000	665	1957-68
Illinois River near Agness (d)	14378200	988	1961-81

DISCONTINUED SURFACE-WATER QUALITY STATIONS

The following continuous-record water-quality stations in Oregon have been discontinued. Continuous water-quality data were collected and published for the period of record shown for each station. For each station entry, a period of record, expressed in water years, is provided for each type of record listed. Discontinued project stations with less than 3 years of record have not been included. Information regarding these stations may be obtained from the District Office at the address given on the back side of the title page.

[Type of record: do (dissolved oxygen), ph (pH), sed (sediment), sc (specific conductance),
t (temperature), tb (turbidity)]

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
MALHEUR AND HARNEY LAKES BASIN				
Donner und Blitzen River near Frenchglen	10396000	200	t, sc	1976-81
OWYHEE RIVER BASIN				
Owyhee River near Rome	13181000	8,000	t	1973-77
Owyhee River at Owyhee	13184000	11,300	t, sc	1980-82
Bully Creek near Vale	13227000	570	t, sed	1959-62
POWDER RIVER BASIN				
Powder River at Baker	13277000	351	sed	1961
Powder River near Richland	13286700	1,310	t	1960-61
Eagle Creek above Smith Creek near New Bridge	13288200	156	t	1960-61
GRANDE RONDE RIVER BASIN				
Imnaha River at Imnaha	13292000	622	t	1966-68;1977
Meadow Creek below Smith Creek near Starkey	13318050	33.2	t	1978-79
Meadow Creek above Bear Creek near Starkey	13318060	48.2	t	1978-79
Grande Ronde River at La Grande	13319000	678	t	1960-61
Wallowa River at Wallowa	13329900	--	t	1977
Lostine River near Lostine	13330000	70.9	t	1958
Lostine River at Lostine	13330200	--	t	1976-77
Minam River at Minam	13331500	240	t	1966-85
Grande Ronde River at Rondowa	13332500	2,555	t	1960-61
WALLA WALLA RIVER BASIN				
South Fork Walla Walla River near Milton-Freewater	14010000	63	t	1960-61
COLUMBIA RIVER MAIN STEM				
Columbia River at McNary Dam	14019200	214,000	t	1962
			sed	1966
Columbia River at Umatilla	14019250	214,000	t	1975-79
UMATILLA RIVER BASIN				
Umatilla River above Meacham Creek near Gibbon	14020000	131	t	1960-80
Umatilla River near Umatilla	14033500	2,290	t	1963-69
WILLOW CREEK RIVER BASIN				
Willow Creek at Heppner	14034500	96.8	t	1963-68; 1972-73
			sed	1963-68
Willow Creek near Arlington	14036000	850	t	1963-68
			sed	1963-70
JOHN DAY RIVER BASIN				
South Fork John Day River near Dayville	14039500	590	t	1952-56
Desolation Creek near Dale	14041000	108	t	1958
Middle Fork John Day River at Ritter	14044000	515	t	1967-68
North Fork John Day River at Monument	14046000	2,520	t	1967-68
John Day River at McDonald Ferry	14048000	7,580	t	1963-68
				1976-81
			sc	1976-81
			sed	1963-70
Columbia River at Biggs Junction	14048330	226,400	t	1975-76

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
DESCHUTES RIVER BASIN				
Paulina Creek near La Pine	14063300	10.1	sc	1992-95
Deschutes River at Benham Falls	14064500	1,759	t	1968-80
Deschutes River near Culver	14076500	2,705	t	1955-57;1959-74
Crooked River at Post	14079500	2,160	t, sed	1960-62
Bear Creek in Prineville	14080250	205	t	1976
			sed	1976-80
Crooked River near Prineville	14080500	2,700	t, sed	1959
Crooked River below Opal Springs, near Culver	14087400	4,300	t	1964-74
Crooked River near Culver	14087500	4,330	t	1955-63
Metolius River near Grandview	14091500	316	t	1955-74
Deschutes River near Madras	14092500	7,820	t	1953-56
				1958;1972-88
White River below Tygh Valley	14101500	417	t, sed	1982
			tb	1982-83
Deschutes River at Moody	14103000	10,500	t	1955-58;1962-81
COLUMBIA RIVER MAIN STEM				
Columbia River at The Dalles	14105700	237,000	t	1956-70;1974-76
			sc	1965-85
Columbia River at Warrendale	14128910	240,000	t, sc	1976-92
Columbia River at Vancouver	14144700	241,000	t	1968-70;1973-79
			sed	1964-69
WILLAMETTE RIVER BASIN				
Middle Fork Willamette River above Salt Creek, near Oakridge	14145500	392	t	1961-97
Middle Fork Willamette River near Oakridge	14144800	258	t	1957-87
Hills Creek above Hills Creek Reservoir, near Oakridge	14144900	52.7	t	1959-81
Middle Fork Willamette River below North Fork, near Oakridge	14148000	924	t	1951-87
Middle Fork Willamette River near Dexter	14150000	1,001	t	1956-97
Fall Creek near Lowell	14150300	118	t	1964-87
Winberry Creek near Lowell	14150800	43.9	t	1964-81
Fall Creek below Winberry Creek, near Fall Creek	14151000	186	t	1951-97
Middle Fork Willamette River at Jasper	14152000	1,340	t	1954-87
Coast Fork Willamette River at London	14152500	72.1	t	1961-65;1968-87
Coast Fork Willamette River near Goshen	14157500	642	t	1962-75
McKenzie River below Trail Bridge Dam, near Belknap Springs	14158850	184	t, sc	1977-85
McKenzie River at McKenzie Bridge	14159000	348	t, sc	1977-85
Horse Creek near McKenzie Bridge	14159100	149	t	1963-69;1984
South Fork McKenzie River above Cougar Lake, near Rainbow	14159200	160	t	1958-87
Blue River below Tidbits Creek, near Blue River	14161100	45.8	t	1964-87
Lookout Creek near Blue River	14161500	24.1	t	1952-55;1964-81
Blue River near Blue River	14162000	75	t	1962-64
McKenzie River at Finn Rock	14162400	--	t	1984
McKenzie River near Vida	14162500	930	t	1962-85
			sc	1977-85
Gate Creek at Vida	14163000	47.6	t	1984
McKenzie River at Leaburg Dam	14163100	--	t	1984
McKenzie River near Springfield	14164000	1,066	t	1984
Walterville Canal near Walterville	14164200	--	t	1984
McKenzie River above Hayden Bridge, at Springfield	14164900	--	t	1984
Mohawk River near Springfield	14165000	177	t	1964-69;1984
McKenzie River near Coburg	14165500	1,337	t	1964-75;1984
Willamette River at Harrisburg	14166000	3,420	t	1962-87
			sc, do	1970-76
			ph	1970-75
Willamette River above Calapooia River at Albany	14171750	4,460	t	1964-87
North Santiam River below Boulder Creek, near Detroit	14178000	216	t	1952-87
Breitenbush River above French Creek, near Detroit	14179000	108	t	1951;1954-87
North Santiam River at Niagra	14181500	453	t	1954-97
North Santiam River at Fisherman's Bend, near Mill City	14181800	--	t	1986
Little North Santiam River near Mehama	14182500	112	t	1986
North Santiam River at Mehama	14183000	655	t	1986

WATER RESOURCES DATA FOR OREGON, 1998

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
WILLAMETTE RIVER BASIN--Continued				
North Santiam River near Jefferson	14184100	736	t	1985-86
South Santiam River below Cascadia	14185000	174	t	1963-63;1967; 1970-87
Middle Santiam River near Cascadia	14185800	104	t	1964-79;1981-82
Quartzville Creek near Cascadia	14185900	99.2	t	1964-87
Middle Santiam River at mouth, near Foster	14186500	287	t	1954-64;1966
South Santiam River at Foster	14186700	493	t	1968;1970-73; 1985
South Santiam River near Foster	14187200	557	t	1954-97
South Santiam River at Waterloo	14187500	640	t	1964-87
Crabtree Creek near Scio	14188750	--	t	1985
Thomas Creek near Scio	14188800	109	t	1963-75
Thomas Creek near Crabtree	14188850	--	t	1986
South Santiam River below Thomas Creek, near Jefferson	14188900	--	t	1986
Santiam River at Jefferson	14189000	1,790	t	1964-65;1967-87
Luckiamute River at Pedee	14190000	115	t	1965-70
Willamette River at Salem	14191000	7,280	t sc	1964-87 1952-60;1965-72 1976-84
Willamina Creek near Willamina	14193000	64.7	t	1964-68
South Yamhill River near Whiteson	14194000	502	t	1964-68
North Yamhill River at Pike	14197000	66.8	t	1964-69
Molalla River above Pine Creek, near Wilhoit	14198500	97	t	1964-69
Molalla River near Canby	14200000	323	t	1964-69
Silver Creek at Silverton	14200300	47.9	t	1964-68
Little Abiqua Creek near Scotts Mills	14200400	9.81	t	1994-97
Zollner Creek near Mount Angel	14201300	15.0	t	1994-97
Pudding River at Aurora	14202000	479	sc,t	1994-97
Tualatin River near Gaston	14202500	48.5	t	1979-84
Tualatin River near Dilley	14203500	125	t	1964-68
Gales Creek near Glenwood	14203750	7.3	t	1994-95
Gales Creek near Gales Creek	14204000	33.2	t	1964-69
Fanno Creek at Durham	14206950	31.5	t, sc	1994-96
Tualatin River at West Linn	14207500	706	t sc	1964-68;1976-81 1976-81
Willamette River at Oregon City	14207700	10,000	t	1963-67
Clackamas River near Clackamas	14211000	930	t	1964-76
Willamette River at Portland	14211720	11,100	t, sc	1976-81
Willamette River above St. Johns Bridge, at Portland	14211805	11,450	t	1972-75
COLUMBIA RIVER MAIN STEM				
Columbia River at Columbia City	14222880	254,000	t	1971
Columbia River near Columbia City	14222890	253,900	t	1969-72
Columbia River at Kalama	14222910	254,000	t	1969-79
Columbia River at Prescott	14223780	254,200	t	1968-69
Columbia River at Rainier	14245295	256,700	t	1972-79
Columbia River at Longview, WA	14245300	256,700	t	1968-72
Columbia River at Beaver Army Terminal, near Quincy	14246900	256,900	t	1968-70
Columbia River at Wauna	14247295	256,900	t	1972-76
Columbia River at Bradwood	14247400	257,100	t	1977-81
Columbia River at Altoona, WA	14248600	258,000	t	1972-79
Bear Creek near Svenson	14248700	3.33	t	1966-75
PACIFIC SLOPE BASINS IN OREGON				
NEHALEM RIVER BASIN				
Nehalem River near Foss	14301000	667	t sc	1975-81 1981
NESTUCCA RIVER BASIN				
Trask River near Tillamook	14302500	145	t	1962-71
Nestucca River near Beaver	14303600	180	t	1965-87

WATER RESOURCES DATA FOR OREGON, 1998
DISCONTINUED SURFACE-WATER QUALITY STATIONS

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Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
SILETZ RIVER BASIN				
Big Rock Creek near Valsetz	14304850	6.90	t	1979-85
Siletz River at Siletz	14305500	202	t	1979-85
YAQUINA RIVER BASIN				
Yaquina River near Chitwood	14306030	71	sed	1973-74
ALSEA RIVER BASIN				
North Fork Beaver Creek near Seal Rock	14306040	10	t	1966-67
North Fork Alsea River at Alsea	14306100	63	t	1958-66
South Fork Alsea River near Alsea	14306200	49.5	t	1958-63
Fall Creek near Alsea	14306300	29.4	t	1959
Five Rivers near Fisher	14306400	114	t	1959
Alsea River near Tidewater	14306500	334	t, sc	1980-81
			sed	1973-74
Drift Creek near Salado	14306600	20.5	t	1959-63; 1969-70
Needle branch near Salado	14306700	0.27	t, sed	1959-73
Flynn Creek near Salado	14306800	0.78	t, sed	1959-73
Deer Creek near Salado	14306810	1.17	t, sed	1959-73
SIUSLAW RIVER BASIN				
Siuslaw River near Mapleton	14307620	588	t	1968-75; 1978-81
			sc	1978-81
			sed	1968-75
UMPQUA RIVER BASIN				
South Umpqua River at Days Creek	14308600	641	t	1971-82; 1991-92
			tb	1973-82
			sc, ph, do	1991-92
South Umpqua River near Roseburg	14312260	1,798	sc	1971-95
			ph	1972-95
			do	1971-95
North Umpqua River at Winchester	14319500	1,344	t	1971-91
Umpqua River near Elkton	14321000	3,683	t	1971-92
COOS RIVER BASIN				
West Fork Millicoma River near Allegany	14324500	46.9	t	1973-76
COQUILLE RIVER BASIN				
South Fork Coquille River near Illahe	14324700	40.6	t	1971-74
Rock Creek near Illahe	14324800	--	t	1958
South Fork Coquille River near Powers	14324900	93.2	t	1957-70
SIXES RIVER BASIN				
Sixes River at Sixes	14327150	116	t	1968
			sed	1968-70
ROGUE RIVER BASIN				
South Fork Rogue River south of Prospect	14334700	246	t	1969-92
			sed	1977-81
Rogue River at Grants Pass	14361500	2,459	t	1956-58; 1974-87
Middle Fork Applegate River near Copper	14361590	50.7	t	1980-87
Elliott Creek near Copper	14361600	51.8	t	1978-87
			sed	1978-80
Carberry Creek near Copper	14361700	68.9	t	1978-87
			sed	1981
Rogue River near Merlin	14370400	3,268	t	1975-87
Rogue River at Marial	14372250	3,812	t	1975-87
Rogue River near Agness	14372300	3,939	t	1961-87
Illinois River near Selma	14378000	665	t	1962-68

INTRODUCTION

The Water Resources Division of the U.S. Geological Survey, in cooperation with state agencies, obtains a large amount of data pertaining to the water resources of Oregon each water year. These data, accumulated during many water years, constitute a valuable data base for developing an improved understanding of the water resources of the State. To make these data readily available to interested parties outside the Geological Survey, the data are published annually in this report series entitled "Water Resources Data - Oregon."

This report includes records on both surface and ground water in the State. Specifically, it contains: (1) Discharge records for 183 stream-gaging stations, stage only records for 5 gaging stations, 72 partial-record or miscellaneous streamflow stations, and 1 crest-stage, partial-record streamflow station; (2) stage and content records for 26 lakes and reservoirs; (3) water-quality records for 62 streamflow-gaging stations; (4) water-quality for 2 atmospheric disposition stations; (5) air-temperature records for 1 data site; and (6) light incident for 1 record.

This series of annual reports for Oregon began with the 1961 water year with a report that contained only data relating to the quantities of surface water. For the 1964 water year, a similar report was introduced that contained only data relating to water quality. Beginning with the 1975 water year, the report format was changed to present, in one or two volumes, data on quantities of surface water, quality of surface and ground water, and ground-water levels. In 1981, the annual report was divided into two volumes: Volume 1 described the activities for Eastern Oregon, while Volume 2 described the activities for Western Oregon. In 1991, the annual report returned to a single volume report.

Prior to introduction of this series and for several water years concurrent with it, water-resources data for Oregon were published in U.S. Geological Survey Water-Supply Papers. Data on stream discharge and stage and on lake or reservoir contents and stage, through September 1960, were published annually under the title "Surface-Water Supply of the United States, Parts 10, 11, 13, and 14." For the 1961 through 1970 water years, the data were published in two 5-year reports. Data on chemical quality, temperature, and suspended sediment for the 1941 through 1970 water years were published annually under the title "Quality of Surface Waters of the United States," and water levels for the 1935 through 1974 water years were published under the title "Ground-Water Levels in the United States." These Water-Supply Papers may be consulted in the libraries of the principal cities of the United States, or if not out of print, may be purchased from the U.S. Geological Survey, Books and Open-File Reports, Federal Center, Building 41, Box 25425, Denver, CO 80225. For further ordering information, telephone (303) 236-7476.

Publications similar to this report are published annually by the Geological Survey for all states. These official Survey reports have an identification number consisting of the two-letter State abbreviation, the last two digits of the water year, and the volume number. For example, this report is identified as "U.S. Geological Survey Water-Data Report OR-98-1". For archiving and general distribution, the reports for 1971-74 water years also are identified as water-data reports. These water-data reports are for sale in paper copy or in microfiche by the National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22161. For further ordering information, the Customer Inquiries telephone number is (703) 487-4650.

Additional information, including current prices, for ordering specific reports may be obtained from the District Chief at the address given on back of title page or by telephone (503) 251-3201.

The USGS is continually updating the availability of its information on the internet. Current streamflow conditions (via satellite) for Oregon and other water resource information can be found at the following Universal Resource Locator (URL): <http://oregon.usgs.gov>. Nationwide information on water resources, including real-time and historic streamflow data, water-use data, publications and USGS program activities, can be found at URL: <http://water.usgs.gov>.

COOPERATION

The U.S. Geological Survey and organizations of the State of Oregon have had cooperative agreements for the systematic collection of surface-water records since 1905. Organizations that supplied data are acknowledged in station descriptions. Organizations that assisted in collecting data through cooperative agreements with the Survey are:

State of Oregon Water Resources Department, Martha O. Pagel, Director.
State of Oregon Department of Fish and Wildlife, Rudy Rosen, Director.
State of Oregon Department of Environmental Quality, Debrah Marriott, Director.
Clackamas County, Helene K. Lichtman, Director.
Coos Bay-North Bend Water Board, Robert K. Schab, General Manager.
Eugene Water and Electric Board, Everett Jordan, General Manager.
Coos County, Board of Commissioners, Beverly Owen, Chair.
Douglas County, Natural Resources Division of Public Works, Frank M. Nielsen, Division Manager.
City of Albany, Steve Bryant, City Manager.
City of Ashland, Department of Public Works, Paula C. Brown, Director.
City of Brookings, Beverly Adams, Finance Director and Recorder.
City of Gresham, Department of Environmental Services, Mel Miracle.
City of Lake Oswego, Mark Schoening, City Engineer.
City of McMinnville, Kent Taylor, City Manager.
City of Portland, Bureau of Environmental Services, Dean Marriott, Director.
City of Portland, Bureau of Water Works, Michael F. Rosenberger, Administrator.
City of West Linn, David Monson, Director of Public Works.
City of Woodburn, Public Works, Frank Tiwari, Director.
The Confederated Tribes of the Warm Springs Indian Reservation, Bruce Brunoe, Chair of Tribal Council.
Tillamook Bay National Estuary Project, Steve Nelson, Project Director.
Unified Sewage Agency, Bill Gaffi, General Manager.

Assistance in the form of funds or services was provided by the Forest Service, U.S. Department of Agriculture; Corps of Engineers, U.S. Army; Bonneville Power Administration, U.S. Department of Energy; Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, National Park Service, U.S. Department of the Interior in collection of records for stage and discharge stations and water-quality stations published in this report.

The following organizations aided in collecting records for stations under Federal Energy Regulatory Commission licenses: Eugene Water & Electric Board; Grayco Resources, Inc.; Idaho Power Co.; Pacific Power Co.; Portland General Electric Co.

SUMMARY OF HYDROLOGIC CONDITIONS

Surface Water

The hydrology of Oregon is influenced by five mountain ranges with the Cascade Range providing a natural division between western and eastern Oregon. These ranges divide the state into drainage basins and greatly affect the distribution of precipitation. Hydrologic patterns are generally uniform from drainage basin to drainage basin throughout western Oregon; whereas in eastern Oregon, hydrologic patterns vary widely between drainage basins.

Western Oregon, which composes about one-third of the total area of the state, has a climate characterized by moderate temperatures, wet winters, and dry summers. About 80 percent of the precipitation occurs between October and March. Annual precipitation ranges from about 20 inches per year in the lower elevations in the southern part of the area to about 200 inches per year in the Coast and Cascade Ranges. In general, streamflow characteristics are similar, with most of the runoff and flooding on both large and small streams being caused by winter rains. Major floods have occurred when winter rains combine with melting snow.

Eastern Oregon has more complex hydrologic patterns than western Oregon. Precipitation is less than 10 inches per year in the semiarid regions, such as parts of the north-central area, the closed basin in south-central Oregon, and southeastern Oregon. The northeastern part of the state receives as much as 80 inches of precipitation per year, much of it occurring as snowfall. On large streams, flooding can result from winter rains and (or) seasonal snowmelt; in smaller drainage basins, flooding can result from winter rains, seasonal snowmelt, and convection storms. Monthly and annual mean discharges for four representative gages are compared with the 30-year median in figures 3 and 4.

Surface-water Conditions

Streamflow for the 1998 water year generally remained above average for the fourth consecutive year due, in part, to above average snowpacks coupled with abundant precipitation. By the end of April, as reported by the Natural Resources Conservation Service, the snow water equivalent of the snowpack ranged from a high of 201 percent of the 1961-90 average for the Lake County area of south-central Oregon to a low of 81 percent of average for the Willamette Basin located west of the Cascades in northern Oregon. Precipitation across the state for the water year, as reported by the State Climatologist, ranged from a high of 155 percent of normal in the Owyhee Basin of southeastern Oregon to a low of 100 percent of normal in the Lower Deschutes Basin of north-central Oregon.

The water year began with an abrupt change from summer to autumn with a sudden drop in temperature and an increase in precipitation during October. October streamflow averages for coastal basins were some of the highest on record. The October monthly average for the Nehalem River near Foss gage was 3,698 ft³/s, the highest in 59 years of record. The Wilson River, a nearby stream, also reported a record high monthly mean, 2,249 ft³/s, the highest in 68 years of record. As a result of excessive precipitation from a major rainstorm October 29th and 30th, gages at many rivers and streams west of the Cascades recorded their highest annual maximums for stage and discharge.

After a mostly dry November, streamflows returned to normal. By December, streams were beginning to show effects of statewide below-normal precipitation. Streamflow for the month of December was 49 percent of average for the Owyhee Basin of southeastern Oregon, 39 percent of average for the John Day Basin of north-central Oregon, and 45 percent of average for the Umpqua Basin of the central coast.

Streamflows returned to normal in January as the weather pattern brought mild temperatures and near to-above normal precipitation across the entire state. Streams and rivers along the southern Oregon coast reached their 1998 maximum levels January 17th, as a series of Pacific storms brought excessive precipitation to the area.

Beginning with February, streamflows remained above average through the end of the water year. The exception to this was the coastal basins where flows generally remained in the normal range for the remainder of the water year.

Table 1. Maximum stage, discharge and recurrence interval for the 1998 water year at selected gaging stations.

[mi², square miles; ft, feet; ft³/s, cubic feet per second; ND, not determined; <, less than.

Station Number	Stream and Location	Drainage Area (mi ²)	Period of Record	Maximum for Period of Record			Maximum during Water Year			
				Date	Stage (ft)	Discharge (ft ³ /s)	Date	Stage (ft)	Discharge (ft ³ /s)	Estimate of Recurrence interval (years)
10396000	Donner und Blitzen River near Frenchglen	200	1912-13, 15,16,18,21, 1938-	04-26-78	7.15	4,270	05-14-98	6.32	3,110	<25
11502500	Williamson River below Sprague River, near Chiloquin	3,000	1918-	01-05-97	10.27	17,100	03-28-98	6.75	3,930	<5
13181000	Owyhee River near Rome	8,000	1950-	03-18-93	20.11	55,700	05-14-98	10.65	13,600	regulated
13292000	Imnaha River at Imnaha	622	1929-	01-01-97	11.44	20,200	05-26-98	7.06	6,350	<25
13333000	Grande Ronde River at Troy	3,275	1944-	02-09-96	13.76	51,800	05-26-98	9.51	17,800	2
14033500	Umatilla River near Umatilla	2,290	1903-	01-30-65	10.75	19,800	05-28-98	5.21	3,230	regulated
14046500	John Day River at Service Creek	5,090	1930-	12-23-64	17.85	40,200	03-24-98	10.02	12,900	2
14120000	Hood River at Tucker Bridge, near Hood River	279	1898-99, 1914-17, 1965-	02-07-96	17.11	23,300	10-30-97	11.75	10,400	2
14137000	Sandy River near Marmot	263	1912-	12-22-64	--	61,400	10-30-97	736.28	10,600	<2
14150300	Fall Creek near Lowell	118	1964-	11-19-96	12.48	12,700	01-11-98	6.96	4,240	1.2
14301000	Nehalem River near Foss	667	1940-	02-08-96	29.56	70,300	10-30-97	15.21	22,800	<2
14305500	Siletz River at Siletz	202	1906-12, 1925-	02-07-96	24.49	34,700	10-30-97	15.66	16,800	2
14308500	Elk Creek near Drew	54	1955-82, 1987-	01-09-95	11.09	9,120	02-21-98	6.91	2,160	2
14311500	Lookingglass Creek at Brockway	158	1956-	12-26-55	24.93	35,000	01-16-98	5.70	1,410	1.2
14316700	Steamboat Creek near Glide	227	1957-	12-22-64	25.60	51,000	01-17-98	9.44	10,100	1.2
14320700	Calapooya Creek near Oakland	210	1956-73, 1987-	11-18-96	21.62	27,100	02-21-98	13.77	6,820	<2
14321000	Umpqua River near Elkton	3,683	1906-	12-23-64	51.95	265,000	02-22-98	21.41	61,900	1.2
14327250	Elk River above Anvil Creek, near Port Orford	83.4	1994-	11-18-96	22.58	28,900	10-30-97	11.96	5,940	ND
14328000	Rogue River above Prospect	312	1909-11, 1924-	12-22-64	11.55	22,400	01-17-98	6.04	6,360	<5
14337800	Elk Creek near Cascade Gorge	78.8	1974-	01-15-74	8.90	6,780	01-17-98	6.85	3,030	2
14357500	Bear Creek at Medford	289	1921-81, 1985-	01-01-97	14.69	17,600	05-20-98	5.81	2,530	regulated
14361500	Rogue River at Grants Pass	2,459	1939-	12-23-64	35.15	152,000	01-17-98	15.26	39,000	regulated
14372300	Rogue River near Agness	3,939	1961-	12-23-64	68.03	290,000	01-17-98	17.78	58,100	regulated
14400000	Chetco River near Brookings	271	1970-	11-19-96	28.56	76,100	01-17-98	14.16	25,900	1.2

NOTE.--The recurrence interval, or return period, of a flood of a given magnitude is the average interval of time within which the given flood will be exceeded once by the annual maximum discharge. The recurrence interval is inversely related to the chance of a specific flood discharge being exceeded by any one year. Thus, a flood with a 50-year recurrence interval would have 1 chance in 50 of being exceeded in any one year. Recurrence intervals are average figures based on historical data; because the occurrence of floods is erratic, the 50-year flood may not necessarily occur in any given 50-year period, or floods of this magnitude may occur several times during that period. A similar relation is true for a flood of any given recurrence interval.

Ground Water

The seasonal level of the water table reflects natural recharge and discharge, and indirectly reflects long-term climatic trends. Changes in the water table are represented by seasonal averages of measurements made in shallow-aquifer wells.

The relation of seasonal water-table levels during 1998 to the long-term means, or normals, was evaluated for the five wells that comprise the Oregon District portion of the U.S. Geological Survey's Office of Ground Water's Collection of Basic Records (CBR) network of wells. These are wells that show a high correlation to climatic variability.

The normal water level for a season is defined as being within one-half the standard deviation of the seasonal mean for the period of record. The seasons are defined as: FALL, October to December; WINTER, January to March; SPRING, April to June; and SUMMER, July to September.

The water-table levels in the Oregon CBR network were all above normal throughout 1998 except for well 441508123053001, near Harrisburg, which was within the normal range in Spring. Levels in many of the wells were more than one standard deviation above normal. Two wells maintained levels more than one standard deviation above normal through all four quarters.

SPECIAL NETWORKS AND PROGRAMS

Hydrologic Benchmark Network is a network of 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by human activities.

National Stream-Quality Accounting Network (NASQAN) monitors the water quality of large rivers within four of the Nation's largest river basins--the Mississippi, Columbia, Colorado, and Rio Grande. The network consists of 39 stations. Samples are collected with sufficient frequency that the flux of a wide range of constituents can be estimated. The objective of NASQAN is to characterize the water quality of these large rivers by measuring concentration and mass transport of a wide range of dissolved and suspended constituents, including nutrients, major ions, dissolved and sediment-bound heavy metals, common pesticides, and inorganic and organic forms of carbon. This information will be used (1) to describe the long-term trends and changes in concentration and transport of these constituents; (2) to test findings of the National Water-Quality Assessment Program (NAWQA); (3) to characterize processes unique to large-river systems such as storage and remobilization of sediments and associated contaminants; and (4) to refine existing estimates of off-continent transport of water, sediment, and chemicals for assessing human effects on the world's oceans and for determining global cycles of carbon, nutrients, and other chemicals.

The National Atmospheric Deposition Program/National Trends Network (NADP/NTN) provides continuous measurement and assessment of the chemical climate of precipitation throughout the United States. As the lead federal agency, the USGS works together with over 100 organizations to accomplish the following objectives; (1) Provide a long-term, spatial and temporal record of atmospheric deposition generated from a network of 191 precipitation chemistry monitoring sites. (2) Provide the mechanism to evaluate the effectiveness of the significant reduction in SO₂ emissions that began in 1995 as implementation of the Clean Air Act Amendments (CAAA) occurred. (3) Provide the scientific basis and nationwide evaluation mechanism for implementation of the Phase II CAAA emission reductions for SO₂ and NO_x scheduled to begin in 2000.

Data from the network, as well as information about individual sites, are available through the world wide web at:

<http://nadp.nrel.colostate.edu/NADP>

The National Water-Quality Assessment (NAWQA) Program of the U.S. Geological Survey is a

long-term program with goals to describe the status and trends of water-quality conditions for a large, representative part of the Nation's ground- and surface-water resources; provide an improved understanding of the primary natural and human factors affecting these observed conditions and trends; and provide information that supports development and evaluation of management, regulatory, and monitoring decisions by other agencies.

Assessment activities are being conducted in 53 study units (major watersheds and aquifer systems) that represent a wide range of environmental settings nationwide and that account for a large percentage of the Nation's water use. A wide array of chemical constituents will be measured in ground water, surface water, streambed sediments, and fish tissues. The coordinated application of comparative hydrologic studies at a wide range of spatial and temporal scales will provide information for decision making by water-resources managers and a foundation for aggregation and comparison of findings to address water-quality issues of regional and national interest.

Communication and coordination between USGS personnel and other local, State, and federal interests are critical components of the NAWQA Program. Each study unit has a local liaison committee consisting of representatives from key federal, State, and local water resources agencies, Indian nations, and universities in the study unit. Liaison committees typically meet semiannually to discuss their information needs, monitoring plans and progress, desired information products, and opportunities to collaborate efforts among the agencies.

Additional information about the NAWQA Program is available through the world wide web at:

http://www.rvares.er.usgs.gov/nawqa/nawqa_home.html

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1998 water year that began October 1, 1997, and ended September 30, 1998. A calendar of the water year is provided on the inside of the front cover. The records contain streamflow data, stage and content data for lakes and reservoirs, and water-quality data for surface water. The following sections of the introductory text are presented to provide users with a more detailed explanation of how the hydrologic data published in this report were collected, analyzed, computed, and arranged for presentation.

Station Identification Numbers

Each data station in this report is assigned a unique identification number. This number is unique in that it applies specifically to a given station and to no other. The number usually is assigned when a station is first established and is retained for that station indefinitely. The two systems used by the U.S. Geological Survey to assign identification numbers for surface-water stations are based on geographic location. The "downstream order" system is used for regular surface-water stations and the "latitude-longitude" system is used for surface-water stations where only miscellaneous measurements are made. Basin designation is based on the Hydrologic Unit Map for Oregon prepared in cooperation with the U.S. Water Resources Council (1974).

Downstream Order System

Since October 1, 1950, the order of listing hydrologic-station records in Survey reports is in a downstream direction along the main stream. All stations on a tributary entering upstream from a mainstream station are listed before that station. A station on a tributary that enters between two mainstream stations is listed between them. A similar order is followed in listing stations on first rank, second rank, and other ranks of tributaries. The rank of any tributary with respect to the stream to which it is immediately tributary is indicated by an indentation in the "List of Stations" in the front of this report. Each indentation represents one rank. This downstream order and system of indentation show which stations are on tributaries between any two stations and the rank of the tributary on which each station is situated.

The station-identification number is assigned according to downstream order. In assigning station numbers, no distinction is made between partial-record stations and other stations; therefore, the station number for a partial-record station indicates downstream-order position in a list made up of both types of stations. Gaps are left in the series of numbers to allow for new stations that may be established; hence, the numbers are not consecutive. The complete eight-digit number for each station, such as 14105700, which appears just to the left of the station name, includes the two-digit Part number "14" plus the six-digit downstream-order number "105700." The Part number designates the major river basin; for example, part "14" refers to the Pacific slope basins in Oregon and lower Columbia River basin.

Latitude-Longitude System

The identification numbers for wells and miscellaneous surface-water sites are assigned according to the grid system of latitude and longitude (figure 1). The number consists of 15 digits. The first six digits denote the degrees, minutes, and seconds of latitude, the next seven digits denote degrees, minutes, and seconds of longitude, and the last two digits (assigned sequentially) identify the wells or other sites within a one-second grid. This site-identification number, once assigned, is a pure number, and has no locational significance. In the rare instance where the initial determination of latitude and longitude are found to be in error, the station will retain its initial identification number; however, its true latitude and longitude will be listed in the LOCATION paragraph of the station description.

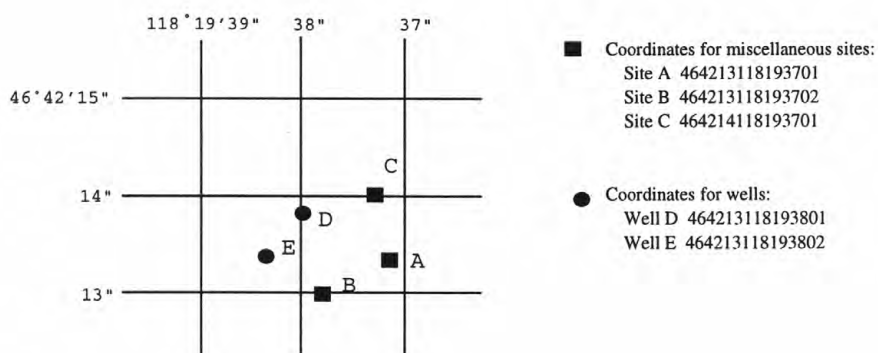


Figure 1. System for numbering wells and miscellaneous sites (latitude and longitude).

Local Identifier Well-Numbering System

In addition to the latitude-longitude based site identification number, wells in Oregon are assigned local well numbers (figure 2). The State is divided into 36 square mile townships numbered according to their location relative to the east-west Willamette baseline and a north-south Willamette meridian. The position of a township is given by its north-south "Township" position relative to the baseline and its east-west "Range" position relative to the meridian. Each township is divided into 36 sections approximately one-square-mile, (640-acre) in area and numbered from 1 to 36. For example, a well designated as 01S/03E-33DCA is located in Township 1 south, Range 3 east, section 33. The letters following the section number correspond to the location within the section; the first letter (D) identifies the quarter section (160 acres); the second letter (C) identifies the quarter-quarter section (40 acres); and the third letter (A) identifies the quarter-quarter-quarter section (10-acres). Thus, well 33DCA is located in the NE quarter of the SW quarter of the SE quarter of section 33 (figure 2). When more than one designated well occurs in the quarter-quarter-quarter section, a serial number is included.

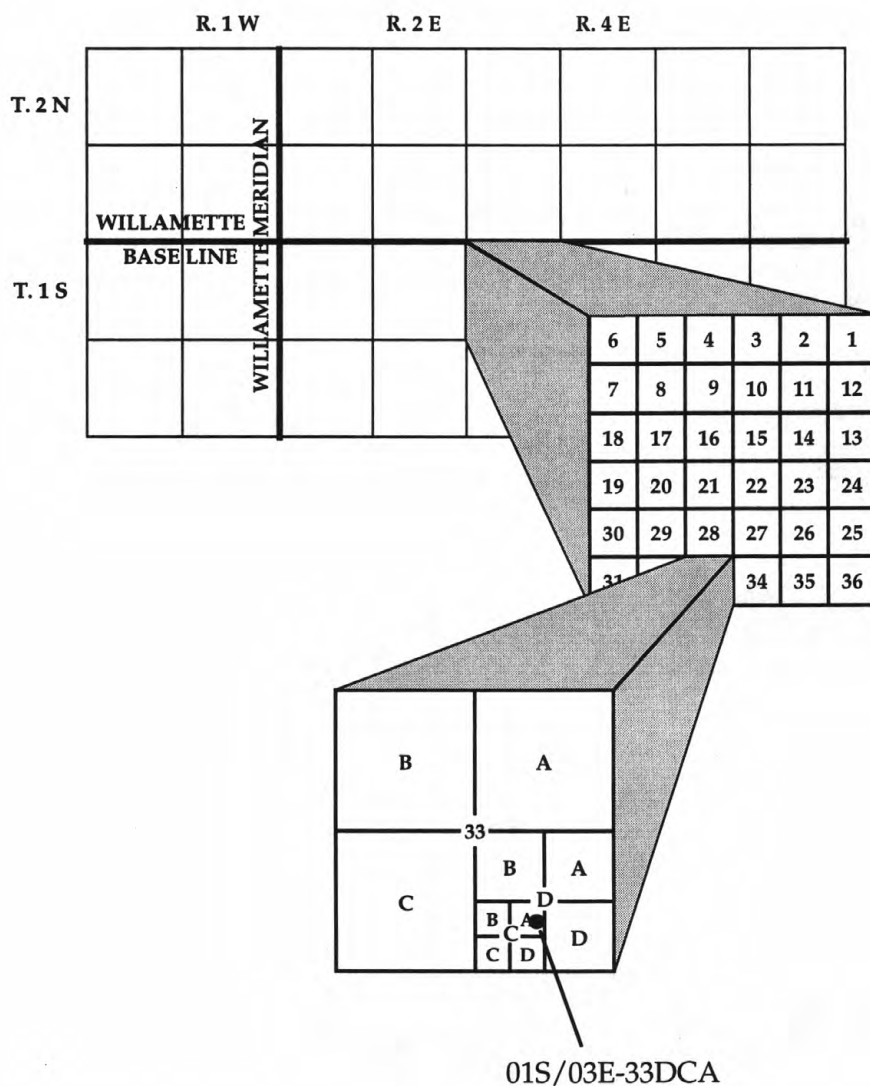


Figure 2. Local identifier well-numbering system.

Records of Stage and Water Discharge

Records of stage and water discharge may be complete or partial. Complete records of discharge are those obtained using a continuous stage-recording device through which either instantaneous or mean daily discharges may be computed for any time, or any period of time, during the period of record. Complete records of lake or reservoir content, similarly, are those for which stage or content may be computed or estimated with reasonable accuracy for any time, or period of time. They may be obtained using a continuous stage-recording device, but need not be. Because daily mean discharges and end-of-day contents commonly are published for such stations, they are referred to as "daily stations."

By contrast, partial records are obtained through discrete measurements without using a continuous stage-recording device and pertain only to a few flow characteristics, or perhaps only one. The nature of the partial record

is indicated by table titles such as "Crest-stage partial records," or "Low-flow partial records." Records of miscellaneous discharge measurements or of measurements from special studies, such as low-flow seepage studies, may be considered as partial records, but they are presented separately in this report.

Data Collection and Computation

The data obtained at a complete-record gaging station on a stream or canal consist of a continuous record of stage, individual measurements of discharge throughout a range of stages, and notations regarding factors that may affect the relations between stage and discharge. These data, together with supplemental information, such as weather records, are used to compute daily discharges. The data obtained at a complete-record gaging station on a lake or reservoir consist of a record of stage and of notations regarding factors that may affect the relation between stage and lake content. These data are used with stage-area and stage-capacity curves or tables to compute water-surface areas and lake storage.

Continuous records of stage are obtained with analog recorders that trace continuous graphs of stage or with digital recorders that punch stage values on paper tapes at selected time intervals. Measurements of discharge are made with current meters using methods adapted by the Geological Survey that are described in standard textbooks, in Water-Supply Paper 2175, and in U.S. Geological Survey Techniques of Water-Resources Investigations (TWRI), Book 3, Chapter A6. These methods are described in standard textbooks, Water-Supply Paper 2175, and the U.S. Geological Survey Techniques of Water Resources Investigations (TWRI's), Book 3, Chapter A1 through A19 and Book 8, Chapters A2 and B2. The methods are consistent with the American Society for Testing and Materials (ASTM) standards and generally follow the standards of the International Organization for Standards (ISO).

In computing discharge records, results of individual measurements are plotted against the corresponding stages, and stage-discharge relation curves are then constructed. From these curves, rating tables indicating the approximate discharge for any stage within the range of the measurements are prepared. If it is necessary to define extremes of discharge outside the range of the current-meter measurements, the curves are extended using: (1) logarithmic plotting; (2) velocity-area studies; (3) results of indirect measurements of peak discharge, such as slope-area or contracted-opening measurements, and computations of flow-over-dams or weirs; or (4) step-backwater techniques.

Daily mean discharges are computed by applying the daily mean stages (gage heights) to the stage-discharge curves or tables. If the stage-discharge relation is subject to change because of frequent or continual change in the physical features that form the control, the daily mean discharge is determined by the shifting-control method, in which correction factors based on the individual discharge measurements and notes of the personnel making the measurements are applied to the gage heights before the discharges are determined from the curves or tables. This shifting-control method also is used if the stage-discharge relation is changed temporarily because of aquatic growth or debris on the control. For some stations, formation of ice in the winter may so obscure the stage-discharge relations that daily mean discharges must be estimated from other information such as temperature and precipitation records, notes of observations, and records for other stations in the same or nearby basins for comparable periods.

At some stream-gaging stations the stage-discharge relation is affected by the backwater from reservoirs, tributary streams, or other sources. This necessitates the use of the slope method in which the slope or fall in a reach of the stream is a factor in computing discharge. The slope or fall is obtained by means of an auxiliary gage set at some distance from the base gage. At some gaging stations, acoustic velocity meter (AVM) systems are used to compute discharge. The AVM system measures the stream's velocity at one or more paths in the cross section. Coefficients are developed to relate this path velocity to the mean velocity in the cross section. Because the AVM sensors are fixed in position, the adjustment coefficients generally vary with stage. Cross-sectional area curves are developed to relate stage, recorded as noted above, to cross section area. Discharge is computed by multiplying path velocity by the appropriate stage related coefficient and area.

In computing records of lake or reservoir contents, it is necessary to have information available from surveys, curves, or tables that define the relation of stage to content. The application of stage to the stage-content curves or tables gives the contents from which daily, monthly, or yearly changes then are determined. If the stage-content relation changes because of deposition of sediment in a lake or reservoir, periodic resurveys may be necessary to redefine the relation. Discharges over lake or reservoir spillways are computed from stage-discharge relations much as other stream discharges are computed.

For some gaging stations there are periods when no gage-height record is obtained, or the validity of the recorded gage height is so questionable that it cannot be used to compute daily discharge or contents. This happens when the recorder stops or otherwise fails to operate properly, intakes are plugged, the float is frozen in the well, or for various other reasons. For such periods, the daily discharges are estimated from the recorded range in stage, previous or following record, discharge measurements, weather records, and comparison with other station records from the same or nearby basins. Likewise, daily contents may be estimated from operator's logs, previous or following record, inflow-outflow studies, and other information. Information explaining how estimated daily-discharge values are identified in station records is included in the next two sections, "Data Presentation" (REMARKS paragraph) and "Identifying Estimated Daily Discharge."

Data Presentation

Streamflow data in this report are presented in a new format that is considerably different from the format in data reports prior to the 1991 water year. The major changes are that statistical characteristics of discharge now appear in tabular summaries following the water-year data table and less information is provided in the text or station manuscript above the table. These changes represent the results of a pilot program to reformat the annual water data report to meet current user needs and data preferences.

The records published for each continuous-record surface-water discharge station (gaging station) now consist of four parts, the manuscript or station description; the data table of daily mean values of discharges for the current water year with summary data; a tabular statistical summary of monthly mean flow data for a designated period by water year; and a summary statistics table that includes statistical data of annual, daily, and instantaneous flows as well as data pertaining to annual runoff, 7-day low-flow minimums, and flow duration. Summary statistics were not included for certain sites where these data would be misleading. Contact the District Office for further information concerning summary statistics for these sites.

Station manuscript

The manuscript provides, under various headings, descriptive information, such as station location; period of record; historical extremes outside the period of record; record accuracy; and other remarks pertinent to station operation and regulation. The following information, as appropriate, is provided with each continuous record of discharge or lake content. Comments to follow clarify information presented under the various headings of the station description.

LOCATION.--Information on locations is obtained from the most accurate maps available. The location of the gage with respect to the cultural and physical features in the vicinity and with respect to the reference place mentioned in the station name is given. River mileages are based on information developed by the Hydraulics and Hydrology Committee of the Pacific Northwest River Basins Commission.

DRAINAGE AREA.--Drainage areas are measured using the most accurate maps available. Because the type of maps available varies from one drainage basin to another, the accuracy of drainage areas likewise varies. Drainage areas are updated as better maps become available.

PERIOD OF RECORD.--This indicates the period for which there are published records for the station or for an equivalent station. An equivalent station is one that was in operation at a time that the present station was not, and whose location was such that records from it can reasonably be considered equivalent with records from the present station.

REVISED RECORDS.--Published records, because of new information, occasionally are found to be incorrect, and revisions are printed in later reports. Listed under this heading are all the reports in which revisions have been published for the station and the water years to which the revisions apply. If a revision did not include daily, monthly, or annual figures of discharge, that fact is noted after the year dates as follows: "(M)" means the instantaneous maximum discharge was revised; "(m)" the instantaneous minimum was revised; and "(P)" the peak discharges were revised. If the drainage area has been revised, the report in which the most recently revised figure was first published is given.

GAGE.--The type of gage in current use, the datum of the current gage referred to sea level (see "DEFINITION OF TERMS"), and a condensed history of the types, locations, and datums of previous gages are given under this heading.

REMARKS.--All periods of estimated daily-discharge record will either be identified by date in this paragraph of the station description for water-discharge stations or flagged in the daily-discharge table. (See next section, "Identifying Estimated Daily Discharge.") If a remarks statement is used to identify estimated record, the paragraph will begin with this information presented as the first entry. The paragraph is also used to present information relative to the accuracy of the records, special methods of computation, conditions that affect natural flow at the station and, possibly, other pertinent items. For reservoir stations, information is given on the dam forming the reservoir, the capacity, outlet works and spillway, and purpose and use of the reservoir.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

AVERAGE DISCHARGE.--The discharge value given is the arithmetic average of the water-year mean discharges. Average discharge is computed only for stations having at least 2 water years of complete record; water years with incomplete record are not included in the computation. The mean-discharge value that uses all published data may differ from that given in the summary statistics data, which is based only on computer-stored data. The summary data does not include values of monthly or yearly data that were determined by various methods for the series of Water-Supply Papers entitled "Compilation of Records of Surface Water of the United States". The average-discharge value is not computed for stations where diversions, storage, or other water-use practices cause the value to be meaningless. If water projects that significantly alter flow at a station are put into use after the station has been in operation for a period of years, the new average is computed as soon as 2 water years of record have accumulated after the project began.

EXTREMES FOR PERIOD OF RECORD.--Extremes may include maximum and minimum stages and maximum and minimum discharges or content. Unless otherwise qualified, the maximum discharge or content is the instantaneous maximum corresponding to the highest stage that occurred. The highest stage may have been obtained from a graphic or digital recorder, a crest-stage gage, or by direct observation of a nonrecording gage. If the maximum stage did not occur on the same day as the maximum discharge or content, it is given separately. Similarly, the minimum is the instantaneous minimum discharge, unless otherwise qualified, and was determined and is reported in the same manner as the maximum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Included here is information concerning major floods or unusually low flows that occurred outside the stated period of record. The information may or may not have been obtained by the U.S. Geological Survey.

EXTREMES FOR CURRENT YEAR.--Extremes given here are similar to those for the period of record, except the peak discharge listing may include secondary peaks. For stations meeting certain criteria, all peak discharges and stages occurring during the water year and greater than a selected base discharge are presented under this heading. The peaks greater than the base discharge, excluding the highest one, are referred to as secondary peaks. Peak discharges are not published for canals, ditches, drains, or streams for which the peaks are subject to substantial control by man. The time of occurrence for peaks is expressed in 24-hour local standard time. For example, 12:30 a.m. is 0030, and 1:30 p.m. is 1330. The minimum for the current water year appears below the table of peak data.

REVISIONS.--If a critical error in published records is discovered, a revision is included in the first report published following discovery of the error.

Although rare, occasionally the records of a discontinued gaging station may need revision. Because, for these stations, there would be no current or, possibly, future station manuscript published to document the revision in a "Revised Records" entry, users of data for these stations who obtained the record from previously published data reports may wish to contact the Oregon office (address given on the back of the title page of this report) to determine if the published records were ever revised after the station was discontinued. Of course, if the data were obtained by computer retrieval, the data would be current and there would be no need to check because any published revision of data is always accompanied by revision of the corresponding data in computer storage.

Manuscript information for lake or reservoir stations differs from that for stream stations in the nature of the "Remarks" and in the inclusion of a skeleton stage-capacity table when daily contents are given.

Data table of daily mean values

The daily table for stream-gaging stations gives mean discharge for each day of the water year. In the monthly

summary for the table, the line headed "TOTAL" gives the sum of the daily figures for each month; the line headed "MEAN" gives the average flow in cubic feet per second for the month; and the lines headed "MAX" and "MIN" give the maximum and minimum daily mean discharges, respectively, for the month. Discharge for the month also is usually expressed in cubic feet per second per square mile (line headed "CFSM"), or in inches (line headed "IN."), or in acre-feet (line headed "AC-FT"). Figures for cubic feet per second per square mile and runoff in inches are omitted if there is extensive regulation or diversion or if the drainage area includes large noncontributing areas. At some stations monthly and (or) yearly observed discharges are adjusted for reservoir storage or diversion, or diversion data or reservoir contents are given. These figures are identified by a symbol and corresponding footnote.

Statistics of monthly mean data

A tabular summary of the mean (line headed "MEAN"), maximum (line headed "MAX"), and minimum (line headed "MIN") of monthly mean flows for each month for a designated period is provided below the mean values table. The water years of the first occurrence of the maximum and minimum monthly flows are provided immediately below those figures. The designated period will be expressed as "FOR WATER YEAR _____-_____, BY WATER YEAR (WY)," and will list the first and last water years of the range of years selected from the PERIOD OF RECORD paragraph in the station manuscript. It will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript.

Summary statistics

A table titled "SUMMARY STATISTICS" follows the statistics of monthly mean data tabulation. This table consists of four columns, with the first column containing the line headings of the statistics being reported. The table provides a statistical summary of yearly and daily flows, not only for the current water year but also for the previous calendar year and for a designated period, as appropriate. The designated period selected, "WATER YEARS _____-_____", will consist of all of the station record within the specified water years, inclusive, including complete months of record for partial water years, if any, and may coincide with the period of record for the station. The water years for which the statistics are computed will be consecutive, unless a break in the station record is indicated in the manuscript. All of the calculations for the statistical characteristics designated ANNUAL (See line headings below), except for the "ANNUAL 7-DAY MINIMUM" statistic, are calculated for the designated period using computerized data for complete water years. The other statistical characteristics may be calculated using partial water years.

The date or water year, as appropriate, of the first occurrence of each statistic reporting extreme values of discharge is provided adjacent to the statistic. Repeated occurrences may be noted in the REMARKS paragraph of the manuscript or in footnotes. Because the designated period may not be the same as the station period of record published in the manuscript, occasionally the dates of occurrence listed for the daily extremes in the designated-period column may not be within the selected water years listed in the heading. When this occurs, it will be noted in the REMARKS paragraph or in footnotes. Selected streamflow duration curve statistics and runoff data are also given. Runoff data may be omitted if there is extensive regulation or diversion of flow in the drainage basin.

The following summary statistics data, as appropriate, are provided with each continuous record of discharge. Comments to follow clarify information presented under the various line headings of the summary statistics table.

ANNUAL TOTAL.--The sum of the daily mean values of discharge for the year. At some stations the annual total discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes.

ANNUAL MEAN.--The arithmetic mean of the individual daily mean discharges for the year noted or for the designated period. At some stations the yearly mean discharge is adjusted for reservoir storage or diversion. The adjusted figures are identified by a symbol and corresponding footnotes. At least 5 complete years of record must be available before this statistic is published for the designated period.

HIGHEST ANNUAL MEAN.--The maximum annual mean discharge occurring for the designated period.

LOWEST ANNUAL MEAN.--The minimum annual mean discharge occurring for the designated period.

HIGHEST DAILY MEAN.--The maximum daily mean discharge for the year or for the designated period.

LOWEST DAILY MEAN.--The minimum daily mean discharge for the year or for the designated period.

ANNUAL 7-DAY MINIMUM.--The lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1 - March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

ANNUAL RUNOFF.--Indicates the total quantity of water in runoff for a drainage area for the year. Data reports may use any of the following units of measurement in presenting annual runoff data:

Acre-foot (AC-FT) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Cubic feet per second per square mile (CFSM) is the average number of cubic feet of water flowing per second from each square mile area drained, assuming the runoff is distributed uniformly in time and area.

Inches (INCHES) indicates the depth to which the drainage area would be covered if all of the runoff for a given time period were uniformly distributed on it.

10 PERCENT EXCEEDS.--The discharge that is exceeded 10 percent of the time for the designated period.

50 PERCENT EXCEEDS.--The discharge that is exceeded 50 percent of the time for the designated period.

90 PERCENT EXCEEDS.--The discharge that is exceeded 90 percent of the time for the designated period.

Data collected at partial-record stations follow the information for continuous-record sites. Data for partial-record discharge stations are presented in two tables. The first is a table of annual maximum stage and discharge at crest-stage stations, and the second is a table of discharge measurements at low-flow partial-record stations. The tables of partial-record stations are followed by a listing of discharge measurements made at sites other than continuous-record or partial-record stations. These measurements are generally made in times of drought or flood to give better areal coverage to those events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Identifying Estimated Daily Discharge

Estimated daily-discharge values published in the water-discharge tables of annual state data reports are identified either by flagging individual daily values with the letter symbol "e" and printing a table footnote, "e Estimated," or by listing the dates of the estimated record in the REMARKS paragraph of the station description.

Accuracy of the Records

The accuracy of streamflow records depends primarily on: (1) The stability of the stage-discharge relation or, if the control is unstable, the frequency of discharge measurements, and (2) the accuracy of measurements of stage, measurements of discharge, and interpretation of records.

The accuracy attributed to the records is indicated under the "REMARKS" paragraph. "Excellent" means that about 95 percent of the daily discharges are within 5 percent of the true; "good," within 10 percent; and "fair," within 15 percent. Records that do not meet the criteria mentioned, are rated "poor." Different accuracies may be attributed to different parts of a given record. Daily mean discharges in this report are given to the nearest hundredth of a cubic foot per second for values less than 1 ft³/s; the nearest tenth between 1.0 and 10 ft³/s; whole numbers between 10 and 1,000 ft³/s; and 3 significant figures for more than 1,000 ft³/s. The number of significant figures used is based solely on the magnitude of the discharge value. The same rounding rules apply to discharges listed for partial-record stations and miscellaneous sites.

Discharge at many stations, as indicated by the monthly mean, may not reflect natural runoff because of the effects of diversion, consumption, regulation by storage, increase or decrease in evaporation, or other factors. For such stations, figures of cubic feet per second per square mile and of runoff, in inches, are not published unless satisfactory adjustments can be made for diversions, changes in contents of reservoirs, or other changes incident to use and control.

Evaporation from a reservoir is not included in the adjustments for changes in reservoir contents, unless it is so stated. Even at those stations where adjustments are made, large errors in computed runoff may occur if adjustments or losses are large in comparison with the observed discharge.

Other Records Available

Monthly records for several ungaged sites are given in a separate section following the gaged sites. The accuracy of records for ungaged sites is generally lower than that for gaged sites, depending on the precision of the computation method and the accuracy of data used in the computations. For most gaging stations, unpublished, detailed information, on file in the Oregon office, includes discharge measurements, gage-height records, and rating tables. Many gaging-station records in Oregon through 1987 have been analyzed to determine several statistical summaries: (1) The number of days in each year that the daily discharge was between selected limits (duration tables); (2) the lowest mean discharge for selected numbers of consecutive days in each year; and (3) the highest mean discharge for selected numbers of consecutive days in each year.

Other Federal and State agencies have collected discharge data at other sites in Oregon during the current water year. Although these records have not been published by the U.S. Geological Survey, the National Water Data Exchange, NAWDEX, Water Resources Division, U.S. Geological Survey, National Center, Reston, VA 22092, maintains an index of these sites and will furnish information about them.

Records of Surface-Water Quality

Records of surface-water quality ordinarily are obtained at or near stream-gaging stations because interpretation of records of surface-water quality nearly always requires corresponding discharge data. Records of surface-water quality in this report may involve a variety of types of data and measurement frequencies.

Classification of Records

Water-quality data for surface-water sites are grouped into one of three classifications. A continuing-record station is a site where data are collected on a regularly scheduled basis. Frequency may be one or more times daily, weekly, monthly, or quarterly. A partial-record station is a site where limited water-quality data are collected systematically over a period of years. Frequency of sampling is usually less than quarterly. A miscellaneous sampling site is a location other than a continuing or partial-record station, where random samples are collected to give better areal coverage to define water-quality conditions in the river basin.

A careful distinction needs to be made between "continuing records" as used in this report and "continuous recordings," which refers to a continuous graph or a series of discrete values punched at short intervals on a paper tape. Some records of water quality, such as temperature and specific conductance, may be obtained through continuous recordings; however, because of costs, most data are obtained only monthly or less frequently.

Arrangement of Records

Water-quality records collected at a surface-water daily record station are published immediately following that record, regardless of the frequency of sample collection. Station number and name are the same for both records. Where a surface-water daily record station is not available or where the water quality differs significantly from that at the nearby surface-water station, the continuing water-quality record is published with its own station number and name in the regular downstream-order sequence. Water-quality data for partial-record stations and for miscellaneous sampling sites appear in separate tables following the table of discharge measurements at miscellaneous sites.

On-site Measurements and Sample Collection

In obtaining water-quality data, it is important that the data obtained represent the in situ quality of the water. To assure this, certain measurements, such as water temperature, pH, and dissolved oxygen, need to be made onsite when the samples are taken. To assure that measurements made in the laboratory also represent the in situ water, carefully prescribed procedures need to be followed in collecting the samples, treating the samples to prevent changes in quality pending analysis, and shipping the samples to the laboratory. Procedures for onsite measurements and for collecting, treating, and shipping samples are detailed in the TWRI Book 1, Chapter D2; Book 3, Chapter C2;

Book 5, Chapter A1, A3, and A4. These references are listed in the PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS section of this report. These methods are consistent with ASTM standards and generally follow ISO standards. Also, detailed information on collecting, treating, and shipping samples may be obtained from the Geological Survey Oregon office.

One sample can define adequately the water quality at a given time if the mixture of solutes throughout the stream cross section is homogeneous. However, the concentration of solutes at different locations in the cross section may vary widely with different rates of water discharge, depending on the source of material and the turbulence and mixing of the stream. Some streams must be sampled through several vertical sections to obtain a representative sample needed for an accurate mean concentration and for use in calculating load. All samples obtained for the National Stream Quality Accounting Network (see "DEFINITION OF TERMS") are obtained from at least several verticals. Whether samples are obtained from the centroid of flow or from several verticals, depends on flow conditions and other factors which must be evaluated by the collector.

Chemical-quality data published in this report are considered to be the most representative values available for the stations listed. The values reported represent water-quality conditions at the time of sampling as much as possible, consistent with available sampling techniques and methods of analysis. In the rare case where an apparent inconsistency exists between a reported pH value and the relative abundance of carbon dioxide species (carbonate and bicarbonate), the inconsistency is the result of a slight uptake of carbon dioxide from the air by the sample between measurement of pH in the field and determination of carbonate and bicarbonate in the laboratory.

For chemical-quality stations equipped with digital monitors, the records consist of daily maximum, minimum, and mean values for each constituent measured and are based upon hourly punches beginning at 0100 hours and ending at 2400 hours for the day of record. More detailed records (hourly values) may be obtained from the U.S. Geological Survey office whose address is given on the back of the title page of this report.

Water Temperature

Water temperatures are measured at most of the water-quality stations. In addition, water temperatures are taken at time of discharge measurements for water-discharge stations. For stations where water temperatures are taken manually once or twice daily, the water temperatures are taken at about the same time each day. Large streams have a small diurnal temperature change; shallow streams may have a daily range of several degrees and may follow closely the changes in air temperature. Some streams may be affected by waste-heat discharges.

At stations where recording instruments are used, either mean temperatures or maximum and minimum temperatures for each day are published. Water temperatures measured at the time of water-discharge measurements are on file in the Oregon office.

Sediment

Suspended-sediment concentrations are determined from samples collected by one of the standard sampling techniques discussed in TWRI, Book 3, Chapter C2, "Field methods for measurement of fluvial sediment." Samples are obtained using standard depth- or point-integrating samplers, or by means of an approved pumping sampler. Mean concentrations for the sampled cross section are in turn determined from these samples.

During periods of rapidly changing flow or rapidly changing suspended-sediment concentration, samples may have been collected more frequently (twice daily or, in some instances, hourly). The published sediment discharges for days of rapidly changing flow or concentration were computed by the subdivided-day method (time discharge weighted average). Therefore, for those days when the published sediment discharge value differs from the value computed as the product of discharge times mean concentration times 0.0027, the reader can assume that the sediment discharge for that day was computed by the subdivided-day method. For periods when no samples were collected, daily discharges of suspended sediment were estimated on the basis of water discharge, sediment concentrations observed immediately before and after the periods, and suspended-sediment loads for other periods of similar discharge. Methods used in the computation of sediment records are described in the TWRI Book 3, Chapters C1 and C3. These methods are consistent with ASTM standards and generally follow ISO standards.

At other stations, suspended-sediment samples were collected periodically. Although data collected periodically may represent conditions only at the time of observations, such data are useful in establishing seasonal

relations between quality and streamflow and in predicting long-term sediment-discharge characteristics of the stream.

In addition to the records of suspended-sediment discharge, periodic measurements of particle-size distributions for the suspended-sediment, bed-load, and bed-material samples are included for stations where samples were obtained to measure this parameter.

Laboratory Measurements

Sediment samples, samples for biochemical-oxygen demand (BOD), samples for identification of biological populations, samples for indicator bacteria, and daily samples for specific conductance are analyzed locally. All other samples are analyzed in the Geological Survey laboratory in Arvada, Colorado. Methods used to analyze sediment samples and to compute sediment records are described in the TWRI Book 1, Chapter D2; Book 3, Chapter C2; and Book 5, Chapters A1, A3, A4, and A5. These methods are consistent with ASTM standards and generally follow ISO standards.

In March 1989, the National Water-Quality Laboratory discovered a bias in the turbidimetric method for sulfate analysis, indicating that values below 75 mg/L have a median positive bias of 2 mg/L above the true value for the period between 1982 and 1989. Sulfate values in this report have not been corrected for this bias.

Data Presentation

For continuing-record stations, information pertinent to the history of station operation is provided in descriptive headings preceding the tabular data. These descriptive headings give details regarding location, drainage area, period of record, type of data available, instrumentation, general remarks, cooperation, and extremes for parameters currently measured daily. Tables of chemical, physical, biological, radiochemical data, and so forth, obtained at a frequency less than daily are presented first. Tables of "daily values" of specific conductance, pH, water temperature, dissolved oxygen, and suspended sediment then follow in sequence.

In the descriptive headings, if the location is identical to that of the discharge gaging station, neither the LOCATION nor the DRAINAGE AREA statements are repeated. The following information, as appropriate, is provided with each continuous-record station. Comments that follow clarify information presented under the various headings of the station description.

LOCATION.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

DRAINAGE AREA.--See Data Presentation under "Records of Stage and Water Discharge;" same comments apply.

PERIOD OF RECORD.--This indicates the periods for which there are published water-quality records for the station. The periods are shown separately for records of parameters measured daily or continuously and those measured less than daily. For those measured daily or continuously, periods of record are given for the parameters individually.

INSTRUMENTATION.--Information on instrumentation is given only if a water-quality monitor, sediment pumping sampler, or other sampling device is in operation at a station.

REMARKS.--Remarks provide added information pertinent to the collection, analysis, or computation of the records.

COOPERATION.--Records provided by a cooperating organization or obtained for the Geological Survey by a cooperating organization are identified here.

EXTREMES.--Maximums and minimums are given only for parameters measured daily or more frequently. None are given for parameters measured weekly or less frequently, because the true maximums or minimums may not have been sampled. Extremes, when given, are provided for both the period of record and for the current water year.

REVISIONS.--If errors in published water-quality records are discovered after publication, appropriate updates are made to the Water-Quality File in the U.S. Geological Survey's computerized data system, NWIS, and subsequently by monthly transfer of update transactions to the U.S. Environmental Protection Agency's STORET system. Because the usual volume of updates makes it impractical to document individual changes in the State data-report series or elsewhere, potential users of U.S. Geological Survey water-quality data are encouraged to obtain all

required data from the appropriate computer file.

The surface-water-quality records for partial-record stations and miscellaneous sampling sites are published in separate tables following the table of discharge measurements at miscellaneous sites. No descriptive statements are given for these records. Each station is published with its own station number and name in the regular downstream-order sequence.

Remark Codes

The following remark codes may appear with the water-quality data in this report:

<u>PRINTED OUTPUT</u>	<u>REMARK</u>
E	Estimated value
<	Actual value is known to be less than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
ND	Materials specifically analyzed for but not detected
V	Analyte was detected in both the environmental sample and the associated blanks.

Water-Quality-Control Data

Data generated from quality-control (QC) samples are a requisite for evaluating the quality of the sampling and processing techniques as well as data from the actual samples themselves. Without QC data, environmental sample data cannot be adequately interpreted because the errors associated with the sample data are unknown. The various types of QC samples collected by this district are described in the following section. Procedures have been established for the storage of water-quality-control data within the USGS. These procedures allow for storage of all derived QC data and are identified so that they can be related to corresponding environmental samples.

Blank Sample

Blank samples are collected and analyzed to ensure that environmental samples have not been contaminated by the overall data-collection process. The blank solution used to develop specific types of blank samples is a solution that is free of the analytes of interest. Any measured value signal in a blank sample for an analyte (a specific component measured in a chemical analysis) that was absent in the blank solution is believed to be due to contamination. There are many types of blank samples possible, each designed to segregate a different part of the overall data-collection process. The types of blank samples collected in this district are:

Field blank - a blank solution that is subjected to all aspects of sample collection, field processing preservation, transportation, and laboratory handling as an environmental sample.

Trip blank - a blank solution that is put in the same type of bottle used for an environmental sample and kept with the set of sample bottles before and after sample collection.

Equipment blank - a blank solution that is processed through all equipment used for collecting and processing all environmental sample (similar to a field blank but normally done in the more controlled conditions of the office).

Sampler blank - a blank solution that is poured or pumped through the same field sampler used for collecting an environmental sample.

Filter blank - a blank solution that is filtered in the same manner and through the same filter apparatus used for an environmental sample.

Splitter blank - a blank solution that is mixed and separated using a field splitter in the same manner and through the same apparatus used for an environmental sample.

Preservation blank - a blank solution that is treated with the sampler preservatives used for an environmental sample.

Reference Samples

Reference material is a solution or material prepared by a laboratory whose composition is certified for one or more properties so that it can be used to assess a measurement method. Samples of reference material are submitted for analysis to ensure that an analytical method is accurate for the known properties of the reference material. Generally, the selected reference material properties are similar to the environmental sample properties.

Replicate Samples

Replicate samples are a set of environmental samples collected in a manner such that the samples are thought to be essentially identical in composition. Replicate is the general case for which a duplicate is the special case consisting of two samples. Replicate samples are collected and analyzed to establish the amount of variability in the data contributed by some part of the collection and analytical process. There are many types of replicate samples possible, each of which may yield slightly different results in a dynamic hydrologic setting, such as a flowing stream. The types of replicate samples collected in this district are sequential samples. Sequential samples are a type of replicate sample in which the samples are collected one after the other, typically over a short time.

Split sample - a type of replicate sample in which a sample is split into subsamples contemporaneous in time and space.

Spike Samples

Spike samples are samples to which known quantities of a solution with one or more well-established analyte concentrations have been added. These samples are analyzed to determine the extent of matrix interference or degradation on the analyte concentration during sample processing and analysis.

Records of Ground-Water Levels

Water-level records for selected wells are included in this report. These wells are part of the U.S. Geological Survey's nationwide Collection of Basic Records (CBR) network of observation wells. The primary purpose of the network is to monitor the effect of climatic variability on the nation's regional aquifers. Well locations are shown in Figure 36.

Ground-water level records obtained through cooperative efforts of many Federal, State, and local agencies for many observation wells throughout Oregon are not included in this report. These records may be in computer storage, published in reports, or kept in files. Information about the availability of ground-water data may be obtained from the District Chief, Oregon District, U.S. Geological Survey, 10615 S.E. Cherry Blossom Drive, Portland, Oregon 97216.

Data Collection and Computation

Measurements of water levels are made in many types of wells under varying conditions, but the methods of measurement are standardized to the extent possible. The equipment and measuring techniques used at each observation well ensure that measurements at each well are of consistent accuracy and reliability.

The water-level data tables and hydrographs are published in alphabetical order by county and then in ascending order of latitude within the county. Each well is identified by means of (1) a 15-digit site identification number that is based on the grid system of latitude and longitude, and (2) a local designation based on the official system for the rectangular subdivision of public lands, referenced to the Willamette base line and meridian. Both of these identification number systems are described in the "Station Identification Numbers" section.

Water-level measurements are reported in feet below the land-surface datum (LSD). The land-surface datum is a horizontal plane coincident with land surface at each well. The altitude of the land-surface datum at each well has been estimated from U.S. Geological Survey 7.5 minute quadrangle topographic maps and is relative to the National Geodetic Vertical Datum (NGVD) of 1929 in all cases except well 441508123053001 which is relative to mean sea level.

The measuring point (MP) is reported in feet above the land-surface datum at each well and is the point at which measurements are taken.

Water levels are published to as many significant figures as can be justified by the local conditions. For example, in a measurement of a depth to water of several hundred feet, the error of determining the absolute value of the total depth to water may be a few tenths of a foot, whereas the error in determining the net change of water level between successive measurements may be only a hundredth or a few hundredths of a foot. For lesser depths to water, the accuracy is greater.

Data Presentation

Each well record consists of three parts, a station description, a table of water levels for the entire period of record through the current water year, and a hydrograph of that record. Topical headings of the station description section are explained below.

WELL NUMBER.--This entry reports the 15-digit site identification number and the local well number previously mentioned and explained more completely in the section entitled, "Station Identification Numbers" under the headings, "Latitude-Longitude system" and Local identifier well numbering system".

LOCATION.--This paragraph reports the latitude and longitude (given in degrees, minutes, and seconds); the hydrologic unit number; the distance and direction from a geographic point of reference; and the owner's name.

AQUIFER.--This entry designates by name and geologic age the aquifer open to the well.

WELL CHARACTERISTICS.--This entry describes the well in terms of depth, diameter, casing depth and (or) screened interval, method of construction, use, and additional information such as casing breaks, collapsed screen, and other changes since construction.

INSTRUMENTATION.--This paragraph provides information on both the frequency of measurement (periodic or continuous) and the collection method used.

DATUM.--This entry describes both the land-surface elevation at the well and the measuring point. The elevation of the land-surface datum is described in feet above the National Geodetic Vertical Datum of 1929 or mean sea level and is reported with a precision respective to the method of determination. The measuring point's physical description and height, in feet, relative to the land-surface datum is also noted.

REMARKS.--This entry describes factors that may influence the water level in a well or the measurement of the water level. It may be used to acknowledge the assistance of local observers.

PERIOD OF RECORD.--This entry indicates the period for which there are published records for the well. It reports the month and year of the start of publication of water-level records by the U.S. Geological Survey and the words "to current year" if the records are to be continued into the following year.

EXTREMES FOR PERIOD OF RECORD.--This entry contains the highest and lowest water levels of the record, with respect to the land-surface datum, and the dates of their occurrence.

A table of water levels follows the station description for each well. Water levels are reported in feet below the land-surface datum. For the well equipped with a recorder, only an abbreviated table of the monthly means is given and the highest and lowest water levels of the water year and when they occurred follow that. Because all values are not published for wells with recorders, the extremes may be values that are not listed in the table. Missing records are indicated with an asterisk (*) in place of the water level.

Following the table of water levels is a hydrograph of the measurements. The water levels, in feet below land surface, are on the ordinate (y-axis) which has been reversed to imply depth. The dates, in calendar years, are on the abscissa (x-axis). The hydrograph is provided to aid the reader in better understanding the fluctuations of the water levels seasonally and over time. The first point on these hydrographs is usually the driller's reported static water level. A note on the hydrograph will state the driller's reported water level if it was drilled some years prior to development of the water level record. Also, breaks in the graph line correspond to extended breaks of time in collecting water level measurements at the site.

ACCESS TO USGS WATER DATA

The USGS provides near real-time stage and discharge data for many of the gaging stations equipped with the necessary telemetry and historic daily-mean and peak-flow discharge data for most current or discontinued gaging stations through the internet. These data may be accessed at:

<http://water.usgs.gov>

Some water-quality and ground-water data also are available through the internet. In addition, data can be provided in various machine-readable formats on magnetic tape or 3-1/2 inch floppy disk. Information about the availability of specific types of data or products, and user charges, can be obtained locally from each of the Water Resources Division District Offices (see address on the back of the title page).

DEFINITION OF TERMS

Terms related to streamflow, water-quality, and other hydrologic data, as used in this report, are defined below. See also table for converting English units to International System (SI) Units on the inside of the back cover.

Acre-foot (AC-FT, acre-ft) is the quantity of water required to cover 1 acre to a depth of 1 foot and is equal to 43,560 cubic feet or about 326,000 gallons or 1,233 cubic meters.

Adenosine triphosphate (ATP) is an organic, phosphate-rich, compound important in the transfer of energy in organisms. Its central role in living cells makes it an excellent indicator of the presence of living material in water. A measure of ATP therefore provides a sensitive and rapid estimate of biomass. ATP is reported in micrograms per liter of the original water sample.

Algae are mostly aquatic single-celled, colonial, or multicelled plants, containing chlorophyll and lacking roots, stems, and leaves.

Algal growth potential (AGP) is the maximum algal dry weight biomass that can be produced in a natural water sample under standardized laboratory conditions. The growth potential is the algal biomass present at stationary phase and is expressed as milligrams dry weight of algae produced per liter of sample.

Aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to yield significant quantities of water to wells and springs.

Artesian means confined and is used to describe a well in which the water level stands above the top of the aquifer tapped by the well. A flowing artesian well is one in which the water level is above the land surface.

Bacteria are microscopic unicellular organisms, typically spherical, rodlike, or spiral and threadlike in shape, often clumped into colonies. Some bacteria cause disease, while others perform an essential role in nature in the recycling of materials; for example, by decomposing organic matter into a form available for reuse by plants.

Total coliform bacteria are a particular group of bacteria that are used as indicators of possible sewage pollution. They are characterized as aerobic or facultative anaerobic, gram-negative, nonspore-forming, rod-shaped bacteria which ferment lactose with gas formation within 48 hours at 35°C. In the laboratory these bacteria are defined as all the organisms that produce colonies with a golden-green metallic sheen within 24 hours when incubated at 35°C plus or minus 1.0°C on M-Endo medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 milliliters (mL) of sample.

Fecal coliform bacteria are bacteria that are present in the intestine or feces of warmblooded animals. They are often used as indicators of the sanitary quality of the water. In the laboratory they are defined as all organisms that produce blue colonies within 24 hours when incubated at 44.5°C plus or minus 0.2°C on M-FC medium (nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Fecal streptococcal bacteria are bacteria found also in the intestine of warmblooded animals. Their presence in water is considered to verify fecal pollution. They are characterized as gram-positive, cocci bacteria which are capable of growth in brain-heart infusion broth. In the laboratory they are defined as all the organisms which produce red or pink colonies within 48 hours at 35°C plus or minus 1.0°C on KF-streptococcus medium.

(nutrient medium for bacterial growth). Their concentrations are expressed as number of colonies per 100 mL of sample.

Base flow. See Base runoff.

Base runoff refers to sustained or fair weather runoff. In most streams, base runoff is composed largely of ground-water effluent. The term base flow is often used in the same sense as base runoff. However, the distinction is the same as that between streamflow and runoff. When the concept in the terms base flow and base runoff is that of the natural flow in a stream, base runoff is the logical term.

Bed material is the sediment mixture of which a streambed, lake, pond, reservoir, or estuary bottom is composed.

Biochemical oxygen demand (BOD) is a measure of the quantity of dissolved oxygen, in milligrams per liter, necessary for the decomposition of organic matter by micro-organisms, such as bacteria.

Biomass is the amount of living matter present at any given time, expressed as the mass per unit area or volume of habitat.

Ash mass is the mass or amount of residue present after the residue from the dry mass determination has been ashed in a muffle furnace at a temperature of 500°C for 1 hour. The ash mass values of zooplankton and phytoplankton are expressed in grams per cubic meter (g/m^3), and periphyton and benthic organisms in grams per square meter (g/m^2).

Dry mass refers to the mass of residue present after drying in an oven at 105°C for zooplankton and periphyton, until the mass remains unchanged. This mass represents the total organic matter, ash and sediment, in the sample. Dry-mass values are expressed in the same units as ash mass.

Organic mass or volatile mass of the living substance is the difference between the dry mass and the ash mass and represents the actual mass of the living matter. The organic mass is expressed in the same units as for ash and dry mass.

Wet mass is the mass of living matter plus contained water.

Bottom material: See Bed material.

Cells/volume refers to the number of cells of any organism which is counted by using a microscope and grid or counting cell. Many planktonic organisms are multicelled and are counted according to the number of contained cells per sample, usually milliliters (mL) or liters (L).

Chemical oxygen demand (COD) is a measure of the chemically oxidizable material in the water, and furnishes an approximation of the amount of organic and reducing material present. The determined value may correlate with natural water color or with carbonaceous organic pollution from sewage or industrial wastes.

Chlorophyll refers to the green pigments of plants. Chlorophyll a and b are the two most common green pigments in plants.

Color unit is produced by one milligram per liter of platinum in the form of the chloroplatinate ion. Color is expressed in units of the platinum-cobalt scale.

Contents is the volume of water in a reservoir or lake. Unless otherwise indicated, volume is computed on the basis of a level pool and does not include bank storage.

Control designates a feature downstream from the gage that determines the stage-discharge relation at the gage. This feature may be a natural constriction of the channel, an artificial structure, or a uniform cross section over a long reach of the channel.

Control structure as used in this report is a structure on a stream or canal that is used to regulate the flow or stage of the stream or to prevent the intrusion of salt water.

Cubic foot per second (ft^3/s) is the rate of discharge representing a volume of 1 cubic foot passing a given point during 1 second and is equivalent to 7.48 gallons per second or 448.8 gallons per minute or 0.02832 cubic meters per second.

Cubic foot per second-day [(ft³/s)/d] is the volume of water represented by a flow of 1 cubic foot per second for 24 hours. It is equivalent to 86,400 cubic feet, approximately 1.9835 acre-feet, about 646,000 gallons, or 2,445 cubic meters.

Cubic feet per second per square mile [(ft³/s)/mi²] is the average number of cubic feet of water flowing per second from each square mile of area drained, assuming that the runoff is distributed uniformly in time and area.

Discharge is the volume of water (or more broadly, volume of fluid plus suspended sediment) that passes a given point within a given period of time.

Mean discharge (MEAN) is the arithmetic mean of individual daily mean discharges during a specific period.

Instantaneous discharge is the discharge at a particular instant of time.

Annual 7-day minimum is the lowest mean discharge for 7 consecutive days for a calendar year or a water year. Note that most low-flow frequency analyses of annual 7-day minimum flows use a climatic year (April 1 - March 31). The date shown in the summary statistics table is the initial date of the 7-day period. (This value should not be confused with the 7-day 10-year low-flow statistic.)

Dissolved refers to that material in a representative water sample which passes through a 0.45-um membrane filter. This is a convenient operational definition used by Federal agencies that collect water data. Determinations of "dissolved" constituents are made on subsamples of the filtrate.

Dissolved-solids concentration of water is determined either analytically by the "residue-on-evaporation" method, or mathematically by totaling the concentrations of individual constituents reported in a comprehensive chemical analysis. During the analytical determination of dissolved solids, the bicarbonate (generally a major dissolved component of water) is converted to carbonate. Therefore, in the mathematical calculation of dissolved-solids concentration, the bicarbonate value, in milligrams per liter, is multiplied by 0.492 to reflect the change.

Drainage area of a stream at a specified location is that area, measured in a horizontal plane, enclosed by a topographic divide from which direct surface runoff from precipitation normally drains by gravity into the stream above the specified point. Figures of drainage area given herein include all closed basins, or noncontributing areas, within the area unless otherwise noted.

Drainage basin is a part of the surface of the earth that is occupied by a drainage system, which consists of a surface stream or a body of impounded surface water together with all tributary surface streams and bodies of impounded surface water.

Gage height (G.H.) is the water-surface elevation referred to some arbitrary gage datum. Gage height is often used interchangeably with the more general term "stage," although gage height is more appropriate when used with a reading on a gage.

Gaging station is a particular site on a stream, canal, lake, or reservoir where systematic observations of hydrologic data are obtained.

Hardness of water is a physical-chemical characteristic that is commonly recognized by the increased quantity of soap required to produce lather. It is computed as the sum of equivalents of polyvalent cations and is expressed as the equivalent concentration of calcium carbonate (CaCO₃).

Hydrologic Bench-Mark Network is a network of more than 50 sites in small drainage basins around the country whose purpose is to provide consistent data on the hydrology, including water quality, and related factors in representative undeveloped watersheds nationwide, and to provide analyses on a continuing basis to compare and contrast conditions observed in basins more obviously affected by the activities of man.

Hydrologic unit is a geographic area representing part or all of a surface drainage basin or distinct hydrologic feature as delineated by the Office of Water Data Coordination on the State Hydrologic Unit Maps; each hydrologic unit is identified by an eight-digit number.

Land-surface datum (lsd) is a datum plane that is approximately at land surface at each ground-water observation well.

Measuring point (MP) is an arbitrary permanent reference point from which the distance to the water surface in a well is measured to obtain the water level.

Metamorphic stage refers to the stage of development that an organism exhibits during its transformation from an immature form to an adult form. This developmental process exists for most insects, and the degree of difference from the immature stage to the adult form varies from relatively slight to pronounced, with many intermediates. Examples of metamorphic stages of insects are egg-larva-adult or egg-nymph-adult.

Methylene blue active substances (MBAS) are apparent detergents. The determination depends on the formation of a blue color when methylene blue dye reacts with synthetic anionic detergent compounds.

Micrograms per gram ($\mu\text{g/g}$) is a unit expressing the concentration of a chemical constituent as the mass (micrograms) of the element per unit mass (gram) of material analyzed.

Micrograms per liter ($\mu\text{g/L}$) is a unit expressing the concentration of chemical constituents in solution as mass (micrograms) of solute per unit volume (liter) of water. One thousand micrograms per liter is equivalent to one milligram per liter.

Milligrams per liter (MG/L, mg/L) is a unit for expressing the concentration of chemical constituents in solution. Milligrams per liter represents the mass of solute per unit volume (liter) of water. Concentration of suspended sediment also is expressed in mg/L and is based on the mass of dry sediment per liter of water-sediment mixture.

National Geodetic Vertical Datum of 1929 (NGVD of 1929) is a geodetic datum derived from a general adjustment of the first order level nets of both the United States and Canada. It was formerly called "Sea Level Datum of 1929" or "mean sea level" in this series of reports. Although the datum was derived from the average sea level over a period of many years at 26 tide stations along the Atlantic, Gulf of Mexico, and Pacific Coasts, it does not necessarily represent local mean sea level at any particular place.

National Stream Quality Accounting Network (NASQAN) is a nationwide data-collection network designed by the U.S. Geological Survey to meet many of the information needs of government agencies and other groups involved in national or regional water-quality planning and management. The several hundred sites in NASQAN are generally located at the downstream ends of hydrologic accounting units designated by the U.S. Geological Survey Office of Water Data Coordination in consultation with the Water Resources Council. The objective of NASQAN is to obtain information on the quality and quantity of water moving within and from the United States through a systematic and uniform process of data collection, summarization, analysis, and reporting. The design of the network is intended to provide data for (1) description of the areal variability of water quality in the Nation's rivers through analysis of data from this and other programs, (2) detection of changes or trends with time in the pattern of occurrence of water-quality characteristics, and (3) a nationally consistent data base useful for water-quality assessment and hydrologic research.

National Trends Network (NTN) is a 150-station network for sampling atmospheric deposition in the United States. The purpose of the network is to determine the variability, both in location and in time, of the composition of atmospheric deposition, which includes snow, rain, dust particles, aerosols, and gases. The core from which the NTN was built was the already-existing deposition-monitoring network of the National Atmospheric Deposition Program (NADP).

NTU (Nephelometric Turbidity Unit) is a method of quantitative analysis in which the concentration or particle size of suspended matter in a liquid is determined by measurement of light absorption.

Organism is any living entity.

Organism count/area refers to the number of organisms collected and enumerated in a sample and adjusted to the number per unit area habitat, usually square meter (m^2), acre, or hectare. Periphyton, benthic organisms, and macrophytes are expressed in these terms.

Organism count/volume refers to the number of organisms collected and enumerated in a sample and adjusted to the number per sample volume usually milliliter (mL) or liter (L). Numbers of planktonic organisms can be expressed in these terms.

Total organism count is the total number of organisms collected and enumerated in any particular sample.

Parameter Code is a 5-digit number used in the U.S. Geological Survey's data system, National Water Information System (NWIS), to uniquely identify a specific constituent. The codes used in NWIS are the same as those used in the U.S. Environmental Protection Agency data system, STORET. The Environmental Protection Agency assigns and approves all requests for new codes.

Partial-record station is a particular site where limited streamflow and (or) water-quality data are collected systematically over a period of years for use in hydrologic analyses.

Particle size is the diameter, in millimeters (mm), of a particle determined by either sieve or sedimentation methods. Sedimentation methods (pipet, bottom-withdrawal tube, visual-accumulation tube) determine fall diameter of particles in either distilled water (chemically dispersed) or in native water (the river water at the time and point of sampling).

Particle-size classification used in this report agrees with the recommendation made by the American Geophysical Union Subcommittee on Sediment Terminology. The classification is as follows:

<u>Classification</u>	<u>Size (mm)</u>	<u>Method of analysis</u>
Clay.....	0.00024 - 0.004	Sedimentation
Silt.....	0.004 - .062	Sedimentation
Sand.....	.062 - 2.0	Sedimentation or sieve
Gravel.....	2.0 - 64.0	Sieve

The particle-size distributions given in this report are not necessarily representative of all particles in transport in the stream. Most of the organic matter is removed and the sample is subjected to mechanical and chemical dispersion before analysis in distilled water. Chemical dispersion is not used for native-water analysis.

Percent composition is a unit for expressing the ratio of a particular part of a sample or population to the total sample or population in terms of types, numbers, mass, or volume.

Periphyton is the assemblage of microorganisms attached to and living upon submerged solid surfaces. While primarily consisting of algae, they also include bacteria, fungi, protozoa, rotifers, and other small organisms.

Pesticides are chemical compounds used to control undesirable organisms. Major categories of pesticides include insecticides, miticides, fungicides, herbicides, and rodenticides.

Picocurie (PC, pCi) is one trillionth (1×10^{-12}) of the amount of radioactivity represented by a curie (Ci). A curie is the amount of radioactivity that yields 3.7×10^{10} radioactive disintegrations per second. A picocurie yields 2.22 disintegrations per minute (dpm).

Plankton is the community of suspended, floating, or weakly swimming organisms that live in the open water of lakes and rivers.

Phytoplankton is the plant part of the plankton. They are usually microscopic and their movement is subject to the water currents. Phytoplankton growth is dependent upon solar radiation and nutrient substances. Because they are able to incorporate as well as release materials to the surrounding water, the phytoplankton have a profound effect upon the quality of the water. They are the primary food producers in the aquatic environment, and are commonly known as algae.

Blue-green algae are a group of phytoplankton organisms having a blue pigment, in addition to the green pigment called chlorophyll. Blue-green algae often cause nuisance conditions in water.

Diatoms are the unicellular or colonial algae having a siliceous shell. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Green algae have chlorophyll pigments similar in color to those of higher green plants. Some forms produce algae mats or floating "moss" in lakes. Their concentrations are expressed as number of cells per milliliter (cells/mL) of sample.

Zooplankton is the animal part of the plankton. Zooplankton are capable of extensive movements within the water column and are often large enough to be seen with the unaided eye. Zooplankton are secondary consumers feeding upon bacteria, phytoplankton, and detritus. Because they are the grazers in the aquatic environment, the zooplankton are a vital part of the aquatic food web. The zooplankton community is dominated by small crustaceans and rotifers.

Primary productivity is a measure of the rate at which new organic matter is formed and accumulated through photosynthetic and chemosynthetic activity of producer organisms (chiefly, green plants). The rate of primary production is estimated by measuring the amount of oxygen released (oxygen method) or the amount of carbon assimilated by the plants (carbon method).

Milligrams of carbon per area or volume per unit time [$\text{mg C}/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg C}/(\text{m}^3 \cdot \text{time})$] for phytoplankton are units for expressing primary productivity. They define the amount of carbon dioxide consumed as measured by radioactive carbon (carbon 14). The carbon 14 method is of greater sensitivity than the oxygen light and dark bottle method, and is preferred for use in unenriched waters. Unit time may be either the hour or day, depending on the incubation period.

Milligrams of oxygen per area or volume per unit time [$\text{mg O}/(\text{m}^2 \cdot \text{time})$] for periphyton and macrophytes and [$\text{mg O}/(\text{m}^3 \cdot \text{time})$] for phytoplankton are units for expressing primary productivity. They define production and respiration rates as estimated from changes in the measured dissolved-oxygen concentration. The oxygen light and dark bottle method is preferred if the rate of primary production is sufficient for accurate measurements to be made within 24 hours. Unit time may be either the hour or day, depending on the incubation period.

Radiochemical program is a network of regularly sampled water-quality stations where samples are collected to be analyzed for radioisotopes. The streams that are sampled represent major drainage basins in the conterminous United States.

Recoverable from bottom material is the amount of a given constituent that is in solution after a representative sample of bottom material has been digested by a method (usually using an acid or mixture of acids) that results in dissolution of readily soluble substances. Complete dissolution of all bottom material is not achieved by the digestion treatment and thus the determination represents less than the total amount (that is, less than 95 percent) of the constituent in the sample. To achieve comparability of analytical data, equivalent digestion procedures would be required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Return period is the average time interval between occurrences of a hydrological event of a given or greater magnitude, usually expressed in years. May also be called recurrence interval.

Runoff in inches (IN, in) shows the depth to which the drainage area would be covered if all the runoff for a given time period were uniformly distributed on it.

Sea level, in this report, refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)--a geodetic datum derived from a general adjustment of the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

Sediment is solid material that originates mostly from disintegrated rocks and is transported by, suspended in, or deposited from water; it includes chemical and biochemical precipitates and decomposed organic material such as humus. The quantity, characteristics, and cause of the occurrence of sediment in streams are influenced by environmental factors. Some major factors are degree of slope, length of slope, soil characteristics, land usage, and quantity and intensity of precipitation.

Bed load is the sediment that is transported in a stream by rolling, sliding, or skipping along the bed very close to the bed surface. In this report, bed load is considered to consist of particles in transit within 0.25 ft of the streambed.

Bed load discharge (tons per day) is the quantity of bed load measured by dry weight that moves past a section as bed load in a given time.

Suspended sediment is the sediment that at any given time is maintained in suspension by the upward components of turbulent currents or that exists in suspension as a colloid.

Suspended-sediment concentration is the velocity-weighted concentration of suspended sediment in the sampled zone (from the water surface to a point approximately 0.3 ft above the bed) expressed as milligrams of dry sediment per liter of water-sediment mixture (mg/L).

Mean concentration is the time-weighted concentration of suspended sediment passing a stream section during a 24-hour day.

Suspended-sediment discharge (tons/day) is the rate at which dry mass of sediment passes a section of a stream or is the quantity of sediment, as measured by dry mass or volume, that passes a section in a given time. It is calculated in units of tons per day as follows: concentration (mg/L) x discharge (ft³/s) x 0.0027.

Suspended-sediment load is a general term that refers to material in suspension. It is not synonymous with either discharge or concentration.

Total-sediment discharge (tons/day) is the sum of the suspended-sediment discharge and the bed-load discharge. It is the total quantity of sediment, as measured by dry mass or volume, that passes a section during a given time.

Total-sediment load or total load is a term which refers to the total sediment (bed load plus suspended-sediment load) that is in transport. It is not synonymous with total-sediment discharge.

Seven-day 10-year low flow (7 Q10) is the discharge at the 10-year recurrence interval taken from a frequency curve of annual values of the lowest mean discharge for 7 consecutive days (the 7-day low flow).

Sodium-adsorption-ratio (SAR) is the expression of relative activity of sodium ions in exchange reactions within soil and is an index of sodium or alkali hazard to the soil. Waters range in respect to sodium hazard from those which can be used for irrigation on almost all soils to those which are generally unsatisfactory for irrigation.

Solute is any substance that is dissolved in water.

Specific conductance is a measure of the ability of a water to conduct an electrical current. It is expressed in microsiemens per centimeter at 25°C. Specific conductance is related to the type and concentration of ions in solution and can be used for approximating the dissolved-solids content of the water. Commonly, the concentration of dissolved solids (in milligrams per liter) is about 65 percent of the specific conductance (in microsiemens). This relation is not constant from stream to stream, and it may vary in the same source with changes in the composition of the water.

Stage-discharge relation is the relation between gage height (stage) and the volume of water, per unit of time, flowing in a channel.

Streamflow is the discharge that occurs in a natural channel. Although the term "discharge" can be applied to the flow of a canal, the word "streamflow" uniquely describes the discharge in a surface stream course. The term "streamflow" is more general than "runoff" as streamflow may be applied to discharge whether or not it is affected by diversion or regulation.

Substrate is the physical surface upon which an organism lives.

Natural substrate refers to any naturally occurring emersed or submersed solid surface, such as a rock or tree, upon which an organism lives.

Artificial substrate is a device which is purposely placed in a stream or lake for colonization of organisms. The artificial substrate simplifies the community structure by standardizing the substrate from which each sample is taken. Examples of artificial substrates are basket samplers (made of wire cages filled with clean streamside rocks) and multiplate samplers (made of hardboard) for benthic organism collection, and plexiglass strips for periphyton.

Surface area of a lake is that area outlined on the latest U.S.G.S. topographic map as the boundary of the lake and measured by a planimeter in acres. In localities not covered by topographic maps, the areas are computed from the

best maps available at the time planimetered. All areas shown are those for the stage when the planimetered map was made.

Surficial bed material is the part (0.1 to 0.2 ft) of the bed material that is sampled using U.S. Series Bed-Material Samplers.

Suspended (as used in tables of chemical analyses) refers to the amount (concentration) of undissolved material in a water-sediment mixture. It is associated with the material retained on a 0.45-um filter.

Suspended, recoverable is the amount of a given constituent that is in solution after the part of a representative water-suspended sediment sample that is retained on a 0.45-um membrane filter has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all the particulate matter is not achieved by the digestion treatment and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses because different digestion procedures are likely to produce different analytical results.

Determinations of "suspended, recoverable" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total recoverable concentrations of the constituent.

Suspended, total is the total amount of a given constituent in the part of a representative water-suspended sediment sample that is retained on a 0.45-um membrane filter. This term is used only when the analytical procedure assures measurement of at least 95 percent of the constituent determined. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to determine when the results should be reported as "suspended, total."

Determinations of "suspended, total" constituents are made either by analyzing portions of the material collected on the filter or, more commonly, by difference, based on determinations of (1) dissolved and (2) total concentrations of the constituent.

Taxonomy is the division of biology concerned with the classification and naming of organisms. The classification of organisms is based upon a hierarchical scheme beginning with Kingdom and ending with Species at the base. The higher the classification level, the fewer features the organisms have in common. For example, the taxonomy of a particular mayfly, Hexagenia limbata, is the following:

Kingdom.....	Animal
Phylum.....	Arthropoda
Class.....	Insecta
Order.....	Ephemeroptera
Family.....	Ephemeridae
<u>Genus.....</u>	<u>Hexagenia</u>
<u>Species.....</u>	<u>Hexagenia limbata</u>

Thermograph is an instrument that continuously records variations of temperature on a chart. The more general term "temperature recorder" is used in the table headings and refers to any instrument that records temperature whether on a chart, a tape, or any other medium.

Time-weighted average is computed by multiplying the number of days in the sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the total number of days. A time-weighted average represents the composition of water that would be contained in a vessel or reservoir that had received equal quantities of water from the stream each day for the year.

Tons per acre-foot indicates the dry mass of dissolved solids in 1 acre-foot of water. It is computed by multiplying the concentration of the constituent, in milligrams per liter, by 0.00136.

Tons per day (T/DAY) is the quantity of a substance in solution or suspension that passes a stream section during a 24-hour period.

Total is the total amount of a given constituent in a representative water-suspended sediment sample, regardless of the constituent's physical or chemical form. This term is used only when the analytical procedure assures

measurement of at least 95 percent of the constituent present in both the dissolved and suspended phases of the sample. A knowledge of the expected form of the constituent in the sample, as well as the analytical methodology used, is required to judge when the results should be reported as "total." (Note that the word "total" does double duty here, indicating both that the sample consists of a water-suspended sediment mixture and that the analytical method determined all of the constituent in the sample.)

Total discharge is the total quantity of any individual constituent, as measured by dry mass or volume, that passes through a stream cross section per unit of time. This term needs to be qualified, such as "total sediment discharge," "total chloride discharge," and so on.

Total, recoverable is the amount of a given constituent that is in solution after a representative water-suspended sediment sample has been digested by a method (usually using a dilute acid solution) that results in dissolution of only readily soluble substances. Complete dissolution of all particulate matter is not achieved by the digestion treatment, and thus the determination represents something less than the "total" amount (that is, less than 95 percent) of the constituent present in the dissolved and suspended phases of the sample. To achieve comparability of analytical data, equivalent digestion procedures are required of all laboratories performing such analyses, because different digestion procedures are likely to produce different analytical results.

Tritium Network is a network of stations which has been established to provide baseline information on the occurrence of tritium in the Nation's surface waters. In addition to the surface-water stations in the network, tritium data are also obtained at a number of precipitation stations. The purpose of the precipitation stations is to provide an estimate sufficient for hydrologic studies of the tritium input to the United States.

Water year in Geological Survey reports dealing with surface-water supply is the 12-month period, October 1 through September 30. The water year is designated by the calendar year in which it ends and which includes 9 of the 12 months. Thus, the year ending September 30, 1980, is called the "1980 water year."

WDR is used as an abbreviation for "Water-Data Report" in the REVISED RECORDS paragraph to refer to State annual hydrologic-data reports (WRD was used as an abbreviation for "Water-Resources Data" in reports published prior to 1976).

Weighted average is used in this report to indicate discharge-weighted average. It is computed by multiplying the discharge for a sampling period by the concentrations of individual constituents for the corresponding period and dividing the sum of the products by the sum of the discharges. A discharge-weighted average approximates the composition of water that would be found in a reservoir containing all the water passing a given location during the water year after thorough mixing in the reservoir.

WSP is used as an abbreviation for "Water-Supply Paper" in references to previously published reports.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

The U.S. Geological Survey publishes a series of manuals describing procedures for planning and conducting specialized work in water-resources investigations. The material is grouped under major subject headings called books and is further divided into sections and chapters. For example, Section A of Book 3 (Applications of Hydraulics) pertains to surface water. The chapter, the unit of publication, is limited to a narrow field of subject matter. This format permits flexibility in revision and publication as the need arises.

The reports listed below are for sale by the U.S. Geological Survey, Branch of Information Services, Box 25286, Federal Center, Denver, Colorado 80225 (authorized agent of the Superintendent of Documents, Government Printing Office). Prepayment is required. Remittance should be sent by check or money order payable to the U.S. Geological Survey. Prices are not included because they are subject to change. Current prices can be obtained by writing to the above address. When ordering or inquiring about prices for any of these publications, please give the title, book number, chapter number, and "U.S. Geological Survey Techniques of Water-Resources Investigations."

- 1-D1. *Water temperature--influential factors, field measurement, and data presentation*, by H. H. Stevens, Jr., J. F. Ficke, and G. F. Smoot: USGS-TWRI Book 1, Chapter D1. 1975. 65 pages.
- 1-D2. *Guidelines for collection and field analysis of ground-water samples for selected unstable constituents*, by W. W. Wood: USGS-TWRI Book 1, Chapter D2. 1976. 24 pages.
- 2-D1. *Application of surface geophysics to ground-water investigations*, by A. A. R. Zohdy, G. P. Eaton, and D. R. Mabey: USGS-TWRI Book 2, Chapter D1. 1974. 116 pages.
- 2-D2. *Application of seismic-refraction techniques to hydrologic studies*, by F. P. Haeni: USGS-TWRI Book 2, Chapter D2. 1988. 86 pages.
- 2-E1. *Application of borehole geophysics to water-resources investigations*, by W. S. Keys and L.M. MacCary: USGS-TWRI Book 2, Chapter E1. 1971. 126 pages.
- 2-E2. *Borehole geophysics applied to ground-water investigations*, by W. S. Keys: USGS-TWRI Book 2, Chapter E2. 1990. 150 pages.
- 2-F1. *Application of drilling, coring, and sampling techniques to test holes and wells*, by Eugene Shuter and W. E. Teasdale: USGS-TWRI Book 2, Chapter F1. 1989. 97 pages.
- 3-A1. *General field and office procedures for indirect discharge measurements*, by M. A. Benson and Tate Dalrymple: USGS-TWRI Book 3, Chapter A1. 1967. 30 pages.
- 3-A2. *Measurement of peak discharge by the slope-area method*, by Tate Dalrymple and M. A. Benson: USGS-TWRI Book 3, Chapter A2. 1967. 12 pages.
- 3-A3. *Measurement of peak discharge at culverts by indirect methods*, by G. L. Bodhaine: USGS-TWRI Book 3, Chapter A3. 1968. 60 pages.
- 3-A4. *Measurement of peak discharge at width contractions by indirect methods*, by H. F. Matthai: USGS-TWRI Book 3, Chapter A4. 1967. 44 pages.
- 3-A5. *Measurement of peak discharge at dams by indirect methods*, by Harry Hulsing: USGS-TWRI Book 3, Chapter A5. 1967. 29 pages.
- 3-A6. *General procedure for gaging streams*, by R. W. Carter and Jacob Davidian: USGS-TWRI Book 3, Chapter A6. 1968. 13 pages.
- 3-A7. *Stage measurement at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS-TWRI Book 3, Chapter A7. 1968. 28 pages.
- 3-A8. *Discharge measurements at gaging stations*, by T. J. Buchanan and W. P. Somers: USGS-TWRI Book 3, Chapter A8. 1969. 65 pages.
- 3-A9. *Measurement of time of travel in streams by dye tracing*, by F. A. Kilpatrick and J. F. Wilson, Jr.: USGS-TWRI Book 3, Chapter A9. 1989. 27 pages.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS

- 3-A10. *Discharge ratings at gaging stations*, by E. J. Kennedy: USGS-TWRI Book 3, Chapter A10. 1984. 59 pages.
- 3-A11. *Measurement of discharge by the moving-boat method*, by G. F. Smoot and C. E. Novak: USGS-TWRI Book 3, Chapter A11. 1969. 22 pages.
- 3-A12. *Fluorometric procedures for dye tracing*, Revised, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS-TWRI Book 3, Chapter A12. 1986. 34 pages.
- 3-A13. *Computation of continuous records of streamflow*, by E. J. Kennedy: USGS-TWRI Book 3, Chapter A13. 1983. 53 pages.
- 3-A14. *Use of flumes in measuring discharge*, by F. A. Kilpatrick and V. R. Schneider: USGS-TWRI Book 3, Chapter A14. 1983. 46 pages.
- 3-A15. *Computation of water-surface profiles in open channels*, by Jacob Davidian: USGS-TWRI Book 3, Chapter A15. 1984. 48 pages.
- 3-A16. *Measurement of discharge using tracers*, by F. A. Kilpatrick and E. D. Cobb: USGS-TWRI Book 3, Chapter A16. 1985. 52 pages.
- 3-A17. *Acoustic velocity meter systems*, by Antonius Laenen: USGS-TWRI Book 3, Chapter A17. 1985. 38 pages.
- 3-A18. *Determination of stream reaeration coefficients by use of tracers*, by F. A. Kilpatrick, R. E. Rathbun, Nobuhiro Yotsukura, G. W. Parker, and L. L. DeLong: USGS-TWRI Book 3, Chapter A18. 1989. 52 pages.
- 3-A19. *Levels at streamflow gaging stations*, by E.J. Kennedy: USGS-TWRI Book 3, Chapter A19. 1990. 31 pages.
- 3-A20. *Simulation of soluble waste transport and buildup in surface waters using tracer*, by F. A. Kilpatrick: USGS-TWRI Book 3, Chapter A20. 1993. 38 pages.
- 3-A21. *Stream-gaging cableways*, by C. Russell Wagner: USGS-TWRI Book 3, Chapter A21. 1995. 56 pages.
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- 3-B2. *Introduction to ground-water hydraulics, a programed text for self-instruction*, by G. D. Bennett: USGS-TWRI Book 3, Chapter B2. 1976. 172 pages.
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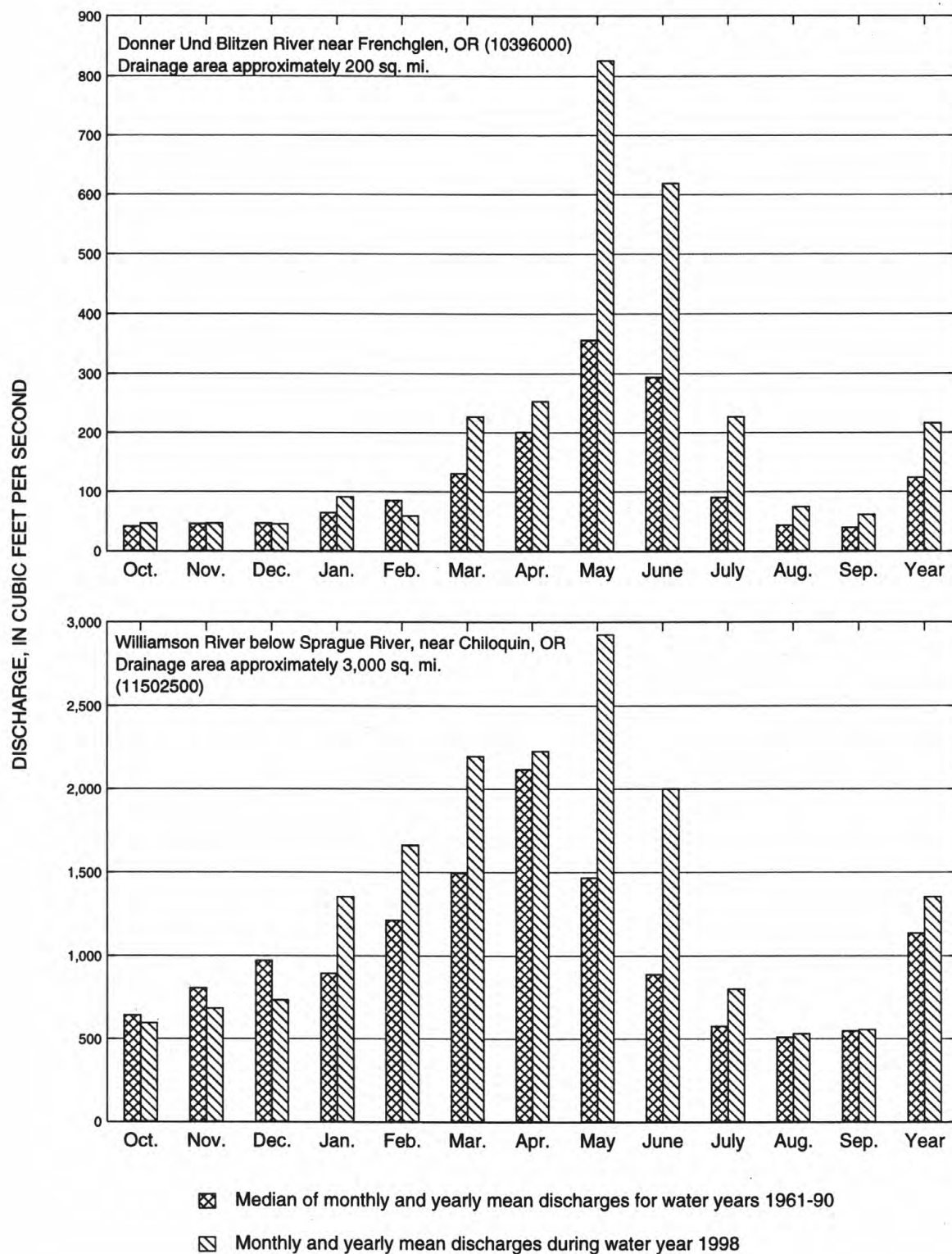


Figure 3. Discharge during 1998 water year compared with median discharge for period 1961-90 for two representative gaging stations in Eastern Oregon.

WATER RESOURCES DATA FOR OREGON 1998

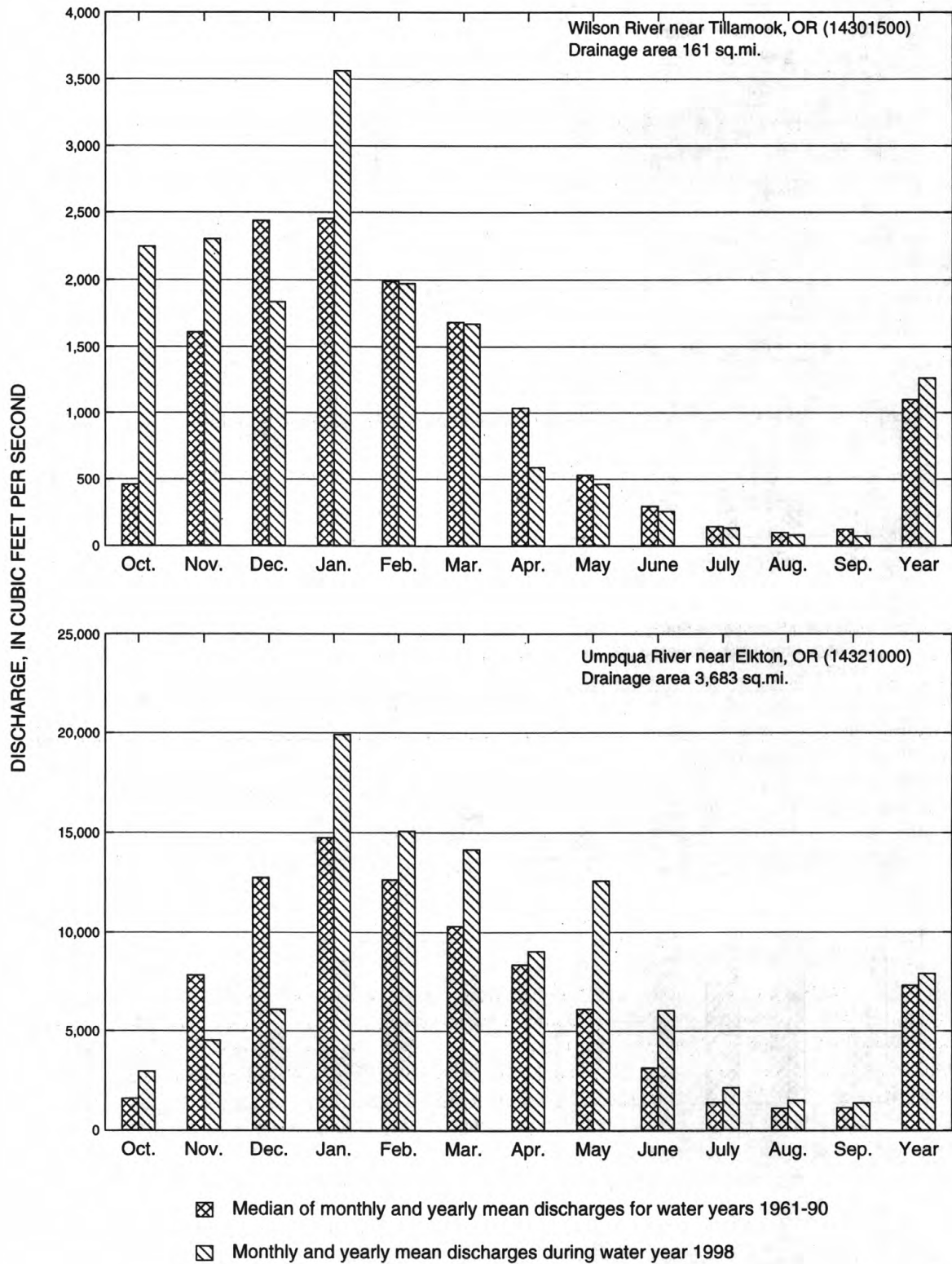


Figure 4. Discharge during 1998 water year compared with median discharge for period 1961-90 for two representative gaging stations in Western Oregon.

SURFACE-WATER RECORDS

Remark Codes

The following remark codes may appear with the water-quality data in this section:

PRINTED OUTPUT	REMARK
E	Estimated value
<	Actual value is known to be less than the value shown
>	Actual value is known to be greater than the value shown
K	Results based on colony count outside the acceptance range (non-ideal colony count)
ND	Materials specifically analyzed for but not detected
V	Analyte was detected in both the environmental sample and the associated blanks.

Dissolved Trace-Element Concentrations

NOTE.--Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter ($\mu\text{g/L}$) level. Recent evidence, mostly from large rivers, indicates that actual dissolved-phase concentrations for a number of trace elements are within the range of 10's to 100's of nanograms per liter (ng/L). Data above the $\mu\text{g/L}$ level should be viewed with caution. Such data may actually represent elevated environmental concentrations from natural or human causes; however, these data could reflect contamination introduced during sampling, processing, or analysis. To confidently produce dissolved trace-element data with insignificant contamination, the U.S. Geological Survey began using new trace-element protocols at some stations in water year 1994.

Change in National Trends Network Procedures

NOTE.--Sample handling procedures at all National Trends Network stations were changed substantially on January 11, 1994, in order to reduce contamination from the sample shipping container. The data for samples before and after that date are different and not directly comparable. A tabular summary of the differences based on a special intercomparison study, is available from the NADP/NTN Coordination Office, Colorado State University, Fort Collins, CO 80523 (Telephone: 303-491-5643)

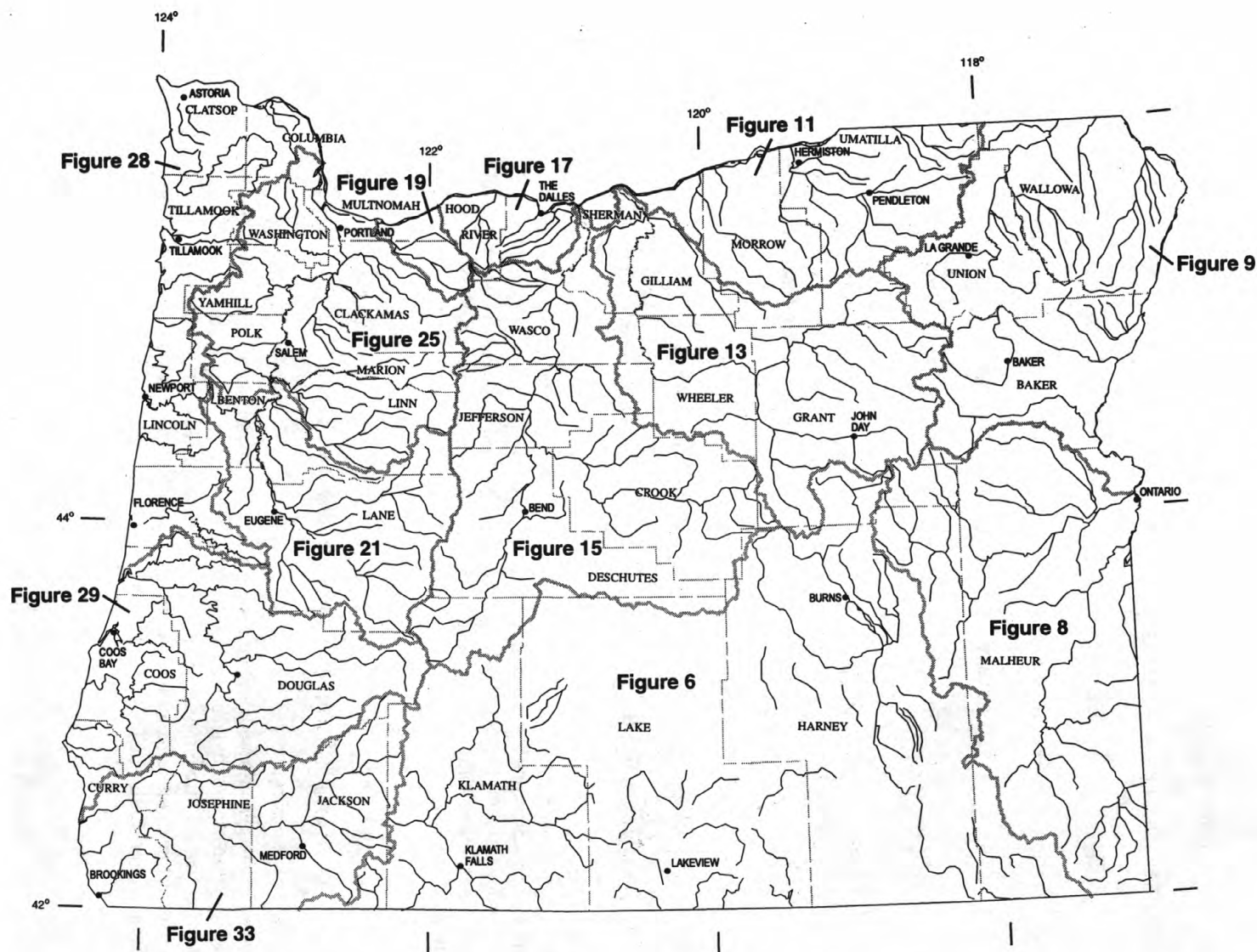


Figure 5. Location map of major drainage basins in Oregon.

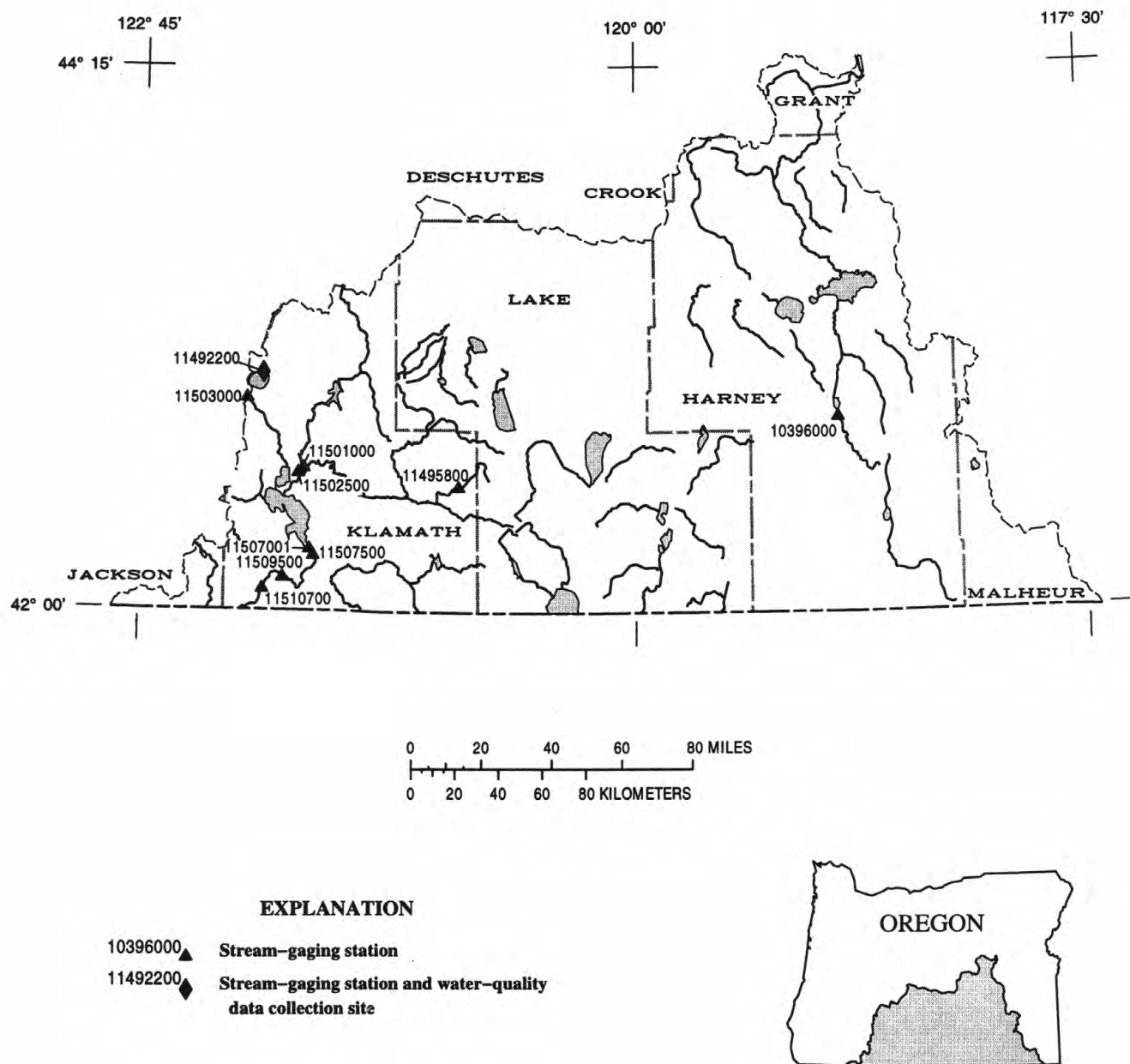


Figure 6. Location of surface-water and water-quality stations in The Great Basin and the Klamath River Basin.

GAGING STATION RECORDS

THE GREAT BASIN

MALHEUR AND HARNEY LAKES BASIN

10396000 DONNER UND BLITZEN RIVER NEAR FRENCHGLEN, OR

LOCATION.--Lat 42°47'28", long 118°52'00", in NW 1/4 NW 1/4 sec.20, T.32 S., R.32-1/2 E., Harney County, Hydrologic Unit 17120003, Bureau of Land Management land, on left bank 1.5 mi upstream from upper diversions for Malheur National Wildlife Refuge, 2.0 mi downstream from Fish Creek, and 3.5 mi southeast of Frenchglen.

DRAINAGE AREA.--200 mi², approximatly.

PERIOD OF RECORD.--March 1911 to September 1913, March 1914 to September 1916, April 1917 to September 1921, August to November 1929, April to September 1930, December 1937 to current year. Monthly discharge only for some periods, published in WSP 1314. Published as "near Diamond" 1911-21. Records of discharge for January 1909 to September 1910 (published in WSP 270, 290, and 370, for a nonequivalent site as "near Diamond") have been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 330: Drainage area (former site). WSP 860: Drainage area (present site). WSP 1564: 1938-39(M), 1942-43(M), 1948(M), 1951(P), 1952-53. WSP 1714: Drainage area. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,254 ft above sea level (levels by Fish and Wildlife Service). Prior to December 1937, nonrecording gage at several sites within 2 mi downstream at different datums. Dec. 6, 1937, to Feb. 14, 1938, nonrecording gage at present site and datum.

REMARKS.--No estimated daily values. Records good. No regulation or diversion upstream from station. Periodic water-quality records for the period March 1975 to September 1986 and continuous water-quality records for the period October 1975 to September 1981 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--68 years (water years 1912-13, 1915-16, 1918-21, 1939-98), 128 ft³/s, 92,620 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,270 ft³/s Apr. 26, 1978, gage height, 7.15 ft, from floodmarks, from rating curve extended above 1,900 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 4.2 ft³/s Dec. 9, 1972, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 650 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 12	2000	820	4.00	June 2	2100	2,190	5.55
Mar. 22	1530	1,320	4.64	June 12	2300	1,070	4.34
May 14	0200	*3,110	*6.32	June 25	0430	820	4.00
May 26	2200	1,430	4.77				

Minimum discharge, 16 ft³/s Dec. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	49	43	46	55	72	151	614	546	425	104	60
2	44	47	38	46	51	241	149	636	1040	431	99	60
3	45	47	43	44	55	239	214	619	938	420	92	59
4	45	46	50	43	126	137	259	649	687	364	89	59
5	45	46	48	34	94	83	326	623	671	343	87	59
6	45	45	48	39	66	80	213	648	688	338	84	62
7	46	50	48	53	84	59	167	682	689	332	84	62
8	46	49	47	44	66	64	205	1260	693	326	82	63
9	48	46	47	40	54	59	176	1300	679	318	79	71
10	47	46	46	54	52	74	142	1360	672	300	77	70
11	47	47	43	54	52	178	133	1090	688	269	76	70
12	47	46	36	55	51	379	133	1450	779	245	75	64
13	47	46	43	61	51	384	128	1170	856	236	74	62
14	47	46	53	52	57	307	122	1840	802	225	72	61
15	47	46	50	61	60	257	121	1240	685	204	71	60
16	47	46	47	89	48	404	223	994	646	187	71	59
17	47	46	48	336	55	233	248	958	496	185	70	58
18	47	45	44	243	46	132	143	638	501	191	70	58
19	47	47	27	276	53	119	135	521	560	170	70	60
20	47	46	46	99	56	141	152	470	504	156	70	60
21	47	45	51	60	66	164	209	433	471	146	68	61
22	46	42	33	63	64	651	353	420	462	143	67	61
23	48	49	41	140	53	579	467	383	455	142	66	60
24	46	48	50	152	54	405	531	398	474	131	66	59
25	44	53	34	93	44	327	382	587	710	127	65	61
26	47	47	40	78	52	275	330	800	521	123	64	72
27	46	49	63	118	47	255	357	901	402	117	64	64
28	46	45	61	104	51	238	414	551	393	110	62	61
29	48	45	51	114	---	178	472	853	423	116	61	59
30	46	47	45	82	---	159	538	932	433	113	61	58
31	50	---	45	57	---	150	---	573	---	111	61	---
TOTAL	1440	1402	1409	2830	1663	7023	7593	25593	18564	7044	2301	1853
MEAN	46.5	46.7	45.5	91.3	59.4	227	253	826	619	227	74.2	61.8
MAX	50	53	63	336	126	651	538	1840	1040	431	104	72
MIN	44	42	27	34	44	59	121	383	393	110	61	58
AC-FT	2860	2780	2790	5610	3300	13930	15060	50760	36820	13970	4560	3680

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1998, BY WATER YEAR (WY)

MEAN	43.7	47.8	55.9	68.2	92.1	152	223	381	291	100	48.3	42.6
MAX	86.4	94.3	181	277	310	500	666	826	802	320	113	87.3
(WY)	1985	1985	1965	1997	1921	1993	1952	1998	1917	1984	1984	1984
MIN	24.2	25.3	25.2	25.0	27.8	40.5	61.2	105	44.7	28.9	21.1	22.2
(WY)	1993	1962	1960	1916	1964	1977	1968	1992	1992	1968	1992	1992

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1911 - 1998

ANNUAL TOTAL	55828		78715						
ANNUAL MEAN	153		216			128			
HIGHEST ANNUAL MEAN						273			1984
LOWEST ANNUAL MEAN						49.1			1992
HIGHEST DAILY MEAN	1570	Jan 2	1840	May 14		2700	Mar 17	1993	
LOWEST DAILY MEAN	27	Dec 19	27	Dec 19		11	Nov 16	1961	
ANNUAL SEVEN-DAY MINIMUM	40	Dec 19	40	Dec 19		14	Jan 2	1974	
ANNUAL RUNOFF (AC-FT)	110700		156100			92620			
10 PERCENT EXCEEDS	377		623			330			
50 PERCENT EXCEEDS	82		71			58			
90 PERCENT EXCEEDS	46		46			32			

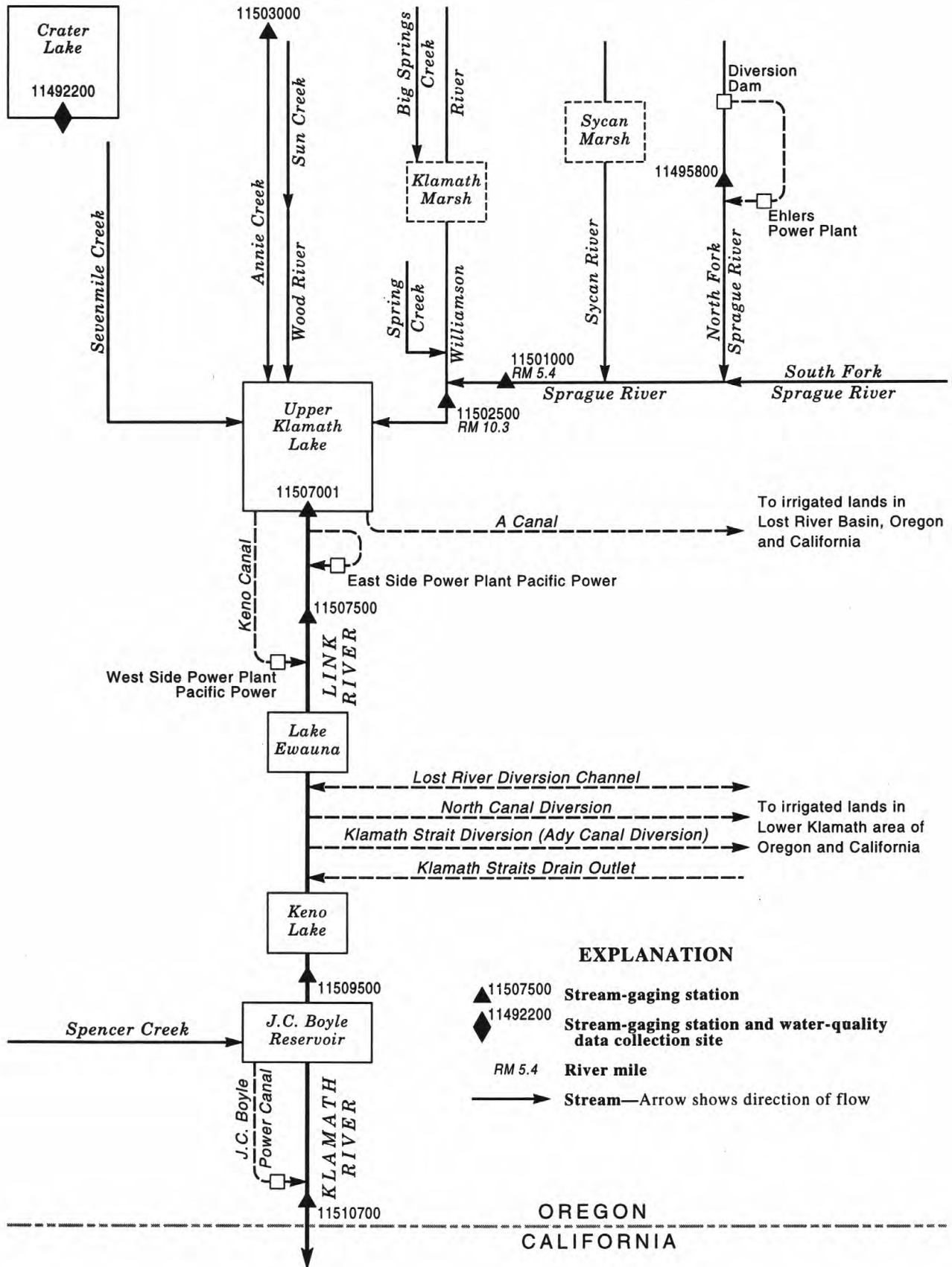


Figure 7. Schematic diagram showing gaging stations and major diversions in the Klamath Basin in Oregon.

KLAMATH RIVER BASIN

11492200 CRATER LAKE NEAR CRATER LAKE, OR
(Hydrologic bench-mark station)

LOCATION.--Lat 42°58'33", long 122°05'17", Crater Lake National Park and Vicinity Quadrangle, Klamath County, Hydrologic Unit 18010201, at boat harbor at end of trail in Cleetwood Cove and 6 mi northeast of Crater Lake post office.

DRAINAGE AREA.--26.2 mi², of which 20.5 mi² is lake area at elevation 6,176 ft.

WATER-ELEVATION RECORDS

PERIOD OF RECORD.--October 1961 to current year. 1878 to September 1961 (fragmentary records) available in files of U.S. Geological Survey.

GAGE.--Water-stage recorder. Datum of gage is sea level. Prior to September 1961, nonrecording gage and various reference points used near old boat landing at abandoned trail (Eagle Cove) directly across Lake.

REMARKS.--Crater Lake occupies the caldera of prehistoric Mount Mazama. It has no visible inlet or outlet. Over a period of years precipitation and runoff from snowmelt on the walls of the crater are offset by seepage and evaporation. Records of accumulated annual precipitation, collected at the north rim of Crater Lake as part of the operation of this station, are published annually in reports of the National Weather Service. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 6,179.34 ft Mar. 25, 1975; minimum elevation observed, 6,163.2 ft Sept. 10, 1942.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum elevation known, 6,180.5 ft, average of several observations of line of crustose lichens made between 1916 and 1960; that stage may have occurred near the close of the 19th century. The occurrence of living pine trees slightly higher suggests that the lake has not been materially higher for several centuries.

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 6,175.74 ft May 30, June 25; minimum elevation, 6,173.60 Oct. 28.

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	6173.95	6173.92	6173.79	6174.84	6175.41	6175.66	6175.53	6175.71	6175.71	6175.51	6174.96
2	---	6173.94	6173.88	6173.84	6174.88	6175.45	6175.66	6175.53	6175.70	6175.72	6175.49	6174.94
3	---	6173.91	6173.87	6173.86	6174.91	6175.46	6175.67	6175.54	6175.70	6175.71	6175.48	6174.93
4	---	6173.90	6173.87	6173.86	6174.87	6175.45	6175.65	6175.58	6175.69	6175.71	6175.47	6174.91
5	6173.83	6173.88	6173.84	6173.85	6174.91	6175.44	6175.66	6175.58	6175.69	6175.70	6175.45	6174.89
6	6173.81	6173.93	6173.83	6173.87	6174.96	6175.42	6175.66	6175.58	6175.69	6175.70	6175.44	6174.88
7	6173.78	6173.92	6173.90	6173.89	6174.96	6175.43	6175.64	6175.59	6175.69	6175.69	6175.41	6174.86
8	6173.83	6173.90	6173.88	6173.87	6174.99	6175.42	6175.63	6175.60	6175.69	6175.68	6175.39	6174.84
9	6173.88	6173.88	6173.87	6173.87	6174.97	6175.40	6175.65	6175.59	6175.69	6175.68	6175.38	6174.81
10	6173.86	6173.88	6173.85	6173.97	6175.02	6175.39	6175.66	6175.59	6175.71	6175.67	6175.36	6174.78
11	6173.89	6173.86	6173.83	6174.09	6175.00	6175.38	6175.66	6175.59	6175.71	6175.66	6175.35	6174.76
12	6173.83	6173.83	6173.80	6174.16	6175.07	6175.35	6175.66	6175.60	6175.71	6175.66	6175.33	6174.73
13	6173.82	6173.84	6173.77	6174.18	6175.02	6175.36	6175.65	6175.60	6175.71	6175.63	6175.31	6174.72
14	6173.81	6173.82	6173.81	6174.31	6175.14	6175.35	6175.64	6175.61	6175.69	6175.62	6175.30	6174.71
15	6173.80	6173.80	6173.86	6174.30	6175.12	6175.35	6175.62	6175.61	6175.69	6175.61	6175.27	6174.69
16	6173.79	6173.86	6173.92	6174.58	6175.11	6175.34	6175.61	6175.61	6175.68	6175.59	6175.25	6174.67
17	6173.78	6173.85	6173.93	6174.58	6175.14	6175.33	6175.59	6175.60	6175.68	6175.58	6175.22	6174.65
18	6173.77	6173.91	6173.91	6174.66	6175.14	6175.32	6175.59	6175.59	6175.68	6175.58	6175.20	6174.63
19	6173.75	6173.92	6173.89	6174.67	6175.21	6175.31	6175.58	6175.61	6175.67	6175.57	6175.17	6174.59
20	6173.74	6173.90	6173.91	6174.66	6175.19	6175.29	6175.56	6175.62	6175.66	6175.56	6175.16	6174.57
21	6173.73	6173.88	6173.88	6174.71	6175.40	6175.37	6175.56	6175.61	6175.65	6175.54	6175.14	6174.55
22	6173.71	6173.87	6173.87	6174.73	6175.40	6175.56	6175.55	6175.60	6175.66	6175.53	6175.12	6174.53
23	6173.69	6173.93	6173.87	6174.75	6175.44	6175.68	6175.58	6175.59	6175.65	6175.54	6175.10	6174.51
24	6173.67	6173.99	6173.85	6174.77	6175.42	6175.69	6175.57	6175.65	6175.71	6175.53	6175.08	6174.51
25	6173.65	6173.93	6173.83	6174.79	6175.42	6175.70	6175.55	6175.64	6175.73	6175.52	6175.07	6174.51
26	6173.63	6173.99	6173.82	6174.84	6175.40	6175.71	6175.54	6175.63	6175.73	6175.52	6175.05	6174.46
27	6173.62	6173.96	6173.80	6174.83	6175.40	6175.70	6175.53	6175.63	6175.72	6175.50	6175.03	6174.45
28	6173.63	6173.94	6173.79	6174.76	6175.40	6175.70	6175.53	6175.71	6175.71	6175.48	6175.02	6174.44
29	6173.77	6173.95	6173.78	6174.85	---	6175.67	6175.52	6175.73	6175.71	6175.47	6175.00	6174.42
30	6173.94	6173.93	6173.77	6174.82	---	6175.67	6175.52	6175.72	6175.71	6175.54	6174.99	6174.41
31	6173.96	---	6173.74	6174.80	---	6175.67	---	6175.71	---	6175.53	6174.97	---
MAX	---	6173.99	6173.93	6174.85	6175.44	6175.71	6175.67	6175.73	6175.73	6175.72	6175.51	6174.96
MIN	---	6173.80	6173.74	6173.79	6174.84	6175.29	6175.52	6175.53	6175.65	6175.47	6174.97	6174.41

KLAMATH RIVER BASIN

41

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1963 to current year.

INSTRUMENTATION.--Temperature recorder from October 1963 to current year. Elevation of probe is approximately 6,157 ft above sea level.

REMARKS.--Samples were collected at boat harbor at end of trail in Cleetwood Cove and 6 mi northeast of Crater Lake post office. Records represent water temperature at sensor within 0.5°C.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 18.5°C Aug. 9, 10, 1978, several days in July and August, 1994, Aug. 14-16, 1998; minimum recorded, 0.5°C on several days in 1969, but may have been as low or lower during period of missing record Oct. 29, 1985 to July 1, 1986.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 18.5°C Aug. 14-16; minimum, 2.5°C Feb. 23, 24, Mar. 5-11.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	8.5	8.0	8.0	6.0	5.5	5.5	4.5	4.0	4.5
2	---	---	---	8.5	8.0	8.0	5.5	5.5	5.5	4.5	4.0	4.5
3	---	---	---	8.0	8.0	8.0	5.5	5.5	5.5	4.5	4.0	4.0
4	---	---	---	8.0	8.0	8.0	5.5	5.5	5.5	4.0	4.0	4.0
5	---	---	---	8.5	8.0	8.0	5.5	5.5	5.5	4.0	4.0	4.0
6	10.5	10.0	10.5	8.0	8.0	8.0	5.5	5.5	5.5	4.0	4.0	4.0
7	10.0	10.0	10.0	8.0	8.0	8.0	5.5	5.0	5.5	4.0	4.0	4.0
8	10.0	10.0	10.0	8.0	8.0	8.0	5.5	5.0	5.0	4.5	4.0	4.0
9	10.0	9.5	9.5	8.0	8.0	8.0	5.0	5.0	5.0	4.0	4.0	4.0
10	9.5	9.0	9.5	8.0	7.5	8.0	5.0	5.0	5.0	4.0	4.0	4.0
11	9.0	9.0	9.0	7.5	7.5	7.5	5.0	5.0	5.0	4.0	4.0	4.0
12	9.0	9.0	9.0	7.5	7.5	7.5	5.0	5.0	5.0	4.0	4.0	4.0
13	9.0	9.0	9.0	7.5	7.5	7.5	5.0	5.0	5.0	4.0	4.0	4.0
14	9.5	9.0	9.0	7.5	7.5	7.5	5.0	5.0	5.0	4.0	4.0	4.0
15	9.5	9.0	9.5	7.5	7.0	7.5	5.0	4.5	5.0	4.0	4.0	4.0
16	9.5	9.0	9.5	7.5	7.0	7.0	5.0	4.5	5.0	4.0	4.0	4.0
17	9.5	9.0	9.5	7.0	7.0	7.0	5.0	4.5	4.5	4.0	4.0	4.0
18	9.5	9.0	9.5	7.0	7.0	7.0	5.0	4.5	4.5	4.0	4.0	4.0
19	9.5	9.0	9.5	7.0	6.5	6.5	5.0	4.5	4.5	4.0	4.0	4.0
20	9.5	9.0	9.0	6.5	6.5	6.5	4.5	4.5	4.5	4.0	4.0	4.0
21	9.5	9.0	9.0	6.5	6.5	6.5	4.5	4.5	4.5	4.0	4.0	4.0
22	9.5	9.0	9.0	6.5	6.5	6.5	4.5	4.5	4.5	4.0	4.0	4.0
23	9.0	9.0	9.0	6.5	6.0	6.5	4.5	4.5	4.5	4.0	4.0	4.0
24	9.0	8.5	9.0	6.0	6.0	6.0	4.5	4.5	4.5	4.0	3.5	4.0
25	9.0	8.5	9.0	6.0	6.0	6.0	4.5	4.0	4.5	3.5	3.5	3.5
26	9.0	8.5	8.5	6.0	6.0	6.0	4.5	4.5	4.5	3.5	3.5	3.5
27	9.0	8.5	8.5	6.0	6.0	6.0	4.5	4.5	4.5	4.0	3.5	4.0
28	8.5	8.5	8.5	6.0	6.0	6.0	4.5	4.5	4.5	3.5	3.5	3.5
29	8.5	8.5	8.5	6.0	5.5	6.0	4.5	4.5	4.5	4.0	3.5	3.5
30	8.5	8.5	8.5	6.0	5.5	5.5	4.5	4.5	4.5	4.0	3.5	3.5
31	8.5	8.0	8.5	---	---	---	4.5	4.5	4.5	3.5	3.5	3.5
MONTH	---	---	---	8.5	5.5	7.1	6.0	4.0	4.9	4.5	3.5	3.9

KLAMATH RIVER BASIN

11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	3.5	4.0	4.0	4.0
2	4.0	3.5	3.5	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0
3	3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.5	3.5	4.5	4.0	4.0
4	3.5	3.5	3.5	3.5	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0
5	3.5	3.5	3.5	3.0	2.5	3.0	3.5	3.5	3.5	4.0	4.0	4.0
6	3.5	3.5	3.5	3.0	2.5	3.0	4.0	3.5	3.5	4.0	4.0	4.0
7	3.5	3.5	3.5	3.0	2.5	2.5	4.0	3.5	3.5	4.0	4.0	4.0
8	3.5	3.5	3.5	3.0	2.5	2.5	3.5	3.5	3.5	4.0	4.0	4.0
9	4.0	3.5	3.5	3.0	2.5	3.0	3.5	3.0	3.5	4.0	3.5	4.0
10	3.5	3.5	3.5	3.0	2.5	2.5	3.5	3.0	3.0	4.0	4.0	4.0
11	3.5	3.5	3.5	3.5	2.5	3.0	3.5	3.0	3.5	4.0	4.0	4.0
12	3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.0	3.5	4.0	4.0	4.0
13	3.5	3.5	3.5	3.0	3.0	3.0	3.5	3.5	3.5	4.0	4.0	4.0
14	3.5	3.5	3.5	3.5	3.0	3.0	3.5	3.0	3.5	4.0	4.0	4.0
15	3.5	3.5	3.5	3.5	3.0	3.0	3.5	3.0	3.5	4.0	4.0	4.0
16	3.5	3.0	3.5	3.5	3.0	3.5	4.0	3.0	3.5	4.5	4.0	4.0
17	3.5	3.0	3.5	3.5	3.0	3.5	4.0	3.5	3.5	4.0	4.0	4.0
18	3.5	3.5	3.5	4.0	3.0	3.5	4.0	3.5	3.5	4.5	4.0	4.0
19	3.5	3.0	3.5	4.0	3.5	3.5	4.0	3.5	3.5	4.0	4.0	4.0
20	3.5	3.0	3.0	4.0	3.5	3.5	4.0	3.5	4.0	4.0	4.0	4.0
21	3.0	3.0	3.0	3.5	3.0	3.0	4.0	3.5	4.0	4.5	4.0	4.0
22	3.5	3.0	3.0	3.0	3.0	3.0	4.0	3.5	4.0	4.5	4.0	4.5
23	3.0	2.5	3.0	3.0	3.0	3.0	3.5	3.5	3.5	4.5	4.0	4.0
24	3.0	2.5	3.0	3.5	3.0	3.0	4.0	3.5	3.5	4.0	4.0	4.0
25	3.5	3.0	3.0	3.5	3.0	3.5	4.0	3.5	4.0	4.5	4.0	4.0
26	3.5	3.0	3.0	3.5	3.0	3.5	4.0	3.5	4.0	4.5	4.0	4.0
27	3.5	3.0	3.0	3.5	3.5	3.5	4.0	3.5	4.0	4.5	4.0	4.0
28	3.0	3.0	3.0	3.5	3.0	3.0	4.0	4.0	4.0	4.0	4.0	4.0
29	---	---	---	3.5	2.5	3.0	4.5	4.0	4.0	4.0	4.0	4.0
30	---	---	---	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.0	4.5
31	---	---	---	3.5	3.0	3.5	---	---	---	4.5	4.0	4.5
MONTH	4.0	2.5	3.3	4.0	2.5	3.1	4.5	3.0	3.6	4.5	3.5	4.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	4.5	4.5	4.5	10.5	7.5	9.0	16.5	15.5	16.0	17.0	16.5	17.0
2	4.5	4.0	4.5	9.0	8.5	9.0	16.5	16.0	16.0	17.0	16.5	17.0
3	4.5	4.5	4.5	9.0	7.0	8.0	16.0	15.5	16.0	17.5	17.0	17.0
4	5.0	4.5	4.5	11.0	9.0	10.0	16.5	15.0	16.0	18.0	17.0	17.5
5	5.0	4.5	5.0	10.5	8.0	9.5	18.0	16.0	17.0	18.0	17.5	18.0
6	6.0	5.0	5.0	11.5	9.5	11.0	18.0	17.5	18.0	17.5	17.5	17.5
7	6.0	5.0	5.5	11.5	11.0	11.0	18.0	16.5	17.5	17.5	17.5	17.5
8	5.5	5.0	5.5	12.5	10.0	12.0	17.5	16.0	17.0	17.5	17.5	17.5
9	5.5	5.0	5.0	13.0	10.0	12.0	17.5	16.5	17.5	17.5	17.0	17.0
10	6.0	4.5	5.0	13.0	10.5	11.5	17.5	16.5	17.0	17.0	16.5	16.5
11	7.0	5.5	6.5	14.0	12.0	13.5	17.5	17.0	17.5	16.5	16.0	16.0
12	6.5	5.5	5.5	14.0	12.5	13.0	17.5	17.0	17.5	16.5	16.0	16.0
13	6.0	5.5	5.5	14.5	12.5	13.5	18.0	17.5	17.5	16.0	16.0	16.0
14	6.0	5.5	6.0	13.5	13.0	13.5	18.5	17.5	18.0	16.0	16.0	16.0
15	6.0	5.0	5.0	13.5	13.0	13.5	18.5	18.0	18.0	16.5	16.0	16.0
16	7.5	5.0	7.0	14.0	12.5	13.5	18.5	18.0	18.0	16.5	16.0	16.5
17	7.5	7.0	7.0	13.5	12.5	13.0	18.0	17.5	17.5	16.5	15.5	16.0
18	7.5	6.5	7.0	13.5	12.5	13.0	17.5	17.0	17.5	15.5	15.0	15.5
19	8.0	6.5	7.0	15.5	13.0	14.5	17.5	17.0	17.5	15.0	13.5	14.5
20	7.5	7.0	7.5	14.5	13.5	14.0	17.0	17.0	17.0	14.0	13.5	14.0
21	7.5	7.0	7.5	15.0	13.0	14.0	17.0	17.0	17.0	14.0	13.5	14.0
22	8.0	7.5	7.5	15.5	13.0	14.5	17.0	16.5	17.0	14.0	13.5	13.5
23	8.0	7.0	7.5	16.5	13.5	15.5	17.0	16.5	16.5	14.0	13.5	13.5
24	9.0	8.0	8.5	15.5	13.5	14.0	16.5	16.5	16.5	13.5	13.5	13.5
25	9.0	8.5	8.5	16.0	14.5	15.0	16.5	16.5	16.5	13.5	13.0	13.5
26	8.5	8.0	8.5	17.0	14.5	15.5	16.5	16.0	16.5	13.0	12.5	13.0
27	8.5	8.0	8.0	17.0	14.5	16.0	17.0	16.5	16.5	12.5	12.5	12.5
28	8.5	8.0	8.0	17.0	13.5	15.0	17.0	17.0	17.0	12.5	12.5	12.5
29	9.0	8.0	8.5	15.0	12.0	14.0	17.0	16.5	17.0	12.5	12.5	12.5
30	8.0	7.5	7.5	15.5	14.0	15.0	17.0	16.5	17.0	12.5	12.5	12.5
31	---	---	---	16.0	15.0	15.5	17.0	16.5	17.0	---	---	---
MONTH	9.0	4.0	6.4	17.0	7.0	13.0	18.5	15.0	17.0	18.0	12.5	15.3

KLAMATH RIVER BASIN

43

11495800 NORTH FORK SPRAGUE RIVER AT POWERPLANT, NEAR BLY, OR

LOCATION.--Lat 42°30'06", long 120°59'13", in SW 1/4 SE 1/4 sec.30, T.35 S., R.15 E., Klamath County, Hydrologic Unit 18010202, at powerplant 0.1 mi upstream from Yaden Creek, and 7.6 mi northeast of Bly.

DRAINAGE AREA.--77.7 mi².

PERIOD OF RECORD.--May 1993 to current year.

GAGE.--Water-stage record. Elevation of gage is 4,750 ft above sea level, from topographic map.

REMARKS.--Records good. All records given herein do not include flow diverted through powerplant.

AVERAGE DISCHARGE.--5 years (water years 1994-98), 80.4 ft³/s, 58,230 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,180 ft³/s Apr. 24, 1996, gage height, 7.12 ft; minimum discharge, 12 ft³/s Dec. 10, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 719 ft³/s May 7, gage height, 7.28 ft; minimum discharge, 25 ft³/s several days in March, April and July.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	32	32	31	32	32	47	436	293	104	84	26
2	43	32	33	31	31	32	37	407	351	51	79	26
3	42	32	32	31	33	32	45	410	352	43	77	26
4	42	32	32	31	34	31	67	439	310	34	75	26
5	42	32	31	31	33	36	59	450	305	35	75	26
6	42	32	31	31	32	31	53	470	302	50	60	27
7	42	40	32	31	32	37	42	588	297	45	28	27
8	38	33	31	32	32	31	38	598	304	42	28	e27
9	37	32	32	32	31	32	36	528	293	40	36	e28
10	36	32	31	32	32	34	33	457	336	37	28	e28
11	35	32	31	32	31	35	36	413	321	36	27	e28
12	34	32	33	31	33	35	41	366	324	35	27	e28
13	33	32	40	31	32	36	42	336	374	34	27	e29
14	33	32	50	32	33	39	40	344	345	33	27	e29
15	33	32	34	31	32	41	41	326	279	31	27	e29
16	33	32	36	33	32	52	46	328	261	33	30	e29
17	33	32	36	41	32	48	48	311	236	48	42	e29
18	33	32	33	44	32	42	57	290	220	33	27	e28
19	33	32	48	36	33	40	80	284	205	31	33	e28
20	33	32	39	32	32	42	97	289	185	29	45	e28
21	32	32	31	32	32	67	128	271	182	27	26	e28
22	33	32	38	31	31	192	179	268	232	41	26	e28
23	33	34	31	31	31	322	228	276	161	68	26	e28
24	33	38	32	31	33	324	284	292	172	33	38	e28
25	33	33	36	32	33	293	228	374	185	27	26	e28
26	33	33	35	33	32	244	237	323	149	26	26	e29
27	32	32	32	34	32	185	297	313	215	26	26	e29
28	32	32	32	33	32	156	357	309	211	28	26	e30
29	33	31	32	33	---	134	370	355	76	79	26	e30
30	34	31	32	32	---	113	418	305	114	55	26	e31
31	71	---	32	32	---	65	---	283	---	66	32	---
TOTAL	1137	977	1060	1010	900	2833	3711	11439	7590	1300	1186	841
MEAN	36.7	32.6	34.2	32.6	32.1	91.4	124	369	253	41.9	38.3	28.0
MAX	71	40	50	44	34	324	418	598	374	104	84	31
MIN	32	31	31	31	31	31	33	268	76	26	26	26
AC-FT	2260	1940	2100	2000	1790	5620	7360	22690	15050	2580	2350	1670

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1998, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
MEAN	41.2	44.8	48.3	70.4	49.6	63.2	153	272	139	42.6	32.8	32.1
MAX	51.2	75.7	81.4	211	83.1	91.4	257	386	253	67.2	38.3	43.8
(WY)	1997	1997	1996	1997	1996	1998	1996	1993	1998	1995	1998	1995
MIN	30.2	29.5	30.4	32.6	32.1	37.4	52.6	43.9	36.1	29.9	27.5	25.6
(WY)	1995	1995	1995	1998	1998	1994	1994	1994	1994	1993	1993	1993

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1993 - 1998

ANNUAL TOTAL	29109	33984	80.4	
ANNUAL MEAN	79.8	93.1	93.4	1996
HIGHEST ANNUAL MEAN			37.6	1994
LOWEST ANNUAL MEAN				
HIGHEST DAILY MEAN	735	Jan 1	735	Jan 1 1997
LOWEST DAILY MEAN	29	Aug 6	16	Jan 11 1994
ANNUAL SEVEN-DAY MINIMUM	29	Aug 12	23	May 23 1994
ANNUAL RUNOFF (AC-FT)	57740	67410	58230	
10 PERCENT EXCEEDS	219	305	239	
50 PERCENT EXCEEDS	42	33	39	
90 PERCENT EXCEEDS	31	28	29	

e Estimated

LOCATION.--Lat 42°35'05", long 121°50'55", in NE 1/4 NW 1/4 sec.35, T.34 S., R.7 E., Klamath County, Hydrologic Unit 18010202, on right bank 1.0 mi northeast of Chiloquin, 4.6 mi upstream from Modoc Point Canal intake, and at mile 5.4.

PERIOD OF RECORD.--July to October 1920, March 1921 to current year. Monthly discharge only July 1920, published in WSP 1315-B. Prior to October 1931, published as "at McCreedy Ranch, near Chilouquin."

GAGE.--Water-stage recorder. Datum of gage is 4,202.43 ft above sea level. Prior to Oct. 1, 1931, nonrecording gage at site 12 mi upstream at different datum.

AVERAGE DISCHARGE.--77 years (water years 1922-98), 586 ft³/s, 424,200 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,300 ft³/s May 14, gage height, 5.45 ft; minimum daily discharge, 182 ft³/s Aug. 21, 22.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	259	332	389	335	1500	652	2130	1520	2420	728	316	191
2	253	355	380	334	1230	875	1940	1580	2430	675	294	208
3	274	362	364	352	1070	1290	1910	1660	2390	647	293	215
4	290	333	345	371	1170	1560	1890	1750	2280	651	270	202
5	296	325	339	358	1310	1650	1790	1870	2130	650	253	203
6	290	325	356	345	1430	1400	1750	1960	1990	622	233	210
7	279	331	363	331	1330	1020	1750	2060	1880	585	212	216
8	282	349	367	331	1080	837	1780	2160	1790	540	202	230
9	294	379	368	335	971	739	1790	2290	1720	507	209	230
10	294	374	361	340	876	697	1730	2470	1650	494	215	248
11	304	359	339	364	779	661	1610	2690	1610	508	213	266
12	321	353	333	435	715	648	1520	2950	1580	497	219	275
13	320	348	328	573	689	662	1420	3160	1600	465	215	270
14	308	346	327	686	690	764	1340	3260	1650	448	223	279
15	295	344	338	773	713	966	1280	3130	1680	443	214	281
16	289	343	348	767	759	1070	1250	3010	1630	412	205	274
17	294	339	351	893	798	1120	1220	2860	1510	382	199	275
18	282	337	354	1090	723	1220	1170	2710	1370	362	209	263
19	292	347	363	1440	655	1310	1110	2600	1240	365	210	247
20	307	351	351	1690	635	1260	1050	2590	1110	395	202	250
21	304	349	325	1820	653	1150	1040	2610	1010	381	194	252
22	295	349	e310	1630	690	1160	1050	2550	948	360	187	260
23	298	349	e305	1160	659	1330	1090	2410	920	341	203	254
24	302	352	e300	955	624	1630	1170	2260	930	333	219	248
25	307	368	e300	925	620	2060	1260	2130	913	344	218	257
26	305	402	e300	963	631	2540	1370	1980	876	315	216	271
27	307	425	e310	995	622	2970	1460	1920	910	279	210	279
28	308	431	319	1200	611	3120	1510	2010	912	252	204	287
29	310	439	326	1550	---	3000	1480	2220	847	249	207	307
30	312	404	326	1800	---	2740	1480	2360	779	266	197	312
31	333	---	329	1690	---	2450	---	2400	---	310	197	---
TOTAL	9204	10800	10514	26831	24233	44551	44340	73130	44705	13806	6858	7560
MEAN	297	360	339	866	865	1437	1478	2359	1490	445	221	252
MAX	333	439	389	1820	1500	3120	2130	3260	2430	728	316	312
MIN	253	325	300	331	611	648	1040	1520	779	249	187	191
AC-FT	18260	21420	20850	53220	48070	88370	87950	145100	88670	27380	13600	15000

MEAN	294	342	469	543	700	947	1267	1146	615	282	218	236
MAX	848	789	2853	3017	2877	2904	4250	3211	1762	560	405	375
(WY)	1963	1974	1965	1997	1996	1972	1956	1956	1983	1983	1956	1956
MIN	183	218	215	196	223	286	263	119	93.8	85.1	76.9	125
(WY)	1934	1995	1933	1937	1933	1992	1977	1992	1992	1994	1992	1992

ANNUAL TOTAL	316204			316532				
ANNUAL MEAN	866			867			586	
HIGHEST ANNUAL MEAN							1395	1956
LOWEST ANNUAL MEAN							199	1992
HIGHEST DAILY MEAN	10300	Jan 5		3260	May 14		14500	Dec 26 1964
LOWEST DAILY MEAN	169	Aug 17		187	Aug 22		50	May 26 1926
ANNUAL SEVEN-DAY MINIMUM	177	Aug 12		201	Aug 17		65	Aug 5 1992
ANNUAL RUNOFF (AC-FT)	6272200			6278000			4242	
10 PERCENT EXCEEDS	1620			2000			1330	
50 PERCENT EXCEEDS	417			448			345	
90 PERCENT EXCEEDS	218			248			200	

e Estimated

45

LOCATION.--Lat 42°33'54", long 121°52'42", in NE 1/4 SE 1/4 sec.4, T.35 S., R.7 E., Klamath County, Hydrologic Unit 18010201, on right bank 0.8 mi downstream from Sprague River and 1.2 mi southwest of Chilquinn, and at mile 10.3.

PERIOD OF RECORD.--June 1917 to current year. Monthly discharge only for October 1922 to August 1923 published in WSP 1315-B.

GAGE.--Water-stage recorder. Datum of gage is 4,148.50 ft above sea level. September 1, 1923 to July 12, 1991 at site 0.6 mi upstream at datum 7.05 ft higher. Prior to Sept. 1, 1923, at different datum.

AVERAGE DISCHARGE.--80 years (water years 1918-22, 1924-98), 1,047 ft³/s, 758,800 acre-ft/yr, includes monthly data published in WSP 1315-B.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,930 ft³/s Mar. 28, gage height, 6.75 ft; minimum discharge, 487 ft³/s Aug. 22.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	540	634	788	710	2260	1430	2960	2140	2890	1130	656	498
2	535	647	784	714	2020	1650	2760	2190	2890	1080	628	508
3	554	662	774	730	1870	2040	2730	2270	2850	1040	626	516
4	580	633	759	753	1950	2300	2700	2370	2770	1030	602	508
5	586	625	750	732	2090	2380	2620	2470	2650	1020	580	509
6	592	630	762	722	2210	2180	2580	2550	2530	997	560	513
7	581	629	773	703	2130	1800	2570	2640	2440	949	534	513
8	584	634	772	698	1880	1610	2580	2720	2360	909	522	531
9	599	665	772	696	1780	1490	2590	2830	2280	883	524	536
10	596	669	770	702	1690	1440	2520	3000	2210	861	528	543
11	601	656	754	747	1590	1380	2390	3240	2160	858	526	564
12	617	651	744	807	1530	1350	2300	3510	2130	852	527	572
13	618	650	742	936	1500	1350	2210	3710	2130	824	521	569
14	615	651	739	1070	1510	1440	2110	3770	2160	802	527	573
15	604	651	751	1170	1520	1640	2050	3700	2190	792	522	575
16	594	657	762	1210	1560	1750	2020	3580	2140	766	507	567
17	596	660	766	1390	1610	1820	1970	3440	2040	735	502	574
18	589	663	765	1560	1530	1920	1920	3280	1900	709	507	569
19	592	682	767	1930	1460	2020	1840	3170	1770	698	509	557
20	608	680	763	2180	1430	1990	1770	3140	1660	734	503	559
21	608	682	732	2350	1440	1890	1740	3150	1560	713	494	560
22	601	690	e660	2220	1460	1950	1740	3090	1490	691	489	569
23	602	698	e640	1770	1460	2200	1770	2970	1450	674	501	566
24	599	704	e630	1570	1430	2490	1830	2850	1430	674	518	561
25	605	724	e640	1550	1420	2870	1930	2740	1410	681	517	569
26	605	760	e650	1620	1420	3320	2040	2600	1350	672	511	581
27	609	794	e680	1690	1410	3720	2140	2510	1350	640	506	585
28	612	806	708	1880	1390	3920	2180	2590	1350	609	502	596
29	619	826	731	2250	---	3840	2150	2750	1280	598	504	612
30	621	802	711	2470	---	3600	2120	2850	1200	607	499	618
31	646	---	708	2420	---	3300	---	2880	---	642	501	---
TOTAL	18508	20515	22747	41950	46550	68080	66830	90700	60020	24870	16453	16671
MEAN	597	684	734	1353	1663	2196	2228	2926	2001	802	531	556
MAX	646	826	788	2470	2260	3920	2960	3770	2890	1130	656	618
MIN	535	625	630	696	1390	1350	1740	2140	1200	598	489	498
AC-FT	36710	40690	45120	83210	92330	135000	132600					

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 1998, BY WATER YEAR (WY)

MEAN	651	756	941	1019	1251	1618	1974	1662	1007	610	537	563
MAX	1237	1345	3682	4067	3846	4256	5488	4376	2658	1278	934	872
(WY)	1963	1974	1965	1997	1972	1952	1952	1956	1953	1958	1958	1958
MIN	488	530	545	524	547	619	583	391	338	311	304	382
(WY)	1993	1995	1993	1937	1933	1992	1992	1992	1992	1994	1994	1994

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1918 - 1998
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ANNUAL TOTAL	481395			493894			
ANNUAL MEAN	1319			1353		1047	
HIGHEST ANNUAL MEAN						2187	1956
LOWEST ANNUAL MEAN						483	1992
HIGHEST DAILY MEAN	16000	Jan 5		3920	Mar 28	16000	Dec 26 1964
LOWEST DAILY MEAN	441	Aug 18		489	Aug 22	288	Aug 6 1994
ANNUAL SEVEN-DAY MINIMUM	453	Aug 12		501	Aug 17	294	Aug 4 1994
ANNUAL RUNOFF (AC-FT)	954800			979600		758800	
10 PERCENT EXCEEDS	2300			2670		2000	
50 PERCENT EXCEEDS	763			824		745	
90 PERCENT EXCEEDS	492			542		506	

e Estimated

KLAMATH RIVER BASIN

11503000 ANNIE SPRING NEAR CRATER LAKE, OR

LOCATION.--Lat 42°52'18", long 122°10'04", unsurveyed, Klamath County, Hydrologic Unit 18010203, in Crater Lake National Park, at highway bridge 0.1 mi downstream from source.

DRAINAGE AREA.--Indeterminate, normal flow is entirely from Annie Spring.

PERIOD OF RECORD.--June 1977 to current year. Discharge measurement and fragmentary gage-height record August to October 1913. Discharge measurements only Oct. 11, 1967, June 26, Sept. 13, 1968.

GAGE.--Water-stage recorder and V-notch sharp-crested weir. Datum of gage is 5,982.65 ft above sea level (National Park Service bench mark).

REMARKS.--No estimated daily discharges. Records good. Fluctuations caused by pumps 0.1 mi upstream. Diversion for domestic use by National Park Service 0.1 mi upstream.

COOPERATION.--Records of diversion by pumping furnished by National Park Service.

AVERAGE DISCHARGE.--21 years (water years 1978-98), 2.90 ft³/s, 2,100 acre-ft/yr, adjusted for diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18 ft³/s July 6, 1984, gage height, 1.56 ft; minimum daily discharge, 0.28 ft³/s Mar. 2-5, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10 ft³/s several days in July, gage height, 1.23 ft; minimum daily discharge, 1.3 ft³/s several days in March.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	2.1	1.9	1.6	1.8	1.5	1.9	1.9	3.4	9.9	7.0	4.0
2	2.4	2.2	1.9	1.6	1.7	1.5	1.9	2.1	3.6	10	6.9	3.9
3	2.4	2.2	1.9	1.6	1.7	1.5	1.9	2.1	3.9	10	6.7	3.8
4	2.4	2.2	1.9	1.7	1.8	1.5	1.8	2.5	4.2	10	6.7	3.7
5	2.4	2.2	1.9	1.6	1.7	1.5	1.8	3.2	4.5	10	6.5	3.7
6	2.3	2.2	1.9	1.6	1.7	1.5	1.8	3.4	4.8	10	6.4	3.6
7	2.3	2.2	1.9	1.6	1.7	1.4	1.8	3.6	5.0	10	6.3	3.5
8	2.3	2.2	1.9	1.6	1.7	1.4	1.7	3.8	5.3	10	6.3	3.6
9	2.3	2.2	1.9	1.6	1.7	1.4	1.7	4.0	5.6	10	6.2	3.6
10	2.3	2.1	1.8	1.6	1.7	1.4	1.7	4.6	5.8	10	6.1	3.5
11	2.3	2.1	1.8	1.6	1.6	1.4	1.7	4.9	6.1	10	5.9	3.5
12	2.3	2.1	1.8	1.6	1.6	1.4	1.6	4.9	6.5	10	5.7	3.5
13	2.3	2.1	1.7	1.5	1.6	1.4	1.6	4.9	6.9	9.9	5.6	3.4
14	2.2	2.1	1.8	1.5	1.6	1.3	1.6	4.9	7.2	9.9	5.6	3.3
15	2.2	2.1	1.8	1.5	1.6	1.3	1.5	4.9	7.6	9.7	5.7	3.2
16	2.2	2.1	1.7	1.5	1.5	1.3	1.5	4.8	7.9	9.6	5.3	3.2
17	2.2	2.1	1.7	1.6	1.5	1.3	1.5	4.6	8.1	9.3	5.2	3.2
18	2.2	2.1	1.7	1.7	1.5	1.3	1.5	4.5	8.3	9.2	5.1	3.1
19	2.2	2.1	1.7	1.7	1.5	1.3	1.5	4.3	8.4	8.9	5.0	3.1
20	2.2	2.1	1.7	1.7	1.5	1.3	1.5	4.2	8.5	8.7	4.9	3.1
21	2.2	2.1	1.7	1.7	1.5	1.3	1.5	4.0	8.7	8.5	4.8	3.0
22	2.2	2.0	1.7	1.7	1.5	1.4	1.4	3.9	8.8	8.4	4.7	3.0
23	2.2	2.0	1.7	1.7	1.5	1.6	1.5	3.8	8.8	8.3	4.6	2.9
24	2.1	2.0	1.7	1.7	1.6	1.8	1.5	3.7	8.8	8.1	4.5	2.9
25	2.2	2.0	1.7	1.8	1.6	1.9	1.6	3.6	9.1	8.0	4.5	3.0
26	2.2	1.9	1.7	1.8	1.6	1.9	1.6	3.5	9.9	7.8	4.4	3.0
27	2.1	1.9	1.7	1.8	1.5	1.9	1.5	3.5	9.9	7.7	4.3	3.0
28	2.1	1.9	1.7	1.8	1.5	1.9	1.6	3.5	9.9	7.5	4.2	2.9
29	2.1	1.9	1.7	1.8	---	1.9	1.7	3.5	9.9	7.3	4.1	2.8
30	2.1	1.9	1.6	1.8	---	1.9	1.8	3.4	9.9	7.2	4.1	3.0
31	2.2	---	1.6	1.7	---	1.9	---	3.4	---	7.1	4.0	---
TOTAL	69.5	62.4	54.8	51.3	45.0	47.3	49.2	117.9	215.3	281.0	167.3	99.0
MEAN	2.24	2.08	1.77	1.65	1.61	1.53	1.64	3.80	7.18	9.06	5.40	3.30
MAX	2.4	2.2	1.9	1.8	1.8	1.9	1.9	4.9	9.9	10	7.0	4.0
MIN	2.1	1.9	1.6	1.5	1.5	1.3	1.4	1.9	3.4	7.1	4.0	2.8
AC-FT	138	124	109	102	89	94	98	234	427	557	332	196
MEAN†	2.28	2.10	1.80	1.69	1.64	1.55	1.66	3.83	7.25	9.18	5.51	3.38
AC-FT†	140	125	110	104	91	95	99	236	432	564	339	201

CAL YR 1997 TOTAL 1464.1 MEAN 4.01 MAX 9.7 MIN 1.6 AC-FT 2900 MEAN† 4.06 AC-FT† 2937
WTR YR 1998 TOTAL 1260.0 MEAN 3.45 MAX 10 MIN 1.3 AC-FT 2500 MEAN† 3.50 AC-FT† 2537

† Adjusted for diversion by pumping.

KLAMATH RIVER BASIN

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11507001 UPPER KLAMATH LAKE NEAR KLAMATH FALLS, OR

LOCATION.--Lat 42°15'00", long 121°48'55", in NW 1/4 SW 1/4 sec.19, T.38 S., R.9 E., Klamath County, Hydrologic Unit 18010203, at southeast end of lake, 1.4 mi upstream from outlet and 2.5 mi northwest of Main Street Bridge at Klamath Falls.

DRAINAGE AREA.--3,810 mi², approximately, including 26.2 mi² in closed basin of Crater Lake.

PERIOD OF RECORD.--May 1904 to September 1922 (gage heights only), October 1922 to current year. Monthend contents only October 1923 to September 1927, published in WSP 1315-B.

GAGE.--Water-stage recorder. Datum of gage is 4,098.22 ft above sea level, or 4,100.00 ft above Bureau of Reclamation datum. Gage readings have been reduced to elevations above Bureau of Reclamation datum. See WSP 1735 for history of changes prior to Nov. 10, 1923. Since Oct. 1, 1974, supplementary water-stage recorders at sites 7 mi north and 21 mi northwest at same datum (water-surface transfer by Pacific Power and Light Co.).

REMARKS.--Reservoir is formed by concrete dam at outlet of natural lake, completed in 1921, replacing a temporary dam built in 1919; controlled storage began Apr. 15, 1919. Capacity, 523,700 acre-ft between elevations 4,136.0 ft and 4,143.3 ft. Dead storage below elevation 4,136.0 ft is 211,300 acre-ft. Stored water may be diverted through "A" Canal for irrigation on land under Klamath project of Bureau of Reclamation, or released to Link River through dam or powerplants at Klamath Falls. Contents given herein represent those above elevation 4,136.0 ft. Prior to Oct. 1, 1973, contents given represented those above elevation 4,135.0 ft. Prior to Sept. 30, 1974, contents at end of month obtained by averaging elevations for last 3 days of month and first 3 days of following month to compensate for wind effect. Since Oct. 1, 1974, daily elevations are weighted mean of elevations at base and supplementary gages; contents at end of month are obtained from weighted midnight elevations of base and supplementary gages.

COOPERATION.--Capacity table furnished by Bureau of Reclamation, Klamath Project.

EXTREMES FOR PERIOD OF RECORD.--Maximum elevation, 4,144.98 ft about Apr. 20, 1904, from high-water marks; minimum recorded, 4,135.55 ft Oct. 30, 1944.

EXTREMES FOR CURRENT YEAR.--Maximum weighted daily elevation, 4,143.20 ft June 11; minimum weighted daily, 4,140.00 ft Sept. 30.

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

4,136	0	4,139	193,700	4,142	414,400
4,137	61,300	4,140	262,600	4,143	498,300
4,138	127,000	4,141	335,400	4,143.3	523,700

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4140.08	4140.37	4140.94	4141.14	4141.96	4142.16	4142.72	4142.97	4143.16	4143.07	4141.99	4140.75
2	4140.20	4140.39	4140.94	4141.17	4142.03	4142.18	4142.68	4143.00	4143.15	4143.08	4141.95	4140.71
3	4140.17	4140.40	4140.93	4141.19	4142.04	4142.22	4142.69	4143.04	4143.16	4143.04	4141.93	4140.66
4	4140.20	4140.42	4140.96	4141.25	4141.99	4142.26	4142.69	4143.08	4143.15	4143.02	4141.89	4140.61
5	4140.22	4140.42	4140.98	4141.25	4141.94	4142.30	4142.67	4143.13	4143.14	4143.00	4141.86	4140.55
6	4140.28	4140.43	4140.99	4141.28	4141.91	4142.31	4142.66	4143.14	4143.14	4142.98	4141.84	4140.52
7	4140.21	4140.48	4141.01	4141.30	4141.92	4142.27	4142.65	4143.16	4143.14	4142.96	4141.78	4140.50
8	4140.15	4140.51	4141.06	4141.31	4142.00	4142.25	4142.62	4143.15	4143.12	4142.93	4141.74	4140.46
9	4140.18	4140.52	4141.05	4141.33	4142.02	4142.25	4142.59	4143.14	4143.14	4142.89	4141.68	4140.43
10	4140.23	4140.52	4141.07	4141.32	4141.96	4142.26	4142.57	4143.08	4143.18	4142.85	4141.65	4140.40
11	4140.24	4140.54	4141.07	4141.36	4141.99	4142.27	4142.67	4143.07	4143.20	4142.82	4141.62	4140.38
12	4140.23	4140.54	4141.07	4141.40	4141.97	4142.27	4142.65	4143.10	4143.16	4142.79	4141.58	4140.34
13	4140.23	4140.55	4141.06	4141.42	4142.02	4142.31	4142.68	4143.12	4143.16	4142.74	4141.52	4140.31
14	4140.23	4140.57	4141.01	4141.46	4142.02	4142.35	4142.71	4143.09	4143.16	4142.69	4141.48	4140.29
15	4140.23	4140.54	4141.05	4141.54	4142.08	4142.38	4142.72	4143.09	4143.16	4142.67	4141.44	4140.27
16	4140.24	4140.56	4141.06	4141.61	4142.04	4142.44	4142.72	4143.09	4143.15	4142.64	4141.38	4140.24
17	4140.24	4140.59	4141.12	4141.74	4142.10	4142.47	4142.73	4143.07	4143.13	4142.59	4141.34	4140.21
18	4140.26	4140.56	4141.16	4141.77	4142.09	4142.48	4142.74	4143.06	4143.12	4142.54	4141.28	4140.17
19	4140.30	4140.60	4141.12	4141.92	4142.07	4142.50	4142.72	4143.04	4143.12	4142.49	4141.23	4140.18
20	4140.30	4140.65	4141.11	4141.97	4142.09	4142.51	4142.73	4143.05	4143.13	4142.44	4141.20	4140.16
21	4140.27	4140.68	4141.12	4142.00	4142.08	4142.47	4142.74	4143.09	4143.13	4142.41	4141.15	4140.12
22	4140.28	4140.67	4141.11	4142.06	4142.15	4142.52	4142.76	4143.11	4143.13	4142.36	4141.12	4140.10
23	4140.30	4140.66	4141.10	4142.05	4142.18	4142.58	4142.74	4143.10	4143.11	4142.30	4141.07	4140.08
24	4140.28	4140.70	4141.09	4142.05	4142.22	4142.68	4142.85	4143.09	4143.08	4142.26	4141.04	4140.07
25	4140.27	4140.74	4141.09	4142.03	4142.18	4142.71	4142.85	4143.14	4143.10	4142.22	4141.00	4140.06
26	4140.26	4140.80	4141.08	4142.08	4142.18	4142.67	4142.87	4143.12	4143.08	4142.18	4140.96	4140.07
27	4140.27	4140.80	4141.08	4142.10	4142.16	4142.69	4142.90	4143.09	4143.08	4142.17	4140.92	4140.06
28	4140.25	4140.82	4141.09	4142.04	4142.15	4142.78	4142.93	4143.12	4143.08	4142.14	4140.88	4140.02
29	4140.24	4140.84	4141.10	4142.03	---	4142.77	4142.94	4143.13	4143.08	4142.11	4140.85	4140.03
30	4140.22	4140.92	4141.12	4142.08	---	4142.67	4142.97	4143.16	4143.07	4142.07	4140.82	4140.00
31	4140.35	---	4141.13	4142.04	---	4142.70	---	4143.17	---	4142.03	4140.80	---
MEAN	4140.24	4140.59	4141.06	4141.65	4142.06	4142.44	4142.74	4143.10	4143.13	4142.60	4141.39	4140.29
MAX	4140.35	4140.92	4141.16	4142.10	4142.22	4142.78	4142.97	4143.17	4143.20	4143.08	4141.99	4140.75
MIN	4140.08	4140.37	4140.93	4141.14	4141.91	4142.16	4142.57	4143.07	4143.07	4142.03	4140.80	4140.00
(†)	288300	332400	346100	412800	427600	476200	493200	511000	504200	415200	319000	262600
(‡)	+16500	+44100	+13700	+66700	+14800	+48600	+17000	+17800	-6800	-89000	-96200	-56400

CAL YR 1997 MEAN 4141.63 MAX 4143.14 MIN 4140.08 AC-FT† -20900
WTR YR 1998 MEAN 4141.77 MAX 4143.20 MIN 4140.00 AC-FT‡ -9200

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

KLAMATH RIVER BASIN

11507500 LINK RIVER AT KLAMATH FALLS, OR

LOCATION.--Lat 42°13'25", long 121°47'35", in SW 1/4 NW 1/4 sec.32, T.38 S., R.9 E., Klamath County, Hydrologic Unit 18010204, on right bank 600 ft upstream from outlet of Keno Canal and 0.4 mi upstream from Main Street Bridge at Klamath Falls.

DRAINAGE AREA.--3,810 mi², approximately, including 26.2 mi² in closed basin of Crater Lake.

PERIOD OF RECORD.--May 1904 to current year. Records since October 1983 equivalent to earlier records if flow in Keno Canal is added to flow past station.

GAGE.--Water-stage recorder. Datum of gage is 4,083.71 ft above sea level, or 4,085.50 ft above Bureau of Reclamation datum. Prior to Sept. 14, 1912, water-stage recorder or nonrecording gages at several sites within 0.5 mi of present site at various datums. Sept. 14, 1912, to Nov. 23, 1923, at site 600 ft downstream at datum 5.42 ft lower. Nov. 24, 1923, to Nov. 15, 1961, at site on left bank at present datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1919 by Upper Klamath Lake (station 11507001). Large diurnal fluctuation caused by powerplant upstream from station. Water diverted upstream from station by main or "A" Canal of Klamath project. Many other diversions upstream from lake. All records presented herein do not include flow in Keno Canal which, since September 1908, has diverted from Upper Klamath Lake at Link River Dam for power generation, and returns flow to Link River downstream from station.

AVERAGE DISCHARGE.--79 years (water years 1905-83), 1,593 ft³/s, 1,154,000 acre-ft/yr, not adjusted for "A" Canal. 15 years (water years 1984-98), 1,261 ft³/s, 913,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,400 ft³/s May 12, 1904, gage height at Main Street Bridge, 7.30 ft, datum then in use, from floodmarks; minimum daily discharge, 17 ft³/s Dec. 13, 1937.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,280 ft³/s Mar. 25; minimum, 495 ft³/s Jan. 13, 14, result of regulation from Upper Klamath Lake, minimum daily, 529 ft³/s Jan. 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	711	715	810	809	4410	2410	4320	1260	3480	1170	954	1070
2	878	717	807	809	4230	2040	4270	1580	3470	1180	945	1300
3	837	761	800	760	3810	1840	4270	1500	3480	1180	998	1510
4	779	876	861	693	3750	1980	4280	1650	3460	982	1090	1390
5	770	979	875	604	3660	2830	4280	2420	3460	829	1140	1010
6	700	850	656	706	3620	3220	4280	3270	3180	744	1130	810
7	665	826	642	773	3480	3090	4290	3730	2550	799	1190	999
8	693	994	777	820	3430	3090	3690	4060	2140	1390	1290	1210
9	863	1010	1120	1130	3310	2600	2590	4030	2130	1100	1120	1210
10	920	998	1240	1300	2810	1950	2260	3800	2020	1050	1080	1060
11	1040	993	1250	1100	2520	1840	2320	3350	2340	1120	1160	719
12	1040	1060	1250	1090	2240	1420	2300	3530	2600	1150	1390	715
13	1040	1090	1240	579	2060	933	2310	4380	2200	1140	1600	721
14	1030	1090	1240	529	2050	935	2190	4510	1960	1140	1500	808
15	1040	934	1230	791	2070	1040	2080	4500	2250	1200	972	907
16	1050	902	1210	1030	2040	1100	1990	4580	2300	1170	899	945
17	946	945	1160	545	2060	1520	2240	4470	2010	1120	899	1060
18	924	1010	1390	531	2330	1900	2080	4170	1760	1300	897	1020
19	928	916	1580	1090	2530	1800	2270	3300	1040	1340	896	914
20	1020	894	1500	1540	2790	1730	1860	2950	866	1330	1020	811
21	1140	998	1500	1400	3060	1830	1170	2770	1260	1420	1070	767
22	1230	995	1490	2090	2900	2070	858	3010	1310	1500	1060	764
23	1260	894	1570	3380	2630	3100	686	3460	1580	1430	976	654
24	1260	897	1570	3740	2880	4260	928	3460	1430	1180	874	642
25	1260	846	1460	3350	3180	5150	827	3480	1040	865	784	643
26	1260	790	1310	3610	2870	4870	760	3470	948	820	781	644
27	1250	788	1090	3730	2610	4560	847	3220	950	741	817	646
28	1240	682	813	4320	2550	4460	1150	3110	843	699	1000	658
29	1240	589	808	4490	---	4440	1190	3480	845	836	922	664
30	1190	721	806	4620	---	4260	1190	3490	1030	1290	805	662
31	935	---	807	4560	---	4280	---	3490	---	1270	721	---
TOTAL	31139	26760	34862	56519	81880	82548	69776	103480	59932	34485	31980	26933
MEAN	1004	892	1125	1823	2924	2663	2326	3338	1998	1112	1032	898
MAX	1260	1090	1580	4620	4410	5150	4320	4580	3480	1500	1600	1510
MIN	665	589	642	529	2040	933	686	1260	843	699	721	642
AC-FT	61760	53080	69150	112100	162400	163700	138400	205300	118900	68400	63430	53420

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	998	1162	1346	1449	1576	1977	1861	1409	1045	783	771	771			
MAX	2125	3739	4075	5832	4797	5261	3801	3338	1998	1112	1032	1205			
(WY)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
MIN	606	434	451	372	214	119	342	286	648	543	551	362			
(WY)	1990	1992	1995	1995	1994	1992	1991	1991	1990	1987	1991	1992			

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	622358	640294		
ANNUAL MEAN	1705	1754		
HIGHEST ANNUAL MEAN			2200	1984
LOWEST ANNUAL MEAN			547	1992
HIGHEST DAILY MEAN	6920	Jan 8	5150	Mar 25
LOWEST DAILY MEAN	303	Aug 2	529	Jan 14
ANNUAL SEVEN-DAY MINIMUM	406	Jul 29	650	Sep 23
ANNUAL RUNOFF (AC-FT)	1234000		1270000	
10 PERCENT EXCEEDS	4170		3670	
50 PERCENT EXCEEDS	1030		1210	
90 PERCENT EXCEEDS	665		761	
				2820
				889
				393

LOCATION.--Lat 42°05'05", long 122°04'20", in SE 1/4 SE 1/4 sec.14, T.40 S., R.6 E., Klamath County, Hydrologic Unit 18010206, on right bank 0.7 mi downstream from John C. Boyle powerplant, 8 mi downstream from Spencer Creek, and 8.5 mi southwest of Keno, and at mile 219.7.

PERIOD OF RECORD.--January 1959 to current year. Prior to Oct. 1, 1961, published as "below Big Bend powerplant."

REVISID RECORDS.--WDR OR-87-1: 1967.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 3,274.82 ft above sea level (levels by Pacific Power & Light Co.).

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated by Upper Klamath Lake (station 11507001). Large diurnal fluctuation caused by Keno and John C. Boyle powerplants. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--39 years (water years 1960-98), 1,821 ft³/s, 1,319,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft³/s Feb. 21, 1996, gage height, 9.50 ft; minimum discharge, 283 ft³/s Feb. 17, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,080 ft³/s Mar. 26, gage height, 8.32 ft; minimum discharge, 305 ft³/s Nov. 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1150	1360	1690	1950	6010	3290	6200	1610	5370	1050	1080	1430
2	1390	1360	1690	1650	5450	3470	6650	1710	5180	933	1080	1500
3	1380	1480	1720	1260	5110	3800	6710	2020	5200	1030	1070	1280
4	1230	1470	1630	1320	5900	3920	6790	1980	5090	925	1060	1340
5	1200	1340	1630	1890	5570	4450	6970	2940	4950	1030	1040	1190
6	1190	1480	1390	1570	5010	4750	7260	4400	4780	997	1050	1190
7	1120	1520	1980	1480	4940	4470	6800	5200	4180	800	1050	1300
8	1280	1540	1850	1780	4650	4430	6850	6090	3610	787	1180	1310
9	1460	1690	1940	1710	4690	4060	6870	6330	3350	1000	1100	1480
10	1470	1640	1820	2130	4260	3270	4570	5700	3370	939	1070	1380
11	1470	1580	1970	1790	3640	3100	4050	4990	3400	803	1060	1460
12	1360	1780	2000	2080	3390	2740	3860	5480	3450	866	1130	1350
13	1340	1680	1430	2080	3410	2340	4410	5970	3450	1240	1340	1260
14	1260	1730	1420	2200	3420	2360	4420	6270	3490	830	1410	1650
15	1470	1460	1900	2260	3430	2340	4410	6490	3530	946	1110	1370
16	1380	1420	1560	2170	3430	2300	4400	6500	3310	809	1010	1390
17	1410	1790	1780	2370	3420	2660	4360	6670	2990	893	1410	1260
18	1460	1630	2130	2870	3460	2980	3950	6790	2540	917	479	1270
19	1380	1610	2010	2930	3900	2990	3840	6210	2270	904	747	1210
20	1460	1720	2140	3120	3740	3050	3510	5140	1630	890	1190	1210
21	1510	1630	2180	3110	3810	3040	2650	4890	1550	878	1180	1200
22	1570	1380	2500	3490	3820	3070	2160	5210	1680	879	1080	1230
23	1660	1380	2920	4590	3830	4450	1940	5580	1710	908	1080	1320
24	1750	2090	2850	5160	3950	6380	1860	5490	1620	993	1090	1280
25	1710	1690	2830	5090	4280	7540	1700	5540	1330	984	1080	1160
26	1610	1800	2830	4970	3890	7550	1630	5580	1470	882	1260	1210
27	1510	1530	2830	5450	3390	6620	1740	5480	1420	846	1220	1200
28	1630	1540	2820	6540	3270	6220	1760	5610	1610	1200	1030	1200
29	1670	1530	2770	6370	---	6210	1960	5950	1140	1150	1050	1210
30	1600	1520	2770	6030	---	6070	1970	6100	1170	1190	1140	1250
31	1440	---	2730	6040	---	5860	---	5920	---	1090	1290	---
TOTAL	44520	47370	65710	97450	117070	129780	126250	159840	89840	29589	34166	39090
MEAN	1436	1579	2120	3144	4181	4186	4208	5156	2995	954	1102	1303
MAX	1750	2090	2920	6540	6010	7550	7260	6790	5370	1240	1410	1650
MIN	1120	1340	1390	1260	3270	2300	1630	1610	1140	787	479	1160
AC-FT	88310	93960	130300	193300	232200	257400	250400	317000	178200	58690	67770	77540

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1960 - 1998, BY WATER YEAR (WY)

MEAN	1547	1908	2341	2519	2588	3008	2491	1792	950	659	892	1197
MAX	3157	4506	5733	7905	7780	8755	5645	5156	2995	1339	1102	1876
(WY)	1985	1985	1984	1965	1965	1972	1974	1998	1998	1982	1998	1965
MIN	786	735	792	771	489	450	537	418	391	349	349	457
(WY)	1982	1992	1995	1993	1992	1992	1994	1992	1992	1992	1992	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1960 - 1998
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ANNUAL TOTAL	858173		980675				
ANNUAL MEAN	2351		2687			1821	
HIGHEST ANNUAL MEAN						3024	1984
LOWEST ANNUAL MEAN						564	1992
HIGHEST DAILY MEAN	9860	Jan 4	7550	Mar 26	10800		Mar 5 1972
LOWEST DAILY MEAN	326	Jul 15	479	Aug 18	302		Aug 30 1995
ANNUAL SEVEN-DAY MINIMUM	647	Jul 14	881	Jul 16	338		Aug 30 1992
ANNUAL RUNOFF (AC-FT)	1702000		1945000		1319000		
10 PERCENT EXCEEDS	5980		5650		3490		
50 PERCENT EXCEEDS	1490		1780		1310		
90 PERCENT EXCEEDS	845		1070		607		

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LOCATION.--Lat 41°55'41", long 122°26'35", in SE 1/4 NE 1/4 sec.17, T.47 N., R.5 W., Siskiyou County, Hydrologic Unit 18010206, on left bank 0.1 mi downstream from Bogus Creek, 0.6 mi downstream from Iron Gate Dam, and 5.9 mi northeast of Hornbrook.

PERIOD OF RECORD.--October 1960 to current year. Chemical data available October 1961 to September 1981. Water temperature data available October 1962 to September 1980.

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated by Upper Klamath Lake (station 11507001), capacity, 523,700 acre-ft. Iron Gate Reservoir, other smaller reservoirs, and diversions upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,400 ft³/s Dec. 22, 1964, gage height, 13.63 ft. from rating curve extended above 15,000 ft³/s, on basis of slope-area measurement of peak flow; minimum daily discharge, 389 ft³/s Aug. 25-28, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,770 ft³/s Mar. 25, gage height, 8.81 ft; minimum daily discharge, 1,110 ft³/s Aug. 2, 3, 5, 6, 15.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1290	1500	1750	1760	6480	3910	6570	2210	6370	1170	1120	1370
2	1330	1500	1750	1760	6120	4050	7100	2230	5890	1130	1110	1380
3	1330	1490	1750	1760	6070	4170	7270	2210	5580	1130	1110	1380
4	1330	1490	1750	1760	6210	4260	7540	2390	5470	1130	1120	1380
5	1320	1480	1750	1750	6400	4760	7540	3330	5310	1130	1110	1380
6	1320	1480	1750	1750	5350	5170	7850	3840	5140	1130	1110	1380
7	1320	1680	1750	1750	5250	4800	7920	5450	4720	1130	1120	1380
8	1380	1760	1750	1760	5100	4560	7410	6350	4030	1120	1120	1380
9	1530	1760	1750	1760	4900	4400	7450	6660	3430	1120	1120	1390
10	1520	1760	1750	1770	4510	3820	6480	6590	3210	1120	1120	1390
11	1520	1760	1750	1790	3980	3700	4790	5940	3320	1130	1120	1390
12	1520	1760	1750	1790	3630	3250	4310	5710	3660	1120	1120	1390
13	1520	1760	1750	1780	3620	2600	4310	6350	3700	1120	1120	1390
14	1520	1760	1750	2140	3640	2620	4390	6510	3810	1120	1120	1390
15	1520	1760	1750	2630	3650	2640	4430	6610	3780	1120	1110	1400
16	1520	1760	1750	3190	3610	2690	4410	6790	3650	1120	1120	1400
17	1520	1760	1750	4500	3600	2930	4480	6830	3330	1120	1120	1400
18	1520	1760	1750	4120	3600	3260	4590	6950	2800	1120	1120	1400
19	1520	1760	1760	4080	3970	3230	4460	6540	2200	1120	1120	1400
20	1520	1760	1770	3920	4040	3240	4190	6180	1820	1120	1120	1400
21	1520	1750	1960	3990	4380	3250	3450	6020	1790	1130	1120	1390
22	1520	1760	2130	4060	4330	3600	2480	5580	1870	1120	1120	1400
23	1510	1760	2180	4750	4280	5090	2000	5620	2380	1120	1120	1410
24	1510	1760	2100	5580	4310	7210	1990	5760	1790	1130	1120	1410
25	1520	1770	1760	5510	4470	8680	1960	6150	1760	1130	1120	1410
26	1520	1760	1760	6050	4480	8660	1940	6140	1570	1120	1120	1410
27	1510	1760	1770	6840	3850	7920	1990	5950	1580	1120	1120	1410
28	1510	1750	1770	6710	3800	7290	2150	5820	1580	1120	1120	1410
29	1580	1750	1760	7530	---	6960	2200	6400	1570	1120	1120	1410
30	1760	1760	1760	7050	---	6800	2210	6610	1570	1120	1120	1410
31	1650	---	1760	6580	---	6660	---	6610	---	1120	1130	---
TOTAL	45980	51080	55740	112160	127630	146180	139860	172330	98680	34870	34680	41840
MEAN	1483	1703	1798	3618	4558	4715	4662	5559	3289	1125	1119	1395
MAX	1760	1770	2180	7530	6480	8680	7920	6950	6370	1170	1130	

MEAN	1651	2113	2739	3023	3152	3614	2998	2140	1114	770	976	1298
MAX	3353	5254	6735	9553	9150	10780	6922	5559	3289	1429	1208	2052
(WY)	1985	1985	1984	1997	1965	1972	1971	1998	1998	1982	1965	1965
MIN	852	873	889	888	525	511	572	512	506	428	398	538
(WY)	1982	1992	1992	1992	1992	1992	1994	1992	1992	1992	1992	1992

ANNUAL TOTAL	958316		1061030				
ANNUAL MEAN	2626		2907			2127	
HIGHEST ANNUAL MEAN						3657	1965
LOWEST ANNUAL MEAN						641	1992
HIGHEST DAILY MEAN	18500	Jan 1	8680	Mar 25		25000	Dec 22 1964
LOWEST DAILY MEAN	804	Jul 21	1110	Aug 2		389	Aug 25 1992
ANNUAL SEVEN-DAY MINIMUM	807	Jul 19	1110	Jul 31		390	Aug 24 1992
INSTANTANEOUS PEAK FLOW			8770	Mar 25		29400	Dec 22 1964
INSTANTANEOUS PEAK STAGE			8.81	Mar 25		13.63	Dec 22 1964
INSTANTANEOUS LOW FLOW						389	Aug 25 1992
ANNUAL RUNOFF (AC-FT)	1901000		2105000			1541000	
10 PERCENT EXCEEDS	6860		6380			4220	
50 PERCENT EXCEEDS	1640		1760			1400	
90 PERCENT EXCEEDS	1030		1120			731	

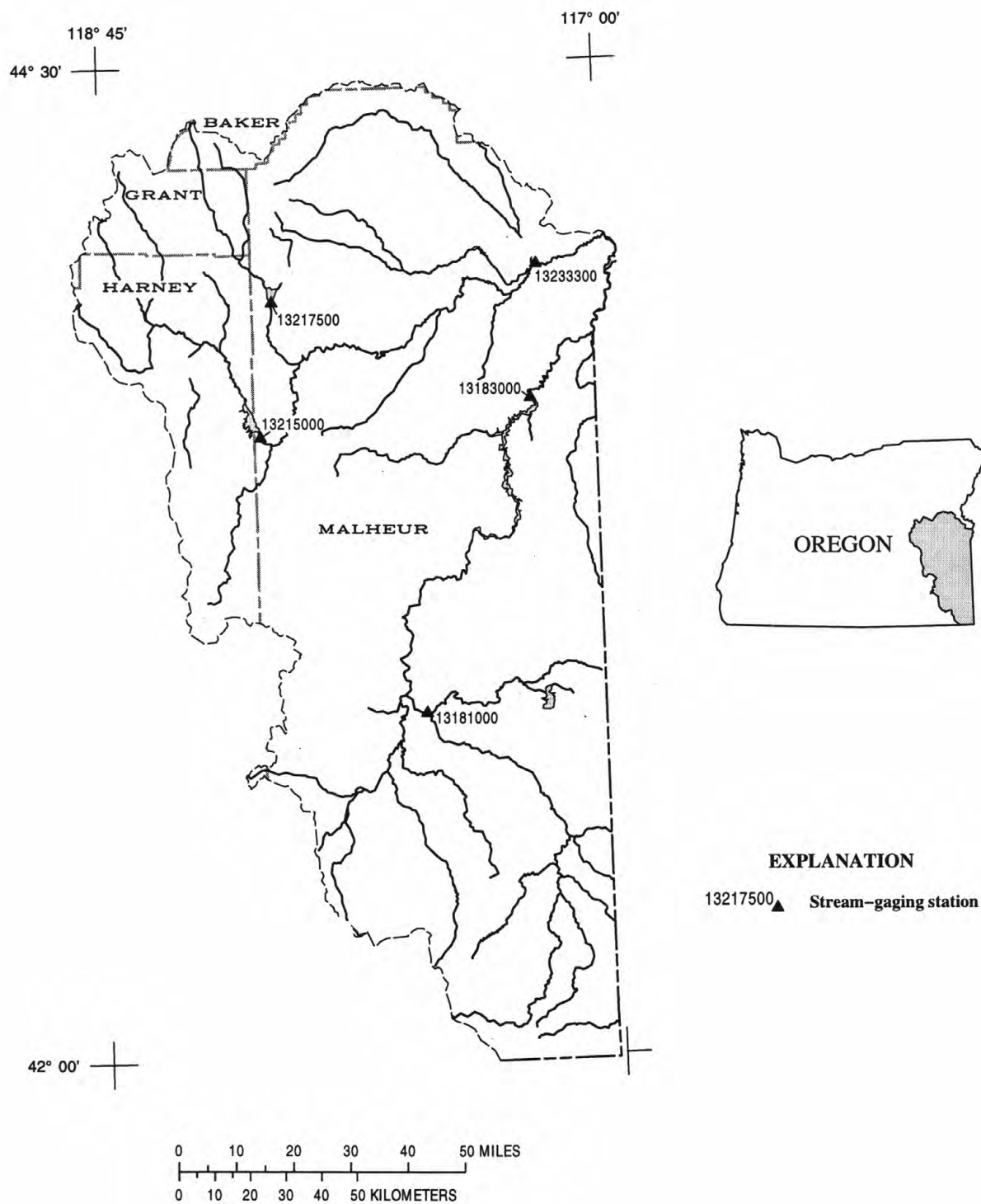


Figure 8. Location of surface-water stations in the Owyhee and Malheur River Basins.

LOCATION.--Lat 42°52'02", long 117°38'52", in SE 1/4 NE 1/4 sec.14, T.31 S., R.41 E., Malheur County, Hydrologic Unit 17050107, on right bank 0.5 mi downstream from Jordan Creek, 2.6 mi north of Rome, and at mile 122.4.

PERIOD OF RECORD.--October 1949 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,344.20 ft above sea level. Prior to Feb 10, 1960, at datum 0.24 ft lower.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Antelope Reservoir, capacity, 70,000 acre-ft, increased in 1970, and Wild Horse Reservoir, capacity, 32,690 acre-ft, and numerous small reservoirs. Diversions upstream from station for irrigation. Continuous water-quality records for the period October 1972 to June 1977 have been collected at this location. U. S. Bureau of Reclamation satellite telemetry at station.

AVERAGE DISCHARGE.--49 years (water years 1950-98). 972 ft³/s. 704,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 55,700 ft³/s Mar. 18, 1993, gage height, 20.11 ft; minimum discharge, 42 ft³/s Aug. 12, 1954, July 28, Aug. 5, 1961, July 31, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,600 ft³/s May 14, gage height, 10.65 ft; minimum discharge, 128 ft³/s Dec. 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	164	180	221	186	357	316	1650	2110	3650	848	299	191
2	167	180	224	189	339	320	1820	2130	3350	784	294	186
3	171	183	218	193	322	384	2540	2110	3270	724	290	176
4	169	189	206	199	313	986	2950	2120	3330	670	282	169
5	163	198	174	203	321	954	2720	2270	3270	639	264	154
6	164	200	168	196	323	696	2890	2250	3040	611	252	154
7	168	205	188	208	415	559	2800	2150	2930	583	237	158
8	169	205	221	213	390	467	2450	1930	2740	548	224	184
9	174	203	216	207	376	428	2320	2230	2640	517	213	186
10	177	201	210	196	380	389	2180	2870	2510	490	200	206
11	185	200	241	212	399	402	2140	7070	2430	479	190	211
12	188	200	225	212	367	437	2080	8800	2710	478	185	206
13	186	200	193	223	338	814	1920	10600	2350	470	178	194
14	188	200	171	235	327	1260	2040	13000	2360	437	186	193
15	192	198	193	241	316	1310	2000	12400	2250	405	187	209
16	184	196	210	249	311	1400	2030	11700	1850	388	184	212
17	183	196	214	267	312	1600	1800	9360	1630	369	179	211
18	183	199	220	306	327	1820	1810	9450	1520	357	173	206
19	182	200	222	358	315	1390	1670	7830	1400	359	160	203
20	179	200	188	775	312	1110	1660	6190	1300	356	156	205
21	175	200	179	677	311	1170	1780	5220	1280	337	166	203
22	173	200	185	521	320	1590	1800	4630	1220	312	171	202
23	174	198	178	443	335	4260	1930	4480	1100	351	171	194
24	172	199	163	394	424	7990	2490	4150	952	311	171	193
25	169	200	154	359	487	9880	2920	3940	974	254	166	206
26	168	197	167	344	411	7950	2880	4200	1210	259	162	225
27	168	198	173	329	377	5250	2640	7290	1250	271	159	202
28	168	202	175	332	328	3640	2340	7920	1120	274	157	206
29	173	216	167	335	---	2970	2200	5700	1030	271	152	212
30	178	220	182	344	---	2160	2160	4820	953	289	167	201
31	180	---	186	361	---	1690	---	4100	---	301	193	---
TOTAL	5434	5963	6032	9507	9853	65592	66610	175020	61619	13742	6168	5858
MEAN	175	199	195	307	352	2116	2220	5646	2054	443	199	195
MAX	192	220	241	775	487	9880	2950	13000	3650	848	299	225
MIN	163	180	154	186	311	316	1650	1930	952	254	152	154
AC-FT	10780	11830	11960	18860	19540	130100	132100	347200	122200	27260	12230	11620

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1998, BY WATER YEAR (WY)

MEAN	163	216	394	707	1283	2519	2938	2050	915	262	155	140
MAX	442	593	2898	4461	8820	9404	16960	10470	4870	1035	452	361
(WY)	1976	1971	1965	1971	1986	1972	1952	1984	1984	1984	1984	1984
MIN	85.3	107	104	114	129	233	145	86.5	89.6	61.2	56.0	62.5
(WY)	1955	1955	1955	1955	1955	1977	1992	1992	1992	1968	1992	1955

SUMMARY STATISTICS

FOR 1997. CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1950 - 1998

ANNUAL TOTAL	490607		431398			
ANNUAL MEAN	1344		1182		972	
HIGHEST ANNUAL MEAN					3400	1984
LOWEST ANNUAL MEAN					162	1992
HIGHEST DAILY MEAN	26700	Jan 2	13000	May 14	46900	Mar 18 1993
LOWEST DAILY MEAN	123	Aug 23	152	Aug 29	44	Aug 1 1968
ANNUAL SEVEN-DAY MINIMUM	135	Aug 18	162	Aug 24	47	Jul 26 1968
ANNUAL RUNOFF (AC-FT)	973100		855700		704100	
10 PERCENT EXCEEDS	3570		2920		2580	
50 PERCENT EXCEEDS	353		312		235	
90 PERCENT EXCEEDS	161		173		109	

OWYHEE RIVER BASIN

55

13183000 OWYHEE RIVER BELOW OWYHEE DAM, OR

LOCATION.--Lat 43°39'17", long 117°15'16", in SE 1/4 sec.18, T.22 S., R.45 E., Malheur County, Hydrologic Unit 17050110, on left bank 0.8 mi downstream from Owyhee Dam, 20 mi southwest of Nyssa, and at mile 27.3.

DRAINAGE AREA.--11,160 mi², approximately.

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

REVISED RECORDS.--WSP 983: 1941-42. WSP 1397: 1930, 1933, 1946.

GAGE.--Water-stage recorder. Datum of gage is 2,343.67 ft above sea level (levels by Bureau of Reclamation).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1932 by Lake Owyhee (station 13182500), and by many smaller reservoirs. Diversion of up to 457,000 acre-ft from Lake Owyhee during the year for irrigation of lands downstream from station and outside the basin. Many smaller diversions upstream from Lake Owyhee for irrigation upstream from station. Computation of monthly and annual adjusted flows discontinued in 1991.

AVERAGE DISCHARGE.--66 years (water years 1933-98), 426 ft³/s, 308,500 acre-ft/yr, not adjusted for storage or diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,900 ft³/s Apr. 15, 1952, gage height, 15.70 ft; no flow for part of Aug. 8, 9, 1932, when temporary diversion tunnel at Owyhee Dam was closed.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,800 ft³/s May 14, gage height, 11.36 ft; minimum daily discharge, 3.0 ft³/s Nov. 11, 12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	234	4.6	6.9	6.8	4.3	8.8	261	279	3260	255	258	249
2	235	4.6	7.1	7.0	4.2	125	260	280	2690	256	258	249
3	235	6.0	6.8	7.0	4.4	346	261	280	2370	256	257	248
4	235	6.9	6.8	6.8	7.1	339	261	281	2280	256	257	248
5	234	6.8	6.8	6.8	3.1	338	261	282	2320	256	257	248
6	235	6.8	6.9	6.6	3.2	338	261	282	2370	257	257	248
7	235	6.7	6.9	7.3	3.9	338	263	282	2350	258	257	248
8	234	7.4	6.9	6.7	4.4	338	266	283	1870	259	257	248
9	224	7.2	6.9	5.9	4.5	336	267	285	1620	258	256	248
10	234	5.1	6.8	5.7	4.9	587	270	286	1200	258	256	248
11	234	3.0	6.7	5.7	4.7	977	271	285	1200	258	255	248
12	234	3.0	6.8	5.5	5.0	973	274	285	1420	258	256	248
13	233	3.1	6.9	5.2	5.1	1400	275	1240	1570	258	256	248
14	234	3.3	6.8	5.1	5.5	1670	277	6070	1490	258	255	248
15	235	3.6	7.0	5.0	5.3	1640	277	9760	1440	258	255	246
16	235	3.9	7.1	4.9	5.2	2070	273	10200	1190	258	255	246
17	235	4.5	7.1	5.0	5.4	2380	269	9680	668	258	255	246
18	235	5.3	7.3	5.1	5.6	2270	269	8750	457	259	254	245
19	235	5.7	7.2	5.2	6.1	2370	271	8310	427	260	253	245
20	235	6.3	7.0	4.8	6.8	2370	271	6640	393	260	252	245
21	234	6.9	7.0	4.8	6.9	2370	271	4780	361	260	252	245
22	234	6.7	7.2	4.9	6.8	2360	272	4060	334	257	253	245
23	235	6.7	7.0	4.7	7.1	2360	268	3930	311	261	253	245
24	235	6.9	7.0	4.6	8.1	2360	273	3570	287	260	251	245
25	235	7.3	7.0	4.4	7.7	2370	274	3110	270	261	250	246
26	235	7.3	6.8	4.4	8.1	2370	274	3010	257	261	250	245
27	235	6.8	6.8	4.5	8.0	1970	275	4950	255	260	250	245
28	235	6.6	6.7	4.6	8.1	997	276	6480	255	259	250	245
29	235	6.5	6.5	4.8	---	549	277	6300	255	252	250	245
30	235	6.8	6.6	4.5	---	425	278	5870	255	258	250	245
31	127	---	6.8	4.2	---	261	---	4750	---	258	249	---
TOTAL	7155	172.3	214.1	168.5	159.5	39605.8	8096	114850	35425	8001	7874	7398
MEAN	231	5.74	6.91	5.44	5.70	1278	270	3705	1181	258	254	247
MAX	235	7.4	7.3	7.3	8.1	2380	278	10200	3260	261	258	249
MIN	127	3.0	6.5	4.2	3.1	8.8	260	279	255	252	249	245
AC-FT	14190	342	425	334	316	78560	16060	227800	70270	15870	15620	14670

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1998, BY WATER YEAR (WY)

	MEAN	62.3	9.52	24.6	152	411	1073	1726	878	339	171	152	125
MAX	242	196	703	2751	5198	7799	12790	8565	3246	618	312	248	
(WY)	1986	1933	1985	1971	1986	1972	1984	1984	1984	1933	1933	1933	
MIN	2.80	1.00	1.31	1.17	1.13	1.66	28.2	39.5	45.8	44.3	22.4	8.00	
(WY)	1955	1953	1993	1993	1993	1992	1955	1955	1948	1948	1948	1948	

SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1933 - 1998

	ANNUAL TOTAL	285340.4	229119.2	426	
ANNUAL MEAN		782	628	2991	1984
HIGHEST ANNUAL MEAN				22.3	1948
LOWEST ANNUAL MEAN					
HIGHEST DAILY MEAN	4160	Feb 7	10200	May 16	21800
LOWEST DAILY MEAN	3.0	Nov 11	3.0	Nov 11	1.0
ANNUAL SEVEN-DAY MINIMUM	3.5	Nov 11	3.5	Nov 11	1.0
ANNUAL RUNOFF (AC-FT)	566000		454500		308500
10 PERCENT EXCEEDS	2330		2010		730
50 PERCENT EXCEEDS	252		249		82
90 PERCENT EXCEEDS	6.9		5.1		2.7

SNAKE RIVER BASIN

13213100 SNAKE RIVER AT NYSSA, OR

LOCATION.--Lat 43°52'34", long 116°58'53", in NW 1/4 SW 1/4 NE 1/4 sec.7, T.6 N., R.5 W., Canyon County, Hydrologic Unit 17050115, on right bank, 300 upstream from U.S. Highway 20-26 bridge at Nyssa, 2.3 mi downstream from Boise River and at mile 385.2.

DRAINAGE AREA.--58,700 mi², approximately.

PERIOD OF RECORD.--November 1974 to September 1986, February 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,170 ft above sea level, from topographic map. Prior to 1989, station located on left bank, in Oregon.

REMARKS.--No estimated daily discharges. Records good. Station equipment includes satellite telemetry. Flow regulated by many reservoirs upstream from station. Water temperature data and biological data are contained in the reports of the Idaho District.

AVERAGE DISCHARGE.--21 years (water years 1976-86, 1989-98), 14,690 ft³/s, 10,650,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 57,900 ft³/s Apr. 19, 1984, gage height, 13.34 ft; minimum discharge, 4,110 ft³/s June 7, 1992, gage height, 4.32 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 50,700 ft³/s May 18, gage height, 12.55 ft; minimum discharge, 8,230 ft³/s Aug. 9, gage height, 5.27 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17700	17300	16700	16000	14600	18600	21200	15200	43700	19200	9680	10200
2	16600	17900	17600	16000	15200	18700	20900	15500	42100	19700	9830	10200
3	16900	17800	17100	16100	14800	19200	23200	14100	39700	20300	10200	10300
4	17300	17500	17200	16300	15800	19300	22200	14100	37200	20900	10300	10400
5	17200	16300	17400	16200	15100	19100	23600	15300	35900	16700	10300	10000
6	17100	15400	17900	16300	15000	18300	23800	14200	35100	16600	9410	10800
7	17400	16700	17500	16300	16100	17100	24100	14500	34800	14400	9520	10800
8	17700	16600	17900	15600	15900	15600	22800	14800	34100	11100	9410	11100
9	17600	16400	18100	15600	15100	16400	23700	15700	32300	13400	8750	11300
10	17700	16600	16800	16100	14500	14400	23800	15500	31900	12600	9590	11800
11	17900	16600	17700	15800	15300	14400	23400	19200	31400	10100	9660	12000
12	18300	16700	17000	15400	15700	13700	22500	19400	31100	11100	9430	12000
13	18200	16400	17000	16500	16500	14900	22600	25000	30700	10300	9250	12100
14	18400	15900	17700	16400	17200	15700	23500	29900	30100	10200	8900	12400
15	18800	15200	17600	15400	16700	16500	23400	40700	28400	10000	9720	12200
16	18500	14200	16900	16300	17700	18300	22200	45700	27200	9920	9720	12900
17	18600	12400	16800	16300	17800	20400	21400	47600	26100	9370	9270	12800
18	17900	12500	16700	16100	17400	21500	20800	49500	23200	9250	9240	12600
19	17800	13800	17700	15100	17600	22100	21300	48000	22300	9120	9770	11400
20	17800	10900	17000	16100	18000	24200	20200	47000	22100	9420	9540	11500
21	18500	10600	16600	16400	17900	22800	20200	42400	21000	8970	9360	11800
22	18000	13500	16600	16100	19000	23200	19100	41500	20700	8860	9730	12900
23	17600	14300	16600	15800	18800	23600	19300	41800	19000	8500	10400	12600
24	17600	15000	16200	15700	19000	23700	19100	41200	18600	8900	10000	11400
25	17300	16100	15900	15500	18600	24800	17600	40300	19200	9080	9510	13000
26	17400	16600	16700	15400	18000	26900	17300	41600	18800	9430	10400	14100
27	17700	16700	16300	15400	18800	25900	17600	44400	16900	9500	9690	13900
28	17500	16200	14800	15300	18400	24400	17500	47700	18100	9350	9530	13500
29	17300	17400	15100	15600	---	21700	17400	46900	18100	9100	10200	12400
30	17900	16900	16400	15400	---	20900	16700	46200	19100	9190	10100	13200
31	17600	---	16000	15000	---	21200	---	45400	---	9710	10000	---
TOTAL	549800	466400	523500	491500	470500	617500	632400	1000300	828900	364270	300410	357600
MEAN	17740	15550	16890	15850	16800	19920	21080	32270	27630	11750	9691	11920
MAX	18800	17900	18100	16500	19000	26900	24100	49500	43700	20900	10400	14100
MIN	16600	10600	14800	15000	14500	13700	16700	14100	16900	8500	8750	10000
AC-FT	1091000	925100	1038000	974900	933200	1225000	1254000	1984000	1644000	722500	595900	709300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1998, BY WATER YEAR (WY)

	MEAN	12460	13070	13520	14820	16130	18640	21420	20520	17430	9071	8825	10850
MAX	21360	24660	24320	30290	38580	40010	43970	49060	41100	16480	12620	17110	
(WY)	1985	1985	1984	1984	1997	1986	1984	1984	1984	1983	1997	1997	
MIN	8102	8924	8902	8908	8562	8018	6033	5367	5223	5546	5075	6664	
(WY)	1993	1993	1993	1993	1993	1992	1991	1992	1992	1992	1992	1992	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1975 - 1998
ANNUAL TOTAL	8953590	6603080	
ANNUAL MEAN	24530	18090	14690
HIGHEST ANNUAL MEAN			26260
LOWEST ANNUAL MEAN			7365
HIGHEST DAILY MEAN	48500	49500	57400
LOWEST DAILY MEAN	9530	8500	4240
ANNUAL SEVEN-DAY MINIMUM	10000	8980	4520
ANNUAL RUNOFF (AC-FT)	17760000	13100000	10650000
10 PERCENT EXCEEDS	39100	26000	27900
50 PERCENT EXCEEDS	22600	16700	11100
90 PERCENT EXCEEDS	11400	9810	7360

13215000 MALHEUR RIVER BELOW WARMSPRINGS RESERVOIR, NEAR RIVERSIDE, OR

LOCATION.--Lat 43°34'29", long 118°12'31", on line between NW 1/4 SW 1/4 and SW 1/4 NW 1/4 sec.17, T.23 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on left bank 0.9 mi downstream from Warm Springs Dam, 3.0 mi upstream from South Fork, 4.0 mi northwest of Riverside, and at mile 113.

DRAINAGE AREA.--1,100 mi², approximately.

PERIOD OF RECORD.--January 1906 to March 1907 and December 1908 (gage heights only), January 1909 to September 1910, December 1914 to July 1917, March 1919 to current year. Monthly discharge only for some periods, published in WSP 1317. Figures of discharge for January 1906 to March 1907, published in WSP 272 and 370, have been found to be unreliable and should not be used. Published as Middle Fork of Malheur River at Riverside 1906-7, as Middle Fork of Malheur River above South Fork, at Riverside 1909-10, as Malheur River above South Fork, at Riverside in WSP 370, 1906-10, and as Malheur River at Warm Springs reservoir site, near Riverside 1914-17.

REVISED RECORDS.--WSP 833: 1936. WSP 1063: 1942-45. WSP 1397: 1909-10, 1917. WSP 1447: 1955. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 3,305 ft above sea level, by barometer. See WSP 1317 or 1737 for history of changes prior to Sept. 29, 1949.

REMARKS.--No estimated daily discharges. Records good except for those below 10 ft³/s, which are poor. Flow completely regulated since November 1919 by Warm Springs Reservoir (station 13214500). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--79 years (water years 1920-98), 189 ft³/s, 136,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 7,200 ft³/s Mar. 1, 1910, gage height, 10.7 ft, site and datum then in use, from rating curve extended above 820 ft³/s; maximum discharge since storage began November 1919, 3,150 ft³/s Mar. 22, 1984, gage height, 9.70 ft, from floodmark; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,230 ft³/s Apr. 25, gage height, 6.50 ft; minimum discharge, no flow many days during December to March.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	182	.13	.10	.00	.00	.08	94	436	597	514	587	499
2	181	.12	.08	.00	.01	.10	320	436	432	583	584	499
3	171	.12	.06	.02	.03	.12	542	437	413	593	573	483
4	164	.12	.06	.04	.04	.11	662	509	462	591	567	463
5	164	.12	.05	.02	.03	.08	709	684	463	590	573	447
6	164	.14	.04	.00	.04	.08	709	759	417	563	589	440
7	164	.14	.05	.00	.04	.07	709	730	397	535	591	440
8	162	.14	.09	.01	.04	.06	707	676	383	526	590	430
9	160	.14	.08	.00	.04	.06	292	620	310	533	591	408
10	135	.14	.05	.00	.02	.05	4.1	600	312	558	581	353
11	121	.12	.04	.00	.04	.04	5.8	600	361	557	573	270
12	121	.11	.02	.01	.06	.03	6.3	600	381	551	573	239
13	107	.11	.02	.02	.09	.01	341	568	391	568	579	239
14	86	.11	.00	.07	.12	.00	700	582	383	578	582	225
15	79	.11	.00	.09	.13	.00	766	599	320	577	581	199
16	79	.10	.02	.07	.10	.00	803	543	302	583	580	175
17	30	.11	.04	.11	.09	.00	801	511	273	586	572	167
18	.10	.10	.03	.09	.07	.00	799	512	299	577	568	167
19	.10	.10	.00	.09	.08	.00	341	278	364	569	568	167
20	.09	.09	.00	.06	.10	.00	3.5	128	388	577	567	167
21	.08	.09	.00	.02	.09	.00	161	132	404	588	564	167
22	.07	.07	.00	.02	.11	.00	257	132	483	575	556	167
23	.06	.09	.00	.03	.09	.00	259	132	536	573	548	167
24	.06	.11	.00	.03	.13	.00	610	132	545	585	553	157
25	.06	.17	.00	.02	.11	.00	1130	145	544	623	546	127
26	.08	.16	.00	.02	.10	231	1090	586	543	644	523	113
27	.09	.15	.00	.03	.09	498	778	798	542	614	512	113
28	.10	.13	.00	.01	.08	198	617	581	538	596	512	93
29	.12	.11	.00	.00	---	2.6	495	451	519	608	512	81
30	.12	.11	.00	.00	---	2.4	436	428	508	612	512	81
31	.12	---	.00	.00	---	2.6	---	536	---	597	504	---
TOTAL	2271.25	3.56	0.83	0.88	1.97	935.49	15147.7	14861	12810	17924	17411	7743
MEAN	73.3	.12	.027	.028	.070	30.2	505	479	427	578	562	258
MAX	182	.17	.10	.11	.13	498	1130	798	597	644	591	499
MIN	.06	.07	.00	.00	.00	.00	3.5	128	273	514	504	81
AC-FT	4510	7.1	1.6	1.7	3.9	1860	30050	29480	25410	35550	34530	15360

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1998, BY WATER YEAR (WY)

	MEAN	34.6	.80	7.30	19.2	37.5	85.7	316	425	344	433	356	199
MAX	138	19.8	323	452	763	1440	1603	1162	558	677	575	394	
(WY)	1953	1920	1984	1971	1983	1983	1984	1958	1953	1945	1946	1928	
MIN	.000	.000	.000	.000	.000	.000	.000	31.4	92.0	30.3	.041	.000	
(WY)	1934	1933	1933	1933	1933	1933	1935	1932	1942	1992	1988	1988	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1920 - 1998

ANNUAL TOTAL	98359.14	89110.68	
ANNUAL MEAN	269	244	189
HIGHEST ANNUAL MEAN			566
LOWEST ANNUAL MEAN			46.8
HIGHEST DAILY MEAN	1060	1130	3030
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	195100	176800	136900
10 PERCENT EXCEEDS	506	591	500
50 PERCENT EXCEEDS	269	132	4.0
90 PERCENT EXCEEDS	.07	.00	.00

MALHEUR RIVER BASIN

13217500 NORTH FORK MALHEUR RIVER AT BEULAH, OR

LOCATION.--Lat 43°54'28", long 118°09'08", in NW 1/4 NE 1/4 sec.22, T.19 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on left bank at Beulah, 0.3 mi downstream from Agency Valley Dam, 12 mi northwest of Juntura, and at mile 14.5.

DRAINAGE AREA.--440 mi², approximately.

PERIOD OF RECORD.--June 1926 to current year. Published as "near Beulah" June 1926 to September 1935.

REVISED RECORDS.--WSP 1397: 1927-32, 1934, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,261.20 ft above sea level. Prior to Apr. 25, 1926, water-stage recorder at site 1 mi downstream at different datum. Apr. 25, 1936, to Sept. 30, 1949, nonrecording gage at site 20 ft downstream at datum 1.0 ft higher. Oct. 1, 1949, to June 30, 1964, at present site at datum 1.0 ft higher.

REMARKS.--No estimated daily discharges. Records good except those below 20 ft³/s, which are poor. Flow regulated since 1935 by Beulah Reservoir (station 13217000). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--63 years (water years 1936-98), 144 ft³/s, 104,500 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,000 ft³/s May 7, 1942, gage height, 9.4 ft, present datum, from floodmark, caused by failure of gates at Agency Valley Dam, from rating curve extended above 1,100 ft³/s on basis of computation of peak flow over dam; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 779 ft³/s Apr. 25, 26, gage height, 4.36 ft; minimum daily discharge, no flow many days October to January.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	97	.00	.19	.00	.83	1.0	340	442	418	296	281	264
2	90	.00	.14	.00	.82	1.0	340	631	381	296	281	255
3	91	.00	.09	.09	.83	1.0	340	665	363	296	281	252
4	92	.00	.06	.33	.87	1.0	341	666	364	296	280	249
5	92	.00	.07	.32	.90	1.0	343	666	385	296	278	244
6	74	.00	.09	.28	.91	34	343	666	409	296	278	240
7	65	.00	.10	.28	.87	59	343	674	409	295	278	239
8	64	.00	.16	.28	.89	58	292	705	409	293	278	241
9	65	.00	.13	.26	.89	57	271	706	374	293	276	215
10	65	.00	.07	.23	.87	56	272	704	336	293	275	175
11	65	.00	.05	.44	.83	84	275	672	334	293	275	162
12	65	.00	.05	.39	.86	113	275	523	326	292	274	136
13	65	.00	.05	.37	.86	112	275	488	325	293	272	123
14	65	.00	.05	.41	.96	113	275	489	324	304	293	123
15	57	.02	.07	.48	.94	115	278	491	324	307	306	121
16	53	.06	.15	.52	.99	114	278	441	325	304	306	110
17	19	.07	.11	.59	.98	112	278	418	285	311	304	104
18	.00	.05	.00	.61	.99	113	278	427	264	301	302	112
19	.00	.08	.00	.66	1.0	115	278	463	264	293	304	117
20	.00	.11	.00	.61	.98	114	278	450	264	299	302	117
21	.00	.10	.00	.61	1.0	115	274	333	264	294	299	117
22	.00	.11	.00	.61	.98	168	319	293	288	290	299	117
23	.00	.14	.00	.61	1.0	276	659	328	299	290	299	117
24	.00	.16	.00	.63	.91	412	663	349	299	287	296	117
25	.00	.19	.00	.66	.93	562	695	410	299	287	296	117
26	.00	.18	.00	.67	.94	740	759	448	299	287	298	117
27	.03	.19	.00	.70	.96	714	641	523	299	287	290	117
28	.01	.19	.00	.72	.99	576	500	491	299	284	290	117
29	.04	.19	.00	.71	---	518	437	435	299	283	280	107
30	.02	.19	.00	.76	---	381	414	417	298	284	275	82
31	.00	---	.00	.80	---	342	---	418	---	283	273	---
TOTAL	1184.10	2.03	1.63	14.63	25.78	6178.0	11354	15832	9826	9103	8919	4724
MEAN	38.2	.068	.053	.47	.92	199	378	511	328	294	288	157
MAX	97	.19	.19	.80	1.0	740	759	706	418	311	306	264
MIN	.00	.00	.00	.00	.82	1.0	271	293	264	283	272	82
AC-FT	2350	4.0	3.2	29	51	12250	22520	31400	19490	18060	17690	9370

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1998, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1936	36.3	134	1954	.086	1974
1937	1.03	35.5	1936	.000	1938
1938	1.73	62.7	1943	.000	1936
1939	11.0	287	1943	.000	1938
1940	30.0	478	1965	.000	1938
1941	85.5	936	1983	.000	1938
1942	296	856	1958	2.29	1981
1943	356	810	1983	120	1977
1944	282	510	1974	53.7	1939
1945	274	402	1979	39.5	1992
1946	218	399	1980	30.4	1992
1947	138	341	1945	31.9	1961

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1936 - 1998

ANNUAL TOTAL	72926.76	67164.17	144
ANNUAL MEAN	200	184	335
HIGHEST ANNUAL MEAN			54.6
LOWEST ANNUAL MEAN			1936
HIGHEST DAILY MEAN	713	759	3700
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	144700	133200	104500
10 PERCENT EXCEEDS	451	418	365
50 PERCENT EXCEEDS	227	117	47
90 PERCENT EXCEEDS	.00	.00	.10

MALHEUR RIVER BASIN

59

13233300 MALHEUR RIVER BELOW NEVADA DAM, NEAR VALE, OR

LOCATION.--Lat 43°59'20", long 117°13'10", in NE 1/4 SW 1/4 sec.21, T.18 S., R.45 E., Malheur County, Hydrologic Unit 17050117, on right bank, 510 ft downstream from dam and headgates of Nevada Canal, and 1.5 mi northeast of Vale.

DRAINAGE AREA.--3,880 mi², approximately.

PERIOD OF RECORD.--June 1926 to September 1934, April 1936 to March 1942, March 1944 to September 1954, October 1993 to current year. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Elevation of gage is 2,220 ft above sea level, from topographic map. Prior to Nov. 17, 1930, at datum 1.00 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Many diversions for irrigation upstream from station. Since March 1930, Vale-Oregon Canal has diverted in sec.31 T.20 S., R.41 E., for irrigation upstream from station and on Willow Creek, a tributary which enters partly above and partly below station. Gilleman-Frohman Canal diverts on left bank in sec.8 T.19 S., R.44 E., for irrigation above and below station. Nevada Canal diverts on right bank 300 ft above station for irrigation below station. Flow regulated by Warm Springs Reservoir and, since December 1935, by Beulah Reservoir.

AVERAGE DISCHARGE.--5 years (water years 1994-98), 288 ft³/s, 208,800 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,530 ft³/s Feb. 28, 1940, gage height, 8.88 ft; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 24, 1957 reached a stage of 14.6 ft, discharge 21,000 ft³/s. Flood of Mar. 19, 1993 reached a stage of 13.31 ft, discharge 16,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,500 ft³/s May 28, gage height, 5.94 ft; minimum discharge, 14 ft³/s July 1, gage height, 0.82 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	208	147	160	131	234	328	724	541	1500	67	216	181
2	198	146	155	130	228	331	709	381	1520	49	194	193
3	190	152	151	138	224	447	860	428	1310	183	197	210
4	191	143	146	134	321	843	1160	492	1170	224	184	218
5	181	143	139	130	264	696	1300	528	1120	407	169	241
6	179	141	139	122	243	550	1360	609	1090	338	147	254
7	179	148	150	129	229	400	1390	694	1010	275	170	255
8	183	160	164	135	242	355	1360	677	935	268	185	269
9	208	157	154	127	229	352	1310	701	901	249	183	492
10	192	157	142	126	211	333	1100	684	761	241	191	576
11	199	159	138	130	210	319	643	740	593	247	181	502
12	198	159	138	126	213	377	581	791	517	240	155	398
13	196	157	e130	146	221	643	564	794	600	238	139	359
14	187	157	e130	172	225	881	625	794	503	200	142	345
15	176	155	142	209	252	939	1140	883	447	175	143	328
16	200	154	161	194	248	961	1160	986	375	159	159	333
17	209	157	162	232	278	927	1160	1250	279	132	165	321
18	196	157	154	839	268	955	1160	1450	198	141	162	296
19	204	160	144	786	253	832	1160	1280	110	144	148	267
20	193	163	133	584	242	698	1050	1140	73	121	156	268
21	176	159	136	383	256	633	401	828	86	107	161	262
22	144	156	124	318	382	596	375	832	74	112	162	265
23	127	156	128	283	425	817	543	851	62	108	169	267
24	120	158	136	282	420	1580	857	968	132	92	166	260
25	119	186	128	250	423	1690	1080	989	164	91	154	263
26	119	180	119	240	421	1680	1650	1400	149	104	145	285
27	120	180	126	275	387	1690	1770	1530	148	157	146	276
28	141	174	132	299	343	1790	1480	2320	148	166	151	273
29	139	170	132	270	---	1390	1100	1970	142	132	153	268
30	159	166	129	267	---	976	812	1620	115	157	157	275
31	165	---	132	250	---	824	---	1470	---	217	167	---
TOTAL	5396	4757	4354	7837	7892	25833	30584	30621	16232	5541	5117	9000
MEAN	174	159	140	253	282	833	1019	988	541	179	165	300
MAX	209	186	164	839	425	1790	1770	2320	1520	407	216	576
MIN	119	141	119	122	210	319	375	381	62	49	139	181
AC-FT	10700	9440	8640	15540	15650	51240	60660	60740	32200	10990	10150	17850

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1998, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998
MEAN	158	138	161	469	643
MAX	224	159	314	1589	1322
(WY)	1994	1997	1997	1997	1998
MIN	74.1	100	78.9	128	94.2
(WY)	1995	1995	1995	1994	1994

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1994 - 1998

ANNUAL TOTAL	153822	153164	
ANNUAL MEAN	421	420	288
HIGHEST ANNUAL MEAN			434
LOWEST ANNUAL MEAN			87.0
HIGHEST DAILY MEAN	6230	2320	6230
LOWEST DAILY MEAN	36	49	8.0
ANNUAL SEVEN-DAY MINIMUM	73	100	9.8
ANNUAL RUNOFF (AC-FT)	305100	303800	208800
10 PERCENT EXCEEDS	1080	1100	754
50 PERCENT EXCEEDS	181	224	154
90 PERCENT EXCEEDS	120	131	60

e Estimated

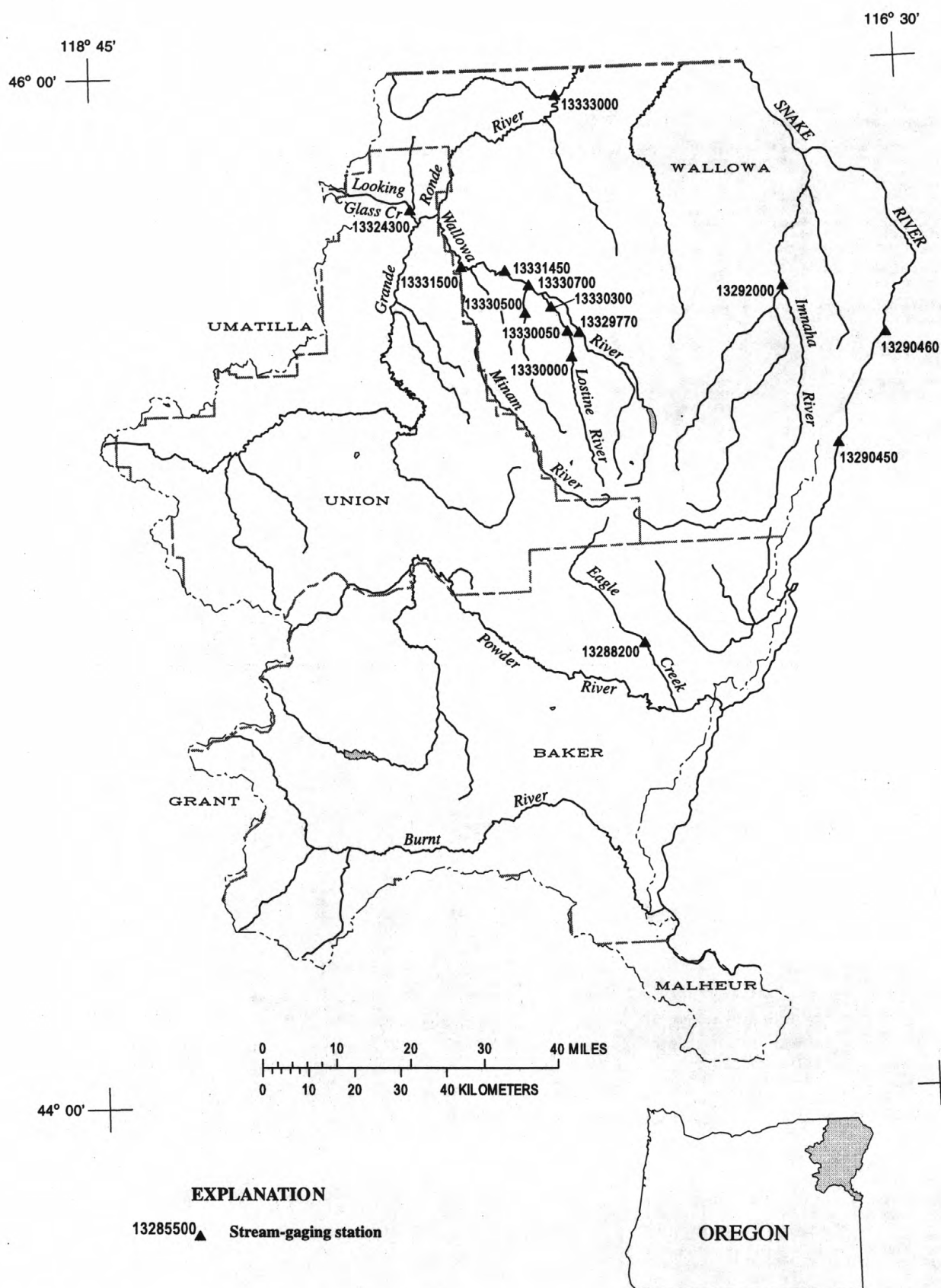
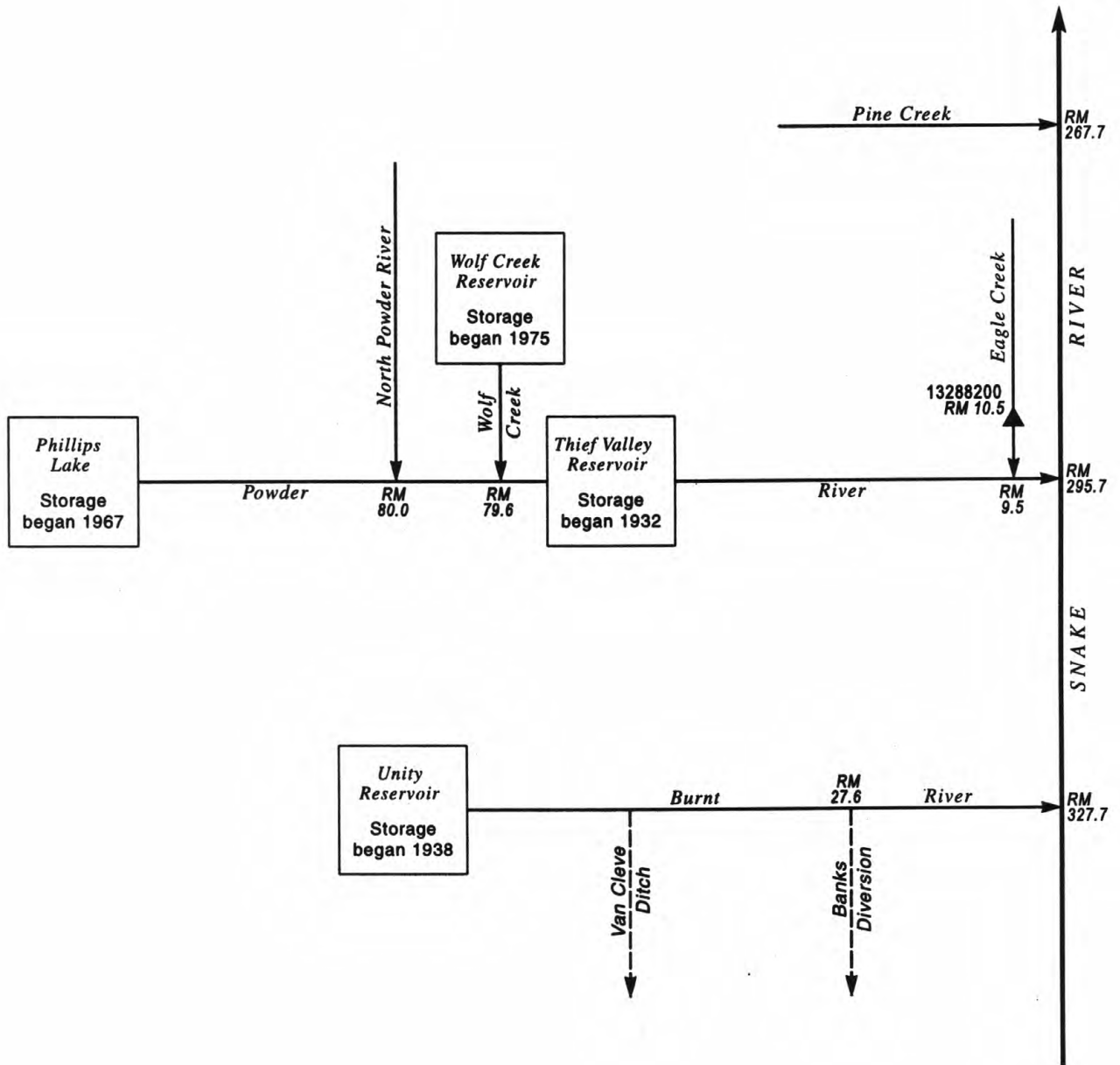


Figure 9. Location of surface-water and water-quality stations in the Powder River, Snake River Main Stem, Pine Creek, Imnaha River, and Grande Ronde River Basins.



EXPLANATION

- ▲ 13288200 Stream-gaging station
- RM 10.5 River mile
- Stream—Arrow shows direction of flow
- Tunnel, canal or pipe—Arrow shows direction of flow

Figure 10. Schematic diagram showing gaging stations in the Powder River Basin and Snake River Main Stem.

LOCATION.--Lat 44°52'50", long 117°15'10", in SE 1/4 sec.7, T.8 S., R.45 E., Baker County, Hydrologic Unit 17050203, Wallowa-Whitman National Forest, on left bank 0.5 mi upstream from Skull Creek, 6.5 mi northwest of New Bridge, and at mile 10.5.

PERIOD OF RECORD.--October 1957 to December 1998 (discontinued).

GAGE.--Water-stage recorder. Elevation of gage is 2,800 ft above sea level, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation. Some diversions upstream from station for irrigation and one small interbasin diversion for irrigation supply. All diversions are small compared to flow at station during irrigation season. Continuous water-quality records for the period June 1959 to September 1961 have been collected at this location.

AVERAGE DISCHARGE.--40 years (water years 1958-97), 317 ft³/s, 229,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,310 ft³/s July 12, 1975, gage height, 5.06 ft, from rating curve extended above 2,500 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 6.88 ft Jan. 25, 1962 (ice jam); minimum daily discharge, 30 ft³/s Nov. 28, 1976.

EXTREMES FOR PERIOD OCTOBER TO DECEMBER.--Peak discharges greater than base discharge of 1.700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 31	0630	*211	*1.68				
Minimum daily discharge. 84 ft ³ /s Dec. 25.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

[illegible]

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1998, BY WATER YEAR (WY)

MEAN	105	123	117	112	127	194	424	925	1004	416	147	105
MAX	323	264	319	258	279	493	658	1747	2134	1011	253	172
(WY)	1960	1974	1996	1997	1996	1986	1990	1958	1974	1975	1983	1978
MIN	56.1	67.9	69.8	52.7	60.0	64.8	191	252	276	84.0	62.8	61.4
(WY)	1989	1988	1994	1993	1994	1977	1967	1977	1977	1977	1977	1988

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

WATER YEARS 1958 - 1998

ANNUAL TOTAL	152142				
ANNUAL MEAN	417			317	
HIGHEST ANNUAL MEAN				519	1974
LOWEST ANNUAL MEAN				118	1977
HIGHEST DAILY MEAN	2210	May 16		3400	Jun 16 1974
LOWEST DAILY MEAN	84	Dec 25		30	Nov 28 1976
ANNUAL SEVEN-DAY MINIMUM	96	Dec 21		42	Jan 5 1993
ANNUAL RUNOFF (AC-FT)	301800			229600	
10 PERCENT EXCEEDS	1180			842	
50 PERCENT EXCEEDS	159			140	
90 PERCENT EXCEEDS	108			78	

e Estimated

SNAKE RIVER MAIN STEM

63

13290450 SNAKE RIVER AT HELLS CANYON DAM, IDAHO-OREGON STATE LINE

LOCATION.--Lat 45°15'05", long 116°41'50", in SE 1/4 SE 1/4 sec.33, T.3 S., R.49 E., unsurveyed (Willamette meridian), Wallowa County, Wallowa-Whitman National Forest, Hydrologic Unit 17050201, on left bank, 0.2 mi upstream from Hells Canyon Creek, 0.4 mi downstream from Deep Creek, 0.6 mi downstream from Hells Canyon Dam, 15.5 mi northeast of Homestead, Oregon, and at mile 247.0.

DRAINAGE AREA.--73,300 mi², approximately.

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

REVISED RECORDS.--WDR ID-78-2: 1969-70, 1972-76, WDR ID-79-2: 1972-73(m).

GAGE.--Water-stage recorder. Datum of gage is 1,400 ft above sea level (levels by Idaho Power Company).

REMARKS.--No estimated daily discharges. Records good. Station equipment includes satellite telemetry. Flow regulated by many reservoirs upstream from station, with a total usable capacity of more than 10,000,000 acre-feet, the most effective of which is Brownlee Reservoir, 38 mi upstream. Diurnal fluctuations caused by Hells Canyon powerplant. Diversions upstream from station for irrigation of about 3,820,000 acres, of which 742,000 acres are irrigated by withdrawals from ground water (1966 determination).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 103,000 ft³/s Jan. 2, 1997, gage height, 86.17 ft; minimum discharge, 1,580 ft³/s Mar. 19, 1967, gage height, 59.9 ft; minimum daily discharge, 4,360 ft³/s May 8, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 94,500 ft³/s May 29, gage height, 84.90 ft; minimum discharge, 7,010 ft³/s Aug. 16, gage height, 63.82 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29700	12100	12100	13800	25900	27600	31800	31800	75600	27500	19300	16200
2	27000	12100	12200	15700	25800	27500	31800	31800	66600	27700	18300	17900
3	26500	12100	12100	15900	26000	27600	31700	31900	61800	29000	19100	19600
4	27300	12100	12200	12200	27100	26900	31700	31900	61200	29300	18400	19200
5	27300	12200	12200	19200	26600	26300	31600	31900	62100	29100	18500	12300
6	27400	12200	12200	19400	26700	26900	31700	31800	58600	25400	16600	9630
7	27400	12200	12100	22300	27300	26000	31600	31800	50400	24800	13200	9810
8	27500	12100	12400	21700	27400	26700	31600	31900	54900	25000	11500	19200
9	27400	12000	15100	26600	27400	25900	31600	31900	54900	24000	13200	20000
10	28000	12000	19300	26700	27900	27300	31600	31800	52900	25300	15600	19900
11	28600	12100	19300	17700	28300	27600	31600	33300	45800	25400	15800	19500
12	27500	12100	19700	22300	28200	27400	31600	43100	47500	20300	16200	19900
13	28300	12100	20000	18800	27800	26700	31500	42300	50000	23500	16500	20400
14	31800	12100	16300	22100	29100	27100	31800	49000	49900	22600	15900	20100
15	32000	12100	20000	21200	29200	28100	31800	55600	47700	22000	13500	21300
16	32000	12100	18700	22500	28800	27600	31600	64700	46400	19900	8590	23700
17	31800	12100	19500	17500	27900	26400	31700	66200	40800	19900	13000	23900
18	31600	12100	19600	17200	28300	25200	31700	68200	35600	23300	13800	23700
19	14500	12100	19900	20100	28400	27700	31700	67500	32600	21900	15100	23000
20	12200	12100	20200	22700	28100	28300	31600	61000	32600	20200	14100	20300
21	12100	12200	17300	23700	27100	25900	31600	62700	34200	19300	10800	18000
22	12200	12200	17800	23800	28100	25700	31600	67800	31000	20000	9630	15800
23	12200	12100	20000	23500	27300	28100	30600	73400	30100	19600	8740	16800
24	12200	12100	15800	24700	27000	29900	29900	69700	27800	19200	13100	19400
25	12100	12100	13900	24600	28000	29800	30000	67600	28200	19000	12700	19400
26	12200	12200	15900	25700	28100	29700	30100	81100	29600	18900	11600	17900
27	12200	12200	14200	24900	27500	30600	30000	93400	35600	22300	12000	12400
28	12200	12200	12500	25900	27500	31800	29800	93100	30100	19100	14800	19400
29	12500	12200	17700	25300	---	31800	29800	93400	30800	19000	12600	19300
30	12400	12200	19300	26800	---	31700	31000	85700	29900	19400	9130	19400
31	12200	---	18900	26100	---	31700	---	78000	---	19400	14200	---
TOTAL	680300	363800	508400	670600	772800	867500	937700	1735300	1335200	701300	435490	557340
MEAN	21950	12130	16400	21630	27600	27980	31260	55980	44510	22620	14050	18580
MAX	32000	12200	20200	26800	29200	31800	31800	93400	75600	29300	19300	23900
MIN	12100	12000	12100	12200	25800	25200	29800	31800	27800	18900	8590	9630
AC-FT	1349000	721600	1008000	1330000	1533000	1721000	1860000	3442000	2648000	1391000	863800	1105000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

MEAN	15660	15950	18410	22680	24910	29090	30550	27960	25170	14220	11480	14170
MAX	24140	28630	30410	50150	58230	66340	61960	68840	59080	25550	19860	24960
(WY)	1972	1985	1984	1997	1997	1986	1984	1984	1984	1983	1997	1997
MIN	9962	9193	9391	12850	11570	10600	7371	6401	5868	6901	6583	6887
(WY)	1989	1993	1993	1991	1988	1991	1988	1977	1992	1977	1992	1977

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1966 - 1998

ANNUAL TOTAL	12646100	9565730	
ANNUAL MEAN	34650	26210	
HIGHEST ANNUAL MEAN			20820
LOWEST ANNUAL MEAN			36560
HIGHEST DAILY MEAN	98100	93400	9746
LOWEST DAILY MEAN	12000	8590	9746
ANNUAL SEVEN-DAY MINIMUM	12100	11200	98100
ANNUAL RUNOFF (AC-FT)	25080000	18970000	4360
10 PERCENT EXCEEDS	59300	41400	5330
50 PERCENT EXCEEDS	31800	25200	15080000
90 PERCENT EXCEEDS	12200	12200	39400
			16800
			9180

SNAKE RIVER MAIN STEM

13290460 SNAKE RIVER AT JOHNSON BAR, ID

LOCATION.--Lat 45°27'50", long 116°33'16", in SE 1/4 NE 1/4 sec.22, T.1 S., R.50 E., (Willamette meridian), Wallowa County, Hydrologic Unit 17060101, Hells Canyon National Recreation Area, on left bank opposite lower end of Johnson Bar, 0.5 mi upstream from mouth of Sheep Creek, and at mile 229.9.

DRAINAGE AREA.--73,400 mi², approximately.

PERIOD OF RECORD.--July 1959 to September 1992 (gage heights only), October 1992 to September 1995, October 1995 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is 1,226.341 ft above sea level (levels by Corps of Engineers.)

REMARKS.--Records good. Station equipment includes satellite telemetry. Diurnal fluctuations in stage are caused by Hells Canyon Powerplant. Records for years prior to the 1991 water year were not published, but are available from the Boise, Idaho Field Office.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,600 ft³/s June 13, 1995, gage height, 15.18 ft; minimum daily discharge, 5,360 ft³/s Aug. 3, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 23.54 ft May 29; minimum gage height, 4.56 ft Aug. 16.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10.66	6.34	6.25	6.76	9.68	9.99	11.18	11.08	20.48	10.14	8.00	7.13
2	10.02	6.34	6.27	7.12	9.60	10.00	11.18	11.09	18.88	10.07	7.75	7.62
3	9.76	6.36	6.25	7.21	9.66	9.98	11.13	11.11	17.94	10.52	7.97	7.94
4	9.98	6.36	6.26	6.31	9.95	9.87	11.17	11.12	17.76	10.58	7.84	7.94
5	9.97	6.38	6.25	7.94	9.87	9.68	11.13	11.15	18.01	10.61	7.80	6.23
6	9.99	6.37	6.24	8.17	9.83	9.81	11.09	11.14	17.45	9.61	7.36	5.39
7	10.00	6.35	6.25	8.79	10.04	9.59	11.05	11.13	15.74	9.49	6.44	5.37
8	10.05	6.34	6.31	8.58	9.99	9.80	11.03	11.15	16.57	9.47	6.02	7.84
9	10.03	6.31	6.89	9.87	10.04	9.58	10.88	11.19	16.67	9.24	6.40	8.26
10	10.11	6.30	8.15	9.87	10.14	9.95	10.88	11.12	16.25	9.52	7.07	8.13
11	10.38	6.32	8.04	7.73	10.24	10.01	10.88	11.39	14.68	9.58	7.17	8.10
12	10.21	6.32	8.20	8.73	10.24	9.96	10.88	13.63	15.01	8.34	7.17	8.11
13	10.35	6.32	8.30	8.01	10.14	9.81	10.85	13.37	15.64	9.04	7.31	8.19
14	11.33	6.33	7.35	8.72	10.45	10.02	10.96	14.02	15.61	8.83	7.21	8.20
15	11.37	6.30	8.29	8.45	10.47	10.23	11.02	15.44	15.13	8.61	6.64	8.45
16	11.20	6.28	7.99	8.83	10.41	10.14	10.97	17.54	14.81	8.22	5.26	9.04
17	11.10	6.29	8.15	7.66	10.12	9.85	10.98	18.26	13.49	8.14	6.17	9.09
18	11.08	6.29	8.19	7.57	10.26	9.54	11.00	18.88	12.25	8.87	6.48	9.13
19	7.17	6.29	8.25	8.20	10.27	10.13	11.00	18.84	11.47	8.55	6.89	8.89
20	6.33	6.26	8.32	8.81	10.24	10.37	10.99	17.73	11.38	8.05	6.62	8.23
21	6.31	6.26	7.64	9.01	9.92	9.74	11.02	17.99	11.81	7.75	5.76	7.82
22	6.31	6.26	7.68	9.18	10.20	9.67	11.02	18.99	11.06	8.09	5.33	7.10
23	6.31	6.28	8.32	9.04	9.99	10.29	10.82	20.10	10.78	8.19	5.12	7.40
24	6.32	6.27	7.21	9.31	9.90	10.78	10.62	19.50	10.25	7.97	6.21	8.11
25	6.30	6.26	6.74	9.40	10.13	10.73	10.60	19.06	10.26	7.96	6.29	8.16
26	6.33	6.27	7.18	9.65	10.18	10.69	10.61	21.37	10.65	7.87	5.94	7.79
27	6.35	6.28	6.86	9.40	9.95	10.90	10.60	23.39	12.21	8.85	5.92	6.18
28	6.32	6.27	6.35	9.57	9.98	11.19	10.59	23.30	10.85	7.97	6.80	8.02
29	6.42	6.30	7.60	9.58	---	11.19	10.59	23.36	10.91	7.98	6.14	7.99
30	6.42	6.28	8.08	9.87	---	11.19	10.86	22.17	10.81	8.12	5.29	8.00
31	6.35	---	8.05	9.70	---	11.18	---	20.84	---	8.08	6.40	---
MEAN	8.74	6.31	7.35	8.61	10.07	10.19	10.92	16.14	14.16	8.85	6.61	7.80
MAX	11.37	6.38	8.32	9.87	10.47	11.19	11.18	23.39	20.48	10.61	8.00	9.13
MIN	6.30	6.26	6.24	6.31	9.60	9.54	10.59	11.08	10.25	7.75	5.12	5.37

WTR YR 1998 MEAN 9.64 MAX 23.39 MIN 5.12

LOCATION.--Lat 45°33'45", long 116°50'00", in NW 1/4 SW 1/4 sec.16, T.1 N., R.48 E., Wallowa County, Hydrologic Unit 17060102, on left bank at Imnaha, 0.3 mi downstream from Big Sheep Creek, and at mile 19.3.

GAGE.--Water-stage recorder. Datum of gage is 1,941.14 ft above sea level. Prior to Aug. 6, 1934, nonrecording gage at site 0.25 mi upstream at different datum. Aug. 6-31, 1934, nonrecording gage at present site and datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation upstream from station. Water is diverted from Big Sheep Creek and tributaries upstream from station for irrigation in Wallowa River basin. National Weather Service satellite telemeter at station. Continuous water-quality records for the period August 1965 to September 1968 and from May 1976 to September 1977 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,200 ft³/s Jan. 1, 1997, gage height, 11.44 ft, from floodmark, curve extended above 7,900 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge observed, 16 ft³/s Nov. 22, 1931, result of freezeup; minimum daily, 25 ft³/s Nov. 22, 23, 1931.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 24	0500	2,320	4.64	May 23	0800	4,160	5.92
Apr. 24	0430	2,390	4.70	May 26	1900	*6,350	*7.06
May 5	0330	2,670	4.92	June 13	0700	2,190	4.73

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	191	277	194	174	265	240	659	2110	2390	1370	444	152
2	189	240	174	183	269	226	640	2240	2280	1330	347	152
3	192	227	145	182	258	237	638	2160	2160	1360	324	150
4	193	220	168	187	263	216	653	2290	2000	1260	308	150
5	191	214	167	175	283	210	687	2430	1900	1180	296	148
6	190	209	169	173	293	205	676	2290	1820	1120	285	148
7	187	218	207	179	300	203	663	2320	1720	1060	276	148
8	185	245	224	161	320	219	635	2290	1690	1020	268	156
9	211	230	196	131	339	208	620	2380	1640	980	261	276
10	224	220	151	e115	318	202	641	2050	1620	945	255	287
11	218	215	178	e100	307	200	691	2100	1920	897	250	202
12	219	208	158	e120	285	207	708	1950	1970	808	245	186
13	210	201	168	e150	283	252	680	1870	2060	732	237	175
14	208	196	193	e130	266	367	650	1730	1930	680	232	169
15	206	194	198	e150	266	444	649	1570	1760	630	227	163
16	202	190	187	171	248	503	607	1460	1670	599	223	159
17	200	203	198	198	245	522	611	1480	1450	566	218	158
18	197	199	189	198	234	475	617	1450	1410	521	213	158
19	194	205	149	214	234	435	627	1410	1610	494	203	171
20	192	211	147	207	228	426	643	1360	1430	465	187	177
21	189	207	186	194	253	458	743	1610	1340	433	178	166
22	187	196	148	197	261	557	1030	2650	1300	409	e175	173
23	189	197	124	196	255	1260	1760	3730	1330	389	172	184
24	196	210	191	215	255	2060	2180	3070	1340	377	175	183
25	186	220	173	212	234	1680	1710	3670	1330	366	173	189
26	186	207	150	215	246	1460	1430	5960	1460	352	167	215
27	186	207	158	243	215	1220	1360	4860	1380	355	162	198
28	184	200	178	260	226	1010	1460	4110	1330	356	159	188
29	192	197	189	267	---	870	1640	3310	1290	339	157	183
30	247	199	184	281	---	767	1880	2880	1290	337	155	180
31	335	---	175	274	---	705	---	2550	---	449	152	---
TOTAL	6276	6362	5416	5852	7449	18044	28188	77510	49820	22179	7122	5346
MEAN	202	212	175	189	266	582	940	2500	1661	715	230	178
MAX	335	277	224	281	339	2060	2180	5960	2390	1370	444	287
MIN	184	190	124	100	215	200	607	1360	1290	337	152	148
AC-FIT	12450	12620	10740	11610	14780	35790	55910	153700	98820	43990	14130	10600

MEAN	157	185	215	213	244	415	940	1569	1330	565	197	145
MAX	501	625	806	1343	570	1026	1760	2804	2612	1348	380	256
(WY)	1963	1974	1942	1997	1996	1995	1956	1948	1974	1975	1982	1978
MIN	81.5	80.0	88.6	69.3	82.4	114	345	445	361	123	78.8	82.8
(WY)	1937	1937	1936	1937	1937	1977	1977	1977	1992	1977	1931	1931

ANNUAL TOTAL	288270		239564						
ANNUAL MEAN	790		656			515			
HIGHEST ANNUAL MEAN						897			1974
LOWEST ANNUAL MEAN						184			1977
HIGHEST DAILY MEAN	12400	Jan 1	5960	May 26	12400		Jan 1	1997	
LOWEST DAILY MEAN	124	Dec 23	100	Jan 11	25		Nov 22	1931	
ANNUAL SEVEN-DAY MINIMUM	160	Dec 19	128	Jan 9	43		Jan 8	1993	
ANNUAL RUNOFF (AC-FT)	571800		475200		373200				
10 PERCENT EXCEEDS	1970		1780		100				
50 PERCENT EXCEEDS	335		245		230				
90 PERCENT EXCEEDS	189		167		112				

e Estimated

GRANDE RONDE RIVER BASIN

13324300 LOOKINGGLASS CREEK NEAR LOOKING GLASS, OR

LOCATION.--Lat 45°43'55", long 117°51'50", in NW 1/4 NW 1/4 sec.19, T.3 N., R.40 E., Union County, Hydrologic Unit 17060104, on left bank at Oregon State Fish and Wildlife Service fish hatchery, 310 ft upstream from Jarboe Creek, 2.3 mi northwest of Looking Glass, and at mile 2.3.

DRAINAGE AREA.--78.3 mi².

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,530 ft above sea level, from topographic map.

REMARKS.--Records fair except for the period June 10 to Sept. 30, which are poor. Records include a diversion by the fish hatchery 0.3 mi upstream from station of up to 50 ft³/s that is returned through the fish ladder to the gage pool.

AVERAGE DISCHARGE.--16 years (water years 1983-98), 139 ft³/s, 100,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,120 ft³/s Feb. 9, 1996, gage height, 7.41 ft, from rating curve extended above 1,000 ft³/s; minimum discharge, 25 ft³/s Oct. 11, 1983, result of regulation at fish hatchery upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 380 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 23	2300	451	5.56	May 3	1715	*690	*6.14
Apr. 23	2200	407	5.45				

Minimum daily discharge, 38 ft³/s Sept. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	81	74	70	92	80	162	480	185	75	66	50
2	55	74	73	75	89	84	161	523	174	76	58	53
3	59	69	73	73	87	86	155	580	175	77	61	50
4	59	68	70	73	84	87	156	569	174	71	59	52
5	60	62	66	71	84	85	152	540	165	70	57	e45
6	57	65	65	71	83	87	154	510	155	68	60	47
7	56	80	67	72	84	84	149	477	157	67	55	49
8	57	97	66	71	94	87	146	421	147	64	58	47
9	57	103	65	70	98	83	146	415	132	88	55	46
10	e57	101	66	71	93	87	156	351	125	75	54	48
11	58	89	66	73	95	93	158	309	127	71	61	47
12	59	63	68	73	89	95	155	286	120	64	71	47
13	57	63	67	74	88	103	153	269	114	64	58	45
14	54	67	67	75	88	122	151	260	103	69	54	43
15	52	68	67	73	88	133	144	243	107	71	58	e45
16	52	68	83	72	83	136	137	226	118	66	55	e50
17	52	71	87	81	89	126	134	223	107	66	55	46
18	51	71	79	82	87	119	136	220	101	74	58	44
19	51	77	74	85	82	113	136	208	96	67	56	e48
20	52	90	e73	83	84	113	143	196	92	64	55	44
21	51	94	e71	81	102	125	174	191	84	67	58	45
22	53	85	70	81	104	188	216	234	84	63	55	56
23	55	83	69	82	96	304	300	206	82	64	57	47
24	57	90	68	89	95	367	347	195	81	64	59	45
25	58	91	67	89	95	331	304	248	82	63	57	44
26	54	87	66	92	87	292	283	242	81	65	57	43
27	54	82	67	113	81	252	319	230	81	62	53	40
28	56	78	68	112	80	226	326	234	74	66	52	38
29	78	77	69	105	---	201	386	221	73	63	51	42
30	115	76	69	101	---	179	432	202	73	63	e53	39
31	117	---	70	96	---	172	---	196	---	61	e49	---
TOTAL	1860	2370	2170	2529	2501	4640	6071	9705	3469	2108	1765	1385
MEAN	60.0	79.0	70.0	81.6	89.3	150	202	313	116	68.0	56.9	46.2
MAX	117	103	87	113	104	367	432	580	185	88	71	56
MIN	51	62	65	70	80	80	134	191	73	61	49	38
AC-FT	3690	4700	4300	5020	4960	9200	12040	19250	6880	4180	3500	2750

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1998, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	53.4	72.4	84.3	91.2	144	203	328	361	158	68.8	53.3	51.8				
MAX	66.7	167	288	213	483	431	564	608	425	117	65.3	61.9				
(WY)	1986	1996	1996	1997	1996	1997	1997	1997	1984	1984	1985	1984				
MIN	45.2	46.8	53.2	52.9	54.8	83.3	202	114	57.4	47.0	37.1	40.1				
(WY)	1995	1988	1988	1987	1993	1985	1998	1992	1992	1994	1994	1994				

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1983 - 1998

ANNUAL TOTAL	81345	40573	
ANNUAL MEAN	223	111	139
HIGHEST ANNUAL MEAN			227
LOWEST ANNUAL MEAN			97.9
HIGHEST DAILY MEAN	1160	Apr 20	580
LOWEST DAILY MEAN	38	Aug 13	38
ANNUAL SEVEN-DAY MINIMUM	41	Aug 13	42
ANNUAL RUNOFF (AC-FT)	161300		80480
10 PERCENT EXCEEDS	607		222
50 PERCENT EXCEEDS	114		78
90 PERCENT EXCEEDS	52		49

e Estimated

GRANDE RONDE RIVER BASIN

67

13329770 WALLOWA RIVER ABOVE CROSS COUNTRY CANAL, NEAR ENTERPRISE, OR

LOCATION.--Lat 45°29'18", long 117°24'10", in SW 1/4 SE 1/4 sec.11, T.1 S., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank 300 ft upstream from Cross Country canal, 6 mi northwest of Enterprise, and at mile 32.5.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--April 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,330 ft above sea level, from topographic map.

REMARKS.--Records poor. Regulation by Wallowa Lake. Many diversions for irrigation upstream from gage. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--3 years (water years 1996-98), 339 ft³/s, 245,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,590 ft³/s July 9, 1997, gage height, 4.17 ft; maximum gage height, 4.27 ft May 16, 1997; minimum recorded discharge, 112 ft³/s Jan. 31, 1996, result of freeaep, but may have been less during period of ice effect Feb. 1-5, 1996.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 26	1500	1,150	3.62	June 25	2230	1,130	3.69
June 11	0415	1,100	3.56	July 11	0415	*1,220	*3.72
June 19	1145	1,110	3.67				

Minimum daily discharge, 140 ft³/s July 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	284	296	225	168	168	179	165	241	665	776	303	208
2	291	279	217	187	169	181	164	291	680	777	244	202
3	304	266	206	175	203	183	162	321	760	769	243	196
4	303	254	202	172	262	177	179	335	744	719	229	200
5	303	251	195	164	247	171	187	379	723	709	215	200
6	308	251	194	160	214	169	189	394	712	652	204	187
7	312	270	197	159	233	164	199	406	705	570	197	205
8	315	269	203	161	249	170	206	376	711	575	202	221
9	317	257	194	153	231	168	202	401	722	569	214	312
10	304	249	187	153	209	170	203	377	740	573	204	350
11	308	243	189	159	211	175	202	407	960	794	188	298
12	324	239	182	148	201	173	200	423	910	622	178	266
13	319	235	178	157	209	177	198	482	931	569	156	258
14	312	229	175	166	204	179	208	469	930	526	145	259
15	307	228	176	169	204	180	228	470	929	483	152	249
16	306	227	180	159	195	183	223	443	910	473	157	223
17	305	232	200	176	195	181	211	460	e850	427	168	215
18	300	229	186	180	189	175	202	432	e900	397	177	216
19	291	231	166	209	190	171	197	404	1000	349	186	247
20	284	230	172	199	189	168	190	382	898	315	200	247
21	279	237	172	188	202	168	185	440	871	283	215	246
22	272	233	163	182	200	172	187	624	938	240	232	241
23	268	234	163	183	192	194	207	571	950	212	240	237
24	264	247	169	226	188	222	214	537	997	199	246	234
25	258	244	166	211	175	206	195	757	1030	185	233	237
26	256	233	165	218	183	193	190	1030	994	172	243	255
27	247	231	166	227	171	189	183	870	864	160	250	238
28	242	227	172	205	174	183	189	771	790	146	243	228
29	264	226	174	199	---	177	197	740	750	140	238	221
30	309	231	172	201	---	170	219	741	728	165	217	218
31	373	---	161	180	---	170	---	694	---	349	213	---
TOTAL	9129	7308	5667	5594	5657	5538	5881	15668	25292	13895	6532	7114
MEAN	294	244	183	180	202	179	196	505	843	448	211	237
MAX	373	296	225	227	262	222	228	1030	1030	794	303	350
MIN	242	226	161	148	168	164	162	241	665	140	145	187
AC-PT	18110	14500	11240	11100	11220	10980	11660	31080	50170	27560	12960	14110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	1995	1996	1997	1998
MEAN	241	238	246	209
MAX	294	272	356	233
(WY)	1998	1996	1996	1997
MIN	200	199	183	180
(WY)	1997	1997	1998	1998

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1995 - 1998
ANNUAL TOTAL	130616	113275	
ANNUAL MEAN	358	310	339
HIGHEST ANNUAL MEAN			358
LOWEST ANNUAL MEAN			310
HIGHEST DAILY MEAN	1140	May 16	1140
LOWEST DAILY MEAN	161	Dec 31	140
ANNUAL SEVEN-DAY MINIMUM	166	Dec 21	156
ANNUAL RUNOFF (AC-FT)	259100		224700
10 PERCENT EXCEEDS	678		715
50 PERCENT EXCEEDS	270		225
90 PERCENT EXCEEDS	195		169

e Estimated

GRANDE RONDE RIVER BASIN

13330000 LOSTINE RIVER NEAR LOSTINE, OR

LOCATION.--Lat 45°26'20", long 117°25'35", in NW 1/4 sec.34, T.1 S., R.43 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 3.5 mi south of Lostine, and at mile 10.0.

DRAINAGE AREA.--70.9 mi².

PERIOD OF RECORD.--August 1912 to March 1914, April to September 1915, July 1925 to September 1991, April 1995 to current year. Monthly discharge only for some periods, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1913, 1942. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,650 ft above sea level, by barometer. See WSP 1317 or 1737 for history of changes prior to Dec. 16, 1953. Dec. 16, 1953 to Aug. 23 1977, at datum 1.04 ft higher.

REMARKS.--Records fair. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Diversions for irrigation upstream from station. Continuous water-quality records for the period October 1957 to September 1958 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--69 years (water years 1926-91, 1996-98), 194 ft³/s, 140,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,550 ft³/s June 16, 1974, gage height, 8.59 ft, present datum; minimum discharge, 7.5 ft³/s Mar. 2, 1966, result of freezeup; minimum daily, 10 ft³/s Nov. 28-30, 1936.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
July 3	0245	*979	*5.87				

Minimum discharge, 20 ft³/s Jan. 9, result of freeze-up.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	106	48	39	36	36	90	444	460	790	162	44
2	51	91	41	39	37	35	88	548	540	795	134	44
3	55	85	42	39	37	35	87	573	546	865	121	43
4	56	80	45	39	42	34	86	612	573	757	113	50
5	56	77	41	38	42	31	85	730	592	695	106	53
6	53	77	43	38	40	33	83	766	554	651	102	53
7	53	96	47	39	40	32	84	821	538	626	98	55
8	51	97	47	38	41	34	80	779	563	650	91	63
9	54	90	43	27	41	33	79	673	604	651	85	98
10	53	84	41	30	39	33	79	564	646	663	81	78
11	54	79	39	35	40	34	77	600	751	709	79	65
12	55	74	40	34	40	35	75	583	861	535	75	60
13	55	70	39	38	40	39	73	570	865	468	73	56
14	54	67	44	38	40	43	73	493	832	424	70	54
15	55	66	42	38	39	45	75	414	816	395	68	51
16	56	64	47	38	38	47	72	362	735	376	66	50
17	56	e65	52	44	38	47	71	332	582	345	64	48
18	56	e63	48	42	37	47	69	305	608	324	61	48
19	54	63	38	42	37	48	69	291	664	295	59	69
20	52	62	48	40	37	50	70	294	540	261	57	61
21	51	62	44	38	39	54	76	334	526	223	56	55
22	50	57	33	37	38	83	102	380	547	205	55	52
23	51	61	40	37	38	140	207	393	583	193	54	49
24	50	63	41	38	37	168	242	428	636	188	54	47
25	48	60	33	37	33	149	197	696	665	182	52	49
26	50	57	33	38	37	136	178	696	648	171	50	58
27	49	56	40	39	31	123	179	539	524	164	49	51
28	47	55	39	39	36	112	207	466	498	154	47	47
29	63	53	43	38	---	104	258	455	527	148	46	45
30	102	54	41	38	---	98	339	431	622	149	45	44
31	171	---	39	36	---	94	---	414	---	198	45	---
TOTAL	1810	2134	1301	1170	1070	2032	3550	15986	18646	13250	2318	1640
MEAN	58.4	71.1	42.0	37.7	38.2	65.5	118	516	622	427	74.8	54.7
MAX	171	106	52	44	42	168	339	821	865	865	162	98
MIN	47	53	33	27	31	31	69	291	460	148	45	43
AC-FT	3590	4230	2580	2320	2120	4030	7040	31710	36980	26280	4600	3250

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1926 - 1998, BY WATER YEAR (WY)

	MEAN	56.7	64.9	59.8	50.4	48.5	55.8	160	514	788	388	86.2	50.0
MAX	291	226	212	158	191	169	393	909	1374	913	180	104	
(WY)	1960	1928	1959	1974	1996	1986	1934	1928	1974	1975	1943	1978	
MIN	18.0	14.7	15.3	15.0	14.8	16.3	35.7	203	332	59.7	30.6	23.0	
(WY)	1937	1937	1937	1937	1937	1955	1975	1977	1926	1977	1931	1931	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1926 - 1998

ANNUAL TOTAL	94088	64907											
ANNUAL MEAN	258	178											
HIGHEST ANNUAL MEAN										194			
LOWEST ANNUAL MEAN										288			1974
HIGHEST DAILY MEAN	1490	Jun 4	865	Jun 13	2290	Jun 17	1974			90.9			1977
LOWEST DAILY MEAN	33	Dec 22	27	Jan 9	10	Nov 28	1936						
ANNUAL SEVEN-DAY MINIMUM	37	Dec 22	33	Mar 4	11	Nov 26	1936						
ANNUAL RUNOFF (AC-FT)	186600		128700		140200								
10 PERCENT EXCEEDS	798		583		605								
50 PERCENT EXCEEDS	84		60		64								
90 PERCENT EXCEEDS	50		38		28								

e Estimated

GRANDE RONDE RIVER BASIN

69

13330050 LOSTINE RIVER AT CAUDLE LANE, AT LOSTINE, OR

LOCATION.--Lat 45°29'22", long 117°26'08", in NW 1/4 SW 1/4 sec.10, T.1 S., R.43 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 500 ft downstream from bridge at Caudle Lane, at Lostine, and at mile 5.4.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--April 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,360 ft above sea level, from topographic map.

REMARKS.--Records fair except for those above 600 ft³/s, those below 15 ft³/s and estimated daily discharges, which are poor. Minam Lake, capacity 400 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--3 years (water years 1996-98), 202 ft³/s, 146,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,100 ft³/s June 1, 1997, gage height, 6.73 ft; minimum discharge, 7.3 ft³/s Sept. 2-4, 1998.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 6	2315	1,310	6.42	July 3	0215	*1,450	*6.50

Minimum discharge, 7.3 ft³/s Sept. 2-4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	87	49	39	46	44	80	356	408	883	84	7.8
2	42	77	43	39	44	42	78	438	476	893	71	7.7
3	43	73	e40	38	44	42	76	511	495	973	65	7.7
4	44	69	e42	38	49	41	75	568	544	759	59	7.6
5	45	66	e40	39	50	40	73	937	551	677	57	7.8
6	44	67	e42	38	48	43	71	1030	495	609	54	8.2
7	44	81	48	38	48	42	71	977	475	549	51	8.8
8	42	85	48	37	49	43	68	837	519	556	48	9.6
9	45	79	e44	e32	49	42	67	673	598	550	46	32
10	45	73	e40	e28	47	42	66	491	666	562	40	35
11	46	68	e39	e32	43	43	64	550	847	620	35	31
12	46	65	e40	e35	42	44	62	526	1000	423	33	30
13	47	62	e39	e38	43	47	61	496	1000	380	33	30
14	47	61	e44	e40	42	51	61	412	954	335	30	30
15	47	61	42	e42	42	52	60	346	930	319	29	30
16	47	60	45	e43	41	53	58	291	787	300	28	29
17	48	60	50	51	42	54	58	262	511	255	e25	28
18	47	60	46	49	40	53	56	231	554	228	e23	27
19	47	60	e40	50	41	53	56	212	630	201	22	41
20	47	59	e46	47	41	54	57	219	452	172	21	39
21	46	58	e43	45	44	58	61	259	446	141	21	37
22	45	54	e34	45	43	76	79	297	450	124	20	35
23	46	59	e40	44	43	122	149	304	475	107	20	33
24	45	62	42	45	43	147	170	340	536	100	19	31
25	43	59	e34	44	39	135	136	779	622	92	17	32
26	47	55	e34	45	44	123	130	823	593	78	11	42
27	46	53	e38	46	40	113	131	530	435	72	11	40
28	45	52	39	46	44	104	143	435	414	66	11	37
29	56	51	42	45	---	96	184	421	453	59	11	35
30	82	51	40	45	---	89	263	396	600	59	9.2	34
31	134	---	39	44	---	84	---	373	---	97	8.0	---
TOTAL	1536	1927	1292	1287	1231	2072	2764	15320	17916	11239	1012.2	803.2
MEAN	49.5	64.2	41.7	41.5	44.0	66.8	92.1	494	597	363	32.7	26.8
MAX	134	87	50	51	50	147	263	1030	1000	973	84	42
MIN	38	51	34	28	39	40	56	212	408	59	8.0	7.6
AC-FT	3050	3820	2560	2550	2440	4110	5480	30390	35540	22290	2010	1590

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	1995	1996	1997	1998
MEAN	49.1	97.5	92.4	78.8
MAX	60.1	172	170	118
(WY)	1996	1996	1996	1997
MIN	37.8	56.0	41.7	41.5
(WY)	1997	1997	1998	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1995 - 1998

ANNUAL TOTAL	85768	58399.4	202
ANNUAL MEAN	235	160	235
HIGHEST ANNUAL MEAN			160
LOWEST ANNUAL MEAN			160
HIGHEST DAILY MEAN	1590	1030	1590
LOWEST DAILY MEAN	26	7.6	7.6
ANNUAL SEVEN-DAY MINIMUM	28	7.8	7.8
ANNUAL RUNOFF (AC-FT)	170100	115800	146400
10 PERCENT EXCEEDS	723	532	554
50 PERCENT EXCEEDS	86	50	80
90 PERCENT EXCEEDS	39	32	33

e Estimated

GRANDE RONDE RIVER BASIN

13330300 LOSTINE RIVER AT BAKER ROAD, NEAR LOSTINE, OR

LOCATION.--Lat 45°32'14", long 117°28'43", in NW 1/4 SW 1/4 sec.29, T.1 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 300 ft upstream from bridge at Baker road, 4 mi northwest of Lostine, and at mile 1.3.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--June 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 3,050 ft above sea level, from topographic map.

REMARKS.--Records fair except for those below 20 ft³/s, which are poor. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Many diversions for irrigation upstream from gage.

AVERAGE DISCHARGE.--3 years (water years 1996-98), 213 ft³/s, 154,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,970 ft³/s June 9, 1996, gage height, 6.88 ft; minimum discharge, 6.3 ft³/s Aug. 22, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 25	1930	*836	*5.46				
Minimum discharge, 7.9 ft ³ /s Sept. 2.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	112	60	47	41	38	83	368	e390	626	106	9.0
2	91	97	53	47	42	36	81	462	e430	630	91	8.7
3	95	98	51	44	40	36	80	535	e460	695	84	11
4	97	88	55	45	49	34	80	566	515	605	81	12
5	94	81	53	43	53	31	78	663	525	543	81	11
6	92	81	51	41	48	34	77	683	494	489	78	11
7	90	96	57	42	48	31	78	724	481	444	85	11
8	67	103	58	41	49	34	75	694	502	460	87	11
9	46	94	53	e35	50	33	74	609	538	481	92	33
10	45	89	51	e33	45	33	72	508	560	496	80	47
11	46	84	49	e35	48	33	73	538	640	541	57	42
12	46	81	48	e37	46	34	71	524	740	425	28	39
13	46	78	46	45	47	36	69	513	751	371	16	39
14	45	75	52	44	46	38	71	452	722	318	11	41
15	45	72	50	44	46	41	72	388	700	287	11	43
16	44	69	53	40	42	44	69	332	633	256	20	42
17	44	71	62	52	44	46	66	305	479	205	14	40
18	44	70	57	49	41	43	65	277	482	171	20	41
19	42	69	47	50	41	42	64	254	530	145	25	54
20	43	68	56	47	40	43	64	250	438	109	29	48
21	46	66	53	44	45	46	67	287	439	84	26	45
22	53	61	47	42	44	66	87	334	436	69	22	42
23	57	69	45	41	42	120	173	337	438	40	23	42
24	55	74	53	44	41	152	214	366	481	24	23	39
25	54	72	43	44	34	136	174	636	514	24	19	57
26	56	68	44	44	38	124	156	686	504	28	30	80
27	54	67	49	48	31	113	157	528	406	24	24	77
28	52	65	49	46	35	103	181	450	388	18	15	72
29	64	64	53	44	---	96	220	432	409	23	14	69
30	93	65	51	45	---	89	282	409	505	30	12	63
31	180	---	46	42	---	86	---	e370	---	91	11	---
TOTAL	2008	2347	1595	1345	1216	1871	3173	14480	15530	8752	1315	1179.7
MEAN	64.8	78.2	51.5	43.4	43.4	60.4	106	467	518	282	42.4	39.3
MAX	180	112	62	52	53	152	282	724	751	695	106	80
MIN	42	61	43	33	31	31	64	250	388	18	11	8.7
AC-FT	3980	4660	3160	2670	2410	3710	6290	28720	30800	17360	2610	2340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	1995	1996	1997	1998	1995	1996	1997	1998	1995	1996	1997	1998
MEAN	72.8	129	116	89.5	114	84.0	181	512	771	439	59.8	45.7
MAX	95.0	243	218	148	198	96.1	239	586	894	535	101	80.9
(WY)	1996	1996	1996	1997	1996	1997	1997	1995	1995	1996	1997	1997
MIN	58.7	65.6	51.5	43.4	43.4	60.4	106	467	518	282	32.0	23.1
(WY)	1997	1997	1998	1998	1998	1998	1998	1998	1998	1998	1995	1995

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1995 - 1998

ANNUAL TOTAL	86922	54811.7	213
ANNUAL MEAN	238	150	251
HIGHEST ANNUAL MEAN			150
LOWEST ANNUAL MEAN			1996
HIGHEST DAILY MEAN	1250	May 15	751
LOWEST DAILY MEAN	15	Aug 27	8.7
ANNUAL SEVEN-DAY MINIMUM	20	Aug 25	11
ANNUAL RUNOFF (AC-FT)	172400		154500
10 PERCENT EXCEEDS	652		626
50 PERCENT EXCEEDS	98		92
90 PERCENT EXCEEDS	48		35

e Estimated

13330500 BEAR CREEK NEAR WALLOWA, OR

LOCATION.--Lat 45°31'37", long 117°33'05", in NW 1/4 NE 1/4 sec.34, T.1 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank, at private road bridge, 3.0 mi southwest of Wallowa, and at mile 4.4.

DRAINAGE AREA.--68 mi², approximately.

PERIOD OF RECORD.--April to September 1915, April 1924 to September 1985, April 1995 to current year. Monthly discharge only for some periods, published in WSP 1317.

REVISED RECORDS.--WSP 1397: 1915, 1927, 1929-30, 1932, 1936-40, 1945, 1949.

GAGE.--Water-stage recorder. Elevation of gage is 3,250 ft above sea level, by barometer. Apr. 13 to Sept. 16, 1915, nonrecording gage at site 1.0 mi upstream at different datum. Apr. 22, 1924 to Nov. 2, 1931, water-stage recorder at site 1.5 mi upstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Diversions for irrigation upstream from station. Water for irrigation in Lostine River basin diverted from Little Bear Creek, a tributary upstream from station, in sec.32, T.1 S., R.43 E. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--64 years (water years 1925-85, 1996-98), 115 ft³/s, 83,560 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,730 ft³/s June 15, 1974, gage height, 3.58 ft; maximum gage height, 5.38 ft Jan. 24, 1984 (result of ice jam); minimum daily discharge, 3 ft³/s Jan. 20, Feb. 1, 1937.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 2	1730	*777	*3.48	May 25	1515	710	3.42
May 7	2015	647	3.34				

Minimum discharge, 10 ft³/s Sept. 6, 7, 17, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e23	98	31	24	37	26	104	430	296	235	31	12
2	e21	82	28	25	37	26	96	573	329	229	26	12
3	20	74	e25	25	36	25	90	475	320	238	24	11
4	e23	67	e32	26	37	24	87	464	312	208	22	11
5	e22	62	e30	25	38	24	81	513	297	188	21	11
6	e21	60	e28	24	40	26	78	556	278	173	20	10
7	e21	75	e28	24	41	25	78	560	263	162	20	11
8	e20	78	e32	24	42	23	72	517	269	157	19	12
9	e21	70	e29	e17	40	23	72	436	278	141	19	16
10	e21	64	e22	e19	39	23	74	375	281	130	18	14
11	e21	59	e18	e21	38	24	78	386	320	124	18	13
12	e21	53	e17	e21	37	25	78	370	355	100	17	12
13	e21	49	e18	e22	36	29	78	385	341	86	17	12
14	e21	45	e30	e22	35	39	76	375	311	75	17	12
15	e22	42	e28	e22	35	51	73	321	306	67	17	11
16	e22	40	e29	e23	33	60	67	281	281	60	17	11
17	22	41	e32	e24	32	60	67	255	232	54	17	11
18	e22	38	26	e25	31	57	68	229	231	48	17	11
19	e22	38	e24	e26	30	55	70	223	248	43	16	17
20	e21	37	e27	25	30	55	72	222	208	40	16	14
21	22	36	e25	25	31	60	85	231	203	36	16	13
22	21	32	e21	25	30	101	133	270	209	34	15	13
23	23	35	e23	26	30	206	265	332	211	32	15	13
24	21	38	e24	28	29	257	313	364	218	30	15	12
25	21	37	e20	29	28	233	262	533	222	29	14	14
26	21	36	e18	30	28	211	229	553	228	27	14	16
27	21	36	e21	34	27	187	217	486	192	26	13	14
28	21	35	e25	37	28	163	236	408	182	26	13	14
29	36	34	e25	38	---	142	274	385	188	24	13	14
30	77	35	24	39	---	127	339	346	213	28	12	13
31	146	---	24	38	---	115	---	301	---	35	12	---
TOTAL	858	1526	784	813	955	2502	3912	12155	7822	2885	541	380
MEAN	27.7	50.9	25.3	26.2	34.1	80.7	130	392	261	93.1	17.5	12.7
MAX	146	98	32	39	42	257	339	573	355	238	31	17
MIN	20	32	17	17	27	23	67	222	182	24	12	10
AC-FT	1700	3030	1560	1610	1890	4960	7760	24110	15510	5720	1070	754
CFSM	.41	.75	.37	.39	.50	1.19	1.92	5.77	3.83	1.37	.26	.19
IN.	.47	.83	.43	.44	.52	1.37	2.14	6.65	4.28	1.58	.30	.21

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1925 - 1998, BY WATER YEAR (WY)

	MEAN	25.6	41.5	50.9	45.1	49.3	66.8	171	375	402	121	20.2	15.9
MAX	160	220	195	141	192	186	422	682	869	388	37.5	44.2	
(WY)	1928	1928	1996	1984	1996	1972	1936	1928	1974	1943	1975	1941	
MIN	7.58	8.20	7.29	5.16	4.46	11.1	49.6	138	112	18.6	8.10	6.33	
(WY)	1936	1953	1937	1937	1937	1977	1975	1977	1926	1977	1940	1935	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1925 - 1998

ANNUAL TOTAL	56203												
ANNUAL MEAN	154						35133						
HIGHEST ANNUAL MEAN							96.3			115			
LOWEST ANNUAL MEAN										178			1974
HIGHEST DAILY MEAN										46.2			1977
LOWEST DAILY MEAN										1480			Jun 17 1974
ANNUAL SEVEN-DAY MINIMUM										3.0			Jan 20 1937
ANNUAL RUNOFF (AC-FT)										3.9			Jan 19 1937
ANNUAL RUNOFF (CFSM)	111500						69690			83560			
ANNUAL RUNOFF (INCHES)		2.26					1.42			1.70			
10 PERCENT EXCEEDS		30.75					19.22			23.05			
50 PERCENT EXCEEDS		469					287			353			
90 PERCENT EXCEEDS		64					34			43			
		21					15			11			

e Estimated

GRANDE RONDE RIVER BASIN

13330700 BEAR CREEK AT WALLOWA, OR

LOCATION.--Lat 45°34'50", long 117°32'21", in NW 1/4 SW 1/4 sec.11, T.1 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on right bank, 5 ft upstream from bridge crossing, 0.5 mi northwest of Wallowa, and at mile 0.7.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--May 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,900 ft above sea level, from topographic map.

REMARKS.--Records fair. No regulation. Many diversions for irrigation upstream from station. Water for irrigation in the Lostine River basin is diverted from Little Bear Creek, a tributary upstream from station.

AVERAGE DISCHARGE.--3 years (water years 1996-98), 127 ft³/s, 92,210 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,410 ft³/s May 16, 1997, gage height, 6.51 ft; minimum discharge, 4.0 ft³/s Aug. 15, 1997.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 2	2345	*653	*5.77				
Minimum discharge, 2.3 ft ³ /s Sept. 7, gage height, 3.63 ft.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	106	31	21	36	22	96	416	310	255	10	4.6
2	8.9	87	28	23	34	23	87	473	332	240	9.9	4.4
3	9.7	77	24	22	33	23	81	554	325	239	9.3	3.6
4	9.8	69	32	22	34	21	77	558	319	202	7.1	3.1
5	10	63	31	23	36	21	72	508	311	178	6.0	2.8
6	9.4	60	28	22	37	23	68	514	290	155	6.4	2.7
7	9.3	75	28	20	38	22	70	550	272	146	5.4	2.7
8	9.1	82	32	20	38	21	63	485	281	136	5.5	3.0
9	10	73	28	e15	38	19	63	423	295	121	5.1	3.8
10	10	66	e22	e17	36	19	64	381	291	114	5.0	4.7
11	13	60	e17	e19	35	19	68	390	328	106	5.1	5.8
12	23	54	e16	e19	34	21	69	368	358	87	5.3	6.1
13	21	50	17	e21	34	25	69	386	350	79	5.1	5.1
14	23	47	30	e21	32	35	67	374	330	65	4.9	5.6
15	23	44	27	e21	32	47	68	325	323	55	4.8	5.8
16	23	43	27	e22	29	56	62	278	294	48	4.8	7.0
17	23	41	32	e24	28	57	62	243	234	42	4.6	7.2
18	22	38	26	e24	27	53	61	217	229	36	4.7	7.8
19	22	38	e25	e24	26	52	62	217	247	28	4.8	8.0
20	22	38	e27	e23	26	50	63	226	195	23	4.6	8.1
21	21	37	e25	e22	29	55	73	240	188	20	4.3	7.6
22	18	32	e21	22	28	85	115	290	194	16	3.7	9.5
23	16	36	e23	23	27	190	280	351	199	15	3.4	14
24	15	40	e24	25	26	299	316	373	203	12	3.7	7.7
25	14	39	e20	26	26	266	246	466	209	8.0	3.5	7.4
26	13	37	e17	27	25	218	207	475	226	7.5	3.7	7.6
27	13	37	23	31	25	182	185	401	187	6.3	4.0	7.3
28	13	36	23	34	27	155	206	376	172	5.3	4.4	6.7
29	25	34	24	35	---	134	243	368	174	5.7	5.2	5.6
30	65	36	22	36	---	117	320	343	214	5.9	5.0	5.5
31	156	---	20	35	---	106	---	314	---	9.4	4.8	---
TOTAL	678.4	1575	770	739	876	2436	3583	11883	7880	2466.1	164.1	180.8
MEAN	21.9	52.5	24.8	23.8	31.3	78.6	119	383	263	79.6	5.29	6.03
MAX	156	106	32	36	38	299	320	558	358	255	10	14
MIN	8.2	32	16	15	25	19	61	217	172	5.3	3.4	2.7
AC-FT	1350	3120	1530	1470	1740	4830	7110	23570	15630	4890	325	359

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	1995	1996	1997	1998	1995	1996	1997	1998	1995	1996	1997	1998
MEAN	22.0	84.5	100	69.7	106	87.2	171	386	358	128	8.39	7.63
MAX	33.0	164	202	114	224	100	199	494	495	182	10.2	9.45
(WY)	1996	1996	1996	1997	1996	1997	1996	1997	1997	1997	1996	1997
MIN	11.2	36.6	24.8	23.8	31.3	78.6	119	281	263	79.6	5.29	5.81
(WY)	1997	1997	1998	1998	1998	1998	1998	1998	1998	1998	1998	1995

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1995 - 1998

ANNUAL TOTAL	53620.7	33231.4	127
ANNUAL MEAN	147	91.0	149
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			1998
HIGHEST DAILY MEAN	962	May 16	962
LOWEST DAILY MEAN	4.5	Aug 15	2.7
ANNUAL SEVEN-DAY MINIMUM	5.9	Sep 1	3.1
ANNUAL RUNOFF (AC-FT)	106400	65910	92210
10 PERCENT EXCEEDS	478	303	371
50 PERCENT EXCEEDS	53	31	60
90 PERCENT EXCEEDS	8.2	5.5	7.3

e Estimated

GRANDE RONDE RIVER BASIN

73

13331450 WALLOWA RIVER BELOW WATER CANYON, NEAR WALLOWA, OR

LOCATION.--Lat 45°36'30", long 117°36'55", in NW 1/4 SW 1/4 sec.31, T.2 N., R.42 E., Wallowa County, Hydrologic Unit 17060105, on left bank, 160 ft upstream from bridge, approximately 6 mi east of Wallowa, and at mile 18.3.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--August 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,760 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair except for those below 200 ft³/s, which are poor. Flow regulated by Wallowa Lake. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--3 years (water years 1996-98), 819 ft³/s, 593,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,640 ft³/s Feb 9, 1996, gage height, 4.76 ft; minimum discharge, 102 ft³/s July 29, 1998.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 26	1915	*3,590	*4.03	No other peak greater than base discharge.			
Minimum discharge, 102 ft ³ /s July 29.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	405	584	371	329	374	331	472	1350	1750	1650	393	225
2	413	522	351	339	371	342	449	1550	1810	1710	358	205
3	424	498	333	338	380	371	429	1710	1800	1820	337	193
4	427	471	336	341	449	343	439	1770	1720	1660	314	209
5	429	446	320	329	472	332	438	2000	1690	1560	307	227
6	426	448	318	308	425	326	432	2080	1640	1480	286	217
7	429	495	335	308	415	310	459	2130	1600	1350	288	230
8	440	514	351	308	444	319	447	2040	1610	1370	310	256
9	448	482	331	281	440	314	443	1920	1630	1380	321	357
10	439	465	320	255	397	324	451	1670	1680	1420	310	445
11	444	449	318	284	393	338	440	1740	1950	1540	264	402
12	463	430	312	270	379	365	420	1730	2220	1280	219	374
13	455	416	303	288	393	399	406	1780	2310	1140	181	373
14	444	402	312	301	396	444	431	1710	2210	1040	170	365
15	443	393	319	310	401	475	488	1560	2150	954	171	348
16	436	383	328	284	381	480	488	1390	2020	880	175	333
17	434	393	382	336	373	457	459	1370	1680	774	165	322
18	435	386	356	352	354	421	445	1290	1640	652	189	319
19	426	390	312	378	358	407	434	1210	1830	537	215	370
20	413	387	326	370	360	409	419	1170	1620	457	245	371
21	405	388	328	344	415	428	422	1290	1590	387	246	365
22	398	372	307	330	418	524	501	1690	1600	328	251	345
23	396	386	317	324	390	865	857	1760	1620	245	271	339
24	391	418	329	369	377	1130	1070	1760	1680	192	290	337
25	380	423	312	380	344	990	883	2480	1700	174	255	358
26	375	396	303	376	351	865	776	3240	1720	176	273	395
27	368	393	314	439	322	766	734	2920	1520	161	275	382
28	357	383	322	443	320	672	784	2490	1440	130	274	371
29	404	376	333	412	---	591	888	2270	1410	109	262	366
30	539	391	331	420	---	536	1090	2090	1490	123	233	354
31	841	---	321	399	---	508	---	1880	---	336	227	---
TOTAL	13527	12880	10151	10545	10892	15382	16894	57040	52330	27015	8075	9753
MEAN	436	429	327	340	389	496	563	1840	1744	871	260	325
MAX	841	584	382	443	472	1130	1090	3240	2310	1820	393	445
MIN	357	372	303	255	320	310	406	1170	1410	109	165	193
AC-FT	26830	25550	20130	20920	21600	30510	33510	113100	103800	53580	16020	19350

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	1995	1996	1997	1998
MEAN	378	536	583	520
MAX	436	743	864	747
(WY)	1998	1996	1996	1997
MIN	318	429	327	340
(WY)	1997	1998	1998	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1995 - 1998

ANNUAL TOTAL	343697	244484		
ANNUAL MEAN	942	670	819	1997
HIGHEST ANNUAL MEAN			952	1998
LOWEST ANNUAL MEAN			670	1998
HIGHEST DAILY MEAN	3500	Jan 1	3900	Feb 9 1996
LOWEST DAILY MEAN	303	Dec 13	109	Jul 29 1998
ANNUAL SEVEN-DAY MINIMUM	315	Dec 22	152	Jul 24 1998
ANNUAL RUNOFF (AC-FT)	681700		484900	593600
10 PERCENT EXCEEDS	2250		1690	1780
50 PERCENT EXCEEDS	540		402	482
90 PERCENT EXCEEDS	343		274	313

GRANDE RONDE RIVER BASIN

13331500 MINAM RIVER AT MINAM, OR
(Hydrologic bench-mark station)

LOCATION.--Lat 45°37'12", long 117°43'32", in SW 1/4 SW 1/4 sec.29, T.2 N., R.41 E., Wallowa County, Hydrologic Unit 17060105, on left bank 2.3 mi downstream from Squaw Creek, 0.3 mi west of Minam, and at mile 0.3.

DRAINAGE AREA.--240 mi², approximately.

PERIOD OF RECORD.--June 1912 to March 1914, September 1965 to current year. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Datum of gage is 2,540.48 ft above sea level. June 1912 to March 1914, nonrecording gage at approximately same site at different datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation. Minam Lake, capacity 440 acre-ft, has stored and diverted flow from Minam River since 1917 for irrigation in Lostine River basin. Continuous water temperature October 1965 to September 1985. Chemical analysis water years 1966 to 1995.

AVERAGE DISCHARGE.--34 years (water years 1913, 1966-98), 462 ft³/s, 26.13 in/yr, 334,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,260 ft³/s June 16, 1974, gage height, 6.89 ft; maximum gage height, 7.3 ft May 28, 1913, datum then in use; minimum discharge, 10 ft³/s Dec. 6, 1972, Jan. 10, 1973, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 8	0130	2,330	3.81	June 12	2400	1,960	3.46
May 25	2230	*3,230	*4.53	July 3	0530	1,590	3.07

Minimum daily discharge, 50 ft³/s Jan. 10, result of freezeup.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	85	236	126	131	222	156	376	1400	1550	1350	269	84
2	84	191	90	142	216	152	356	1580	1620	1360	239	82
3	93	172	84	135	198	154	343	1730	1600	1470	219	80
4	97	160	e85	134	207	145	335	1780	1620	1360	203	79
5	96	151	e95	134	243	139	324	2010	1610	1230	194	77
6	94	145	e110	125	247	135	316	2020	1570	1160	183	77
7	90	156	e120	126	241	138	310	2140	1500	1120	177	81
8	87	204	e130	123	241	147	291	2120	1490	1110	170	96
9	95	175	154	101	239	145	292	1950	1520	1100	163	156
10	98	165	132	e50	222	144	294	1700	1550	1110	156	199
11	98	157	125	125	215	143	299	1750	1610	e1150	150	129
12	103	148	118	107	205	152	295	1670	1830	e1100	144	108
13	98	137	125	134	202	175	291	1580	1830	e900	138	99
14	101	128	154	151	198	225	291	1510	1800	e800	132	94
15	103	126	192	147	198	271	295	1390	1730	e740	127	89
16	101	123	170	154	190	290	286	1280	1680	e680	124	86
17	100	137	180	160	182	277	290	1240	1420	610	122	84
18	98	129	172	174	178	247	301	1240	1370	562	119	84
19	96	128	139	190	172	227	305	1220	1460	515	116	145
20	92	134	169	195	173	221	311	1150	1270	469	112	147
21	90	138	167	191	188	242	342	1190	1220	415	107	110
22	87	122	120	178	187	356	475	1500	1210	373	105	100
23	92	129	103	170	180	782	910	1620	1230	347	103	96
24	97	148	162	197	175	1080	1170	1540	1270	333	102	91
25	89	156	136	226	167	877	930	2370	1290	327	100	97
26	87	146	126	225	164	746	794	3010	1350	311	97	145
27	90	148	e120	286	145	637	762	2470	1190	295	94	115
28	87	138	e130	326	146	545	852	2030	1110	292	93	101
29	114	133	e140	288	---	480	986	1860	1110	271	89	95
30	217	135	140	264	---	436	1180	1710	1210	263	87	91
31	330	---	121	241	---	406	---	1570	---	287	85	---
TOTAL	3289	4495	4135	5330	5541	10270	14602	53330	43820	23410	4319	3117
MEAN	106	150	133	172	198	331	487	1720	1461	755	139	104
MAX	330	236	192	326	247	1080	1180	3010	1830	1470	269	199
MIN	84	122	84	50	145	135	286	1150	1110	263	85	77
AC-FT	6520	8920	8200	10570	10990	20370	28960	105800	86920	46430	8570	6180
CFSM	.44	.62	.56	.72	.82	1.38	2.03	7.17	6.09	3.15	.58	.43
IN.	.51	.70	.64	.83	.86	1.59	2.26	8.27	6.79	3.63	.67	.44

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1998, BY WATER YEAR (WY)

MEAN	96.0	153	193	207	266	323	541	1317	1586	636	158	98.6
MAX	173	508	765	470	977	697	888	2016	3125	1392	276	180
(WY)	1969	1996	1996	1997	1996	1986	1913	1971	1974	1975	1912	1978
MIN	38.1	56.1	62.4	59.6	56.9	66.7	235	484	494	125	72.6	45.9
(WY)	1988	1994	1979	1977	1977	1977	1967	1977	1992	1977	1966	1987

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1912 - 1998
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ANNUAL TOTAL	229959		175658				
ANNUAL MEAN	630		481			462	
HIGHEST ANNUAL MEAN						713	1974
LOWEST ANNUAL MEAN						189	1977
HIGHEST DAILY MEAN	3600	May 17	3010	May 26		5160	Jun 15 1974
LOWEST DAILY MEAN	84	Oct 2	50	Jan 10		11	Dec 6 1972
ANNUAL SEVEN-DAY MINIMUM	89	Sep 26	80	Sep 1		15	Dec 6 1972
ANNUAL RUNOFF (AC-FT)	456100		348400			334400	
ANNUAL RUNOFF (CFSM)	2.63		2.01			1.92	
ANNUAL RUNOFF (INCHES)	35.64		27.23			26.13	
10 PERCENT EXCEEDS	1950		1500			1310	
50 PERCENT EXCEEDS	281		182			200	
90 PERCENT EXCEEDS	100		94			73	

e Estimated

LOCATION.--Lat 45°56'45", long 117°27'00", in NE 1/4 NW 1/4 sec.4, T.5 N., R.43 E., Wallowa County, Hydrologic Unit 17060106, on left bank, on upstream side of bridge at Troy, 100 ft downstream from Wenaha River, and at mile 45.3.

REVISED RECORDS.--WSP 1397: 1946(M), 1948-50.

GAGE --Water-stage recorder. Datum of gage is 1,585.98 ft above sea level. Aug. 17, 1944, to Sept. 30, 1949, nonrecording gage at datum 10.85 ft lower. Oct. 1, 1949, to Sept. 30, 1963, water-stage recorder at datum 1.15 ft higher. Sept. 6, 1963 to Oct. 19, 1994, water-stage recorder at site 500 ft downstream, at present datum.

REMARKS.--Records fair. Flow slightly regulated by Wallowa Lake and small reservoirs. Diversions for irrigation upstream from station, chiefly in vicinity of La Grande, Enterprise, and Wallowa; one transbasin diversion from Big Sheep Creek and tributaries in Innaha River basin for irrigation in Wallowa Valley. U.S. Geological Survey satellite telemeter and National Weather Service telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,800 ft³/s Feb. 9, 1996, gage height, 13.76 ft, from rating curve extended above 20,000 ft³; minimum discharge, 321 ft³/s Nov. 25, 1993; result of freezeup, but may have been less during period of ice effect that day.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 24	0600	10,500	7.83	May 26	2400	*17,800	*9.51
May 6	0430	10,100	7.73				

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1010	1970	1300	1150	2450	1760	4140	7690	9810	4410	1150	652
2	1010	1660	1230	1230	2320	1790	3980	8340	9570	4570	1150	648
3	1040	1510	1150	1250	2220	2090	3740	9120	9430	4860	1090	627
4	1070	1410	1110	1240	2240	2090	3710	9120	9130	4750	1010	617
5	1080	1340	1100	1220	2710	2040	3800	9600	8770	4370	961	622
6	1070	1300	1060	1190	2860	1940	3780	9680	8450	4070	925	629
7	1060	1330	1160	1190	2740	1850	3980	9600	8000	3730	877	623
8	1050	1450	1220	1190	2780	1820	3860	9310	7730	3550	874	671
9	1080	1420	1200	1140	2840	1820	3670	8990	7930	3480	876	755
10	1080	1380	1150	1030	2710	1870	3800	8060	7520	3650	871	1010
11	1070	1350	1120	e1050	2560	1970	3890	7800	7390	3880	837	964
12	1120	1300	1100	e1100	2430	2140	3850	7560	7700	3440	786	903
13	1110	1250	1060	1160	2340	2520	3710	7260	7760	2970	745	865
14	1100	1210	990	1240	2310	3290	3710	7130	7360	2690	702	856
15	1080	1180	1100	1330	2320	4080	3670	6720	6930	2460	679	840
16	1080	1160	1240	1320	2300	4450	3700	6290	6910	2300	669	820
17	1070	1190	1640	1420	2190	4320	3630	6210	6120	2140	670	793
18	1060	1200	1620	1860	2080	3900	3520	6260	5640	1930	666	787
19	1050	1240	1420	1900	1990	3500	3470	6210	5770	1760	686	862
20	1020	1390	1300	2170	1970	3300	3540	6100	5340	1590	697	965
21	1010	1500	1260	2050	2210	3480	3780	6020	4930	1420	711	913
22	1000	1430	1190	1940	2480	4320	4540	7090	4840	1280	707	895
23	1000	1360	1090	1890	2400	6770	5980	8210	4890	1140	722	875
24	1030	1420	1150	2390	2280	9780	7760	8120	4840	1050	745	848
25	1000	1520	1130	2490	2150	9100	7150	9760	4870	980	744	848
26	989	1490	1090	2410	2040	8330	6520	14400	4960	963	720	921
27	998	1480	1070	3000	1910	7490	6170	16300	4640	937	722	959
28	984	1410	1150	3500	1790	6670	6180	14200	4270	911	706	919
29	1100	1340	1170	3100	---	5830	6480	12700	4090	873	702	905
30	1610	1330	1180	2830	---	5050	7060	11600	4080	843	678	877
31	2390	---	1140	2680	---	4520	---	10600	---	937	658	---
TOTAL	34421	41520	36890	54660	65620	123880	136770	276050	199670	77934	24736	24469
MEAN	1110	1384	1190	1763	2344	3996	4559	8905	6656	2514	798	816
MAX	2390	1970	1640	3500	2860	9780	7760	16300	9810	4860	1150	1010
MIN	984	1160	990	1030	1790	1760	3470	6020	4080	843	658	617
AC-FT	68270	82350	73170	108400	130200	245700	271300	547500	396000	154600	49060	48530

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1998, BY WATER YEAR (WY)

MEAN	881	1245	2006	2209	3259	4287	6305	7444	5732	2202	854	774
MAX	2559	3766	7212	6280	14390	11520	11390	13820	11610	4951	1385	1291
(WY)	1960	1996	1996	1974	1996	1972	1997	1948	1974	1975	1984	1984
MIN	528	618	685	702	769	888	2257	2368	1501	520	438	414
(WY)	1988	1988	1945	1979	1977	1977	1968	1977	1992	1977	1992	1994

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1945 - 1998

ANNUAL TOTAL	1773975		1096620				
ANNUAL MEAN	4860		3004			3094	
HIGHEST ANNUAL MEAN						5253	1996
LOWEST ANNUAL MEAN						1136	1977
HIGHEST DAILY MEAN	28000	Jan 1	16300	May 27	42200		Feb 9 1996
LOWEST DAILY MEAN	853	Sep 1	617	Sep 4	344		Aug 20 1977
ANNUAL SEVEN-DAY MINIMUM	871	Aug 27	631	Sep 1	361		Aug 18 1977
ANNUAL RUNOFF (AC-FT)	3519000		2175000		2241000		
10 PERCENT EXCEEDS	12000		7540		7510		
50 PERCENT EXCEEDS	3030		1790		1640		
90 PERCENT EXCEEDS	1010		848		700		

e Estimated

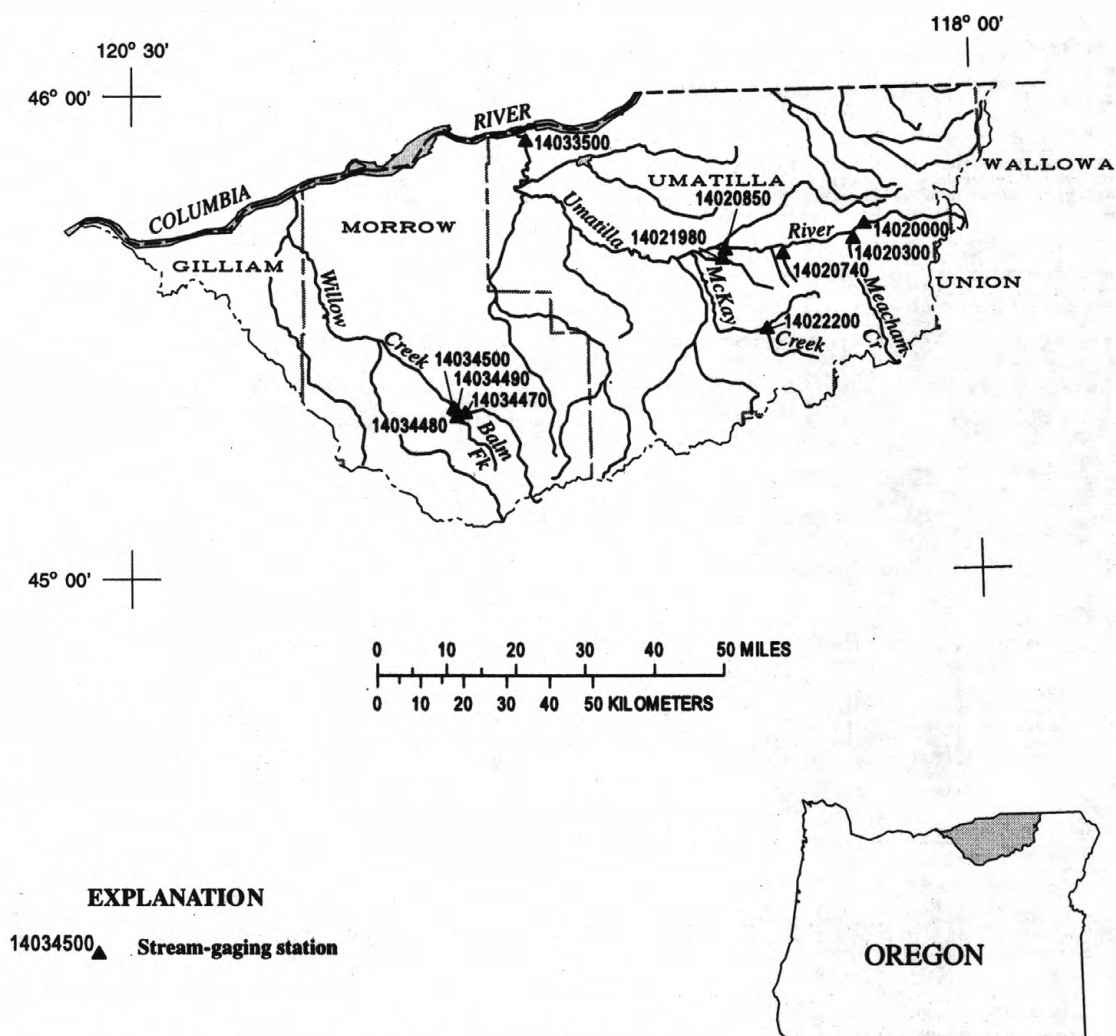


Figure 11. Location of surface-water stations in the Umatilla and Willow Creek Basins.

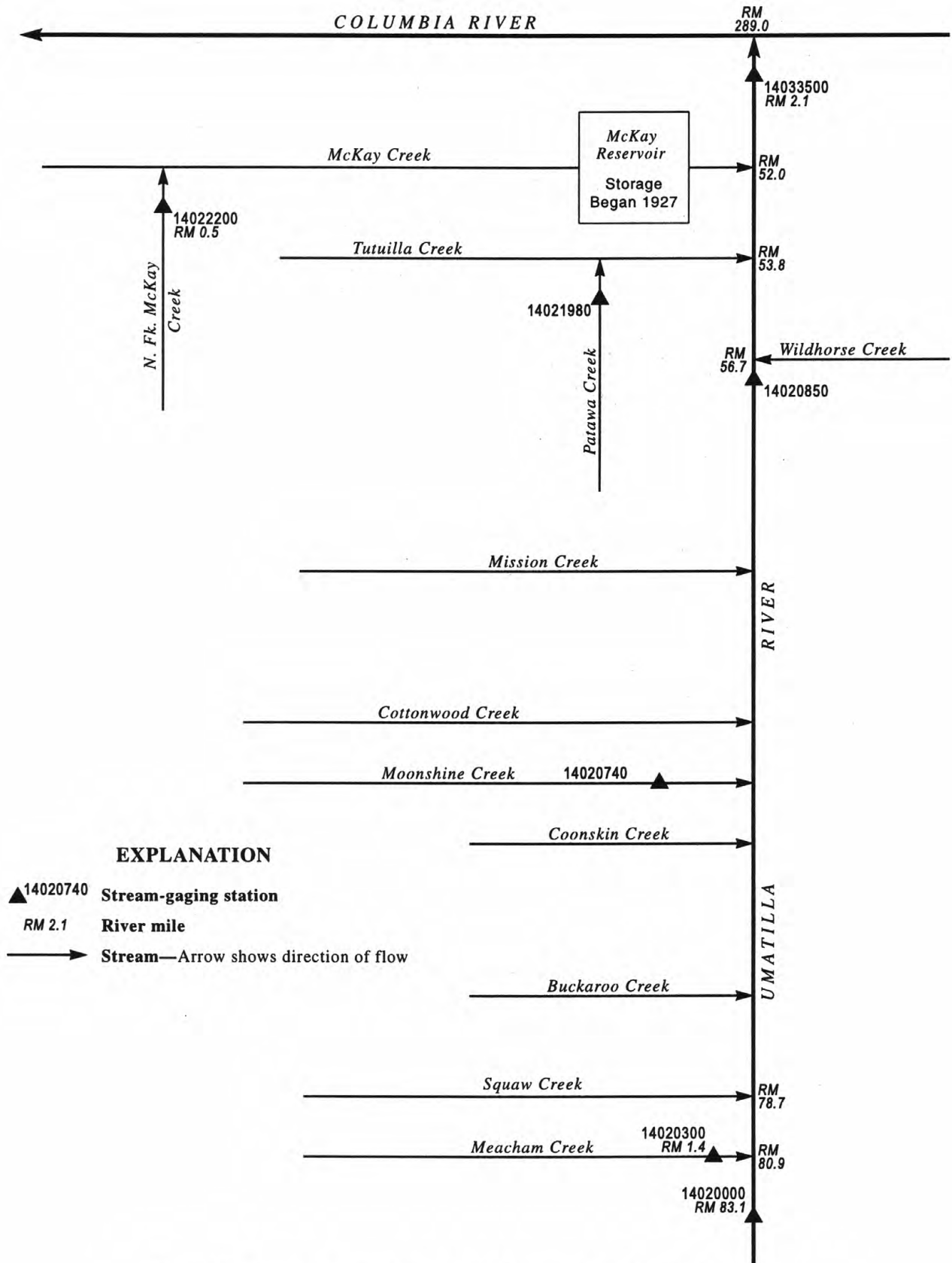


Figure 12. Schematic diagram showing gaging stations in the Umatilla River Basin.

UMATILLA RIVER BASIN

14020000 UMATILLA RIVER ABOVE MEACHAM CREEK, NEAR GIBBON, OR

LOCATION.--Lat 45°43'11", long 118°19'20", in SE 1/4 SW 1/4 sec.21, T.3 N., R.36 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on right bank 0.8 mi downstream from Ryan Creek, 2.2 mi upstream from Meacham Creek, 2.5 mi northeast of Gibbon, and at mile 83.1.

DRAINAGE AREA.--131 mi².

PERIOD OF RECORD.--April 1933 to current year.

REVISED RECORDS.--WSP 1935: 1946-48(M), 1950(M), 1953(M), 1956-59(M), drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,854.81 ft above sea level. Prior to June 27, 1939, at site 1 mi downstream at datum 43.94 ft lower.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period June 1959 to September 1980 have been collected at this location.

AVERAGE DISCHARGE.--65 years (water years 1934-98), 227 ft³/s, 23.59 in/yr, 164,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,220 ft³/s Nov. 28, 1995, gage height, 9.40 ft (high-water mark), from rating curve extended above 3,500 ft³/s; maximum gage height, 9.50 ft Jan. 29, 1965; minimum discharge, 16 ft³/s Nov. 9, 1965, momentary regulation from unknown source.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 23	2300	*1,320	*5.46				

Minimum discharge, 41 ft³/s Aug. 28 to Sept. 4, Sept. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	46	118	114	176	308	155	288	542	393	78	55	43
2	47	91	106	201	267	189	265	534	334	77	52	42
3	52	78	99	211	242	268	251	506	293	80	50	43
4	53	69	94	205	292	285	251	458	259	75	49	43
5	60	65	90	187	340	264	245	445	235	72	48	43
6	54	63	86	172	302	250	245	393	220	70	47	43
7	52	66	85	163	275	223	246	348	206	68	47	45
8	50	72	86	151	270	210	236	309	198	66	47	47
9	52	73	80	138	256	207	233	327	177	67	47	50
10	50	70	77	131	234	265	245	280	165	79	46	49
11	55	67	74	128	213	304	270	257	154	90	46	47
12	56	66	75	128	199	354	267	245	143	73	46	46
13	53	64	75	122	188	421	261	263	134	68	45	46
14	52	62	78	129	184	451	266	279	124	65	45	46
15	51	60	86	180	209	439	287	316	125	63	45	46
16	51	58	267	189	214	413	301	320	153	60	45	45
17	50	60	537	385	211	352	314	494	131	59	45	44
18	49	60	332	457	203	299	310	912	119	57	45	47
19	49	65	235	651	195	263	307	692	113	56	45	58
20	49	89	188	542	193	245	325	521	108	55	45	56
21	49	161	160	363	218	268	398	421	103	54	45	53
22	50	176	147	301	223	459	529	485	99	54	44	49
23	54	153	128	295	217	865	690	485	97	54	46	48
24	55	181	116	344	206	1030	722	445	95	54	45	48
25	52	192	106	332	193	808	554	788	99	52	45	50
26	52	202	98	338	179	672	471	954	94	51	44	53
27	51	178	98	537	164	556	460	1070	91	50	44	51
28	52	148	102	544	158	471	480	888	86	49	43	50
29	77	130	116	478	---	403	501	702	82	50	42	49
30	131	122	146	439	---	348	524	568	81	54	42	47
31	216	---	163	365	---	315	---	465	---	61	42	---
TOTAL	1870	3059	4244	8982	6353	12052	10742	15712	4711	1961	1422	1427
MEAN	60.3	102	137	290	227	389	358	507	157	63.3	45.9	47.6
MAX	216	202	537	651	340	1030	722	1070	393	90	55	58
MIN	46	58	74	122	158	155	233	245	81	49	42	42
AC-FT	3710	6070	8420	17820	12600	23910	21310	31160	9340	3890	2820	2830
CFSM	.46	.78	1.05	2.21	1.73	2.97	2.73	3.87	1.20	.48	.35	.36
IN.	.53	.87	1.21	2.55	1.80	3.42	3.05	4.46	1.34	.56	.40	.41

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1998, BY WATER YEAR (WY)

	MEAN	57.6	130	236	265	332	392	540	450	189	64.8	47.2	46.8
MAX	169	405	716	656	1074	989	885	1135	591	110	63.4	81.6	
(WY)	1952	1948	1976	1965	1996	1972	1974	1948	1974	1948	1975	1959	
MIN	39.1	40.2	44.4	45.7	71.8	189	162	67.0	49.4	39.5	36.9	34.9	
(WY)	1936	1936	1966	1937	1977	1955	1941	1934	1992	1934	1939	1935	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1933 - 1998

	117468	72535	227	415	1974
ANNUAL TOTAL	117468	72535	227	415	1974
ANNUAL MEAN	322	199	227	415	1974
HIGHEST ANNUAL MEAN			227	415	1974
LOWEST ANNUAL MEAN			114	114	1977
HIGHEST DAILY MEAN	3630	Jan 1	1070	May 27	5130
LOWEST DAILY MEAN	41	Sep 1	42	Aug 29	28
ANNUAL SEVEN-DAY MINIMUM	42	Aug 27	42	Aug 28	31
ANNUAL RUNOFF (AC-FT)	233000		143900		164800
ANNUAL RUNOFF (CFSM)	2.46		1.52		1.74
ANNUAL RUNOFF (INCHES)	33.36		20.60		23.59
10 PERCENT EXCEEDS	851		462		554
50 PERCENT EXCEEDS	137		129		118
90 PERCENT EXCEEDS	45		47		44

UMATILLA RIVER BASIN

79

14020300 MEACHAM CREEK AT GIBBON, OR

LOCATION.--Lat 45°41'20", long.118°21'20", in SE 1/4 SE 1/4 sec.31, T.3. N., R.36 E., Umatilla County, Hydrologic Unit 17070103, on left bank 250 ft downstream from Union Pacific railroad bridge, 0.9 mi southeast of Gibbon, and at mile 1.4.

DRAINAGE AREA.--176 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 1,803.05 ft above sea level.

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

AVERAGE DISCHARGE.--23 years (water years 1976-98), 205 ft³/s, 15.83 in/yr, 148,500 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s Nov. 28, 1995, gage height, 7.67 ft, from rating curve extended above 4,600 ft³/s; maximum gage height, 8.16 ft, from floodmark; minimum discharge, 6.6 ft³/s Aug. 29, 1984.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Jan. 25, 1975, reached a stage of 7.21 ft, from floodmark, discharge, about 8,200 ft³/s.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 24	0145	*1,660	*4.69	No other peak greater than base discharge.			
Minimum discharge, 9.5 ft ³ /s Sept.6.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	e44	62	105	407	124	342	308	460	45	17	10
2	12	e38	58	128	318	136	307	295	376	42	17	10
3	13	e32	54	141	272	179	285	275	307	42	17	10
4	13	e30	50	145	521	214	295	242	255	40	16	10
5	15	27	46	133	716	229	293	235	214	37	16	10
6	14	26	44	120	566	233	290	198	186	35	15	10
7	e14	25	42	113	474	215	289	173	171	32	15	11
8	e13	28	45	104	458	203	273	161	161	30	15	13
9	e14	28	40	94	411	186	259	200	144	30	14	14
10	e13	28	39	86	335	212	259	184	130	36	14	13
11	e13	28	38	85	280	253	273	169	118	38	13	13
12	e15	27	37	75	247	338	270	165	107	35	13	13
13	e14	26	37	73	217	602	254	173	97	31	13	13
14	e14	25	37	95	194	798	246	193	88	29	12	13
15	e14	24	44	141	203	814	239	243	83	27	12	13
16	e14	23	152	131	186	748	227	283	92	26	12	13
17	e13	23	341	300	173	632	222	366	87	25	12	13
18	e13	24	263	351	166	497	226	652	77	24	12	14
19	e13	23	175	672	160	402	233	674	73	23	12	16
20	e13	25	142	609	159	366	255	573	68	22	12	16
21	e13	33	114	399	168	465	302	480	62	21	12	15
22	e14	45	95	311	172	740	416	505	58	20	12	15
23	e15	55	83	275	168	1200	504	584	65	20	12	15
24	e16	58	75	327	164	1350	531	550	62	20	12	15
25	e15	81	67	335	157	1060	405	885	60	19	11	15
26	e15	99	61	334	150	869	322	1180	59	18	11	16
27	e15	95	58	589	136	716	293	1240	58	18	11	15
28	e15	83	60	704	129	603	293	1020	54	17	11	15
29	e20	72	62	662	---	518	301	805	49	17	11	16
30	e30	67	70	643	---	444	310	645	48	17	11	16
31	e50	---	87	522	---	389	---	547	---	17	11	---
TOTAL	487	1242	2578	8802	7707	15735	9014	14203	3869	853	404	401
MEAN	15.7	41.4	83.2	284	275	508	300	458	129	27.5	13.0	13.4
MAX	50	99	341	704	716	1350	531	1240	460	45	17	16
MIN	12	23	37	73	129	124	222	161	48	17	11	10
AC-FT	966	2460	5110	17460	15290	31210	17880	28170	7670	1690	801	795
CFSM	.09	.24	.47	1.61	1.56	2.88	1.71	2.60	.73	.16	.07	.08
IN.	.10	.26	.54	1.86	1.63	3.33	1.91	3.00	.82	.18	.09	.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1998, BY WATER YEAR (WY)

	MEAN	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	16.0	81.8	204	242	411	503	540	326	102	24.6	13.0	12.2													
MAX	26.7	323	582	583	1074	1016	956	668	354	52.2	20.7	16.7													
(WY)	1985	1996	1976	1997	1996	1997	1985	1991	1984	1984	1993	1978													
MIN	8.48	11.2	18.0	22.2	27.1	134	228	58.3	21.7	13.2	8.48	9.37													
(WY)	1988	1988	1977	1977	1977	1977	1986	1992	1992	1977	1986	1987													

SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1975 - 1998

	1997	1998	1975-1998
ANNUAL TOTAL	113409	65295	205
ANNUAL MEAN	311	179	352
HIGHEST ANNUAL MEAN			66.2
LOWEST ANNUAL MEAN			4820
HIGHEST DAILY MEAN	3600	1350	7.5
LOWEST DAILY MEAN	11	10	7.7
ANNUAL SEVEN-DAY MINIMUM	11	10	7.7
ANNUAL RUNOFF (AC-FT)	224900	129500	148500
ANNUAL RUNOFF (CFSM)	1.77	1.02	1.16
ANNUAL RUNOFF (INCHES)	23.97	13.80	15.83
10 PERCENT EXCEEDS	1000	510	549
50 PERCENT EXCEEDS	69	73	67
90 PERCENT EXCEEDS	13	13	11

e Estimated

UMATILLA RIVER BASIN

14020740 MOONSHINE CREEK NEAR MISSION, OR

LOCATION.--Lat 45°39'37", long 118°35'42", in NW 1/4 NE 1/4 sec.16, T.2 N., R.34 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on left bank, 60 ft upstream from county road crossing, 5.7 mi west of Mission, and at mile 1.1.

DRAINAGE AREA.--4.62 mi².

PERIOD OF RECORD.--November 1991 to current year.

REVISED RECORDS.--WDR OR-93-1: 1992(M); WDR OR-94-1: 1993.

GAGE.--Water-stage recorder. Elevation of gage is 1,600 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records poor. No known regulation.

AVERAGE DISCHARGE.--6 years (water years 1993-98), 3.38 ft³/s, 2,450 acre-ft per year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 247 ft³/s Feb. 7, 1996, gage height, 6.67 ft, from rating curve extended above 75 ft³/s; no flow many days most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 41 ft³/s Jan. 14, gage height, 5.59 ft; minimum discharge, 0.05 ft³/s several days in August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	.21	1.1	1.6	6.4	1.8	4.0	.93	3.5	.27	.09	.07
2	.12	.22	1.1	1.8	5.5	2.6	3.6	.87	3.0	.27	.09	.07
3	.14	.23	1.0	1.8	5.1	3.7	3.4	.81	2.5	.26	.08	.07
4	.13	.22	.93	1.8	5.1	4.3	3.2	.76	2.0	.25	.07	.07
5	.15	.24	.88	1.8	4.7	4.6	2.9	.81	1.7	.23	.06	.07
6	.15	.27	.83	1.7	4.3	4.6	2.7	.71	1.6	.22	.06	.07
7	.13	.36	.80	2.1	3.8	4.4	2.5	.66	1.3	.20	.07	.11
8	.12	.38	.85	2.0	3.4	4.4	2.2	.66	1.3	.19	.07	.10
9	.13	.38	.77	1.9	3.0	4.6	2.0	.83	1.1	.18	.07	.10
10	.12	.38	.83	1.8	2.7	5.4	1.9	.71	1.0	.17	.07	.10
11	.11	.38	1.0	1.7	2.4	6.4	2.1	.66	.92	.17	.07	.09
12	.11	.38	1.1	1.7	2.5	6.6	1.9	.64	.81	.15	.07	.08
13	.11	.38	1.0	1.7	2.4	6.1	1.8	.66	.73	.14	.07	.07
14	.10	.38	.99	1.7	2.5	5.4	2.2	.72	.67	.13	.06	.07
15	.10	.38	1.3	1.5	3.5	5.0	2.3	.84	.60	.11	.07	.07
16	.11	.38	1.4	9.6	4.0	4.6	2.4	.77	.63	.11	.09	.07
17	.11	.38	1.2	2.2	4.0	4.0	2.5	1.8	.56	.10	.10	.06
18	.11	.38	6.3	1.6	3.8	3.6	2.5	4.8	.50	.09	.11	.07
19	.11	.40	4.5	1.9	3.7	3.2	2.4	4.4	.48	.09	.11	.07
20	.12	.44	3.5	1.4	3.5	2.8	2.2	3.8	.46	.09	.10	.09
21	.13	.45	2.8	9.8	3.4	2.6	2.0	3.4	.43	.08	.10	.08
22	.14	.45	2.3	1.1	3.1	2.7	1.9	3.2	.41	.08	.10	.08
23	.15	.48	2.0	1.1	2.9	3.6	1.9	2.9	.38	.08	.10	.06
24	.14	.52	1.8	9.1	2.7	4.9	1.8	2.6	.39	.08	.11	.05
25	.14	.91	1.6	7.7	2.5	5.9	1.5	3.8	.39	.07	.10	.06
26	.14	1.4	1.5	7.1	2.3	6.2	1.4	4.6	.35	.07	.09	.07
27	.14	1.4	1.3	1.1	2.0	6.1	1.3	5.4	.33	.07	.09	.06
28	.14	1.2	1.3	9.8	1.9	5.7	1.2	5.3	.32	.07	.08	.06
29	.20	1.2	1.3	8.5	---	5.1	1.1	5.0	.30	.07	.08	.05
30	.23	1.1	1.4	8.1	---	4.8	.98	4.6	.28	.07	.08	.05
31	.21	---	1.5	7.3	---	4.4	---	4.1	---	.08	.08	---
TOTAL	4.14	15.88	73.58	236.4	97.1	140.1	65.78	71.74	28.94	4.24	2.59	2.19
MEAN	.13	.53	2.37	7.63	3.47	4.52	2.19	2.31	.96	.14	.084	.073
MAX	.23	1.4	1.4	2.2	6.4	6.6	4.0	5.4	3.5	.27	.11	.11
MIN	.10	.21	.77	1.6	1.9	1.8	.98	.64	.28	.07	.06	.05
AC-FT	8.2	31	146	469	193	278	130	142	57	8.4	5.1	4.3

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1998, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998
MEAN	.15	1.79	5.44	6.51	7.47	7.16	3.85
MAX	.33	3.65	14.2	9.67	25.1	12.0	7.80
(WY)	1997	1995	1997	1997	1996	1993	1996
MIN	.098	.26	.48	1.93	1.90	2.41	.58
(WY)	1994	1994	1994	1992	1994	1992	1992

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1992 - 1998

ANNUAL TOTAL	1077.72	742.68	
ANNUAL MEAN	2.95	2.03	3.38
HIGHEST ANNUAL MEAN			4.95
LOWEST ANNUAL MEAN			1.59
HIGHEST DAILY MEAN	54	22	164
LOWEST DAILY MEAN	.05	.05	.00
ANNUAL SEVEN-DAY MINIMUM	.06	.06	.00
ANNUAL RUNOFF (AC-FT)	2140	1470	2450
10 PERCENT EXCEEDS	6.9	5.1	8.3
50 PERCENT EXCEEDS	.58	.83	.69
90 PERCENT EXCEEDS	.07	.07	.05

UMATILLA RIVER BASIN

81

14020850 UMATILLA RIVER AT WEST RESERVATION BOUNDARY, NEAR PENDLETON, OR

LOCATION.--Lat 45°40'18", long 118°44'08", in NE 1/4 NW 1/4 sec.7, T.2 N., R.33 E., Umatilla County, Hydrologic Unit 17070103, on left bank, 0.5 mi east of west line of boundary for Umatilla Indian Reservation, 1.6 mi upstream from Wildhorse Creek, 2.5 mi east of Post Office in Pendleton, and at mile 58.3.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1995 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,130 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No known regulation. Many diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--3 years (water years 1996-98), 654 ft³/s, 473,600 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,700 ft³/s Feb. 9, 1996, gage height, 11.64 ft; minimum discharge, 36 ft³/s Aug. 25, 26, 30, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,860 ft³/s Mar. 24, gage height, 6.42 ft; minimum discharge, 43 ft³/s Aug. 28 to Sept. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	200	204	309	888	367	735	832	944	126	64	44
2	50	152	185	355	757	393	665	827	783	119	58	44
3	54	130	173	390	657	574	617	793	672	120	53	43
4	58	116	163	404	785	633	613	721	580	119	49	43
5	60	108	152	380	1040	642	606	706	504	112	47	44
6	64	101	143	350	933	633	594	633	458	106	47	44
7	61	108	138	337	810	593	589	566	428	100	47	46
8	60	119	146	315	771	559	568	514	413	93	47	51
9	63	116	135	291	744	544	540	555	359	89	46	56
10	62	113	131	270	666	622	540	518	323	101	45	57
11	61	110	129	278	600	717	570	472	302	119	45	55
12	65	107	125	275	541	822	585	442	276	113	45	51
13	64	104	124	256	511	999	556	450	254	99	46	50
14	62	100	126	321	471	1200	579	500	233	89	45	49
15	62	94	138	587	515	1220	582	558	218	82	45	48
16	62	91	391	509	527	1140	596	609	243	75	45	48
17	63	90	1020	938	512	1020	600	746	238	70	47	48
18	62	91	789	1110	493	872	601	1570	211	67	47	51
19	62	92	561	1460	469	755	598	1550	197	64	47	65
20	63	100	442	1380	458	684	615	1230	189	63	47	70
21	64	160	367	1010	481	722	677	1010	176	60	47	69
22	64	255	312	859	499	962	855	991	165	58	47	64
23	65	251	275	784	489	1660	1060	1100	164	57	47	61
24	70	257	249	862	474	2560	1280	1050	161	59	49	58
25	69	324	225	852	453	2170	1000	1590	166	58	47	58
26	67	353	204	826	429	1760	834	2290	159	55	46	67
27	67	324	190	1180	396	1510	767	2600	154	52	46	66
28	68	283	187	1410	374	1250	770	2240	144	51	45	62
29	77	248	199	1270	---	1050	788	1720	134	50	44	60
30	126	222	236	1210	---	913	812	1420	129	52	43	59
31	247	---	278	1030	---	803	---	1130	---	61	43	---
TOTAL	2191	4919	8137	21808	16743	30349	20792	31933	9377	2539	1466	1631
MEAN	70.7	164	262	703	598	979	693	1030	313	81.9	47.3	54.4
MAX	247	353	1020	1460	1040	2560	1280	2600	944	126	64	70
MIN	49	90	124	256	374	367	540	442	129	50	43	43
AC-FT	4350	9760	16140	43260	33210	60200	41240	63340	18600	5040	2910	3240

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1996 - 1998, BY WATER YEAR (WY)

	1996	1997	1998	1996	1997	1998	1996	1997	1998	1996	1997	1998
MEAN	66.6	413	832	1012	1606	1362	1307	909	233	73.0	45.0	49.5
MAX	70.7	717	1186	1360	2801	1971	1763	1030	313	81.9	47.6	54.4
(WY)	1998	1996	1997	1997	1996	1997	1997	1998	1998	1998	1997	1998
MIN	64.2	164	262	703	598	979	693	794	180	63.0	40.1	42.8
(WY)	1996	1998	1998	1998	1998	1998	1998	1996	1996	1996	1996	1996

SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1996 - 1998

ANNUAL TOTAL	249350	151885	654
ANNUAL MEAN	683	416	777
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			1998
HIGHEST DAILY MEAN	8450	2600	11700
LOWEST DAILY MEAN	45	43	37
ANNUAL SEVEN-DAY MINIMUM	45	43	38
ANNUAL RUNOFF (AC-FT)	494600	301300	473600
10 PERCENT EXCEEDS	1940	1010	1520
50 PERCENT EXCEEDS	226	247	325
90 PERCENT EXCEEDS	48	49	46

UMATILLA RIVER BASIN

14021980 PATAWA CREEK AT WEST RESERVATION BOUNDARY, NEAR PENDLETON, OR

LOCATION.--Lat 45°39'11", long 118°44'39", in NW 1/4 SW 1/4 sec. 18, T.2 N., R.33 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on left bank, at downstream side of county road crossing, 2 mi southwest of Pendleton City Hall, and at mile 2.9.

DRAINAGE AREA.--30 mi², excludes about 1 mi² in upper basin where water has been diverted directly to the Umatilla River.

PERIOD OF RECORD.--December 1973 to April 1975 (discharge measurements only), October 1991 to current year.

REVISED RECORDS.--WDR OR-94-1: 1993 (M).

GAGE.--Water-stage recorder. Elevation of gage is 1,220 ft above sea level, from topographic map.

REMARKS.--Records fair. No known regulation.

AVERAGE DISCHARGE.--7 years (water years 1992-98), 6.26 ft³/s, 4,530 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 378 ft³/s Feb. 7, 1996, gage height, 7.94 ft; minimum discharge, 0.09 ft³/s Oct. 30, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 57 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 14	2115	*99	*6.10	No other peak greater than base discharge.			
Minimum discharge, 0.13 ft ³ /s Sept. 13-15.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.54	.78	2.3	1.5	13	4.6	7.5	3.0	8.0	1.5	.53	.21
2	.54	.78	2.3	1.5	11	6.8	7.0	2.9	6.4	1.4	.51	.20
3	.55	.78	2.3	1.5	10	10	6.7	2.7	13	1.4	.53	.21
4	.55	.78	2.3	1.6	9.0	10	6.5	2.6	8.3	1.4	.50	.23
5	.55	.78	2.4	1.5	8.1	12	5.9	2.6	6.5	1.3	.51	.20
6	.57	.78	2.4	1.5	7.5	12	5.6	2.4	5.9	1.3	.51	e.20
7	.58	.98	2.4	1.7	6.8	11	5.4	2.3	5.4	1.2	.54	e.20
8	.61	1.3	2.7	1.7	6.2	11	e5.2	2.2	5.1	1.2	.46	e.23
9	.64	1.1	2.7	1.7	5.6	11	e5.0	2.3	4.4	1.2	.45	.23
10	.62	1.0	2.7	1.7	5.4	13	e5.0	2.2	3.9	1.2	.43	.19
11	.61	1.0	2.8	1.5	5.1	15	e5.2	2.2	3.7	1.2	.42	.18
12	.59	1.0	2.7	1.5	5.2	14	e5.0	2.1	3.3	1.2	.45	.18
13	.60	1.0	2.7	1.7	5.6	13	e5.0	2.2	3.0	1.1	.39	.17
14	.60	1.0	2.8	29	5.6	11	e5.2	2.4	2.7	1.1	.37	.15
15	.60	1.0	3.0	31	8.4	10	e5.4	2.6	2.5	1.0	.31	.16
16	.62	1.0	13	20	8.8	9.2	e5.6	2.5	2.4	1.0	.30	.23
17	.62	1.0	18	39	8.6	8.3	5.9	18	2.3	.98	.29	.22
18	.60	1.0	10	28	7.9	7.4	5.8	28	2.1	.86	.29	.24
19	.62	1.3	6.4	37	7.4	6.7	5.5	19	2.0	.83	.29	.27
20	.62	1.8	4.7	27	7.0	6.0	5.2	14	2.0	.81	.29	.31
21	.62	2.0	3.5	20	6.7	5.5	4.8	12	1.9	.80	.32	.37
22	.62	2.1	2.6	24	6.0	5.7	4.6	11	1.8	.76	.25	.33
23	.62	2.2	2.4	22	5.8	6.8	4.7	9.5	1.8	.75	.25	.29
24	.62	2.2	2.1	18	5.5	10	5.2	8.0	1.8	.72	.25	.29
25	.66	2.3	1.9	15	5.3	13	4.4	15	1.7	.62	.25	.29
26	.67	2.4	1.8	13	5.1	12	4.1	18	1.7	.58	.27	.29
27	.67	2.4	1.7	21	4.8	11	3.8	20	1.7	.58	.30	.29
28	.67	2.3	1.6	18	4.6	11	3.6	17	1.6	.60	.31	.29
29	.73	2.3	1.5	16	---	9.5	3.4	14	1.6	.62	.26	.29
30	.81	2.3	1.5	16	---	8.6	3.2	12	1.5	.63	.22	.29
31	.87	---	1.5	14	---	7.9	---	10	---	.64	.22	---
TOTAL	19.39	42.66	112.7	428.6	196.0	303.0	155.4	264.7	110.0	30.48	11.27	7.23
MEAN	.63	1.42	3.64	13.8	7.00	9.77	5.18	8.54	3.67	.98	.36	.24
MAX	.87	2.4	1.8	39	13	15	7.5	28	13	1.5	.54	.37
MIN	.54	.78	1.5	1.5	4.6	4.6	3.2	2.1	1.5	.58	.22	.15
AC-FT	38	85	224	850	389	601	308	525	218	60	22	14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1992 - 1998, BY WATER YEAR (WY)

	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
MEAN	.56	2.53	5.85	11.7	13.2	15.8	9.60	11.9	2.12	.89	.65	.56
MAX	.71	5.88	14.5	21.8	34.6	26.7	16.8	37.0	3.67	1.45	.98	.89
(WY)	1994	1992	1997	1997	1996	1997	1993	1995	1998	1997	1997	1993
MIN	.31	.80	.65	1.30	2.84	5.19	1.81	1.01	.48	.22	.24	.24
(WY)	1993	1994	1993	1992	1992	1992	1992	1992	1992	1992	1992	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1992 - 1998

	1997	1998	1992-1998
ANNUAL TOTAL	2936.46	1681.43	
ANNUAL MEAN	8.05	4.61	
HIGHEST ANNUAL MEAN			6.26
LOWEST ANNUAL MEAN			10.6
HIGHEST DAILY MEAN	180	39	218
LOWEST DAILY MEAN	.54	.15	.10
ANNUAL SEVEN-DAY MINIMUM	.55	.18	.12
ANNUAL RUNOFF (AC-FT)	5820	3340	4530
10 PERCENT EXCEEDS	18	12	16
50 PERCENT EXCEEDS	2.3	2.2	1.7
90 PERCENT EXCEEDS	.63	.29	.43

e Estimated

UMATILLA RIVER BASIN

83

14022200 NORTH FORK MCKAY CREEK NEAR PILOT ROCK, OR

LOCATION.--Lat 45°30'24", long 118°36'57", in NE 1/4 SE 1/4 sec.1, T.1 S., R.33 E., Umatilla County, Hydrologic Unit 17070103, Umatilla Indian Reservation, on left bank 10 mi northeast of Pilot Rock and at mile 0.5.

DRAINAGE AREA.--48.6 mi².

PERIOD OF RECORD.--May 1973 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,870 ft above sea level, from topographic map.

REMARKS.--Records fair except those for the period June to September and estimated daily discharges, which are poor. No regulation. Minor diversion upstream from station.

AVERAGE DISCHARGE.--25 years (water years 1974-98), 43.0 ft³/s, 31,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,980 ft³/s Jan. 25, 1975, gage height, 8.48 ft, from floodmark, from rating curve extended above 150 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.22 ft³/s June 26, 1985 (result of temporary construction upstream).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 290 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 19	0900	298	3.08	May 17	2130	*335	*3.24

Minimum discharge, 0.31 ft³/s Sept. 6, 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	8.5	16	24	90	79	58	11	60	4.2	1.2	.43
2	1.3	6.4	15	31	75	110	52	10	50	3.6	1.0	.42
3	1.4	5.5	14	32	70	160	49	9.7	48	4.1	.82	.48
4	1.5	4.7	12	32	88	170	48	9.0	39	3.4	.67	.48
5	1.7	4.2	11	31	85	157	45	9.3	32	2.9	.53	.44
6	1.6	4.0	10	29	74	135	42	8.3	29	2.7	.50	.40
7	1.6	5.0	9.7	30	68	118	38	7.7	25	2.5	.52	.65
8	1.6	11	10	29	65	102	35	7.7	23	2.2	.46	e.95
9	1.7	14	9.3	26	56	85	32	13	20	2.2	.46	e.95
10	1.6	12	8.8	25	48	71	30	10	17	2.3	.45	e.90
11	1.7	11	8.8	23	42	61	29	8.9	15	2.3	.45	e.90
12	1.7	9.9	9.0	23	43	60	30	8.4	13	2.0	.44	e.90
13	1.7	9.0	9.5	25	49	67	27	9.7	12	2.0	.44	e.90
14	1.6	7.9	10	51	53	e86	28	12	10	e2.0	.41	e.90
15	1.6	7.2	15	81	51	e90	30	19	9.6	e1.9	.34	e.90
16	1.6	6.5	109	67	50	e86	30	18	11	e1.8	.38	e.90
17	1.6	6.1	161	176	49	e80	29	116	9.2	e1.7	.43	e.90
18	1.6	5.8	83	187	48	e72	28	e200	8.2	e1.7	.46	e1.0
19	1.6	6.1	53	265	45	e66	26	e160	7.7	e1.6	.47	e1.1
20	1.7	5.8	41	188	42	e62	25	e120	7.2	e1.5	.45	e1.2
21	1.7	9.3	32	123	35	e90	23	e100	6.2	e1.4	.52	1.1
22	1.7	13	26	127	31	e110	21	e80	5.8	e1.4	.46	.69
23	1.9	13	23	142	31	e120	22	e70	5.8	e1.4	.55	.53
24	2.0	15	20	146	42	147	23	e65	5.8	e1.3	.65	.47
25	1.9	20	18	117	77	158	20	e100	6.6	e1.3	.58	.97
26	1.8	24	16	116	90	130	18	e150	7.0	e1.3	.53	2.0
27	1.7	22	15	200	93	113	16	e170	6.5	e1.2	.50	1.1
28	1.8	19	15	169	82	96	15	e150	5.6	e1.2	.45	.77
29	2.8	17	16	147	---	83	13	e130	5.0	e1.2	.39	.56
30	6.0	16	22	134	---	72	12	e90	4.6	e1.2	.40	.54
31	16	---	23	110	---	64	---	75	---	1.2	.41	---
TOTAL	70.8	318.9	841.1	2906	1672	3100	894	1947.7	504.8	62.7	16.32	24.43
MEAN	2.28	10.6	27.1	93.7	59.7	100	29.8	62.8	16.8	2.02	.53	.81
MAX	16	24	161	265	93	170	58	200	60	4.2	1.2	2.0
MIN	1.1	4.0	8.8	23	31	60	12	7.7	4.6	1.2	.34	.40
AC-FT	140	633	1670	5760	3320	6150	1770	3860	1000	124	32	48

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1998, BY WATER YEAR (WY)

	MEAN	2.52	23.1	54.5	77.5	95.9	113	83.3	49.8	14.5	2.33	1.12	1.21
MAX	8.50	74.6	197	170	225	223	200	154	60.4	4.97	2.77	2.74	
(WY)	1983	1992	1974	1976	1996	1984	1974	1995	1984	1991	1993	1977	
MIN	.90	1.30	3.11	5.01	4.39	29.3	16.2	5.08	2.26	.73	.53	.78	
(WY)	1988	1988	1977	1977	1977	1992	1992	1992	1992	1985	1998	1987	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1974 - 1998

ANNUAL TOTAL	16435.27	12358.75	
ANNUAL MEAN	45.0	33.9	43.0
HIGHEST ANNUAL MEAN			72.5
LOWEST ANNUAL MEAN			10.7
HIGHEST DAILY MEAN	510	265	1070
LOWEST DAILY MEAN	.75	.34	.34
ANNUAL SEVEN-DAY MINIMUM	.80	.41	.41
ANNUAL RUNOFF (AC-FT)	32600	24510	31140
10 PERCENT EXCEEDS	129	109	122
50 PERCENT EXCEEDS	9.5	12	12
90 PERCENT EXCEEDS	.99	.62	1.0

e Estimated

UMATILLA RIVER BASIN

14033500 UMATILLA RIVER NEAR UMATILLA, OR

LOCATION.--Lat 45°54'11", long 119°19'33", in SW 1/4 NW 1/4 sec.21, T.5 N., R.28 E., Umatilla County, Hydrologic Unit 17070103, on left bank, 1.2 mi southeast of Umatilla, 1.6 mi downstream from West Division main canal of Umatilla project, and at mile 2.1.

DRAINAGE AREA.--2,290 mi², approximately.

PERIOD OF RECORD.--October 1903 to current year.

REVISED RECORDS.--WSP 794: Drainage area. WSP 1398: 1909, 1911, 1914, 1928, 1935.

GAGE.--Water-stage recorder. Datum of gage is 330.47 ft above sea level. Oct. 21, 1903, to Jan. 25, 1931, nonrecording gage.

REMARKS.--Records good except for estimated daily discharges, which are poor. Some regulation since 1927 by McKay Reservoir. Many diversions upstream from station for irrigation of lands upstream and downstream from station; Brownell Canal diverts downstream from station. Diversions since 1908 to Cold Springs Reservoir, an off-channel reservoir, capacity, 52,380 acre-ft. Continuous water-quality records for the period October 1962 to September 1969 have been collected at this location. U.S. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--71 years (water years 1928-98), 476 ft³/s, 344,700 acre-ft/yr. Water years prior to 1928 not included in computation of average discharge owing to increased regulation and diversion since 1927.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,800 ft³/s Jan. 30, 1965, gage height, 10.75 ft; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 28	0315	*3,230	*5.21	No other peak greater than base discharge.			
Minimum discharge, 0.85 ft ³ /s July 17-21.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	221	413	359	271	932	357	626	448	1170	159	4.8	66
2	221	458	340	291	795	361	556	472	939	151	1.8	63
3	235	443	322	318	659	399	456	463	688	132	1.3	59
4	255	410	307	347	557	493	464	416	469	139	1.8	62
5	265	315	295	375	692	576	504	339	390	140	2.4	62
6	271	260	284	389	901	602	493	316	436	133	1.2	71
7	281	240	275	388	795	589	486	261	464	e20	1.1	74
8	286	243	267	381	692	539	461	339	418	e1.5	1.4	84
9	289	253	264	371	647	502	417	329	418	e2.0	1.2	87
10	283	247	259	357	599	486	373	375	361	e2.5	1.2	90
11	281	241	256	341	527	557	362	359	319	e2.2	1.4	74
12	281	235	254	325	467	650	398	349	297	e1.9	2.2	82
13	287	231	250	324	420	749	421	354	288	e1.7	1.3	162
14	286	225	247	324	439	932	424	388	284	e1.6	1.3	160
15	277	223	243	346	443	1130	456	454	293	e1.4	1.4	165
16	266	219	243	437	470	1210	469	567	296	e1.2	1.2	166
17	271	219	290	450	463	1160	468	629	307	e1.1	3.6	167
18	276	214	562	576	383	1020	464	1000	273	1.1	37	185
19	276	214	644	692	363	886	453	1710	278	.94	62	237
20	276	214	562	792	353	737	434	1320	295	.95	59	243
21	278	210	441	843	347	615	436	1050	298	1.8	56	243
22	284	212	375	863	369	623	487	874	279	2.1	54	241
23	290	241	342	848	378	901	566	954	279	1.1	57	209
24	287	281	334	832	361	e1600	724	1100	304	2.4	67	205
25	281	306	327	822	341	e2500	867	1090	372	1.7	68	206
26	283	338	307	818	342	e2100	720	2150	338	1.2	65	208
27	294	376	290	814	352	e1700	540	2850	299	1.1	67	216
28	299	398	271	850	364	1450	429	3170	227	1.5	63	224
29	301	396	261	889	---	1190	370	2660	200	2.3	60	238
30	310	380	256	1100	---	956	389	1990	186	1.6	60	235
31	336	---	257	1090	---	765	---	1430	---	2.7	65	---
TOTAL	8627	8655	9984	17864	14451	28335	14713	30206	11465	913.59	870.6	4584
MEAN	278	289	322	576	516	914	490	974	382	29.5	28.1	153
MAX	336	458	644	1100	932	2500	867	3170	1170	159	68	243
MIN	221	210	243	271	341	357	362	261	186	.94	1.1	59
AC-FT	17110	17170	19800	35430	28660	56200	29180	59910	22740	1810	1730	9095

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1998, BY WATER YEAR (WY)

MEAN	99.7	267	545	726	975	1153	1157	615	124	19.8	22.4	40.6
MAX	481	1302	1948	2366	3786	3678	3056	3362	805	149	95.0	153
(WY)	1928	1928	1974	1965	1996	1972	1958	1948	1950	1942	1993	1998
MIN	4.18	40.2	70.8	89.3	86.7	154	4.57	1.55	1.33	.81	1.04	.59
(WY)	1978	1932	1988	1930	1977	1977	1968	1977	1979	1985	1985	1987

SUMMARY STATISTICS

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1928 - 1998	
ANNUAL TOTAL	342514.9		150668.19			
ANNUAL MEAN	938		413		476	
HIGHEST ANNUAL MEAN					1026	
LOWEST ANNUAL MEAN					77.5	
HIGHEST DAILY MEAN	12600	Jan 2	3170	May 28	15600	Jan 30 1965
LOWEST DAILY MEAN	2.1	Jul 25	.94	Jul 19	.00	Apr 20 1930
ANNUAL SEVEN-DAY MINIMUM	2.1	Jul 25	1.2	Jul 14	.00	Oct 18 1931
ANNUAL RUNOFF (AC-FT)	679400		298900		344700	
10 PERCENT EXCEEDS	2600		865		1330	
50 PERCENT EXCEEDS	289		315		146	
90 PERCENT EXCEEDS	8.3		2.4		6.0	

e Estimated

WILLOW CREEK BASIN

85

14034470 WILLOW CREEK ABOVE WILLOW CREEK LAKE, NEAR HEPPNER, OR

LOCATION.--Lat 45°20'27", long 119°30'53", in NE 1/4 NE 1/4 sec.1, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank 1.5 mi southeast of Heppner, 1.7 mi upstream from Willow Creek dam, and at mile 54.1.

DRAINAGE AREA.--67.6 mi².

PERIOD OF RECORD.--October 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 2,085.41 ft above sea level (levels by Corps of Engineers).

REMARKS.--Records fair. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station. Chemical analysis May 1985 to September 1987.

AVERAGE DISCHARGE.--16 years (water years 1983-98), 23.7 ft³/s, 17,170 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 544 ft³/s Feb. 1, 1997, gage height, 9.60 ft, from crest-stage gage; minimum discharge, 0.01 ft³/s July 31 to Sept. 14, 1988, Aug. 20, 1992, but may have been less during period of no gage-height record July 31 to Sept. 14, 1988.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 140 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	unknown	*191	*a7.43	No other peak greater than base discharge.			
Minimum discharge, 1.1 ft ³ /s July 28, 29.							
a From crest-stage gage.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	7.6	10	6.9	26	17	35	44	e120	6.3	2.0	1.8
2	3.2	6.7	9.9	7.5	24	25	32	42	e100	5.7	1.6	1.8
3	3.4	6.4	9.2	7.4	23	37	32	36	80	5.4	2.0	1.8
4	3.7	6.3	9.6	7.6	24	43	35	29	65	4.9	2.0	1.8
5	3.5	6.2	9.4	6.9	22	38	32	23	54	6.0	1.9	1.9
6	3.7	6.1	8.8	7.2	22	38	34	23	46	6.1	1.9	1.9
7	3.7	7.4	9.3	7.8	22	32	36	24	40	4.5	1.9	2.7
8	3.6	9.5	10	7.0	21	30	36	25	37	5.3	1.6	3.5
9	3.4	7.9	9.5	6.3	20	29	36	26	31	4.1	1.9	3.7
10	3.8	7.3	9.9	6.7	18	32	35	24	30	2.5	2.5	3.9
11	4.0	7.0	9.3	6.0	17	35	36	23	28	2.7	3.1	3.4
12	4.2	6.9	9.7	5.8	16	42	36	22	25	2.3	3.0	3.2
13	4.2	6.6	9.0	8.0	16	53	36	20	22	1.9	2.9	3.0
14	4.1	6.3	8.8	11	16	56	37	19	20	2.3	2.6	2.5
15	3.5	6.6	7.5	11	18	59	39	20	19	2.7	2.6	2.3
16	3.3	6.6	7.8	10	16	60	44	20	19	2.5	2.6	2.2
17	3.5	6.4	9.5	27	16	51	47	43	18	2.4	2.6	2.2
18	3.4	6.5	7.9	31	15	42	49	74	16	2.4	2.7	2.2
19	3.6	9.9	6.4	43	16	39	50	78	16	2.4	2.6	2.8
20	3.3	10	7.5	30	17	37	50	83	15	2.2	2.5	3.0
21	3.4	9.7	6.8	22	18	40	54	83	14	2.1	2.5	3.6
22	3.4	9.8	5.7	e22	17	54	64	77	14	1.6	2.3	3.5
23	3.4	10	6.6	e36	17	82	73	66	13	1.6	2.6	3.2
24	3.7	11	7.4	44	16	92	77	59	12	1.5	2.7	3.2
25	4.0	12	6.0	32	16	76	67	83	13	1.4	2.5	3.1
26	4.0	11	5.7	27	15	65	58	e100	15	1.3	2.3	3.3
27	4.0	11	7.2	32	13	59	50	e90	13	1.3	2.2	3.4
28	4.1	10	7.0	35	14	48	48	e80	12	1.3	2.1	3.2
29	5.3	10	7.2	34	---	45	45	e74	8.9	1.2	1.9	3.0
30	8.6	10	7.0	33	---	40	45	e180	6.0	1.3	1.9	2.9
31	11	---	6.8	29	---	36	---	e170	---	2.0	1.8	---
TOTAL	127.1	248.7	252.4	600.1	511	1432	1348	1760	921.9	91.2	71.3	84.0
MEAN	4.10	8.29	8.14	19.4	18.3	46.2	44.9	56.8	30.7	2.94	2.30	2.80
MAX	11	12	10	44	26	92	77	180	120	6.3	3.1	3.9
MIN	3.1	6.1	5.7	5.8	13	17	32	19	6.0	1.2	1.6	1.8
AC-FT	252	493	501	1190	1010	2840	2670	3490	1830	181	141	167

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1998, BY WATER YEAR (WY)

	3.39	8.77	17.7	24.1	40.9	63.6	52.7	47.1	19.2	4.77	1.63	1.69
MEAN	3.39	8.77	17.7	24.1	40.9	63.6	52.7	47.1	19.2	4.77	1.63	1.69
MAX	7.10	21.2	72.8	78.2	109	128	116	110	55.4	11.2	3.99	6.13
(WY)	1983	1987	1997	1997	1997	1993	1984	1995	1984	1993	1997	1984
MIN	.20	2.79	4.02	6.68	7.52	9.81	11.9	2.73	1.60	.88	.010	.064
(WY)	1989	1988	1991	1990	1994	1988	1992	1992	1992	1985	1988	1988

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1983 - 1998

ANNUAL TOTAL	11456.2	7447.7	23.7
ANNUAL MEAN	31.4	20.4	44.3
HIGHEST ANNUAL MEAN			6.84
LOWEST ANNUAL MEAN			1984
HIGHEST DAILY MEAN	450	180	450
LOWEST DAILY MEAN	2.0	1.2	.01
ANNUAL SEVEN-DAY MINIMUM	2.2	1.3	.01
ANNUAL RUNOFF (AC-FT)	22720	14770	17170
10 PERCENT EXCEEDS	63	50	65
50 PERCENT EXCEEDS	11	9.7	9.3
90 PERCENT EXCEEDS	3.5	2.3	.76

e Estimated

WILLOW CREEK BASIN

14034480 BALM FORK NEAR HEPPNER, OR

LOCATION.--Lat 45°19'56", long 119°32'24", in NW 1/4 SE 1/4 sec.2, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank, 0.7 mi upstream from bridge on Willow Creek Road, 1.0 mi southeast of Heppner, 1.2 mi upstream from Willow Creek dam, and at mile 1.1.

DRAINAGE AREA.--26.3 mi².

PERIOD OF RECORD.--May 1982 to current year.

REVISED RECORDS.--WDR OR-83-1: Drainage area. WDR OR-88-1: 1987(M).

GAGE.--Water-stage recorder. Concrete control since Aug. 24, 1982. Datum of gage is 2,101.52 ft above sea level (Corps of Engineers bench mark).

REMARKS.--Records poor. Diversion for irrigation of about 170 acres upstream from station. Chemical analysis May 1985 to September 1987.

AVERAGE DISCHARGE.--16 years (water years 1983-98), 3.06 ft³/s, 2,220 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 190 ft³/s Mar. 4, 1983, gage height, 4.90 ft, from rating curve extended above 82 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 5.12 ft Dec. 29, 1996; no flow for part or all of several days in 1982, 1990, 1991, 1992.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 36,000 ft³/s June 14, 1903, by computation of slope-area measurement (see WSP 96).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 60 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 30	1415	*128	*5.57	No other peak greater than base discharge.			
Minimum discharge, 0.09 ft ³ /s Sept. 3, 4, 6.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.34	.69	1.3	e1.7	7.1	2.8	4.0	3.2	30	1.2	.14	.11
2	.52	.67	1.3	e1.7	6.5	3.5	3.8	3.2	21	.79	.13	.10
3	.49	.66	1.3	1.8	5.7	6.7	3.7	3.0	16	.76	.14	.10
4	.53	.72	1.3	1.9	4.6	11	4.5	2.7	13	.72	.14	.09
5	.51	.77	1.2	1.8	3.4	11	4.5	2.6	11	.73	.14	.10
6	.51	.78	1.2	1.8	2.9	12	4.5	2.5	8.7	.70	.14	.10
7	.52	.90	1.3	2.2	2.7	12	4.3	2.3	7.2	.72	.14	.17
8	.53	.90	1.3	1.9	2.8	11	4.3	2.2	6.1	.84	.14	.11
9	.63	.88	1.2	1.9	3.0	10	4.0	2.2	5.3	1.0	.14	.11
10	.55	.86	1.2	2.0	3.1	11	3.8	2.1	4.9	.21	.14	.11
11	.55	.89	1.2	2.0	3.0	14	3.6	2.1	4.6	.20	.14	.10
12	.55	.88	1.2	2.0	3.0	13	3.4	2.0	4.1	.21	.14	.13
13	.55	.89	1.2	2.3	2.8	11	3.3	2.0	3.8	.22	.14	.13
14	.62	.95	1.2	3.8	2.8	9.2	3.5	1.9	3.4	.23	.13	.13
15	.60	.95	e1.2	4.2	3.4	8.5	e3.6	1.9	3.3	.24	.12	.13
16	.60	1.0	e1.2	4.2	3.1	8.1	e3.6	1.9	3.2	.20	.12	.14
17	.58	1.1	e1.3	9.6	2.0	7.2	e3.6	2.2	3.1	.20	.12	.13
18	.58	1.1	e1.2	11	1.9	6.4	e3.5	4.9	3.0	.21	.12	.15
19	.59	1.1	e1.1	17	2.0	5.4	3.3	8.1	2.8	.21	.12	.16
20	.59	1.1	e1.2	18	2.1	4.8	3.4	8.5	2.8	.21	.12	.15
21	.59	1.1	e1.2	16	2.4	4.5	3.3	10	2.5	.20	.11	.15
22	.58	1.2	e1.1	15	2.3	4.6	3.7	9.4	2.6	.18	.11	.15
23	.59	1.1	e1.3	16	2.4	4.4	4.2	8.4	2.4	.17	.11	.15
24	.59	1.2	e1.4	13	2.3	4.2	4.5	8.1	2.3	.16	.11	.15
25	.58	1.2	e1.5	11	2.5	4.4	4.2	9.8	2.3	.15	.12	.16
26	.58	1.2	e1.4	9.6	2.6	4.2	3.8	11	2.2	.14	.13	.17
27	.58	1.2	e1.4	10	2.7	4.2	4.1	10	2.0	.14	.13	.17
28	.59	1.2	e1.5	10	2.6	4.2	4.2	8.7	1.9	.14	.11	.17
29	.67	1.2	e1.7	9.4	---	4.0	4.0	8.5	1.6	.14	.14	.15
30	.79	1.3	e1.7	8.3	---	3.9	3.6	54	1.5	.14	.14	.14
31	.80	---	e1.7	7.7	---	4.0	---	52	---	.14	.12	---
TOTAL	17.88	29.69	40.5	218.8	87.7	225.2	115.8	251.4	178.6	11.50	3.99	4.01
MEAN	.58	.99	1.31	7.06	3.13	7.26	3.86	8.11	5.95	.37	.13	.13
MAX	.80	1.3	1.7	18	7.1	14	4.5	54	30	1.2	.14	.17
MIN	.34	.66	1.1	1.7	1.9	2.8	3.3	1.9	1.5	.14	.11	.09
AC-FT	35	59	80	434	174	447	230	499	354	23	7.9	8.0

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1998, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	.37	1.02	2.95	3.90	6.52	9.65	5.06	4.51	1.83	.45	.16	.21					
MAX	1.53	3.97	20.1	12.3	19.2	21.0	16.4	13.0	5.95	1.24	.51	1.02					
(WY)	1985	1997	1997	1997	1996	1993	1984	1995	1998	1993	1984	1984					
MIN	.000	.002	.038	.28	.66	.47	.29	.24	.077	.034	.011	.006					
(WY)	1992	1992	1991	1991	1990	1992	1992	1992	1992	1992	1982	1991					

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1982 - 1998
ANNUAL TOTAL	1614.12	1185.07	
ANNUAL MEAN	4.42	3.25	
HIGHEST ANNUAL MEAN			3.06
LOWEST ANNUAL MEAN			6.23
HIGHEST DAILY MEAN	52 Feb 1	54 May 30	.24 1997
LOWEST DAILY MEAN	.10 Aug 22	.09 Sep 4	.00 Dec 25 1990
ANNUAL SEVEN-DAY MINIMUM	.11 Aug 18	.10 Aug 31	.00 Sep 18 1991
ANNUAL RUNOFF (AC-FT)	3200	2350	2220
10 PERCENT EXCEEDS	12	8.9	9.0
50 PERCENT EXCEEDS	1.3	1.6	.87
90 PERCENT EXCEEDS	.15	.14	.04

e Estimated

WILLOW CREEK BASIN

87

14034490 WILLOW CREEK LAKE AT HEPNER, OR

LOCATION.--Lat 45°20'50", long 119°32'37", in NW 1/4 SE 1/4 sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, U.S. Corps of Engineers land, on top left side of spillway on dam on Willow Creek, 2,000 ft upstream from Court Street bridge and at mile 52.4.

DRAINAGE AREA.--96.6 mi².

PERIOD OF RECORD.--February 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers). Prior to Dec. 22, 1983, nonrecording gage at nearby site at present datum. U.S. Geological Survey satellite telemeter at station.

REMARKS.--Lake is formed behind roller-compacted, concrete dam; storage began Feb. 16, 1983. Capacity, 14,020 acre-ft between elevations 2,000.0 ft, sill of outlet gates, and 2,113.5 ft, crest of spillway. Average minimum lake elevation 2,047.0 ft, storing 2,540 acre-ft. Dead storage, 73 acre-ft below elevation 2,000.0 ft. Reservoir used for flood control. Figures given herein represent total contents. U.S. Geological Survey satellite telemeter at station.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 7,340 acre-ft May 8, 1995, elevation, 2,083.06 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 6,660 acre-ft June 1, elevation, 2,079.06 ft; minimum contents, 4,200 acre-ft Feb. 25, elevation, 2,062.00 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

2,050	2,840	2,060	3,950	2,070	5,280	2,080	6,820
2,055	3,370	2,065	4,590	2,075	6,020		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2073.80	2070.49	2062.59	2062.55	2062.70	2062.30	2072.29	2074.55	2079.04	2076.08	2075.25	2074.48
2	2073.77	2070.34	2062.55	2062.57	2062.49	2062.62	2072.28	2074.66	2078.82	2076.04	2075.22	2074.45
3	2073.75	2070.01	2062.51	2062.59	2062.41	2063.21	2072.29	2074.68	2078.34	2076.04	2075.20	2074.42
4	2073.72	2069.56	2062.47	2062.61	2062.40	2063.87	2072.33	2074.65	2077.66	2076.04	2075.19	2074.39
5	2073.69	2069.12	2062.44	2062.62	2062.49	2064.47	2072.32	2074.61	2076.80	2076.06	2075.13	2074.36
6	2073.68	2068.68	2062.41	2062.65	2062.57	2065.05	2072.34	2074.64	2075.83	2076.07	2075.10	2074.33
7	2073.66	2068.27	2062.38	2062.68	2062.62	2065.56	2072.38	2074.69	2074.74	2076.07	2075.05	2074.40
8	2073.69	2067.88	2062.36	2062.68	2062.66	2066.03	2072.42	2074.77	2074.42	2076.07	2075.01	2074.39
9	2073.67	2067.45	2062.34	2062.67	2062.69	2066.47	2072.50	2074.85	2074.50	2076.06	2074.98	2074.37
10	2073.67	2067.01	2062.34	2062.68	2062.68	2066.95	2072.55	2074.91	2074.75	2076.00	2074.95	2074.36
11	2073.64	2066.56	2062.34	2062.69	2062.66	2067.34	2072.61	2074.97	2074.96	2075.95	2074.95	2074.35
12	2073.64	2066.10	2062.34	2062.68	2062.61	2067.53	2072.66	2075.04	2075.11	2075.89	2074.94	2074.34
13	2073.64	2065.82	2062.34	2062.75	2062.55	2067.83	2072.71	2075.05	2075.20	2075.83	2074.93	2074.32
14	2073.64	2065.62	2062.34	2062.83	2062.50	2068.38	2072.85	2075.10	2075.27	2075.81	2074.90	2074.30
15	2073.63	2065.44	2062.41	2062.93	2062.51	2069.04	2073.01	2075.22	2075.37	2075.79	2074.87	2074.28
16	2073.51	2065.25	2062.41	2063.07	2062.47	2069.74	2073.26	2075.37	2075.50	2075.78	2074.83	2074.25
17	2073.30	2065.07	2062.46	2063.37	2062.40	2070.18	2073.58	2075.83	2075.63	2075.75	2074.81	2074.22
18	2073.09	2064.88	2062.49	2063.42	2062.33	2070.43	2073.93	2076.58	2075.71	2075.72	2074.79	2074.22
19	2072.87	2064.69	2062.51	2063.15	2062.25	2070.61	2074.21	2076.81	2075.79	2075.69	2074.78	2074.20
20	2072.65	2064.49	2062.50	2062.83	2062.26	2070.77	2074.51	2077.02	2075.86	2075.66	2074.76	2074.20
21	2072.42	2064.30	2062.51	2062.66	2062.17	2070.96	2074.86	2077.23	2075.92	2075.63	2074.74	2074.20
22	2072.22	2064.12	2062.50	2062.60	2062.13	2071.31	2075.24	2077.25	2075.98	2075.61	2074.72	2074.20
23	2072.01	2063.94	2062.50	2062.74	2062.08	2071.90	2075.54	2077.09	2076.00	2075.57	2074.69	2074.19
24	2071.78	2063.76	2062.52	2063.06	2062.03	2072.30	2075.49	2076.92	2076.03	2075.53	2074.68	2074.17
25	2071.58	2063.60	2062.50	2063.18	2062.01	2072.37	2075.27	2077.57	2076.08	2075.50	2074.67	2074.15
26	2071.37	2063.42	2062.48	2063.17	2062.06	2072.38	2074.92	2077.96	2076.14	2075.47	2074.64	2074.14
27	2071.15	2063.24	2062.49	2063.24	2062.10	2072.49	2074.61	2078.00	2076.19	2075.44	2074.62	2074.14
28	2070.96	2063.06	2062.51	2063.29	2062.18	2072.46	2074.41	2077.84	2076.22	2075.41	2074.59	2074.13
29	2070.80	2062.87	2062.52	2063.24	---	2072.37	2074.34	2077.53	2076.20	2075.33	2074.56	2074.12
30	2070.73	2062.68	2062.53	2063.12	---	2072.26	2074.41	2078.18	2076.14	2075.30	2074.53	2074.11
31	2070.64	---	2062.53	2062.94	---	2072.27	---	2078.89	---	2075.27	2074.51	---
MAX	2073.80	2070.49	2062.59	2063.42	2062.70	2072.49	2075.54	2078.89	2079.04	2076.08	2075.25	2074.48
MIN	2070.64	2062.68	2062.34	2062.55	2062.01	2062.30	2072.28	2074.55	2074.42	2075.27	2074.51	2074.11
(†)	5370	4280	4270	4320	4220	5600	5930	6630	6190	6060	5940	5880
(‡)	-470	-1090	-10	+50	-100	+1380	+330	+700	-440	-130	-120	-60

CAL YR 1997 MAX 2076.80 MIN 2057.97 AC-FT† -1060
WTR YR 1998 MAX 2079.04 MIN 2062.01 AC-FT† +40

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

WILLOW CREEK BASIN

14034500 WILLOW CREEK AT HEPPNER, OR

LOCATION.--Lat 45°21'02", long 119°32'56", in SE 1/4 NW 1/4 sec.35, T.2 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on right bank at Heppner, 100 ft upstream from Court Street bridge, 800 ft southeast of Morrow County courthouse, 0.2 mi downstream from Willow Creek Dam and at mile 52.2.

DRAINAGE AREA.--96.8 mi².

PERIOD OF RECORD.--May 1951 to current year.

REVISED RECORDS.--WDR OR-83-1: Drainage area.

GAGE.--Water-stage recorder. Concrete control since September 1985. Datum of gage is 1,952.73 ft above sea level.

REMARKS.--Records fair. Flow regulated by Willow Creek Lake, 0.2 mi upstream, since Feb. 16, 1983. Many diversions for irrigation upstream from station. Part of flow of Ditch Creek (John Day River basin) is diverted to Willow Creek upstream from station. Continuous water-quality records for the period February 1963 to June 1968 and March 1972 to September 1973 have been collected at this location. Chemical analysis Oct. 1984 to September 1987.

AVERAGE DISCHARGE.--31 years (water years 1952-82), 19.1 ft³/s, 13,840 acre-ft/yr.
15 years (water years 1984-98), 24.0 ft³/s, 17,410 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 812 ft³/s May 10, 1957, gage height, 6.15 ft, from rating curve extended above 230 ft³/s; maximum gage height, 6.46 ft May 25, 1971, backwater from Shobe Canyon; no flow at times.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, about 36,000 ft³/s June 14, 1903, result of slope-area measurement (see WSP 96). Discharge for flood of Feb. 22, 1949, was 1,700 ft³/s, result of slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 157 ft³/s June 1-3, gage height, 4.34 ft; minimum discharge, 2.6 ft³/s July 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.9	19	14	8.9	53	14	35	35	154	11	2.8	2.9
2	3.9	19	11	8.9	46	11	35	35	154	9.7	2.8	2.9
3	3.9	30	10	8.9	36	6.5	35	35	154	6.1	2.8	2.9
4	3.9	39	10	8.9	31	6.3	35	34	153	6.1	2.7	2.9
5	3.8	39	10	8.9	24	7.0	35	27	153	6.1	2.8	2.9
6	3.9	39	10	8.9	23	7.0	35	21	153	6.1	3.0	2.9
7	3.9	39	10	8.9	23	7.1	35	19	153	6.1	3.5	3.0
8	3.9	39	10	8.9	23	7.2	34	19	83	6.1	3.5	3.0
9	3.9	38	9.7	8.9	23	7.2	33	19	35	6.1	3.5	3.0
10	3.9	39	8.9	8.9	23	7.2	33	19	20	6.1	3.6	3.0
11	3.9	39	8.9	8.9	23	17	33	19	20	6.1	3.1	3.0
12	3.9	38	8.9	8.9	23	36	33	19	20	6.1	3.1	2.9
13	3.9	28	8.9	8.9	23	36	33	18	20	5.7	3.1	2.9
14	3.9	20	8.9	9.0	23	22	32	16	20	3.5	3.1	2.8
15	3.9	20	8.9	9.0	23	16	29	11	16	3.3	3.1	2.8
16	11	20	8.9	9.0	23	16	29	11	13	3.3	3.1	2.8
17	19	20	8.9	9.1	23	27	29	11	13	3.3	3.1	2.8
18	19	20	8.9	29	23	32	29	20	13	3.3	3.1	2.8
19	19	20	8.9	62	23	32	29	67	13	3.3	3.1	2.8
20	19	20	8.9	58	23	32	29	82	13	3.1	2.9	2.9
21	19	20	8.9	44	23	32	29	87	13	3.0	2.9	2.9
22	19	20	8.9	39	23	32	38	87	13	3.0	3.1	e3.0
23	19	20	8.9	40	23	38	55	87	13	2.9	3.1	e3.0
24	19	20	8.9	40	22	60	91	87	12	2.8	3.1	e3.0
25	19	20	8.9	41	20	74	92	86	12	2.8	3.1	e3.0
26	19	20	8.9	43	15	67	91	129	11	2.8	3.1	e3.0
27	19	20	8.9	47	14	52	79	152	11	2.9	3.0	e3.0
28	19	20	8.9	47	14	52	68	153	11	2.8	3.0	e3.0
29	19	20	8.9	52	---	52	52	152	11	2.7	2.9	e3.0
30	19	20	8.9	53	---	49	42	153	11	2.8	2.9	e3.0
31	19	---	8.9	53	---	37	---	153	---	2.8	2.9	---
TOTAL	354.4	785	290.5	799.8	689	891.5	1287	1863	1491	141.8	94.9	87.8
MEAN	11.4	26.2	9.37	25.8	24.6	28.8	42.9	60.1	49.7	4.57	3.06	2.93
MAX	19	39	14	62	53	74	92	153	154	11	3.6	3.0
MIN	3.8	19	8.9	8.9	14	6.3	29	11	11	2.7	2.7	2.8
AC-FT	703	1560	576	1590	1370	1770	2550	3700	2960	281	188	174

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	7.16	11.8	16.2	28.0	36.3	55.0	51.8	46.2	21.3	6.29	4.91	4.25			
MAX	15.6	26.3	48.3	110	110	113	152	127	54.2	10.5	14.3	12.4			
(WY)	1994	1997	1997	1997	1996	1993	1984	1995	1984	1993	1992	1988			
MIN	1.93	1.69	2.65	3.40	5.95	8.09	10.4	2.15	2.17	2.56	2.79	2.56			
(WY)	1992	1992	1993	1991	1994	1988	1994	1992	1992	1987	1991	1991			

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	14286.7	8775.7	
ANNUAL MEAN	39.1	24.0	24.0
HIGHEST ANNUAL MEAN			45.5
LOWEST ANNUAL MEAN			7.79
HIGHEST DAILY MEAN	249	154	298
LOWEST DAILY MEAN	3.1	2.7	1.4
ANNUAL SEVEN-DAY MINIMUM	3.2	2.8	1.4
ANNUAL RUNOFF (AC-FT)	28340	17410	17410
10 PERCENT EXCEEDS	99	52	60
50 PERCENT EXCEEDS	19	14	10
90 PERCENT EXCEEDS	3.9	3.0	2.9

e Estimated

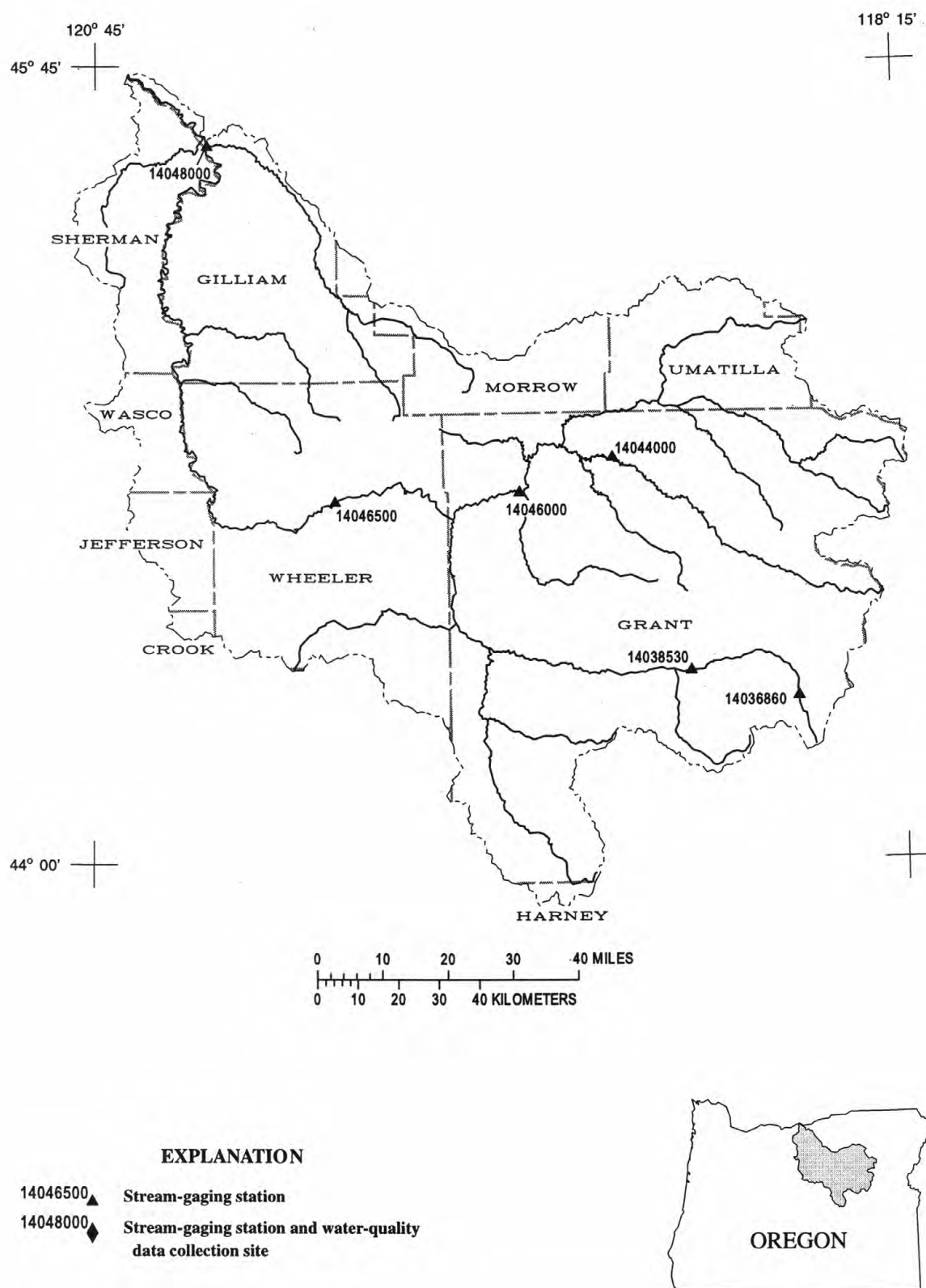


Figure 13. Location of surface-water and water-quality stations in the John Day River Basin.

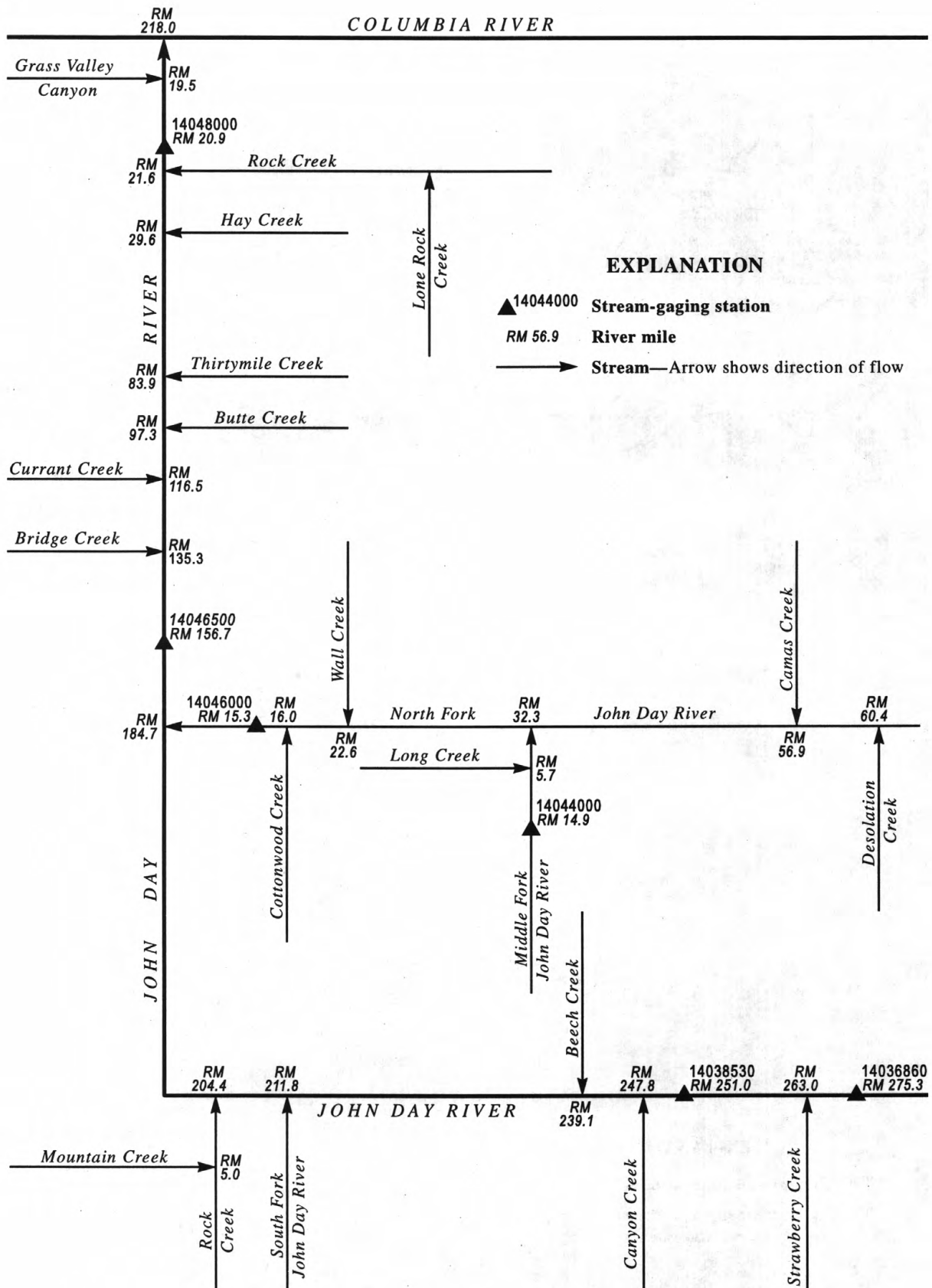


Figure 14. Schematic diagram showing gaging stations in the John Day River Basin.

JOHN DAY RIVER BASIN

91

14036860 JOHN DAY RIVER AT BLUE MOUNTAIN HOT SPRINGS, NEAR PRAIRIE CITY, OR

LOCATION.--Lat 44°21'29", long 118°34'30", in SE 1/4 NW 1/4, sec. 13, T.14 S., R.34 E., Grant County, Hydrologic Unit 17070201, on right bank at private road crossing, 0.25 mi downstream from Blue Mountain Hot Springs, 0.6 mi downstream from Rail Creek, 8 mi southeast of Prairie City, and at mile 275.3.

DRAINAGE AREA.--Not determined.

PERIOD OF RECORD.--October 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 4,200 ft above sea level, from topographic map.

REMARKS.--Records good except for those above 300 ft³/s and estimated daily discharges, which are poor. No regulation. Some diversions for irrigation.

AVERAGE DISCHARGE.--2 years (water year 1997-98), 63.3 ft³/s, 45,880 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 950 ft³/s May 25, 1998, gage height, 3.90 ft, from crest-stage gage, from rating curve extended above 300 ft³/s; minimum discharge, 30 ft³/s Dec. 2, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 950 ft³/s May 25, gage height, 3.90 ft, from crest-stage gage, from rating curve extended above 300 ft³/s; minimum discharge, 30 ft³/s Dec. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	41	33	35	40	37	52	163	e160	67	43	34
2	38	40	32	35	39	37	49	182	e160	e90	43	34
3	38	39	33	36	41	38	49	176	e190	e120	42	34
4	38	39	33	35	42	40	50	164	e160	e76	41	34
5	38	40	33	35	40	39	48	165	e140	e70	41	34
6	39	39	34	34	40	39	47	175	e135	e64	41	34
7	39	44	34	37	39	38	47	208	e130	e60	41	34
8	41	43	34	34	40	38	45	205	e130	e56	41	35
9	43	40	33	44	39	36	45	181	e130	e57	40	47
10	42	41	33	35	39	35	45	151	e140	54	40	41
11	43	40	34	35	38	35	46	140	132	51	40	37
12	42	39	34	34	38	38	45	140	128	50	39	35
13	42	37	34	34	38	41	44	143	125	50	37	34
14	41	39	34	35	38	43	44	e143	123	49	36	34
15	41	40	37	34	37	46	43	e140	121	48	36	34
16	40	37	43	35	37	46	43	e120	119	46	36	34
17	40	35	39	43	36	45	43	e130	109	45	36	34
18	39	36	37	38	36	43	45	e128	100	44	36	35
19	39	34	36	42	36	43	48	e118	98	44	35	36
20	39	35	36	38	37	45	54	e110	93	42	36	36
21	39	36	36	38	38	49	69	e150	90	41	36	35
22	38	36	36	38	36	96	97	e180	87	40	35	34
23	40	35	37	37	35	137	130	e165	84	41	35	34
24	39	35	36	38	36	139	138	e155	85	41	35	34
25	39	37	36	37	36	110	118	e280	86	41	35	39
26	39	35	39	39	35	92	101	e290	86	40	35	42
27	39	34	36	43	36	81	98	e260	77	40	35	40
28	39	32	35	41	36	71	106	e230	72	40	34	39
29	45	32	35	42	---	64	123	e210	69	45	34	39
30	45	34	34	41	---	59	140	e210	68	45	34	39
31	48	---	34	41	---	55	---	e185	---	44	34	---
TOTAL	1249	1124	1090	1163	1058	1755	2052	5397	3427	1642	1162	1085
MEAN	40.3	37.5	35.2	37.5	37.8	56.6	68.4	174	114	53.0	37.5	36.2
MAX	48	44	43	44	42	139	140	290	190	120	43	47
MIN	37	32	32	34	35	35	43	110	68	40	34	34
AC-FT	2480	2230	2160	2310	2100	3480	4070	10700	6800	3260	2300	2150

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 1998, BY WATER YEAR (WY)

	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
MEAN	38.7	43.6	49.9	61.7	42.8	56.6	84.9	164	95.5	46.5	38.5	36.5
MAX	40.3	49.8	64.6	84.7	47.8	56.6	101	174	114	53.0	39.4	36.8
(WY)	1998	1997	1997	1997	1997	1998	1997	1998	1998	1998	1997	1997
MIN	37.2	37.5	35.2	37.5	37.8	56.6	68.4	153	76.8	40.1	37.5	36.2
(WY)	1997	1998	1998	1998	1998	1997	1998	1997	1997	1997	1998	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1997 - 1998

ANNUAL TOTAL	22844	22204	
ANNUAL MEAN	62.6	60.8	63.3
HIGHEST ANNUAL MEAN			65.8
LOWEST ANNUAL MEAN			60.8
HIGHEST DAILY MEAN	303	290	303
LOWEST DAILY MEAN	32	32	32
ANNUAL SEVEN-DAY MINIMUM	33	33	33
ANNUAL RUNOFF (AC-FT)	45310	44040	45880
10 PERCENT EXCEEDS	132	136	133
50 PERCENT EXCEEDS	41	40	42
90 PERCENT EXCEEDS	34	34	34

e Estimated

JOHN DAY RIVER BASIN

14038530 JOHN DAY RIVER NEAR JOHN DAY, OR

LOCATION.--Lat 44°25'07", long 118°54'19", in SW 1/4 SE 1/4 sec.19, T.13 S., R.32 E., Grant County, Hydrologic Unit 17070101, on left bank 1,200 ft downstream from Dog Creek, 2.5 mi east of John Day, and at mile 250.8.

DRAINAGE AREA.--386 mi².

PERIOD OF RECORD.--October 1968 to September 1994, May 1996 to current year.

GAGE.--Water-stage recorder. Datum of gage is 3,130.56 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. No regulation upstream. Many diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--28 years (water years 1969-94, 1997-98), 207 ft³/s, 149,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,830 ft³/s June 9, 1969, gage height, 10.80 ft, from floodmark; minimum discharge, 3.5 ft³/s Aug. 26-28, 1969.

EXTREMES FOR PERIOD MAY TO SEPTEMBER.--Peak discharges greater than base discharge of 800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 7	0215	869	6.02	May 25	1730	*1,530	*7.00
May 22	1900	922	6.10	June 3	0215	964	6.14

Minimum discharge, 29 ft³/s Aug. 20, 21, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	129	127	124	178	161	284	620	669	249	122	42
2	115	124	121	129	177	180	265	715	669	377	112	41
3	116	122	121	131	187	218	266	783	814	465	108	41
4	113	120	122	131	205	212	277	744	637	313	102	41
5	112	120	121	120	195	199	274	760	599	281	88	42
6	113	120	122	122	186	181	262	838	576	258	81	44
7	113	137	124	125	184	165	265	848	563	235	78	54
8	113	146	131	116	183	175	256	826	560	218	73	68
9	116	132	123	108	173	168	250	733	555	209	69	115
10	114	125	123	130	167	164	247	625	591	214	68	154
11	115	124	120	126	164	162	244	562	584	206	60	107
12	119	123	121	121	163	169	245	535	558	188	56	95
13	118	124	126	124	170	193	243	526	537	181	56	88
14	119	123	122	130	170	216	246	519	504	166	48	80
15	117	122	133	148	180	235	248	517	470	159	47	77
16	115	122	164	140	167	240	246	488	450	148	45	76
17	114	122	177	288	165	236	239	538	421	146	46	75
18	114	122	146	376	155	222	234	477	367	135	39	74
19	114	123	129	621	154	214	240	442	351	125	35	87
20	114	122	132	293	153	219	255	427	330	118	32	100
21	114	124	129	218	155	239	289	430	304	107	30	106
22	115	122	119	208	155	395	383	729	302	99	31	103
23	116	125	121	272	151	647	521	697	280	98	30	100
24	120	132	126	277	154	714	598	649	282	99	33	98
25	116	138	117	225	147	579	525	1220	317	85	34	115
26	116	131	125	227	150	503	459	1230	325	79	34	168
27	116	130	128	294	141	429	431	1050	296	78	36	132
28	116	127	122	240	149	377	447	886	267	79	37	123
29	130	126	124	222	---	334	500	827	250	80	36	121
30	136	130	121	209	---	302	570	833	245	109	37	125
31	143	---	121	188	---	288	---	757	---	142	41	---
TOTAL	3633	3787	3958	6183	4678	8736	9809	21831	13673	5446	1744	2692
MEAN	117	126	128	199	167	282	327	704	456	176	56.3	89.7
MAX	143	146	177	621	205	714	598	1230	814	465	122	168
MIN	111	120	117	108	141	161	234	427	245	78	30	41
AC-FT	7210	7510	7850	12260	9280	17330	19460	43300	27120	10800	3460	5340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

MEAN	94.1	127	163	212	235	320	339	445	331	112	43.3	56.8
MAX	156	244	435	613	689	746	718	845	810	314	116	145
(WY)	1983	1974	1997	1997	1982	1984	1984	1982	1982	1984	1984	1984
MIN	65.8	87.5	90.0	88.1	88.8	88.6	88.1	85.4	53.9	25.9	10.4	24.2
(WY)	1989	1979	1989	1977	1977	1977	1992	1992	1992	1973	1973	1990

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1969 - 1998

ANNUAL TOTAL	100059	86170	207
ANNUAL MEAN	274	236	393
HIGHEST ANNUAL MEAN			1984
LOWEST ANNUAL MEAN			73.5
HIGHEST DAILY MEAN	2510	Jan 31	1230
LOWEST DAILY MEAN	35	Aug 24	30
ANNUAL SEVEN-DAY MINIMUM	37	Aug 18	32
ANNUAL RUNOFF (AC-FT)	198500	170900	149600
10 PERCENT EXCEEDS	532	561	464
50 PERCENT EXCEEDS	155	148	130
90 PERCENT EXCEEDS	78	78	40

JOHN DAY RIVER BASIN

93

14044000 MIDDLE FORK JOHN DAY RIVER AT RITTER, OR

LOCATION.--Lat 44°53'20", long 119°08'25", in SW 1/4 NW 1/4 sec.8, T.8 S., R.30 E., Grant County, Hydrologic Unit 17070203, on left bank 0.2 mi south of Ritter, 0.8 mi downstream from Twelvemile Creek, and at mile 14.9.

DRAINAGE AREA.--515 mi².

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

REVISED RECORDS.--WSP 739: 1931. WSP 1218: 1950. WSP 1448: 1930-32, 1937, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,544.56 ft above sea level.

REMARKS.--Records good except those for December and January, which are fair, and those above 3,000 ft³/s and below 30 ft³/s and estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station. Continuous water-quality records for the period July 1966 to September 1968 have been collected at this location.

AVERAGE DISCHARGE.--69 years (water years 1930-98), 258 ft³/s, 186,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,730 ft³/s Jan. 30, 1965, gage height, 8.39 ft, from rating curve extended above 2,200 ft³/s; maximum gage height, 9.13 ft Feb. 1, 1963, ice jam; minimum discharge, 0.90 ft³/s Aug. 19, 20, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 24	0500	*1,980	*5.91	May 3	0130	1,480	5.56
Apr. 24	0400	1,160	5.29	May 25	1600	1,690	5.72

Minimum discharge, 13 ft³/s Jan. 10, result of freeze-up.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	42	87	66	69	165	136	475	1110	850	206	102	37
2	44	70	49	72	155	163	464	1170	803	198	86	37
3	45	64	45	72	158	244	495	1310	801	284	77	37
4	48	62	49	73	281	267	576	1200	731	246	70	39
5	47	60	51	56	257	206	575	1180	675	204	64	39
6	47	59	50	63	214	196	543	1160	641	183	61	e44
7	47	64	69	62	223	166	528	1120	571	168	59	e46
8	47	103	71	47	245	185	503	1020	552	146	58	e52
9	49	87	63	35	226	191	475	867	513	139	54	e70
10	50	74	62	35	186	208	477	754	483	141	52	e80
11	51	68	51	38	168	223	487	693	477	143	49	e64
12	58	65	45	e42	155	298	478	651	440	134	46	e58
13	58	60	33	e68	148	438	456	648	425	125	46	e54
14	55	59	62	85	141	535	447	618	389	118	45	e52
15	54	61	74	79	150	612	435	588	362	111	45	e49
16	52	56	74	83	125	581	427	528	355	106	45	e48
17	50	61	86	87	137	553	407	583	351	101	48	e46
18	49	61	73	121	126	461	397	680	311	93	48	e48
19	49	60	52	304	140	442	406	633	290	90	48	e52
20	48	63	35	179	145	477	456	638	282	87	48	e56
21	48	64	57	128	153	599	565	628	259	84	48	e58
22	48	62	53	120	175	893	803	745	307	78	46	e58
23	49	59	33	179	157	1400	1040	818	281	76	42	e58
24	55	66	55	238	150	1660	1090	759	248	83	45	e56
25	54	77	67	169	137	1250	878	1320	257	80	46	e60
26	51	73	45	199	134	1070	759	1410	273	75	44	e68
27	51	68	48	375	111	830	745	1310	290	e74	44	e60
28	52	65	66	288	121	683	806	1110	246	e74	43	e54
29	56	61	71	275	---	572	893	1050	217	e74	41	e54
30	79	65	66	243	---	497	1020	1060	201	91	40	56
31	105	---	69	193	---	478	---	983	---	141	38	---
TOTAL	1638	2004	1790	4077	4683	16514	18106	28344	12881	3953	1628	1590
MEAN	52.8	66.8	57.7	132	167	533	604	914	429	128	52.5	53.0
MAX	105	103	86	375	281	1660	1090	1410	850	284	102	80
MIN	42	56	33	35	111	136	397	528	201	74	38	37
AC-FT	3250	3970	3550	8090	9290	32760	35910	56220	25550	7840	3230	3150

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1998, BY WATER YEAR (WY)

	MEAN	44.1	73.8	131	166	252	473	746	713	353	81.5	32.4	32.2
MAX	99.5	231	482	727	1073	1214	1426	1457	1127	285	98.4	108	
(WY)	1983	1974	1956	1997	1996	1972	1984	1984	1984	1984	1984	1984	
MIN	17.4	20.2	29.0	23.4	31.3	69.8	175	79.2	56.6	17.4	3.75	10.0	
(WY)	1937	1937	1933	1937	1937	1977	1968	1934	1992	1973	1966	1935	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1930 - 1998

ANNUAL TOTAL	142947	97208	258
ANNUAL MEAN	392	266	538
HIGHEST ANNUAL MEAN			85.1
LOWEST ANNUAL MEAN			1984
HIGHEST DAILY MEAN	3930	Jan 1	1660
LOWEST DAILY MEAN	33	Dec 13	33
ANNUAL SEVEN-DAY MINIMUM	39	Aug 27	38
ANNUAL RUNOFF (AC-FT)	283500	192800	186700
10 PERCENT EXCEEDS	1050	749	731
50 PERCENT EXCEEDS	124	103	92
90 PERCENT EXCEEDS	44	47	25

e Estimated

JOHN DAY RIVER BASIN

95

14046500 JOHN DAY RIVER AT SERVICE CREEK, OR

LOCATION.--Lat 44°47'38", long 120°00'20", in NW 1/4 NE 1/4 sec.18, T.9 S., R.23 E., Wheeler County, Hydrologic Unit 17070204, on left bank 0.2 mi downstream from bridge on State Highway 207, 0.8 mi downstream from Service Creek, 0.5 mi southwest of town of Service Creek, and at mile 156.7.

DRAINAGE AREA.--5,090 mi², approximately.

PERIOD OF RECORD.--March 1925 to September 1926, October 1929 to current year. Monthly discharge only March 1925 to September 1926, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 1,632.42 ft above sea level. See WSP 1738 for history of changes prior to Feb. 24, 1957.

REMARKS.--No estimated daily discharges. Records good. Slight regulation by several small reservoirs upstream from station. Many small diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--69 years (water years 1930-98), 1,954 ft³/s, 1,415,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,200 ft³/s Dec. 23, 1964, gage height, 17.85 ft, from rating curve extended above 14,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 6.0 ft³/s Aug. 23, 24, 1973.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 24	1230	*12,900	*10.02	May 26	0730	12,000	9.68
Apr. 24	1430	9,190	8.60	May 29	2130	12,000	9.67
May 3	1600	9,640	8.78				

Minimum discharge, 133 ft³/s Sept. 4-7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	320	742	502	498	1800	1340	4010	7700	8530	1520	667	146
2	347	737	519	520	1600	1600	3800	8100	7330	1670	643	138
3	386	582	475	565	1530	2340	3610	8780	7120	1690	569	139
4	408	524	390	570	1800	2650	4050	8340	6710	2120	512	135
5	415	499	344	562	2370	2560	4190	8610	5930	1840	454	133
6	422	487	390	516	2090	2220	4050	8210	5560	1610	411	133
7	424	496	415	522	2020	2010	4030	8050	5140	1440	373	133
8	426	525	500	506	2030	1830	4000	7440	4870	1320	338	139
9	430	614	575	433	1960	1920	3730	6950	4720	1200	329	154
10	435	626	510	383	1750	1890	3620	6170	4340	1130	319	279
11	440	568	520	417	1590	1950	3780	5470	4340	1100	299	413
12	447	530	480	459	1500	2190	3830	5130	4160	1090	277	450
13	453	503	388	541	1500	3000	3640	5040	3820	1010	255	387
14	476	482	384	684	1540	4000	3540	4850	3530	945	235	344
15	473	462	450	759	1700	4530	3580	4750	3230	893	214	329
16	467	440	578	815	1740	4980	3520	4490	2960	842	200	310
17	461	451	594	908	1580	4740	3280	4520	2880	783	194	271
18	452	478	645	1510	1540	4190	3120	5310	2710	734	192	252
19	442	498	602	2440	1540	3690	3110	5410	2400	690	191	255
20	439	492	488	2970	1860	3580	3400	5400	2270	648	185	252
21	437	488	455	1920	2000	4090	4140	5400	2220	610	194	284
22	438	491	417	1530	2150	5220	5490	5230	2000	572	202	372
23	440	492	442	1510	1960	9100	7220	6160	2190	531	198	387
24	440	468	416	2080	1730	12100	8670	5980	2010	512	192	360
25	451	504	426	2140	1630	10700	7850	6780	1890	502	178	334
26	464	562	388	1810	1490	8840	6540	11400	1940	502	173	334
27	459	570	405	2540	1420	7400	5950	10500	1970	476	166	391
28	453	531	427	3390	1300	6210	6080	9280	1950	489	163	494
29	470	524	506	2580	---	5290	6580	10300	1710	477	156	438
30	488	504	544	2510	---	4570	7170	11500	1560	503	154	394
31	565	---	508	2180	---	4140	---	10600	---	490	151	---
TOTAL	13668	15870	14683	40768	48720	134870	139580	221850	111990	29939	8784	8580
MEAN	441	529	474	1315	1740	4351	4653	7156	3733	966	283	286
MAX	565	742	645	3390	2370	12100	8670	11500	8530	2120	667	494
MIN	320	440	344	383	1300	1340	3110	4490	1560	476	151	133
AC-FT	27110	31480	29120	80860	96640	267500	276900	440000	222100	59380	17420	17020

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1998, BY WATER YEAR (WY)

	328	598	1223	1605	2404	3759	5224	4975	2442	578	184	186
MEAN	811	2284	5540	6553	8239	9773	10280	12050	8327	1850	594	862
(WY)	1985	1974	1965	1997	1996	1983	1984	1948	1948	1982	1984	1984
MIN	70.5	152	216	195	358	597	1010	491	302	90.6	15.2	31.4
(WY)	1937	1937	1936	1937	1937	1977	1968	1934	1992	1973	1973	1935

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1930 - 1998

ANNUAL TOTAL	1053854	789302	
ANNUAL MEAN	2887	2162	
HIGHEST ANNUAL MEAN			1954
LOWEST ANNUAL MEAN			4116
HIGHEST DAILY MEAN	29800	Jan 2	12100
LOWEST DAILY MEAN	168	Aug 29	133
ANNUAL SEVEN-DAY MINIMUM	175	Aug 25	136
ANNUAL RUNOFF (AC-FT)	2090000		1566000
10 PERCENT EXCEEDS	6970		5960
50 PERCENT EXCEEDS	898		783
90 PERCENT EXCEEDS	310		306
			1415000
			5430
			755
			135

JOHN DAY RIVER BASIN

14048000 JOHN DAY RIVER AT McDONALD FERRY, OR

LOCATION.--Lat 45°35'16", long 120°24'30", in NE 1/4 NW 1/4 sec.11, T.1 N., R.19 E., Sherman County, Hydrologic Unit 17070204, on left bank at McDonald Ferry, 0.8 mi downstream from Rock Creek, 10 mi east of Klondike, and at mile 20.9.

GAGE AREA.--7,580 mi², approximately.

PERIOD OF RECORD.--December 1904 to September 1996, October 1997 to September 1998. Prior to Oct. 1, 1930, published as "at McDonald."

REVISED RECORDS.--WSP 1094: 1894(M), 1932(M). WSP 1448: 1908-9, 1912, 1916, 1920(M), 1922, 1932.

GAGE.--Water-stage recorder. Datum of gage is 392.27 ft above sea level. Prior to Aug. 30, 1930, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. No regulation. Many diversions for irrigation upstream from station. Additional water-quality data available for this site. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--92 years (water years 1906-96, 1998), 2,089 ft³/s, 1,513,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,800 ft³/s Dec. 24, 1964, gage height, 13.59 ft, from floodmark, from rating curve extended above 11,000 ft³/s on basis of slope-area measurement of peak flow; no flow for part of Sept. 2, 1966, Aug. 15 to Sept. 16, 1973, Aug. 13, 14, 19-25, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of 1894 reached a stage of 12.8 ft, from floodmarks, discharge, 39,100 ft³/s, from rating curve extended above 22,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,900 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 25	0945	13,200	8.61	May 4	1415	9,440	7.28
Apr. 25	1300	9,260	7.21	May 30	1615	*17,000	*9.78

Minimum discharge, 156 ft³/s Sept. 9, 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	427	567	620	627	2740	1710	4510	7270	12300	1820	605	200
2	431	586	609	613	2310	1640	4370	7840	9820	1760	581	191
3	434	688	602	597	2060	1910	4170	8290	8490	1850	652	186
4	437	710	613	614	1910	2480	4020	8880	7960	1830	664	182
5	453	650	599	641	1910	3100	4300	8530	7370	2240	604	175
6	482	621	563	644	2620	3060	4500	8830	6580	2080	561	169
7	491	617	524	642	2570	2720	4380	8390	6130	1850	522	169
8	501	621	519	616	2400	2500	4310	8220	5670	1640	497	164
9	513	622	553	612	2390	2260	4310	7630	5360	1490	472	162
10	502	620	582	613	2340	2270	4090	7130	5170	1360	449	160
11	504	660	640	609	2170	2260	3980	6360	4830	1240	434	169
12	506	682	618	619	1960	2290	4070	5710	4760	1190	412	184
13	512	649	616	506	1850	2470	4150	5380	4550	1170	395	258
14	518	629	600	539	1810	3190	4030	5240	4190	1140	363	388
15	519	612	569	714	1880	4240	3980	5070	3950	1050	331	388
16	527	604	539	881	1970	4840	4130	4970	3670	994	314	357
17	537	588	555	1050	2080	5290	4170	4820	3430	937	302	335
18	534	579	634	1570	1990	5060	3920	4920	3270	880	298	333
19	533	578	654	1770	1860	4540	3720	5610	3100	821	281	318
20	523	587	681	2680	1970	4060	3640	5750	2780	778	270	295
21	521	599	667	3600	2260	3950	3750	5730	2580	747	263	295
22	516	600	609	2600	2510	4380	4300	5690	2530	717	255	302
23	514	600	586	2060	2590	5690	5590	5500	2370	689	264	305
24	513	606	565	2040	2540	9870	7500	6410	2450	661	263	330
25	514	602	568	2310	2240	12400	8870	6420	2380	634	269	385
26	517	595	556	2660	2050	10700	8080	7960	2190	615	252	388
27	524	596	555	2370	1920	8970	6810	11700	2210	607	238	379
28	537	634	548	2500	1780	7670	6190	10800	2210	603	226	368
29	548	643	531	3920	---	6500	6240	10100	2220	591	213	383
30	557	627	543	3230	---	5610	6700	15600	2000	583	207	456
31	572	---	582	2970	---	4950	---	14800	---	586	200	---
TOTAL	15717	18572	18200	47417	60680	142580	146780	235550	136520	35153	11657	8374
MEAN	507	619	587	1530	2167	4599	4893	7598	4551	1134	376	279
MAX	572	710	681	3920	2740	12400	8870	15600	12300	2240	664	456
MIN	427	567	519	506	1780	1640	3640	4820	2000	583	200	160
AC-FT	31170	36840	36100	94050	120400	282800	291100	467200	270800	69730	23120	16610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1998, BY WATER YEAR (WY)

	MEAN	330	610	1188	1654	2658	4008	5626	5213	2715	661	196	184
MAX	892	2310	7030	6402	9736	11450	11900	13180	9531	2131	700	923	
(WY)	1985	1974	1965	1965	1996	1983	1984	1917	1948	1984	1984	1984	1984
MIN	59.9	157	221	217	374	557	964	533	285	88.0	5.70	23.8	
(WY)	1937	1937	1937	1937	1933	1977	1968	1934	1992	1926	1973	1934	

SUMMARY STATISTICS

FOR 1998 WATER YEAR

WATER YEARS 1905 - 1998

ANNUAL TOTAL	877200		
ANNUAL MEAN	2403		
HIGHEST ANNUAL MEAN		2089	
LOWEST ANNUAL MEAN		4724	1984
HIGHEST DAILY MEAN		603	1977
LOWEST DAILY MEAN	15600	39400	Dec 24 1964
ANNUAL SEVEN-DAY MINIMUM	160	.00	Aug 15 1973
ANNUAL RUNOFF (AC-FT)	167	.00	Aug 15 1973
10 PERCENT EXCEEDS	1740000	1513000	
50 PERCENT EXCEEDS	6290	5810	
90 PERCENT EXCEEDS	881	796	
	332	142	

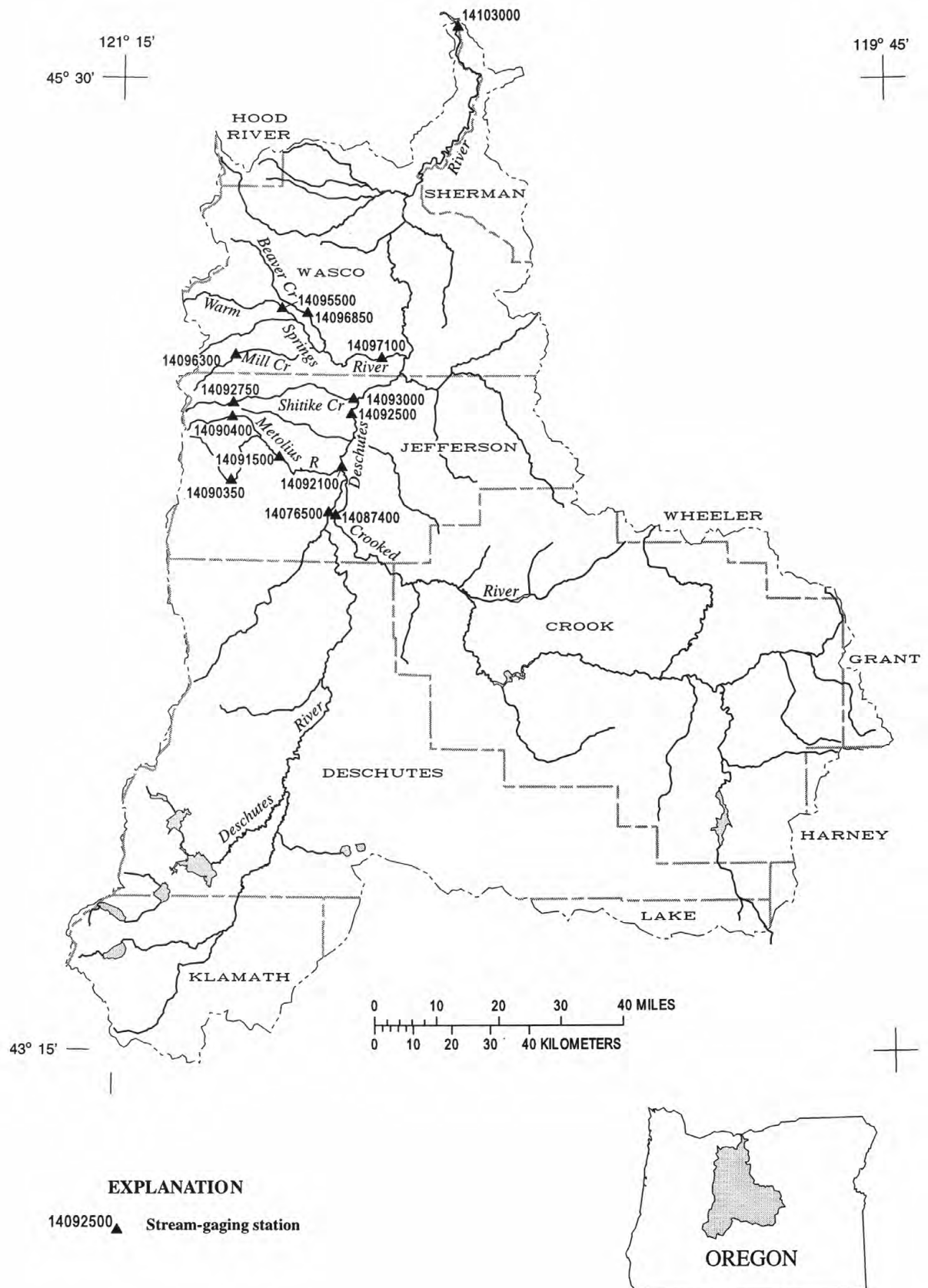


Figure 15. Location of surface-water and water-quality stations in the Deschutes River Basin.

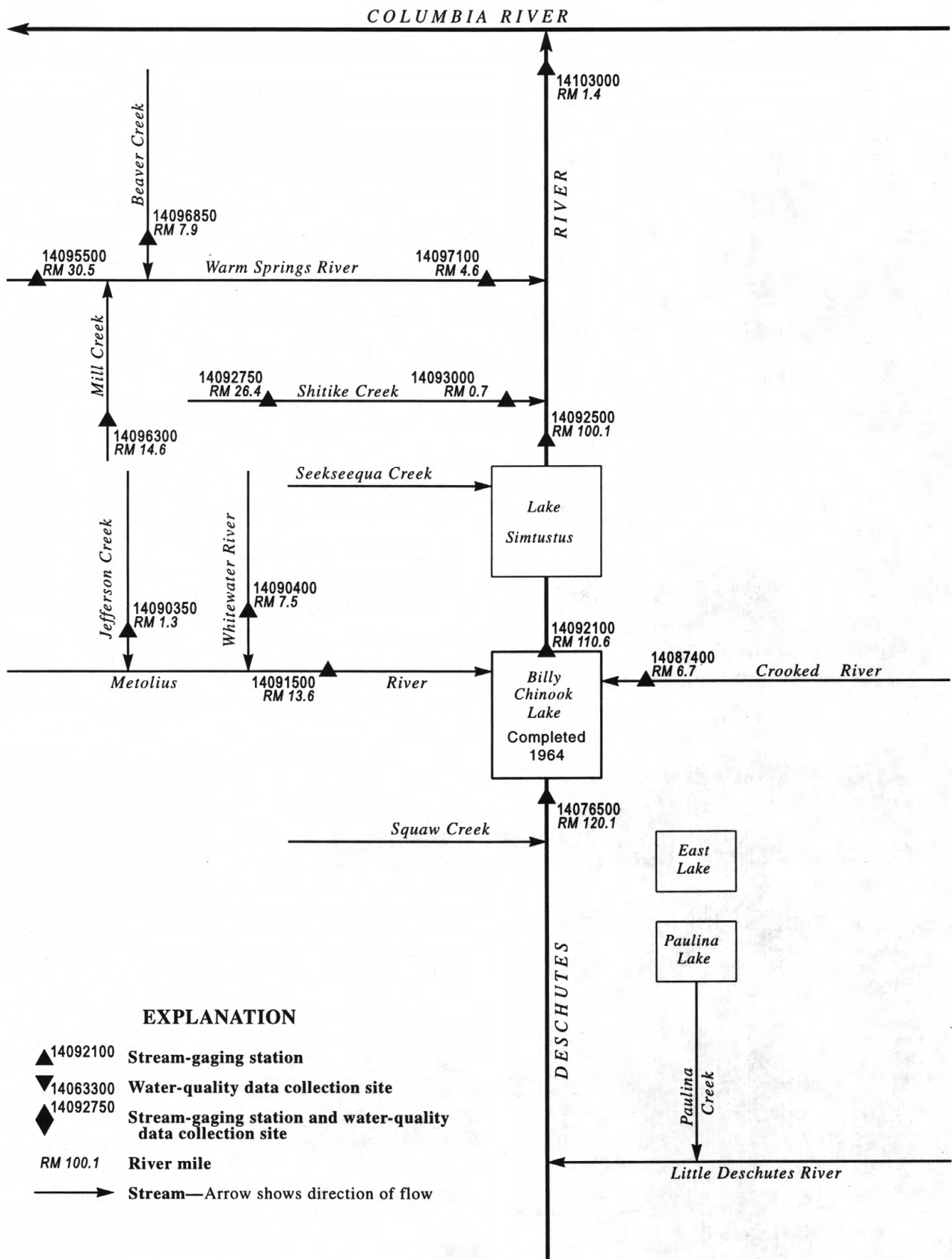


Figure 16. Schematic diagram showing gaging stations in the Deschutes River Basin.

DESCHUTES RIVER BASIN

99

14076500 DESCHUTES RIVER NEAR CULVER, OR

LOCATION.--Lat 44°29'56", long 121°19'12", in NW 1/4 SE 1/4 sec.29, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, on right bank 2.5 mi downstream from Squaw Creek, 6.0 mi southwest of Culver, and at mile 120.1.

DRAINAGE AREA.--2,705 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 1,980 ft above sea level (river-profile survey). July 14, 1952, to Sept. 30, 1961, at site 4.1 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by Crescent Lake and Crane Prairie and Wickiup Reservoirs. Many diversions for irrigation upstream from station. Continuous water-quality records for the period October 1954 to September 1957 and January 1959 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--46 years (water years 1953-98), 915 ft³/s, 662,900 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,680 ft³/s Dec. 24, 1964, gage height, 10.00 ft, from rating curve extended above 3,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 418 ft³/s July 7, 8, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,000 ft³/s Oct. 31, gage height, 6.91 ft; minimum discharge, 492 ft³/s Aug. 19, Sept. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1120	2240	1930	1630	1820	1700	2050	671	1230	697	636	523
2	1060	2130	1930	1650	1810	1700	2010	680	1230	745	595	504
3	1100	2100	1930	1660	1800	1720	1990	727	1250	736	562	503
4	1160	2090	1930	1660	1790	1730	2000	744	1240	704	566	506
5	1320	2070	1910	1650	1780	1730	2010	793	1170	697	574	504
6	1360	2030	1810	1630	1780	1720	2030	871	1130	697	533	524
7	1390	2030	1920	1650	1790	1700	1650	881	1000	722	512	528
8	1400	2020	1850	1650	1780	1700	1600	869	929	697	506	534
9	1490	2010	1820	1610	1760	1690	1550	820	783	682	511	531
10	1520	2010	1820	1560	1760	1620	1550	803	778	723	515	549
11	1500	2000	1810	1590	1760	1640	1590	777	875	675	519	567
12	1340	1990	1800	1570	1740	1650	1570	864	861	628	531	608
13	1220	1970	1790	1580	1750	1650	1560	1020	845	626	525	654
14	1140	1960	1770	1610	1760	1710	1010	1050	879	616	511	642
15	1120	1950	1650	1640	1760	1750	979	958	874	623	521	660
16	1530	1950	1190	1630	1710	1710	1010	953	856	621	500	687
17	1640	1830	1220	1750	1230	1260	976	959	780	593	500	677
18	1610	1280	1200	1800	1180	1230	960	945	768	571	497	643
19	1890	1240	1280	1730	1180	1220	945	922	779	560	499	600
20	1890	1230	1790	1360	1210	1250	926	926	768	547	520	579
21	1890	1240	1740	1340	1690	1700	887	994	773	539	528	577
22	1890	1870	1710	1350	1760	1910	774	1010	814	552	544	602
23	1890	1940	1730	1670	1730	2010	696	966	775	573	590	620
24	1870	1950	1710	1900	1710	1970	676	955	777	580	606	597
25	1870	1940	1670	1870	1700	1980	662	1000	847	584	644	600
26	1880	1940	1620	1790	1700	2010	668	975	827	570	659	618
27	1880	1950	1630	1760	1690	2060	670	937	798	560	607	619
28	1850	1960	1620	1740	1690	2100	662	926	824	564	571	604
29	1910	1950	1630	1740	---	2100	635	960	826	562	548	652
30	2160	1950	1630	1730	---	2110	659	1160	768	576	535	687
31	2660	---	1620	1820	---	2110	---	1200	---	595	530	---
TOTAL	49550	56820	52660	51320	46820	54140	36955	28316	27054	19415	16995	17699
MEAN	1598	1894	1699	1655	1672	1746	1232	913	902	626	548	590
MAX	2660	2240	1930	1900	1820	2110	2050	1200	1250	745	659	687
MIN	1060	1230	1190	1340	1180	1220	635	671	768	539	497	503
AC-FT	98280	112700	104500	101800	92870	107400	73300	56160	53660	38510	33710	35110

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1998, BY WATER YEAR (WY)

	726	1154	1274	1347	1406	1361	873	599	634	550	528	559
MEAN	726	1154	1274	1347	1406	1361	873	599	634	550	528	559
MAX	1598	1894	2130	2760	2679	2360	1799	1228	1020	766	741	997
(WY)	1998	1998	1985	1997	1997	1972	1984	1956	1956	1975	1953	1997
MIN	470	783	813	853	892	839	510	457	455	430	441	455
(WY)	1964	1995	1995	1995	1993	1964	1968	1964	1964	1964	1964	1963

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1953 - 1998
ANNUAL TOTAL	561423	457744	
ANNUAL MEAN	1538	1254	915
HIGHEST ANNUAL MEAN			1461
LOWEST ANNUAL MEAN			677
HIGHEST DAILY MEAN	3410	Feb 1	2660
LOWEST DAILY MEAN	533	Aug 14	497
ANNUAL SEVEN-DAY MINIMUM	545	Aug 13	507
ANNUAL RUNOFF (AC-FT)	1114000	907900	662900
10 PERCENT EXCEEDS	2660	1950	1620
50 PERCENT EXCEEDS	1320	1230	756
90 PERCENT EXCEEDS	639	562	489

DESCHUTES RIVER BASIN

14087400 CROOKED RIVER BELOW OPAL SPRINGS, NEAR CULVER, OR

LOCATION.--Lat 44°29'33", long 121°17'50", in NW 1/4 NE 1/4 sec.33, T.12 S., R.12 E., Jefferson County, Hydrologic Unit 17070305, on right bank 0.2 mi downstream from Opal Springs, 4.8 mi southwest of Culver, and at mile 6.7.

DRAINAGE AREA.--4,300 mi², approximately, of which 500 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,953.60 ft above sea level (Portland General Electric Co. bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since December 1960 by Prineville Reservoir, active capacity of 152,800 acre-ft and Ochoco Reservoir, active capacity, 46,500 acre-ft. Dam and powerplant 500 ft upstream, completed in 1985, causes brief fluctuations in flow. Many diversions for irrigation upstream from station. Practically all of the summer flow comes from Opal Springs and other springs within 15 mi upstream from station. Simultaneous records (1961-63) at former gaging station 5.6 mi downstream indicated over 15 percent increase to summer flow from springs downstream from this station. Continuous water-quality records for the period October 1963 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--37 years (water years 1962-98), 1,568 ft³/s, 1,136,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,660 ft³/s Dec. 24, 1964, gage height, 9.36 ft; minimum daily discharge, 1,090 ft³/s May 11, 1981, minimum instantaneous discharge after October 1989, 656 ft³/s many days in the 1990 water year, prior to that date minimum instantaneous discharge was not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5,970 ft³/s May 31, gage height, 8.72 ft, due to powerplant operation; minimum discharge, 703 ft³/s July 28, due to powerplant operation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1370	1380	1330	1320	1480	1590	2910	2040	5070	1380	1410	1310
2	1370	1370	1330	1320	1510	1610	2680	1970	4600	1410	1390	1290
3	1370	1370	1330	1320	1510	1620	2420	1990	4260	1540	1380	1280
4	1390	1370	1330	1320	1510	1620	2200	2010	4050	1560	1350	1290
5	1410	1370	1330	1310	1510	1620	2120	2070	3950	1580	1290	1290
6	1410	1370	1330	1310	1510	1610	2090	2250	3670	1570	1280	1320
7	1420	1370	1330	1320	1540	1600	2010	2400	3740	1460	1290	1340
8	1410	1360	1330	1320	1560	1610	1880	2410	3620	1380	1310	1350
9	1420	1370	1320	1310	1550	1610	1730	2300	3680	1350	1310	1360
10	1430	1360	1320	1310	1560	1600	1620	2260	3600	1310	1340	1370
11	1430	1360	1320	1320	1560	1610	1540	2270	3490	1290	1340	1380
12	1420	1360	1320	1310	1550	1580	1510	2200	3400	1300	1290	1390
13	1430	1350	1320	1300	1580	1500	1530	2170	3080	1310	1290	1410
14	1430	1350	1320	1340	1600	1510	1570	2120	2560	1300	1290	1410
15	1420	1350	1320	1330	1610	1510	1650	2130	2380	1280	1290	1410
16	1420	1350	1330	1330	1610	1520	1680	2210	2040	1250	1300	1390
17	1410	1350	1350	1330	1610	1520	1660	2220	1870	1240	1320	1390
18	1400	1350	1370	1340	1620	1530	1620	2210	1690	1230	1320	1400
19	1400	1370	1390	1340	1650	1540	1580	2210	1550	1240	1320	1410
20	1390	1370	1380	1360	1680	1560	1540	2260	1490	1250	1320	1440
21	1370	1400	1330	1390	1640	1540	1720	2300	1480	1250	1340	1450
22	1380	1390	1320	1410	1580	1530	2110	2260	1510	1230	1360	1450
23	1380	1350	1320	1410	1570	1620	2460	2250	1510	1280	1430	1430
24	1380	1330	1310	1370	1570	2170	2710	2230	1470	1310	1450	1450
25	1380	1330	1310	1340	1550	3190	2930	2390	1520	1250	1390	1530
26	1380	1340	1310	1340	1560	3550	3070	2530	1490	1250	1360	1550
27	1380	1330	1320	1340	1550	3560	3060	2920	1440	1270	1350	1560
28	1410	1330	1310	1350	1550	3570	2820	3000	1420	1260	1340	1560
29	1410	1330	1310	1350	---	3550	2420	3080	1420	1260	1330	1540
30	1400	1330	1310	1370	---	3540	2150	4710	1380	1270	1330	1530
31	1390	---	1320	1470	---	3400	---	5590	---	1360	1330	---
TOTAL	43410	40710	41170	41600	43880	62690	62990	76960	78430	41220	41440	42280
MEAN	1400	1357	1328	1342	1567	2022	2100	2483	2614	1330	1337	1409
MAX	1430	1400	1390	1470	1680	3570	3070	5590	5070	1580	1450	1560
MIN	1370	1330	1310	1300	1480	1500	1510	1970	1380	1230	1280	1280
AC-FT	86100	80750	81660	82510	87040	124300	124900	152700	155600	81760	82200	83860

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1998, BY WATER YEAR (WY)

MEAN	1424	1377	1515	1624	1820	1966	2110	1701	1357	1271	1301	1366
MAX	1650	2069	2686	3551	3490	4208	4793	3295	2614	1475	1593	1541
(WY)	1970	1985	1965	1965	1972	1984	1984	1998	1983	1976	1965	
MIN	1239	1232	1179	1182	1245	1232	1192	1173	1196	1122	1133	1187
(WY)	1969	1964	1964	1964	1989	1977	1977	1964	1977	1981	1980	1980

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1962 - 1998

	1997	1998	1962-1998
ANNUAL TOTAL	627150	616780	1568
ANNUAL MEAN	1718	1690	2196
HIGHEST ANNUAL MEAN			1984
LOWEST ANNUAL MEAN			1250
HIGHEST DAILY MEAN	5520	5590	6130
LOWEST DAILY MEAN	1220	1230	1090
ANNUAL SEVEN-DAY MINIMUM	1250	1240	1100
ANNUAL RUNOFF (AC-FT)	12440000	12230000	11360000
10 PERCENT EXCEEDS	2580	2420	2240
50 PERCENT EXCEEDS	1410	1410	1350
90 PERCENT EXCEEDS	1290	1310	1200

DESCHUTES RIVER BASIN

101

14090350 JEFFERSON CREEK NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°34'18", long 121°38'17", in SW 1/4 SE 1/4 sec.34, T.11 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on left bank 100 ft upstream from bridge, 7.6 mi north of Camp Sherman, and at mile 1.3.

DRAINAGE AREA.--27.8 mi².

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,780 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--15 years (water years 1984-98), 93.7 ft³/s, 45.80 in/yr, 67,890 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 730 ft³/s Feb. 7, 1996, gage height, 3.94 ft, not including 390 ft³/s which flowed out of the channel 150 ft upstream of gage and flowed into Candle Creek; minimum daily discharge, 36 ft³/s Dec. 22, 1990, but could have been lower during period of ice effect Dec. 19-25, 1990.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 4	2330	288	2.68	Oct. 30	2000	*668	*3.77

Minimum discharge, 71 ft³/s Jan. 12, 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	152	89	81	94	87	90	133	119	110	92	79
2	108	132	89	80	93	86	89	147	123	108	92	79
3	115	118	88	80	93	83	88	137	117	107	91	79
4	175	113	88	79	92	81	87	132	120	105	e90	79
5	182	108	87	78	92	80	86	158	121	104	e90	79
6	116	106	86	77	93	80	86	164	117	103	89	78
7	105	107	87	79	92	79	84	153	115	104	89	78
8	109	103	85	76	92	79	84	138	115	103	88	78
9	111	101	84	76	90	77	84	120	119	102	87	78
10	102	101	83	78	90	77	85	113	141	102	87	e77
11	102	100	83	83	89	78	83	112	123	101	86	e77
12	100	98	82	74	92	80	82	114	122	101	86	e77
13	101	97	82	75	92	82	81	110	118	100	86	77
14	102	96	82	91	92	82	80	109	115	101	86	77
15	100	96	82	93	90	85	80	106	120	99	86	76
16	100	95	123	96	89	86	79	105	112	99	85	77
17	97	96	112	139	89	83	79	102	109	98	85	77
18	96	94	e90	114	88	81	82	101	112	97	84	83
19	94	95	e88	105	89	81	86	104	111	97	e84	84
20	93	94	e87	101	89	81	87	113	109	96	e84	e78
21	91	93	e86	98	92	88	91	107	109	95	e83	e77
22	91	92	85	98	90	122	95	106	109	95	e83	e76
23	91	103	88	104	89	122	101	108	110	95	e83	e75
24	89	110	85	102	87	111	100	110	114	95	e83	e74
25	89	99	82	100	86	102	93	110	116	94	e82	77
26	88	96	82	102	85	100	92	103	117	92	e82	e77
27	87	94	81	101	84	97	94	102	109	92	e82	e75
28	87	93	82	98	87	94	100	102	107	95	e81	e74
29	271	93	82	97	---	92	109	114	109	95	e81	e73
30	422	91	80	96	---	92	119	117	109	93	80	e73
31	237	---	80	95	---	91	---	110	---	92	80	---
TOTAL	3847	3066	2690	2846	2520	2739	2676	3660	3467	3070	2647	2318
MEAN	124	102	86.8	91.8	90.0	88.4	89.2	118	116	99.0	85.4	77.3
MAX	422	152	123	139	94	122	119	164	141	110	92	84
MIN	87	91	80	74	84	77	79	101	107	92	80	73
AC-FT	7630	6080	5340	5650	5000	5430	5310	7260	6880	6090	5250	4600
CFSM	4.46	3.68	3.12	3.30	3.24	3.18	3.21	4.25	4.16	3.56	3.07	2.78
IN.	5.15	4.10	3.60	3.81	3.37	3.67	3.58	4.90	4.64	4.11	3.54	3.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

	MEAN	124	84.0	80.0	83.6	91.9	87.0	95.8	119	127	109	90.8	77.7
MAX	124	131	155	160	244	148	135	179	189	157	121	105	105
(WY)	1998	1996	1996	1997	1996	1996	1996	1997	1997	1997	1997	1997	1997
MIN	55.5	59.3	58.6	57.8	50.6	57.9	68.9	83.3	80.0	70.5	62.0	56.8	56.8
(WY)	1993	1988	1993	1993	1989	1985	1994	1991	1992	1992	1994	1994	1994

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	48800	35546	
ANNUAL MEAN	134	97.4	93.7
HIGHEST ANNUAL MEAN			137
LOWEST ANNUAL MEAN			66.8
HIGHEST DAILY MEAN	422	Oct 30	634
LOWEST DAILY MEAN	80	Dec 30	36
ANNUAL SEVEN-DAY MINIMUM	81	Dec 25	75
ANNUAL RUNOFF (AC-FT)	96790	70510	67890
ANNUAL RUNOFF (CFSM)	4.81	3.50	3.37
ANNUAL RUNOFF (INCHES)	65.30	47.57	45.80
10 PERCENT EXCEEDS	192	116	137
50 PERCENT EXCEEDS	122	92	86
90 PERCENT EXCEEDS	91	79	60

e Estimated

DESCHUTES RIVER BASIN

14090400 WHITEWATER RIVER NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°43'06", long 121°38'18", in SW 1/4 NW 1/4 sec.11, T.10 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on right bank bridge abutment, 18 mi north of Camp Sherman, and at mile 7.5.

DRAINAGE AREA.--22.8 mi².

PERIOD OF RECORD.--July 1982 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,230 ft above sea level, from topographic map. July 1982 to Feb. 7, 1996, at comparable site 1/4 mi downstream, at different datum.

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

AVERAGE DISCHARGE.--16 years (water years 1983-98), 85.0 ft³/s, 50.64 in/yr, 61,560 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,320 ft³/s Feb. 7, 1996, from slope-area measurement of peak flow, gage height, unknown; maximum gage height, 8.30 ft Feb. 9, 1996, from outside highwater mark caused by debris, channel fill, and channel reconfiguration, datum then in use; minimum daily discharge, 28 ft³/s Dec. 22, 1990, but could be less because of ice effect.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1930	*683	*7.37	No other peak greater than base discharge.			
Minimum daily discharge, 45 ft ³ /s Jan. 12.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	84	132	e65	71	98	73	103	137	98	115	97	77
2	86	109	e64	62	93	77	95	159	110	108	88	82
3	92	98	e63	61	105	71	98	154	102	108	87	83
4	128	93	e62	57	91	66	92	153	104	106	109	85
5	142	87	e61	57	84	65	89	174	111	107	130	81
6	97	84	e60	60	98	63	86	174	108	111	119	79
7	87	90	e59	61	87	65	79	172	106	115	103	79
8	90	82	e58	56	81	63	79	157	110	116	98	76
9	86	78	e57	61	78	62	83	132	117	112	95	70
10	79	76	e57	65	85	62	88	117	137	110	99	63
11	78	74	e56	e55	76	65	84	116	133	111	100	62
12	76	72	e56	e45	95	70	77	121	126	109	95	65
13	73	70	e55	e50	86	66	73	104	121	105	99	68
14	74	68	e55	e60	102	70	71	97	123	107	103	76
15	72	66	e54	e85	79	75	68	95	132	115	100	81
16	70	66	e60	95	84	76	65	97	117	119	88	84
17	69	66	e76	143	75	79	65	84	108	116	79	82
18	67	65	e65	139	73	80	68	82	114	112	74	81
19	65	e67	e63	109	84	81	67	89	117	106	71	84
20	63	e68	e62	98	84	85	67	96	111	101	71	67
21	61	e66	e61	95	90	97	70	85	110	97	72	61
22	60	e63	e60	93	76	157	80	82	109	97	71	58
23	61	e64	e60	105	76	181	92	86	113	103	69	57
24	58	e83	59	99	72	169	87	89	119	106	69	57
25	57	e78	57	101	69	151	81	90	130	103	70	65
26	56	e74	62	103	68	132	78	83	122	101	68	59
27	55	e70	60	97	67	126	80	75	108	105	67	57
28	56	e68	62	101	68	119	88	76	102	110	71	57
29	178	e67	63	101	---	110	103	93	106	111	78	55
30	353	e66	64	93	---	112	118	90	112	103	75	54
31	222	---	73	97	---	111	---	89	---	96	73	---
TOTAL	2895	2310	1889	2575	2324	2879	2474	3448	3436	3341	2688	2105
MEAN	93.4	77.0	60.9	83.1	83.0	92.9	82.5	111	115	108	86.7	70.2
MAX	353	132	76	143	105	181	118	174	137	119	130	85
MIN	55	63	54	45	67	62	65	75	98	96	67	54
AC-FT	5740	4580	3750	5110	4610	5710	4910	6840	6820	6630	5330	4180
CFSM	4.10	3.38	2.67	3.64	3.64	4.07	3.62	4.88	5.02	4.73	3.80	3.08
IN.	4.72	3.77	3.08	4.20	3.79	4.70	4.04	5.63	5.61	5.45	4.39	3.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1998, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	53.1	67.4	72.4	79.1	95.0	82.7	93.5	112	119	104	80.4	61.7				
MAX	93.4	122	174	220	329	147	148	188	168	142	122	96.6				
(WY)	1998	1996	1996	1997	1996	1997	1997	1997	1997	1997	1997	1997				
MIN	36.0	34.7	45.5	38.4	37.1	50.1	50.3	64.5	60.7	54.0	54.8	42.2				
(WY)	1993	1994	1994	1993	1994	1985	1991	1991	1992	1992	1994	1994				

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1983 - 1998

ANNUAL TOTAL	49509	32364	85.0
ANNUAL MEAN	136	88.7	142
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			1994
HIGHEST DAILY MEAN	550	Jan 1	1400
LOWEST DAILY MEAN	54	Dec 15	28
ANNUAL SEVEN-DAY MINIMUM	56	Dec 9	31
ANNUAL RUNOFF (AC-FT)	98200	64190	61560
ANNUAL RUNOFF (CFSM)	5.95	3.89	3.73
ANNUAL RUNOFF (INCHES)	80.78	52.80	50.64
10 PERCENT EXCEEDS	205	119	137
50 PERCENT EXCEEDS	131	83	74
90 PERCENT EXCEEDS	64	60	43

e Estimated

DESCHUTES RIVER BASIN

103

14091500 METOLIUS RIVER NEAR GRANDVIEW, OR

LOCATION.--Lat 44°37'33", long 121°28'55", in SE 1/4 SW 1/4 sec.12, T.11 S., R.10 E., Jefferson County, Hydrologic Unit 17070301, Deschutes National Forest, on right bank 1.0 mi upstream from maximum controlled pool of Lake Billy Chinook, 15.0 mi northwest of Culver, and at mile 13.6.

DRAINAGE AREA.--316 mi², at cableway 1.0 mi downstream, where all discharge measurements are made. Hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--April 1910 to February 1912 (gage heights and discharge measurements only), March 1912 to December 1913, October 1921 to current year. Published as "at Hubbard's ranch, near Sisters" 1910, and as "at Hubbard's ranch, near Grandview" 1910-13.

REVISED RECORDS.--WSP 1448: 1913.

GAGE.--Water-stage recorder. Datum of gage is 1,974.36 ft above sea level (levels by Portland General Electric Co.). Prior to Dec. 31, 1913, nonrecording gage at site 2.3 mi upstream at different datum. Oct. 1, 1921, to May 3, 1949, nonrecording gage and May 4, 1949, to June 18, 1963, water-stage recorder at site 2.7 mi downstream at datum 64 ft lower.

REMARKS.--No estimated daily discharges. Records excellent except those above 3,500 ft³/s, which are good. No regulation. Many small diversions for irrigation upstream from station. Stream is spring fed. Records herein are for measuring site. Continuous water-quality records for the period October 1954 to September 1974 have been collected at this location.

AVERAGE DISCHARGE.--78 years (water years 1913, 1922-98), 1,491 ft³/s, 1,080,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,430 ft³/s Feb. 7, 1996, gage height, 7.38 ft; minimum discharge, 1,080 ft³/s Feb. 17, 1932, Oct. 2-31, Nov. 6, 7, 10-14, 1942.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,970 ft³/s Oct. 30, gage height, 2.90 ft; minimum discharge, 1,470 ft³/s Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1610	1870	1610	1570	1750	1700	1760	1770	1740	1680	1580	1520
2	1630	1790	1610	1580	1730	1700	1740	1860	1770	1670	1570	1520
3	1650	1750	1600	1580	1740	1690	1740	1860	1760	1660	1570	1520
4	1740	1730	1600	1570	1730	1680	1720	1850	1750	1650	1570	1530
5	1860	1710	1600	1560	1730	1660	1710	1960	1760	1650	1580	1530
6	1700	1700	1590	1560	1760	1660	1700	1960	1750	1650	570	1520
7	1660	1700	1600	1580	1750	1650	1680	1950	1740	1650	1570	1520
8	1680	1680	1590	1560	1730	1650	1670	1920	1740	1650	1550	1520
9	1710	1660	1580	1560	1710	1640	1680	1860	1740	1640	1550	1520
10	1660	1660	1580	1570	1710	1630	1700	1810	1810	1640	1560	1500
11	1650	1650	1570	1610	1700	1630	1690	1780	1790	1630	1550	1500
12	1650	1640	1570	1560	1720	1640	1660	1800	1760	1620	1550	1500
13	1640	1640	1570	1570	1740	1640	1660	1770	1750	1620	1550	1500
14	1640	1630	1570	1670	1750	1640	1650	1740	1740	1620	1560	1510
15	1630	1620	1580	1710	1730	1660	1640	1720	1750	1620	1550	1510
16	1630	1620	1670	1700	1710	1670	1630	1730	1730	1620	1550	1520
17	1620	1620	1700	1960	1700	1670	1620	1710	1690	1620	1540	1520
18	1620	1630	1620	1880	1690	1660	1620	1690	1700	1610	1530	1520
19	1610	1640	1610	1830	1710	1660	1620	1710	1700	1610	1530	1540
20	1610	1640	1610	1800	1710	1660	1630	1780	1680	1600	1530	1510
21	1600	1620	1600	1780	1850	1700	1630	1750	1680	1590	1530	1500
22	1600	1620	1580	1790	1810	1860	1650	1720	1680	1590	1530	1490
23	1600	1640	1580	1830	1770	1920	1680	1710	1680	1590	1530	1490
24	1600	1680	1580	1840	1750	1920	1690	1730	1690	1600	1520	1490
25	1590	1650	1570	1830	1720	1900	1660	1740	1720	1590	1520	1500
26	1590	1640	1570	1830	1710	1880	1640	1700	1720	1590	1520	1500
27	1590	1630	1570	1830	1690	1850	1640	1680	1670	1590	1520	1490
28	1590	1630	1560	1800	1700	1830	1660	1670	1660	1600	1520	1480
29	1870	1620	1560	1790	---	1800	1690	1760	1660	1600	1520	1480
30	2330	1620	1560	1780	---	1790	1720	1770	1670	1600	1520	1480
31	2240	---	1550	1760	---	1780	---	1730	---	1590	1510	---
TOTAL	52400	49930	49310	52840	48500	53420	50180	55190	51680	50240	47850	45230
MEAN	1690	1664	1591	1705	1732	1723	1673	1780	1723	1621	1544	1508
MAX	2330	1870	1700	1960	1850	1920	1760	1960	1810	1680	1580	1540
MIN	1590	1620	1550	1560	1690	1630	1620	1670	1660	1590	1510	1480
AC-FT	103900	99040	97810	104800	96200	106000	99530	109500	102500	99650	94910	89710

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1998, BY WATER YEAR (WY)

	1345	1393	1483	1517	1569	1537	1548	1602	1623	1511	1413	1363
MEAN	1345	1393	1483	1517	1569	1537	1548	1602	1623	1511	1413	1363
MAX	1690	1816	2454	2512	2997	2504	2040	2099	2118	1910	1746	1650
(WY)	1998	1922	1965	1997	1996	1972	1997	1997	1974	1972	1972	1997
MIN	1081	1140	1110	1154	1148	1157	1162	1244	1196	1173	1136	1103
(WY)	1943	1940	1945	1979	1941	1941	1941	1941	1941	1941	1931	1942

SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1913 - 1998

	702470	606770	
ANNUAL TOTAL	702470	606770	
ANNUAL MEAN	1925	1662	1491
HIGHEST ANNUAL MEAN			1949
LOWEST ANNUAL MEAN			1167
HIGHEST DAILY MEAN	4730	Jan 1	2330
LOWEST DAILY MEAN	1550	Dec 31	1480
ANNUAL SEVEN-DAY MINIMUM	1560	Dec 25	1490
ANNUAL RUNOFF (AC-FT)	1393000		1204000
10 PERCENT EXCEEDS	2240		1790
50 PERCENT EXCEEDS	1890		1650
90 PERCENT EXCEEDS	1610		1530
			1220

DESCHUTES RIVER BASIN

14092100 LAKE BILLY CHINOOK NEAR METOLIUS, OR

LOCATION.--Lat 44°36'14", long 121°16'40", in SW 1/4 NE 1/4 sec.22, T.11 S., R.12 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, near left end of Round Butte Dam on Deschutes River, 5.0 mi west of Metolius, and at mile 110.6.

DRAINAGE AREA.--7,490 mi², approximately.

PERIOD OF RECORD.--January 1964 to current year.

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by Portland General Electric Co.).

REMARKS.--Reservoir is formed by rock fill dam completed in June 1964 by Portland General Electric Co.; storage began Jan. 2, 1964. Total capacity is 534,700 acre-ft at elevation 1,945.0 ft proposed upper limit of operation, and usable capacity is 273,900 acre-ft between elevations 1,860.0 ft, proposed lower limit of operation, and 1,945.0 ft. Reservoir used for power generation under FERC license 2030. Figures given herein represent total contents.

COOPERATION.--Gage readings and capacity tables furnished by Portland General Electric Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 538,700 acre-ft July 15, 16, 1972, elevation, 1,946.00 ft; minimum contents observed since first filling, 431,100 acre-ft Feb. 13, 1972, elevation, 1,917.13 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 535,100 acre-ft Oct. 21, elevation, 1,945.09 ft; minimum contents observed, 504,000 acre-ft Feb. 8, elevation, 1,937.04 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,944.16	531,400	--
Oct. 31.....	1,944.53	532,900	+1,500
Nov. 30.....	1,941.17	519,700	-13,200
Dec. 31.....	1,939.80	514,500	-5,200
CAL YR 1997.....	--	--	+10,800
Jan. 31.....	1,938.63	510,000	-4,500
Feb. 28.....	1,940.18	516,000	+6,000
Mar. 31.....	1,942.26	524,000	+8,000
Apr. 30.....	1,943.98	530,700	+6,700
May 31.....	1,944.61	533,200	+2,500
June 30.....	1,944.14	531,300	-1,900
July 31.....	1,944.19	531,500	+200
Aug. 31.....	1,944.17	531,400	-100
Sept. 30.....	1,944.41	532,400	+1,000
WTR YR 1998.....	--	--	+1,000

LOCATION.--Lat 44°43'34", long 121°14'45", in SE 1/4 SW 1/4 sec.1, T.10 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, on right bank 400 ft downstream from reregulating dam, 2.7 mi downstream from Pelton Dam, 8.5 mi northwest of Madras, and at mile 100.1.

REVISED RECORDS.--WSP 1398: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,390.25 ft above sea level (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Nov. 23, 1957.

REMARKS.--No estimated daily discharges. Records excellent. Diurnal fluctuation caused by Lake Simtustus and reregulating reservoir since 1957, combined capacity for normal operation, 6,500 acre-ft. Some winter and spring runoff stored in Ochoco Reservoir, capacity, 47,500 acre-ft, in Crescent Lake, Crane Prairie and Wickiup Reservoirs, combined capacity, 354,600 acre-ft, and since 1960, in Prineville Reservoir, capacity, 152,800 acre-ft, and since 1964, in Lake Billy Chinook, capacity, 534,700 acre-ft. Large diversions in upper basin for irrigation. Continuous water-quality records for the period October 1978 to September 1988 have been collected at this location.

AVERAGE DISCHARGE.--74 years (water years 1925-98), 4,553 ft³/s, 3,299,000 acre-ft/yr.
35 years (water years 1964-98), 4,676 ft³/s, 3,387,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,500 ft³/s July 16, 1983, accidental release from Pelton Dam, gage height, 7.70 ft, from floodmarks; minimum discharge, 916 ft³/s July 4, 1982, caused by power company testing control gates on dam.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,840 ft³/s June 1, gage height, 4.76 ft; minimum discharge, 3,630 ft³/s Sept. 4, result of regulation.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4840	7220	5630	5050	5860	5360	8060	5140	9490	4380	3990	3920
2	4850	6200	5640	5020	5940	5490	8060	5010	8510	4340	3970	3920
3	4840	5650	5440	5020	6240	5510	7050	5000	8100	4090	4110	3920
4	4850	5730	5450	5030	6580	5510	6090	5000	7960	4090	4140	3680
5	4880	5850	5470	5030	6420	5640	5600	5140	7780	4340	4280	3780
6	5100	5860	5620	5030	6270	5800	5810	5160	7400	4500	4040	3920
7	5250	6000	5490	5020	5690	5640	6180	5750	7070	4640	4040	3920
8	5400	5840	5480	5020	5620	5630	6220	5900	7060	4360	4040	3930
9	5430	5780	5480	5030	5440	5570	5920	5910	7040	4360	4040	3920
10	5430	5790	5470	5030	5470	5480	5820	5890	6770	4270	4040	4160
11	5440	5790	5470	5030	5470	5500	5330	5410	6770	4290	3920	4170
12	5450	5790	5490	5560	5480	5510	5300	5140	6660	4270	3910	4160
13	5160	5780	5480	6100	5300	5320	5310	5400	6030	4050	3910	4040
14	5010	5790	5490	6520	5180	5310	5020	5400	5460	4020	3920	4150
15	4960	5790	5350	6160	5200	5320	4520	5400	5340	4010	3920	4260
16	4730	5800	5340	5260	5190	5310	4460	5430	5330	3900	3930	4270
17	5140	5800	5150	5060	5190	5310	4470	5440	5320	3850	3920	4270
18	5400	5770	4930	5200	4970	5100	4500	5430	4830	3850	3920	4280
19	5510	5750	4690	5320	4800	4760	4360	5430	4500	3890	3940	4280
20	5540	5190	4810	5510	4790	4750	4350	5450	4240	4120	3940	4280
21	5690	4910	5200	5390	4800	4750	4350	5880	4240	4110	3920	4170
22	5810	4650	5240	5150	5160	4760	4380	5780	4340	4110	3920	4020
23	5810	5340	5210	5150	5020	5790	4760	5610	4390	4110	3930	4020
24	5810	5580	5230	5190	5460	6450	4890	5440	4620	4120	4380	4020
25	5700	5760	5250	5750	5510	7080	5300	5590	4650	4100	4270	4030
26	5440	5800	5250	5910	5510	7780	5340	5920	4650	3970	4290	4120
27	5420	5490	5060	5670	5370	8090	5640	6160	4630	3980	4290	4270
28	5440	5470	5050	5670	5350	8140	5910	6540	4610	3990	4140	4270
29	5490	5600	5050	5650	---	8050	5630	6930	4660	4010	4050	4270
30	6110	5640	5070	5520	---	8060	5290	9010	4520	3990	3920	4270
31	7770	---	5070	5410	---	8060	---	9320	---	4000	3910	---
TOTAL	167700	171410	164050	166460	153280	184830	163920	180010	176970	128110	124940	122690
MEAN	5410	5714	5292	5370	5474	5962	5464	5807	5899	4133	4030	4090
MAX	7770	7220	5640	6520	6580	8140	8060	9320	9490	4640		

MEAN	3979	4486	4878	5051	5315	5486	5320	4456	4208	3884	3779	3818
MAX	5410	6124	7253	9600	8974	9590	8988	6949	5899	4786	4718	4911
(WY)	1998	1985	1997	1997	1996	1972	1984	1956	1998	1974	1976	1997
MIN	3085	3521	3731	3305	3094	3455	3602	3431	3239	3059	3015	3022
(WY)	1965	1965	1932	1964	1964	1964	1968	1931	1931	1964	1931	1931

ANNUAL TOTAL	2170660		1904370				
ANNUAL MEAN	5947		5217			4553	
HIGHEST ANNUAL MEAN						5980	1997
LOWEST ANNUAL MEAN						3558	1964
HIGHEST DAILY MEAN	12800	Jan 3	9490	Jun 1		17800	Feb 8 1996
LOWEST DAILY MEAN	4010	Aug 11	3680	Sep 4		2440	Dec 3 1957
ANNUAL SEVEN-DAY MINIMUM	4250	Aug 9	3860	Aug 30		2590	Nov 30 1957
ANNUAL RUNOFF (AC-FT)	4306000		3777000			3299000	
10 PERCENT EXCEEDS	8080		6190			5950	
50 PERCENT EXCEEDS	5450		5250			4240	
90 PERCENT EXCEEDS	4480		4010			3480	

DESCHUTES RIVER BASIN

14092750 SHITIKE CREEK AT PETERS PASTURE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'02", long 121°37'56", in NW 1/4 NE 1/4 sec.35, T.9 S., R.9 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on left bank 0.5 mi downstream from Peters Pasture, and 18 mi west of town of Warm Springs, and at mile 26.4.

DRAINAGE AREA.--22.9 mi².

PERIOD OF RECORD.--July 1982 to current year.

REVISED RECORDS.--WDR OR-96-1: 1983, 1985, 1986, 1988, 1990, 1995.

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft, from topographic map.

REMARKS.--Records good. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--16 years (water years 1983-98), 78.6 ft³/s, 46.61 in/yr, 56,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,430 ft³/s Feb. 7, 1996, gage height, 6.66 ft, from rating curve extended above 800 ft³/s on basis of slope area measurement of peak flow; minimum discharge, 17 ft³/s Dec. 22, 1990.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	2130	*976	*3.80	No other peak greater than base discharge.			
Minimum discharge, 32 ft ³ /s, Sept. 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	226	60	51	81	60	84	177	106	87	56	39
2	56	146	59	51	77	60	80	221	126	83	55	38
3	63	110	57	51	75	59	79	211	110	84	54	38
4	111	94	57	50	73	58	75	189	109	84	53	38
5	170	83	56	49	72	57	72	212	118	83	52	37
6	96	77	55	48	76	57	70	212	109	80	52	37
7	78	81	54	52	75	56	68	216	111	80	51	37
8	75	74	53	50	72	55	66	190	118	78	51	37
9	78	70	52	49	69	54	64	149	119	74	50	37
10	70	67	51	50	67	53	66	121	148	73	50	37
11	66	65	50	e45	65	54	65	110	128	73	49	36
12	65	64	50	e40	69	56	63	110	118	71	48	36
13	63	62	49	e50	72	59	61	103	114	69	47	36
14	64	60	49	e75	72	63	60	95	106	68	47	35
15	63	59	49	84	69	69	58	90	109	67	46	35
16	62	57	71	89	66	75	58	90	96	65	46	34
17	61	59	93	180	64	76	57	86	87	64	46	34
18	58	58	76	167	64	73	58	80	93	64	46	36
19	56	61	69	140	68	72	60	85	92	63	45	43
20	54	63	65	117	67	71	61	109	87	62	45	40
21	53	60	62	101	75	79	63	104	87	60	45	38
22	52	59	59	93	69	158	69	94	86	59	44	36
23	52	61	58	99	67	238	86	96	92	59	44	35
24	51	84	56	101	64	231	102	103	95	59	44	34
25	50	79	54	98	63	183	91	104	102	58	43	35
26	49	73	53	101	61	153	84	91	100	57	42	37
27	48	69	52	104	59	130	80	84	86	57	42	36
28	48	66	52	99	59	113	84	79	83	58	42	35
29	194	64	51	93	---	100	108	94	85	58	41	34
30	509	62	51	88	---	92	145	105	87	57	40	33
31	500	---	50	85	---	88	---	95	---	57	39	---
TOTAL	3062	2313	1773	2550	1930	2802	2237	3905	3107	2111	1455	1093
MEAN	98.8	77.1	57.2	82.3	68.9	90.4	74.6	126	104	68.1	46.9	36.4
MAX	509	226	93	180	81	238	145	221	148	87	56	43
MIN	47	57	49	40	59	53	57	79	83	57	39	33
AC-FT	6070	4590	3520	5060	3830	5560	4440	7750	6160	4190	2890	2170
CFSM	4.31	3.37	2.50	3.59	3.01	3.95	3.26	5.50	4.52	2.97	2.05	1.59
IN.	4.97	3.76	2.88	4.14	3.14	4.55	3.63	6.34	5.05	3.43	2.36	1.78

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1998, BY WATER YEAR (WY)

	MEAN	39.7	69.9	76.5	83.7	105	90.4	102	122	108	69.9	44.1	34.3
MAX	98.8	175	205	218	363	166	151	207	161	111	70.1	59.6	
(WY)	1998	1996	1996	1997	1996	1986	1997	1997	1997	1983	1997	1997	
MIN	20.3	23.4	34.9	35.9	28.3	41.4	50.4	69.4	41.7	33.4	24.5	20.1	
(WY)	1988	1994	1991	1993	1994	1985	1991	1991	1992	1992	1992	1994	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1983 - 1998

ANNUAL TOTAL	45708	28338	78.6
ANNUAL MEAN	125	77.6	
HIGHEST ANNUAL MEAN			136
LOWEST ANNUAL MEAN			43.2
HIGHEST DAILY MEAN	933	Jan 1	2020
LOWEST DAILY MEAN	47	Sep 25	17
ANNUAL SEVEN-DAY MINIMUM	50	Oct 22	18
ANNUAL RUNOFF (AC-FT)	90660	56210	56910
ANNUAL RUNOFF (CFSM)	5.47	3.39	3.43
ANNUAL RUNOFF (INCHES)	74.25	46.03	46.61
10 PERCENT EXCEEDS	224	112	143
50 PERCENT EXCEEDS	94	65	60
90 PERCENT EXCEEDS	54	43	28

e Estimated

DESCHUTES RIVER BASIN

107

14093000 SHITKE CREEK NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°45'41", long 121°14'25", in NE 1/4 NE 1/4, sec.25, T.9 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation on left bank 1.5 mi east of Warm Springs, and at mile 0.7.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--July 1911 to October 1916, April 1923 to September 1928, October 1972 to September 1974. October 1996 to current year. Records for October 1974 to September 1996 (see station 14092885) at site upstream not equivalent owing to difference in drainage area.

REVISED RECORDS.--WSP 1318: 1911-12, 1916, 1927.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,380 ft above sea level, from topographic map. Prior to September 1928 non-recording gage 1.3 mi upstream, October 1972 to September 1974 water-stage recorder 0.4 mi downstream.

REMARKS.--Records poor. No regulation. Some diversions for irrigation and municipal use.

AVERAGE DISCHARGE.--14 years (water years 1912-16, 1924-28, 1973-74, 1998), 115 ft³/s, 15.03 in/yr, 83,330 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,000 ft³/s Jan. 15, 1974, gage height, 4.36 ft; minimum daily discharge, 20 ft³/s Dec. 8-15, 1972.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 7, 1996 reached a stage of 12.4 ft, information supplied by local resident, discharge about 4,400 ft³/s, from rating curve extended above 900 ft³/s on basis of runoff comparisons with nearby stations.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 31	unknown	*730	a*6.05	No other peak greater than base discharge.			
Minimum discharge, 48 ft ³ /s Sept. 30.							
a From outside high-water mark.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	79	e250	82	70	122	105	149	195	174	107	67	52
2	82	e180	82	71	116	105	143	223	206	103	65	52
3	94	e150	81	71	115	104	137	231	195	99	64	52
4	111	131	79	70	112	101	129	215	185	104	63	52
5	211	116	77	70	110	98	123	237	195	99	62	51
6	143	107	75	68	120	96	124	239	179	99	61	51
7	114	110	75	70	123	94	122	245	174	94	61	50
8	102	102	75	70	121	94	117	224	181	93	61	51
9	110	95	74	68	114	91	115	182	177	87	60	52
10	94	91	73	68	110	90	120	152	195	84	60	53
11	86	89	71	e60	108	90	114	137	187	84	59	52
12	82	86	70	e55	108	91	109	139	157	82	58	52
13	79	86	69	e65	122	97	109	135	151	80	58	51
14	78	83	69	e90	133	106	109	125	142	77	57	51
15	76	80	69	e100	125	117	105	122	133	77	57	50
16	75	79	77	e120	115	130	103	127	130	75	57	50
17	74	80	e125	186	112	132	98	125	113	73	58	49
18	72	81	e100	e200	108	130	96	117	111	73	58	51
19	69	86	e90	e180	114	134	98	121	114	72	57	59
20	67	86	88	e155	117	128	100	151	109	71	58	60
21	66	83	83	e140	163	133	105	153	106	68	59	57
22	65	80	79	130	e140	200	111	141	106	67	57	54
23	65	81	e80	138	131	272	122	141	107	67	57	52
24	64	104	75	141	124	e275	145	157	112	67	57	52
25	62	112	73	138	116	241	137	166	118	67	57	52
26	62	e100	e72	140	110	214	127	155	121	65	56	53
27	61	e95	71	145	106	e195	123	148	109	66	55	54
28	61	91	70	142	104	175	125	143	101	65	54	52
29	118	87	70	138	---	158	140	181	100	68	53	51
30	354	85	70	e133	---	152	174	214	104	66	52	50
31	e500	---	69	e125	---	155	---	176	---	67	53	---
TOTAL	3376	3086	2413	3417	3319	4303	3629	5217	4292	2466	1811	1568
MEAN	109	103	77.8	110	119	139	121	168	143	79.5	58.4	52.3
MAX	500	250	125	200	163	275	174	245	206	107	67	60
MIN	61	79	69	55	104	90	96	117	100	65	52	49
AC-FT	6700	6120	4790	6780	6580	8540	7200	10350	8510	4890	3590	3110
CFSM	1.05	.99	.75	1.06	1.14	1.33	1.16	1.62	1.38	.76	.56	.50
IN.	1.21	1.10	.86	1.22	1.19	1.54	1.30	1.87	1.54	.88	.65	.56

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1998, BY WATER YEAR (WY)

	MEAN	67.0	99.0	119	150	140	127	135	161	150	105	68.2	61.3
MAX	109	167	283	432	261	222	200	238	315	213	106	87.7	
(WY)	1998	1928	1997	1974	1916	1997	1916	1974	1974	1916	1916	1997	
MIN	41.5	50.1	63.6	54.4	60.4	64.7	66.4	86.2	68.9	46.7	36.2	36.1	
(WY)	1916	1926	1912	1926	1915	1973	1973	1973	1924	1924	1924	1924	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1912 - 1998

ANNUAL TOTAL	62225	38897	
ANNUAL MEAN	170	107	115
HIGHEST ANNUAL MEAN			187
LOWEST ANNUAL MEAN			71.0
HIGHEST DAILY MEAN	1110	Jan 1	2300
LOWEST DAILY MEAN	61	Oct 27	20
ANNUAL SEVEN-DAY MINIMUM	63	Oct 22	20
ANNUAL RUNOFF (AC-FT)	123400	77150	83330
ANNUAL RUNOFF (CFSM)	1.64	1.02	1.11
ANNUAL RUNOFF (INCHES)	22.26	13.91	15.03
10 PERCENT EXCEEDS	300	174	196
50 PERCENT EXCEEDS	140	99	91
90 PERCENT EXCEEDS	77	57	51

e Estimated

DESCHUTES RIVER BASIN

14095500 WARM SPRINGS RIVER NEAR SIMNASHO, OR

LOCATION.--Lat 44°58'10", long 121°28'35", in SE 1/4 SW 1/4 sec.7, T.7 S., R.11 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank abutment of log bridge at Hehe Butte rodeo grounds, 3.3 mi upstream from Badger Creek, and 6.2 mi west of Simnasho, and at mile 30.5.

DRAINAGE AREA.--107 mi².

PERIOD OF RECORD.--June to September 1915, August 1949 to September 1954, October 1983 to current year. Prior to October 1983, published as "at Hehe Mill near Warm Springs."

GAGE.--Water-stage recorder. Datum of gage is 2,533.78 ft above sea level. June to September 1915 1.0 mi downstream at different datum. August 1949 to September 1954 0.5 mi downstream at datum 7.12 ft lower.

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

AVERAGE DISCHARGE.--20 years (water years 1950-54, 1984-98), 165 ft³/s, 20.94 in/yr, 119,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,670 ft³/s Feb. 7, 1996, gage height, 6.98 ft, from rating curve extended above 1,300 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 89 ft³/s Aug. 14, 1994, due to temporary diversion.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 350 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 25	0930	*301	*3.37				

Minimum discharge, 130 ft³/s many days in September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	157	141	138	194	198	234	215	178	153	139	133
2	141	149	141	141	190	198	228	222	175	150	138	133
3	141	146	140	140	192	194	229	224	175	151	137	133
4	146	144	140	140	197	189	223	219	177	150	136	131
5	155	143	138	138	197	186	217	223	171	148	135	131
6	144	142	138	137	208	184	214	217	168	148	135	131
7	142	148	139	138	203	180	210	211	176	146	135	131
8	145	145	139	137	197	183	204	206	175	146	135	131
9	146	143	138	136	191	181	204	202	170	145	136	131
10	142	142	138	139	188	178	215	198	169	145	135	131
11	142	141	136	e140	191	176	213	192	167	145	135	131
12	142	140	136	e145	207	179	205	197	165	145	135	131
13	140	140	136	e150	236	182	202	197	162	145	135	130
14	140	139	137	152	229	187	196	189	161	143	135	130
15	140	138	137	160	224	194	192	185	159	143	135	130
16	140	138	145	155	214	203	189	189	159	141	135	130
17	140	139	157	191	210	207	185	188	159	141	135	130
18	139	139	146	187	207	206	184	181	156	141	135	132
19	139	143	143	175	211	204	186	188	156	141	135	134
20	138	142	142	170	213	203	188	201	155	140	135	132
21	138	141	141	165	255	211	190	195	155	140	135	131
22	138	141	138	165	232	256	194	187	153	139	135	132
23	138	143	138	176	218	278	203	183	152	139	135	131
24	138	158	137	184	212	298	208	182	153	140	135	130
25	138	155	136	190	205	296	205	187	153	140	134	131
26	138	150	136	193	199	289	200	181	153	139	133	132
27	138	147	136	199	193	277	199	177	153	140	133	132
28	138	145	137	198	195	265	201	174	153	141	133	130
29	157	144	136	201	---	253	204	195	151	142	133	130
30	169	143	136	201	---	243	208	197	150	140	133	130
31	181	---	136	195	---	240	---	183	---	140	133	---
TOTAL	4453	4325	4314	5076	5808	6718	6130	6085	4859	4447	4183	3935
MEAN	144	144	139	164	207	217	204	196	162	143	135	131
MAX	181	158	157	201	255	298	234	224	178	153	139	134
MIN	138	138	136	136	188	176	184	174	150	139	133	130
AC-FT	8830	8580	8560	10070	11520	13330	12160	12070	9640	8820	8300	7810
CFSM	1.34	1.35	1.30	1.53	1.94	2.03	1.91	1.83	1.51	1.34	1.26	1.23
IN.	1.55	1.50	1.50	1.76	2.02	2.34	2.13	2.12	1.69	1.55	1.45	1.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1998. BY WATER YEAR (WY)

[illegible]

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1950 - 1998
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ANNUAL TOTAL	84185		60333				
ANNUAL MEAN	231		165			165	
HIGHEST ANNUAL MEAN						242	1997
LOWEST ANNUAL MEAN						107	1994
HIGHEST DAILY MEAN	1500	Jan 1	298	Mar 24		3000	Feb 8 1996
LOWEST DAILY MEAN	135	Jan 28	130	Sep 13		93	Dec 14 1992
ANNUAL SEVEN-DAY MINIMUM	136	Dec 25	130	Sep 11		95	Jul 25 1994
ANNUAL RUNOFF (AC-FT)	167000		119700			119500	
ANNUAL RUNOFF (CFSM)	2.16		1.54			1.54	
ANNUAL RUNOFF (INCHES)	29.27		20.98			20.94	
10 PERCENT EXCEEDS	400		210			255	
50 PERCENT EXCEEDS	165		149			134	
90 PERCENT EXCEEDS	139		134			106	

e Estimated

14096300 MILL CREEK NEAR BADGER BUTTE, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°51'42", long 121°37'35", in SW 1/4 sec.23, T.8 S., R.9 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 200 ft upstream from bridge on road B241, 3.4 mi upstream from headworks of Mill Creek Canal, and 19.3 mi northwest of Warm Springs, and at mile 14.6.

DRAINAGE AREA.--26.8 mi².

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,380 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--15 years (water years 1984-98), 68.1 ft³/s, 34.53 in/yr, 49,340 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,300 ft³/s Feb. 7, 1996, from rating curve extended above 800 ft³/s on basis of slope-area measurement of peak flow, gage height, 8.42; maximum gage height, 9.49 ft, Feb. 7, 1996, from high-water mark on crest-stage gage; minimum discharge recorded, 23 ft³/s Feb. 15, 25, 1993, but may have been lower during period of estimated record.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 130 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 31	0500	*400	6.19	Mar. 23	2300	178	5.58
Oct. 31	0500	---	a*6.40	May 5	1430	160	5.53
Jan. 17	1430	179	5.58				

Minimum discharge, 40 ft³/s Sept. 6, 7.
a High-water mark from crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	61	205	75	62	87	76	92	123	92	57	47	44
2	64	158	74	65	84	77	89	143	93	56	47	44
3	65	129	72	63	84	75	88	150	94	55	47	44
4	74	109	70	63	84	74	86	144	91	53	47	44
5	93	97	69	62	84	73	81	150	88	53	47	44
6	78	90	67	63	92	72	78	150	86	53	47	44
7	74	91	66	70	89	72	76	143	91	53	47	44
8	75	85	66	67	83	71	74	133	87	51	47	44
9	80	82	65	65	80	70	73	120	83	51	47	44
10	73	80	64	67	78	69	78	106	81	51	46	44
11	73	77	62	e60	78	70	78	94	83	48	46	44
12	74	76	61	e50	86	72	74	100	80	47	46	44
13	70	73	60	e60	95	77	71	93	76	47	46	44
14	68	72	60	e85	87	79	70	85	72	48	45	44
15	68	71	61	113	85	85	67	86	69	47	45	45
16	67	70	83	110	82	89	67	91	68	47	45	45
17	67	73	95	160	79	88	66	88	65	46	45	45
18	68	73	84	148	78	85	66	81	63	46	46	52
19	67	78	78	134	85	82	68	87	63	45	46	59
20	66	80	75	118	84	82	68	111	62	45	47	50
21	66	76	73	107	96	92	70	106	61	45	47	48
22	66	74	71	103	89	130	73	97	60	46	46	47
23	68	79	70	112	83	154	84	89	58	46	47	46
24	67	109	68	116	80	161	92	89	58	45	47	46
25	66	101	66	113	77	153	92	93	59	45	46	48
26	65	92	65	114	75	141	87	91	63	45	46	50
27	64	87	63	116	73	127	84	86	61	46	45	48
28	64	83	64	108	74	115	87	81	60	47	45	47
29	117	80	62	103	---	107	93	96	59	49	45	46
30	226	78	61	98	---	101	108	103	57	47	45	46
31	330	---	61	91	---	95	---	99	---	47	45	---
TOTAL	2624	2728	2131	2866	2331	2914	2380	3308	2183	1507	1430	1384
MEAN	84.6	90.9	68.7	92.5	83.3	94.0	79.3	107	72.8	48.6	46.1	46.1
MAX	330	205	95	160	96	161	108	150	94	57	47	59
MIN	61	70	60	50	73	69	66	81	57	45	45	44
AC-FT	5200	5410	4230	5680	4620	5780	4720	6560	4330	2990	2840	2750
CFSM	3.16	3.39	2.56	3.45	3.11	3.51	2.96	3.98	2.72	1.81	1.72	1.72
IN.	3.64	3.79	2.96	3.98	3.24	4.04	3.30	4.59	3.03	2.09	1.98	1.92

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

MEAN	44.3	68.6	76.4	81.0	93.1	79.4	87.3	90.6	70.1	47.0	41.1	40.3
MAX	84.6	136	203	162	275	123	124	141	103	71.6	63.3	64.9
(WY)	1998	1996	1996	1996	1996	1997	1997	1997	1997	1997	1997	1997
MIN	30.0	38.2	44.1	43.8	40.0	58.1	62.4	43.7	33.3	34.2	31.1	28.2
(WY)	1993	1988	1994	1994	1993	1994	1991	1992	1992	1994	1992	1995

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	36832	27786	68.1
ANNUAL MEAN	101	76.1	114
HIGHEST ANNUAL MEAN			46.5
LOWEST ANNUAL MEAN			1996
HIGHEST DAILY MEAN	510	Jan 1	330
LOWEST DAILY MEAN	60	Dec 13	44
ANNUAL SEVEN-DAY MINIMUM	61	Aug 9	44
ANNUAL RUNOFF (AC-FT)	73060	55110	49340
ANNUAL RUNOFF (CFSM)	3.77	2.84	2.54
ANNUAL RUNOFF (INCHES)	51.13	38.57	34.53
10 PERCENT EXCEEDS	156	108	107
50 PERCENT EXCEEDS	84	72	58
90 PERCENT EXCEEDS	63	46	35

e Estimated

14096850 BEAVER CREEK BELOW QUARTZ CREEK, NEAR SIMNASHO, OR

LOCATION.--Lat 44°57'32", long 121°23'35", in NE 1/4 SW 1/4 sec.14, T.7 S., R.11 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 600 ft downstream from culvert on Warm Springs Reservation Highway 9, 200 ft downstream from Quartz Creek, and 2.4 mi west of Simnasho, and at mile 7.92.

DRAINAGE AREA.--145 mi².

PERIOD OF RECORD.--October 1983 to current year.

REVISED RECORDS.--WDR OR-96-1: 1986.

GAGE.--Water-stage recorder. Elevation of gage is 2,260 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--15 years (water years 1984-98), 86.4 ft³/s, 8.09 in/yr, 62,570 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,760 ft³/s, Feb. 7, 1996, gage height, 10.57 ft; minimum discharge, 4.5 ft³/s Jan. 7, 1991.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 21	1000	*594	*4.19	No other peak greater than base discharge.			
Minimum discharge, 38 ft ³ /s Jan. 11, 12.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	63	51	47	141	166	131	96	111	52	45	41
2	43	55	50	49	136	155	122	104	95	52	45	41
3	44	52	50	49	141	142	123	115	89	52	44	41
4	45	50	50	48	177	132	120	108	91	51	44	41
5	54	50	50	48	183	121	112	106	86	51	43	41
6	52	49	48	49	248	117	106	100	81	51	43	40
7	48	51	47	49	223	111	104	95	91	49	43	40
8	48	52	47	49	202	112	99	90	87	49	43	40
9	50	50	47	49	162	110	98	87	81	49	43	40
10	49	49	47	49	150	105	114	84	78	47	43	41
11	47	49	46	45	174	103	132	81	77	47	43	41
12	48	49	46	39	191	102	114	84	73	47	43	41
13	48	49	46	43	286	105	105	88	70	47	43	40
14	47	48	46	55	266	112	102	81	67	47	42	40
15	45	46	46	69	272	120	97	78	66	47	42	40
16	45	46	48	71	208	133	92	79	65	47	42	40
17	45	46	61	147	187	136	89	81	64	46	42	40
18	45	46	57	172	182	131	87	76	63	46	42	41
19	45	48	52	152	213	124	85	77	62	45	42	42
20	44	50	51	118	228	119	85	90	61	46	42	42
21	44	51	51	99	440	125	85	87	60	45	42	42
22	44	51	48	98	306	200	85	79	60	45	42	41
23	44	51	49	160	236	232	93	75	58	45	42	41
24	44	56	48	192	201	237	99	75	58	45	42	41
25	43	57	45	184	172	212	96	84	58	45	42	41
26	43	56	45	188	155	191	91	80	58	45	42	41
27	43	53	48	211	139	177	87	75	58	45	42	41
28	43	52	47	192	144	163	85	72	56	45	42	41
29	49	51	47	190	---	148	87	150	54	46	41	41
30	63	51	47	190	---	137	91	358	53	45	41	41
31	85	---	47	157	---	135	---	158	---	45	41	---
TOTAL	1480	1527	1508	3258	5763	4413	3016	3093	2131	1464	1318	1224
MEAN	47.7	50.9	48.6	105	206	142	101	99.8	71.0	47.2	42.5	40.8
MAX	85	63	61	211	440	237	132	358	111	52	45	42
MIN	43	46	45	39	136	102	85	72	53	45	41	40
AC-FT	2940	3030	2990	6460	11430	8750	5980	6130	4230	2900	2610	2430
CFSM	.33	.35	.34	.72	1.42	.98	.69	.69	.49	.33	.29	.28
IN.	.38	.39	.39	.84	1.48	1.13	.77	.79	.55	.38	.34	.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

	MEAN	38.2	50.7	77.9	128	213	160	119	84.4	56.7	41.7	37.7	36.8
MAX	47.7	104	315	479	646	305	182	130	95.5	47.7	42.9	43.4	
(WY)	1998	1985	1997	1997	1996	1986	1997	1997	1993	1997	1997	1997	
MIN	33.1	35.6	40.0	47.6	42.7	58.9	60.8	44.6	36.6	32.3	30.5	30.4	
(WY)	1995	1988	1986	1987	1994	1994	1994	1994	1994	1994	1994	1994	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	52279	30195	
ANNUAL MEAN	143	82.7	
HIGHEST ANNUAL MEAN			86.4
LOWEST ANNUAL MEAN			166
HIGHEST DAILY MEAN	2100	440	3600
LOWEST DAILY MEAN	42	39	5.8
ANNUAL SEVEN-DAY MINIMUM	42	40	8.3
ANNUAL RUNOFF (AC-FT)	103700	59890	62570
ANNUAL RUNOFF (CFSM)	.99	.57	.60
ANNUAL RUNOFF (INCHES)	13.41	7.75	8.09
10 PERCENT EXCEEDS	284	164	164
50 PERCENT EXCEEDS	56	52	48
90 PERCENT EXCEEDS	43	42	36

DESCHUTES RIVER BASIN

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14097100 WARM SPRINGS RIVER NEAR KAHNEETA HOT SPRINGS, OR

LOCATION.--Lat 44°51'24", long 121°08'55", in SE 1/4 SW 1/4 sec.23, T.8 S., R.13 E., Wasco County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 25 ft upstream from bridge, 2.5 mi east of Kahneeta Hot Springs, and at mile 4.6.

DRAINAGE AREA.--526 mi².

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,400 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--26 years(water years 1973-98), 446 ft³/s, 11.51 in/yr, 322,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,600 ft³/s Feb. 7, 1996, gage height, 14.32 ft, from inside highwater mark and slope-area computation; minimum discharge, 149 ft³/s Dec. 20, 1990, but may have been less during period of ice effect Dec. 20, 1990 to Jan. 10, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 21	1400	*1,630	*4.28				
Minimum discharge, 261 ft ³ /s Sept. 17.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	326	671	356	329	587	618	681	605	561	341	292	270
2	330	522	352	342	581	607	645	651	513	336	288	270
3	334	458	348	342	573	590	636	712	496	333	287	269
4	338	414	343	335	669	565	632	684	499	328	286	269
5	382	394	340	332	664	543	600	688	476	325	284	269
6	383	381	338	333	764	531	579	683	461	323	282	269
7	355	392	338	338	758	516	569	654	461	319	281	268
8	344	387	335	338	710	515	544	624	494	316	281	268
9	358	373	332	332	622	512	535	599	463	314	281	269
10	350	363	330	336	582	497	574	565	448	312	279	270
11	341	358	326	344	649	489	611	535	445	312	279	270
12	344	353	323	343	629	496	576	548	428	310	278	270
13	342	349	320	368	859	515	548	573	411	309	278	269
14	336	346	325	398	869	533	528	523	400	309	277	269
15	331	342	328	459	897	564	514	506	389	307	275	268
16	330	339	340	459	727	614	499	514	386	304	277	268
17	329	339	421	607	672	633	487	528	383	301	277	267
18	328	343	397	799	642	617	480	495	376	299	277	269
19	328	358	370	745	694	600	482	491	370	299	277	288
20	326	358	361	630	737	585	486	568	367	297	278	284
21	325	361	353	544	1190	602	487	580	363	296	280	279
22	325	355	336	514	978	817	498	529	361	296	278	275
23	324	354	342	637	799	962	522	494	354	294	277	273
24	325	396	339	715	721	1030	564	491	353	292	277	272
25	323	430	325	729	662	984	567	525	353	290	277	272
26	324	407	323	698	620	931	544	505	355	290	275	278
27	324	389	333	732	584	874	528	482	354	291	273	276
28	322	377	332	709	578	814	527	464	348	298	273	273
29	355	369	333	689	---	757	540	562	341	298	271	271
30	487	364	330	695	---	712	567	1030	338	299	269	269
31	843	---	325	627	---	693	---	684	---	293	270	---
TOTAL	11112	11642	10594	15798	20017	20316	16550	18092	12347	9531	8634	8151
MEAN	358	388	342	510	715	655	552	584	412	307	279	272
MAX	843	671	421	799	1190	1030	681	1030	561	341	292	288
MIN	322	339	320	329	573	489	480	464	338	290	269	267
AC-FT	22040	23090	21010	31340	39700	40300	32830	35890	24490	18900	17130	16170
CFSM	.68	.74	.65	.97	1.36	1.25	1.05	1.11	.78	.58	.53	.52
IN.	.79	.82	.75	1.12	1.42	1.44	1.17	1.28	.87	.67	.61	.58

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1998, BY WATER YEAR (WY)

	MEAN	259	321	494	597	787	654	576	514	380	280	256	251
MAX	358	570	1216	1773	2894	1285	956	848	803	401	337	334	
(WY)	1998	1985	1997	1997	1996	1986	1997	1997	1974	1974	1997	1997	
MIN	211	229	242	201	239	274	278	235	198	198	196	197	
(WY)	1993	1994	1994	1979	1994	1977	1977	1994	1994	1994	1994	1994	

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1973 - 1998
ANNUAL TOTAL	260828	162784	
ANNUAL MEAN	715	446	446
HIGHEST ANNUAL MEAN			786
LOWEST ANNUAL MEAN			246
HIGHEST DAILY MEAN	7790	Jan 1	15800
LOWEST DAILY MEAN	320	Dec 13	160
ANNUAL SEVEN-DAY MINIMUM	324	Oct 22	174
ANNUAL RUNOFF (AC-FT)	517400	322900	322800
ANNUAL RUNOFF (CFSM)	1.36	.85	.85
ANNUAL RUNOFF (INCHES)	18.45	11.51	11.51
10 PERCENT EXCEEDS	1220	686	744
50 PERCENT EXCEEDS	423	363	318
90 PERCENT EXCEEDS	330	277	228

LOCATION.--Lat 45°37'20", long 120°54'05", in SW 1/4 SE 1/4 sec.26, T.2 N., R.15 E., Sherman County, Hydrologic Unit 17070306, on right bank at Moody, 4.0 mi southwest of Biggs, and at mile 1.4.

PERIOD OF RECORD.--October 1897 to December 1899 (published as "near Moro"), July 1906 to current year. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 167.54 ft above sea level. Oct. 19, 1897, to Dec. 31, 1899, nonrecording gage at site 10 mi upstream at different datum. July 22, 1906, to July 18, 1930, nonrecording gage at site 300 ft downstream at datum 0.50 ft lower.

AVERAGE DISCHARGE.--94 years (water years 1898, 1899, 1907-98), 5,834 ft³/s, 4,227,000 acre-ft/yr.
42 years (water years 1957-98), 5,814 ft³/s, 4,212,000 acre-ft/yr (regulated).

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,300 ft³/s May 30, gage height, 6.06 ft; minimum discharge, 4,170 ft³/s Sept. 5.

ANNUAL TOTAL	2783750		2338160				
ANNUAL MEAN	7627		6406			5814	
HIGHEST ANNUAL MEAN						7969	1997
LOWEST ANNUAL MEAN						4290	1994
HIGHEST DAILY MEAN	36600	Jan 1	16500	May 30	63400		Feb 8 1996
LOWEST DAILY MEAN	4430	Aug 12	4210	Sep 5	2880		Dec 4 1957
ANNUAL SEVEN-DAY MINIMUM	4600	Aug 10	4380	Sep 1	3180		Dec 1 1957
ANNUAL RUNOFF (AC-FT)	5522000		4638000		4212000		
10 PERCENT EXCEEDS	10600		8030		8090		
50 PERCENT EXCEEDS	6420		6310		5150		
90 PERCENT EXCEEDS	4880		4590		4190		

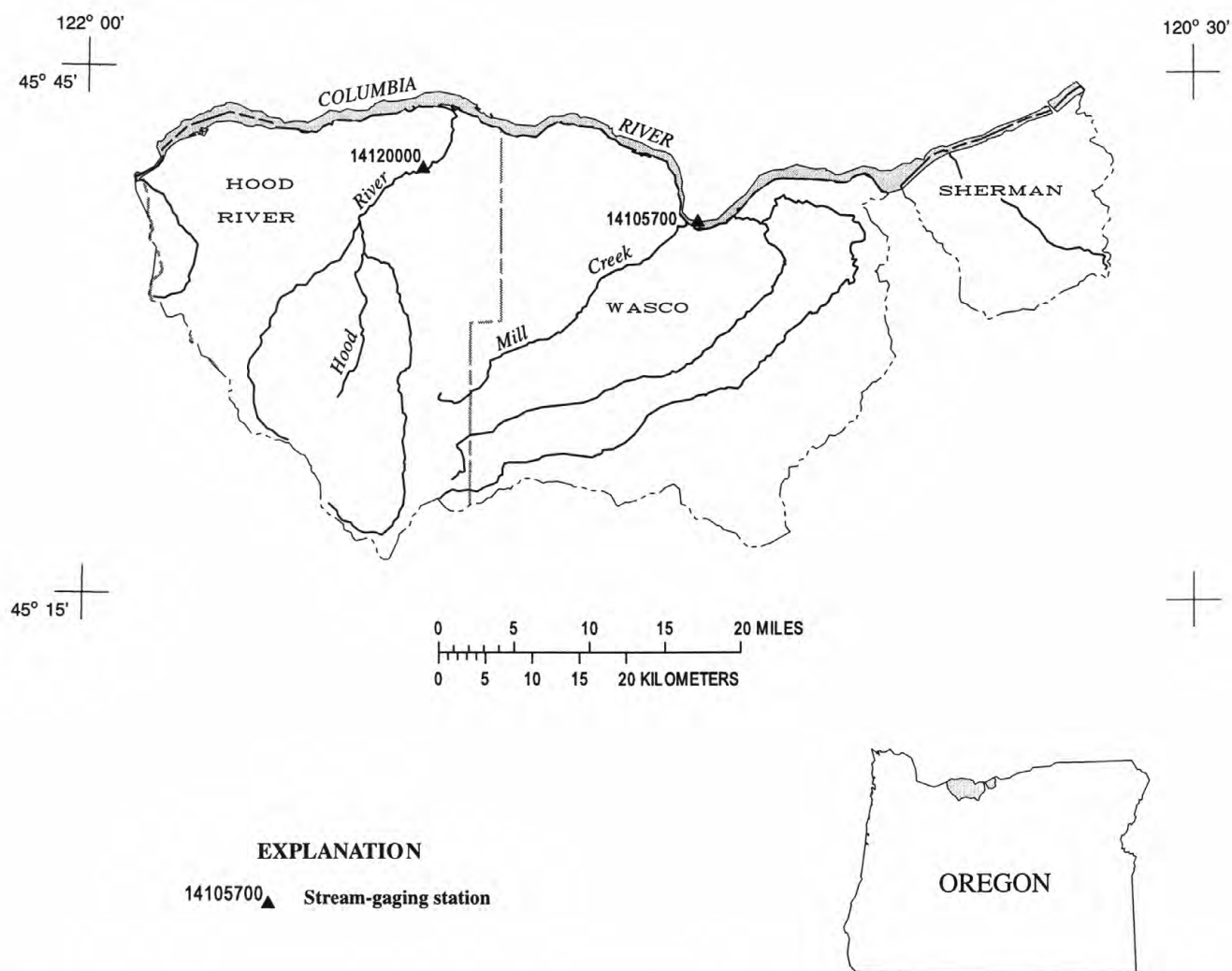
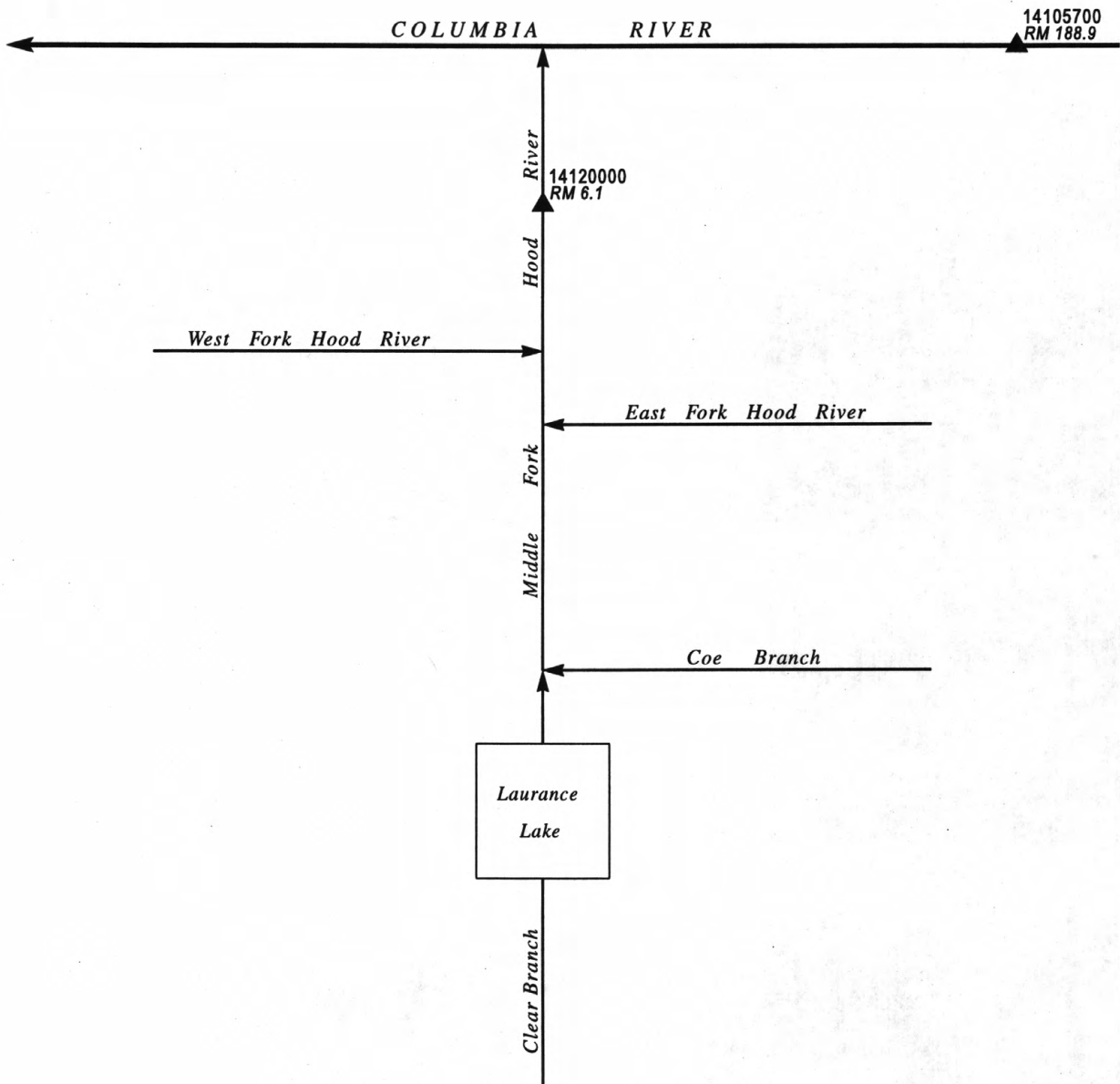


Figure 17. Location of surface-water stations in the Columbia River between the Deschutes River and Bonneville Dam and in the Hood River Basin.



EXPLANATION

- ▲ 14128600 Stream-gaging station
- RM 6.1 River mile
- Stream—Arrow shows direction of flow

Figure 18. Schematic diagram showing gaging stations in the Columbia River between the Deschutes River and Bonneville Dam and in the Hood River Basin.

COLUMBIA RIVER MAIN STEM

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14105700 COLUMBIA RIVER AT THE DALLES, OR

LOCATION.--Lat 45°36'27", long 121°10'20", in SW 1/4 SW 1/4 sec.34, T.2 N., R.13 E., Wasco County, Hydrologic Unit 17070105, Corps of Engineers land, on left bank 0.3 mi downstream from Mill Creek, 2.6 mi downstream from The Dalles Dam, and at mile 188.9.

DRAINAGE AREA.--237,000 mi², approximately.

PERIOD OF RECORD.--October 1857 to September 1877 (annual maximum only, at Lower Cascades Landing, published in WSP 1318), June 1878 to current year. Published as "near The Dalles" 1936-56.

REVISED RECORDS.--WSP 534: 1920(m). SP 1094: 1894. WSP 1248: 1866, 1888, 1899, 1909. WSP 1518: 1876(M).

GAGE.--Ultrasonic velocity meter (UVM) with water-stage and velocity-index recorder. Datum of gage is sea level. See WSP 1738 for history of changes prior to Mar. 16, 1957. Mar. 16, 1957, to Sept 30, 1968, water-stage recorder at site 0.4 mi upstream at same datum.

REMARKS.--Records good. Daily discharge estimates determined from record provided by U.S. Army Corps of Engineers. Considerable regulation by many large reservoirs. Diurnal fluctuations caused by powerplant and gates at The Dalles Dam. Many diversions for irrigation upstream from station. Continuous water-quality records for the period October 1957 to February 1985 have been collected at this location.

AVERAGE DISCHARGE.--120 years (water years 1879-98), 191,900 ft³/s, 139,000,000 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge (since 1858), 1,240,000 ft³/s June 6, 1894, elevation, 106.5 ft; minimum discharge (since 1878), 12,100 ft³/s Apr. 16, 1968 (due to closure of John Day dam, recorded by UVM).

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 446,000 ft³/s May 30; maximum elevation, 84.15 ft May 28; minimum daily discharge, 88,700 ft³/s Sept. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e181000	e128000	e159000	143000	176000	183000	178000	245000	435000	263000	146000	139000
2	e161000	e123000	e161000	139000	196000	179000	171000	236000	401000	248000	146000	155000
3	e187000	e152000	e198000	147000	204000	178000	165000	273000	425000	198000	133000	123000
4	e139000	e165000	e188000	147000	190000	197000	148000	302000	426000	248000	150000	105000
5	e136000	e151000	181000	174000	199000	193000	148000	312000	369000	201000	169000	99600
6	e188000	e178000	151000	213000	199000	201000	163000	327000	387000	221000	167000	117000
7	e151000	e176000	185000	158000	206000	163000	165000	362000	359000	195000	179000	101000
8	e211000	e126000	163000	173000	182000	172000	174000	361000	332000	223000	175000	94300
9	e199000	e158000	184000	181000	201000	155000	145000	372000	354000	216000	132000	90800
10	e180000	e145000	181000	205000	222000	175000	137000	361000	328000	213000	160000	88700
11	e196000	e152000	208000	191000	231000	182000	158000	313000	316000	177000	182000	114000
12	e220000	e149000	208000	189000	215000	162000	131000	330000	317000	180000	175000	130000
13	e181000	e161000	223000	185000	215000	191000	154000	321000	302000	208000	200000	123000
14	e192000	e152000	177000	187000	196000	163000	144000	351000	306000	215000	167000	123000
15	e209000	e127000	204000	171000	168000	138000	144000	345000	279000	214000	166000	144000
16	e206000	e171000	177000	156000	190000	171000	150000	327000	234000	223000	138000	146000
17	e214000	e167000	170000	164000	198000	191000	173000	307000	249000	194000	134000	156000
18	e183000	e146000	190000	141000	201000	211000	143000	327000	256000	194000	138000	134000
19	e160000	e156000	188000	137000	214000	200000	149000	313000	256000	177000	150000	109000
20	e146000	e124000	158000	169000	219000	202000	158000	331000	282000	216000	163000	109000
21	e137000	e150000	183000	190000	208000	171000	166000	333000	253000	192000	148000	108000
22	e134000	e150000	207000	187000	198000	146000	153000	299000	232000	205000	132000	99100
23	e159000	e155000	163000	188000	197000	173000	195000	297000	210000	182000	129000	103000
24	e173000	e146000	152000	151000	202000	185000	211000	330000	268000	184000	148000	89400
25	e112000	e146000	157000	113000	228000	213000	216000	310000	272000	198000	134000	93300
26	e115000	e186000	156000	140000	212000	259000	201000	317000	277000	165000	120000	118000
27	e129000	e151000	167000	164000	226000	298000	215000	399000	277000	197000	109000	113000
28	e159000	e140000	137000	187000	197000	235000	215000	420000	264000	202000	122000	95100
29	e137000	e136000	147000	189000	---	197000	205000	419000	250000	180000	128000	111000
30	e135000	e140000	167000	186000	---	195000	238000	446000	249000	166000	124000	125000
31	e146000	---	182000	180000	---	197000	---	433000	---	169000	134000	---
TOTAL	5176000	4507000	5472000	5245000	5690000	5876000	5113000	10419000	9165000	6264000	4598000	3456300
MEAN	167000	150200	176500	169200	203200	189500	170400	336100	305500	202100	148300	115200
MAX	220000	186000	223000	213000	231000	298000	238000	446000	435000	263000	200000	156000
MIN	112000	123000	137000	113000	168000	138000	131000	236000	210000	165000	109000	88700
AC-FT10270000	8940000	10850000	10400000	11290000	11660000	10140000	20670000	18180000	12420000	9120000	6856000	

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1879 - 1998, BY WATER YEAR (WY)

	104400	107600	114700	117400	127600	146100	203900	341800	442100	301700	172900	120200
MEAN	104400	107600	114700	117400	127600	146100	203900	341800	442100	301700	172900	120200
MAX	174800	200800	258300	275000	340400	345000	386400	624400	1002000	793300	385700	198200
(WY)	1960	1928	1996	1997	1996	1983	1881	1897	1894	1880	1880	1880
MIN	69430	57830	52380	42430	51420	69820	98350	136100	123700	88600	91970	75760
(WY)	1930	1937	1937	1937	1937	1937	1944	1977	1977	1977	1994	1994

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1879 - 1998
ANNUAL TOTAL	97610000	70981300	
ANNUAL MEAN	267400	194500	191900
HIGHEST ANNUAL MEAN			313600
LOWEST ANNUAL MEAN			118100
HIGHEST DAILY MEAN	571000	Jun 15	446000
LOWEST DAILY MEAN	110000	Sep 7	88700
ANNUAL SEVEN-DAY MINIMUM	130000	Sep 7	95000
ANNUAL RUNOFF (AC-FT)	193600000	140800000	139000000
10 PERCENT EXCEEDS	464000	308000	385000
50 PERCENT EXCEEDS	251000	180000	142000
90 PERCENT EXCEEDS	146000	129000	80200

e Estimated

HOOD RIVER RIVER BASIN

14120000 HOOD RIVER AT TUCKER BRIDGE, NEAR HOOD RIVER, OR

LOCATION.--Lat 45°39'20", long 121°32'50", in SE 1/4 sec.15, T.2 N., R.10 E., Hood River County, Hydrologic Unit 17070105, on right bank 25 ft downstream from Tucker Bridge, 0.5 mi upstream from Odell Creek, 4.0 mi, southwest of town of Hood River, and at mile 6.1.

DRAINAGE AREA.--279 mi².

PERIOD OF RECORD.--October 1897 to December 1899, September 1913 to September 1914, August 1915 to September 1917, January 1965 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1318: 1899. WSP 1935: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 383.2 ft above sea level (Oregon State Highway Department bench mark). Prior to July 23, 1915, nonrecording gage at bridge at various datums. July 23 to Dec. 21, 1915, water-stage recorder at site 0.8 mi upstream at different datum. January 1916 to September 1917, nonrecording gage at bridge at different datum. Jan. 16 to July 23, 1965, nonrecording gage at bridge.

REMARKS.--No estimated daily discharges. Records good. Some daily fluctuation possibly caused by diversion dam upstream from station and sawmill at Dee. Diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--38 years (water years 1898-99, 1914, 1916-17, 1966-98), 1,027 ft³/s, 744,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,300 ft³/s Feb. 7, 1996, gage height, 17.11 ft, from rating curve extended above 8,700 ft³/s on basis of slope-area measurement of peak flow; minimum discharge recorded, 136 ft³/s Sept. 16, 1915, caused by temporary storage behind dam at Dee.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964, reached a stage of 20.6 ft, present datum, discharge, 33,200 ft³/s, from rating curve extended above 1,500 ft³/s on basis of slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1830	*10,400	*11.75	Jan. 17	1500	4,990	8.39
Dec. 16	2130	5,390	8.69				

Minimum discharge, 246 ft³/s Aug. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	554	2060	823	835	1560	1410	1030	1520	1080	702	441	304
2	638	1450	776	961	1410	1510	982	1640	1050	658	413	327
3	762	1190	735	862	1390	1410	954	1550	1000	625	405	332
4	1160	1070	700	818	1340	1290	922	1420	1030	607	340	279
5	1450	951	675	865	1290	1180	890	1390	954	579	484	317
6	952	881	653	978	1320	1110	869	1360	923	574	444	294
7	785	995	643	1180	1310	1040	854	1310	911	595	367	292
8	867	884	631	1050	1270	1040	823	1230	887	621	335	292
9	1060	811	615	932	1210	1040	820	1110	870	564	340	279
10	813	773	633	883	1190	1030	919	1020	984	555	353	264
11	870	733	618	889	1190	1010	923	973	940	529	349	256
12	1110	701	594	888	1600	1050	875	951	865	508	359	266
13	972	673	579	968	1910	1110	872	934	835	503	370	279
14	850	652	577	1520	1660	1190	838	966	789	507	407	282
15	795	629	623	1850	1650	1290	809	1050	814	541	394	298
16	756	615	2670	1640	1470	1330	784	979	794	567	347	335
17	722	817	3280	4020	1350	1220	767	1060	728	557	306	337
18	688	837	1920	3180	1300	1120	769	1060	722	548	278	461
19	636	838	1420	2620	1390	1060	820	1000	709	523	268	581
20	595	1880	1230	2100	1340	1030	811	1280	666	475	278	386
21	568	1750	1100	1750	1750	1090	842	1280	664	439	301	328
22	516	1320	959	1640	1630	1670	938	1130	695	451	295	314
23	510	1380	908	2090	1430	2090	1190	1060	663	482	292	313
24	497	1860	855	2250	1300	2020	1290	1040	665	523	284	313
25	512	1540	799	2570	1210	1740	1120	1200	746	447	277	365
26	503	1270	759	2430	1120	1670	1010	1070	854	470	268	369
27	492	1090	781	2270	1050	1530	982	971	737	503	260	333
28	486	1010	782	2030	1100	1360	1040	899	671	541	273	330
29	1200	953	852	1890	---	1230	1180	1100	642	521	316	334
30	4510	902	802	1880	---	1150	1370	1310	634	532	296	332
31	4060	---	762	1700	---	1090	---	1130	---	477	293	---
TOTAL	30889	32515	29754	51539	38740	40110	28293	35993	24522	16724	10551	9844
MEAN	996	1084	960	1663	1384	1294	943	1161	817	539	340	328
MAX	4510	2060	3280	4020	1910	2090	1370	1640	1080	702	484	581
MIN	486	615	577	818	1050	1010	767	899	634	439	260	256
AC-FT	61270	64490	59020	102200	76840	79560	56120	71390	48640	33170	20930	19530

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 1998, BY WATER YEAR (WY)

	1898	1998	1448	1601	1619	1368	1328	1215	933	590	400	377
MEAN	488	1053	1448	1601	1619	1368	1328	1215	933	590	400	377
MAX	996	2546	4109	3313	4217	2915	2358	2418	2439	1687	1088	804
(WY)	1998	1996	1978	1974	1996	1972	1916	1969	1899	1899	1899	1899
MIN	218	282	438	363	430	681	704	532	278	229	209	188
(WY)	1988	1988	1977	1979	1977	1977	1973	1992	1992	1992	1992	1994

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1898 - 1998
ANNUAL TOTAL	527913	349474	
ANNUAL MEAN	1446	957	1027
HIGHEST ANNUAL MEAN			1664
LOWEST ANNUAL MEAN			465
HIGHEST DAILY MEAN	8710	Jan 2	19200
LOWEST DAILY MEAN	398	Sep 8	144
ANNUAL SEVEN-DAY MINIMUM	423	Sep 7	155
ANNUAL RUNOFF (AC-FT)	1047000	693200	744200
10 PERCENT EXCEEDS	2660	1630	1920
50 PERCENT EXCEEDS	1140	870	786
90 PERCENT EXCEEDS	502	333	312

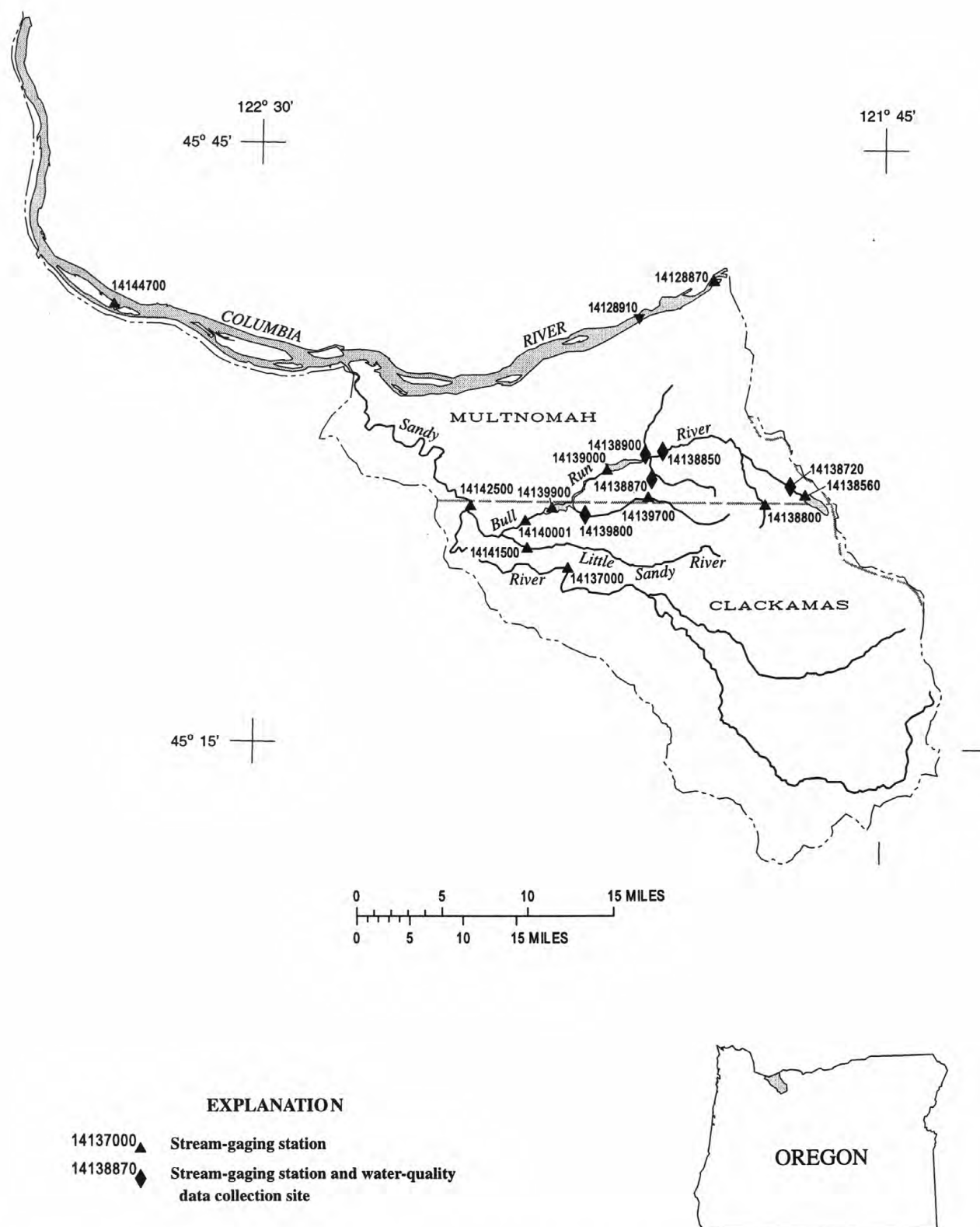


Figure 19. Location of surface-water and water-quality stations in the Columbia River between Bonneville Dam and confluence with the Willamette river and the Sandy River Basin.

COLUMBIA RIVER MAIN STEM

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR

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

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

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

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

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 35.11 ft Feb. 9, 1996; minimum, 6.22 ft Sept. 26, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 29.63 ft May 28; minimum, 7.77 ft Sept. 11.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.24	13.11	14.96	16.24	13.59	15.47	15.99	12.95	14.90	18.57	13.06	14.22
2	15.12	14.06	14.67	14.06	11.59	13.04	15.85	13.34	14.46	15.33	13.75	14.28
3	17.83	14.76	16.16	15.34	12.66	14.43	18.41	13.34	16.21	15.26	13.50	14.24
4	16.07	12.45	14.23	14.93	13.17	14.24	17.14	14.93	16.11	15.18	12.93	14.28
5	16.24	12.07	14.54	15.26	13.23	14.49	16.62	13.31	15.41	17.61	14.48	16.18
6	17.20	15.12	16.22	16.06	15.04	15.58	16.76	12.99	14.33	18.90	17.40	18.00
7	17.27	13.63	15.29	16.21	15.58	15.94	17.05	13.16	15.27	19.42	14.87	16.78
8	18.51	13.90	16.66	15.76	11.33	13.01	17.12	13.91	15.40	17.02	14.10	15.06
9	18.60	16.94	17.50	15.94	11.65	13.08	16.24	14.62	15.41	18.11	14.08	16.52
10	17.71	13.90	15.28	14.99	10.76	13.26	17.87	15.57	16.47	18.06	15.51	16.94
11	17.63	15.29	16.12	15.43	13.08	14.02	17.88	13.32	16.07	18.06	16.31	17.05
12	19.91	17.40	18.33	14.66	13.22	13.97	18.15	15.11	16.83	17.29	15.39	16.50
13	18.57	16.23	17.77	16.00	12.34	13.84	18.73	16.75	17.73	18.16	14.94	16.92
14	18.13	14.37	16.37	16.06	13.77	14.89	17.58	14.82	16.47	19.31	16.40	17.83
15	18.28	17.13	17.83	15.82	11.98	12.70	18.54	13.81	16.47	18.39	16.46	17.69
16	18.07	16.56	17.36	14.55	12.40	13.28	18.32	15.97	16.89	18.79	16.27	17.90
17	18.66	16.03	17.69	16.11	13.42	14.93	18.11	16.79	17.34	18.19	15.88	16.85
18	17.49	16.17	16.69	15.49	14.12	14.80	18.16	17.21	17.68	18.21	15.42	16.75
19	17.50	11.81	14.32	16.31	10.84	13.84	18.48	16.54	17.83	18.24	15.06	16.08
20	17.50	12.58	14.24	15.38	11.84	13.55	16.64	15.86	16.18	17.79	15.31	17.11
21	14.57	11.52	12.85	16.47	13.13	14.89	17.27	13.73	16.10	18.45	17.12	17.81
22	13.63	11.14	12.55	16.47	12.09	14.41	18.95	15.62	17.43	18.09	16.86	17.48
23	14.97	10.26	12.97	16.53	14.80	15.30	16.43	14.02	14.97	19.43	17.61	18.34
24	15.30	13.41	14.48	16.24	14.99	15.65	15.05	13.23	14.49	18.13	15.64	17.05
25	14.99	9.68	11.65	16.90	13.29	15.03	15.14	12.74	14.21	16.38	14.89	15.69
26	12.63	8.79	10.59	18.35	11.39	15.87	14.99	12.55	13.87	16.73	14.69	15.83
27	13.28	11.51	12.63	15.97	12.46	14.55	15.62	14.19	15.01	17.20	14.97	16.05
28	15.58	10.95	13.67	15.95	11.60	13.97	15.34	12.68	13.54	19.30	15.89	17.33
29	15.28	11.37	13.34	15.09	13.32	13.82	14.99	12.89	13.88	19.17	17.38	18.21
30	15.50	12.93	13.90	15.41	11.45	13.22	16.87	13.17	15.36	19.71	17.42	18.35
31	16.46	14.08	15.47	---	---	---	18.57	13.79	15.72	18.65	17.11	17.79
MONTH	19.91	8.79	15.04	18.35	10.76	14.30	18.95	12.55	15.74	19.71	12.93	16.68

COLUMBIA RIVER MAIN STEM

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	17.73	15.73	17.12	19.38	16.51	17.40	17.47	15.75	16.63	20.92	19.02	20.07
2	17.67	16.38	16.88	18.39	15.31	17.17	17.18	15.41	16.27	21.11	18.19	19.14
3	18.91	16.90	17.42	18.88	14.52	16.90	16.71	13.40	15.41	22.09	20.50	21.17
4	18.92	16.97	17.64	19.43	14.75	17.30	14.07	13.18	13.75	23.09	21.48	22.36
5	18.36	16.83	17.23	19.05	16.46	17.88	14.59	12.58	13.86	23.80	22.13	22.96
6	18.68	16.82	17.37	18.48	17.47	17.76	15.64	14.17	14.85	25.54	22.97	23.73
7	19.35	17.22	18.14	17.65	14.89	16.08	16.17	14.50	15.00	26.65	23.96	25.16
8	19.93	16.36	18.22	16.30	14.08	14.92	16.55	14.21	15.40	27.10	24.45	25.69
9	19.16	15.78	17.60	17.66	13.96	15.71	15.92	12.64	13.82	27.25	23.39	25.57
10	19.65	18.51	18.93	16.21	13.74	15.10	14.65	12.69	13.58	27.60	24.79	26.05
11	19.12	17.94	18.66	17.40	14.08	15.82	15.10	13.06	14.08	26.77	22.61	24.47
12	19.71	18.37	19.07	17.99	14.54	15.89	14.61	12.83	13.85	24.70	21.81	23.35
13	19.91	18.04	19.50	18.24	15.09	15.99	14.96	12.89	14.09	25.30	22.29	23.75
14	18.61	17.58	18.24	17.08	14.85	15.96	15.20	13.00	14.08	26.83	22.72	24.97
15	17.75	15.66	16.73	16.23	13.59	14.71	16.04	12.73	14.61	26.80	23.85	25.21
16	17.83	15.04	16.68	17.16	13.51	15.13	13.99	12.56	13.31	25.88	22.85	24.13
17	18.76	16.68	17.55	17.86	16.38	17.23	16.09	12.77	14.52	26.05	22.29	23.53
18	19.29	16.60	17.72	18.34	16.58	17.47	15.90	13.80	14.72	25.88	22.65	23.88
19	19.56	16.59	18.09	18.48	16.42	17.48	13.80	12.47	13.08	25.56	22.18	23.52
20	20.13	17.86	18.70	17.81	15.62	16.93	15.87	12.88	14.80	26.16	22.38	23.81
21	19.06	18.06	18.69	16.39	14.00	15.48	15.70	13.86	14.34	26.44	23.16	24.69
22	19.93	18.28	18.81	15.87	13.56	14.06	15.18	13.82	14.19	25.70	22.71	23.50
23	20.22	16.51	18.19	18.13	13.92	16.21	17.88	14.24	16.16	23.92	22.12	22.83
24	21.05	17.03	18.79	17.69	15.46	16.85	18.45	16.24	17.59	25.05	22.06	23.50
25	21.35	18.27	19.51	19.46	17.06	18.44	20.27	16.54	18.76	25.80	22.42	24.26
26	20.61	16.53	18.50	21.90	18.10	19.95	18.60	15.53	16.90	25.52	21.71	23.36
27	20.76	17.31	18.76	24.15	21.89	23.06	20.18	16.85	18.07	28.58	23.85	26.22
28	19.56	17.13	18.00	22.24	19.93	20.82	19.99	17.21	18.11	29.63	26.61	27.83
29	---	---	---	20.92	16.41	18.94	19.42	17.31	17.88	28.76	28.37	28.60
30	---	---	---	17.71	16.41	17.40	20.39	17.44	18.68	28.89	28.43	28.71
31	---	---	---	18.25	16.40	17.31	---	---	---	29.04	28.65	28.81
MONTH	21.35	15.04	18.10	24.15	13.51	17.01	20.39	12.47	15.35	29.63	18.19	24.35

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	29.12	28.72	28.92	21.91	19.35	20.38	14.45	---	---	13.71	10.43	12.01
2	29.05	27.81	28.55	20.92	18.89	19.91	14.80	12.38	13.67	14.26	12.16	13.34
3	28.73	27.79	28.40	19.00	16.65	17.24	13.74	---	---	14.08	10.92	11.99
4	---	---	---	20.42	17.85	19.41	13.91	12.22	12.92	11.47	9.50	10.91
5	---	---	---	20.04	16.62	17.70	16.00	13.80	15.23	10.86	8.77	9.53
6	27.23	25.87	26.46	20.60	16.65	17.93	16.51	13.68	14.65	11.97	10.46	11.04
7	27.56	---	---	17.66	16.32	16.76	17.16	14.96	15.80	11.92	8.86	10.37
8	26.52	---	---	18.79	17.40	18.27	16.59	14.61	15.22	12.96	7.89	9.36
9	27.11	24.64	25.39	18.57	17.29	18.04	16.32	12.80	14.02	12.74	8.66	9.78
10	26.88	23.54	24.76	17.90	16.88	17.43	14.80	13.44	13.88	10.59	8.51	9.16
11	26.63	23.22	24.53	17.23	15.32	16.00	16.22	14.03	15.02	11.79	7.77	10.10
12	26.23	22.73	24.17	18.27	14.98	15.73	16.89	14.24	15.20	12.08	10.97	11.62
13	25.87	23.41	24.21	18.92	16.36	17.63	18.89	15.26	16.29	12.31	9.23	11.25
14	24.96	23.01	23.84	18.78	16.76	17.75	19.15	14.98	16.10	12.43	8.71	11.03
15	25.33	---	---	19.03	17.10	17.77	16.17	14.41	14.95	13.73	11.96	12.78
16	---	---	---	18.80	17.18	18.14	15.71	---	---	13.54	12.33	12.74
17	---	---	---	17.60	15.93	16.75	14.67	---	---	14.33	13.35	14.03
18	---	---	---	18.03	15.90	16.73	14.90	---	---	14.32	10.53	12.26
19	---	---	---	17.37	15.29	16.28	14.63	---	---	14.13	9.95	11.41
20	23.18	---	---	18.12	16.04	17.35	14.87	---	---	12.60	9.79	11.16
21	23.14	---	---	18.05	15.40	16.36	14.54	---	---	10.77	9.21	9.86
22	---	---	---	18.33	15.35	16.77	14.77	11.42	13.15	10.48	8.75	9.61
23	---	---	---	18.25	15.21	16.61	14.40	11.25	12.70	9.98	8.98	9.43
24	22.32	19.00	20.33	17.18	15.29	16.29	14.56	11.72	12.98	10.04	8.44	9.17
25	22.56	20.49	21.50	17.41	14.88	16.39	12.29	10.68	11.29	9.97	8.53	9.10
26	22.29	19.74	20.54	17.12	14.52	15.23	12.77	10.69	11.52	12.52	9.30	11.11
27	22.84	21.32	21.82	18.06	15.35	16.38	11.01	8.80	10.28	12.24	9.46	10.56
28	21.95	20.30	20.90	17.78	16.14	16.82	12.99	8.87	10.45	9.78	8.33	8.63
29	21.71	18.86	20.23	17.94	14.99	16.25	13.16	10.74	11.71	11.35	8.62	9.85
30	21.26	18.29	19.43	16.36	14.02	15.26	13.62	11.10	11.97	11.76	10.21	11.19
31	---	---	---	15.25	14.13	14.73	13.19	10.30	11.39	---	---	---
MONTH	---	---	---	21.91	14.02	17.11	19.15	---	---	14.33	7.77	10.81

COLUMBIA RIVER MAIN STEM

14128910 COLUMBIA RIVER AT WARRENDALE, OR
(National stream quality accounting network station)

LOCATION.--Lat 45°36'45", long 122°01'35", in NE 1/4 SE 1/4 sec.35, T.2 N., R.6 E., Multnomah County, Hydrologic Unit 17080001, on left bank 0.1 mi downstream from Tumult Creek, 1.0 mi west of Warrendale, 5.1 mi downstream from Bonneville Dam, and at mile 141.0.

DRAINAGE AREA.--240,000 mi², approximately.

PERIOD OF RECORD.--October 1973 to September 1993, October 1996 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to September 1992 (discontinued).

WATER TEMPERATURE: October 1975 to September 1992 (discontinued).

REMARKS.--Boron values less than 16 UG/L have been designated as estimated due to a change in the minimum reporting level effective December 22, 1997.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 244 microsiemens Jan. 7, 1988; minimum, 95 microsiemens June 26, 27, 1982.

WATER TEMPERATURE: Maximum, 22.5°C Aug. 17, 18, 1977, Aug. 11, 1980, July 31, 1992; minimum recorded, 0.0°C many days in January and February, 1979.

WATER-QUALITY DATA

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- TTY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM OF HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS, TOTAL (MG/L AS CACO3) (00900)	CALCIUM, DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 1997												
29...	1250	E140000	165	8.0	13.7	1.5	10.5	759	102	68	19	5.2
DEC												
11...	0940	208000	156	8.0	7.5	1.4	12.7	779	103	66	18	5.0
FEB 1998												
09...	1130	201000	178	8.0	4.8	2.7	13.2	767	102	75	20	6.0
APR												
07...	1050	165000	189	8.2	8.9	2.4	12.7	766	109	78	21	6.3
MAY												
06...	1020	327000	169	8.1	14.1	2.8	11.4	762	111	67	18	5.3
20...	0910	331000	116	7.8	12.7	4.1	13.3	760	125	48	14	3.5
JUN												
09...	0950	354000	135	7.8	15.6	6.6	11.1	761	112	55	15	4.1
30...	1050	249000	129	7.9	18.5	2.7	10.4	767	110	53	15	3.9
JUL												
15...	1030	214000	129	7.8	20.4	2.5	10.4	762	115	54	15	3.9
AUG												
26...	1050	120000	147	8.0	21.4	1.4	9.4	764	107	60	17	4.3

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, DIS IT FIELD (MG/L AS CACO3) (39086)	BICAR- BONATE, DIS IT FIELD (MG/L AS HCO3) (00453)	CAR- BONATE, DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE, DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 1997												
29...	6.6	17	0.4	1.3	66	79	0	11.6	3.1	0.2	9.0	102
DEC												
11...	5.7	16	0.3	1.2	66	80	0	11.0	2.8	0.1	8.8	98
FEB 1998												
09...	7.5	18	0.4	1.4	81	99	0	13.4	3.8	0.2	11.5	121
APR												
07...	7.9	18	0.4	1.4	74	91	0	14.7	4.7	0.2	12.8	122
MAY												
06...	7.2	18	0.4	1.4	65	80	0	12.1	4.2	0.2	11.7	109
20...	3.9	14	0.2	1.0	47	57	0	7.6	1.9	0.1	9.4	80
JUN												
09...	5.2	17	0.3	1.2	55	67	0	8.5	2.3	0.2	12.3	85
30...	4.8	16	0.3	1.2	53	65	0	8.3	2.4	0.2	9.6	80
JUL												
15...	4.6	15	0.3	1.1	49	60	0	7.5	2.0	0.1	9.8	87
AUG												
26...	4.4	13	0.2	0.9	57	69	0	8.5	1.7	0.1	7.2	87

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN,AM- MONIA + ORGANIC DIS. (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, TOTAL (MG/L AS P) (00665)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
OCT 1997												
29...	96	0.14	0.004	<0.001	<0.1	<0.1	0.25	0.02	<0.01	0.016	1.4	<0.2
DEC												
11...	94	0.13	0.003	0.002	<0.1	<0.1	0.29	0.01	0.03	0.015	1.5	<0.2
FEB 1998												
09...	114	0.16	<0.002	0.002	0.1	<0.1	0.38	0.04	0.01	0.014	1.4	0.2
APR												
07...	115	0.17	<0.002	0.011	<0.1	0.1	0.31	0.03	0.01	0.006	1.7	0.2
MAY												
06...	101	0.15	0.013	0.010	<0.1	0.1	0.22	<0.01	<0.01	0.009	1.8	0.3
20...	70	0.11	<0.002	0.001	0.1	0.2	0.14	0.02	<0.01	0.008	2.0	0.4
JUN												
09...	83	0.12	<0.002	0.003	<0.1	0.1	0.20	0.03	<0.01	0.021	2.4	0.2
30...	78	0.11	<0.002	0.001	0.2	0.2	0.07	0.04	0.01	0.008	2.0	0.5
JUL												
15...	74	0.12	0.017	0.006	<0.1	0.1	0.07	<0.01	0.02	0.010	2.0	0.1
AUG												
26...	78	0.12	0.012	0.001	0.3	0.2	0.04	0.02	<0.01	0.006	1.6	0.2

E Estimated.

COLUMBIA RIVER MAIN STEM

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14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY DATA

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT 1997												
29...	2	<1	1	27	<1	17	<1	1	<1	1	<3	<1
DEC												
11...	1	<1	1	25	<1	<16	<1	2	<1	1	<3	<1
FEB 1998												
09...	3	<1	1	25	<1	<16	<1	1	<1	1	<10	<1
APR												
07...	2	<1	1	25	<1	18	<1	1	<1	<1	<10	<1
MAY												
06...	2	<1	1	23	<1	16	<1	<1	<1	1	<10	<1
20...	3	<1	1	17	<1	<16	<1	<1	<1	2	<10	<1
JUN												
09...	4	<1	1	21	<1	<16	<1	<1	<1	1	<10	<1
30...	2	<1	1	20	<1	<16	<1	<1	<1	1	<10	<1
JUL												
15...	2	<1	<1	21	<1	<16	<1	<1	<1	<1	<10	<1
AUG												
26...	2	<1	<1	26	<1	<16	<1	<1	<1	<1	<10	<1
DATE	LITHIUM, DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	DIAZ- INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	TERBUTH YLAZINE SURROGT WAT FLT 0.7 U GF, REC PERCENT (91064)
OCT 1997												
29...	4	<1	1	<1	<1	<1	100	<1	<6	<1	92	109
DEC												
11...	<4	<1	<1	<1	<1	<1	96	<1	<6	1	117	127
FEB 1998												
09...	5	<1	<1	<1	<1	<1	110	1	<10	1	108	122
APR												
07...	6	<1	<1	<1	<1	<1	120	<1	<10	2	101	101
MAY												
06...	7	<1	<1	<1	<1	<1	100	<1	<10	<1	100	107
20...	<4	<1	<1	<1	<1	<1	75	<1	<10	2	99	108
JUN												
09...	<4	<1	<1	<1	<1	<1	85	<1	<10	1	107	112
30...	4	<1	<1	<1	<1	<1	82	<1	<10	1	92	117
JUL												
15...	<4	<1	<1	<1	<1	<1	83	<1	<10	2	126	150
AUG												
26...	<4	<1	<1	<1	<1	<1	89	<1	<10	<1	98	99
DATE	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER DISS REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P, P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	LINDANE DIS- SOLVED (UG/L) (39341)
OCT 1997												
29...	93	<0.007	<0.002	E0.003	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
DEC												
11...	96	<0.007	<0.002	<0.005	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
FEB 1998												
09...	95	<0.007	<0.002	E0.003	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
APR												
07...	91	<0.007	<0.002	<0.005	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	E0.004	<0.004
MAY												
06...	95	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
20...	91	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUN												
09...	92	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
30...	93	<0.007	<0.002	<0.005	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUL												
15...	119	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
AUG												
26...	90	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004

E Estimated.

COLUMBIA RIVER MAIN STEM
14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY DATA

DATE	DI-ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER DISSOLV (UG/L) (39415)	MALA- THION, DIS- SOLVED (UG/L) (39532)	PARA- THION, DIS- SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ACETO- CHLOR, WATER FLTRD (UG/L) (49260)	METRI- BUZIN SENCOR WATER DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U (UG/L) (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)
OCT 1997											
29...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.004	<0.002	<0.002	<0.004	<0.003	<0.002
DEC											
11...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	<0.002	<0.002	<0.004	<0.003	<0.002
FEB 1998											
09...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.003	<0.002	<0.002	<0.004	<0.003	<0.002
APR											
07...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	<0.002	<0.002	<0.004	<0.003	<0.002
MAY											
06...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.003	<0.002	<0.002	<0.004	<0.003	<0.002
20...	<0.001	<0.002	<0.005	<0.004	<0.002	E0.003	<0.002	<0.002	<0.004	<0.003	<0.002
JUN											
09...	<0.001	0.006	<0.005	<0.004	<0.002	0.005	<0.002	<0.002	<0.004	<0.003	<0.002
30...	<0.001	E0.003	<0.005	<0.004	<0.002	E0.002	E0.003	<0.002	<0.004	<0.003	<0.002
JUL											
15...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	<0.002	<0.002	<0.004	<0.003	<0.002
AUG											
26...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	<0.002	<0.002	<0.004	<0.003	<0.002
DATE	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)
OCT 1997											
29...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
DEC											
11...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
FEB 1998											
09...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
APR											
07...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
MAY											
06...	<0.004	<0.002	<0.007	<0.002	<0.006	0.010	<0.004	<0.010	<0.004	<0.003	<0.002
20...	<0.004	<0.002	<0.007	<0.002	<0.006	0.012	<0.004	<0.010	<0.004	<0.003	<0.002
JUN											
09...	<0.004	<0.002	<0.007	<0.002	<0.006	0.007	<0.004	<0.010	<0.004	<0.003	<0.002
30...	<0.004	<0.002	<0.007	<0.002	<0.006	E0.002	<0.004	<0.010	<0.004	<0.003	<0.002
JUL											
15...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
AUG											
26...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
DATE	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)
OCT 1997											
29...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
DEC											
11...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
FEB 1998											
09...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
APR											
07...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
MAY											
06...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.001	<0.004	<0.003
20...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.002	<0.004	<0.003
JUN											
09...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
30...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.002	<0.004	<0.003
JUL											
15...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
AUG											
26...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003

E Estimated.

COLUMBIA RIVER MAIN STEM

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14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

WATER-QUALITY DATA

DATE	PRO- FARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	AN- TIMONY SED. SUSP. (UG/G) (29816)	ARSENIC SED. SUSP. (UG/G) (29818)	BARIUM SED. SUSP. (UG/G) (29820)	BERYL- LIUM SED. SUSP. (UG/G) (29822)	CADMIUM SED. SUSP. (UG/G) (29826)	CHRO- MIUM SED. SUSP. (UG/G) (29829)	COPPER SED. SUSP. (UG/G) (29832)	LEAD SED. SUSP. (UG/G) (29836)
OCT 1997											
29...	<0.013	<0.001	<0.005	1.9	9.0	590	1.5	2.0	75	88	22
DEC											
11...	<0.013	<0.001	<0.005	2.4	8.4	580	1.5	1.8	77	57	18
FEB 1998											
09...	<0.013	<0.001	<0.005	1.9	11	550	1.7	1.3	64	50	18
APR											
07...	<0.013	<0.001	<0.005	1.9	10	540	1.4	1.4	60	42	27
MAY											
06...	<0.013	<0.001	<0.005	1.2	7.6	580	1.3	1.7	53	40	22
20...	<0.013	<0.001	<0.005	1.3	8.8	600	1.6	1.6	57	57	31
JUN											
09...	<0.013	<0.001	<0.005	1.2	8.6	590	1.4	1.3	58	45	18
30...	<0.013	<0.001	<0.005	1.5	9.7	540	1.5	1.6	51	47	26
JUL											
15...	<0.013	<0.001	<0.005	1.5	10	560	1.6	1.7	59	84	33
AUG											
26...	<0.013	<0.001	<0.005	1.6	9.7	540	1.4	2.2	160	110	32

DATE	MAN- GANESE SED. SUSP. (UG/G) (29839)	MERCURY SED. SUSP. (UG/G) (29841)	MOLYB- DENUM SED. SUSP. (UG/G) (29843)	NICKEL SED. SUSP. (UG/G) (29845)	SELE- NIUM SED. SUSP. (UG/G) (29847)	SILVER SED. SUSP. (UG/G) (29850)	VANA- DIUM SED. SUSP. (UG/G) (29853)	ZINC SED. SUSP. (UG/G) (29855)	ALUM- INUM SED, SUS PERCENT (30221)	CARBON SED. SUSP. PERCENT (30244)	IRON SEDI- MENT SUSP. PERCENT (30269)
OCT 1997											
29...	1400	--	<10	46	0.8	<1.0	120	230	6.7	4.5	4.7
DEC											
11...	1200	--	<10	45	0.6	<1.0	110	220	6.6	--	4.3
FEB 1998											
09...	1300	--	<10	48	0.8	<1.0	100	190	6.8	6.1	4.9
APR											
07...	1300	--	<10	41	0.7	<1.0	100	230	6.3	--	4.1
MAY											
06...	1000	0.70	<5	33	0.5	<0.5	110	210	6.7	3.7	4.0
20...	1200	0.05	<10	40	0.6	<1.0	110	270	7.1	4.0	4.5
JUN											
09...	1200	0.08	<10	41	0.4	<1.0	120	200	7.0	2.7	5.0
30...	1200	0.06	<10	34	0.5	<1.0	110	240	6.5	3.8	4.5
JUL											
15...	1200	0.14	<10	40	0.5	<1.0	110	280	6.8	3.8	4.6
AUG											
26...	1400	--	13	99	0.6	<1.0	100	240	5.7	--	4.1

DATE	PHOS- PHORUS SEDI- MENT SUSP. PERCENT (30292)	SULFUR SEDI- MENT SUSP. PERCENT (30308)	TITA- NIUM SEDI- MENT SUSP. PERCENT (30317)	COBALT SEDI- MENT SUSP. (UG/G) (35031)	STRON- TIUM SEDI- MENT SUSP. (UG/G) (35040)	URANIUM SEDI- MENT SUSP. (UG/G) (35046)	LITHIUM SEDI- MENT SUSP. (UG/G) (35050)	CARBON, ORGANIC SUS- PENDEED, TOTAL PERCENT (50465)	SEDI- MENT, SUS- PENDEED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN 0.062 MM (70331)
OCT 1997											
29...	0.14	0.4	0.52	19	310	<100	32	--	6	E2220	93
DEC											
11...	0.13	--	0.50	17	320	<100	32	--	7	3930	90
FEB 1998											
09...	0.18	0.5	0.44	18	270	<100	37	--	6	3260	95
APR											
07...	0.17	--	0.46	15	260	<100	33	--	5	2230	92
MAY											
06...	0.14	0.2	0.46	14	300	<50	24	3.5	22	19400	93
20...	0.12	0.2	0.49	23	250	<100	30	3.6	15	13400	91
JUN											
09...	0.13	0.1	0.51	21	250	<100	28	2.6	16	15300	90
30...	0.16	0.1	0.45	19	230	100	25	3.7	12	8070	98
JUL											
15...	0.15	0.2	0.47	18	260	<100	28	--	7	4040	93
AUG											
26...	0.15	--	0.45	16	260	<100	25	--	4	1300	94

E Estimated.

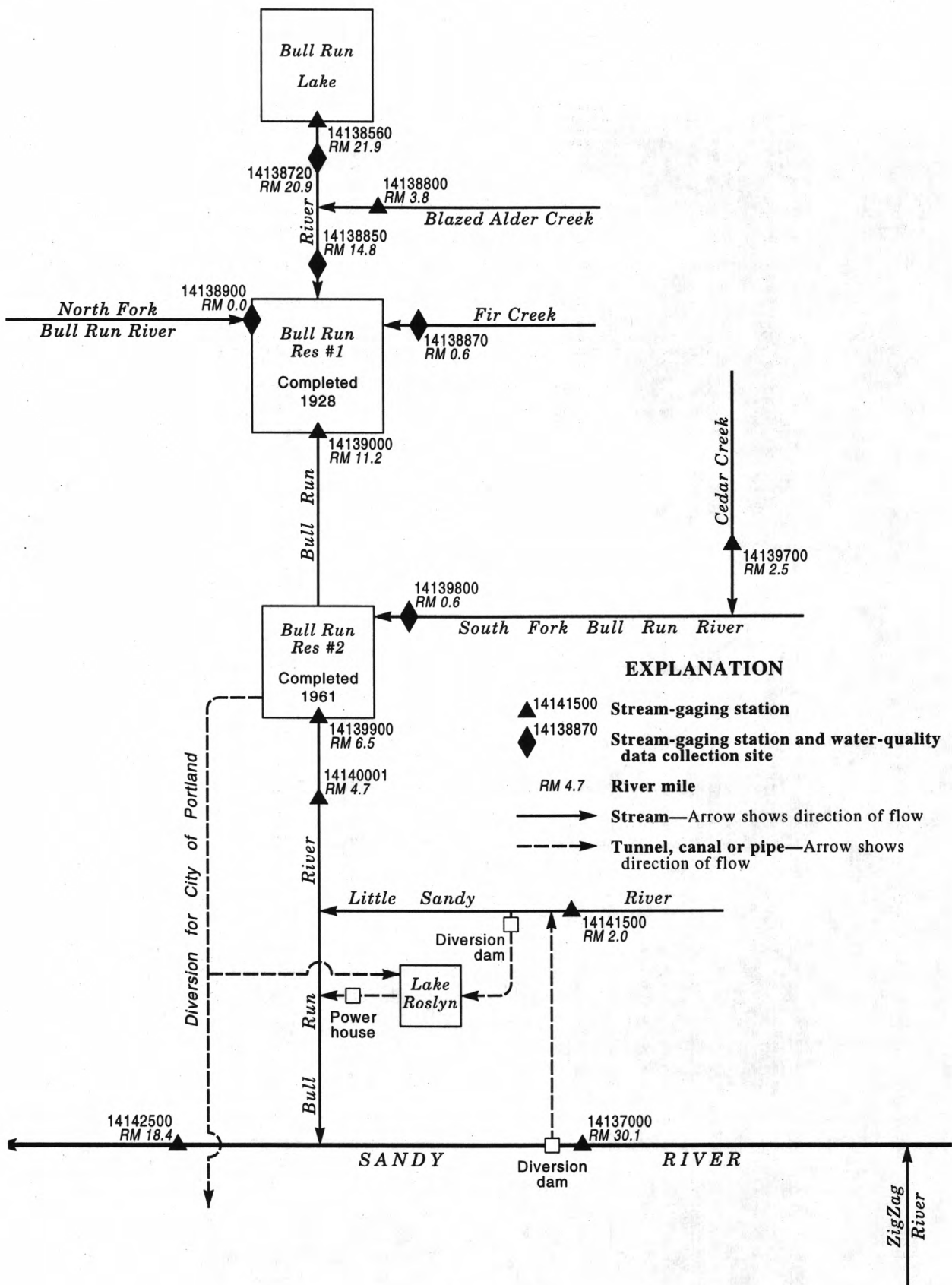


Figure 20. Schematic diagram showing gaging stations and diversions in the Sandy River Basin.

14137000 SANDY RIVER NEAR MARMOT, OR

LOCATION.--Lat 45°23'55", long 122°07'33", in NW 1/4 sec.18, T.2 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, on right bank 0.6 mi west/northwest of Marmot, 0.3 mi upstream from Marmot Dam of Portland General Electric Co., 7.2 mi downstream from Salmon River, and at mile 30.3.

DRAINAGE AREA.--263 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by ENRON). Aug. 15, 1911, to Dec. 20, 1915, and July 2, 1919, to Oct. 19, 1933, nonrecording gage at site 1.5 mi upstream at different datum. Oct. 20, 1933, to Sept. 30, 1958, water-stage recorder at site 1.1 mi upstream at different datum. Sept. 30, 1958 to Mar. 11, 1997, water-stage recorder at site 0.6 mi upstream, at different datum.

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

AVERAGE DISCHARGE.--87 years (water years 1912-98), 1,359 ft³/s, 70.17 in/yr, 984,600 acre-ft/yr, includes monthly discharges published in WSP 1318.

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

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1930	*10,600	*736.28	No other peak greater than base discharge.			
Minimum discharge, 278 ft ³ /s Sept. 23.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e400	2470	891	1180	1710	2840	1220	1690	1930	1050	494	339
2	e500	1750	826	1300	1550	2750	1140	1740	1710	973	472	341
3	e700	1400	774	1160	1440	2390	1110	1600	1540	910	466	340
4	1090	1250	733	1070	1380	2050	1080	1420	1460	866	493	340
5	1510	1060	698	1050	1310	1730	1030	1340	1320	826	491	335
6	984	956	668	1090	1390	1520	1000	1290	1240	814	452	320
7	760	1130	667	1640	1400	1370	1040	1230	1160	787	419	317
8	811	1030	686	1450	1340	1370	1020	1190	1100	763	407	323
9	1160	908	677	1250	1230	1370	1020	1130	1050	709	413	323
10	842	836	798	1240	1200	1370	1230	1060	1130	689	416	311
11	967	781	770	1300	1220	1400	1420	1060	1080	670	409	304
12	1430	728	716	1150	1520	1590	1360	1050	998	640	406	307
13	1210	688	678	1590	2090	1700	1250	1120	947	636	417	307
14	984	652	666	2940	1770	1660	1190	1320	900	631	424	310
15	833	618	728	3420	1810	1640	1140	1770	929	650	413	313
16	730	595	3130	3070	1640	1750	1120	1620	960	645	394	320
17	656	763	4140	6110	1480	1630	1060	1890	876	622	370	324
18	603	756	2420	4590	1390	1450	1050	2130	838	603	360	394
19	559	734	1770	3940	1490	1330	1120	1950	949	580	357	626
20	521	1300	1530	3000	1450	1270	1070	2160	886	550	363	379
21	494	1670	1360	2430	1850	1350	1080	2210	844	535	366	317
22	477	1420	1180	2400	1790	2110	1170	2020	853	547	368	297
23	524	1330	1110	3210	1580	2330	1460	1770	819	557	359	286
24	549	1850	1070	3160	1410	2180	1640	1690	850	538	359	286
25	487	1690	973	3200	1350	1960	1520	2000	1100	508	352	406
26	462	1430	912	2940	1250	1910	1360	1800	1720	522	345	472
27	448	1220	985	2750	1150	1820	1290	1640	1450	543	e340	339
28	443	1100	1120	2420	1600	1640	1310	1470	1180	576	e350	313
29	1550	1030	1360	2290	---	1470	1430	1670	1040	528	355	299
30	4660	967	1230	2150	---	1360	1570	2740	973	544	340	294
31	4780	---	1140	1900	---	1300	---	2270	---	514	338	---
TOTAL	32124	34112	36406	72390	41790	53610	36500	51040	33832	20526	12308	10182
MEAN	1036	1137	1174	2335	1493	1729	1217	1646	1128	662	397	339
MAX	4780	2470	4140	6110	2090	2840	1640	2740	1930	1050	494	626
MIN	400	595	666	1050	1150	1270	1000	1050	819	508	338	286
AC-FT	63720	67660	72210	143600	82890	106300	72400	101200	67110	40710	24410	20200
CFSM	3.94	4.32	4.47	8.88	5.67	6.58	4.63	6.26	4.29	2.52	1.51	1.29
IN.	4.54	4.82	5.15	10.24	5.91	7.58	5.16	7.22	4.79	2.90	1.74	1.44

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1998, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1912	661	2168	1960	239	1988
1913	1611	4777	1996	236	1937
1914	2077	6278	1965	445	1977
1915	2077	4752	1953	498	1937
1916	1886	4971	1996	464	1977
1917	1659	3983	1972	631	1941
1918	1883	3134	1962	658	1941
1919	1803	3443	1944	743	1992
1920	1219	3457	1917	420	1992
1921	644	1385	1917	354	1992
1922	428	663	1974	268	1940
1923	416	1056	1959	244	1994

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1912 - 1998
ANNUAL TOTAL	549957	434820	
ANNUAL MEAN	1507	1191	1355
HIGHEST ANNUAL MEAN			2018
LOWEST ANNUAL MEAN			766
HIGHEST DAILY MEAN	9770	Jan 31	6110 Jan 17
LOWEST DAILY MEAN	339	Sep 8	286 Sep 23
ANNUAL SEVEN-DAY MINIMUM	357	Sep 4	310 Sep 10
ANNUAL RUNOFF (AC-FT)	1091000		862500
ANNUAL RUNOFF (CFSM)	5.73		4.53
ANNUAL RUNOFF (INCHES)	77.79		61.50
10 PERCENT EXCEEDS	2940		2030
50 PERCENT EXCEEDS	1210		1090
90 PERCENT EXCEEDS	428		362

e Estimated

SANDY RIVER BASIN

14138560 BULL RUN LAKE NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°27'39", long 121°50'34", in SE 1/4 SE 1/4 sec.20, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, in main cabin on northwest side of Bull Run Lake, near outlet structure, 10.7 mi northeast of Brightwood, and at mile 21.9.

DRAINAGE AREA.--3.5 mi².

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

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

GAGE.--Water-stage recorder. Datum of gage is sea level, Portland Water Bureau datum.

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 45,190 acre-ft June 1, elevation, 3,178.03 ft; minimum contents, 40,530 acre-ft Sept. 30, elevation, 3,167.44 ft.

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

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

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3170.00	3172.21	3172.38	3172.76	3175.85	3175.81	3176.41	3176.18	3178.01	3176.50	3173.28	3169.89
2	3170.05	3172.23	3172.45	3172.76	3175.83	3175.91	3176.34	3176.35	3178.00	3176.42	3173.17	3169.78
3	3170.16	---	3172.32	3172.76	3175.82	3175.99	3176.30	3176.44	3178.01	3176.34	3173.07	3169.67
4	3170.41	3172.25	3172.26	3172.75	3175.75	3175.99	3176.23	3176.51	3177.97	3176.25	3172.96	3169.57
5	3170.59	3172.22	3172.16	3172.81	3175.69	3175.94	3176.17	3176.55	3177.92	3176.16	3172.84	3169.46
6	3170.54	3172.20	3172.08	3172.84	3175.68	3175.90	3176.11	3176.58	3177.87	3176.08	3172.71	3169.35
7	3170.57	3172.21	3172.04	3172.92	3175.63	3175.85	3176.07	3176.60	3177.80	3175.99	3172.60	3169.24
8	3170.70	3172.12	3172.01	3172.88	3175.61	3175.88	3176.01	3176.64	3177.73	3175.89	3172.49	3169.13
9	3170.79	3172.11	3172.02	3172.84	3175.55	3175.85	3175.95	3176.64	3177.66	3175.78	3172.38	3169.02
10	3170.78	3172.09	3171.97	3172.92	3175.56	3175.81	3175.95	3176.64	3177.65	3175.69	3172.26	3168.92
11	3170.95	3171.98	3171.88	3173.06	3175.51	3175.76	3175.93	3176.62	3177.57	3175.57	3172.15	3168.81
12	3171.05	3171.87	3171.76	3173.09	3175.66	3175.74	3175.90	3176.63	3177.50	3175.47	3172.05	3168.71
13	3171.06	3171.83	3171.72	3173.19	3175.68	3175.73	3175.86	3176.65	3177.39	3175.35	3171.94	3168.61
14	3171.06	---	3171.67	3173.56	3175.78	3175.74	3175.81	3176.75	3177.31	3175.26	3171.83	3168.51
15	3171.02	---	3171.78	3173.65	3175.78	3175.77	3175.73	3176.87	3177.26	3175.14	3171.72	3168.41
16	3170.98	---	3172.67	3173.89	3175.75	3175.80	3175.66	3176.95	3177.19	3175.04	3171.60	3168.31
17	3170.92	---	3172.93	3174.61	3175.70	3175.79	3175.58	3177.07	3177.10	3174.93	3171.48	3168.20
18	3170.86	---	3172.98	3174.90	3175.76	3175.75	3175.53	3177.11	3177.03	3174.83	3171.37	3168.42
19	3170.79	---	3172.98	3175.06	3175.71	3175.72	3175.48	3177.17	3176.96	3174.71	3171.26	3168.39
20	3170.71	---	3173.03	3175.10	3175.81	3175.69	3175.42	3177.32	3176.87	3174.59	3171.15	3168.28
21	3170.64	3172.08	3173.02	3175.15	3175.84	3175.76	3175.38	3177.39	3176.93	3174.48	3171.04	3168.17
22	3170.57	3172.05	3172.97	3175.23	3175.85	3175.98	3175.40	3177.39	3176.86	3174.37	3170.93	3168.08
23	3170.54	3172.29	3173.00	3175.34	3175.79	3176.21	3175.57	3177.41	3176.77	3174.26	3170.83	3167.98
24	3170.45	3172.47	3172.94	3175.52	3175.74	3176.33	3175.68	3177.51	3176.76	3174.14	3170.72	3167.91
25	3170.38	3172.52	3172.88	3175.62	3175.75	3176.43	3175.72	3177.62	3176.75	3174.03	3170.62	3167.91
26	3170.28	3172.49	3172.85	3175.74	3175.70	3176.54	3175.70	3177.64	3176.82	3173.93	3170.51	3167.81
27	3170.21	3172.50	3172.76	3175.81	3175.63	3176.60	3175.71	3177.63	3176.78	3173.82	3170.41	3167.72
28	3170.23	3172.51	3172.80	3175.78	3175.75	3176.58	3175.76	3177.58	3176.72	3173.72	3170.30	3167.63
29	3170.53	3172.51	3172.77	3175.88	---	3176.54	3175.89	3177.81	3176.65	3173.63	3170.19	3167.54
30	3171.74	3172.48	3172.72	3175.94	---	3176.51	3176.02	3177.96	3176.58	3173.51	3170.10	3167.44
31	3172.10	---	3172.68	3175.89	---	3176.47	---	3178.00	---	3173.40	3169.99	---
MEAN	3170.70	---	3172.47	3174.20	3175.72	3176.01	3175.84	3177.04	3177.28	3175.01	3171.61	3168.56
MAX	3172.10	---	3173.03	3175.94	3175.85	3176.60	3176.41	3178.00	3178.01	3176.50	3173.28	3169.89
MIN	3170.00	---	3171.67	3172.75	3175.51	3175.69	3175.38	3176.18	3176.58	3173.40	3169.99	3167.44
(†)	42560	42720	42810	44240	44170	44500	44290	45180	44540	43130	41630	40530
(‡)	+910	+160	+90	+1430	-70	+330	-210	+890	-640	-1410	-1500	-1100

CAL YR 1997 MAX --- MIN --- AC-FT† -2030

WTR YR 1998 MAX --- MIN --- AC-FT† -1120

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

‡ Change in contents, in acre-feet.

SANDY RIVER BASIN

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

LOCATION.--Lat 45°28'08", long 121°51'55", in SE 1/4 NE 1/4 sec.19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, at flume, 1.0 mi downstream from outlet structure at Bull Run Lake, 10.4 mi northeast of Brightwood, and at mile 20.9.

DRAINAGE AREA.--5.08 mi².

WATER-DISCHARGE RECORDS

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

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

REMARKS.--Records fair. Regulation at times by Bull Run Lake. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--6 years (water years 1993-98), 26.6 ft³/s, 19,290 acre-ft/yr.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 55 ft³/s Oct. 30, gage height, 2.18 ft; minimum discharge, 16 ft³/s several days in September.

REVISIONS.--The maximum discharge reported for water year 1997 has been revised to 76 ft³/s March 24, 1977, gage height, 2.77 ft superseding that published in the report for that year.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	32	24	24	33	29	30	28	e31	26	21	18
2	18	30	24	24	32	29	30	29	e31	25	21	18
3	19	29	24	24	32	29	30	29	e31	25	21	18
4	21	28	23	24	31	28	29	29	e31	25	21	17
5	23	27	23	24	31	28	29	29	e30	25	21	17
6	21	27	23	24	30	28	28	29	e30	25	21	17
7	21	27	23	25	30	27	28	29	e30	25	20	17
8	21	26	22	25	30	27	27	29	e30	25	20	17
9	21	26	22	24	29	27	27	29	e29	24	20	17
10	21	25	22	24	29	27	27	28	e29	24	20	17
11	21	25	22	23	28	27	27	28	e29	24	20	17
12	22	25	22	23	29	27	27	28	e29	24	20	17
13	22	24	21	24	30	28	27	28	e28	24	20	17
14	22	24	21	27	30	28	26	28	e28	24	19	17
15	22	23	21	28	30	28	26	29	e28	23	19	17
16	21	23	31	29	30	28	26	29	28	23	19	17
17	21	23	33	41	29	28	26	30	27	23	19	16
18	21	23	30	39	29	28	25	30	27	23	19	17
19	21	22	28	37	29	28	25	30	27	23	19	17
20	21	25	27	35	29	27	25	31	26	23	19	17
21	20	e25	27	34	29	28	25	31	26	23	19	16
22	20	e25	26	33	29	30	25	31	26	22	19	16
23	20	e26	25	34	29	32	26	31	26	22	19	16
24	20	e26	25	35	28	32	26	31	26	22	18	16
25	20	26	25	36	28	32	27	31	26	22	18	16
26	20	26	24	36	27	32	27	31	27	22	18	16
27	20	26	24	36	27	32	27	31	26	22	18	16
28	20	25	24	35	27	32	27	31	26	22	18	16
29	23	25	24	35	---	32	27	e31	26	21	18	16
30	36	25	24	34	---	31	28	e32	26	21	18	16
31	38	---	24	34	---	31	---	e32	---	21	18	---
TOTAL	675	769	758	930	824	900	810	922	840	723	600	502
MEAN	21.8	25.6	24.5	30.0	29.4	29.0	27.0	29.7	28.0	23.3	19.4	16.7
MAX	38	32	33	41	33	32	30	32	31	26	21	18
MIN	18	22	21	23	27	27	25	28	26	21	18	16
AC-FT	1340	1530	1500	1840	1630	1790	1610	1830	1670	1430	1190	996

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1998, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
MEAN	15.4	22.5	28.4	34.7	33.9	35.1	33.9	35.7	25.6	21.1	18.0	15.8
MAX	21.8	37.0	49.1	67.3	55.8	62.7	57.6	67.0	32.0	24.3	21.1	18.4
(WY)	1998	1996	1996	1996	1996	1997	1997	1997	1997	1997	1997	1997
MIN	10.5	11.9	16.4	15.3	15.6	21.5	25.2	21.2	18.5	16.2	13.4	11.6
(WY)	1993	1994	1993	1993	1993	1994	1994	1994	1994	1994	1994	1994

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1993 - 1998

ANNUAL TOTAL	13446	9253	
ANNUAL MEAN	36.8	25.4	26.6
HIGHEST ANNUAL MEAN			37.5
LOWEST ANNUAL MEAN			17.6
HIGHEST DAILY MEAN	112	41	130
LOWEST DAILY MEAN	18	16	8.4
ANNUAL SEVEN-DAY MINIMUM	18	16	8.6
ANNUAL RUNOFF (AC-FT)	26670	18350	19290
10 PERCENT EXCEEDS	68	31	41
50 PERCENT EXCEEDS	27	26	23
90 PERCENT EXCEEDS	20	18	14

e Estimated

SANDY RIVER BASIN

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

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: April 1996 to current year.

TEMPERATURE: October 1995 to current year.

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

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 32 microsiemens Oct. 10-16, 1996, but may have been higher during period of missing record; minimum, 22 microsiemens Jan. 31, 1997.

TEMPERATURE: Maximum 7.0°C Oct. 30, 1997; minimum, 3.0°C Feb. 6, 1996.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 31 microsiemens Aug. 9; minimum, 23 microsiemens Oct. 30.

TEMPERATURE: Maximum, 7.0°C Oct. 30; minimum, 5.0°C Jan. 17.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

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

SANDY RIVER BASIN

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

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	6.5	6.0	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
2	6.5	6.0	6.0	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
3	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
4	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
5	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
6	6.5	6.0	6.0	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
7	6.0	6.0	6.0	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.0	6.5
8	6.5	6.0	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
9	6.5	6.0	6.0	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
10	6.5	6.0	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5
11	6.0	6.0	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0
12	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.0	6.0
13	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.0	6.5
14	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	5.5	6.0
15	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0
16	6.5	6.0	6.5	6.5	6.0	6.5	6.5	5.5	5.5	6.5	6.0	6.0
17	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	5.0	5.5
18	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0
19	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.0	6.0	6.0
20	6.5	6.0	6.5	6.5	6.0	6.5	6.5	6.0	6.5	6.5	6.0	6.5
21	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
22	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
23	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.0	6.5
24	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5
25	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
26	6.5	6.0	6.5	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5
27	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5
28	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
29	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
30	7.0	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5
31	6.5	6.5	6.5	---	---	---	6.5	6.5	6.5	6.5	6.5	6.5
MONTH	7.0	6.0	6.4	6.5	6.0	6.5	6.5	5.5	6.4	6.5	5.0	6.4

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
2	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
3	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
4	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
6	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
7	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
8	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
9	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	6.0
10	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	6.0
11	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	6.0
12	6.5	6.0	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	6.0
13	6.5	6.0	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	6.0
14	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	5.5
15	6.5	6.0	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	5.5
16	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	5.5
17	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	5.5
18	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
19	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	5.5
20	6.5	6.5	6.5	6.5	6.0	6.0	6.0	6.0	6.0	5.5	5.5	5.5
21	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	5.5
22	6.5	6.0	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	5.5
23	6.5	6.0	6.5	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5	5.5
24	6.5	6.0	6.5	6.0	6.0	6.0	6.0	5.5	6.0	5.5	5.5	5.5
25	6.5	6.0	6.5	6.0	6.0	6.0	6.0	5.5	6.0	5.5	5.5	5.5
26	6.5	6.0	6.5	6.0	6.0	6.0	6.0	5.5	6.0	5.5	5.5	5.5
27	6.5	6.0	6.5	6.0	6.0	6.0	6.0	5.5	6.0	5.5	5.5	5.5
28	6.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
29	---	---	---	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
30	---	---	---	6.0	6.0	6.0	6.0	6.0	6.0	6.0	5.5	5.5
31	---	---	---	6.0	6.0	6.0	---	---	---	6.0	5.5	5.5
MONTH	6.5	6.0	6.5	6.5	6.0	6.0	6.0	5.5	6.0	6.0	5.5	5.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	6.0	5.5	6.0	6.0	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
2	6.0	5.5	5.5	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
3	6.0	5.5	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
4	6.0	5.5	6.0	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
5	6.0	5.5	6.0	6.0	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0
6	6.0	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
7	6.0	6.0	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
8	6.0	6.0	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
9	6.0	6.0	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
10	6.0	6.0	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
11	6.0	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
12	6.0	6.0	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
13	6.0	5.5	6.0	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
14	6.0	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0	6.5	6.0	6.0
15	6.0	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0	6.5	6.0	6.0
16	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
17	6.0	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
18	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
19	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
20	6.0	5.5	5.5	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0
21	6.0	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
22	6.0	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
23	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
24	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
25	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
26	5.5	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.0
27	6.0	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.0
28	6.0	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.0
29	6.0	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.0
30	6.0	5.5	5.5	6.0	6.0	6.0	6.0	6.0	6.0	6.5	6.0	6.0
31	---	---	---	6.0	6.0	6.0	6.0	6.0	6.0	6.5	---	---
MONTH	6.0	5.5	5.7	6.0	5.5	5.9	6.0	6.0	6.0	6.5	6.0	6.0
YEAR	7.0	5.0	6.1									

SANDY RIVER BASIN

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14138800 BLAZED ALDER CREEK NEAR RHODODENDRON, OR

LOCATION.--Lat 45°27'10", long 121°53'25", in NW 1/4 SE 1/4 sec.25, T.1 S., R.7 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 600 ft downstream from the confluence of Bedrock and Hickman Creeks and 8.6 mi north of Rhododendron, and at mile 3.78.

DRAINAGE AREA.--8.17 mi².

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

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

REMARKS.--Records good except those for the period Dec. 16 to May 11, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--35 years (water years 1964-98), 58.2 ft³/s, 96.72 in/yr, 42,130 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,610 ft³/s Dec. 22, 1964, gage height, 8.25 ft, from rating curve extended above 330 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 1.2 ft³/s Oct. 16, 1991.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1800	*1,010	*4.90	Jan. 17	0630	623	3.86
Dec. 16	1930	696	4.07				

Minimum discharge, 1.4 ft³/s Sept. 15-17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	143	34	57	59	154	34	69	59	24	4.9	2.0
2	37	78	29	69	47	154	31	64	44	22	4.5	2.0
3	74	57	25	49	41	103	30	51	36	20	4.2	2.0
4	161	50	23	37	40	71	29	42	30	18	4.1	1.8
5	182	37	21	36	41	52	28	37	26	17	3.9	1.8
6	83	30	19	51	51	40	27	33	23	15	3.8	1.8
7	50	38	19	99	52	34	29	31	20	14	3.6	1.8
8	107	31	19	62	51	38	28	29	18	12	3.6	1.6
9	120	26	18	43	45	52	27	28	17	12	3.5	1.6
10	64	23	26	37	51	50	37	27	19	11	3.3	1.6
11	99	21	22	e35	55	56	45	26	17	11	3.3	1.6
12	127	19	19	e30	115	71	41	25	15	10	3.2	1.6
13	85	17	18	e100	131	84	38	28	14	9.5	3.1	1.6
14	54	16	20	262	99	89	36	60	13	9.3	3.0	1.6
15	39	15	36	192	109	87	33	104	14	8.9	3.0	1.6
16	29	14	481	168	74	79	30	84	17	8.4	3.0	1.4
17	24	62	328	512	60	65	29	108	14	8.0	3.0	1.4
18	20	48	133	246	61	50	30	103	13	7.8	2.7	22
19	18	38	76	188	69	43	37	78	15	7.4	2.7	20
20	16	213	61	122	69	41	35	90	13	7.0	2.7	6.2
21	15	189	46	86	114	55	38	78	17	6.9	2.7	4.1
22	14	103	33	103	84	155	48	69	22	6.5	2.6	3.4
23	17	111	28	168	61	152	77	56	18	6.2	2.6	3.0
24	15	162	25	172	44	120	84	54	19	6.0	2.7	2.8
25	13	121	20	182	37	95	65	78	34	5.7	2.5	10
26	12	76	18	155	32	104	48	72	115	5.6	2.5	8.5
27	11	55	27	130	28	81	45	56	77	5.3	2.4	5.0
28	13	45	46	98	67	62	51	43	47	5.3	2.2	3.9
29	146	42	53	87	---	48	64	60	34	5.0	2.2	3.5
30	483	40	47	89	---	41	70	115	27	5.1	2.2	3.2
31	364	---	40	71	---	38	---	83	---	5.0	2.1	---
TOTAL	2513	1920	1810	3736	1787	2364	1244	1881	847	314.9	95.8	124.4
MEAN	81.1	64.0	58.4	121	63.8	76.3	41.5	60.7	28.2	10.2	3.09	4.15
MAX	483	213	481	512	131	155	84	115	115	24	4.9	22
MIN	11	14	18	30	28	34	27	25	13	5.0	2.1	1.4
AC-FT	4980	3810	3590	7410	3540	4690	2470	3730	1680	625	190	247
CFSM	9.92	7.83	7.15	14.8	7.81	9.33	5.08	7.43	3.46	1.24	.38	.51
IN.	11.44	8.74	8.24	17.01	8.14	10.76	5.66	8.56	3.86	1.43	.44	.57

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

	MEAN	32.0	89.5	104	105	84.7	68.9	78.6	71.3	37.9	11.0	5.57	10.9
MAX	82.5	218	288	207	221	167	150	165	115	35.4	27.6	35.5	
(WY)	1968	1996	1965	1974	1996	1972	1990	1969	1964	1983	1968	1977	
MIN	1.57	12.5	22.6	19.2	17.5	17.7	33.1	18.1	4.74	3.95	2.37	1.67	
(WY)	1988	1994	1977	1985	1969	1992	1983	1992	1992	1992	1967	1991	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1964 - 1998

ANNUAL TOTAL	24966.3	18637.1	
ANNUAL MEAN	68.4	51.1	58.2
HIGHEST ANNUAL MEAN			88.1
LOWEST ANNUAL MEAN			33.5
HIGHEST DAILY MEAN	694	Jan 31	1780
LOWEST DAILY MEAN	3.1	Sep 8	1.3
ANNUAL SEVEN-DAY MINIMUM	3.3	Sep 4	1.3
ANNUAL RUNOFF (AC-FT)	49520	36970	42130
ANNUAL RUNOFF (CFSM)	8.37	6.25	7.12
ANNUAL RUNOFF (INCHES)	113.68	84.86	96.72
10 PERCENT EXCEEDS	161	114	132
50 PERCENT EXCEEDS	34	34	31
90 PERCENT EXCEEDS	5.4	3.0	3.5

e Estimated

SANDY RIVER BASIN

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

LOCATION.--Lat 45°29'50", long 122°00'50", near center of sec.12, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 1.2 mi upstream from North Fork, 7.0 mi southeast of Multnomah Falls, and at mile 14.8.

DRAINAGE AREA.--47.9 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WDR OR-91-1: 1990.

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

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

AVERAGE DISCHARGE.--32 years (water years 1967-98), 411 ft³/s, 116.66 in/yr, 298,000 acre-ft/yr.EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,140 ft³/s Feb. 6, 1996, gage height, 13.60 ft; minimum discharge, 30 ft³/s Oct. 28-31, 1987.EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1830	*5,630	*10.80	Dec. 16	1930	4,150	9.62

Minimum discharge, 40 ft³/s Sept. 15-18.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	177	831	301	450	438	1160	293	377	440	212	63	44
2	321	522	267	528	382	1030	269	367	358	193	61	44
3	552	403	241	399	345	730	258	321	311	180	59	44
4	1030	380	217	338	331	537	246	286	279	171	57	44
5	1100	308	197	366	328	422	234	262	249	164	56	43
6	587	274	180	503	355	352	226	246	225	150	55	43
7	416	305	182	824	354	305	245	234	206	137	54	42
8	567	273	192	540	350	345	237	229	190	128	54	42
9	639	243	190	398	335	461	229	224	175	120	53	42
10	432	219	310	351	359	471	288	217	197	114	53	42
11	609	198	273	311	408	491	364	219	189	108	53	42
12	854	180	232	283	652	550	352	224	167	103	52	42
13	609	165	206	498	773	545	332	273	154	100	52	42
14	431	152	207	1480	603	509	314	461	143	95	51	41
15	333	139	280	1200	743	489	295	683	154	90	51	41
16	271	132	2790	1070	544	454	271	550	180	87	52	41
17	230	344	1960	2700	438	391	251	762	156	83	51	40
18	200	322	871	1440	420	335	248	749	144	81	50	152
19	172	278	546	1220	497	303	282	553	157	79	49	198
20	150	1150	455	829	457	291	261	602	145	76	49	69
21	132	1100	398	625	780	324	264	570	133	74	48	55
22	121	621	320	697	649	736	292	514	151	73	48	50
23	145	684	294	1090	490	836	402	448	134	71	49	48
24	130	925	279	1070	e400	716	512	438	154	69	49	48
25	112	736	250	1130	e350	581	440	578	310	67	48	98
26	103	521	227	995	299	633	359	515	713	66	47	89
27	96	392	272	821	269	573	326	420	478	64	46	61
28	102	355	477	640	538	459	328	348	342	64	45	54
29	831	342	534	594	---	387	350	432	273	63	45	52
30	2780	340	427	631	---	342	375	768	232	63	45	50
31	2010	---	363	518	---	318	---	566	---	63	45	---
TOTAL	16242	12834	13938	24539	12887	16076	9143	13436	7139	3208	1590	1743
MEAN	524	428	450	792	460	519	305	433	238	103	51.3	58.1
MAX	2780	1150	2790	2700	780	1160	512	768	713	212	63	198
MIN	96	132	180	283	269	291	226	217	133	63	45	40
AC-FT	32220	25460	27650	48670	25560	31890	18140	26650	14160	6360	3150	3460
CFSM	10.9	8.93	9.39	16.5	9.61	10.8	6.36	9.05	4.97	2.16	1.07	1.21
IN.	12.61	9.97	10.82	19.06	10.01	12.48	7.10	10.43	5.54	2.49	1.23	1.35

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1998, BY WATER YEAR (WY)

	MEAN	251	611	706	703	616	510	517	434	278	116	83.3	124
MAX	535	1325	1434	1238	1216	1120	834	885	699	292	231	294	
(WY)	1968	1996	1978	1975	1996	1972	1993	1969	1974	1983	1968	1977	
MIN	36.5	72.4	193	177	167	148	242	150	54.8	54.0	43.7	40.9	
(WY)	1988	1994	1977	1985	1993	1992	1967	1992	1992	1977	1967	1994	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1967 - 1998

ANNUAL TOTAL	167883		132775		411	
ANNUAL MEAN	460		364		643	1974
HIGHEST ANNUAL MEAN					249	1977
LOWEST ANNUAL MEAN					7480	Feb 7 1996
HIGHEST DAILY MEAN	3730	Jan 31	2790	Dec 16	30	Oct 29 1987
LOWEST DAILY MEAN	54	Sep 9	40	Sep 17	31	Oct 25 1987
ANNUAL SEVEN-DAY MINIMUM	56	Sep 4	41	Sep 11		
ANNUAL RUNOFF (AC-FT)	333000		263400		298000	
ANNUAL RUNOFF (CFSM)	9.60		7.59		8.59	
ANNUAL RUNOFF (INCHES)	130.38		103.12		116.66	
10 PERCENT EXCEEDS	935		736		873	
50 PERCENT EXCEEDS	318		286		259	
90 PERCENT EXCEEDS	75		51		59	

e Estimated

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

pH: August 1990 to September 1992.

WATER TEMPERATURE: October 1977 to current year.

TURBIDITY: August 1990 to July 1994.

SUSPENDED SEDIMENT DISCHARGE: October 1977 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 44 microsiemens Sept. 17, 1988; minimum recorded, 9 microsiemens Jan. 23, 1982, Feb. 23, 1986, Dec. 4, 1989.

pH: Maximum recorded, 8.1 units Aug. 30, Sept. 1, 1990; minimum recorded, 5.7 units Jan. 18, 1991.

WATER TEMPERATURE: Maximum, 18.0°C June 22-25, 1992, July 23, 1994; minimum, 0.0°C on many days during winter periods.

TURBIDITY: Maximum recorded, 44 NTU Jan. 15, 1991; minimum recorded, 0.08 NTU Aug. 30, 31, 1992.

SEDIMENT CONCENTRATION: Maximum daily, 290 mg/L Dec. 2, 1977; minimum, 0 mg/L on many days.

SEDIMENT DISCHARGE: Maximum daily, 5,930 tons Dec. 2, 1977; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 30 microsiemens several days in September, but may have been greater during periods of missing record; minimum recorded, 15 microsiemens Oct. 30, Jan. 17, but may have been less during periods of missing record.

WATER TEMPERATURE: Maximum, 17.5°C July 28, 29; minimum, 0.0°C Jan. 11-13.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

SANDY RIVER BASIN

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	11.5	10.5	11.0	8.5	7.5	8.0	---	---	---	5.0	4.5	5.0
2	10.5	9.5	10.0	8.0	7.0	7.5	---	---	---	4.5	3.0	3.5
3	10.5	10.0	10.0	8.5	7.0	7.5	---	---	---	3.5	3.0	3.0
4	10.5	10.0	10.0	9.0	8.5	8.5	---	---	---	3.0	2.5	3.0
5	10.0	9.0	9.5	9.0	8.5	8.5	---	---	---	3.5	2.5	3.0
6	9.0	8.0	8.5	---	---	---	---	---	---	4.0	3.5	4.0
7	8.5	8.0	8.0	---	---	---	---	---	---	4.0	4.0	4.0
8	9.0	7.5	8.0	---	---	---	---	---	---	4.0	3.5	3.5
9	8.5	8.0	8.5	---	---	---	---	---	---	3.5	2.5	3.0
10	8.0	7.5	8.0	---	---	---	---	---	---	3.5	2.0	3.0
11	8.0	7.5	7.5	---	---	---	---	---	---	2.0	.0	.0
12	8.5	8.0	8.0	---	---	---	---	---	---	.0	.0	.0
13	9.0	8.0	8.5	---	---	---	---	---	---	1.5	.0	.5
14	9.0	7.5	8.0	---	---	---	---	---	---	3.5	1.5	2.5
15	9.5	8.0	9.0	---	---	---	---	---	---	4.0	3.5	3.5
16	9.0	8.0	9.0	---	---	---	---	---	---	4.0	3.5	3.5
17	9.0	8.5	9.0	---	---	---	---	---	---	4.0	3.5	4.0
18	9.0	8.5	9.0	---	---	---	---	---	---	4.5	4.0	4.0
19	8.5	7.5	8.0	---	---	---	---	---	---	4.0	4.0	4.0
20	8.0	6.5	7.0	---	---	---	---	---	---	4.5	3.5	4.0
21	7.0	6.0	6.5	---	---	---	---	---	---	4.0	3.5	4.0
22	---	---	---	---	---	---	---	---	---	4.5	4.0	4.0
23	---	---	---	---	---	---	---	---	---	4.5	4.0	4.0
24	7.5	6.5	7.0	---	---	---	3.5	3.0	3.5	4.5	4.0	4.0
25	6.5	5.5	6.0	---	---	---	3.0	2.5	2.5	4.5	4.0	4.5
26	7.0	6.0	6.5	---	---	---	3.0	2.5	2.5	4.5	4.5	4.5
27	7.5	7.0	7.0	---	---	---	3.5	3.0	3.5	5.0	4.5	4.5
28	7.5	7.0	7.0	---	---	---	4.5	3.5	4.0	5.0	4.0	4.5
29	8.5	7.5	8.0	---	---	---	5.0	4.0	4.5	5.0	4.5	5.0
30	9.5	8.5	9.0	---	---	---	4.5	3.5	4.0	4.5	4.0	4.5
31	8.5	8.5	8.5	---	---	---	4.5	3.5	4.0	4.5	4.0	4.0
MONTH	---	---	---	---	---	---	---	---	---	5.0	.0	3.5

SANDY RIVER BASIN

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14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	3.5	4.0	5.0	3.5	4.0	5.5	4.0	4.5	11.0	8.5	9.5
2	4.0	3.5	4.0	4.5	3.5	4.0	5.5	4.5	5.0	10.0	8.5	9.0
3	5.0	4.0	4.5	3.5	2.5	3.0	5.5	5.0	5.0	9.0	8.5	8.5
4	5.5	5.0	5.0	3.5	2.5	3.0	5.5	5.0	5.0	9.0	8.0	8.5
5	5.0	4.5	5.0	3.5	2.5	3.0	6.0	5.0	5.5	9.0	8.5	8.5
6	5.5	5.0	5.0	3.5	2.5	3.0	6.0	5.0	5.5	9.5	8.5	9.0
7	5.0	4.0	4.5	3.5	2.5	3.0	5.5	4.5	5.0	10.5	8.5	9.0
8	5.0	4.5	4.5	4.0	3.0	3.5	5.5	4.0	4.5	9.5	7.5	8.5
9	4.5	4.0	4.5	4.0	3.5	3.5	6.0	4.5	5.5	7.5	7.0	7.0
10	4.5	3.5	4.0	4.5	3.5	4.0	6.0	5.0	5.5	7.5	7.0	7.0
11	4.5	4.0	4.5	5.5	4.0	4.5	5.0	4.5	4.5	8.0	7.0	7.5
12	5.0	4.5	4.5	6.0	4.5	5.5	5.5	4.0	4.5	7.5	7.0	7.0
13	4.5	4.0	4.5	6.0	4.5	5.5	4.5	4.0	4.5	7.5	6.5	7.0
14	4.5	4.0	4.5	6.0	5.0	5.5	5.0	4.0	4.5	7.0	6.0	6.5
15	4.5	4.0	4.0	6.0	5.5	5.5	5.5	4.5	5.0	6.5	5.5	6.0
16	4.5	3.5	4.0	5.5	4.5	5.0	6.5	5.0	5.5	6.0	5.5	6.0
17	5.0	4.0	4.5	5.0	4.0	4.5	7.0	5.0	6.0	6.5	5.5	6.0
18	5.0	4.0	4.5	5.5	3.5	4.5	7.0	5.5	6.5	8.5	6.0	7.0
19	5.0	4.5	5.0	6.0	4.5	5.0	7.5	6.0	6.5	7.5	6.5	7.0
20	5.0	4.5	4.5	6.5	5.0	6.0	8.0	5.5	6.5	8.0	7.0	7.0
21	4.5	3.5	4.0	6.5	5.5	5.5	8.5	6.0	7.0	7.0	7.0	7.0
22	4.0	3.0	3.5	6.0	5.5	5.5	9.0	7.0	8.0	7.0	6.5	7.0
23	4.0	3.5	3.5	6.0	5.0	5.5	8.5	6.5	7.5	8.0	7.0	7.5
24	---	---	---	6.0	5.0	5.5	6.5	5.5	5.5	8.0	7.0	7.5
25	---	---	---	6.0	5.5	5.5	6.5	5.0	5.5	7.5	6.5	7.0
26	3.5	2.5	3.0	5.5	4.0	4.5	8.0	4.5	6.0	7.0	6.0	6.5
27	3.5	2.5	3.0	4.0	3.0	3.5	9.0	6.0	7.5	8.0	6.5	7.0
28	4.0	3.5	3.5	4.5	3.5	4.0	10.0	7.0	8.5	9.5	6.0	7.5
29	---	---	---	5.0	3.0	3.5	11.0	7.5	9.0	8.5	7.5	8.0
30	---	---	---	5.0	3.5	4.0	11.0	8.0	9.5	8.0	7.0	7.5
31	---	---	---	5.0	3.5	4.0	---	---	---	10.5	6.5	8.5
MONTH	---	---	---	6.5	2.5	4.4	11.0	4.0	6.0	11.0	5.5	7.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.0	8.0	9.5	11.5	11.0	11.0	14.0	13.0	13.5	14.0	13.0	14.0
2	11.0	8.5	9.5	11.0	10.5	10.5	14.5	12.0	13.5	14.0	13.0	13.5
3	12.0	8.5	10.0	11.0	10.5	10.5	16.0	13.5	14.5	14.0	13.0	13.5
4	10.5	9.0	9.5	10.5	10.0	10.5	16.5	14.5	15.5	14.0	13.5	14.0
5	11.5	8.5	10.0	11.5	10.0	10.5	16.5	15.0	15.5	14.0	13.0	13.5
6	12.5	9.0	10.5	13.5	10.0	11.5	16.0	14.0	15.0	13.5	12.5	13.0
7	13.0	10.0	11.5	13.5	11.5	12.5	15.5	13.5	14.5	13.0	12.5	12.5
8	13.0	10.5	11.5	14.5	12.0	13.5	14.5	12.5	13.5	13.0	12.5	12.5
9	13.5	11.0	12.0	15.5	12.0	13.5	14.5	13.0	14.0	12.5	11.0	12.0
10	12.5	10.5	11.0	14.5	12.5	13.5	14.5	13.0	13.5	11.0	10.5	11.0
11	10.5	9.5	10.0	13.5	12.0	13.0	15.5	13.0	14.0	11.5	10.5	11.0
12	11.0	9.5	10.5	13.5	12.0	13.0	15.5	13.5	14.5	12.0	11.0	11.5
13	11.0	10.0	10.0	13.5	12.0	13.0	16.0	14.5	15.5	12.0	11.5	12.0
14	11.0	9.5	10.0	13.5	12.0	13.0	16.0	14.5	15.5	12.0	11.5	12.0
15	10.5	9.5	10.0	14.5	12.5	13.5	16.0	13.5	14.5	12.0	11.5	12.0
16	9.5	8.5	9.0	16.0	13.0	14.0	13.5	12.5	13.0	12.5	11.5	12.0
17	12.0	8.5	10.0	16.0	13.0	14.5	13.0	11.5	12.0	12.0	11.5	11.5
18	11.5	9.5	10.0	16.0	13.5	15.0	13.0	11.5	12.5	12.0	11.5	11.5
19	9.5	8.5	9.0	15.5	13.5	14.5	13.0	11.0	12.0	12.0	11.5	12.0
20	12.5	8.5	10.0	15.0	12.5	13.5	13.5	12.0	12.5	12.0	11.0	11.5
21	13.5	10.0	12.0	16.0	13.0	14.5	13.5	13.0	13.5	11.5	10.5	11.0
22	13.0	11.0	12.0	16.5	14.0	15.0	13.5	12.5	13.0	11.0	10.5	11.0
23	12.5	11.0	11.0	16.5	14.5	15.5	13.5	12.0	12.5	11.0	10.5	11.0
24	11.0	10.0	10.5	16.0	14.0	15.0	13.0	11.0	12.0	11.0	10.5	11.0
25	10.5	9.0	10.0	16.0	13.5	15.0	13.0	12.0	12.5	11.0	11.0	11.0
26	9.5	8.5	9.0	16.5	14.0	15.5	13.0	12.0	12.5	11.0	9.5	10.0
27	12.0	8.5	10.0	16.5	15.5	16.0	13.0	12.0	12.5	10.5	9.5	10.0
28	13.0	9.0	11.0	17.5	14.5	16.0	13.5	12.0	12.5	10.5	10.0	10.5
29	13.5	10.0	12.0	17.5	16.0	16.5	13.5	13.0	13.5	10.5	10.0	10.0
30	12.5	11.0	11.5	16.5	14.5	15.5	13.5	13.0	13.0	10.5	9.5	10.0
31	---	---	---	16.0	13.5	14.5	14.0	13.0	13.5	---	---	---
MONTH	13.5	8.0	10.4	17.5	10.0	13.7	16.5	11.0	13.5	14.0	9.5	11.7

SANDY RIVER BASIN

14138870 FIR CREEK NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°28'49", long 122°01'28", in NE 1/4 SE 1/4 sec.14, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, on right bank, 6.4 mi north of Brightwood and 0.6 mi above Bull Run Reservoir Number One.

DRAINAGE AREA.--5.46 mi².

WATER-DISCHARGE RECORDS

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

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

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

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

AVERAGE DISCHARGE.--23 years (water years 1976-98), 35.4 ft³/s, 88.02 in/yr, 25,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,290 ft³/s Dec. 2, 1977, gage height, 5.64 ft; minimum discharge, 1.5 ft³/s Oct. 19-21, 1991.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1730	*413	*4.37	No other peak greater than base discharge.			
Minimum discharge, 1.9 ft ³ /s Sept. 13-18.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	11	69	27	39	37	98	25	24	39	21	5.6	2.5
2	19	47	25	41	33	88	23	24	30	20	5.3	2.5
3	37	36	23	32	30	66	22	21	25	19	5.0	2.4
4	68	31	20	28	28	50	21	18	22	18	4.7	2.4
5	78	27	19	30	27	40	20	17	20	17	4.6	2.4
6	44	25	18	40	29	33	20	16	18	16	4.3	2.3
7	31	28	18	73	27	29	21	15	16	15	4.2	2.3
8	49	25	19	52	27	32	20	15	15	14	4.1	2.3
9	52	23	18	39	25	40	19	15	13	13	3.9	2.2
10	35	21	31	33	27	44	24	15	16	13	3.9	2.1
11	45	19	30	30	30	47	30	18	15	12	3.9	2.1
12	59	17	25	27	52	49	29	17	13	11	3.8	2.1
13	47	16	23	55	57	45	27	24	12	11	3.7	2.0
14	34	15	22	119	47	40	25	46	11	10	3.6	1.9
15	26	14	28	101	53	37	24	61	12	9.9	3.6	1.9
16	22	13	160	97	44	34	23	49	14	9.3	3.6	1.9
17	19	25	127	163	36	29	21	65	12	8.7	3.4	1.9
18	16	22	75	113	35	26	21	61	11	8.4	3.3	1.7
19	14	20	51	97	40	24	23	47	13	8.1	3.3	2.0
20	12	57	42	73	39	23	21	48	12	7.7	3.1	7.5
21	10	80	36	58	65	24	20	47	11	7.5	3.0	5.0
22	9.4	54	30	59	56	58	21	44	9.9	7.4	3.0	3.8
23	12	58	29	85	45	62	29	37	9.7	7.0	3.1	3.3
24	11	76	28	84	36	52	45	39	13	6.7	3.1	3.2
25	9.2	63	26	88	31	45	40	57	36	6.4	2.9	11
26	8.2	47	24	81	28	49	31	52	63	6.1	2.8	9.8
27	7.5	35	26	69	25	47	26	39	43	5.8	2.7	5.5
28	8.0	31	45	56	50	38	25	30	31	5.7	2.6	4.3
29	67	30	50	53	---	32	25	40	26	5.5	2.6	3.5
30	185	29	39	52	---	29	25	77	23	5.5	2.6	3.2
31	128	---	33	43	---	27	---	54	---	5.5	2.6	---
TOTAL	1173.3	1053	1167	2010	1059	1337	746	1132	604.6	331.2	111.9	134.3
MEAN	37.8	35.1	37.6	64.8	37.8	43.1	24.9	36.5	20.2	10.7	3.61	4.48
MAX	185	80	160	163	65	98	45	77	63	21	5.6	2.0
MIN	7.5	13	18	27	25	23	19	15	9.7	5.5	2.6	1.9
AC-FT	2330	2090	2310	3990	2100	2650	1480	2250	1200	657	222	266
CFSM	6.93	6.43	6.89	11.9	6.93	7.90	4.55	6.69	3.69	1.96	.66	.82
IN.	7.99	7.17	7.95	13.69	7.22	9.11	5.08	7.71	4.12	2.26	.76	.92

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1998, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	20.3	56.2	64.1	55.3	56.9	45.7	47.8	33.7	22.7	9.45	5.21	8.83											
MAX	44.8	110	133	96.9	126	91.5	73.2	53.0	58.6	27.3	13.0	27.7											
(WY)	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987											
MIN	1.97	6.09	15.3	16.6	16.9	14.0	24.9	14.6	3.80	3.50	2.95	2.57											
(WY)	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987											

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1976 - 1998

	1997	1998	1976-1998
ANNUAL TOTAL	15478.2	10859.3	
ANNUAL MEAN	42.4	29.8	
HIGHEST ANNUAL MEAN			35.4
LOWEST ANNUAL MEAN			53.5
HIGHEST DAILY MEAN	273	185	23.4
LOWEST DAILY MEAN	2.6	1.9	616
ANNUAL SEVEN-DAY MINIMUM	2.8	2.0	1.5
ANNUAL RUNOFF (AC-FT)	30700	21540	1.6
ANNUAL RUNOFF (CFSM)	7.77	5.45	6.48
ANNUAL RUNOFF (INCHES)	105.46	73.99	88.02
10 PERCENT EXCEEDS	93	59	75
50 PERCENT EXCEEDS	32	25	22
90 PERCENT EXCEEDS	5.2	3.6	3.7

SANDY RIVER BASIN

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14138870 FIR CREEK NEAR BRIGHTWOOD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1977 to current year.

pH: August 1990 to September 1992.

WATER TEMPERATURE: October 1977 to current year.

TURBIDITY: August 1990 to September 1994.

SUSPENDED SEDIMENT DISCHARGE: October 1977 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

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

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

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

WATER TEMPERATURE: Maximum recorded, 16.0°C Sept. 1, 1987, June 23, 24, July 18, 19, 1992; minimum recorded, 0.0°C on several days in 1978-80, 1983, 1989, 1991, 1993, Nov. 24-26, 1994, Feb. 13, 15, 1995, Jan. 30, 31, 1996, Jan. 12, 1998.

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

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

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

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 29 microsiemens Sept. 18; minimum, 15 microsiemens Oct. 30, Dec. 16.

WATER TEMPERATURE: Maximum, 15.0°C July 28; minimum, 0.0°C Jan. 12.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

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

SANDY RIVER BASIN

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14138870 FIR CREEK NEAR BRIGHTWOOD, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.5	9.5	10.0	8.0	7.5	7.5	6.0	5.0	5.0	5.0	4.0	5.0
2	9.5	9.0	9.5	8.0	7.0	7.5	5.0	4.5	5.0	4.0	3.5	3.5
3	9.5	9.5	9.5	8.0	7.5	7.5	4.5	4.5	4.5	3.5	3.5	3.5
4	9.5	9.5	9.5	8.0	8.0	8.0	5.0	4.5	4.5	3.5	3.5	3.5
5	9.5	8.5	9.0	8.0	8.0	8.0	4.5	3.5	4.0	4.0	3.5	3.5
6	8.5	8.0	8.0	8.5	8.0	8.0	4.0	3.5	3.5	4.5	4.0	4.0
7	8.0	7.5	8.0	8.5	7.5	8.0	4.0	4.0	4.0	4.5	3.5	4.0
8	8.0	7.5	8.0	7.5	7.0	7.0	4.0	4.0	4.0	4.5	4.0	4.0
9	8.0	7.5	8.0	7.0	6.5	6.5	4.0	3.0	3.5	4.0	3.5	3.5
10	8.0	7.5	7.5	6.5	6.5	6.5	4.5	4.0	4.0	4.0	2.5	3.5
11	7.5	7.0	7.5	6.5	6.0	6.5	4.5	4.0	4.5	3.0	.5	1.0
12	8.0	7.5	7.5	6.0	5.5	5.5	4.5	4.0	4.0	1.5	.0	1.0
13	8.0	7.5	8.0	5.5	5.0	5.5	4.0	3.5	4.0	3.5	1.5	2.5
14	8.0	7.5	8.0	6.0	5.0	5.5	4.5	3.5	4.5	3.5	3.0	3.5
15	8.5	8.0	8.0	5.0	5.0	5.0	4.5	4.5	4.5	4.0	3.5	4.0
16	8.5	8.0	8.5	5.5	5.0	5.5	5.0	4.5	4.5	4.5	4.0	4.0
17	8.5	8.0	8.5	6.0	5.5	6.0	5.0	4.5	5.0	4.5	4.0	4.0
18	8.5	8.0	8.0	6.0	5.5	6.0	5.0	4.5	4.5	4.5	4.5	4.5
19	8.0	7.0	7.5	6.0	6.0	6.0	5.0	4.5	4.5	4.5	4.5	4.5
20	7.0	6.5	7.0	6.5	6.0	6.5	5.0	4.5	4.5	4.5	4.5	4.5
21	7.0	6.5	6.5	6.5	6.0	6.5	4.5	4.0	4.5	4.5	4.5	4.5
22	7.0	6.5	7.0	6.5	6.0	6.0	4.0	3.5	4.0	5.0	4.5	4.5
23	7.0	7.0	7.0	6.5	6.0	6.5	4.0	3.5	3.5	5.0	4.5	4.5
24	7.0	6.5	6.5	6.5	6.5	6.5	4.0	3.5	4.0	4.5	4.5	4.5
25	6.5	6.0	6.0	6.5	6.0	6.0	3.5	3.5	3.5	5.0	4.5	4.5
26	7.0	6.0	6.5	6.0	5.5	6.0	4.0	3.5	3.5	5.0	4.5	5.0
27	7.0	6.5	7.0	6.0	5.0	5.5	4.5	4.0	4.0	5.0	4.5	5.0
28	7.0	6.5	7.0	6.5	6.0	6.0	4.5	4.0	4.5	5.0	4.5	5.0
29	8.0	7.0	7.5	6.5	6.0	6.5	5.0	4.0	4.5	5.5	5.0	5.0
30	9.0	8.0	8.5	6.0	5.5	6.0	4.5	4.0	4.5	5.0	4.5	4.5
31	8.5	8.0	8.0	---	---	---	5.0	4.0	4.5	5.0	4.5	4.5
MONTH	10.5	6.0	7.8	8.5	5.0	6.5	6.0	3.0	4.2	5.5	.0	4.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	4.5	4.5	4.5	4.0	4.0	4.5	4.0	4.5	9.0	7.5	8.5
2	4.5	4.5	4.5	4.5	4.0	4.0	5.0	4.5	4.5	8.5	8.0	8.0
3	5.0	4.5	4.5	4.0	3.5	4.0	5.0	4.5	5.0	8.0	7.5	7.5
4	5.0	5.0	5.0	4.0	3.5	3.5	5.0	4.5	5.0	8.0	7.5	7.5
5	5.0	5.0	5.0	3.5	3.5	3.5	5.5	5.0	5.0	8.0	7.5	7.5
6	5.5	5.0	5.0	4.0	3.5	3.5	5.5	4.5	5.0	8.0	7.5	8.0
7	5.0	4.5	5.0	4.0	3.0	3.5	5.0	4.5	4.5	8.5	7.5	8.0
8	5.0	4.5	5.0	4.0	3.5	4.0	5.0	4.0	4.5	8.0	7.0	7.5
9	5.0	4.0	4.5	4.5	4.0	4.0	5.5	4.5	5.0	7.0	6.5	6.5
10	4.5	4.0	4.5	4.5	4.0	4.5	5.0	4.5	5.0	7.0	6.5	6.5
11	4.5	4.0	4.5	5.0	4.0	4.5	4.5	4.0	4.5	7.0	6.0	6.5
12	5.0	4.5	4.5	5.5	4.5	5.0	5.0	4.0	4.5	6.5	6.0	6.5
13	4.5	4.0	4.5	5.5	4.5	5.0	4.5	4.0	4.5	6.5	6.0	6.5
14	5.0	4.5	4.5	5.5	5.0	5.5	4.5	4.0	4.5	6.5	5.5	6.0
15	4.5	4.0	4.5	5.5	5.0	5.5	5.0	4.5	4.5	6.0	5.0	5.5
16	4.5	4.0	4.5	5.0	4.5	5.0	5.5	4.5	5.0	6.0	5.5	5.5
17	5.0	4.5	4.5	4.5	4.0	4.5	5.5	4.5	5.0	6.0	5.5	5.5
18	5.0	4.5	5.0	5.0	4.0	4.5	6.0	5.0	5.5	7.0	5.5	6.0
19	5.0	4.5	5.0	5.5	4.5	5.0	6.0	5.0	5.5	6.5	6.0	6.5
20	5.0	4.5	5.0	6.0	5.0	5.5	6.5	5.0	5.5	6.5	6.0	6.5
21	4.5	4.0	4.5	5.5	5.5	5.5	7.0	5.5	6.5	6.5	6.0	6.5
22	4.5	3.5	4.0	5.5	5.0	5.5	7.5	6.0	7.0	6.5	6.0	6.5
23	4.5	4.0	4.0	5.5	5.0	5.0	7.5	5.5	6.5	6.5	6.5	6.5
24	4.0	4.0	4.0	5.5	5.0	5.5	5.5	4.5	5.0	7.0	6.5	6.5
25	4.0	3.0	3.5	5.5	5.0	5.5	5.5	4.5	5.0	6.5	6.0	6.0
26	4.0	3.5	3.5	5.0	4.0	4.5	6.0	4.5	5.5	6.0	5.5	6.0
27	3.5	3.5	3.5	4.0	3.5	4.0	7.5	5.5	6.5	6.5	6.0	6.5
28	4.0	3.5	4.0	4.5	4.0	4.0	8.0	6.5	7.0	7.5	6.0	7.0
29	---	---	---	4.0	3.5	4.0	8.5	7.0	8.0	7.5	6.5	7.0
30	---	---	---	4.5	4.0	4.0	9.0	7.5	8.0	7.0	6.5	6.5
31	---	---	---	4.5	4.0	4.5	---	---	---	8.0	6.0	7.0
MONTH	5.5	3.0	4.5	6.0	3.0	4.5	9.0	4.0	5.4	9.0	5.0	6.7

14138900 NORTH FORK BULL RUN RIVER NEAR MULTNOMAH FALLS, OR

LOCATION.--Lat 45°29'40", long 122°02'05", near line between SE 1/4 and SW 1/4 sec.11, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, Mount Hood National Forest, on left bank 7.0 mi southeast of Multnomah Falls and at mouth.

DRAINAGE AREA.--8.32 mi².

WATER-DISCHARGE RECORDS

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

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

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

REMARKS.--No estimated daily discharges. Records fair except those above 300 ft³/s, which are poor. Regulation at times since 1958 by North Fork Reservoir, capacity, about 1,030 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--33 years (water years 1966-98), 73.7 ft³/s, 120.41 in/yr, 53,420 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1600	*766	*5.01	No other peak greater than base discharge.			
Minimum daily discharge, 13 ft ³ /s Sept. 1-17, 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	161	58	80	83	254	53	52	64	37	18	13
2	55	104	51	78	74	222	49	54	55	35	17	13
3	96	79	46	61	68	139	48	48	48	34	17	13
4	181	75	42	56	64	103	45	44	44	34	16	13
5	218	57	39	61	58	80	42	41	39	32	16	13
6	116	53	37	90	66	66	41	39	36	30	16	13
7	79	62	39	148	58	57	46	38	33	29	16	13
8	127	50	41	93	61	63	42	37	31	28	16	13
9	124	45	41	69	57	87	41	36	30	26	16	13
10	83	42	76	62	64	89	54	37	37	26	15	13
11	115	38	57	55	70	93	63	36	33	25	15	13
12	138	35	47	50	113	89	61	37	30	24	15	13
13	112	33	43	93	118	83	57	52	28	23	15	13
14	79	31	45	223	104	74	53	84	27	23	15	13
15	63	29	57	215	130	72	50	110	29	22	15	13
16	52	28	384	199	96	68	47	83	33	21	15	13
17	45	79	330	421	78	61	43	137	28	20	15	13
18	41	58	164	269	86	56	44	125	27	20	15	36
19	36	51	105	240	100	54	47	89	29	20	14	34
20	33	241	87	158	88	53	42	96	26	19	14	18
21	31	229	72	122	134	57	42	88	24	19	14	15
22	30	127	59	140	115	115	43	78	24	18	14	14
23	36	149	55	212	92	130	64	70	24	18	15	14
24	31	187	53	199	73	112	78	77	32	18	15	14
25	28	154	47	205	64	95	65	96	62	18	14	25
26	26	106	43	178	58	104	57	77	123	18	14	20
27	25	78	49	140	52	91	53	65	70	17	14	15
28	27	77	97	112	120	75	51	56	53	17	14	14
29	156	76	91	121	---	66	51	87	44	17	14	14
30	415	69	66	130	---	60	52	133	39	17	14	13
31	339	---	55	97	---	57	---	83	---	17	14	---
TOTAL	2972	2603	2476	4377	2344	2825	1524	2185	1202	722	467	467
MEAN	95.9	86.8	79.9	141	83.7	91.1	50.8	70.5	40.1	23.3	15.1	15.6
MAX	415	241	384	421	134	254	78	137	123	37	18	36
MIN	25	28	37	50	52	53	41	36	24	17	14	13
AC-FT.	5890	5160	4910	8680	4650	5600	3020	4330	2380	1430	926	926
CFSM	11.5	10.4	9.60	17.0	10.1	11.0	6.11	8.47	4.82	2.80	1.81	1.87
IN.	13.29	11.64	11.07	19.57	10.48	12.63	6.81	9.77	5.37	3.23	2.09	2.09

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1998, BY WATER YEAR (WY)

	MEAN	44.7	107	128	132	110	89.5	88.2	72.4	47.9	25.1	17.6	24.3
MAX	95.9	222	285	309	231	200	147	137	111	62.7	35.2	54.4	
(WY)	1998	1996	1976	1975	1996	1972	1993	1972	1974	1983	1968	1977	
MIN	9.08	16.9	33.4	32.1	35.3	28.8	49.5	28.3	14.6	12.6	10.6	10.9	
(WY)	1988	1994	1977	1979	1993	1992	1967	1992	1992	1992	1994	1987	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1966 - 1998

ANNUAL TOTAL	29351	24164	73.7	
ANNUAL MEAN	80.4	66.2	121	1974
HIGHEST ANNUAL MEAN			46.1	1977
LOWEST ANNUAL MEAN			1910	Dec 2 1977
HIGHEST DAILY MEAN	539	421	13	Oct 24 1987
LOWEST DAILY MEAN	14	13	8.6	Oct 23 1987
ANNUAL SEVEN-DAY MINIMUM	15	13	8.7	
ANNUAL RUNOFF (AC-FT)	58220	47930	53420	
ANNUAL RUNOFF (CFSM)	9.67	7.96	8.86	
ANNUAL RUNOFF (INCHES)	131.23	108.04	120.41	
10 PERCENT EXCEEDS	171	130	152	
50 PERCENT EXCEEDS	55	52	47	
90 PERCENT EXCEEDS	18	15	15	

SANDY RIVER BASIN

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

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to current year.

pH: October 1980 to September 1981, August 1990 to September 1992.

WATER TEMPERATURE: October 1978 to current year.

TURBIDITY: August 1990 to September 1994.

SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1986.

INSTRUMENTATION.--Water-quality monitor.

REMARKS.--Turbidity values herein are recorded values and may not reflect actual extremes for the day. Turbidity data prior to October 1990 are available in the files of the Portland field office.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 103 microsiemens Jan. 13, 1981 (cement spill); minimum, 7 microsiemens Jan. 31, 1995, Feb. 19, 1995.

pH: Maximum recorded, 9.8 units Jan. 13, 1981 (cement spill); minimum recorded, 6.3 units June 19, 1981.

WATER TEMPERATURE: Maximum, 15.0°C July 28, 1998; minimum, 0.0°C on several days during winter periods.

TURBIDITY: Maximum recorded, 25 NTU Nov. 24, 1990; minimum recorded, 0.06 NTU Sept. 7, 13, 14, 1992.

SEDIMENT CONCENTRATION: Maximum daily, 205 mg/L Dec. 25, 1980; minimum, 0 mg/L on many days.

SEDIMENT DISCHARGE: Maximum daily, 765 tons Feb. 23, 1986; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 43 microsiemens several days in September; minimum, 14 microsiemens Oct. 30, Dec. 16, 17.

WATER TEMPERATURE: Maximum recorded, 15.0°C July 28; minimum, 0.0°C Jan. 11, 12.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	22	21	21	27	26	26	38	37	38	42	41	42
2	23	22	22	28	27	27	39	37	38	42	41	42
3	24	23	23	29	27	28	39	38	39	43	41	42
4	25	24	24	29	27	28	40	38	39	42	41	42
5	26	25	25	29	28	29	40	38	39	42	41	42
6	27	25	26	30	29	29	39	38	39	42	41	42
7	28	26	27	31	29	30	39	38	39	42	41	42
8	29	27	28	31	30	31	40	38	39	42	41	42
9	29	28	28	32	31	31	40					

SANDY RIVER BASIN

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

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	10.5	10.0	10.0	8.0	7.5	8.0	6.0	5.0	5.5	5.5	3.5	5.0
2	10.0	9.5	9.5	8.0	7.0	7.5	5.0	4.5	4.5	3.5	3.0	3.5
3	10.5	9.5	10.0	8.0	7.0	7.5	4.5	4.0	4.5	3.5	3.0	3.0
4	10.0	10.0	10.0	9.0	8.0	8.5	4.5	4.0	4.5	3.5	3.0	3.0
5	10.0	9.0	9.5	9.5	8.5	9.0	4.5	4.0	4.0	3.5	3.0	3.5
6	9.0	8.0	8.5	9.0	9.0	9.0	4.0	3.5	4.0	4.0	3.5	3.5
7	8.5	8.0	8.0	9.0	7.5	8.5	4.0	4.0	4.0	4.0	3.5	4.0
8	8.5	7.5	8.0	7.5	7.0	7.5	4.0	4.0	4.0	4.0	1.5	3.5
9	8.5	8.0	8.0	7.5	7.0	7.0	4.0	3.0	3.5	3.5	3.0	3.0
10	8.0	7.5	7.5	7.0	6.5	7.0	4.5	3.5	4.0	4.0	2.5	3.5
11	7.5	7.5	7.5	7.0	6.0	6.5	4.5	3.5	4.0	2.5	.0	1.0
12	8.0	7.5	8.0	6.5	5.5	6.0	4.5	3.5	4.0	1.5	.0	.5
13	8.5	8.0	8.5	6.0	5.5	5.5	4.0	3.5	4.0	2.5	1.5	2.0
14	9.0	8.0	8.5	6.5	5.5	6.0	4.5	4.0	4.5	3.5	2.5	3.0
15	9.5	8.5	9.0	5.5	5.0	5.5	4.5	4.0	4.0	3.5	3.0	3.0
16	9.5	8.5	9.0	6.0	5.0	5.5	5.0	4.0	4.5	4.0	3.0	3.5
17	9.0	8.5	8.5	6.5	6.0	6.0	4.5	4.0	4.5	4.0	3.0	3.5
18	8.5	8.0	8.5	6.5	6.0	6.0	4.5	3.5	4.0	3.5	3.0	3.5
19	8.0	7.0	8.0	6.5	6.0	6.5	4.0	3.5	4.0	3.5	3.5	3.5
20	8.0	6.5	7.0	7.0	6.5	6.5	4.0	3.5	4.0	4.0	3.5	3.5
21	7.5	6.5	7.0	7.0	6.0	6.5	4.0	3.5	3.5	4.0	3.5	3.5
22	7.0	6.5	7.0	6.5	6.0	6.0	3.5	3.0	3.5	4.5	4.0	4.0
23	7.0	6.5	7.0	7.0	6.5	7.0	3.5	3.0	3.0	4.5	3.5	4.0
24	7.0	6.0	6.5	7.0	6.5	7.0	4.0	3.0	3.5	4.5	4.0	4.0
25	6.5	5.5	6.0	6.5	5.5	6.0	3.0	3.0	3.0	4.5	4.0	4.0
26	7.0	6.0	6.5	6.0	5.0	5.5	3.5	3.0	3.0	4.5	4.5	4.5
27	7.5	6.5	7.0	6.0	5.0	5.5	4.0	3.5	3.5	5.0	4.5	4.5
28	7.0	6.5	6.5	6.5	6.0	6.5	4.5	3.5	4.0	5.0	4.0	4.5
29	8.0	7.0	7.5	6.5	6.0	6.5	5.0	4.0	4.5	5.0	4.5	5.0
30	9.5	8.0	8.5	6.0	6.0	6.0	5.0	4.0	4.5	4.5	4.0	4.5
31	8.5	8.0	8.5	---	---	---	5.0	4.0	4.5	4.5	4.0	4.0
MONTH	10.5	5.5	8.0	9.5	5.0	6.7	6.0	3.0	4.0	5.5	.0	3.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.5	4.0	4.0	4.5	3.5	4.0	5.0	4.0	4.5	11.5	10.0	11.0
2	4.5	3.5	4.0	4.0	3.0	3.5	5.5	4.5	5.0	10.5	10.0	10.5
3	5.0	4.0	4.5	3.5	2.5	3.0	5.5	5.0	5.0	10.0	9.5	10.0
4	5.5	4.5	5.0	3.5	2.5	3.0	5.5	5.0	5.0	10.0	9.5	9.5
5	5.5	4.5	5.0	3.5	2.5	3.0	6.0	5.0	5.0	9.5	9.0	9.5
6	5.5	5.0	5.0	3.5	2.5	3.0	6.0	5.0	5.5	9.5	9.0	9.5
7	5.0	4.5	5.0	3.5	2.5	3.0	5.5	4.5	5.0	10.0	8.5	9.0
8	5.0	4.5	5.0	4.0	3.5	3.5	6.0	4.0	5.0	9.0	8.0	8.5
9	4.5	4.0	4.5	4.0	3.5	3.5	6.0	5.0	5.5	8.0	7.5	7.5
10	4.5	4.0	4.0	4.5	3.5	4.0	6.0	5.0	5.5	7.5	7.0	7.5
11	4.5	4.0	4.0	5.5	3.5	4.5	5.5	4.5	5.0	8.0	7.0	7.5
12	5.0	4.5	4.5	5.5	4.5	5.0	5.0	4.0	4.5	7.5	7.0	7.0
13	4.5	4.0	4.0	6.0	4.5	5.5	5.0	4.5	4.5	7.5	7.0	7.0
14	4.5	4.0	4.5	6.0	5.0	5.5	5.0	4.5	4.5	7.0	6.5	7.0
15	4.5	4.0	4.0	5.5	5.0	5.5	5.0	4.5	5.0	7.0	6.0	6.5
16	4.5	3.5	4.0	5.5	5.0	5.0	6.0	4.5	5.0	6.5	6.0	6.5
17	5.0	4.5	4.5	5.0	4.0	4.5	6.5	4.5	5.5	6.5	6.0	6.5
18	5.0	4.5	4.5	5.5	4.5	5.0	7.5	5.5	6.5	8.0	6.5	7.0
19	5.0	4.5	5.0	6.0	5.0	5.5	7.0	6.0	6.5	8.0	7.0	7.5
20	5.0	4.5	4.5	7.0	5.5	6.0	8.0	5.5	6.5	8.0	7.5	7.5
21	4.5	3.5	4.0	6.5	6.0	6.0	8.5	6.5	7.5	7.5	7.0	7.5
22	4.0	3.0	3.5	6.0	5.5	6.0	9.5	7.5	8.0	7.5	7.0	7.0
23	4.5	3.0	3.5	5.5	5.5	5.5	8.5	7.0	8.0	8.0	7.0	7.5
24	3.5	3.0	3.5	6.5	5.0	5.5	7.0	6.0	6.0	8.5	7.5	8.0
25	3.5	2.5	3.0	6.0	5.5	5.5	6.5	5.5	6.0	8.0	6.5	7.0
26	4.0	2.5	3.0	5.5	3.5	4.5	7.5	5.5	6.5	7.0	6.5	7.0
27	3.5	2.5	3.0	3.5	3.0	3.5	9.0	6.5	8.0	7.5	6.5	7.0
28	4.0	3.5	4.0	4.0	3.0	3.5	10.0	7.5	8.5	9.0	6.5	7.5
29	---	---	---	4.5	3.0	4.0	10.5	8.5	9.5	8.5	8.0	8.0
30	---	---	---	5.0	3.5	4.5	11.5	9.5	10.5	8.0	7.5	8.0
31	---	---	---	4.5	4.0	4.5	---	---	---	10.0	7.0	8.5
MONTH	5.5	2.5	4.2	7.0	2.5	4.5	11.5	4.0	6.1	11.5	6.0	7.9

SANDY RIVER BASIN

14139000 BULL RUN RESERVOIR NUMBER ONE NEAR BULL RUN, OR

LOCATION.--Lat 45°28'50", long 122°04'50", in NW 1/4 SW 1/4 sec.16, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, in Mount Hood National Forest, in control house of Bear Creek Dam on Bull Run River, 8.2 mi northeast of Bull Run, and at mile 11.2.

DRAINAGE AREA.--74.6 mi².

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

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

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

REMARKS.--Midnight readings Oct. 14-22, Aug. 2 to Sept. 30, furnished by Portland General Electric. Lake is formed by concrete dam completed in March 1929 for water supply of city of Portland. Storage began about Apr. 29, 1929; first filling occurred May 15, 1929. Capacity, 26,930 acre-ft at crest of spillway, elevation, 1,036.0 ft; capacity increased in October 1954 to 30,140 acre-ft at elevation 1,044.0 ft by installation of three gates 40 ft wide and 8 ft high. No dead storage. Water is used for power generation by Portland General Electric Co. and municipal supply for city of Portland.

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

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 30,830 acre-ft May 20, elevation, 1,045.6 ft; minimum contents, 7,110 acre-ft Sept. 30, elevation, 964.65 ft.

Capacity table (elevation, in feet, and capacity, in acre-feet)

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

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1026.62	1035.7	1035.2	1035.1	1035.2	1036.1	1035.0	1041.1	1044.9	1045.0	1034.7	1001.91
2	1027.74	1034.6	1034.6	1035.0	1034.6	1036.0	1035.2	1041.1	1044.5	1045.1	1034.7	1002.37
3	1031.80	1034.8	1034.6	1035.0	1035.0	1035.7	1034.8	1041.0	1044.5	1045.0	1034.15	1002.78
4	1035.81	1034.9	1034.3	1035.1	1035.0	1034.7	1034.5	1041.1	1044.8	1044.8	1034.60	1003.27
5	1035.74	1034.9	1035.0	1035.5	1034.8	1034.8	1034.7	1041.4	1045.0	1045.1	1034.10	1001.94
6	1034.45	1034.3	1035.0	1035.1	1035.2	1034.7	1034.3	1042.0	1044.8	1045.1	1034.55	1001.15
7	1035.51	1034.4	1034.8	1034.8	1035.4	1034.9	1034.2	1042.3	1045.0	1045.1	1034.46	999.26
8	1035.33	1034.7	1034.9	1035.0	1034.4	1035.2	1034.4	1042.6	1044.8	1045.1	1032.29	998.56
9	1034.32	1034.5	1034.5	1035.0	1035.5	1035.3	1034.3	1042.8	1044.8	1045.3	1031.62	996.78
10	1034.61	1034.1	1035.2	1034.8	1037.3	1035.0	1034.8	1043.3	1044.9	1045.2	1031.52	993.87
11	1034.61	1034.4	1035.1	1034.7	1037.5	1035.0	1035.4	1043.7	1045.1	1045.3	1027.75	992.01
12	1034.58	1035.1	1034.4	1034.9	1038.4	1035.4	1035.2	1044.0	1044.7	1045.1	1024.72	989.47
13	1035.64	1034.7	1034.2	1035.7	1036.5	1035.4	1034.9	1044.6	1044.7	1045.0	1021.73	985.80
14	1034.80	1034.2	1034.5	1039.7	1034.6	1034.8	1035.3	1044.5	1044.8	1045.0	1018.70	984.12
15	1034.97	1034.2	1034.8	1038.9	1034.2	1034.4	1036.0	1044.9	1044.5	1044.2	1016.78	981.55
16	1034.57	1034.3	1040.0	1036.6	1035.5	1034.8	1037.1	1044.5	1044.7	1043.8	1015.77	976.68
17	1034.33	1034.5	1037.0	1038.8	1035.5	1035.0	1037.9	1045.3	1045.2	1043.1	1014.32	970.51
18	1034.31	1034.7	1035.3	1036.8	1034.6	1034.9	1038.1	1044.9	1044.9	1042.5	1013.96	970.25
19	1035.64	1034.5	1034.8	1036.0	1035.5	1035.0	1038.5	1043.9	1044.9	1042.3	1011.21	973.62
20	1034.67	1036.0	1034.5	1035.6	1035.0	1034.8	1039.3	1044.5	1045.1	1041.9	1009.31	973.73
21	1034.39	1035.9	1034.5	1034.9	1035.4	1034.9	1039.2	1045.1	1045.0	1041.9	1008.10	974.65
22	1034.3	1034.5	1034.5	1035.9	1034.8	1035.4	1038.9	1044.2	1044.8	1040.2	1007.17	975.50
23	1034.5	1035.6	1034.6	1035.7	1035.0	1035.1	1041.0	1044.5	1045.0	1039.4	1005.86	973.22
24	1029.5	1035.1	1034.5	1035.6	1035.0	1035.3	1041.0	1045.1	1045.3	1038.4	1004.87	971.73
25	1023.7	1035.0	1034.5	1035.2	1034.9	1035.2	1041.0	1044.0	1045.3	1038.0	1003.97	970.80
26	1023.3	1034.7	1034.9	1035.8	1034.8	1035.3	1040.6	1045.0	1044.7	1037.1	1002.66	969.51
27	1021.1	1034.8	1035.0	1035.2	1034.8	1035.1	1041.1	1044.2	1045.2	1036.9	1001.29	967.74
28	1022.2	1035.4	1035.2	1034.8	1035.7	1034.7	1041.0	1044.7	1045.0	1035.0	1000.04	966.33
29	1027.2	1034.9	1034.9	1036.2	---	1034.7	1041.1	1044.7	1044.8	1034.5	1000.50	965.53
30	1040.6	1035.5	1034.8	1035.4	---	1034.9	1041.1	1044.9	1045.1	1034.7	1000.98	964.65
31	1036.9	---	1034.9	1035.3	---	1034.8	---	1044.7	---	1034.7	1001.45	---
MAX	1040.60	1036.00	1040.00	1039.70	1038.40	1036.10	1041.10	1045.30	1045.30	1045.30	1034.70	1003.27
MIN	1021.10	1034.10	1034.20	1034.70	1034.20	1034.40	1034.20	1041.00	1044.50	1034.50	1000.04	964.65
(†)	27280	26740	26510	26660	26820	26470	28940	30440	30610	26440	15410	7110
(‡)	+4320	-540	-230	+150	+160	-350	+2470	+1500	+170	-4170	-11030	-15850

CAL YR 1997 MAX 1045.21 MIN 1002.65 AC-FT‡ -1760
WTR YR 1998 MAX 1045.30 MIN 964.65 AC-FT‡ -15850

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

ANNUAL TOTAL	26304.3		20799.3				
ANNUAL MEAN	72.1		57.0			66.5	
HIGHEST ANNUAL MEAN						105	1974
LOWEST ANNUAL MEAN						41.8	1977
HIGHEST DAILY MEAN	580	Jan 31	415	Jan 17	1440		Feb 7 1996
LOWEST DAILY MEAN	9.2	Sep 10	6.9	Sep 17		4.8	Oct 28 1987
ANNUAL SEVEN-DAY MINIMUM	9.8	Sep 4	7.1	Sep 11		4.9	Oct 23 1987
ANNUAL RUNOFF (AC-FT)	52170		41260		48140		
ANNUAL RUNOFF (CFSM)	9.09		7.19			8.38	
ANNUAL RUNOFF (INCHES)	123.39		97.57			113.86	
10 PERCENT EXCEEDS	150		114			142	
50 PERCENT EXCEEDS	47		41			41	
90 PERCENT EXCEEDS	14		10			12	

SANDY RIVER BASIN

14139800 SOUTH FORK BULL RUN RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°26'38", long 122°06'20", in NE 1/4 NE 1/4 sec.31, T.1 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 6.2 mi northeast of Bull Run, and at mile 0.6.

DRAINAGE AREA.--15.4 mi²

WATER-DISCHARGE RECORDS

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

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

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

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

AVERAGE DISCHARGE.--24 years (water years 1975-98), 112 ft³/s, 98.66 in/yr, 81,010 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1930	*1,590	*6.93	No other peak greater than base discharge.			
Minimum discharge, 11 ft ³ /s Sept. 8-18.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	37	301	92	128	142	449	97	69	167	67	18	12
2	57	205	81	138	128	402	87	67	130	59	17	12
3	102	150	72	107	108	317	83	59	103	53	17	12
4	170	126	65	96	98	249	78	54	86	49	16	12
5	217	95	58	108	90	190	72	50	75	46	16	12
6	144	81	53	159	98	149	69	46	65	42	16	12
7	106	98	56	295	90	120	77	43	58	38	16	12
8	154	85	67	229	87	140	75	44	52	35	15	12
9	176	75	64	167	82	182	71	46	48	33	15	12
10	127	67	119	145	91	193	96	47	58	31	15	11
11	181	60	107	127	109	197	135	58	55	30	15	11
12	222	54	93	109	165	198	135	54	47	28	15	11
13	183	49	82	273	206	184	127	72	44	27	14	11
14	138	45	78	482	173	159	116	165	41	26	14	11
15	105	41	102	438	224	144	104	297	45	25	14	11
16	83	38	534	390	174	130	97	250	54	24	14	11
17	69	95	576	788	149	108	87	309	48	23	14	11
18	61	79	311	487	147	93	82	285	46	23	14	48
19	53	68	220	430	162	83	88	233	56	22	14	62
20	47	195	187	318	155	76	77	227	51	22	13	23
21	43	280	163	252	274	79	72	211	47	21	13	18
22	39	207	125	249	266	197	69	197	45	20	13	16
23	42	200	111	345	211	201	90	166	44	20	13	15
24	40	258	107	331	161	177	142	166	52	20	14	15
25	35	231	91	349	135	162	143	249	108	19	13	31
26	32	176	81	316	113	210	117	224	222	19	13	33
27	31	134	100	270	97	213	99	174	167	18	13	22
28	31	115	157	225	205	173	88	136	122	18	13	20
29	168	109	190	212	---	141	81	158	92	18	13	18
30	667	105	156	211	---	119	74	274	74	17	13	17
31	653	---	128	166	---	109	---	222	---	18	12	---
TOTAL	4213	3822	4426	8340	4140	5544	2828	4652	2302	911	445	534
MEAN	136	127	143	269	148	179	94.3	150	76.7	29.4	14.4	17.8
MAX	667	301	576	788	274	449	143	309	222	67	18	62
MIN	31	38	53	96	82	76	69	43	41	17	12	11
AC-FT	8360	7580	8780	16540	8210	11000	5610	9230	4570	1810	883	1060
CFSM	8.82	8.27	9.27	17.5	9.60	11.6	6.12	9.74	4.98	1.91	.93	1.16
IN.	10.18	9.23	10.69	20.15	10.00	13.39	6.83	11.24	5.56	2.20	1.07	1.29

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1998, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	66.2	167	194	187	180	148	145	102	70.8	33.2	22.0	32.3												
MAX	146	313	413	321	353	275	215	162	180	91.2	53.2	93.4												
(WY)	1997	1996	1997	1997	1996	1997	1976	1977	1981	1983	1978	1977												
MIN	8.31	23.3	50.4	58.3	54.7	53.8	89.6	47.1	15.4	14.8	11.7	9.03												
(WY)	1988	1994	1977	1979	1979	1992	1983	1992	1992	1992	1994	1994												

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1975 - 1998

	1997	1998	1975-1998
ANNUAL TOTAL	49631	42157	
ANNUAL MEAN	136	115	112
HIGHEST ANNUAL MEAN			171
LOWEST ANNUAL MEAN			75.4
HIGHEST DAILY MEAN	1310	788	2830
LOWEST DAILY MEAN	15	11	5.6
ANNUAL SEVEN-DAY MINIMUM	16	11	5.7
ANNUAL RUNOFF (AC-FT)	98440	83620	81010
ANNUAL RUNOFF (CFSM)	8.83	7.50	7.26
ANNUAL RUNOFF (INCHES)	119.89	101.83	98.66
10 PERCENT EXCEEDS	281	239	237
50 PERCENT EXCEEDS	91	87	74
90 PERCENT EXCEEDS	21	15	16

WATER-QUALITY RECORDS

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

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

SPECIFIC CONDUCTANCE: Maximum, 45 microsiemens Sept. 6; minimum, 17 microsiemens Jan. 14, 17, 18, Mar. 1, but may have been less during period of missing record.
WATER TEMPERATURE: Maximum, 17.0°C July 27-29; minimum, 0.5°C Jan. 11, 12.

[illegible]

SANDY RIVER BASIN

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

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	22	21	22	26	25	25	37	36	37	42	41	42
2	23	22	22	26	25	26	37	36	37	42	41	42
3	24	23	23	27	26	26	37	36	37	42	41	42
4	24	24	24	28	26	27	38	37	37	43	42	42
5	25	24	25	28	26	28	38	37	37	43	42	42
6	26	25	25	29	28	29	37	37	37	45	42	44
7	28	26	26	30	29	29	38	36	37	44	42	43
8	28	26	27	30	29	30	39	38	38	42	41	42
9	29	28	29	31	30	30	39	37	38	42	41	42
10	29	26	28	31	30	31	38	38	38	42	41	42
11	29	26	27	32	31	31	39	38	39	42	42	42
12	30	29	29	33	31	32	39	38	39	42	42	42
13	30	29	30	32	31	32	40	39	39	42	42	42
14	31	29	30	33	32	32	40	38	39	43	42	42
15	31	29	30	33	32	33	39	38	39	43	42	42
16	30	28	29	34	33	33	39	38	38	43	42	43
17	30	29	29	34	33	34	40	39	39	44	42	43
18	30	29	29	34	33	34	40	39	40	44	31	40
19	30	28	29	35	34	34	40	39	40	34	31	32
20	30	29	29	35	34	34	41	39	40	36	34	35
21	30	29	30	35	34	35	41	39	40	37	36	37
22	30	30	30	36	35	35	41	40	40	38	37	37
23	31	30	30	36	35	35	41	40	40	38	37	38
24	31	29	30	36	35	35	41	40	40	39	38	38
25	29	23	26	36	35	36	41	40	40	38	34	36
26	23	21	21	37	36	36	41	40	40	34	32	34
27	22	21	22	37	36	37	41	40	41	35	34	34
28	23	22	23	38	37	37	41	41	41	36	34	35
29	25	23	24	38	36	37	42	41	41	36	35	35
30	25	24	25	37	36	37	42	41	41	36	35	36
31	---	---	---	38	37	37	42	41	42	---	---	---
MONTH	31	21	27	38	25	32	42	36	39	45	31	40

SANDY RIVER BASIN

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	11.0	10.0	11.0	8.5	8.0	8.5	6.5	5.0	5.5	---	---	---
2	10.5	10.0	10.0	8.0	7.5	8.0	5.0	4.5	5.0	---	---	---
3	10.5	10.0	10.5	8.5	7.5	8.0	4.5	4.5	4.5	---	---	---
4	10.5	10.0	10.5	8.5	8.5	8.5	5.0	4.5	4.5	---	---	---
5	10.0	9.5	10.0	9.0	8.5	8.5	4.5	4.0	4.5	---	---	---
6	9.5	8.5	9.0	9.0	8.5	9.0	4.0	3.5	4.0	---	---	---
7	9.0	8.5	8.5	9.0	8.0	8.5	4.5	4.0	4.5	---	---	---
8	9.0	8.0	8.5	8.0	7.5	7.5	4.5	4.5	4.5	4.5	4.0	4.0
9	8.5	8.5	8.5	7.5	7.0	7.0	4.5	3.5	4.0	4.0	3.5	3.5
10	8.5	8.0	8.0	7.0	6.5	6.5	4.5	4.0	4.0	4.5	3.0	4.0
11	8.0	8.0	8.0	7.0	6.5	6.5	4.5	4.0	4.0	3.0	.5	1.0
12	8.5	8.0	8.5	6.5	5.5	6.0	4.5	4.0	4.0	2.0	.5	1.5
13	8.5	8.0	8.5	5.5	5.0	5.5	4.5	4.0	4.0	3.5	1.5	2.5
14	8.5	8.0	8.5	6.0	5.5	6.0	5.0	4.5	5.0	4.0	3.0	3.5
15	9.0	8.0	8.5	5.5	5.0	5.5	5.0	4.5	5.0	4.5	4.0	4.0
16	9.0	8.0	8.5	6.0	5.5	5.5	6.0	5.0	5.5	4.5	4.5	4.5
17	9.0	8.5	8.5	6.5	6.0	6.5	6.0	5.5	5.5	4.5	3.5	4.5
18	9.0	8.5	8.5	6.5	6.0	6.5	5.5	5.0	5.0	5.0	4.5	5.0
19	8.5	7.5	8.0	6.5	6.5	6.5	5.5	4.5	5.0	5.0	4.5	5.0
20	7.5	6.5	7.0	7.0	6.5	7.0	5.0	4.5	5.0	5.0	4.5	4.5
21	7.0	6.5	6.5	7.0	6.5	7.0	5.0	4.5	4.5	5.0	4.5	4.5
22	7.0	6.5	7.0	7.0	6.5	6.5	4.5	3.5	4.0	5.0	5.0	5.0
23	7.5	7.0	7.5	7.5	7.0	7.0	4.0	3.5	4.0	5.0	4.5	5.0
24	7.5	7.0	7.0	7.5	7.0	7.0	4.0	4.0	4.0	5.0	5.0	5.0
25	7.0	6.0	6.5	7.0	6.0	6.5	4.0	3.5	3.5	5.5	5.0	5.0
26	6.5	6.0	6.5	6.5	6.0	6.5	3.5	3.0	3.5	5.5	5.5	5.5
27	7.0	6.5	7.0	6.0	5.5	5.5	4.5	3.5	4.0	5.5	5.5	5.5
28	7.5	6.5	7.0	7.0	6.0	6.5	5.0	4.0	4.5	5.5	5.0	5.5
29	8.5	7.0	8.0	7.0	6.5	7.0	5.0	4.5	5.0	6.0	5.5	6.0
30	9.5	8.5	9.0	6.5	6.0	6.5	---	---	---	5.5	5.0	5.5
31	9.0	8.5	9.0	---	---	---	---	---	---	5.0	4.5	5.0
MONTH	11.0	6.0	8.3	9.0	5.0	6.9	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.5	4.5	5.0	5.5	4.5	5.0	5.5	4.5	5.0	12.0	10.5	11.0
2	5.0	4.5	5.0	5.0	4.5	5.0	6.0	5.0	5.5	11.5	10.5	10.5
3	5.5	5.0	5.0	4.5	3.5	4.0	5.5	5.5	5.5	10.5	10.0	10.0
4	6.0	5.5	5.5	4.0	3.5	4.0	6.0	5.5	5.5	10.0	9.5	10.0
5	6.0	5.5	5.5	4.0	3.5	3.5	6.5	5.5	6.0	10.0	9.5	9.5
6	6.0	6.0	6.0	4.0	3.5	3.5	6.5	5.5	6.0	10.0	9.5	10.0
7	6.0	5.5	5.5	4.0	3.5	4.0	6.0	5.5	5.5	10.5	9.5	10.0
8	5.5	5.5	5.5	4.5	4.0	4.5	5.5	4.5	5.0	10.0	8.5	9.5
9	5.5	5.0	5.5	4.5	4.0	4.5	6.0	5.5	5.5	8.5	8.0	8.0
10	5.0	5.0	5.0	5.0	4.0	4.5	6.0	5.5	6.0	8.0	8.0	8.0
11	5.5	5.0	5.0	6.0	4.5	5.0	5.5	5.5	5.5	8.5	7.5	8.0
12	6.0	5.5	5.5	6.0	5.0	5.5	5.5	5.0	5.0	8.0	7.5	8.0
13	5.5	5.0	5.5	6.5	5.5	6.0	5.5	5.0	5.0	7.5	7.5	7.5
14	5.5	5.0	5.5	6.5	5.5	6.0	5.5	5.0	5.0	7.5	7.0	7.0
15	5.5	5.0	5.5	6.5	6.0	6.0	5.5	5.0	5.5	7.0	6.5	7.0
16	5.5	4.5	5.0	6.0	5.5	6.0	6.5	5.0	6.0	6.5	6.5	6.5
17	5.5	5.0	5.5	5.5	5.0	5.0	7.0	5.5	6.0	7.0	6.5	6.5
18	5.5	5.0	5.0	6.0	4.5	5.0	7.0	6.0	6.5	8.5	6.5	7.5
19	6.0	5.5	5.5	6.5	5.0	5.5	7.5	6.5	7.0	7.5	7.0	7.5
20	6.0	5.0	5.5	7.0	6.0	6.5	7.5	6.0	7.0	8.0	7.5	7.5
21	5.5	5.0	5.0	6.5	6.0	6.5	8.5	6.5	7.5	7.5	7.5	7.5
22	5.0	4.0	4.5	6.5	6.5	6.5	9.0	7.5	8.5	8.0	7.0	7.5
23	5.0	4.0	4.5	6.5	6.0	6.5	9.0	7.5	8.5	8.0	7.5	7.5
24	4.5	4.0	4.0	6.5	6.0	6.5	7.5	6.5	6.5	8.5	7.5	8.0
25	4.5	3.5	4.0	6.5	6.0	6.5	7.0	6.0	6.5	8.0	7.0	7.5
26	4.0	3.5	4.0	6.0	5.0	5.5	8.0	5.5	6.5	7.5	6.5	7.0
27	4.0	3.0	3.5	5.0	4.0	4.5	9.0	6.5	8.0	8.5	7.0	7.5
28	4.5	4.0	4.0	5.0	4.0	4.5	10.0	7.5	9.0	9.5	6.5	8.0
29	---	---	---	5.0	4.0	4.5	10.5	8.5	9.5	9.0	8.0	8.5
30	---	---	---	5.0	4.0	4.5	11.5	9.5	10.5	8.0	7.5	8.0
31	---	---	---	5.0	4.5	5.0	---	---	---	10.5	7.0	8.5
MONTH	6.0	3.0	5.0	7.0	3.5	5.2	11.5	4.5	6.5	12.0	6.5	8.2

SANDY RIVER BASIN

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

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.5	8.5	9.5	10.5	10.0	10.5	14.5	13.5	14.0	14.5	13.5	14.0
2	10.5	9.0	9.5	10.5	10.0	10.5	15.0	13.0	14.0	14.5	13.5	14.0
3	10.5	9.0	10.0	10.0	10.0	10.0	15.5	13.5	14.5	14.5	13.5	14.0
4	10.5	9.5	9.5	10.0	10.0	10.0	16.0	14.5	15.5	14.5	13.5	14.0
5	10.5	9.0	9.5	11.0	10.0	10.5	16.0	15.0	15.5	14.0	13.0	13.5
6	11.5	9.5	10.5	12.5	10.0	11.0	15.5	15.0	15.5	14.0	13.0	13.5
7	12.5	10.5	11.5	12.0	11.5	12.0	15.0	14.0	14.5	13.5	12.5	13.0
8	12.0	11.0	11.5	13.5	11.5	12.5	15.0	13.5	14.0	13.5	12.5	13.0
9	12.5	11.0	12.0	14.0	12.0	13.0	15.0	13.5	14.0	12.5	12.0	12.5
10	12.0	10.5	11.5	14.0	13.0	13.5	15.0	13.0	14.0	12.0	11.5	11.5
11	10.5	10.0	10.5	13.0	12.5	13.0	15.0	13.5	14.5	12.0	11.0	11.5
12	10.5	10.0	10.5	13.0	12.0	12.5	15.5	14.0	15.0	12.0	11.5	12.0
13	11.0	10.5	10.5	13.5	12.0	13.0	16.0	14.5	15.5	12.0	11.5	12.0
14	11.0	10.0	10.5	13.5	12.5	13.0	16.5	15.0	15.5	12.0	11.5	12.0
15	11.0	10.0	10.5	14.5	13.0	13.5	15.5	14.5	15.0	12.5	11.0	12.0
16	10.0	9.5	9.5	15.0	13.5	14.5	14.5	13.5	14.0	12.0	11.5	12.0
17	11.5	9.0	10.0	15.5	14.0	15.0	14.0	12.5	13.0	12.0	11.5	12.0
18	11.0	10.0	10.5	16.0	14.0	15.0	13.5	12.5	13.0	12.0	11.5	11.5
19	10.0	9.5	9.5	15.0	14.0	14.5	13.5	11.5	12.5	11.5	11.5	11.5
20	12.0	9.0	10.5	15.0	13.0	14.0	14.0	12.5	13.0	11.5	11.0	11.5
21	13.0	10.5	12.0	15.5	13.5	14.5	13.5	13.0	13.0	11.5	10.5	11.0
22	12.5	12.0	12.0	16.0	14.0	15.0	13.5	12.5	13.0	11.5	10.5	11.0
23	12.0	11.0	11.5	16.0	15.0	15.5	13.0	13.0	13.0	11.0	10.5	11.0
24	11.0	10.5	11.0	16.0	14.5	15.0	13.0	12.0	12.5	11.0	10.5	10.5
25	10.5	9.5	10.0	16.0	14.0	15.0	13.0	12.0	12.5	11.0	10.5	10.5
26	9.5	9.0	9.5	16.5	15.0	15.5	13.0	12.0	12.5	10.5	9.5	10.0
27	11.5	8.5	10.0	17.0	15.5	16.0	13.0	12.0	12.5	10.5	9.5	10.0
28	12.0	9.0	10.5	17.0	15.5	16.0	13.5	12.0	13.0	10.5	9.5	10.0
29	12.5	10.0	11.0	17.0	16.0	16.5	14.0	12.5	13.5	10.0	9.5	10.0
30	11.5	10.5	11.0	16.5	15.5	16.0	14.0	12.5	13.5	10.5	9.5	10.0
31	---	---	---	16.0	14.5	15.0	14.5	13.0	13.5	---	---	---
MONTH	13.0	8.5	10.5	17.0	10.0	13.6	16.5	11.5	13.8	14.5	9.5	11.8

SANDY RIVER BASIN

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14139900 BULL RUN RESERVOIR NUMBER TWO NEAR BULL RUN, OR

LOCATION.--Lat 45°26'55", long 122°08'45", on line between secs.25 and 26, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on headworks dam on Bull Run River, 4.4 mi northeast of Bull Run, and at mile 6.5.

DRAINAGE AREA.--102 mi².

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

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

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

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

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

EXTREMES FOR CURRENT YEAR.--Maximum contents, 22,000 acre-ft Oct. 30, elevation, 862.27 ft; minimum contents, 16,300 acre-ft Sept. 9, elevation, 848.61 ft.

Capacity table (elevation, in feet, and capacity in acre-feet)

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

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	858.65	859.63	859.30	859.58	859.46	860.38	859.31	859.51	859.59	860.04	857.58	854.15
2	859.03	859.37	859.72	859.05	859.77	860.47	859.00	859.56	859.44	860.03	856.89	852.39
3	858.67	859.19	859.80	859.28	858.80	859.78	858.97	859.60	859.61	860.10	856.47	850.76
4	858.74	858.70	859.96	859.26	859.17	859.00	858.88	859.58	859.89	860.16	855.16	849.53
5	859.85	858.35	859.02	859.64	859.81	859.27	858.31	859.47	859.68	860.06	854.72	849.57
6	858.62	859.48	858.74	859.40	858.85	859.13	858.52	859.34	859.82	859.67	853.37	849.42
7	858.40	859.34	858.88	859.85	859.20	859.24	858.76	859.41	859.71	859.85	852.59	849.88
8	859.37	858.88	858.91	859.64	859.90	859.61	858.60	859.43	859.91	859.87	853.76	849.39
9	858.88	859.17	859.49	859.61	859.25	859.77	858.81	859.54	859.61	859.77	853.36	849.67
10	859.76	859.53	859.94	859.37	858.57	858.65	859.29	859.57	859.81	859.82	853.38	850.97
11	859.93	859.41	859.54	859.45	859.34	859.49	859.85	859.56	859.67	859.67	854.73	851.34
12	859.66	858.68	859.57	859.43	859.62	859.91	859.49	859.80	859.84	859.71	856.26	852.07
13	858.55	858.83	859.49	860.01	859.34	859.19	859.57	859.29	859.46	859.77	857.69	853.04
14	859.01	859.08	859.42	861.08	859.91	859.78	859.65	859.81	859.25	859.75	858.94	853.15
15	859.14	858.85	859.98	860.52	859.75	859.38	859.80	859.51	859.50	859.89	859.36	853.66
16	859.00	858.68	861.95	860.78	859.64	859.50	859.43	859.49	860.01	859.85	859.13	855.27
17	858.73	859.47	860.98	861.65	859.15	859.00	859.32	859.96	859.97	859.89	859.27	857.04
18	859.31	859.45	859.94	860.94	859.87	859.15	859.09	859.89	859.86	859.89	858.46	857.98
19	858.38	859.70	859.26	860.60	859.39	859.18	859.21	859.50	859.97	859.54	859.38	857.89
20	857.73	860.21	859.26	859.93	859.33	858.78	858.80	859.79	859.90	859.49	859.81	857.20
21	852.20	860.04	858.98	859.41	859.49	858.91	859.69	859.73	859.92	859.83	859.84	856.33
22	851.92	858.93	859.05	858.77	859.49	858.90	859.64	859.91	859.95	859.86	859.65	855.90
23	851.61	859.67	859.65	860.09	859.35	859.30	859.17	859.97	859.87	859.74	859.82	855.98
24	855.76	859.65	859.79	860.55	859.56	859.56	859.70	859.61	859.81	860.11	859.83	856.14
25	859.13	859.72	859.21	860.23	859.52	859.44	859.22	859.85	860.01	859.78	859.68	856.57
26	858.73	859.72	858.98	859.96	859.13	859.82	859.64	859.65	860.91	859.77	859.75	857.09
27	859.87	859.54	859.60	859.54	858.86	859.53	859.27	859.57	860.41	859.81	859.74	857.56
28	858.65	859.60	859.62	858.87	859.69	859.06	859.61	859.77	860.45	859.82	859.59	857.71
29	859.40	859.64	859.19	858.96	---	859.28	859.68	859.83	860.54	859.30	858.38	857.57
30	862.27	859.24	859.47	859.91	---	859.60	859.62	859.90	860.21	858.94	857.17	857.42
31	860.95	---	859.35	859.14	---	859.61	---	859.69	---	858.44	855.81	---
MAX	862.27	860.21	861.95	861.65	859.91	860.47	859.85	859.97	860.91	860.16	859.84	857.98
MIN	851.61	858.35	858.74	858.77	858.57	858.65	858.31	859.29	859.25	858.44	852.59	849.39
(†)	21420	20670	20710	20620	20860	20830	20830	20860	21090	20310	19160	19860
(‡)	+730	-750	+40	-90	+240	-30	0	+30	+230	-780	-1150	+700

CAL YR 1997 MAX 862.59 MIN 851.61 AC-FT† -920
WTR YR 1998 MAX 862.27 MIN 849.39 AC-FT† -830

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

‡ Change in contents, in acre-feet.

14140001 BULL RUN RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°26'15", long 122°10'40", in NE 1/4 SW 1/4 sec.34, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on left bank 1.8 mi downstream from Bull Run Reservoir Number Two, 2.7 mi northeast of Bull Run, and at mile 4.7.

DRAINAGE AREA.--107 mi².

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

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

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

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated since 1915 by Bull Run Lake capacity, 12,270 acre-ft, since 1929 by Bull Run Reservoir Number One (station 14139000), since 1958 by North Fork Reservoir, capacity, 1,030 acre-ft, and since 1961 by Bull Run Reservoir Number Two (station 14139900). All records given herein include flow diverted from Bull Run Reservoir Number Two for city of Portland, and that used by Portland General Electric Co. for power generation, which returns to Bull Run River downstream from station. Total diversion, 176,300 acre-ft of which 45,230 acre-ft were used for power generation and returned to Bull Run River.

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

AVERAGE DISCHARGE.--91 years (water years 1908-98), 778 ft³/s, 98.74 in/yr, 563,700 acre-ft/yr, adjusted for storage in Bull Run Reservoir Number One since 1929 and Bull Run Reservoir Number Two since 1961.

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

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

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 6,880 ft³/s Oct. 30, gage height, 10.99 ft; minimum discharge, 2.8 ft³/s Sept. 23, 24.

Combined flow, maximum discharge, 7,040 ft³/s (of which approximately 163 ft³/s were diverted for Portland water supply) Oct. 30; minimum daily, 168 ft³/s Sept. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	197	2270	654	769	852	2200	625	635	950	470	220	338
2	213	1380	554	1110	828	2280	575	608	725	367	263	361
3	212	845	451	590	857	1930	607	520	615	377	307	323
4	847	829	449	740	577	1670	568	446	470	361	297	262
5	1640	711	492	565	517	964	555	388	509	283	287	242
6	1550	413	412	1090	790	919	448	296	454	378	295	212
7	595	609	391	1560	617	693	467	287	389	279	268	240
8	880	587	395	1170	566	675	481	295	378	245	273	261
9	1490	438	398	866	577	937	424	280	418	226	300	254
10	580	407	440	910	427	e1310	372	258	365	241	296	203
11	1110	361	699	843	514	e817	503	268	358	232	293	231
12	1610	390	656	462	864	e906	815	281	379	226	305	241
13	1240	341	487	866	1710	1230	712	556	372	220	302	251
14	914	353	445	1830	1320	882	559	691	322	254	306	261
15	607	336	428	2870	1430	944	414	1310	313	272	310	246
16	657	310	2930	2760	809	819	426	1200	206	284	291	245
17	580	398	4540	4420	923	802	440	1290	193	299	289	236
18	289	547	2360	3680	878	620	431	1620	356	289	317	212
19	342	443	1440	2900	876	529	415	1460	300	266	307	168
20	588	1450	1050	2080	1020	651	422	1030	228	251	282	187
21	1530	2080	932	1670	1360	552	436	1060	282	289	268	208
22	397	1730	704	1440	1460	1180	439	1170	297	294	261	194
23	348	944	506	1890	1040	1360	401	856	258	305	243	191
24	386	e1970	587	2040	834	1160	642	898	235	259	225	198
25	485	e1760	712	2340	844	1100	997	1400	594	275	249	206
26	416	1050	483	1870	727	1070	719	906	1220	308	255	179
27	342	847	441	1810	651	1240	535	1110	945	315	274	172
28	343	606	889	1490	809	1100	555	561	714	317	285	190
29	391	801	1210	942	---	759	532	1040	563	323	285	195
30	1610	643	810	1220	---	590	603	1490	467	287	271	200
31	4950	---	757	1130	---	674	---	1400	---	226	303	---
TOTAL	27339	25849	27702	49923	24677	32563	16118	25610	13875	9018	8727	6907
MEAN	882	862	894	1610	881	1050	537	826	463	291	282	230
MAX	4950	2270	4540	4420	1710	2280	997	1620	1220	470	317	361
MIN	197	310	391	462	427	529	372	258	193	220	220	168
AC-FT	54230	51270	54950	99020	48950	64590	31970	50800	27520	17890	17310	13700
MEAN†	964	840	890	1611	889	1044	579	851	469	210	83.4	102
CFSM†	9.01	7.85	8.32	15.1	8.30	9.76	5.41	7.95	4.38	1.97	1.78	1.96
IN.†	10.38	8.76	9.60	17.36	8.65	11.25	6.04	9.17	4.89	2.27	0.90	1.07
AC-FT†	59250	49990	54750	99060	49350	64190	34440	52330	27920	12940	5130	6098

CAL YR 1997 TOTAL 321130 MEAN 880 MAX 6290 MIN 181 AC-FT 637000 MEAN† 876 CFSM† 8.19 IN.† 111.18 AC-FT† 634200
WTR YR 1998 TOTAL 268308 MEAN 735 MAX 4950 MIN 168 AC-FT 532200 MEAN† 712 CFSM† 6.65 IN.† 90.36 AC-FT† 515500

e Estimated

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

14141500 LITTLE SANDY RIVER NEAR BULL RUN, OR

LOCATION.--Lat 45°24'55", long 122°10'20", in NE 1/4 NE 1/4 sec.10, T.2 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on left bank 0.25 mi upstream from Portland General Electric Co. dam and tunnel from Sandy River, 3.0 mi east of Bull Run, and at mile 1.95.

DRAINAGE AREA.--22.3 mi².

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

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

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

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

AVERAGE DISCHARGE.--79 years (water years 1920-98), 145 ft³/s, 88.10 in/yr, 104,800 acre-ft/yr.

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

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1930	*1,180	*4.99				
Minimum discharge, 12 ft ³ /s Sept. 9-18.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	254	91	140	139	474	107	84	183	81	22	13
2	60	164	79	154	129	439	97	83	145	72	21	13
3	92	124	70	123	116	302	96	73	123	65	20	13
4	154	123	64	112	112	243	91	65	108	62	19	13
5	214	98	59	105	108	197	85	61	97	59	18	13
6	127	85	56	126	121	164	83	57	84	54	18	13
7	97	110	59	249	112	140	99	54	75	49	18	13
8	136	98	70	187	105	141	96	55	68	46	18	13
9	174	81	67	147	97	159	95	59	63	43	17	12
10	112	71	112	140	97	168	121	66	83	41	17	12
11	202	66	106	149	112	178	145	90	81	39	17	12
12	303	60	94	136	147	190	144	74	66	37	16	12
13	206	56	83	219	166	189	133	120	60	35	16	12
14	141	52	79	433	139	171	125	224	56	34	16	12
15	107	48	105	441	174	165	118	328	62	32	16	12
16	86	45	535	427	137	150	111	259	82	31	16	12
17	71	99	516	794	122	129	101	366	68	29	16	12
18	62	91	277	511	124	112	97	323	60	28	16	46
19	55	71	188	450	140	102	113	246	77	27	16	80
20	48	148	160	314	135	98	96	242	68	27	15	26
21	44	217	144	244	206	106	91	247	59	26	15	19
22	41	142	120	252	186	242	93	245	57	25	15	16
23	46	148	116	383	154	217	119	206	55	24	15	15
24	45	226	115	320	134	183	151	199	65	24	16	15
25	39	181	103	335	124	163	143	276	120	23	15	47
26	36	139	96	300	113	176	116	232	272	22	15	42
27	35	114	115	260	102	172	104	185	187	22	15	23
28	34	103	191	212	213	145	99	146	131	21	14	19
29	192	101	208	208	---	130	95	175	103	21	14	17
30	539	102	159	200	---	122	90	350	85	21	14	16
31	525	---	136	157	---	116	---	243	---	21	14	---
TOTAL	4062	3417	4373	8228	3764	5683	3254	5433	2843	1141	510	593
MEAN	131	114	141	265	134	183	108	175	94.8	36.8	16.5	19.8
MAX	539	254	535	794	213	474	151	366	272	81	22	80
MIN	34	45	56	105	97	98	83	54	55	21	14	12
AC-FT	8060	6780	8670	16320	7470	11270	6450	10780	5640	2260	1010	1180
CFSM	5.88	5.11	6.33	11.9	6.03	8.22	4.86	7.86	4.25	1.65	.74	.89
IN.	6.78	5.70	7.29	13.73	6.28	9.48	5.43	9.06	4.74	1.90	.85	.99

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1998, BY WATER YEAR (WY)

	MEAN	88.0	211	245	239	210	186	195	162	102	39.8	23.3	38.5
MAX	271	588	585	589	452	407	325	328	268	121	96.1	184	
(WY)	1960	1956	1965	1961	1932	1920	1945	1933	1983	1989	1968	1927	
MIN	10.6	14.3	57.5	45.9	59.2	49.9	54.0	55.8	19.2	13.8	10.1	12.4	
(WY)	1988	1930	1977	1937	1977	1941	1941	1947	1992	1940	1940	1938	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1920 - 1998

ANNUAL TOTAL	53286	43301	145
ANNUAL MEAN	146	119	223
HIGHEST ANNUAL MEAN			87.6
LOWEST ANNUAL MEAN			3500
HIGHEST DAILY MEAN	1020	Jan 31	794
LOWEST DAILY MEAN	17	Sep 9	12
ANNUAL SEVEN-DAY MINIMUM	18	Sep 4	12
ANNUAL RUNOFF (AC-FT)	105700	85890	104800
ANNUAL RUNOFF (CFSM)	6.55	5.32	6.48
ANNUAL RUNOFF (INCHES)	88.89	72.23	88.10
10 PERCENT EXCEEDS	305	243	303
50 PERCENT EXCEEDS	105	98	97
90 PERCENT EXCEEDS	24	16	18

SANDY RIVER BASIN

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

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

DRAINAGE AREA.--436 mi².

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

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

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

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1915 by Bull Run Lake, since 1929 by Bull Run Reservoir Number One (station 14139000), and since 1961 by Bull Run Reservoir Number Two (station 14139900). Some fluctuation caused by Bull Run powerplant of Portland General Electric Company. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--55 years (water years 1911-14, 1930-66, 1985-98) 2,304 ft³/s, 1,669,000 acre-ft/yr.
14 years (water years 1985-98), 2,151 ft³/s, 1,558,000 acre-ft/yr, regulated period.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 19,200 ft³/s Oct. 30, gage height, 15.78 ft; minimum discharge, 296 ft³/s Aug. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	517	5150	1620	1970	2660	5820	1910	2170	3040	1450	563	411
2	659	3260	1430	2580	2440	5820	1770	2260	2480	1320	523	461
3	882	2230	1230	1870	2330	4850	1700	2050	2160	1250	497	425
4	1900	2070	1200	1970	2010	4190	1710	1780	1980	1190	542	395
5	3230	1830	1160	1690	1880	3020	1630	1670	1840	1060	540	362
6	2620	1390	1110	2220	2180	2660	1460	1510	1680	1120	499	346
7	1420	1720	1060	3340	2080	2230	1570	1440	1560	960	461	342
8	1640	1690	1150	2840	1900	2190	1560	1420	1410	873	453	345
9	2730	1380	1130	2220	1940	2450	1490	1380	1400	820	462	328
10	1510	1250	1270	2250	1610	2870	1640	1340	1460	788	458	316
11	2030	1160	1520	2490	1800	2390	1990	1380	1460	821	444	310
12	3150	1120	1460	1850	2150	2530	2250	1340	1380	737	444	319
13	2570	1040	1200	2640	3960	3060	2060	1610	1270	728	448	328
14	1950	1000	1170	5400	3150	2600	1850	2090	1160	721	461	330
15	1410	929	1230	7430	3340	2670	1620	3330	1200	736	463	331
16	1430	860	6220	6670	2490	2620	1620	3030	1130	731	461	343
17	1250	1210	10000	12400	2440	2480	1510	3540	1030	705	442	347
18	862	1380	5240	9830	2320	2100	1530	4100	1190	684	457	416
19	843	1140	3420	8050	2340	1880	1570	3600	1200	662	470	782
20	960	2650	2700	5750	2520	1960	1580	3380	1040	627	410	449
21	1990	3890	2450	4470	3300	1880	1450	3540	1030	614	379	360
22	843	3220	2000	4160	3490	3380	1600	3420	1040	605	412	332
23	860	2260	1750	5650	2770	3860	1850	2840	985	630	401	318
24	892	3830	1740	5700	2290	3530	2290	2730	1020	580	397	314
25	923	3320	1770	6240	2270	3140	2570	3680	1640	574	392	432
26	824	2560	1550	5280	2080	3070	2080	2970	2950	569	388	572
27	681	2150	1540	4920	1930	3200	1820	2920	2470	613	349	393
28	761	1760	2030	4160	2400	2810	1830	2100	1890	622	373	350
29	1720	1940	2680	3390	---	2320	1900	2730	1580	612	381	374
30	6530	1670	2160	3610	---	2040	2060	4580	1360	577	385	413
31	11300	---	1970	3140	---	2040	---	3920	---	559	389	---
TOTAL	60887	61059	68160	136180	68070	91660	53470	79850	47035	24538	13744	11544
MEAN	1964	2035	2199	4393	2431	2957	1782	2576	1568	792	443	385
MAX	11300	5150	10000	12400	3960	5820	2570	4580	3040	1450	563	782
MIN	517	860	1060	1690	1610	1880	1450	1340	985	559	349	310
AC-FT	120800	121100	135200	270100	135000	181800	106100	158400	93290	48670	27260	22900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1998, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	982	3377	3287	3381	3677	2941	3089	2211	1441	692	441	421		
MAX	2077	7882	7523	5612	8793	5221	4010	2920	2465	1212	620	812		
(WY)	1996	1996	1997	1997	1996	1997	1988	1993	1985	1993	1993	1985		
MIN	242	354	1568	1204	1196	1183	1782	998	479	390	308	310		
(WY)	1988	1994	1987	1985	1993	1992	1998	1992	1992	1992	1992	1994		

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1985 - 1998
ANNUAL TOTAL	926924	716197	
ANNUAL MEAN	2540	1962	2151
HIGHEST ANNUAL MEAN			3456
LOWEST ANNUAL MEAN			1463
HIGHEST DAILY MEAN	17700	Jan 2	57500
LOWEST DAILY MEAN	374	Sep 7	190
ANNUAL SEVEN-DAY MINIMUM	407	Sep 4	232
ANNUAL RUNOFF (AC-FT)	1839000		1558000
10 PERCENT EXCEEDS	5280		4470
50 PERCENT EXCEEDS	1870		1520
90 PERCENT EXCEEDS	505		351

14144700 COLUMBIA RIVER AT VANCOUVER, WA

LOCATION.--Lat 45°37'15", long 122°40'20", in NE 1/4 NW 1/4 sec.34, T.2 N., R.1 E., Clark County, Hydrologic Unit 17080001, near right bank in control house of Interstate Highway 5 bridge at south edge of Vancouver, 5.0 mi upstream from Willamette River, and at mile 106.5.

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

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

GAGE.--Water-stage recorder. Datum of gage is 1.82 ft above sea level. Prior to February 1998, datum of gage was sea level.

REMARKS.--Considerable regulation by many large reservoirs. Diurnal fluctuations caused by powerplant operations at Bonneville Dam and tides.

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

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

EXTREMES FOR CURRENT YEAR.--Maximum gage height for period February to September, 14.90 ft June 1, minimum, 0.27 ft Sept. 29.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	8.21	6.66	7.37	7.20	5.28	6.15	7.50	6.25	6.76
2	---	---	---	8.09	6.62	7.48	6.35	4.49	5.34	7.35	5.66	6.48
3	---	---	---	7.91	6.76	7.39	5.72	3.96	4.81	7.16	6.56	6.80
4	---	---	---	7.45	6.19	6.89	4.63	2.81	3.80	7.73	7.02	7.47
5	---	---	---	7.49	6.71	7.07	4.27	2.70	3.58	8.31	7.73	8.12
6	---	---	---	7.28	6.19	6.82	4.66	2.93	3.92	8.92	8.13	8.69
7	---	---	---	6.66	4.84	6.02	5.03	3.19	4.21	9.80	8.64	9.51
8	---	---	---	5.59	4.16	4.98	4.91	3.32	4.17	10.67	9.80	10.31
9	---	---	---	6.19	4.18	5.25	5.19	3.15	4.15	11.01	9.96	10.45
10	---	---	---	5.84	4.32	5.11	5.23	2.84	4.12	11.43	10.53	10.93
11	---	---	---	6.20	4.52	5.33	5.83	3.20	4.66	11.24	9.75	10.52
12	8.91	6.96	7.86	6.58	5.03	5.79	5.84	3.71	4.66	10.15	9.07	9.56
13	9.19	7.80	8.56	6.40	5.02	5.72	5.76	3.72	4.66	9.92	8.93	9.32
14	8.87	7.95	8.41	6.43	4.98	5.70	5.93	3.62	4.63	10.35	9.16	9.62
15	8.32	6.84	7.57	6.26	4.49	5.29	5.68	3.75	4.54	10.96	10.23	10.55
16	7.30	6.20	6.75	5.60	3.87	4.74	4.79	2.71	3.71	10.67	9.55	10.26
17	7.46	6.15	6.72	5.99	4.48	5.28	4.39	2.64	3.44	10.42	9.51	10.06
18	7.38	6.23	6.69	5.96	4.81	5.32	4.55	2.86	3.68	10.19	9.57	9.75
19	7.17	5.87	6.48	5.92	4.80	5.29	4.03	1.93	3.11	10.51	9.43	10.11
20	7.47	6.53	6.92	5.47	4.41	4.92	3.73	2.40	3.02	10.16	9.51	9.83
21	8.19	6.90	7.50	5.20	3.68	4.49	4.16	2.33	3.37	10.85	9.88	10.55
22	8.71	7.60	8.17	5.04	3.59	4.31	4.35	2.48	3.50	11.47	10.19	10.85
23	8.68	8.06	8.35	6.14	4.20	5.23	5.29	2.51	4.27	10.84	9.83	10.31
24	8.80	7.90	8.46	7.40	5.96	6.82	6.27	4.04	5.40	10.74	9.81	10.34
25	8.98	7.82	8.41	8.52	6.68	7.74	6.97	5.07	6.13	11.65	10.44	11.03
26	8.50	7.17	7.95	9.12	7.53	8.31	7.10	4.92	5.96	11.58	10.19	10.83
27	8.51	7.27	7.84	10.60	8.59	9.76	7.12	5.13	6.02	12.56	10.64	11.55
28	8.02	6.72	7.36	10.56	9.18	9.85	7.34	5.36	6.24	13.62	12.56	13.17
29	---	---	---	9.59	7.62	8.66	7.24	5.22	6.14	14.23	13.62	13.96
30	---	---	---	7.95	6.24	7.08	7.04	5.44	6.20	14.53	14.19	14.35
31	---	---	---	7.66	5.81	6.61	---	---	---	14.83	14.53	14.68
MONTH	---	---	---	10.60	3.59	6.34	7.34	1.93	4.59	14.83	5.66	10.22

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	14.90	14.76	14.84	6.70	5.78	6.19	4.60	1.58	2.77	3.84	1.03	2.18
2	14.84	14.23	14.61	6.96	5.71	6.31	4.08	1.86	2.65	4.28	1.68	2.77
3	14.27	13.95	14.09	6.54	4.01	5.17	4.21	1.54	2.54	4.76	1.68	3.05
4	14.02	13.21	13.68	5.50	4.51	5.07	4.55	1.71	2.85	4.69	1.32	2.88
5	13.44	12.12	12.97	6.48	4.13	5.32	5.13	2.13	3.68	4.66	.94	2.71
6	12.39	11.80	12.09	5.58	3.95	4.79	5.53	2.71	3.91	4.87	1.40	3.04
7	12.35	11.06	11.87	6.04	4.00	4.84	6.01	3.01	4.42	5.15	1.64	---
8	11.33	9.95	10.56	6.17	4.08	5.18	6.00	3.27	4.45	4.67	1.14	---
9	10.77	9.96	10.32	6.79	4.85	5.65	6.10	2.96	4.36	4.81	1.44	3.06
10	11.13	9.87	10.42	6.80	4.75	5.64	5.56	2.69	4.01	4.47	.83	2.53
11	10.48	9.46	9.94	6.47	4.00	5.17	5.59	2.96	4.16	4.76	.99	2.39
12	10.31	---	---	5.98	3.50	4.66	5.63	2.95	4.23	4.67	1.48	2.65
13	---	9.04	---	6.26	4.15	5.14	5.94	3.15	4.26	4.52	1.23	2.33
14	9.46	8.50	9.04	6.36	4.39	5.19	5.89	3.38	4.57	4.36	1.16	2.26
15	9.11	8.25	8.71	6.32	4.44	5.30	5.63	2.71	3.85	4.21	1.38	2.65
16	8.63	6.38	7.42	6.46	4.52	5.32	5.31	2.07	3.40	4.76	1.92	3.24
17	7.08	5.11	5.96	6.60	3.91	4.96	4.95	1.78	3.07	5.00	2.41	3.67
18	6.85	6.14	6.50	6.23	3.70	4.68	5.02	1.69	3.08	5.03	1.96	3.51
19	7.18	5.89	6.49	6.31	3.54	4.73	4.99	1.69	3.07	5.19	2.11	3.47
20	7.49	6.17	6.89	6.16	3.86	4.91	5.36	2.00	3.56	4.67	1.64	3.10
21	8.42	6.59	7.50	6.56	3.98	5.03	5.59	2.60	3.84	4.26	1.33	2.78
22	7.84	6.08	6.85	6.52	3.92	5.05	5.52	2.41	3.74	4.03	1.03	2.43
23	7.60	5.16	6.22	6.90	4.42	5.38	5.35	2.13	3.52	4.12	.94	2.32
24	7.71	5.16	6.76	6.26	3.87	4.92	5.00	2.27	3.53	3.93	.90	2.24
25	8.83	7.07	7.95	6.04	3.75	4.83	4.32	1.52	3.03	4.12	.84	2.25
26	8.41	6.98	7.70	5.79	3.37	4.63	4.13	1.40	2.72	4.26	1.00	2.29
27	8.57	7.53	7.99	5.46	3.38	4.41	3.67	.84	2.20	3.71	1.26	2.27
28	8.24	7.07	7.73	5.86	3.83	4.78	3.71	.44	1.84	3.26	.61	1.60
29	7.67	6.48	7.16	5.73	3.48	4.67	3.82	1.03	2.07	3.19	.27	1.48
30	7.11	5.33	6.09	5.37	3.01	4.08	3.76	1.20	2.14	3.28	.76	1.91
31	---	---	---	4.92	2.48	3.44	3.62	.89	1.81	---	---	---
MONTH	---	---	---	6.96	2.48	5.01	6.10	.44	3.33	5.19	.27	---

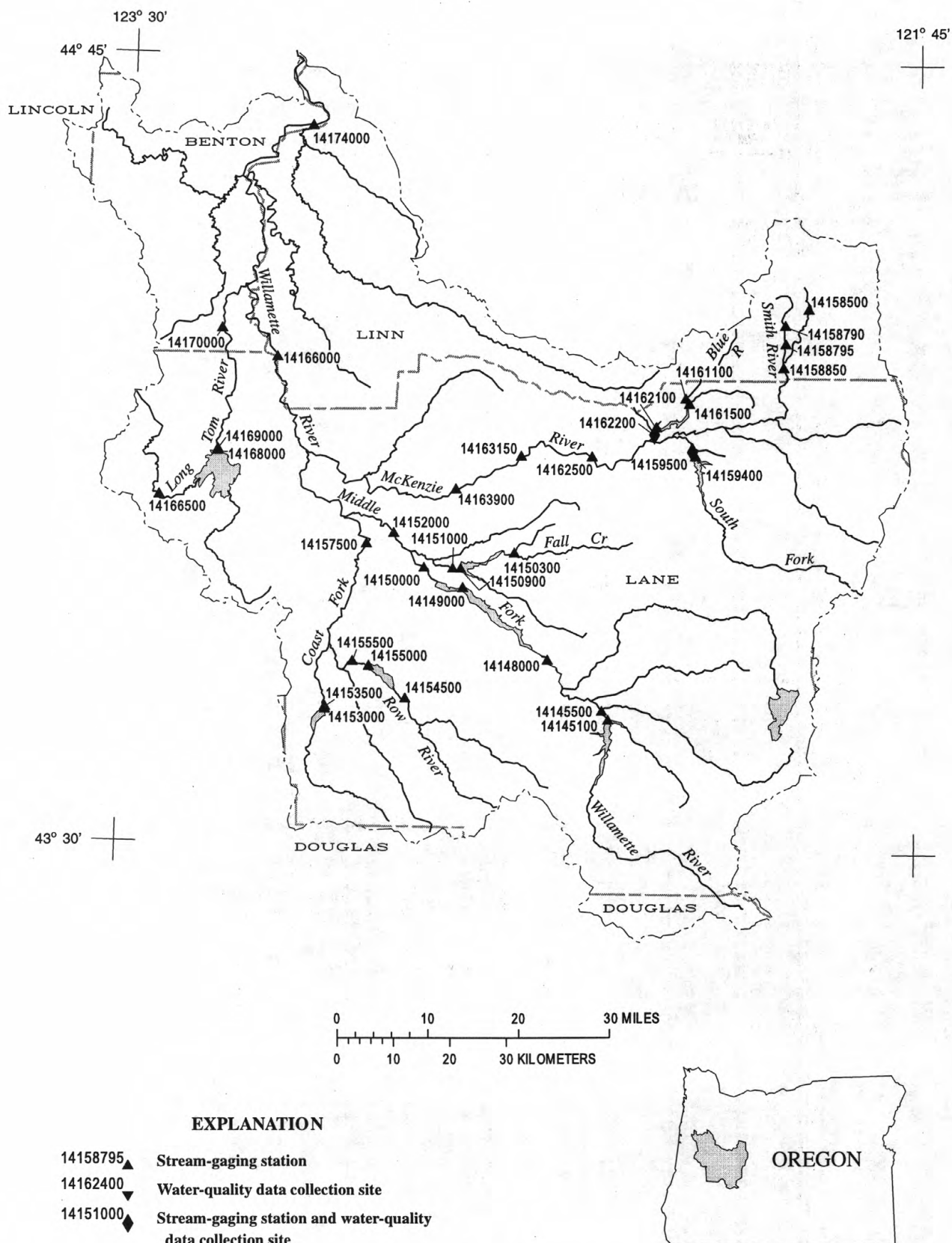


Figure 21. Location of surface-water and water-quality stations in the Willamette River Basin upstream from the Luckiamute River..

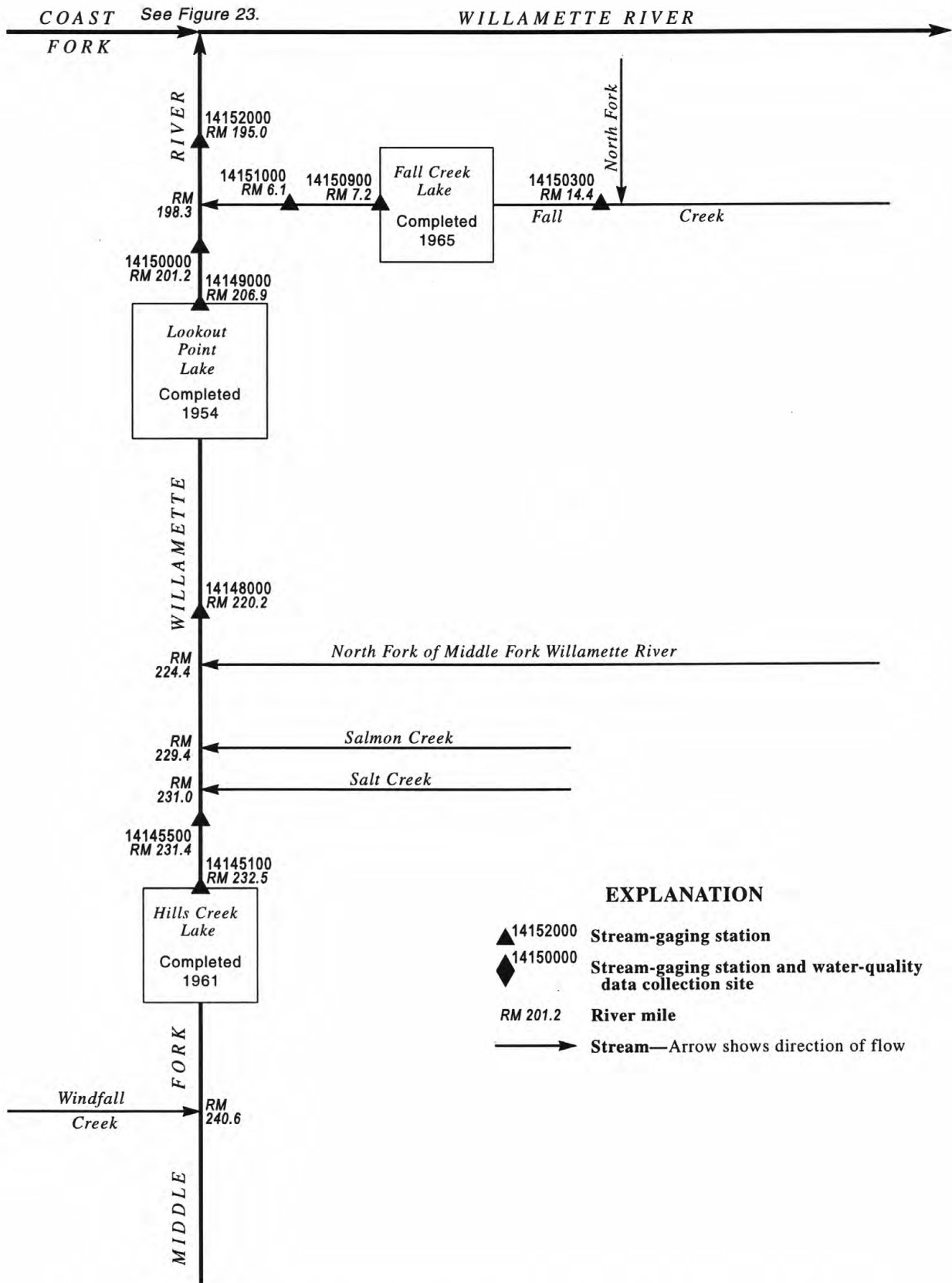


Figure 22. Schematic diagram showing gaging stations in the Middle Fork Willamette River Basin..

WILLAMETTE RIVER BASIN

14145100 HILLS CREEK LAKE NEAR OAKRIDGE, OR

LOCATION.--Lat 43°42'30", long 122°25'25", in NW 1/4 sec.35, T.21 S., R.3 E., Lane County, Hydrologic Unit 17090001, in Willamette National Forest, near right end of Hills Creek Dam on Middle Fork Willamette River, 600 ft downstream from Hills Creek, 3.5 mi southeast of Oakridge, and at mile 232.5.

DRAINAGE AREA.--389 mi².

PERIOD OF RECORD.--August 1961 to current year. Prior to October 1971, published as Hills Creek Reservoir near Oakridge.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway completed in 1961 by the Corps of Engineers; storage began August 1961. Total capacity is 355,600 acre-ft at elevation 1,543.0 ft, top of spillway gates, and usable capacity is 248,900 acre-ft between elevations 1,414.0 ft, minimum power pool, and 1,543.0 ft. Reservoir used for flood control and power generation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 354,200 acre-ft June 25, 1971, elevation, 1,542.52 ft; minimum contents, 104,800 acre-ft Jan. 2, 1969, elevation, 1,412.52 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 352,700 acre-ft May 15, elevation, 1,541.97 ft; minimum contents, 164,300 acre-ft Dec. 15, elevation, 1,453.58 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

1,410	101,500	1,460	174,900	1,520	297,200
1,420	114,600	1,480	211,000	1,540	347,300
1,440	143,000	1,500	251,900	1,544	358,500

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1518.88	1494.53	1464.64	1454.79	1464.22	1489.62	1521.94	1535.42	1541.34	1541.38	1540.91	1538.86
2	1518.16	1493.89	1463.65	1455.24	1464.72	1491.03	1522.32	1536.10	1541.32	1541.33	1540.88	1538.77
3	1517.34	1492.97	1462.58	1455.57	1465.08	1492.48	1522.71	1536.65	1541.27	1541.26	1540.85	1538.67
4	1516.60	1491.89	1461.53	1456.02	1465.59	1493.74	1523.11	1537.12	1541.32	1541.19	1540.80	1538.56
5	1516.04	1490.69	1460.38	1456.09	1466.19	1494.83	1523.50	1537.65	1541.36	1541.10	1540.75	1538.46
6	1515.32	1489.50	1459.21	1455.95	1466.87	1495.78	1524.00	1538.17	1541.34	1541.02	1540.69	1538.35
7	1514.54	1488.42	1458.14	1456.43	1467.65	1496.62	1524.64	1538.70	1541.32	1541.01	1540.64	1538.24
8	1513.86	1487.22	1457.09	1457.12	1468.36	1497.43	1525.26	1539.26	1541.28	1541.03	1540.57	1537.89
9	1513.73	1485.95	1455.98	1457.37	1469.03	1498.21	1525.87	1539.79	1541.19	1541.05	1540.51	1537.24
10	1513.38	1484.79	1455.04	1457.59	1469.68	1498.95	1526.64	1540.21	1541.21	1541.04	1540.46	1536.56
11	1512.95	1483.75	1454.52	1461.28	1470.12	1499.76	1527.51	1540.58	1541.26	1541.05	1540.40	1535.91
12	1512.56	1482.77	1454.26	1463.60	1470.67	1500.73	1528.21	1541.21	1541.33	1541.05	1540.33	1535.24
13	1512.05	1481.64	1453.97	1464.09	1471.48	1501.78	1528.77	1541.59	1541.64	1541.06	1540.26	1534.58
14	1511.44	1480.46	1453.72	1463.52	1472.51	1502.83	1529.25	1541.81	1541.93	1541.08	1540.20	1533.92
15	1510.76	1479.21	1453.59	1464.05	1473.68	1503.92	1529.65	1541.93	1541.89	1541.09	1540.12	1533.06
16	1510.02	1477.98	1454.54	1465.93	1474.74	1505.10	1529.87	1541.74	1541.73	1541.09	1540.05	1532.15
17	1509.06	1476.76	1456.90	1472.81	1475.65	1506.16	1529.96	1541.66	1541.53	1541.06	1539.97	1531.23
18	1507.91	1475.55	1457.45	1475.05	1476.44	1507.08	1530.04	1541.47	1541.30	1541.04	1539.91	1530.33
19	1506.74	1474.47	1457.34	1474.88	1477.33	1507.91	1530.16	1541.34	1541.21	1541.03	1539.83	1529.42
20	1505.25	1473.54	1457.00	1473.51	1478.25	1508.74	1530.36	1541.40	1541.26	1541.03	1539.76	1528.50
21	1503.47	1472.53	1456.43	1470.94	1480.74	1509.71	1530.66	1541.45	1541.29	1541.02	1539.69	1527.57
22	1501.65	1471.43	1455.69	1467.39	1482.71	1512.08	1531.13	1541.43	1541.32	1541.01	1539.61	1526.64
23	1499.86	1470.36	1454.90	1463.80	1484.10	1515.37	1531.62	1541.35	1541.35	1541.01	1539.55	1525.70
24	1498.01	1469.67	1454.38	1460.74	1485.20	1517.31	1532.02	1541.40	1541.41	1541.01	1539.47	1524.76
25	1496.55	1469.24	1454.23	1458.66	1486.17	1518.42	1532.17	1541.43	1541.47	1541.01	1539.40	1523.89
26	1495.39	1468.67	1454.30	1458.07	1486.99	1519.21	1532.49	1541.37	1541.52	1541.00	1539.33	1522.99
27	1494.24	1468.07	1454.43	1459.24	1487.72	1519.72	1533.00	1541.28	1541.50	1541.00	1539.25	1522.05
28	1493.08	1467.28	1454.55	1460.57	1488.53	1520.09	1533.66	1541.23	1541.46	1540.99	1539.18	1521.48
29	1492.39	1466.46	1454.67	1461.71	---	1520.57	1534.35	1541.30	1541.43	1540.97	1539.10	1520.92
30	1492.92	1465.60	1454.72	1462.74	---	1521.06	1534.93	1541.38	1541.41	1540.97	1539.03	1520.00
31	1494.64	---	1454.69	1463.55	---	1521.50	---	1541.28	---	1540.94	1538.95	---
MAX	1518.88	1494.53	1464.64	1475.05	1488.53	1521.50	1534.93	1541.93	1541.93	1541.38	1540.91	1538.86
MIN	1492.39	1465.60	1453.59	1454.79	1464.22	1489.62	1521.94	1535.42	1541.19	1540.94	1538.95	1520.00
(†)	240400	184500	166100	181000	227800	300800	334100	350800	351100	349900	344600	297200
(‡)	-56200	-55900	-18400	+14900	+46800	+73000	+33300	+16700	+300	-1200	-5300	-47400

CAL YR 1997 MAX 1541.98 MIN 1447.70 AC-FT‡ -121500
WTR YR 1998 MAX 1541.93 MIN 1453.59 AC-FT‡ +600

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

WILLAMETTE RIVER BASIN

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14145500 MIDDLE FORK WILLAMETTE RIVER ABOVE SALT CREEK, NEAR OAKRIDGE, OR

LOCATION.--Lat 43°43'20", long 122°26'15", in NW 1/4 NE 1/4 sec.27, T.21 S., R.3 E., Lane County, Hydrologic Unit 17090001, in Willamette National Forest, on right bank 90 ft upstream from highway bridge, 0.4 mi upstream from Salt Creek, 1.1 mi downstream from Hills Creek Dam, 2.3 mi southeast of Oakridge, and at mile 231.4.

DRAINAGE AREA.--392 mi².

PERIOD OF RECORD.--October 1913 to September 1914, September 1935 to current year. Monthly discharge only September 1935, published in WSP 1318.

REVISED RECORDS.--WSP 1248: 1914.

GAGE.--Water-stage recorder. Datum of gage is 1,208.01 ft above sea level (levels by Corps of Engineers). Oct. 3, 1913, to Sept. 30, 1914, nonrecording gage and Sept. 1, 1935, to Aug. 18, 1960, water-stage recorder at sites 400 ft and 1,000 ft downstream, respectively, at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Discharges for period Oct. 1 to Nov. 4, Mar. 3, 4, computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated since 1961 by Hills Creek Lake (station 14145100). No diversions upstream from station.

AVERAGE DISCHARGE.--64 years (water years 1914, 1936-98), 1,151 ft³/s, 39.87 in/yr, 833,900 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 34,000 ft³/s Dec. 28, 1945, gage height, 12.06 ft, site and datum then in use, from rating curve extended above 13,000 ft³/s; minimum observed discharge, 0.70 ft³/s Sept. 8-11, 13, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,070 ft³/s Jan. 22, gage height, 7.29 ft; minimum discharge, 219 ft³/s Jan. 27, 28, Feb. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1510	2110	1720	800	894	300	735	1300	2180	706	e400	e240
2	1520	2110	1710	976	897	297	733	1190	2070	735	e400	e250
3	1510	2110	1710	1100	895	268	744	1120	1930	735	e380	e260
4	1510	2110	1710	1110	734	268	687	1120	1620	735	e380	e280
5	1510	2120	1700	1220	578	271	687	1120	1500	734	e370	e290
6	1520	2110	1700	1300	458	279	597	1070	1490	705	e370	e290
7	1520	2120	1690	1300	331	277	474	918	1460	549	e360	e290
8	1520	2140	1690	1300	331	279	472	861	1460	515	e360	e600
9	1530	2140	1710	1340	333	278	482	790	1440	521	e350	e900
10	1530	1980	1530	1400	336	269	491	797	1400	515	e350	e1200
11	1530	1800	1140	1350	533	275	553	793	1400	518	e350	e1200
12	1530	1690	909	1850	478	277	694	812	1230	518	e340	e1200
13	1520	1810	901	3300	332	277	698	1200	814	486	e330	e1200
14	1530	1830	902	4130	268	272	722	1500	715	483	e320	e1200
15	1530	1840	902	4030	268	275	763	1840	1150	487	e320	1460
16	1550	1840	1350	3500	266	274	909	2210	1210	489	e320	1540
17	1710	1820	1830	2070	265	266	1010	1940	1220	509	e320	1540
18	1920	1810	1780	2630	266	266	1010	1930	1210	487	e310	1550
19	1940	1810	1730	3590	265	273	1010	1900	984	463	e310	1550
20	2270	1800	1670	3980	266	285	942	1670	781	460	e310	1550
21	2580	1800	1660	4640	292	283	895	1680	784	463	e310	1550
22	2580	1800	1660	5600	282	287	884	1670	746	461	e300	1540
23	2570	1790	1660	5920	283	701	1130	1650	744	432	e300	1550
24	2570	1810	1370	5320	284	1400	1430	1560	752	443	e300	1540
25	2130	1790	999	4410	284	1610	1510	2190	753	441	e290	1540
26	1710	1790	741	2920	281	1600	1130	2150	811	e430	e270	1540
27	1730	1690	665	1200	295	1590	782	1960	831	e420	e270	1530
28	1740	1730	665	822	298	1430	672	1750	778	e410	e260	1110
29	1740	1730	671	933	---	1040	856	2460	734	e410	e250	998
30	1740	1720	742	912	---	884	1170	3070	713	e430	e250	1490
31	1950	---	800	908	---	860	---	2740	---	e410	e240	---
TOTAL	55250	56750	41617	75861	11293	17211	24872	48961	34910	16100	9990	32978
MEAN	1782	1892	1342	2447	403	555	829	1579	1164	519	322	1099
MAX	2580	2140	1830	5920	897	1610	1510	3070	2180	735	400	1550
MIN	1510	1690	665	800	265	266	472	790	713	410	240	240
AC-FT	109600	112600	82550	150500	22400	34140	49330	97110	69240	31930	19820	65410
MEAN†	868	953	1043	2689	1246	1741	1389	1850	1169	500	236	303
CFSM†	2.22	2.43	2.66	6.86	3.18	4.44	3.54	4.72	2.98	1.27	0.60	0.77
IN.†	2.55	2.71	3.07	7.91	3.31	5.12	3.95	5.44	3.33	1.47	0.69	0.86
AC-FT†	53400	56700	64150	165400	69200	107100	82630	113800	69540	30730	14520	18010

CAL YR 1997 TOTAL 522151 MEAN 1431 MAX 8040 MIN 284 AC-FT 1036000 MEAN† 1263 CFSM† 3.22 IN.† 43.74 AC-FT† 914500
WTR YR 1998 TOTAL 425793 MEAN 1167 MAX 5920 MIN 240 AC-FT 844600 MEAN† 1167 CFSM† 2.98 IN.† 40.43 AC-FT† 845200

e Estimated

† Adjusted for change in contents, in Hill Creek Lake.

WILLAMETTE RIVER BASIN

14148000 MIDDLE FORK WILLAMETTE RIVER BELOW NORTH FORK, NEAR OAKRIDGE, OR

LOCATION.--Lat 43°48'05", long 122°33'35", in SW 1/4 sec.27, T.20 S., R.2 E., Lane County, Hydrologic Unit 17090001, on left bank 0.5 mi downstream from Whitehead Creek, 4.2 mi downstream from North Fork of Middle Fork Willamette River, 7.0 mi northwest of Oakridge, and at mile 220.2.

DRAINAGE AREA.--924 mi².

PERIOD OF RECORD.--March 1911 to September 1912, July 1923 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as "near Hazeldell" 1911-12 and as "at Eula" 1923-50.

REVISED RECORDS.--WSP 694: 1925-28. WSP 814: Drainage area at Eula. WSP 1248: 1924, 1925(M), 1926-28, 1929(M), 1930, 1933, 1946(M). WSP 1398: 1927(M). WSP 1638: 1936(M).

GAGE.--Water-stage recorder. Datum of gage is 934.76 ft above sea level. Mar. 22, 1911, to Sept. 30, 1912, nonrecording gage at site 4.0 mi upstream, just downstream from North Fork at different datum. July 1, 1923, to Aug. 11, 1935, nonrecording gage and Aug. 12, 1935, to Sept. 30, 1950, water-stage recorder at site 4.0 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1961 by Hills Creek Lake (station 14145100); slight regulation at times by logponds upstream from station. No diversion upstream from station. Continuous water-quality records for the period September 1950 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--76 years (water years 1912, 1924-98), 2,792 ft³/s, 2,023,000 acre-ft/yr.
37 years (water years 1962-98), 2,862 ft³/s, 2,073,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 81,800 ft³/s Dec. 28, 1945, gage height, 18.8 ft, from floodmark, site and datum then in use, from rating curve extended above 39,000 ft³/s; minimum discharge, 322 ft³/s Aug. 30, 1961, caused by closing outlet gates at Hills Creek Dam.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since 1861 and prior to March 1911, 17.0 ft in February 1890 at site used 1923-50, from information by local resident, discharge, about 55,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,900 ft³/s Jan. 17, gage height, 6.17 ft; minimum discharge, 739 ft³/s Sept. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2230	5240	2790	2000	3130	2720	2650	3580	5480	1550	992	813
2	2540	4370	2740	2700	2950	3050	2530	3620	4950	1550	980	820
3	2490	3930	2690	2850	2820	3200	2540	3380	4510	1520	961	838
4	2570	3670	2680	2970	2610	2990	2420	3200	4050	1490	970	837
5	2760	3500	2650	2890	2300	2730	2390	3300	3630	1460	955	836
6	2700	3370	2610	2910	2140	2480	2320	3140	3460	1440	958	836
7	2610	3460	2630	3820	1900	2250	2250	2830	3370	1460	953	832
8	2600	3380	2680	4060	1830	2210	2210	2750	3360	1380	948	1190
9	3190	3290	2660	3650	1780	2120	2180	2640	3230	1370	942	1660
10	2950	3100	2530	3720	1710	2050	2390	2490	3220	1340	930	1750
11	2950	2840	2120	8140	1860	2130	2710	2410	3230	1350	932	1740
12	3290	2690	1810	7860	1850	2340	2850	2720	2920	1330	919	1740
13	3080	2750	1780	8660	1720	2440	2730	3200	2410	1270	917	1730
14	2930	2730	1790	9250	1740	2460	2640	3620	2120	1240	901	1720
15	2810	2720	1960	9870	1990	2510	2690	4390	2480	1220	898	1880
16	2730	2690	3330	10200	1930	2620	2740	4810	2510	1200	902	1860
17	2800	2680	5380	11600	1800	2500	2750	4460	2430	1210	894	1860
18	2940	2680	4440	9460	1740	2300	2670	4390	2360	1190	892	1880
19	2870	2720	3850	8940	1790	2130	2690	4390	2120	1140	886	1930
20	3070	2740	3540	8250	1880	2070	2630	4270	1830	1120	896	1910
21	3360	2720	3350	8170	3200	2110	2590	4300	1790	1110	893	1890
22	3330	2680	3170	9000	3240	2990	2680	4160	1710	1090	879	1870
23	3330	2680	3090	9850	2780	4470	3170	3980	1660	1040	872	1860
24	3340	2960	2800	9130	2440	5020	3840	3800	1700	1040	878	1860
25	2930	3120	2330	8140	2240	4800	3730	4930	1760	1030	869	1910
26	2410	3050	1990	6510	2070	4510	3200	4840	2010	1030	849	1990
27	2410	2900	1840	4450	1950	4310	2700	4440	1920	1010	844	1910
28	2400	2860	1810	3810	2260	3920	2610	4030	1760	1010	836	1520
29	2810	2820	1820	3800	---	3330	2900	5470	1650	1000	828	1180
30	4330	2870	1870	3610	---	2960	3360	7700	1590	1030	824	1810
31	7320	---	1920	3350	---	2860	---	6760	---	996	818	---
TOTAL	94080	93210	82650	193620	61650	90580	81760	124000	81220	38216	28016	46462
MEAN	3035	3107	2666	6246	2202	2922	2725	4000	2707	1233	904	1549
MAX	7320	5240	5380	11600	3240	5020	3840	7700	5480	1550	992	1990
MIN	2230	2680	1780	2000	1710	2050	2180	2410	1590	996	818	813
AC-FT	186600	184900	163900	384000	122300	179700	162200	246000	161100	75800	55570	92160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1998, BY WATER YEAR (WY)

	1906	3480	4935	4615	3421	3010	3170	3295	2389	1273	1188	1689
MEAN	1906	3480	4935	4615	3421	3010	3170	3295	2389	1273	1188	1689
MAX	3035	7641	13540	10350	8460	7802	5606	5550	4969	1901	1753	2639
(WY)	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987
MIN	625	1414	1073	874	710	1167	1464	1113	811	703	629	1117
(WY)	1962	1994	1977	1977	1977	1992	1968	1992	1992	1994	1994	1992

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1962 - 1998

	1275201	1015464	2862	1997
ANNUAL TOTAL	1275201	1015464	2862	1997
ANNUAL MEAN	3494	2782	4710	1977
HIGHEST ANNUAL MEAN			1416	1977
LOWEST ANNUAL MEAN			43500	Dec 23 1964
HIGHEST DAILY MEAN	23100	Jan 1	813	Oct 5 1961
LOWEST DAILY MEAN	924	Aug 19	334	Oct 1 1961
ANNUAL SEVEN-DAY MINIMUM	944	Aug 13	349	
ANNUAL RUNOFF (AC-FT)	2529000	2014000	2073000	
10 PERCENT EXCEEDS	6360	4410	5470	
50 PERCENT EXCEEDS	2690	2610	2090	
90 PERCENT EXCEEDS	1100	976	1020	

WILLAMETTE RIVER BASIN

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14149000 LOOKOUT POINT LAKE NEAR LOWELL, OR

LOCATION.--Lat 43°54'50", long 122°45'00", in SE 1/4 sec.13, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, in elevator house at right end of spillway section of dam on Middle Fork Willamette River, 1.5 mi east of Lowell, and at mile 206.9.

DRAINAGE AREA.--991 mi².

PERIOD OF RECORD.--November 1953 to current year. Prior to October 1971, published as Lookout Point Reservoir near Lowell.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers). Nov. 7, 1953, to Dec. 4, 1954, approximate elevations obtained from reference marks and Dec. 5, 1954, to Feb. 4, 1955, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam with concrete gate and spillway section, completed in 1954 by Corps of Engineers. Planned storage began in November 1953. Total capacity is 455,800 acre-ft at elevation 929 ft, and usable capacity is 349,200 acre-ft between elevations 819 ft and 929 ft, top of spillway gates. Reservoir used for flood control, improvement of navigation, power generation, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 464,900 acre-ft Dec. 26, 1964, elevation, 931.09 ft; minimum contents observed since first filling, 91,450 acre-ft Dec. 1, 1954, elevation, 811.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 449,300 acre-ft May 16, elevation, 927.47 ft; minimum contents, 121,300 acre-ft Dec. 12, elevation, 826.22 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

810	89,600	860	205,500	900	338,900
820	108,600	870	235,500	910	377,400
830	129,500	880	267,800	920	417,800
840	152,500	890	302,300	930	460,200
850	177,700				

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	871.94	875.71	835.50	831.18	828.78	851.99	887.67	914.62	925.82	925.69	907.32	881.15
2	871.90	874.60	834.13	831.45	829.85	853.53	888.44	915.88	925.58	925.58	906.57	880.24
3	871.80	873.24	832.73	831.40	831.26	854.79	889.19	916.98	925.45	925.49	905.78	879.30
4	871.80	871.69	831.11	831.43	832.50	855.58	889.88	917.99	925.11	925.37	905.04	878.33
5	871.89	869.99	829.69	831.31	833.13	856.44	890.51	919.04	925.11	925.02	904.25	877.38
6	871.92	868.30	829.10	830.47	833.14	857.40	891.16	920.02	925.26	924.62	903.47	876.45
7	871.86	866.70	828.67	830.62	833.67	858.23	891.81	920.86	925.51	924.10	902.68	875.46
8	871.82	865.01	828.26	831.53	834.15	859.04	892.50	921.67	925.77	923.55	901.87	874.65
9	872.25	863.24	827.69	831.99	834.55	859.68	893.18	922.44	926.01	922.99	901.05	874.13
10	872.49	861.37	827.06	831.98	834.93	860.34	894.00	923.11	926.24	922.40	900.24	873.55
11	872.70	860.31	826.72	836.03	835.36	861.10	895.06	923.74	926.32	921.74	899.45	872.97
12	873.16	859.15	826.31	839.53	835.85	861.88	896.11	924.62	926.49	921.12	898.67	872.45
13	873.45	857.89	826.79	842.60	836.22	862.76	897.10	925.54	926.55	920.52	897.85	871.92
14	873.62	856.84	827.11	844.64	836.70	863.67	897.99	926.42	927.00	919.93	897.00	871.94
15	873.62	855.53	827.83	848.77	837.46	864.56	898.86	927.12	926.98	919.29	896.17	871.35
16	873.51	854.14	829.21	852.96	838.15	865.52	899.72	927.40	926.79	918.61	895.31	871.05
17	873.42	852.83	830.55	859.18	838.62	866.40	900.59	927.13	926.61	917.91	894.47	871.31
18	873.42	851.69	830.60	859.76	839.04	867.14	901.42	926.82	926.27	917.26	893.60	871.33
19	873.36	850.56	831.23	858.89	839.61	867.75	902.28	927.00	925.96	916.62	892.74	871.37
20	873.43	849.44	830.42	856.83	840.38	868.27	903.04	926.76	925.88	915.95	891.87	871.40
21	873.70	848.17	830.36	853.07	842.98	868.94	903.79	926.33	925.82	915.33	891.04	871.39
22	873.90	846.74	830.04	848.71	845.14	870.35	904.51	925.57	925.84	914.65	890.16	871.34
23	874.20	845.37	830.27	844.83	846.61	872.72	905.75	925.44	925.73	913.95	889.28	871.33
24	874.46	844.17	830.08	840.86	847.71	875.30	907.28	925.28	925.73	913.24	888.41	871.32
25	874.44	843.11	830.27	837.13	848.53	877.77	908.71	925.80	925.77	912.52	887.52	871.42
26	874.00	842.07	830.57	834.14	849.24	879.97	909.79	926.25	925.91	911.78	886.65	871.48
27	873.63	840.84	830.84	832.59	849.87	881.95	910.61	926.67	925.88	911.06	885.77	871.49
28	873.22	839.54	831.07	831.41	850.73	883.62	911.38	926.46	925.98	910.31	884.82	871.30
29	873.16	838.24	831.28	829.09	---	884.87	912.28	926.41	925.88	909.58	883.90	870.86
30	874.05	836.82	831.36	827.67	---	885.88	913.43	926.75	925.80	908.81	883.03	870.81
31	876.16	---	831.53	827.98	---	886.82	---	926.43	---	908.08	882.10	---
MAX	876.16	875.71	835.50	859.76	850.73	886.82	913.43	927.40	925.69	907.32	881.15	
MIN	871.80	836.82	826.31	827.67	828.78	851.99	887.67	914.62	925.11	908.08	882.10	870.81
(†)	255200	144900	132800	125100	179700	291100	391100	444800	442100	369900	274900	238100
(‡)	+13300	-110300	-12100	-7700	+54600	+111400	+100000	+53700	-2700	-72200	-95000	-36800

CAL YR 1997 MAX 926.71 MIN 826.31 AC-FT† -176200

WTR YR 1998 MAX 927.40 MIN 826.31 AC-FT‡ -3800

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

‡ Change in contents, in acre-feet.

LOCATION.--Lat 43°56'45", long 122°50'10", in SE 1/4 NW 1/4 sec.5, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, on right bank 0.6 mi upstream from Lost Creek, 2.0 mi northwest of Dexter, 2.6 mi downstream from Dexter Dam, and at mile 201.2.

PERIOD OF RECORD.--October 1946 to current year. Prior to October 1954, published as "at Lowell".

GAGE.--Water-stage recorder. Datum of gage is 592.30 ft above sea level (levels by Corps of Engineers). Prior to Aug. 23, 1950, nonrecording gage and Aug. 23, 1950, to Sept. 30, 1954, at site 4.0 mi upstream at different datum, and June 9, 1955, to Feb. 18, 1977, at datum 3.00 ft higher.

AVERAGE DISCHARGE.--52 years (water years 1947-98), 3,121 ft³/s, 2,261,000 acre-ft/yr, unadjusted.
45 years (water years 1954-98), 3,054 ft³/s, 2,213,000 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 62,600 ft³/s Jan. 18, 1953, gage height, 12.46 ft, site and datum then in use, from rating curve extended above 33,000 ft³/s; minimum daily discharge, 100 ft³/s Nov. 25, 1960.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,300 ft³/s Jan. 22, gage height, 10.49 ft; minimum discharge, 1,040 ft³/s Mar. 25.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2510	5680	4240	2350	2690	1400	1410	1290	7670	2080	2670	2630
2	2550	6270	4210	2330	1780	1520	1410	1300	6000	2080	2670	2640
3	2540	6310	4210	2990	1600	1980	1410	1300	5100	2080	2680	2680
4	2540	6220	4210	2970	1570	2300	1410	1270	5040	2080	2680	2640
5	2530	6220	4030	2990	1800	1980	1410	1210	4130	2470	2680	2640
6	2530	6080	3080	3830	2200	1480	1420	1200	3430	2660	2680	2650
7	2550	6090	3020	3890	1520	1380	1340	1200	3080	2720	2680	2640
8	2540	6100	3100	3190	1520	1370	1260	1210	3120	2720	2670	2650
9	2530	5960	3060	3210	1510	1370	1250	1210	3330	2720	2670	2720
10	2530	5940	3080	3780	1510	1370	1260	1210	3150	2720	2670	2660
11	2530	4420	2610	3830	1500	1340	1260	1210	2880	2710	2660	2660
12	2510	4280	2070	4070	1510	1370	1250	1220	2520	2720	2650	2660
13	2520	4280	1360	5540	1470	1370	1260	1650	2440	2720	2640	2690
14	2530	4290	1300	7260	1400	1370	1260	2260	1790	2700	2670	2510
15	2550	4290	1290	4950	1400	1360	1280	3200	2930	2690	2650	2130
16	2780	4290	2090	4800	1400	1370	1300	5120	3950	2700	2650	2150
17	2760	4300	4060	3050	1400	1370	1310	5290	3340	2710	2660	2130
18	2820	4290	4270	8790	1400	1370	1300	5300	2710	2650	2670	2120
19	2830	4270	4280	10200	1410	1370	1300	4570	2730	2580	2660	2120
20	2840	4260	3360	11200	1410	1370	1300	5070	2140	2670	2670	2120
21	2810	4260	3380	13200	1420	1370	1300	6020	2090	2680	2660	2120
22	2820	4260	3360	14200	1420	1370	1300	5980	2110	2690	2660	2120
23	2830	4270	2930	14400	1410	1380	1310	4570	2110	2690	2660	2130
24	2850	4270	2920	13800	1410	1400	1310	4470	2110	2690	2660	2130
25	2920	4330	2180	12600	1410	1350	1310	4490	2110	2670	2660	2130
26	2940	4370	1630	10300	1410	1370	1310	4310	2100	2670	2660	2130
27	2940	4370	1530	6870	1400	1420	1300	4120	2120	2670	2670	2130
28	2950	4350	1520	5560	1400	1420	1300	4710	2110	2680	2640	2130
29	2960	4300	1530	6710	---	1410	1290	6280	2090	2690	2660	2130
30	3500	4270	1710	5600	---	1420	1290	7610	2090	2690	2650	2130
31	4270	---	1690	3780	---	1420	---	8040	---	2690	2640	---
TOTAL	85810	146890	87310	202240	43280	45140	39420	107890	92520	80690	82550	71080
MEAN	2768	4896	2816	6524	1546	1456	1314	3480	3084	2603	2663	2369
MAX	4270	6310	4280	14400	2690	2300	1420	8040	7670	2720	2680	2720
MIN	2510	4260	1290	2330	1400	1340	1250	1200	1790	2080	2640	2120
AC-FT	170200	291400	173200	401100	85850	89540	78190	214000	183500	160000	163700	141000

MEAN	2951	4608	5407	4894	2884	2335	2231	2773	2415	1659	1941	2523
MAX	5266	8779	12310	13510	7634	8084	4854	5464	5072	2603	2981	3932
(WY)	1963	1985	1997	1965	1972	1957	1993	1996	1984	1998	1993	1972
MIN	1051	1627	981	1050	668	525	437	526	816	1053	1083	1366
(WY)	1993	1955	1955	1977	1977	1977	1977	1977	1977	1957	1966	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1954 - 1998	
ANNUAL TOTAL	1330910		1084820			
ANNUAL MEAN	3646		2972		3054	
HIGHEST ANNUAL MEAN					4660	1997
LOWEST ANNUAL MEAN					1392	1977
HIGHEST DAILY MEAN	16400	Jan 7	14400	Jan 23	28900	Dec 27 1964
LOWEST DAILY MEAN	1260	Feb 12	1200	May 6	100	Nov 25 1960
ANNUAL SEVEN-DAY MINIMUM	1270	Feb 12	1210	May 5	344	May 4 1977
ANNUAL RUNOFF (AC-FT)	2640000		2152000		2213000	
10 PERCENT EXCEEDS	6220		5080		6120	
50 PERCENT EXCEEDS	2530		2650		2210	
90 PERCENT EXCEEDS	1320		1310		1160	

LOCATION.--Lat 43°58'15", long 122°38'15", in SW 1/4 sec.25, T.18 S., R.1 E., Lane County, Hydrologic Unit 17090001, on right bank 0.1 mi downstream from North Fork, 8.0 mi northeast of Lowell, and at mile 14.4.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and maximum (*):

e Estimated

WILLAMETTE RIVER BASIN

14150900 FALL CREEK LAKE NEAR LOWELL, OR

LOCATION.--Lat 43°56'40", long 122°45'20", in SW 1/4 sec.1, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, in regulating tower near the center of Fall Creek Dam on Fall Creek, 2.2 mi northeast of Lowell, and at mile 7.2.

DRAINAGE AREA.--184 mi².

PERIOD OF RECORD.--January 1966 to current year. Prior to October 1971, published as Fall Creek Reservoir near Lowell.

GAGE.--Water-stage recorder. Datum of gage is sea level. Levels by U.S. Army Corps of Engineers (USACE).

REMARKS.--Reservoir is formed by earthfill dam with concrete gate and spillway section, completed in 1965 by Corps of Engineers; storage began January 1966. Total capacity is 125,100 acre-ft at elevation 834 ft and usable capacity is 115,500 acre-ft between elevation 728 ft and 834 ft. Reservoir used for flood control, conservation, and recreation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by USACE.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 123,200 acre-ft May 30, 31, 1972, May 19, 1991; maximum elevation, 832.98 ft May 31, 1972; minimum contents, no contents Nov. 7 to Dec. 6, 1969, Nov. 14-16, 1970, Nov. 18-25, 1972.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 119,700 acre-ft May 30, elevation, 831.08 ft; minimum contents, 1,830 acre-ft Nov. 15, elevation, 698.39.

CORRECTION.--Change in contents for water year 1997 published in error. Correct value is -330 acre-feet.

Capacity table (elevation, in feet, and total contents, in acre-feet)

670.4	0	725	8,340	785	53,120
679	59	735	13,270	795	64,590
685	366	745	19,480	805	77,880
695	1,400	755	26,130	815	92,750
705	2,850	765	33,770	825	109,200
715	5,200	775	42,580	833	123,200

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	758.22	714.54	704.78	730.59	732.69	783.03	810.97	825.86	830.37	830.68	814.09	806.30
2	755.85	714.22	705.82	730.90	733.89	786.43	811.41	826.11	830.30	830.64	813.27	806.08
3	753.20	713.11	706.66	730.90	735.73	789.83	811.87	826.34	830.28	830.60	813.08	805.81
4	750.55	711.61	707.29	730.83	737.35	792.48	812.28	826.52	830.34	830.52	812.89	805.55
5	748.15	709.80	707.79	730.74	738.67	794.45	812.67	826.69	830.35	830.47	812.66	805.28
6	745.28	707.60	708.23	730.72	740.01	795.83	813.14	826.86	830.44	830.39	812.46	805.02
7	742.08	705.89	708.87	733.28	741.15	796.89	813.82	826.96	830.58	830.40	812.23	804.71
8	738.91	703.80	709.48	734.60	742.13	798.06	814.58	827.10	830.68	830.37	812.02	804.48
9	736.92	701.21	709.76	734.31	743.11	799.22	815.23	827.25	830.62	830.30	811.80	804.21
10	733.90	700.76	710.90	734.42	744.07	800.25	816.12	827.45	830.72	830.28	811.57	803.95
11	731.15	700.50	712.79	743.47	745.03	801.44	816.99	827.60	830.74	830.24	811.34	803.66
12	729.62	700.03	714.29	747.51	746.00	802.33	817.85	828.21	830.63	830.20	811.10	803.39
13	726.75	699.50	715.57	748.56	747.07	802.82	818.33	828.95	830.46	830.16	810.89	803.15
14	722.85	698.83	716.74	746.36	748.37	803.29	818.58	829.59	830.30	830.08	810.66	802.89
15	718.47	698.57	718.58	744.64	750.59	803.89	819.20	830.40	830.20	830.02	810.43	802.64
16	714.56	698.71	722.11	743.84	752.56	804.38	819.83	830.31	830.21	829.94	810.19	802.36
17	711.15	699.06	728.58	747.56	754.06	804.82	820.35	830.08	830.21	829.87	809.95	802.10
18	708.83	699.17	729.98	747.76	755.33	805.17	820.75	830.14	830.20	829.81	809.72	801.86
19	706.99	699.38	730.17	746.14	756.81	805.51	821.18	830.26	830.18	829.32	809.43	801.55
20	704.84	---	730.04	744.15	758.70	805.72	821.49	830.47	830.18	828.33	809.23	801.36
21	701.97	---	730.29	741.92	764.52	806.06	821.77	830.42	830.13	827.23	808.98	801.13
22	702.00	698.90	730.75	740.11	768.93	806.90	822.01	830.22	830.06	826.16	808.76	800.82
23	702.20	699.35	730.86	738.99	771.77	807.37	822.48	830.17	830.04	825.04	808.50	800.52
24	702.32	698.90	730.94	737.67	773.80	807.74	823.35	830.15	830.12	823.93	808.30	800.30
25	702.27	698.60	730.54	737.12	775.44	807.73	823.93	830.09	830.22	822.77	808.06	800.08
26	701.86	698.63	730.38	736.23	776.86	807.67	824.43	830.19	830.49	821.62	807.81	799.93
27	701.33	699.18	730.44	735.19	778.04	808.05	824.89	830.15	830.66	820.42	807.57	799.71
28	700.74	700.12	730.40	733.48	780.08	808.84	825.23	830.15	---	819.15	807.32	799.45
29	701.45	701.69	730.33	732.54	---	809.55	825.49	830.52	830.72	817.92	807.14	799.20
30	705.55	703.47	730.32	732.43	---	810.07	825.68	831.07	830.71	816.65	806.81	798.90
31	713.39	---	730.32	732.42	---	810.51	---	830.65	---	815.37	806.58	---
MAX	758.22	---	730.94	748.56	780.08	810.51	825.68	831.07	---	830.68	814.09	806.30
MIN	700.74	---	704.78	730.59	732.69	783.03	810.97	825.86	---	815.37	806.58	798.90
(†)	4780	2580	10750	11850	47770	85880	110300	119000	119100	93330	80130	69550
(‡)	-25980	-2200	+8170	+1100	+35920	+38110	+24420	+8700	+100	-25770	-13200	-10580

CAL YR 1997 AC-FT† -56110

WTR YR 1998 AC-FT‡ +38790

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

WILLAMETTE RIVER BASIN

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14151000 FALL CREEK BELOW WINBERRY CREEK, NEAR FALL CREEK, OR

LOCATION.--Lat 43°56'40", long 122°46'25", in NW 1/4 SE 1/4 sec.2, T.19 S., R.1 W., Lane County, Hydrologic Unit 17090001, on right bank 10 ft upstream from highway bridge, 1.1 mi downstream from Fall Creek Dam, 2.3 mi southeast of town of Fall Creek, and at mile 6.1.

DRAINAGE AREA.--186 mi².

PERIOD OF RECORD.--October to December 1911 (published as Big Fall Creek near Fall Creek; gage heights and discharge measurements only), September 1935 to current year.

REVISED RECORDS.--WSP 1094: 1946(M). WSP 1248: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 637.81 ft above sea level (Corps of Engineers bench mark). Oct. 1 to Dec. 31, 1911, nonrecording gage at site 0.25 mi downstream at different datum. Sept. 9, 1935, to Aug. 3, 1950, nonrecording gage on left bank at present site and datum. Aug. 4, 1950 to Aug. 27, 1982 water-stage recorder. Aug. 27, 1982 gage moved to right bank at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Discharges for period March 21 to May 5 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated since 1966 by Fall Creek Lake (station 14150900). No diversion upstream from station. Water temperatures August 1950 to September 1997.

AVERAGE DISCHARGE.--63 years (water years 1936-98), 579 ft³/s, 42.27 in/yr, 419,500 acre-ft/yr, adjusted for storage in Fall Creek Lake since January 1965.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,700 ft³/s Dec. 11, 1956, gage height, 18.80 ft, from rating curve extended above 9,700 ft³/s; minimum discharge, 1.5 ft³/s Oct. 7, 8, 1965.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,150 ft³/s Jan. 13, gage height, 6.65 ft; minimum discharge, 26 ft³/s Feb. 20, 27, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1220	495	96	281	635	31	279	209	1390	217	1100	211
2	1200	497	97	541	312	37	220	165	903	217	701	211
3	1200	497	98	615	46	46	220	165	695	217	215	211
4	1190	492	99	779	45	58	220	165	531	217	215	211
5	1220	481	101	669	45	90	221	165	477	217	215	211
6	1210	469	102	575	45	141	181	165	365	201	214	208
7	1200	457	103	963	45	141	109	165	237	156	214	208
8	1170	444	147	1170	44	144	109	165	330	155	213	208
9	1190	427	210	1080	44	144	109	165	375	155	211	208
10	1220	235	185	957	44	144	203	165	375	155	213	208
11	1190	190	57	1500	44	144	350	165	413	155	213	208
12	1220	190	57	1760	45	289	350	167	451	155	211	208
13	1200	188	57	2500	47	484	498	169	449	155	211	208
14	1200	187	57	2960	41	366	532	273	450	155	211	209
15	1100	147	57	2930	43	264	316	736	333	155	211	208
16	869	120	494	2440	42	214	228	1360	233	155	211	208
17	673	120	885	1020	41	214	228	1360	227	155	211	208
18	454	173	906	1600	42	215	228	1010	221	155	211	208
19	357	190	781	2020	43	214	230	957	223	493	211	211
20	348	190	740	1990	34	214	214	1020	221	1010	211	210
21	381	190	570	1830	51	214	225	1350	220	1080	212	209
22	114	158	417	1670	40	356	229	1290	220	1070	211	208
23	106	144	476	1660	33	1100	230	902	203	1070	211	208
24	115	285	491	1640	30	979	308	874	179	1070	211	208
25	124	311	563	1640	28	979	425	1270	179	1060	209	208
26	134	271	447	1630	28	977	304	984	193	1060	211	208
27	134	208	361	1610	27	812	230	916	220	1090	211	208
28	138	158	361	1590	27	464	230	740	220	1120	211	208
29	218	96	361	1370	---	339	237	1170	219	1120	211	208
30	489	96	334	988	---	339	233	2200	217	1120	211	208
31	507	---	311	815	---	339	---	2090	---	1110	211	---
TOTAL	23091	8106	10021	44793	1991	10492	7696	22697	10969	16620	7943	6262
MEAN	745	270	323	1445	71.1	338	257	732	366	536	256	209
MAX	1220	497	906	2960	635	1100	532	2200	1390	1120	1100	211
MIN	106	96	57	281	27	31	109	165	179	155	209	208
AC-FT	45800	16080	19880	88850	3950	20810	15270	45020	21760	32970	15750	12420
MEAN†	322	233	456	1463	718	958	667	873	367	117	41.5	30.9
CFSM†	1.73	1.25	2.45	7.86	3.86	5.15	3.59	4.70	1.98	0.63	0.22	0.17
IN.†	2.00	1.40	2.83	9.07	4.02	5.94	4.00	5.42	2.20	0.73	0.26	0.19
AC-FT†	19820	13880	28050	89950	39870	58920	39690	53720	21860	7200	2550	1840

CAL YR 1997 TOTAL 217226 MEAN 595 MAX 3460 MIN 53 AC-FT 430900 MEAN† 518 CFSM† 2.78 IN.† 37.78 AC-FT† 374800
WTR YR 1998 TOTAL 170681 MEAN 468 MAX 2960 MIN 27 AC-FT 338500 MEAN† 521 CFSM† 2.80 IN.† 38.03 AC-FT† 377300

† Adjusted for change in contents, in Fall Creek Lake.

WILLAMETTE RIVER BASIN

14152000 MIDDLE FORK WILLAMETTE RIVER AT JASPER, OR

LOCATION.--Lat 43°59'54", long 122°54'17", in SW 1/4 SW 1/4 sec.14, T.18 S., R.2 W., Lane County, Hydrologic Unit 17090001, on right bank 25 ft downstream from highway bridge at Jasper, 0.1 mi downstream from Hills Creek, and at mile 195.0.

DRAINAGE AREA.--1,340 mi².

PERIOD OF RECORD.--September 1905 to February 1912, July 1913 to March 1917, October 1952 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1288: 1907-8, 1910-12, 1914-16, drainage area.

GAGE.--Water-stage recorder. Datum of gage is 513.45 ft above sea level. September 1905 to February 1912 and July 1913 to March 1917, nonrecording gage at approximately same site at datum about 1.5 ft higher. Oct. 22, 1952, to Sept. 30, 1953, nonrecording gage at site 25 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1953 by Lookout Point Lake (station 14149000), since 1961 by Hills Creek Lake (station 14145100), and since 1966 by Fall Creek Lake (station 14150900). Continuous water-quality records for the period October 1953 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--55 years (water years 1906-11, 1914-16, 1953-98), 4,095 ft³/s, 2,967,000 acre-ft/yr.
32 years (water years 1967-98), 4,115 ft³/s, 2,981,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 94,000 ft³/s Nov. 23, 1909, gage height, 17.4 ft, datum then in use, from graph based on gage readings, from rating curve extended above 42,000 ft³/s; minimum discharge, 366 ft³/s Dec. 5, 1954.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,200 ft³/s Jan. 22, gage height, 9.44 ft; minimum discharge, 1,460 ft³/s May 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4000	6650	4800	2990	3950	2370	2090	1680	10100	2250	3620	2680
2	4150	7180	4740	3480	2670	2630	1970	1660	7540	2250	3320	2680
3	4100	7150	4730	4240	2050	3260	1960	1650	6270	2250	2740	2680
4	4110	7020	4710	4670	1990	3590	1930	1590	5920	2240	2730	2680
5	4220	6980	4570	4420	2070	3070	1910	1510	4890	2580	2730	2680
6	4140	6840	3540	5040	2540	2410	1930	1490	4010	2770	2740	2690
7	4110	6860	3500	5850	1820	2170	1820	1480	3450	2770	2730	2680
8	4050	6840	3640	5480	1790	2180	1720	1480	3510	2770	2730	2690
9	4190	6690	3700	5210	1760	2130	1720	1500	3780	2760	2730	2750
10	4190	6480	3760	5620	1750	2070	2080	1490	3640	2760	2720	2700
11	4150	5070	3130	7520	1740	2030	2380	1490	3370	2760	2720	2700
12	4230	4830	2530	7910	1770	2140	2280	1660	3040	2760	2710	2690
13	4160	4820	1750	10500	1950	2340	2310	2130	2900	2760	2700	2720
14	4120	4820	1630	12400	1910	2160	2300	2790	2290	2730	2720	2590
15	4030	4780	1660	10300	2110	2030	2110	4310	3240	2720	2710	2200
16	4010	4740	3000	9410	2020	1930	1950	7120	4190	2730	2710	2220
17	3760	4760	6500	5930	1890	1890	1900	7460	3570	2730	2720	2200
18	3580	4840	6360	11800	1810	1860	1840	7190	2890	2690	2720	2190
19	3460	4900	5960	14000	1840	1820	1820	6310	2890	2900	2720	2200
20	3450	4900	4920	15200	1930	1800	1770	7160	2360	3460	2720	2200
21	3450	4900	4710	17200	3800	1820	1750	8470	2280	3610	2720	2190
22	3210	4850	4390	18400	3450	2380	1720	8230	2290	3600	2720	2190
23	3150	4830	4040	19100	2700	3560	1830	6210	2270	3600	2720	2190
24	3200	5050	4060	18400	2340	3360	2130	5960	2280	3590	2720	2190
25	3250	5190	3350	17200	2170	3150	2210	6700	2280	3570	2720	2200
26	3290	5180	2600	14200	2050	3040	2010	6050	2320	3560	2710	2220
27	3290	5070	2300	10200	1950	2980	1840	5620	2330	3590	2720	2200
28	3300	4990	2250	8510	2090	2550	1790	5900	2300	3620	2700	2190
29	3480	4860	2240	9240	---	2280	1750	8510	2260	3650	2700	2200
30	4580	4860	2390	7740	---	2210	1720	11500	2250	3640	2700	2190
31	5900	---	2340	5410	---	2210	---	11600	---	3640	2690	---
TOTAL	120310	166930	113800	297570	61910	75420	58540	147900	106710	93310	85760	72780
MEAN	3881	5564	3671	9599	2211	2433	1951	4771	3557	3010	2766	2426
MAX	5900	7180	6500	19100	3950	3590	2380	11600	10100	3650	3620	2750
MIN	3150	4740	1630	2990	1740	1800	1720	1480	2250	2240	2690	2190
AC-FT	238600	331100	225700	590200	122800	149600	116100	293400	211700	185100	170100	144400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1998, BY WATER YEAR (WY)

	MEAN	3881	6339	7702	6852	3952	3324	2999	3376	2889	2024	2482	3519
MAX	5392	12730	19100	16940	9742	10550	6834	7156	6746	3010	3395	4824	
(WY)	1985	1985	1997	1997	1996	1972	1993	1996	1984	1998	1993	1984	
MIN	1586	2618	1517	1327	787	1111	729	844	1187	1248	1766	1830	
(WY)	1993	1988	1977	1977	1977	1977	1977	1973	1977	1978	1984	1968	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1967 - 1998

ANNUAL TOTAL	1801470	1400940	
ANNUAL MEAN	4936	3838	4115
HIGHEST ANNUAL MEAN			6722
LOWEST ANNUAL MEAN			1877
HIGHEST DAILY MEAN	22400	Jan 4	19100
LOWEST DAILY MEAN	1630	Dec 14	1480
ANNUAL SEVEN-DAY MINIMUM	1720	Apr 12	1490
ANNUAL RUNOFF (AC-FT)	3573000	2779000	2981000
10 PERCENT EXCEEDS	8560	6840	8230
50 PERCENT EXCEEDS	3450	2760	3040
90 PERCENT EXCEEDS	2320	1840	1530

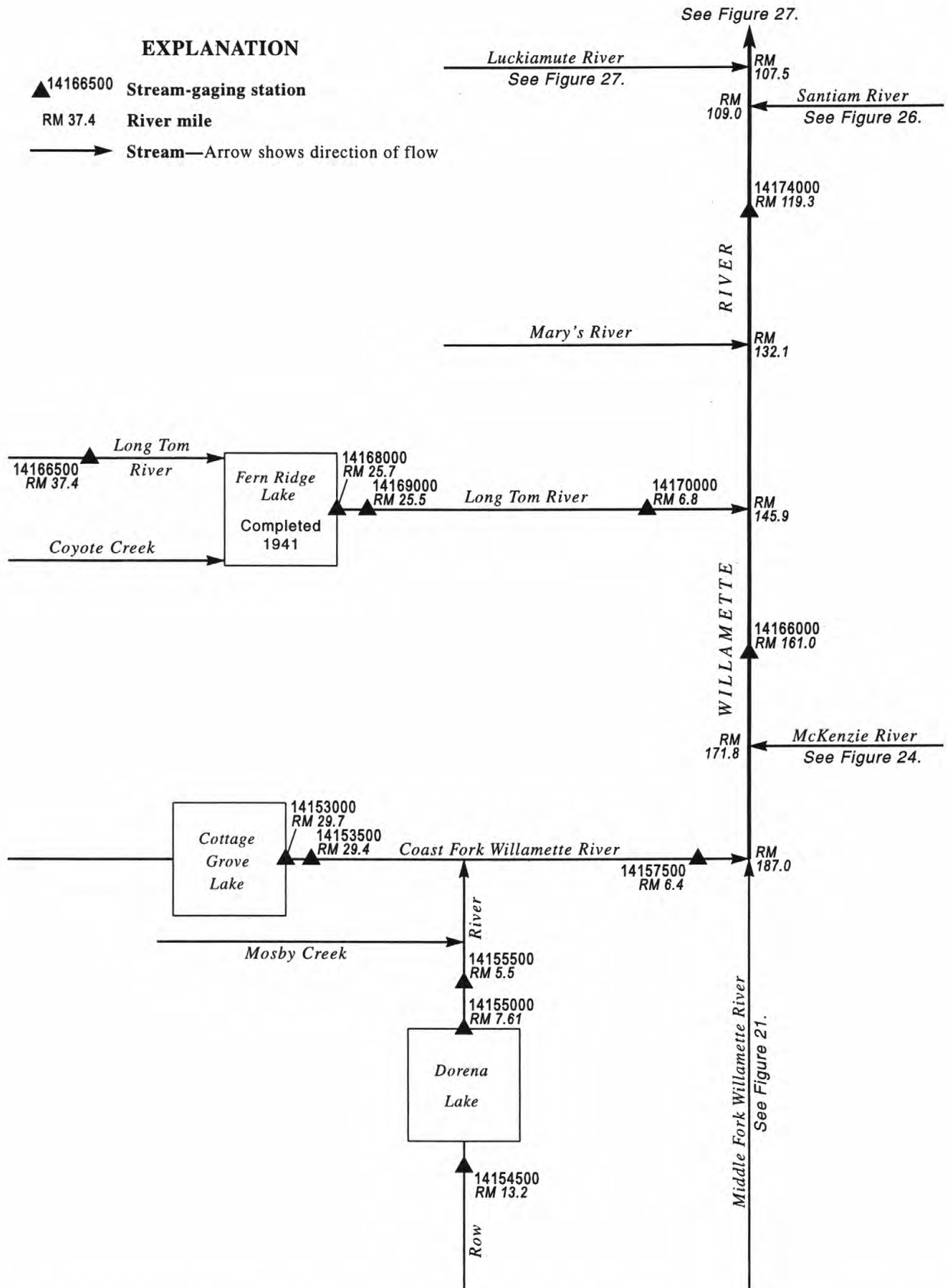


Figure 23. Schematic diagram showing gaging stations in the Long Tom, Coast Fork Willamette and upper Willamette River Basins.

WILLAMETTE RIVER BASIN

14153000 COTTAGE GROVE LAKE NEAR COTTAGE GROVE, OR

LOCATION.--Lat 43°43'00", long 123°02'55", in NE 1/4 sec.28, T.21 S., R.3 W., Lane County, Hydrologic Unit 17090002, in east abutment of dam on Coast Fork Willamette River 5.8 mi south of Cottage Grove, and at mile 29.7.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--October 1942 to current year. Prior to October 1971, published as Cottage Grove Reservoir near Cottage Grove.

REVISED RECORDS.--WSP 1218: 1950.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam with concrete spillway completed by Corps of Engineers in 1942; storage began Oct. 31, 1942. Capacity, 32,930 acre-ft between elevation 719.0 ft, outlet conduit, and 791.0 ft, crest of spillway. Dead storage negligible. Reservoir used for flood control and improvement of navigation. Figures given herein represent total contents. Monthly elevation for month of July provided by Corps of Engineers.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 36,750 acre-ft Dec. 24, 1964, elevation, 794.23 ft; minimum contents since first filling, no contents Sept. 26 to Oct. 19, 1966, and Nov. 14, 15, Nov. 20 to Dec. 8, 1969.

EXTREMES FOR CURRENT YEAR.-- Maximum contents, 32,600 acre-ft May 29, elevation, 790.71 ft; minimum contents, 3,260 acre-ft Nov. 16, elevation, 750.39 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

710.9	0	755	4,860	780	21,460
730	151	760	7,150	785	26,370
740	926	765	9,970	790	31,780
745	1,840	770	13,260	793	35,270
750	3,140	775	17,070		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	775.08	752.55	750.82	753.13	752.65	767.66	778.71	786.62	789.92	790.18	---	787.41
2	774.98	751.65	751.00	753.09	752.79	767.99	778.98	786.80	789.95	790.14	---	787.33
3	774.43	751.26	751.31	753.37	752.83	768.78	779.21	786.97	790.00	790.11	---	787.26
4	773.81	751.12	751.51	754.12	752.82	769.61	779.39	787.10	790.00	790.07	789.27	787.18
5	773.28	750.94	751.55	753.70	753.18	770.04	779.58	787.20	789.98	790.01	789.22	787.10
6	772.58	750.73	751.37	753.39	753.76	770.13	779.77	787.30	789.95	789.95	789.15	787.02
7	771.73	750.73	751.49	753.57	754.40	770.37	780.10	787.39	789.98	789.94	789.09	786.94
8	770.89	750.63	751.26	752.95	755.21	770.77	780.43	787.55	790.00	789.94	789.03	786.87
9	770.43	750.53	750.98	752.26	756.02	771.26	780.81	787.74	790.00	789.95	788.97	786.79
10	769.68	750.54	751.07	751.97	756.74	771.85	781.53	787.87	790.10	789.96	788.91	786.43
11	768.74	750.50	751.30	753.46	757.48	772.36	782.06	787.99	790.12	789.97	788.85	786.00
12	767.68	750.46	751.46	753.61	758.52	772.86	782.41	788.42	790.12	789.99	788.78	785.57
13	766.51	750.50	751.67	753.25	759.95	773.24	782.67	788.93	790.08	789.99	788.72	785.15
14	765.17	750.50	751.78	751.85	761.20	773.63	782.84	789.45	790.00	789.99	788.65	784.72
15	763.68	750.46	751.71	752.58	762.36	774.09	782.97	790.01	790.02	789.99	788.59	784.08
16	762.43	750.41	752.43	753.14	762.85	774.51	783.05	790.01	790.05	789.98	788.52	783.40
17	761.63	750.56	753.90	755.58	763.26	774.88	783.18	789.84	790.08	789.96	788.45	782.73
18	760.81	750.85	753.53	755.64	763.61	775.20	783.32	789.74	790.10	789.94	788.37	782.10
19	759.96	751.28	753.45	755.00	764.33	775.46	783.44	789.82	790.12	789.92	788.31	781.55
20	759.06	751.44	753.57	753.89	765.22	775.69	783.58	789.98	790.12	789.89	788.24	780.98
21	758.14	751.21	753.52	753.54	770.06	776.03	783.75	790.03	790.12	789.86	788.18	---
22	757.16	750.96	753.47	753.09	772.19	776.87	784.02	789.88	790.12	789.83	788.11	779.92
23	756.17	750.77	753.43	752.36	771.81	777.45	---	789.73	790.12	789.80	788.05	779.41
24	755.12	751.19	753.41	752.19	770.79	777.67	---	789.70	790.16	789.77	787.98	778.91
25	754.03	751.10	753.16	752.66	769.83	778.03	---	789.81	790.17	789.73	787.91	778.42
26	752.82	750.83	753.07	753.17	769.06	778.34	---	790.13	790.22	789.69	787.84	777.91
27	751.56	750.56	753.04	753.32	768.48	778.44	---	790.27	790.23	789.65	787.78	777.40
28	750.92	750.51	752.89	752.77	767.89	778.46	---	790.27	790.23	---	787.71	776.87
29	751.11	750.56	752.72	752.43	---	778.55	---	790.57	790.23	---	787.64	776.35
30	752.22	750.81	752.75	752.63	---	778.62	786.43	789.94	790.20	---	787.55	775.82
31	753.67	---	752.81	752.85	---	778.60	---	789.85	---	789.47	787.48	---
MAX	775.08	752.55	753.90	755.64	772.19	778.62	---	790.57	790.23	---	---	---
MIN	750.92	750.41	750.82	751.85	752.65	767.66	---	786.62	789.92	---	---	---
(†)	4360	3380	4040	4060	11810	20180	27870	31610	32010	31190	28990	17760
(‡)	-12870	-960	+660	+20	+7750	+8370	+7690	+3740	+400	-820	-2200	-11230

CAL YR 1997 AC-FT# -7530

WTR YR 1998 AC-FT# +530

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

WILLAMETTE RIVER BASIN

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14153500 COAST FORK WILLAMETTE RIVER BELOW COTTAGE GROVE DAM, OR

LOCATION.--Lat 43°43'15", long 123°02'55", in NE 1/4 sec.28, T.21 S., R.3 W., Lane County, Hydrologic Unit 17090002, on right bank at bridge 0.3 mi downstream from Cottage Grove Dam, 5.5 mi south of Cottage Grove, and at mile 29.4.

DRAINAGE AREA.--104 mi².

PERIOD OF RECORD.--January 1939 to current year. Prior to October 1944, published as "near Cottage Grove."

REVISED RECORDS.--WSP 1448: 1949(M).

GAGE.--Water-stage recorder. Datum of gage is 711.00 ft above sea level (Corps of Engineers bench mark). Jan. 1 to Oct. 12, 1939, nonrecording gage and Oct. 13, 1939, to Sept. 30, 1944, water-stage recorder at several sites and datums 0.8 mi downstream.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1942 by Cottage Grove Lake (station 14153000). Small diversions for irrigation upstream from station. Several observations of water temperature were made during the year.

AVERAGE DISCHARGE.--59 years (water years 1940-98), 267 ft³/s, 34.86 in/yr, 193,400 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,910 ft³/s Dec. 24, 1964, gage height, 11.83 ft; no flow July 5-7, 1945, and for part of Aug. 24, 1947.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,200 ft³/s May 30, gage height, 7.53 ft; minimum discharge, 47 ft³/s Oct. 28, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	275	490	196	133	451	554	297	79	588	107	52	50
2	302	347	151	340	343	488	196	80	479	107	52	50
3	368	215	105	328	340	495	196	80	348	107	52	50
4	410	147	105	505	340	502	196	80	332	107	52	50
5	407	136	119	513	241	503	197	80	279	107	52	50
6	407	136	143	401	188	503	198	79	259	107	52	50
7	423	136	141	342	146	374	166	79	185	70	52	50
8	420	136	214	499	78	315	153	78	182	53	52	50
9	416	121	201	457	72	234	134	78	182	55	52	50
10	476	98	133	393	73	170	123	78	185	55	52	190
11	514	97	99	528	74	170	321	78	185	55	52	231
12	509	92	99	806	76	172	387	79	185	55	52	229
13	501	76	81	1150	116	198	386	80	185	55	52	228
14	517	76	102	1100	227	164	386	80	181	55	52	228
15	526	76	178	743	458	125	346	178	120	55	52	337
16	438	76	180	768	492	125	317	587	105	55	52	345
17	290	76	509	545	360	123	251	603	105	54	52	343
18	288	99	537	805	297	121	206	486	107	53	52	342
19	284	193	357	1010	254	121	208	412	107	53	52	287
20	282	280	276	988	267	121	175	586	107	53	52	285
21	278	299	273	709	553	122	132	667	108	53	52	268
22	274	246	237	704	704	273	71	630	109	53	52	241
23	271	223	237	698	1100	785	72	517	109	53	52	240
24	267	223	270	625	1070	787	73	508	109	53	52	240
25	264	314	296	567	925	572	221	633	109	53	52	238
26	259	326	242	687	755	537	93	471	108	53	52	243
27	255	263	204	723	614	569	76	471	107	53	52	243
28	142	193	204	719	609	527	78	469	107	53	52	243
29	53	194	194	713	---	415	78	1560	107	53	52	243
30	242	196	150	544	---	375	78	1750	107	52	51	243
31	445	---	132	451	---	401	---	958	---	52	50	---
TOTAL	10803	5580	6365	19494	11223	10941	5811	12594	5486	1999	1609	5937
MEAN	348	186	205	629	401	353	194	406	183	64.5	51.9	198
MAX	526	490	537	1150	1100	787	387	1750	588	107	52	345
MIN	53	76	81	133	72	121	71	78	105	52	50	50
AC-FT	21430	11070	12620	38670	22260	21700	11530	24980	10880	3970	3190	11780
MEAN†	139	170	216	629	540	489	323	467	190	51.2	16.1	9.24
CFSM†	1.34	1.63	2.08	6.05	5.19	4.70	3.11	4.49	1.83	0.49	0.15	0.09
IN.†	1.54	1.82	2.39	6.98	5.41	5.42	3.47	5.18	2.03	0.57	0.18	0.10
AC-FT†	8560	10110	13280	38690	30010	30070	19220	28720	11280	3150	990	550

CAL YR 1997 TOTAL 90000 MEAN 247 MAX 2520 MIN 47 AC-FT 178500 MEAN† 236 CFSM† 2.27 IN.† 30.83 AC-FT† 170970
WTR YR 1998 TOTAL 97842 MEAN 268 MAX 1750 MIN 50 AC-FT 194100 MEAN† 269 CFSM† 2.59 IN.† 35.10 AC-FT† 194630

† Adjusted for change in contents, in Cottage Grove Lake.

WILLAMETTE RIVER BASIN

14154500 ROW RIVER ABOVE PITCHER CREEK, NEAR DORENA, OR

LOCATION.--Lat 43°44'10", long 122°52'20", in NE 1/4 sec.24, T.21 S., R.2 W., Lane County, Hydrologic Unit 17090002, on right bank 0.5 mi upstream from Pitcher Creek, 1.2 mi northwest of Dorena, and at mile 13.2.

DRAINAGE AREA.--211 mi².

PERIOD OF RECORD.--September 1935 to current year. Prior to October 1949, published as "at Star."

GAGE.--Water-stage recorder. Datum of gage is 856.16 ft above sea level. Sept. 16, 1935, to Oct. 17, 1938, nonrecording gage at site 450 ft upstream at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Slight regulation caused by upstream logponds. No diversions upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--63 years (water years ~~1936~~-98), 597 ft³/s, 38.44 in/yr, 432,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD - Maximum discharge, 33,100 ft³/s Dec. 22, 1964, gage height, 18.19 ft, from rating curve extended above 12,000 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 10 ft³/s Sept. 24, 25, 1951, Oct. 7, 8, 1958.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	2330	*5,740	*8.48	No other peak greater than base discharge.			
Minimum discharge, 27 ft ³ /s Sept. 16-18.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	856	302	348	648	1330	615	490	1290	140	48	29
2	461	524	270	935	558	1700	562	497	915	133	48	29
3	280	378	237	836	503	1780	538	448	700	126	46	29
4	320	294	209	1010	473	1460	543	374	569	118	43	29
5	467	242	186	737	427	1210	540	353	481	109	42	29
6	375	208	167	586	427	935	598	324	413	100	42	29
7	246	287	186	1150	393	744	756	298	364	94	41	29
8	214	272	273	1310	358	744	772	293	328	89	41	28
9	1030	233	247	909	352	729	702	396	293	85	40	30
10	606	204	242	915	337	694	1040	376	335	81	39	29
11	537	181	232	3630	376	804	1490	367	439	80	38	29
12	991	162	215	2710	392	1030	1370	719	362	79	37	29
13	623	145	198	2930	505	944	1060	1130	305	74	37	29
14	427	136	188	2170	618	804	891	1040	266	70	36	29
15	315	121	268	2450	1050	770	876	1550	240	68	35	28
16	244	111	1060	2680	913	782	812	1540	223	64	37	28
17	195	133	2690	3990	672	658	706	1460	204	62	36	27
18	163	158	1220	2110	580	546	634	1300	186	61	35	28
19	140	331	741	1680	801	476	653	1190	175	60	35	34
20	121	589	580	1380	1020	452	610	1760	164	59	34	36
21	106	473	500	1080	3480	472	572	1430	151	57	34	33
22	94	354	415	1160	2470	1490	559	1080	142	56	34	31
23	96	306	380	1310	1550	2400	912	846	137	55	34	30
24	95	590	428	1340	1090	1860	1870	779	151	54	35	29
25	84	830	438	1540	849	1360	1540	1640	172	53	34	33
26	78	608	377	1590	708	1420	1070	1550	266	51	34	59
27	72	459	332	1380	611	1300	809	1230	242	51	33	49
28	68	362	317	1100	815	1070	690	962	193	50	32	38
29	201	316	322	1000	---	838	619	2750	164	48	31	34
30	1240	343	338	905	---	698	548	3320	148	48	30	33
31	2540	---	315	760	---	643	---	2010	---	48	30	---
TOTAL	12503	10206	13873	47631	22976	32143	24957	33502	10018	2323	1151	956
MEAN	403	340	448	1536	821	1037	832	1081	334	74.9	37.1	31.9
MAX	2540	856	2690	3990	3480	2400	1870	3320	1290	140	48	59
MIN	68	111	167	348	337	452	538	293	137	48	30	27
AC-FT	24800	20240	27520	94480	45570	63760	49500	66450	19870	4610	2280	1900
CFSM	1.91	1.61	2.12	7.28	3.89	4.91	3.94	5.12	1.58	.36	.18	.15
IN.	2.20	1.80	2.45	8.40	4.05	5.67	4.40	5.91	1.77	.41	.20	.11

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1998, BY WATER YEAR (WY)

MEAN	162	766	1168	1170	1088	1001	832	568	275	76.8	37.8	46.4
MAX	1152	2569	4114	2606	2322	2168	2161	1333	847	236	107	259
(WY)	1951	1974	1965	1971	1986	1972	1937	1963	1993	1983	1976	1978
MIN	12.8	19.2	58.0	86.0	81.1	159	290	116	52.1	26.3	15.0	15.7
(WY)	1988	1937	1977	1977	1977	1992	1941	1987	1987	1940	1940	1951

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1936 - 1998
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ANNUAL TOTAL	193353		212239			
ANNUAL MEAN	530		581		597	
HIGHEST ANNUAL MEAN					1008	1974
LOWEST ANNUAL MEAN					233	1977
HIGHEST DAILY MEAN	7160	Jan 1	3990	Jan 17	23800	Dec 22 1964
LOWEST DAILY MEAN	29	Aug 15	27	Sep 17	11	Sep 24 1951
ANNUAL SEVEN-DAY MINIMUM	30	Aug 12	28	Sep 12	11	Oct 21 1987
ANNUAL RUNOFF (AC-FT)	383500		421000		432500	
ANNUAL RUNOFF (CFSM)	2.51		2.76		2.83	
ANNUAL RUNOFF (INCHES)	34.09		37.42		38.44	
10 PERCENT EXCEEDS	1240		1400		1430	
50 PERCENT EXCEEDS	302		362		279	
90 PERCENT EXCEEDS	40		34		28	

WILLAMETTE RIVER BASIN

173

14155000 DORENA LAKE NEAR COTTAGE GROVE, OR

LOCATION.--Lat 43°47'10", long 122°57'15", in SE 1/4 sec.32, T.20 S., R.2 W., Lane County, Hydrologic Unit 17090002, on left end of Dorena Dam on Row River, 5.0 mi east of Cottage Grove, and at mile 7.61.

DRAINAGE AREA.--265 mi².

PERIOD OF RECORD.--October 1949 to current year. Prior to October 1971, published as Dorena Reservoir near Cottage Grove.

REVISED RECORDS.--WRD OR-78-1: 1969.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with concrete outlet and spillway, completed in 1949 by Corps of Engineers; controlled storage began Oct. 11, 1949. Capacity, 77,580 acre-ft between elevations 739.0 ft, sill of outlet gates, and 835.0 ft, crest of spillway. Dead storage, 18 acre-ft below elevation 739.0 ft. Reservoir used for flood control and improvement of navigation. Figures given herein represent total contents. Monthend elevation for months of May, August, and September provided by Corps of Engineers.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 95,550 acre-ft Dec. 23, 1964, elevation, 844.03 ft; minimum contents observed since first filling, 159 acre-ft Dec. 14, 1970, elevation, 743.60 ft.

EXTREMES FOR CURRENT YEAR.--Maximum recorded contents, 72,840 acre-ft July 14, 16, elevation, 832.43 ft; minimum contents, 6,900 acre-ft Nov. 14, elevation, 770.13 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

760	2,810	785	15,850	810	39,380	835	77,600
765	4,560	790	19,580	815	45,620	840	87,320
770	6,840	795	23,780	820	52,480		
775	9,540	800	28,490	825	60,060		
780	12,530	805	33,700	830	68,470		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	809.08	773.52	771.02	773.26	772.49	797.08	813.59	826.71	---	832.34	831.85	---
2	808.68	770.51	771.24	773.49	772.92	797.69	814.27	826.95	---	832.33	831.81	---
3	807.77	770.29	771.66	773.25	772.99	797.95	814.86	827.09	---	832.34	831.76	---
4	806.90	770.40	771.93	773.41	773.43	798.33	815.41	827.25	---	832.28	---	---
5	806.38	770.26	772.04	772.38	774.27	798.81	815.99	827.50	---	832.25	---	---
6	805.58	770.34	771.91	772.07	775.21	799.14	816.68	827.69	---	832.24	---	---
7	804.44	771.07	771.95	773.03	776.05	799.71	817.35	827.85	---	832.27	---	---
8	803.28	771.29	771.91	773.27	776.91	800.53	817.88	828.11	---	832.27	---	---
9	803.65	771.04	771.75	772.51	777.73	801.24	818.29	828.48	---	832.35	---	---
10	802.93	770.79	771.85	772.98	778.46	801.97	819.26	828.82	832.10	832.37	---	---
11	801.74	770.43	772.23	781.46	779.29	802.71	819.67	829.13	832.34	832.38	---	---
12	801.36	770.14	772.51	784.30	780.24	803.25	819.84	830.06	832.36	832.41	---	---
13	800.22	770.15	772.70	783.92	781.57	803.44	820.08	830.48	832.27	832.42	---	---
14	798.33	770.22	772.78	780.02	783.28	803.73	820.24	830.66	832.12	832.41	---	---
15	795.91	770.39	772.92	777.13	785.54	804.13	820.85	830.96	832.07	832.41	---	---
16	793.24	770.51	773.50	776.11	786.59	804.51	819.99	831.27	832.07	832.41	---	---
17	790.37	770.78	778.77	783.25	787.03	805.44	820.30	831.56	832.00	832.39	---	---
18	787.76	770.93	778.33	783.03	787.53	806.23	820.71	---	831.99	832.36	---	---
19	785.67	771.29	776.02	780.46	788.91	806.86	821.18	---	831.97	832.37	---	---
20	784.14	771.23	773.00	776.62	790.79	807.42	821.54	---	832.02	832.33	---	---
21	782.73	770.93	771.44	773.24	797.15	808.07	821.93	---	832.03	832.31	---	---
22	781.46	770.79	771.64	772.16	799.66	809.47	822.31	---	832.02	832.25	---	---
23	780.29	770.62	771.69	772.04	798.79	809.79	823.13	---	832.02	832.26	---	---
24	779.12	771.82	772.02	772.21	797.53	809.96	823.94	---	832.08	832.20	---	---
25	777.88	772.06	772.29	773.30	796.25	810.20	823.89	---	832.16	832.17	---	---
26	776.50	771.15	772.53	774.51	795.31	810.51	824.07	---	832.31	832.14	---	---
27	775.12	770.75	772.69	774.93	795.30	810.73	824.37	---	832.29	832.10	---	---
28	773.49	770.49	772.75	774.10	796.21	811.17	824.69	---	832.30	832.05	---	---
29	772.21	770.66	772.80	772.97	---	811.61	826.19	---	832.33	831.98	---	---
30	775.98	770.96	772.90	771.99	---	812.11	826.49	---	832.33	831.95	---	812.37
31	779.92	---	772.96	772.40	---	812.84	---	832.04	---	831.90	829.78	---
MAX	809.08	773.52	778.77	784.30	799.66	812.84	826.49	---	---	832.42	---	---
MIN	772.21	770.14	771.02	771.99	772.49	797.08	813.59	---	---	831.90	---	---
(†)	12480	7330	8410	8100	24870	42850	62480	72130	72650	71870	68080	42260
(‡)	-26770	-5150	+1080	-310	+16770	+17980	+19630	+9650	+520	-780	-3790	-25820

CAL YR 1997 MAX 832.44 MIN 770.06 AC-FT† -34460
WTR YR 1998 MAX --- MIN --- AC-FT† +3010

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

WILLAMETTE RIVER BASIN

14155500 ROW RIVER NEAR COTTAGE GROVE, OR

LOCATION.--Lat 43°47'35", long 122°59'25", in NE 1/4 sec.36, T.20 S., R.3 W., Lane County, Hydrologic Unit 17090002, on right bank 1.7 mi upstream from Mosby Creek, 2.1 mi downstream from Dorena Dam, 3.5 mi east of Cottage Grove, and at mile 5.5.

DRAINAGE AREA.--270 mi².

PERIOD OF RECORD.--January 1939 to current year. Prior to October 1947, published as "near Dorena."

GAGE.--Water-stage recorder. Datum of gage is 685.24 ft above sea level (levels by Corps of Engineers). Jan. 5 to Oct. 12, 1939, nonrecording gage at site 180 ft upstream at datum 1.00 ft higher.

REMARKS.--Records good. Flow regulated since October 1949 by Dorena Lake (station 14155000). No diversion upstream from station.

AVERAGE DISCHARGE.--59 years (water years 1940-98), 746 ft³/s, 37.52 in/yr, 540,500 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 21,400 ft³/s Dec. 28, 1945, gage height, 18.20 ft; minimum discharge, 0.20 ft³/s Sept. 25 to Oct. 7, 1958.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,340 ft³/s Jan. 13, gage height, 7.58 ft; minimum recorded discharge, 90 ft³/s several days in July to September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	690	2890	356	349	831	1500	333	445	1730	200	93	e90
2	758	1400	286	967	639	2080	333	445	1310	200	93	e90
3	879	504	205	1030	638	1870	333	445	796	200	92	e90
4	873	334	205	1190	504	1450	333	350	792	200	93	e90
5	868	324	219	1140	335	1110	333	250	542	200	91	e90
6	867	252	246	791	309	859	333	250	493	152	91	e90
7	895	242	243	1060	265	644	548	250	493	93	90	e90
8	890	293	344	1460	216	596	633	213	493	93	90	e150
9	889	342	345	1270	209	568	639	200	405	93	90	e350
10	1050	315	287	1040	213	579	681	200	328	93	90	e500
11	1270	311	213	1570	213	822	1530	200	368	93	e90	e500
12	1300	267	216	2100	220	1010	1560	203	443	93	e90	e500
13	1290	195	216	3520	225	878	1190	968	491	93	e90	e500
14	1400	177	234	3940	230	721	954	1180	483	93	e90	e500
15	1490	137	332	3770	622	721	795	1530	349	92	e90	e560
16	1460	137	1000	3360	790	398	795	1530	319	93	e90	e660
17	1420	138	1560	2100	670	225	695	1500	319	92	e90	e660
18	1260	198	1600	2600	484	225	531	1410	260	93	e90	e660
19	964	320	1570	2970	443	225	474	1300	238	93	e90	e620
20	711	656	1510	2930	784	230	470	1950	203	92	e90	e620
21	615	600	982	2330	1350	751	431	2240	200	93	e90	e620
22	548	440	488	1670	2460	2650	416	1360	200	91	e90	e600
23	496	405	498	1600	2100	2340	518	1200	200	93	e90	e600
24	489	408	505	1600	1870	2140	1540	1170	201	93	e90	e600
25	480	835	505	1620	1710	1540	1800	1820	200	93	e90	e600
26	473	899	441	1650	1060	1500	1120	1830	241	93	e90	e620
27	464	619	388	1670	545	1440	757	1630	319	91	e90	e620
28	492	475	388	1660	949	1080	625	1370	256	90	e90	e620
29	520	353	388	1630	---	817	509	3080	200	90	e90	e620
30	529	356	386	1390	---	615	445	4000	200	90	e90	e620
31	1470	---	363	905	---	413	---	2850	---	91	e90	---
TOTAL	27800	14822	16519	56882	20884	31997	21654	37369	13072	3459	2803	13530
MEAN	897	494	533	1835	746	1032	722	1205	436	112	90.4	451
MAX	1490	2890	1600	3940	2460	2650	1800	4000	1730	200	93	660
MIN	464	137	205	349	209	225	333	200	200	90	90	90
AC-FT	55140	29400	32770	112800	41420	63470	42950	74120	25930	6860	5560	26840
MEAN†	461	408	551	1830	1050	1320	1050	1360	445	98.9	28.8	17.1
CFSM†	1.71	1.51	2.04	6.78	3.88	4.90	3.90	5.04	1.65	0.37	0.11	0.06
IN.†	1.97	1.68	2.35	7.81	4.04	5.66	4.35	5.82	1.84	0.42	0.12	0.07
AC-FT†	28370	24250	33850	112490	58190	81450	62580	83770	26450	6080	1770	1020

CAL YR 1997 TOTAL 251931 MEAN 690 MAX 6420 MIN 88 AC-FT 499700 MEAN† 643 CFSM† 2.38 IN.† 32.32 AC-FT† 465240
WTR YR 1998 TOTAL 260791 MEAN 714 MAX 4000 MIN 90 AC-FT 517300 MEAN† 710 CFSM† 2.63 IN.† 35.72 AC-FT† 514290

e Estimated

† Adjusted for change in contents, in Dorena Lake.

WILLAMETTE RIVER BASIN

175

14157500 COAST FORK WILLAMETTE RIVER NEAR GOSHEN, OR

LOCATION.--Lat 43°58'50", long 122°57'55", in NW 1/4 sec.29, T.18 S., R.2 W., Lane County, Hydrologic Unit 17090002, on right bank at downstream side of bridge on State Highway 58, 2.5 mi southeast of Goshen, and at mile 6.4.

DRAINAGE AREA.--642 mi².

PERIOD OF RECORD.--August 1905 to February 1912, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1248: 1905-12. WSP 1935: 1956.

GAGE.--Water-stage recorder. Datum of gage is 473.80 ft above sea level. Aug. 23, 1905 to Feb. 7, 1912, nonrecording gage at site 600 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1942 by Cottage Grove Lake (station 14153000) and since 1949 by Dorena Lake (station 14155000). Several small diversions for logponds and irrigation upstream from station. Several observations of water temperature were made during the year. Continuous water-quality records for the period October 1961 to September 1975 have been collected at this location.

AVERAGE DISCHARGE.--54 years (water years 1906-11, 1951-98), 1,600 ft³/s, 1,159,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 58,500 ft³/s Nov. 22, 1909, gage height, 19.5 ft, site and datum then in use, from rating curve extended above 15,000 ft³/s; minimum discharge, 36 ft³/s Sept. 29, 30, Oct. 11, 12, 1908.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,230 ft³/s May 29, 30, gage height, 10.19 ft; minimum discharge, 120 ft³/s Sept. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1070	3860	883	759	2070	2600	1300	739	3570	370	153	127
2	1370	2590	804	1860	1740	3180	1050	753	2680	370	153	127
3	1440	1160	563	2130	1600	4090	1010	838	1930	370	149	126
4	1450	791	521	2940	1550	3930	972	723	1650	367	148	124
5	1530	654	494	2620	1210	3200	938	538	1360	363	146	124
6	1490	579	544	2030	1010	2630	1070	506	1120	346	145	124
7	1470	623	575	2020	911	2070	1160	489	1020	249	145	122
8	1460	625	803	2810	727	1890	1330	471	945	209	142	180
9	1770	658	818	2580	678	1650	1300	493	870	204	142	432
10	1840	598	742	2140	649	1410	1750	495	766	200	140	630
11	2130	562	539	3720	743	1400	2770	484	818	199	140	603
12	2150	529	514	4630	821	1600	3050	632	844	197	140	597
13	2080	420	493	6910	1580	1750	2560	1470	874	195	138	593
14	2090	388	467	6980	1570	1580	2140	2070	846	192	137	592
15	2190	330	685	6270	2180	1330	1890	2240	690	190	137	692
16	2130	314	1330	5670	2410	1290	1690	3070	559	188	135	896
17	1860	324	3910	5030	1990	973	1490	3080	544	187	135	899
18	1720	400	3290	4590	1650	715	1190	2940	503	182	133	903
19	1440	691	2770	5330	1530	670	1030	2690	442	181	131	876
20	1150	1260	2470	5070	1600	638	976	3800	417	179	129	854
21	983	1350	2230	4280	6230	705	869	4300	393	178	129	849
22	934	1060	1280	3550	6440	2390	751	3180	387	173	129	802
23	846	920	1210	3470	5660	5310	863	2580	382	171	129	792
24	827	1220	1360	3710	4370	4970	1950	2390	396	170	129	791
25	809	1630	1320	4060	3730	3630	2690	3680	416	167	129	795
26	793	1850	1190	4410	3230	3290	1950	3480	412	164	129	835
27	777	1470	967	4330	2380	3150	1320	3060	509	164	129	835
28	753	1040	910	3770	1960	2780	1080	2590	480	161	129	830
29	689	900	870	3620	---	2150	914	5910	375	160	129	817
30	1140	980	813	3220	---	1720	761	8460	370	156	127	814
31	3030	---	745	2390	---	1610	---	5720	---	154	127	---
TOTAL	45411	29776	36110	116899	62219	70301	43814	73871	26568	6756	4233	17781
MEAN	1465	993	1165	3771	2222	2268	1460	2383	886	218	137	593
MAX	3030	3860	3910	6980	6440	5310	3050	8460	3570	370	153	903
MIN	689	314	467	759	649	638	751	471	370	154	127	122
AC-FT	90070	59060	71620	231900	123400	139400	86910	146500	52700	13400	8400	35270

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1998, BY WATER YEAR (WY)

	MEAN	782	2001	3363	3586	2814	2256	1581	1068	597	258	373	543
MAX	3119	6305	9820	7814	6891	5716	4020	3285	2424	588	1115	1057	
(WY)	1951	1974	1965	1909	1961	1957	1963	1963	1993	1957	1955	1978	
MIN	147	121	196	200	203	385	460	247	129	90.3	49.7	63.5	
(WY)	1911	1953	1977	1977	1977	1992	1987	1987	1987	1910	1910	1910	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1906 - 1998

ANNUAL TOTAL	507251	533739	
ANNUAL MEAN	1390	1462	1600
HIGHEST ANNUAL MEAN			2701
LOWEST ANNUAL MEAN			512
HIGHEST DAILY MEAN	12900	8460	36500
LOWEST DAILY MEAN	132	122	36
ANNUAL SEVEN-DAY MINIMUM	132	125	42
ANNUAL RUNOFF (AC-FT)	1006000	1059000	1159000
10 PERCENT EXCEEDS	3340	3560	4200
50 PERCENT EXCEEDS	816	910	747
90 PERCENT EXCEEDS	147	151	175

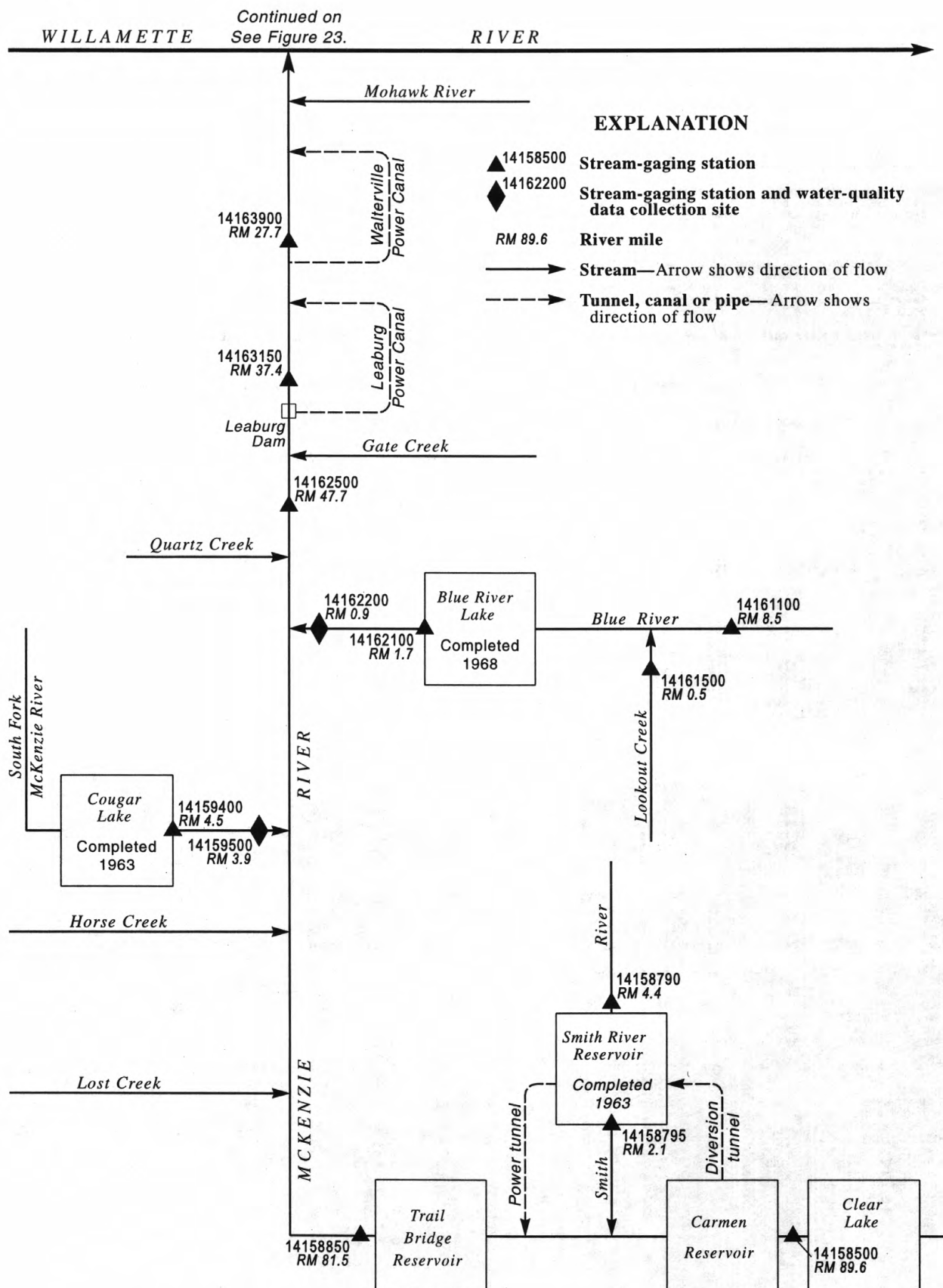


Figure 24. Schematic diagram showing gaging stations and diversions in the McKenzie River Basin.

WILLAMETTE RIVER BASIN

177

14158500 MCKENZIE RIVER AT OUTLET OF CLEAR LAKE, OR

LOCATION.--Lat 44°21'40", long 121°59'40", in SE 1/4 sec.8, T.14 S., R.7 E., Linn County, Hydrologic Unit 17090004, Willamette National Forest, on west bank of Clear Lake in narrow channel, 150 ft upstream from outlet and at mile 89.6.

DRAINAGE AREA.--92.4 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--June 1912 to September 1915, October 1947 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1288: 1949. WSP 1318: 1915(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,015.32 ft above sea level (levels by Eugene Water and Electric Board). June 20, 1912, to July 31, 1915, nonrecording gage at site 1.0 mi north at different datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by natural storage in lake. At high stages an undetermined flow enters numerous sinkholes in lava rock along south edge of lake upstream from station.

AVERAGE DISCHARGE.--54 years (water years 1913-15, 1948-98), 459 ft³/s, 67.42 in/yr, 332,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,300 ft³/s Dec. 23, 1964, gage height, 8.15 ft; minimum discharge, 116 ft³/s Oct. 27, 28, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,170 ft³/s Jan. 17, gage height, 4.40 ft; minimum discharge, 242 ft³/s Sept. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	314	431	430	384	753	516	715	633	548	422	319	271
2	316	451	429	386	725	520	688	647	545	421	317	270
3	315	473	428	379	698	522	663	633	544	419	314	269
4	321	496	426	376	670	518	634	612	547	417	312	268
5	328	514	422	372	646	510	607	629	544	415	311	266
6	331	532	419	371	634	503	585	627	532	412	308	265
7	344	547	419	373	616	496	565	606	524	410	306	265
8	361	539	414	366	598	492	545	592	519	407	304	264
9	375	525	407	364	580	479	534	577	515	405	302	263
10	371	513	401	367	565	471	533	557	510	402	299	261
11	380	499	395	390	557	465	529	540	502	399	296	260
12	386	479	390	398	551	460	520	532	494	395	294	259
13	390	463	385	417	567	461	511	523	486	391	292	258
14	396	453	381	459	571	466	505	514	481	388	291	257
15	402	445	380	507	573	478	501	514	474	385	290	256
16	406	440	399	675	561	498	495	511	467	381	288	254
17	409	443	406	1070	552	525	488	503	456	378	286	253
18	410	436	390	1040	544	530	483	497	448	374	284	256
19	408	432	391	923	549	528	477	498	442	370	283	255
20	405	431	399	847	557	530	475	507	437	365	281	252
21	402	425	401	816	607	550	475	511	434	358	279	250
22	398	419	402	813	602	689	480	509	432	354	277	250
23	394	421	405	840	578	906	511	504	429	350	276	249
24	388	426	404	853	559	950	552	503	430	346	275	248
25	381	426	403	845	545	856	553	512	429	341	275	249
26	375	427	400	876	531	813	541	514	429	339	278	247
27	368	429	398	895	518	803	538	507	425	335	277	246
28	360	429	395	859	518	790	551	499	423	332	276	245
29	385	431	392	831	---	773	583	506	423	330	275	244
30	402	433	387	822	---	754	614	541	423	327	273	243
31	429	---	383	784	---	740	---	557	---	322	272	---
TOTAL	11650	13808	12481	19698	16525	18592	16451	16915	14292	11690	9010	7693
MEAN	376	460	403	635	590	600	548	546	476	377	291	256
MAX	429	547	430	1070	753	950	715	647	548	422	319	271
MIN	314	419	380	364	518	460	475	497	423	322	272	243
AC-FT	23110	27390	24760	39070	32780	36880	32630	33550	28350	23190	17870	15260
CFSM	4.07	4.98	4.36	6.88	6.39	6.49	5.93	5.91	5.16	4.08	3.15	2.78
IN.	4.69	5.56	5.02	7.93	6.65	7.49	6.62	6.81	5.75	4.71	3.63	3.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1998, BY WATER YEAR (WY)

	249	375	540	524	538	511	592	679	560	387	300	252
MEAN	249	375	540	524	538	511	592	679	560	387	300	252
MAX	428	829	1209	1123	1313	1205	873	1178	1202	737	499	392
(WY)	1951	1951	1965	1997	1996	1972	1997	1949	1974	1950	1974	1974
MIN	122	141	209	191	180	224	341	319	203	173	149	132
(WY)	1993	1988	1977	1977	1977	1977	1955	1992	1992	1977	1992	1992

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1913 - 1998

ANNUAL TOTAL	230669	168805	459
ANNUAL MEAN	632	462	688
HIGHEST ANNUAL MEAN			241
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	2300	1070	3100
LOWEST DAILY MEAN	314	243	116
ANNUAL SEVEN-DAY MINIMUM	317	246	117
ANNUAL RUNOFF (AC-FT)	457500	334800	332200
ANNUAL RUNOFF (CFSM)	6.84	5.01	4.96
ANNUAL RUNOFF (INCHES)	92.87	67.96	67.42
10 PERCENT EXCEEDS	1040	634	800
50 PERCENT EXCEEDS	527	430	395
90 PERCENT EXCEEDS	342	276	210

WILLAMETTE RIVER BASIN

14158790 SMITH RIVER ABOVE SMITH RIVER RESERVOIR, NEAR BELKNAP SPRINGS, OR

LOCATION.--Lat 44°20'05", long 122°02'45", in SW 1/4 SW 1/4 sec.24, T.14 S., R.6 E., Linn County, Hydrologic Unit 17090004, in Willamette National Forest, on right bank 200 ft upstream from Smith River Reservoir, 0.7 mi downstream from Browder Creek, 10 mi north of town of Belknap Springs, and at mile 4.4.

DRAINAGE AREA.--16.2 mi².

PERIOD OF RECORD.--October 1960 to current year.

REVISED RECORDS.--WDR OR 80-2: 1978(P).

GAGE.--Water-stage recorder. Datum of gage is 2,610.00 ft above sea level (levels by Eugene Water and Electric Board). Prior to Sept. 10, 1964, at datum 1.56 ft higher.

REMARKS.--No estimated daily discharges. Records fair. Eugene Water and Electric Board telemetry at station. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--38 years (water years 1961-98), 90.2 ft³/s, 75.69 in/yr, 65,380 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,160 ft³/s Dec. 22, 1964, gage height, 11.9 ft, from floodmark, from rating curve extended above 560 ft/s, on basis of slope-area measurement of peak flow; minimum discharge, 1.2 ft³/s Oct. 13, 1991, result of log jam.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1930	940	7.69	Jan. 17	0130	*1,070	*7.85

Minimum discharge, 4.2 ft³/s Sept. 14-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	293	76	73	145	96	94	186	125	32	8.3	4.8
2	25	193	69	95	127	115	86	185	115	30	8.0	4.8
3	40	144	63	82	114	107	83	154	109	29	7.7	4.8
4	71	118	57	74	102	91	78	144	109	27	7.5	4.8
5	136	98	52	69	97	79	74	165	95	25	7.4	4.6
6	83	82	49	65	105	71	72	140	83	23	7.2	4.6
7	61	102	51	81	102	64	70	124	81	22	7.0	4.6
8	80	83	49	77	95	61	66	114	81	21	6.9	4.6
9	150	74	45	70	86	56	68	100	76	19	6.9	4.6
10	118	67	42	94	82	55	79	86	78	18	6.7	4.6
11	113	60	40	248	83	64	82	79	73	18	6.5	4.6
12	125	54	38	240	101	92	79	85	67	17	6.4	4.4
13	104	50	37	236	124	124	75	82	60	16	6.3	4.4
14	88	46	37	427	122	141	71	93	54	15	6.2	4.4
15	73	42	43	397	117	159	67	113	50	14	6.1	4.3
16	62	40	229	387	103	167	65	112	49	14	6.0	4.2
17	52	58	254	851	91	150	64	108	44	13	6.0	4.2
18	45	59	166	438	86	132	68	108	41	13	5.8	7.6
19	39	74	132	312	105	121	79	118	39	12	5.8	9.2
20	35	111	113	226	105	126	85	120	36	12	5.8	5.7
21	31	110	94	179	146	166	103	119	34	11	5.8	4.9
22	28	96	80	171	118	410	131	114	33	11	5.6	4.7
23	30	113	74	212	98	470	164	104	30	11	5.6	4.6
24	28	166	66	221	83	355	158	106	32	10	5.6	4.4
25	26	150	59	208	73	263	133	126	40	10	5.5	6.8
26	24	132	54	267	65	213	119	120	57	9.7	5.4	7.0
27	22	113	52	260	59	175	121	109	50	9.4	5.3	5.1
28	21	99	50	219	71	149	142	96	43	9.1	5.2	4.8
29	188	92	50	211	---	128	169	125	38	8.8	5.1	4.6
30	461	85	51	204	---	114	182	167	35	8.7	5.0	4.4
31	586	---	52	168	---	104	---	141	---	8.5	4.9	---
TOTAL	2957	3004	2324	6862	2805	4618	2927	3743	1857	497.2	193.5	151.1
MEAN	95.4	100	75.0	221	100	149	97.6	121	61.9	16.0	6.24	5.04
MAX	586	293	254	851	146	470	182	186	125	32	8.3	9.2
MIN	12	40	37	65	59	55	64	79	30	8.5	4.9	4.2
AC-FT	5870	5960	4610	13610	5560	9160	5810	7420	3680	986	384	300
CFSM	5.89	6.18	4.63	13.7	6.18	9.20	6.02	7.45	3.82	.99	.39	.31
IN.	6.79	6.90	5.34	15.76	6.44	10.60	6.72	8.60	4.26	1.14	.44	.33

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1998, BY WATER YEAR (WY)

MEAN	24.5	116	151	140	138	120	145	149	71.9	16.7	6.70	7.40
MAX	95.4	239	404	293	371	321	270	318	260	51.5	11.7	23.5
(WY)	1998	1996	1965	1970	1996	1993	1993	1971	1974	1971	1968	1978
MIN	3.33	4.47	9.88	13.5	12.8	41.2	50.3	28.1	8.63	5.23	3.22	3.74
(WY)	1988	1994	1977	1977	1977	1992	1967	1992	1992	1992	1992	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1961 - 1998
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ANNUAL TOTAL	37016.0		31938.8			
ANNUAL MEAN	101		87.5		90.2	
HIGHEST ANNUAL MEAN					136	1974
LOWEST ANNUAL MEAN					38.5	1977
HIGHEST DAILY MEAN	1130	Jan 31	851	Jan 17	2590	Dec 22 1964
LOWEST DAILY MEAN	4.4	Sep 8	4.2	Sep 16	2.5	Sep 15 1981
ANNUAL SEVEN-DAY MINIMUM	4.6	Sep 4	4.4	Sep 11	2.6	Sep 12 1981
ANNUAL RUNOFF (AC-FT)	73420		63350		65380	
ANNUAL RUNOFF (CFSM)	6.26		5.40		5.57	
ANNUAL RUNOFF (INCHES)	85.00		73.34		75.69	
10 PERCENT EXCEEDS	203		170		213	
50 PERCENT EXCEEDS	65		73		53	
90 PERCENT EXCEEDS	6.8		5.8		5.0	

WILLAMETTE RIVER BASIN

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14158795 SMITH RIVER RESERVOIR NEAR BELKNAP SPRINGS, OR

LOCATION.--Lat 44°18'20", long 122°02'40", in SW 1/4 SW 1/4 sec.36, T.14 S., R.6 E., Linn County, Hydrologic Unit 17090004, Willamette National Forest, in intake tower near left end of Smith River Dam on Smith River, 800 ft upstream from Bunchgrass Creek, 8 mi north of town of Belknap Springs, and at mile 2.1.

DRAINAGE AREA.--18.2 mi².

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

REVISED RECORDS.--WDR OR-86-2: 1985.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Eugene Water and Electric Board).

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway completed in 1963 by Eugene Water and Electric Board; storage began Mar. 18, 1963. Total capacity is 15,000 acre-ft at elevation 2,605.0 ft, top of spillway gates, and usable capacity is 9,900 acre-ft between elevations 2,525.0 ft, minimum power pool, and 2,605.0 ft. Storage of 5,100 acre-ft, below elevation 2,525.0 ft, not normally available for release. Water used for power generation. Figures herein represent total contents and are furnished by Eugene Water and Electric Board.

COOPERATION.--Elevations and area-volume curves furnished by Eugene Water and Electric Board.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 15,200 acre-ft Dec. 22, 1964, elevation, 2,606.5 ft; minimum contents, 5,700 acre-ft Apr. 11, 14, 1964, elevation, 2,532.90 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 14,760 acre-ft Apr. 29, elevation, 2,603.89 ft; minimum contents, 13,260 acre-ft Mar. 5, elevation, 2,594.77 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30.....	2,599.12	13,960	--
Oct. 31.....	2,598.65	13,880	-80
Nov. 30.....	2,597.23	13,660	-220
Dec. 31.....	2,597.30	13,670	+10
CAL YR 1997.....	--	--	-130
Jan. 31.....	2,595.96	13,450	-220
Feb. 28.....	2,596.43	13,530	+80
Mar. 31.....	2,597.63	13,720	+190
Apr. 30.....	2,601.68	14,390	+670
May 31.....	2,601.11	14,290	-100
June 30.....	2,600.68	14,220	-70
July 31.....	2,600.44	14,180	-40
Aug. 31.....	2,600.73	14,220	+40
Sept.30.....	2,601.21	14,310	+90
WTR YR 1998.....	--	--	+350

WILLAMETTE RIVER BASIN

14158850 MCKENZIE RIVER BELOW TRAIL BRIDGE DAM, NEAR BELKNAP SPRINGS, OR

LOCATION.--Lat 44°16'05", long 122°02'55", in T.15 S., R.6 E., (unsurveyed), Linn County, Hydrologic Unit 17090004, in Willamette National Forest, on left bank 0.4 mi downstream from Trail Bridge Dam, 0.5 mi upstream from Anderson Creek, 5 mi north of town of Belknap Springs, and at mile 81.5.

DRAINAGE AREA.--184 mi².

PERIOD OF RECORD.--October 1959 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,980.00 ft above sea level (levels by Eugene Water and Electric Board). Prior to Oct. 11, 1963, at datum 5.60 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Smith River Reservoir (station 14158795). Diurnal fluctuations by powerplants and by Trail Bridge re-regulating reservoir upstream. Water is diverted from McKenzie River in SW 1/4 sec.20, T.14 S., R.7 E., to Smith River Reservoir and returned to river upstream from station. Continuous water-quality records for the period November 1976 to September 1985, July 1992 September 1993 have been collected at this location. Discharges for the period October 9 to December 19 computed from data obtained through Eugene Water and Electric Board (EWB).

AVERAGE DISCHARGE.--39 years (water years 1960-98), 1,015 ft³/s, 74.91 in/yr, 735,400 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,200 ft³/s Dec. 22, 1964, gage height, 12.45 ft, from rating curve extended above 3,700 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 185 ft³/s Feb. 3, 1963; minimum daily, 423 ft³/s Nov. 22, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,600 ft³/s Jan. 17, gage height, 8.40 ft; minimum discharge, 618 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	788	1290	962	934	1480	1150	1310	1250	1120	906	780	725
2	802	1170	898	999	1440	1230	1310	1260	1100	908	767	720
3	855	1060	922	981	1410	1250	1300	1210	1110	908	763	716
4	888	1160	986	944	1370	1210	1290	1180	1100	907	763	716
5	1010	1090	971	929	1320	1160	1250	1190	1100	905	773	717
6	886	1090	948	938	1350	1120	1200	1190	1100	905	767	717
7	892	1120	889	938	1320	1110	1220	1190	1100	893	763	717
8	915	1070	882	957	1270	1090	1150	1180	1060	889	751	717
9	1030	1050	891	959	1240	1110	1100	1170	1060	889	739	718
10	1020	1010	900	973	1210	1080	1100	1120	1040	886	747	719
11	975	960	910	1310	1220	1040	1100	1100	1050	858	780	711
12	973	1020	885	1300	1230	1060	1110	1090	1050	856	750	686
13	966	1020	877	1310	1260	1120	1120	1090	1030	855	741	679
14	966	955	869	1580	1220	1210	1100	1090	1020	858	767	696
15	947	980	884	1670	1220	1180	1070	1120	1020	867	784	696
16	915	952	1200	1580	1220	1180	1020	1120	985	873	780	685
17	922	934	1270	2300	1210	1180	1010	1110	968	866	732	697
18	924	962	1140	1960	1170	1150	1010	1090	934	856	723	702
19	896	983	1060	1800	1180	1180	1010	1080	946	840	722	712
20	902	1010	928	1680	1200	1180	1030	1090	945	826	716	713
21	874	973	1040	1600	1340	1160	1050	1090	943	815	734	714
22	887	954	1030	1540	1300	1500	1080	1090	940	814	734	714
23	898	977	963	1600	1250	1560	1140	1090	899	798	734	713
24	899	1090	913	1620	1220	1550	1160	1090	906	793	737	709
25	849	1040	932	1620	1210	1530	1120	1090	950	795	737	709
26	819	997	951	1650	1190	1520	1070	1080	975	799	738	708
27	849	995	958	1680	1160	1450	1080	1080	961	801	738	689
28	846	991	951	1630	1120	1400	1100	1080	939	823	739	683
29	1100	1000	939	1580	---	1390	1100	1080	908	821	740	679
30	1410	998	899	1640	---	1350	1180	1120	906	794	737	679
31	1660	---	899	1570	---	1330	---	1150	---	794	727	---
TOTAL	29563	30901	29747	43772	35330	38730	33890	34960	30165	26398	23203	21156
MEAN	954	1030	960	1412	1262	1249	1130	1128	1006	852	748	705
MAX	1660	1290	1270	2300	1480	1560	1310	1260	1120	908	784	725
MIN	788	934	869	929	1120	1040	1010	1080	899	793	716	679
AC-FT	58640	61290	59000	86820	70080	76820	67220	69340	59830	52360	46020	41960
MEAN†	952	1027	960	1408	1264	1252	1141	1126	1005	851	749	707
CFSM†	5.17	5.58	5.21	7.65	6.87	6.81	6.20	6.12	5.46	4.62	4.07	3.84
IN.†	5.97	6.22	6.01	8.82	7.15	7.85	6.92	7.06	6.09	5.33	4.69	4.28
AC-FT†	58560	61070	59010	86600	70160	77010	67890	69240	59760	52320	46060	42050

CAL YR 1997 TOTAL 464974 MEAN 1274 MAX 4420 MIN 776 AC-FT 922300 MEAN† 1274 CFSM† 6.92 IN.† 93.97 AC-FT† 922200
WTR YR 1998 TOTAL 377815 MEAN 1035 MAX 2300 MIN 679 AC-FT 749400 MEAN† 1035 CFSM† 5.63 IN.† 76.41 AC-FT† 749800

† Adjusted for change in contents in Smith River Reservoir.

WILLAMETTE RIVER BASIN

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14159400 COUGAR LAKE NEAR RAINBOW, OR

LOCATION.--Lat 44°07'40", long 122°14'25", in SE 1/4 SE 1/4 sec.31, T.16 S., R.5 E., Lane County, Hydrologic Unit 17090004, Willamette National Forest, in intake tower near left end of Cougar Dam on South Fork McKenzie River, 2.7 mi south of Rainbow, and at mile 4.5.

DRAINAGE AREA.--207 mi².

PERIOD OF RECORD.--October 1963 to current year. Prior to October 1971, published as Cougar Reservoir near Rainbow.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by earthfill dam with concrete spillway completed in 1963 by the Corps of Engineers; storage began September 1963. Total capacity is 219,100 acre-ft at elevation 1,699 ft, maximum pool, and usable capacity is 164,800 acre-ft between elevations 1,516 ft, minimum power pool, and 1,699 ft. Lake used for flood control and power generation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 215,900 acre-ft Apr. 28, 1990, elevation, 1,696.51 ft; minimum contents, 33,690 acre-ft Oct. 31 to Nov. 2, 1965, elevation, 1,475.40 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 210,300 acre-ft June 7, 11, elevation, 1,692.06 ft; minimum contents, 64,630 acre-ft Dec. 10, elevation, 1,533.14 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

1,510	50,920	1,650	162,300
1,550	75,940	1,696	215,300
1,600	114,800		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1628.27	1610.70	1540.11	1538.29	1539.84	1585.56	1647.12	1679.43	1691.91	1691.11	1687.43	1653.15
2	1627.65	1609.55	1539.02	1539.24	1541.26	1588.02	1648.29	1681.13	1691.97	1691.11	1687.20	1652.08
3	1627.04	1607.40	1537.82	1539.98	1543.26	1590.44	1649.46	1682.65	1691.99	1691.08	1686.54	1650.97
4	1626.68	1604.42	1536.57	1540.61	1545.17	1592.48	1650.54	1684.05	1691.86	1691.04	1685.49	1649.86
5	1626.76	1601.24	1535.67	1540.81	1546.95	1594.20	1651.48	1685.66	1691.83	1690.99	1684.44	1648.73
6	1626.45	1597.89	1535.03	1540.75	1548.62	1595.66	1652.44	1687.05	1691.94	1690.84	1683.37	1647.59
7	1625.94	1593.83	1534.49	1542.33	1550.20	1596.99	1653.36	1688.23	1692.00	1690.62	1682.29	1646.45
8	1625.67	1589.02	1534.00	1543.77	1551.68	1598.33	1654.18	1689.01	1691.96	1690.39	1681.23	1645.33
9	1625.96	1584.10	1533.45	1544.55	1553.04	1599.56	1655.01	1689.47	1691.94	1690.34	1680.12	1644.31
10	1625.82	1580.82	1533.19	1545.92	1554.28	1600.78	1656.03	1689.81	1692.03	1690.43	1679.02	1643.31
11	1625.78	1578.99	1533.41	1556.37	1555.53	1602.22	1657.13	1690.06	1692.05	1690.51	1677.91	1642.29
12	1625.94	1577.07	1533.77	1561.37	1556.78	1604.16	1658.16	1690.39	1691.98	1690.54	1676.78	1641.26
13	1625.85	1575.05	1534.10	1561.97	1558.17	1606.33	1659.11	1690.53	1691.94	1690.59	1675.67	1640.22
14	1625.60	1572.96	1534.49	1562.78	1559.72	1608.48	1660.02	1690.87	1691.91	1690.65	1674.50	1639.18
15	1625.03	1570.77	1535.21	1564.40	1561.36	1610.65	1660.86	1690.97	1691.54	1690.61	1673.33	1638.13
16	1624.09	1568.50	1537.30	1566.02	1562.84	1612.79	1661.63	1690.64	1690.97	1690.46	1672.14	1637.08
17	1623.06	1566.34	1539.79	1574.35	1564.18	1614.68	1662.36	1690.43	1690.58	1690.31	1670.95	1636.01
18	1621.97	1564.15	1540.30	1577.66	1565.39	1616.30	1663.06	1690.38	1690.42	1690.15	1669.74	1634.98
19	1620.81	1562.01	1539.85	1576.21	1566.76	1617.75	1663.85	1690.55	1690.28	1689.99	1668.53	1633.95
20	1619.48	1559.90	1539.09	1572.33	1568.19	1619.16	1664.67	1690.71	1690.27	1689.81	1667.32	1632.90
21	1617.92	1557.76	1537.94	1567.63	1571.35	1620.78	1665.56	1690.82	1690.32	1689.64	1666.09	1631.82
22	1616.42	1555.56	1537.60	1563.04	1574.02	1623.97	1666.68	1690.76	1690.33	1689.46	1664.85	1630.73
23	1614.89	1553.45	1537.92	1559.37	1576.12	1627.98	1668.16	1690.63	1690.31	1689.28	1663.59	1629.62
24	1613.32	1551.90	1538.08	1555.64	1577.88	1631.51	1669.79	1690.71	1690.37	1689.07	1662.32	1628.52
25	1611.70	1550.39	1538.10	1551.80	1579.43	1634.56	1671.14	1690.94	1690.53	1688.87	1661.05	1627.51
26	1610.05	1548.80	1538.03	1547.78	1580.78	1637.18	1672.31	1690.89	1690.80	1688.67	1659.77	1626.44
27	1608.33	1547.07	1537.94	1543.64	1581.97	1639.45	1673.46	1690.72	1690.95	1688.47	1658.46	1625.31
28	1606.63	1545.22	1537.81	1539.95	1583.57	1641.39	1674.72	1690.39	1691.04	1688.26	1657.31	1624.16
29	1606.21	1543.40	1537.79	1537.79	---	1643.04	1676.19	1690.76	1691.09	1688.07	1656.35	1623.00
30	1608.07	1541.55	1537.83	1537.78	---	1644.51	1677.78	1691.60	1691.11	1687.86	1655.33	1621.82
31	1610.93	---	1537.86	1538.91	---	1645.87	---	1691.84	---	1687.65	1654.24	---
MAX	1628.27	1610.70	1540.30	1577.66	1583.57	1645.87	1677.78	1691.84	1692.05	1691.11	1687.43	1653.15
MIN	1606.21	1541.55	1533.19	1537.78	1539.84	1585.56	1647.12	1679.43	1690.27	1687.65	1654.24	1621.82
(†)	124400	70150	67690	68390	101100	158000	193100	210000	209100	204900	166800	134400
(‡)	-16900	-54250	-2460	+700	+32710	+56900	+35100	+16900	-900	-4200	-38100	-32400

CAL YR 1997 MAX 1691.86 MIN 1530.74 AC-FT# -78410
WTR YR 1998 MAX 1692.05 MIN 1533.19 AC-FT# -6900

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

WILLAMETTE RIVER BASIN

14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR

LOCATION.--Lat 44°08'10", long 122°14'50", in NE 1/4 sec.31, T.16 S., R.5 E., Lane County, Hydrologic Unit 17090004, in Willamette National Forest, on right bank 0.2 mi upstream from Cougar Creek, 0.6 mi downstream from Cougar Dam, 2.1 mi south of Rainbow, and at mile 3.9.

DRAINAGE AREA.--208 mi².

WATER-DISCHARGE RECORDS

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

REVISED RECORDS.--WSP 1638: Drainage area.

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

REMARKS.--No estimated daily discharges. Records good. Discharges for period December 19 through February 24 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated since 1963 by Cougar Lake (station 14159400), usable capacity, 164,800 acre-ft. No diversion upstream from station. Water temperatures July 1955 to September 1997.

AVERAGE DISCHARGE.--51 years (water years 1948-98), 853 ft³/s, 55.69 in/yr, 618,000 acre-ft/yr, adjusted for storage.

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

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 24,500 ft³/s Dec. 28, 1945, gage height, 8.8 ft, from floodmarks, at Corps of Engineers gage at site 40 ft upstream at datum 0.80 ft higher; gage height at present site and datum, about 9.3 ft, computed by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,900 ft³/s Jan. 19, gage height, 4.27 ft; minimum discharge, 223 ft³/s Apr. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	740	1540	948	528	817	275	275	301	1190	386	382	786
2	743	1540	823	563	567	281	276	302	1060	387	382	779
3	733	1770	833	588	319	286	269	305	979	387	626	788
4	743	1990	832	588	302	285	270	293	986	386	841	791
5	749	1980	713	648	275	285	290	300	847	382	842	793
6	742	1980	628	724	277	287	294	301	699	424	850	792
7	744	2260	628	733	275	289	293	312	729	459	849	792
8	741	2470	629	730	274	283	293	498	735	459	844	779
9	749	2450	627	723	271	280	299	612	666	340	855	736
10	748	1740	523	725	278	277	304	622	644	253	858	721
11	751	1130	382	732	272	279	307	652	655	266	863	725
12	752	1140	341	1470	268	281	306	773	649	279	865	730
13	754	1150	339	2720	266	285	304	863	598	261	861	731
14	749	1160	343	2710	267	284	298	885	557	251	874	731
15	824	1170	342	2740	274	296	299	1270	724	304	877	727
16	934	1180	711	2750	272	307	304	1490	846	359	879	728
17	937	1190	1110	1810	274	298	299	1390	706	360	879	731
18	936	1180	1110	2090	290	280	298	1240	552	359	881	737
19	939	1180	1110	3150	263	268	299	1180	521	360	883	739
20	994	1170	1110	3500	263	269	296	1240	440	363	891	735
21	1040	1160	1100	3430	269	270	303	1280	379	363	894	735
22	1040	1160	791	3330	268	269	303	1290	399	367	897	734
23	1040	1150	567	3300	260	275	302	1210	400	367	901	735
24	1050	1140	566	3240	258	272	305	1090	397	367	902	735
25	1050	1140	567	3170	273	273	306	1120	392	369	907	744
26	1050	1130	567	3110	273	273	301	1150	392	373	904	750
27	1070	1120	563	3020	274	276	288	1150	392	371	914	748
28	1060	1120	560	2660	274	272	287	1150	393	374	934	751
29	1060	1110	543	2200	---	269	301	1050	390	376	735	754
30	1060	1110	524	1380	---	273	301	1070	387	377	759	753
31	1320	---	524	886	---	272	---	1260	---	378	788	---
TOTAL	27842	42710	20954	59948	8513	8669	8870	27649	18704	11107	25517	22510
MEAN	898	1424	676	1934	304	280	296	892	623	358	823	750
MAX	1320	2470	1110	3500	817	307	307	1490	1190	459	914	793
MIN	733	1110	339	528	258	268	269	293	379	251	382	721
AC-FT	55220	84720	41560	118900	16890	17190	17590	54840	37100	22030	50610	44650
MEAN†	623	512	636	1945	893	1205	886	1166	609	290	203	206
CFSM†	3.00	2.46	3.06	9.35	4.29	5.79	4.26	5.61	2.93	1.39	0.98	0.99
IN.†	3.45	2.75	3.52	10.78	4.47	6.68	4.75	6.47	3.26	1.61	1.13	1.10
AC-FT†	38320	30470	39100	119600	49600	74090	52690	71740	36200	17830	12510	12250

CAL YR 1997 TOTAL 369700 MEAN 1013 MAX 6480 MIN 255 AC-FT 733300 MEAN† 904 CFSM† 4.35 IN.† 59.04 AC-FT† 654900
WTR YR 1998 TOTAL 282993 MEAN 775 MAX 3500 MIN 251 AC-FT 561300 MEAN† 766 CFSM† 3.68 IN.† 49.98 AC-FT† 554400

† Adjusted for change in contents in Cougar Lake.

WILLAMETTE RIVER BASIN

183

14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1955 to current year.

INSTRUMENTATION.--Temperature recorder since July 1955.

EXTREMES FOR PERIOD OF DAILY RECORD.--

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

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 13.5°C several days in October and September; minimum, 5.0°C several days in March, but may have been lower during period of missing record.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.5	12.5	13.0	11.5	11.0	11.0	8.5	8.5	8.5	6.0	6.0	6.0
2	13.0	12.5	13.0	11.0	11.0	11.0	8.5	8.0	8.0	6.0	6.0	6.0
3	13.0	12.5	13.0	11.0	10.5	11.0	8.0	7.5	8.0	6.5	6.0	6.0
4	13.0	13.0	13.0	11.0	11.0	11.0	8.0	7.5	7.5	6.5	6.0	6.0
5	13.5	13.0	13.0	11.0	10.5	10.5	7.5	7.5	7.5	6.5	6.0	6.0
6	13.0	13.0	13.0	11.0	11.0	11.0	7.5	7.5	7.5	---	---	---
7	13.5	12.5	13.0	11.0	11.0	11.0	7.5	7.0	7.5	---	---	---
8	13.0	12.5	13.0	11.0	10.5	11.0	7.5	7.0	7.0	---	---	---
9	13.0	12.0	12.5	11.0	10.5	11.0	7.0	7.0	7.0	---	---	---
10	13.0	12.5	12.5	11.0	10.5	10.5	7.0	6.5	6.5	---	---	---
11	12.5	12.5	12.5	11.0	10.5	10.5	6.5	6.5	6.5	---	---	---
12	12.5	12.5	12.5	11.0	10.5	10.5	6.5	6.0	6.5	---	---	---
13	12.5	12.0	12.5	11.0	10.5	10.5	6.0	6.0	6.0	---	---	---
14	12.5	12.0	12.0	11.0	10.5	10.5	6.5	6.0	6.0	---	---	---
15	12.5	12.0	12.0	11.0	10.5	11.0	6.0	6.0	6.0	---	---	---
16	12.5	12.0	12.0	11.0	10.5	10.5	---	---	---	---	---	---
17	12.5	12.0	12.0	11.0	10.5	10.5	---	---	---	---	---	---
18	12.0	12.0	12.0	10.5	10.5	10.5	---	---	---	---	---	---
19	12.5	12.0	12.0	10.5	10.5	10.5	---	---	---	---	---	---
20	12.5	12.0	12.0	10.5	10.0	10.5	---	---	---	---	---	---
21	12.5	12.0	12.0	10.0	10.0	10.0	---	---	---	---	---	---
22	12.0	12.0	12.0	10.0	10.0	10.0	---	---	---	---	---	---
23	12.0	11.5	12.0	10.0	9.5	9.5	---	---	---	---	---	---
24	12.0	12.0	12.0	10.0	9.5	9.5	---	---	---	---	---	---
25	12.0	11.5	12.0	10.0	9.5	9.5	---	---	---	---	---	---
26	12.0	12.0	12.0	9.5	9.0	9.5	---	---	---	---	---	---
27	12.0	12.0	12.0	9.5	9.0	9.0	---	---	---	---	---	---
28	12.0	11.5	12.0	9.0	9.0	9.0	---	---	---	---	---	---
29	12.0	11.5	12.0	9.0	8.5	9.0	---	---	---	---	---	---
30	12.0	11.5	11.5	9.0	8.5	8.5	---	---	---	---	---	---
31	12.0	11.0	11.5	---	---	---	---	---	---	---	---	---
MONTH	13.5	11.0	12.3	11.5	8.5	10.3	---	---	---	---	---	---

WILLAMETTE RIVER BASIN

14159500 SOUTH FORK MCKENZIE RIVER NEAR RAINBOW, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	---	---	---	6.0	5.5	6.0	6.0	5.5	5.5	7.0	5.5	6.0
2	---	---	---	6.0	5.5	5.5	6.0	5.5	5.5	6.5	5.5	6.0
3	---	---	---	5.5	5.5	5.5	6.0	5.5	5.5	7.0	5.5	6.0
4	---	---	---	6.5	5.5	5.5	6.0	5.5	5.5	7.5	5.5	6.0
5	---	---	---	6.5	5.5	5.5	6.5	5.5	5.5	7.0	5.5	6.0
6	---	---	---	6.5	5.0	5.5	6.0	5.5	5.5	6.0	5.5	6.0
7	---	---	---	6.0	5.0	5.5	7.0	5.5	5.5	7.5	5.5	6.0
8	---	---	---	6.0	5.5	5.5	6.5	5.5	5.5	6.0	5.5	6.0
9	---	---	---	6.0	5.0	5.5	6.0	5.5	5.5	6.0	5.5	6.0
10	---	---	---	6.0	5.0	5.5	6.0	5.5	5.5	6.0	5.5	6.0
11	---	---	---	6.5	5.5	5.5	6.0	5.5	5.5	6.0	6.0	6.0
12	---	---	---	6.0	5.5	5.5	6.5	5.5	5.5	6.0	5.5	6.0
13	---	---	---	6.5	5.5	5.5	6.0	5.5	5.5	6.0	6.0	6.0
14	---	---	---	6.5	5.5	5.5	6.5	5.5	6.0	6.0	5.5	6.0
15	---	---	---	6.0	5.5	5.5	6.0	5.5	5.5	6.0	6.0	6.0
16	---	---	---	5.5	5.0	5.5	6.5	5.5	6.0	6.0	5.5	6.0
17	---	---	---	6.5	5.0	5.5	6.5	5.5	5.5	6.0	6.0	6.0
18	---	---	---	6.5	5.0	5.5	6.5	5.5	6.0	6.5	6.0	6.0
19	---	---	---	6.5	5.0	5.5	6.5	5.5	6.0	6.5	5.5	6.0
20	---	---	---	6.5	5.5	5.5	7.0	5.5	6.0	6.5	5.5	6.0
21	---	---	---	5.5	5.5	5.5	7.0	5.5	6.0	6.5	6.0	6.0
22	---	---	---	5.5	5.5	5.5	6.5	5.5	6.0	6.5	6.0	6.0
23	---	---	---	6.0	5.5	5.5	6.0	5.5	5.5	6.5	6.0	6.0
24	---	---	---	6.5	5.5	5.5	6.5	5.5	5.5	6.5	5.5	6.0
25	6.0	5.5	5.5	6.0	5.5	5.5	7.0	5.5	6.0	6.5	6.0	6.0
26	6.0	5.5	5.5	5.5	5.5	5.5	7.0	5.5	6.0	6.5	6.0	6.0
27	6.0	5.5	5.5	6.0	5.0	5.5	7.0	5.5	6.0	7.0	6.0	6.5
28	6.0	5.5	5.5	6.5	5.5	5.5	7.0	5.5	6.0	6.5	6.0	6.0
29	---	---	---	7.0	5.5	5.5	7.0	5.5	6.0	6.5	6.0	6.5
30	---	---	---	6.0	5.5	5.5	7.0	5.5	6.0	6.5	6.0	6.5
31	---	---	---	6.5	5.5	5.5	---	---	---	6.5	5.5	6.5
MONTH	---	---	---	7.0	5.0	5.5	7.0	5.5	5.7	7.5	5.5	6.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	7.0	6.0	6.5	9.0	6.0	7.5	9.0	7.5	8.0	10.5	8.5	9.5
2	7.0	6.0	6.5	8.5	6.5	7.5	9.5	7.5	8.5	10.5	9.0	10.0
3	7.0	6.5	6.5	8.5	6.5	7.5	9.0	7.0	8.0	10.5	9.0	10.0
4	7.5	6.0	6.5	8.5	6.0	7.5	9.0	7.5	8.5	10.5	9.0	10.0
5	7.0	6.5	6.5	9.0	6.5	7.5	9.0	7.5	8.5	10.5	9.0	10.0
6	7.0	6.5	6.5	8.5	7.0	7.5	9.0	7.5	8.5	11.0	9.0	10.0
7	7.5	6.0	6.5	9.0	7.0	8.0	9.0	8.0	8.5	10.5	9.0	10.5
8	7.5	6.5	7.0	9.0	6.5	7.5	9.0	7.5	8.5	11.0	9.5	10.5
9	7.5	6.0	7.0	9.0	7.0	8.0	9.0	8.0	8.5	10.5	10.0	10.5
10	7.0	6.5	6.5	9.5	6.5	7.5	9.0	8.0	8.5	11.5	9.0	10.5
11	7.0	6.5	7.0	9.5	6.0	7.5	9.0	8.0	8.5	11.5	9.0	10.5
12	8.0	6.5	7.0	9.0	6.5	7.5	9.5	8.0	8.5	11.5	10.0	11.0
13	7.5	6.0	7.0	9.5	7.0	8.0	9.5	8.0	8.5	11.5	10.0	11.0
14	7.5	6.5	7.0	9.5	6.5	7.5	9.0	8.0	8.5	11.5	10.5	11.0
15	7.5	6.5	7.0	9.0	7.0	8.0	9.0	7.5	8.5	11.5	10.5	11.0
16	7.5	6.5	7.0	9.0	6.5	8.0	9.0	8.5	8.5	12.0	10.5	11.5
17	7.5	6.5	7.0	9.0	7.0	8.0	9.5	8.0	8.5	12.0	11.0	11.5
18	7.5	6.5	7.0	9.0	7.0	8.0	9.5	8.0	9.0	12.0	11.0	11.5
19	8.0	6.5	7.0	9.5	7.0	8.0	9.5	8.0	9.0	12.0	11.5	12.0
20	7.5	6.5	7.0	9.0	6.5	8.0	9.5	8.0	9.0	12.5	11.5	12.0
21	8.0	6.0	7.0	9.0	6.5	8.0	9.5	8.5	9.0	12.5	11.5	12.0
22	8.0	6.5	7.0	9.0	7.0	8.0	9.5	8.5	9.0	12.5	12.0	12.0
23	7.5	6.5	7.0	9.5	7.0	8.0	9.5	8.5	9.0	13.0	12.0	12.5
24	8.0	6.5	7.5	9.0	7.0	8.0	9.5	8.5	9.0	13.5	12.0	12.5
25	7.5	6.5	7.0	9.5	7.0	8.0	10.0	8.5	9.0	13.0	12.0	13.0
26	8.0	7.0	7.0	9.5	7.0	8.0	10.0	8.5	9.5	13.5	12.5	13.0
27	8.5	7.0	7.5	9.5	7.0	8.0	10.0	8.5	9.5	13.5	12.5	13.0
28	8.5	6.5	7.5	9.5	7.5	8.0	10.0	8.5	9.5	13.5	13.0	13.0
29	8.5	6.5	7.5	9.5	7.0	8.0	10.0	8.5	9.5	13.5	13.0	13.5
30	8.5	6.5	7.5	9.0	7.5	8.0	10.0	9.0	9.5	13.5	13.0	13.5
31	---	---	---	9.0	7.5	8.0	10.5	9.0	9.5	---	---	---
MONTH	8.5	6.0	6.9	9.5	6.0	7.8	10.5	7.0	8.8	13.5	8.5	11.4

14161100 BLUE RIVER BELOW TIDBITS CREEK, NEAR BLUE RIVER, OR

LOCATION.--Lat 44°13'05", long 122°15'50", in SE 1/4 NE 1/4 sec.36, T.15 S., R.4 E., Lane County, Hydrologic Unit 17090004, in Willamette National Forest, on left bank 0.2 mi downstream from Tidbits Creek, 5.5 mi northeast of town of Blue River, and at mile 8.5.

DRAINAGE AREA.--45.8 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,386.90 ft above sea level (Corps of Engineers bench mark).

REMARKS.--Records fair. No regulation or diversion upstream from station. Continuous water-quality records for the period September 1963 to September 1987 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--35 years (water years 1964-98), 252 ft³/s, 74.67 in/yr, 182,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s Dec. 22, 1964, gage height, 15.32 ft, from floodmarks, from rating curve extended above 2,800 ft³/s on basis of slope-area measurement of peak flow; minimum daily discharge, 6.0 ft³/s Oct. 27-29, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	2000	2,360	7.30	Jan. 14	1800	2,360	7.30
Jan. 11	1100	2,140	7.07	Jan. 17	0300	*2,710	*7.64

Minimum discharge, 8.8 ft³/s Sept. 15-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	41	662	156	215	308	536	213	176	249	61	29	e13
2	120	378	144	358	267	680	200	179	203	58	27	e12
3	182	270	132	286	237	575	196	160	174	56	26	e12
4	230	214	123	254	218	416	192	146	153	53	25	e12
5	385	177	114	227	204	333	184	169	134	51	25	e11
6	209	153	107	229	209	277	175	143	120	49	24	e11
7	141	183	115	405	200	238	169	129	110	46	23	e11
8	161	158	129	374	191	229	165	122	103	45	23	e11
9	363	140	121	284	183	225	162	114	96	47	22	e12
10	270	127	119	347	180	218	194	108	99	47	21	e11
11	222	117	127	1580	204	279	236	105	93	46	21	e10
12	250	109	126	1160	247	427	243	125	86	45	20	9.9
13	202	102	123	1250	370	466	217	134	82	43	20	9.5
14	164	96	126	1540	357	444	199	175	78	42	19	9.4
15	133	90	163	1480	364	414	187	296	74	40	18	9.1
16	113	86	1060	1100	326	382	172	289	72	39	18	9.0
17	98	111	1130	2150	274	326	163	274	67	38	17	8.9
18	91	118	594	1110	252	273	158	276	64	37	17	14
19	83	139	391	779	349	241	165	276	62	36	17	25
20	76	233	299	584	368	236	165	266	60	35	17	17
21	71	238	251	455	715	275	171	293	57	34	18	13
22	61	197	207	514	552	682	187	291	55	33	17	12
23	62	200	183	757	409	861	214	246	54	32	16	11
24	61	318	162	643	321	745	220	232	60	30	16	11
25	55	291	149	657	275	511	194	300	68	31	15	17
26	53	259	138	742	240	405	170	272	107	30	e14	26
27	50	220	132	698	215	354	162	234	96	26	14	16
28	49	191	132	563	308	311	172	197	80	25	14	14
29	641	178	149	491	---	271	183	256	70	26	e14	13
30	1200	172	169	444	---	245	183	436	64	27	e13	12
31	1420	---	166	364	---	229	---	324	---	29	e13	---
TOTAL	7257	5927	7237	22040	8343	12104	5611	6743	2890	1237	593	382.8
MEAN	234	198	233	711	298	390	187	218	96.3	39.9	19.1	12.8
MAX	1420	662	1130	2150	715	861	243	436	249	61	29	26
MIN	41	86	107	215	180	218	158	105	54	25	13	8.9
AC-FT	14390	11760	14350	43720	16550	24010	11130	13370	5730	2450	1180	759
CFSM	5.11	4.31	5.10	15.5	6.51	8.53	4.08	4.75	2.10	.87	.42	.28
IN.	5.89	4.81	5.88	17.90	6.78	9.83	4.56	5.48	2.35	1.00	.48	.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

	MEAN	234	338	502	499	436	381	347	249	121	39.3	21.1	25.8
MAX	234	731	1471	1033	1066	995	597	521	320	90.9	51.9	82.2	
(WY)	1998	1974	1965	1970	1996	1972	1993	1971	1974	1983	1968	1978	
MIN	6.42	21.0	33.0	48.3	65.0	84.6	147	70.7	27.3	17.7	9.51	8.62	
(WY)	1988	1994	1977	1977	1977	1992	1968	1992	1992	1992	1992	1987	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1964 - 1998

ANNUAL TOTAL	90977	80364.8	
ANNUAL MEAN	249	220	252
HIGHEST ANNUAL MEAN			404
LOWEST ANNUAL MEAN			106
HIGHEST DAILY MEAN	3070	2150	10000
LOWEST DAILY MEAN	12	8.9	6.0
ANNUAL SEVEN-DAY MINIMUM	13	9.4	6.1
ANNUAL RUNOFF (AC-FT)	180500	159400	182300
ANNUAL RUNOFF (CFSM)	5.44	4.81	5.50
ANNUAL RUNOFF (INCHES)	73.89	65.27	74.67
10 PERCENT EXCEEDS	546	448	575
50 PERCENT EXCEEDS	149	162	140
90 PERCENT EXCEEDS	21	17	16

e Estimated

WILLAMETTE RIVER BASIN

14161500 LOOKOUT CREEK NEAR BLUE RIVER, OR

LOCATION.--Lat 44°12'35", long 122°15'20", in T.15, R.5 E. (unsurveyed), Lane County, Hydrologic Unit 17090004, in Willamette National Forest, on left bank 6.0 mi northeast of town of Blue River, and at mile 0.5.

DRAINAGE AREA.--24.1 mi².

PERIOD OF RECORD.--August 1949 to September 1955, September 1963 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,377.76 ft above sea level (Corps of Engineers bench mark).

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Continuous water-quality records for the period August 1950 to September 1955 and September 1963 to September 1981 have been collected at this location. On Feb. 6, 7, 1996, a series of debris flows from contributing tributaries caused extreme scour and fill throughout the channel.

AVERAGE DISCHARGE.--41 years (water years 1950-55, 1964-98), 124 ft³/s, 70.01 in/yr, 89,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,000 ft³/s Feb. 7, 1996, gage height, 10.03 ft, on basis of slope-area measurement of peak flow; minimum discharge, 4.8 ft³/s Sept. 16, 17, 1981.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	2000	*1,470	*5.64	Jan. 17	0330	1,220	5.33
Jan. 11	1130	1,020	5.07				

Minimum discharge, 7.4 ft³/s Sept. 16-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	410	66	82	188	297	e130	107	158	43	17	9.0
2	39	250	60	143	161	368	e120	106	132	43	16	8.9
3	52	173	55	130	141	352	e110	88	116	41	16	8.8
4	78	132	51	125	127	287	e100	80	102	40	15	8.7
5	166	105	46	115	114	226	e95	103	89	39	15	8.6
6	97	88	42	111	111	183	e90	78	81	37	15	8.4
7	62	102	47	230	101	e170	82	68	75	36	14	8.3
8	84	84	47	227	93	e160	76	62	75	34	14	8.3
9	169	72	44	175	86	e150	77	59	70	33	14	8.5
10	115	64	43	196	83	e150	99	53	75	32	13	8.3
11	97	57	45	773	87	e180	114	54	72	31	13	8.3
12	93	51	44	674	92	e280	114	81	66	29	13	8.2
13	77	46	42	723	117	e320	107	79	62	28	13	8.0
14	63	41	44	780	130	e300	99	100	58	27	12	7.9
15	53	37	68	802	143	e280	92	155	56	26	12	7.8
16	44	34	357	716	135	e240	84	163	55	25	12	7.7
17	37	44	483	1050	118	e200	77	159	53	25	12	7.5
18	32	48	303	702	110	e180	75	150	51	24	11	11
19	29	50	207	531	127	e160	81	161	50	23	11	15
20	25	76	166	412	138	e160	81	154	48	23	11	10
21	23	79	136	328	314	e180	89	157	47	22	12	8.9
22	21	69	113	374	315	e420	106	151	46	21	11	8.3
23	22	71	100	481	245	e500	131	134	44	21	11	8.2
24	20	121	88	422	189	e420	127	135	47	20	11	8.0
25	18	115	77	417	158	e300	104	165	49	20	11	11
26	17	108	70	425	134	e240	90	147	59	19	10	14
27	16	95	64	415	116	e200	87	130	53	19	10	9.6
28	15	83	61	357	179	e180	99	113	49	18	9.8	8.6
29	198	80	60	328	---	e160	110	154	47	19	9.6	8.3
30	653	76	60	275	---	e150	112	227	45	19	9.4	8.2
31	785	---	60	222	---	e140	---	190	---	18	9.2	---
TOTAL	3217	2861	3149	12741	4052	7533	2958	3763	2030	855	383.0	270.3
MEAN	104	95.4	102	411	145	243	98.6	121	67.7	27.6	12.4	9.01
MAX	785	410	483	1050	315	500	131	227	158	43	17	15
MIN	15	34	42	82	83	140	75	53	44	18	9.2	7.5
AC-FT	6380	5670	6250	25270	8040	14940	5870	7460	4030	1700	760	536
CFSM	4.31	3.96	4.21	17.1	6.00	10.1	4.09	5.04	2.81	1.14	.51	.37
IN.	4.97	4.42	4.86	19.67	6.25	11.63	4.57	5.81	3.13	1.32	.59	.42

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1998, BY WATER YEAR (WY)

	MEAN	38.5	152	233	244	220	176	170	134	72.9	25.8	14.9	15.3
MAX	179	350	794	591	640	420	300	255	212	46.6	22.2	40.5	
(WY)	1951	1997	1965	1953	1996	1972	1993	1950	1950	1983	1976	1978	
MIN	5.46	9.36	19.9	25.1	27.0	48.2	69.8	39.2	17.3	12.2	8.26	6.81	
(WY)	1988	1994	1977	1977	1977	1992	1968	1992	1992	1992	1992	1987	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1950 - 1998

ANNUAL TOTAL	51246.6	43812.3	
ANNUAL MEAN	140	120	124
HIGHEST ANNUAL MEAN			207
LOWEST ANNUAL MEAN			49.2
HIGHEST DAILY MEAN	1740	1050	4890
LOWEST DAILY MEAN	9.7	7.5	5.1
ANNUAL SEVEN-DAY MINIMUM	9.9	7.9	5.2
ANNUAL RUNOFF (AC-FT)	101600	86900	89970
ANNUAL RUNOFF (CFSM)	5.83	4.98	5.15
ANNUAL RUNOFF (INCHES)	79.10	67.63	70.01
10 PERCENT EXCEEDS	341	291	280
50 PERCENT EXCEEDS	69	78	74
90 PERCENT EXCEEDS	15	11	12

e Estimated

WILLAMETTE RIVER BASIN

187

14162100 BLUE RIVER LAKE NEAR BLUE RIVER, OR

LOCATION.--Lat 44°10'20", long 122°19'40", in SE 1/4 SE 1/4 sec.16, T.16 S., R.4 E., Lane County, Hydrologic Unit 17090004, in intake tower near left end of Blue River Dam on Blue River, 1.4 mi north of town of Blue River, and at mile 1.7.

DRAINAGE AREA.--87.3 mi².

PERIOD OF RECORD.--October 1968 to current year. Prior to October 1971, published as Blue River Reservoir near Blue River.

REVISED RECORDS.--WDR OR-92-1: 1975-77.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam with concrete gate and spillway section, completed in 1968 by Corps of Engineers; storage began October 1968. Total capacity is 89,520 acre-ft at elevation 1,357 ft, maximum pool, and usable capacity is 85,550 acre-ft between elevations 1,180 ft, minimum flood control pool, and 1,357 ft, maximum pool. Reservoir used for flood control. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 86,260 acre-ft Apr. 28, 1990, elevation, 1,353.63 ft; minimum contents observed since first filling in 1968, 305 acre-ft Dec. 7, 1973, elevation, 1,125.47 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents recorded, 83,430 acre-ft June 27, 28, elevation, 1,350.65 ft; minimum contents recorded, 3,980 acre-ft Nov. 27, elevation, 1,180.03 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

1,120	156	1,160	1,870	1,250	19,260
1,130	437	1,180	3,970	1,290	36,960
1,140	764	1,200	7,030	1,340	73,710
1,150	1,210	1,220	11,040	1,354	86,620

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1308.68	1265.75	1182.58	1187.88	1190.45	1288.90	1322.97	1342.72	1349.74	1350.37	1349.56	1347.26
2	1307.29	1262.05	1182.07	1193.92	1195.42	1293.66	1323.38	1343.40	1350.01	1350.26	1349.52	1347.16
3	1306.27	1257.17	1181.87	1195.59	1201.53	1297.20	1323.95	1343.92	1350.14	1350.12	1349.48	1346.87
4	1305.54	1251.57	1182.15	1195.74	1206.50	1298.73	1324.57	1344.44	1350.18	1349.99	1349.44	1346.34
5	1305.82	1245.36	1182.01	1192.25	1210.73	1299.79	1325.15	1345.02	1350.11	1349.90	1349.37	1345.79
6	1305.02	1238.46	1182.49	1186.84	1214.62	1300.81	1325.75	1345.48	1350.07	1349.84	1349.30	1345.25
7	1303.81	1230.84	1183.98	1193.01	1218.00	1301.60	1326.45	1345.85	1350.14	1349.76	1349.24	1344.70
8	1302.79	1221.94	1184.42	1194.86	1220.97	1302.37	1327.10	1346.21	1350.18	1349.69	1349.17	1343.77
9	1302.91	1211.66	1184.00	1191.91	1223.62	1303.15	1327.77	1346.52	1350.17	1349.68	1349.10	1342.42
10	1301.67	1203.88	1184.44	1190.81	1226.13	1303.97	1328.67	1346.81	1350.22	1349.72	1349.03	1341.05
11	1299.23	1198.67	1186.19	1217.78	1228.85	1305.06	1329.65	1347.11	1350.20	1349.75	1348.96	1339.69
12	1296.91	1193.52	1187.11	1225.41	1231.88	1306.89	1330.57	1347.55	1350.14	1349.78	1348.89	1338.31
13	1294.20	1188.36	1187.44	1231.10	1236.43	1308.60	1331.34	1347.99	1350.05	1349.81	1348.82	1336.94
14	1291.14	1184.19	1187.83	1234.57	1240.43	1309.97	1332.03	1348.69	1349.93	1349.83	1348.75	1335.55
15	1287.63	1183.15	1190.03	1237.21	1244.35	1311.19	1332.62	1349.63	1349.95	1349.85	1348.67	---
16	1283.78	1183.15	1201.49	1237.49	1247.60	1312.25	1333.16	1350.01	1350.07	1349.87	1348.60	1332.76
17	1279.70	1184.02	1204.65	1249.45	1250.16	1312.97	1333.63	1350.01	1350.17	1349.87	1348.51	1331.43
18	1276.29	1182.96	1192.90	1247.85	1252.42	1313.41	1334.08	1349.89	1350.25	1349.87	1348.43	1330.27
19	1273.44	1182.83	1188.59	1241.19	1255.47	1313.66	1334.57	1349.81	1350.32	1349.87	1348.34	1329.11
20	1270.66	1186.80	1188.56	1231.23	1258.67	1313.90	1335.11	1349.71	1350.37	1349.86	1348.26	---
21	1267.85	1188.45	1186.52	1220.03	1265.43	1314.37	1335.76	1349.78	1350.41	1349.85	1348.20	1326.20
22	1265.08	1185.84	1185.55	1211.49	1270.63	1316.77	1336.50	1349.80	1350.45	1349.83	1348.11	1325.32
23	1262.27	1182.71	1186.40	1208.13	1274.17	1318.89	1337.38	1349.62	1350.47	1349.80	1348.03	1324.10
24	1259.38	1184.66	1186.91	1201.82	1276.74	1319.27	1338.26	1349.70	1350.48	1349.77	1347.95	1322.89
25	1256.40	1183.84	1186.81	1196.55	1278.78	1318.64	1338.97	1350.15	1350.46	1349.76	1347.87	1321.81
26	1253.35	1181.24	1186.20	1195.79	1280.50	1318.57	1339.58	1350.23	1350.60	1349.74	1347.78	1320.69
27	1250.24	1182.39	1185.98	1196.61	1281.98	1319.46	1340.13	1350.03	1350.65	1349.71	1347.70	1319.54
28	1246.95	1184.25	1185.99	1193.84	1284.62	1320.50	1340.75	1349.66	1350.64	1349.66	1347.61	1318.40
29	1249.09	1184.22	1186.44	1191.40	---	1321.29	1341.42	1349.75	1350.57	1349.64	1347.52	1316.77
30	1258.17	1183.36	1187.35	1190.28	---	1321.94	1342.08	1350.18	1350.48	1349.63	1347.43	1314.77
31	1266.71	---	1187.25	1190.16	---	1322.51	---	1349.72	---	1349.60	1347.35	---
MAX	1308.68	1265.75	1204.65	1249.45	1284.62	1322.51	1342.08	1350.23	1350.65	1350.37	1349.56	---
MIN	1246.95	1181.24	1181.87	1186.84	1190.45	1288.90	1322.97	1342.72	1349.74	1349.60	1347.35	---
(†)	25420	4430	4990	5420	33960	59180	75560	82560	83270	82440	80350	53320
(‡)	-24720	-20990	+560	+430	+28540	+25220	+16380	+7000	+710	-830	-2090	-27030

CAL YR 1997 MAX 1352.03 MIN 1176.55 AC-FT‡ -46260
WTR YR 1998 MAX --- MIN --- AC-FT‡ +3180

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

WILLAMETTE RIVER BASIN

14162200 BLUE RIVER AT BLUE RIVER, OR

LOCATION.--Lat 44°09'45", long 122°19'55", in NW 1/4 SE 1/4 sec.21, T.16 S., R.4 E., Lane County, Hydrologic Unit 17090004, on right bank 0.3 mi upstream from Simmonds Creek, 0.7 mi north of town of Blue River, 0.8 mi downstream from Blue River Dam, and at mile 0.9.

DRAINAGE AREA.--87.7 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Datum of gage is 1,056.53 ft above sea level (Corps of Engineers bench mark). Prior to Aug. 25, 1966, nonrecording gage at datum 0.80 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1968 by Blue River Lake (station 14162100). No diversion upstream from station. Discharge not adjusted for storage or release from Blue River Lake as losses from reservoir at times exceed natural flow.

AVERAGE DISCHARGE.--32 years (water years 1967-98), 458 ft³/s, 331,800 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,270 ft³/s Feb. 23, 1968, gage height, 8.93 ft; minimum discharge, 0.80 ft³/s Oct. 8, 10, 11, 1968; minimum daily, 3.7 ft³/s Oct. 8, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964 reached a stage of 16.5 ft, from floodmark.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,730 ft³/s Jan. 18, gage height, 7.32 ft; minimum discharge, 47 ft³/s Aug. 3-5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	654	1500	311	351	590	63	205	63	499	166	48	50
2	655	1480	272	367	238	55	205	63	316	166	48	50
3	653	1460	235	464	64	182	150	64	314	168	48	135
4	652	1430	199	509	66	469	109	64	315	169	47	245
5	652	1390	201	654	69	401	109	64	314	142	56	245
6	652	1350	163	747	64	271	89	64	266	124	55	245
7	647	1300	136	667	61	256	55	64	208	124	51	245
8	653	1240	208	729	62	256	57	64	208	126	51	399
9	667	1170	246	776	59	228	57	64	208	80	51	576
10	883	817	208	754	57	203	58	64	208	54	51	576
11	1160	573	159	1300	58	203	92	54	208	54	51	574
12	1150	523	183	1670	59	205	109	54	208	54	51	571
13	1130	473	201	2010	62	279	109	64	208	54	51	571
14	1130	377	201	2520	64	351	109	64	209	54	51	568
15	1160	204	204	2610	65	352	109	210	134	54	51	566
16	1170	148	1120	2280	57	355	109	432	98	53	51	565
17	1150	148	1980	2050	53	355	109	571	98	51	51	529
18	946	250	1890	2450	53	355	109	598	98	51	51	505
19	781	238	988	2640	54	355	109	598	98	51	51	505
20	733	207	602	2530	56	355	85	578	98	53	51	502
21	692	330	599	2170	66	356	52	556	98	57	51	500
22	685	471	467	1840	67	360	54	557	98	56	51	500
23	678	488	333	1780	64	681	59	554	100	56	51	471
24	670	487	304	1710	62	1100	62	452	143	52	51	451
25	663	560	304	1640	61	1100	62	413	166	49	51	450
26	655	579	304	1420	61	772	62	505	166	49	51	447
27	647	358	271	1250	61	357	62	544	168	49	50	445
28	661	260	256	1240	64	196	63	544	169	49	50	443
29	682	322	254	1100	---	205	62	545	169	49	50	590
30	702	351	254	914	---	205	62	729	168	48	50	704
31	1120	---	300	721	---	205	---	859	---	48	50	---
TOTAL	25133	20484	13353	43863	2417	11086	2743	10139	5758	2410	1572	13223
MEAN	811	683	431	1415	86.3	358	91.4	327	192	77.7	50.7	441
MAX	1170	1500	1980	2640	590	1100	205	859	499	169	56	704
MIN	647	148	136	351	53	55	52	63	98	48	47	50
AC-FT	49850	40630	26490	87000	4790	21990	5440	20110	11420	4780	3120	26230

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1998, BY WATER YEAR (WY)

	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	293	656	947	868	476	389	330	337	237	298	398	260																				
MAX	811	1459	2189	1720	1594	1766	853	676	549	626	765	566																				
(WY)	1998	1974	1978	1997	1996	1972	1993	1971	1984	1979	1971	1997																				
MIN	45.7	39.4	63.1	68.1	32.6	12.0	12.0	35.0	63.9	46.6	26.6	27.1																				
(WY)	1993	1988	1977	1977	1977	1977	1977	1973	1973	1967	1967	1967																				

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1967 - 1998

	198857	152181	458	727	1972
ANNUAL TOTAL	198857	152181	458	727	1972
ANNUAL MEAN	545	417	727	192	1977
HIGHEST ANNUAL MEAN			192	192	1977
LOWEST ANNUAL MEAN			192	192	1977
HIGHEST DAILY MEAN	3760	Jan 6	2640	Jan 19	5650
LOWEST DAILY MEAN	41	May 6	47	Aug 4	3.7
ANNUAL SEVEN-DAY MINIMUM	44	May 20	48	Jul 29	7.0
ANNUAL RUNOFF (AC-FT)	394400		301900		331800
10 PERCENT EXCEEDS	1370		1120		999
50 PERCENT EXCEEDS	267		208		288
90 PERCENT EXCEEDS	50		51		50

WILLAMETTE RIVER BASIN

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14162200 BLUE RIVER AT BLUE RIVER, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1966 to current year.

INSTRUMENTATION.--Temperature recorder since August 1966.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 26.0°C July 6, 1968; minimum, 0.0°C Jan. 5-9, 1974, Dec. 23, 24, 1983.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 16.0°C Oct. 5, 6; minimum, 4.0°C Dec. 25-29.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	14.0	13.0	13.5	11.5	11.0	11.0	8.0	7.5	7.5	4.5	4.5	4.5
2	14.5	14.0	14.0	11.0	10.5	10.5	7.5	6.5	7.0	5.0	4.5	4.5
3	15.0	14.5	14.5	10.5	10.5	10.5	6.5	6.0	6.0	5.5	5.0	5.5
4	15.5	15.0	15.0	11.0	10.5	10.5	6.0	5.5	5.5	5.5	5.5	5.5
5	16.0	15.5	15.5	11.0	11.0	11.0	6.0	5.5	5.5	5.5	5.5	5.5
6	16.0	15.5	15.5	11.5	11.0	11.0	6.0	5.5	5.5	5.5	5.0	5.5
7	15.5	15.0	15.0	11.5	11.5	11.5	5.5	5.5	5.5	5.5	5.0	5.5
8	15.5	15.0	15.0	11.5	11.5	11.5	6.0	5.5	5.5	5.5	5.0	5.5
9	15.5	15.0	15.0	11.5	11.0	11.5	6.0	6.0	6.0	5.5	5.5	5.5
10	15.0	14.5	15.0	11.0	10.5	11.0	6.0	5.5	6.0	6.0	5.5	5.5
11	14.5	14.5	14.5	10.5	10.5	10.5	5.5	5.5	5.5	6.5	6.0	6.5
12	14.5	14.5	14.5	11.0	10.5	10.5	5.5	5.0	5.5	7.0	6.5	6.5
13	14.5	14.0	14.5	10.5	10.0	10.5	5.0	5.0	5.0	7.0	6.5	6.5
14	14.5	14.0	14.0	10.0	9.5	10.0	5.0	4.5	4.5	7.0	6.5	6.5
15	14.5	14.0	14.5	10.0	9.0	9.5	5.0	4.5	4.5	7.0	6.5	7.0
16	14.5	14.5	14.5	9.0	8.5	8.5	6.0	5.0	5.0	7.0	7.0	7.0
17	15.0	14.5	14.5	8.5	8.5	8.5	7.0	6.0	6.5	7.0	7.0	7.0
18	15.0	15.0	15.0	9.0	8.5	8.5	7.0	6.5	7.0	7.5	7.0	7.0
19	15.0	15.0	15.0	8.5	8.0	8.5	6.5	5.5	6.0	7.5	7.0	7.0
20	15.0	15.0	15.0	8.5	8.0	8.5	5.5	5.5	5.5	7.0	7.0	7.0
21	15.0	15.0	15.0	8.5	8.0	8.0	5.5	5.0	5.5	7.0	6.5	7.0
22	15.0	14.5	15.0	8.5	8.0	8.0	5.0	5.0	5.0	6.5	6.5	6.5
23	15.0	14.5	14.5	8.0	8.0	8.0	5.0	5.0	5.0	6.5	6.5	6.5
24	15.0	14.5	14.5	8.5	8.0	8.0	5.0	4.5	4.5	7.0	6.5	6.5
25	15.0	14.5	14.5	8.5	8.0	8.5	4.5	4.0	4.0	7.0	6.5	6.5
26	14.5	14.0	14.5	8.0	7.5	8.0	4.0	4.0	4.0	7.0	6.5	6.5
27	14.0	14.0	14.0	8.0	7.5	7.5	4.0	4.0	4.0	7.5	7.0	7.0
28	14.0	14.0	14.0	8.0	7.5	8.0	4.0	4.0	4.0	7.5	7.0	7.5
29	14.0	13.5	14.0	8.0	8.0	8.0	4.5	4.0	4.0	7.5	7.0	7.0
30	13.5	12.0	12.5	8.0	8.0	8.0	4.5	4.5	4.5	7.5	7.0	7.5
31	12.0	11.5	12.0	---	---	---	4.5	4.5	4.5	7.0	6.5	7.0
MONTH	16.0	11.5	14.5	11.5	7.5	9.4	8.0	4.0	5.3	7.5	4.5	6.3

WILLAMETTE RIVER BASIN

14162200 BLUE RIVER AT BLUE RIVER, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	6.5	6.5	6.5	6.5	6.0	6.0	---	---	---	8.0	6.5	7.0
2	6.5	6.5	6.5	6.5	6.0	6.0	---	---	---	7.5	6.5	7.0
3	7.0	6.5	6.5	---	---	---	---	---	---	8.0	6.5	7.0
4	7.0	6.5	6.5	---	---	---	---	---	---	8.0	6.5	7.0
5	6.5	6.5	6.5	---	---	---	---	---	---	8.0	6.5	7.0
6	7.0	6.5	6.5	---	---	---	---	---	---	7.0	6.5	7.0
7	6.5	6.5	6.5	---	---	---	---	---	---	8.0	6.5	7.0
8	7.0	6.5	7.0	---	---	---	---	---	---	7.0	6.5	7.0
9	7.5	6.5	7.0	---	---	---	---	---	---	7.0	6.5	7.0
10	7.0	6.5	6.5	---	---	---	---	---	---	7.0	6.5	7.0
11	7.0	6.5	6.5	---	---	---	---	---	---	7.5	6.5	7.0
12	6.5	6.5	6.5	---	---	---	---	---	---	7.0	6.5	7.0
13	7.0	6.5	6.5	---	---	---	---	---	---	7.0	6.5	7.0
14	6.5	6.5	6.5	---	---	---	---	---	---	7.0	6.5	7.0
15	7.0	6.5	6.5	---	---	---	---	---	---	7.0	6.5	7.0
16	6.5	6.5	6.5	---	---	---	---	---	---	7.0	6.5	7.0
17	7.0	6.5	6.5	---	---	---	---	---	---	7.0	7.0	7.0
18	6.5	6.5	6.5	---	---	---	---	---	---	7.0	7.0	7.0
19	6.5	6.0	6.5	---	---	---	---	---	---	7.0	7.0	7.0
20	6.5	6.0	6.5	---	---	---	---	---	---	7.0	7.0	7.0
21	6.5	6.0	6.5	---	---	---	---	---	---	7.0	7.0	7.0
22	7.0	6.5	6.5	---	---	---	---	---	---	7.0	7.0	7.0
23	6.5	6.0	6.5	---	---	---	---	---	---	7.0	7.0	7.0
24	6.5	6.0	6.0	---	---	---	---	---	---	7.0	7.0	7.0
25	6.0	5.5	6.0	---	---	---	---	---	---	7.5	7.0	7.0
26	6.5	5.5	6.0	---	---	---	---	---	---	7.5	7.0	7.0
27	6.5	6.0	6.0	---	---	---	---	---	---	7.5	7.0	7.0
28	6.0	6.0	6.0	---	---	---	---	---	---	7.5	7.0	7.0
29	---	---	---	---	---	---	8.0	---	---	7.5	7.0	7.0
30	---	---	---	---	---	---	7.5	6.5	7.0	7.5	7.0	7.0
31	---	---	---	---	---	---	---	---	---	7.5	7.5	7.5
MONTH	7.5	5.5	6.4	---	---	---	---	---	---	8.0	6.5	7.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.5	7.0	7.5	8.5	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0
2	8.0	7.5	7.5	8.5	8.0	8.0	10.5	8.5	9.0	10.5	8.5	9.0
3	8.0	7.5	7.5	8.5	8.0	8.0	10.5	8.5	9.0	10.0	9.0	9.0
4	8.0	7.5	7.5	8.5	8.0	8.0	10.5	8.5	9.0	9.0	8.5	9.0
5	8.0	7.5	7.5	9.0	8.0	8.5	10.0	8.5	9.0	9.5	9.0	9.0
6	8.0	7.5	7.5	9.0	8.0	8.5	10.0	8.5	9.0	9.5	9.0	9.0
7	8.0	7.5	7.5	9.0	8.0	8.5	10.0	8.5	9.0	9.0	9.0	9.0
8	8.0	7.5	7.5	9.0	8.0	8.5	10.0	8.5	9.0	9.0	9.0	9.0
9	8.0	7.5	7.5	10.0	8.0	8.5	10.0	8.5	9.0	9.0	9.0	9.0
10	8.0	7.5	7.5	9.5	8.5	8.5	10.0	8.5	9.0	9.0	9.0	9.0
11	8.0	7.5	8.0	10.0	8.5	9.0	10.5	8.5	9.0	9.5	9.0	9.0
12	8.5	7.5	8.0	10.0	8.5	8.5	10.5	8.5	9.0	9.5	9.0	9.0
13	8.0	7.5	8.0	10.0	8.5	8.5	10.5	8.5	9.0	9.5	9.0	9.5
14	8.5	7.5	8.0	10.0	8.5	8.5	10.5	8.5	9.0	9.5	9.5	9.5
15	8.5	7.5	8.0	10.0	8.5	9.0	10.0	8.5	9.0	9.5	9.5	9.5
16	8.5	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.0	9.5	9.5
17	9.0	7.5	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.0	9.5	9.5
18	9.0	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.0	9.5	9.5
19	8.5	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.0	10.0	10.0
20	9.0	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.0	10.0	10.0
21	9.0	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.0	10.0	10.0
22	9.0	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.5	10.0	10.0
23	9.0	8.0	8.0	10.0	8.5	9.0	9.5	8.5	9.0	10.5	10.0	10.0
24	8.0	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.5	10.0	10.5
25	8.0	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.5	10.5	10.5
26	8.5	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	10.5	10.5	10.5
27	8.5	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	11.0	10.5	10.5
28	8.5	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	11.0	10.5	11.0
29	9.0	8.0	8.0	10.5	8.5	9.0	10.0	8.5	9.0	11.0	11.0	11.0
30	8.5	8.0	8.0	10.0	8.5	9.0	10.0	8.5	9.0	11.5	11.0	11.0
31	---	---	---	9.5	8.5	9.0	10.0	8.5	9.0	---	---	---
MONTH	9.0	7.0	7.8	10.5	8.0	8.7	10.5	8.5	9.0	11.5	8.5	9.7

WILLAMETTE RIVER BASIN

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14162500 MCKENZIE RIVER NEAR VIDA, OR

LOCATION.--Lat 44°07'30", long 122°28'10", in NE 1/4 NE 1/4 sec.5, T.17 S., R.3 E., Lane County, Hydrologic Unit 17090004, on right bank 0.4 mi downstream from Mason Creek, 5.4 mi east of Vida, and at mile 47.7.

DRAINAGE AREA.--930 mi² at cableway 0.4 mi downstream, where all discharge measurement are made.

PERIOD OF RECORD.--July 1910 to March 1911 (published as "at Martins Rapids, near Vida"), September 1924 to current year. Monthly discharge only for some periods (water years 1910-11, 1924-25), published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 855.71 ft above sea level (levels by Eugene Water and Electric Board). July 1, 1910, to Mar. 31, 1911, nonrecording gage at site 3 mi downstream at different datum. Sept. 1, 1924, to Nov. 16, 1928, nonrecording gage at site 20 ft upstream at datum 0.15 ft lower. Nov. 17, 1928, to Sept. 23, 1968, water-stage recorder at present site on left bank at datum 0.15 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since 1963 by Smith River Reservoir (station 14158795) and Cougar Lake (station 14159400), and since 1968 by Blue River Lake (station 14162100). No diversion upstream from station. All records given herein are for measuring site. Continuous water-quality records for the period June 1961 to September 1985 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--74 years (water years 1925-98), 4,048 ft³/s, 2,932,000 acre-ft/yr, unadjusted.
30 years (water years 1969-98), 4,149 ft³/s, 3,006,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 64,400 ft³/s Dec. 28, 1945, gage height, 17.70 ft, site and datum then in use, from rating curve extended above 32,000 ft³/s; minimum discharge, 1,260 ft³/s Nov. 7, 1930, Sept. 17, Oct. 4, 8, 9, 1931.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in January 1923 reached a stage of 17.2 ft, from floodmarks, discharge, 62,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,600 ft³/s Jan. 17, gage height, 6.10 ft; minimum daily discharge, 2,200 ft³/s July 28, 29, 31, Aug. 1, 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3150	7130	3590	3150	5390	4050	3630	3390	5480	3000	e2200	e2400
2	3380	6290	3280	3770	4650	4370	3540	3520	4950	3000	e2200	e2400
3	3430	5960	3230	3750	3920	4620	3470	3390	4710	2980	e2400	e2400
4	3600	6080	3210	3820	3800	4630	3370	3220	4630	2940	e2800	e2600
5	4250	5960	3120	3820	3570	4240	3290	3450	4390	2890	e2800	e2600
6	3770	5790	2920	4040	3550	3810	3220	3300	4110	2880	e2600	e2600
7	3510	6040	2860	5110	3490	3610	3230	3200	4010	2900	e2800	e2600
8	3590	6110	2930	4980	3350	3630	3150	3310	3980	2890	e2600	e2600
9	4370	5930	3000	4580	3260	3560	3060	3410	3830	2750	e2600	e3000
10	4210	5070	2920	4570	3180	3450	3260	3300	3850	2550	e2600	e3000
11	4460	3910	2710	9140	3180	3470	3420	3270	3870	2540	e2600	e3000
12	4570	3930	2620	9360	3180	3610	3380	3620	3770	2520	e2600	e3000
13	4360	3840	2590	11200	3370	3760	3300	3730	3670	2500	e2800	e2800
14	4220	3710	2590	11600	3370	3860	3180	3860	3550	e2400	e2600	e2800
15	4200	3490	2740	12500	3530	3840	3120	4890	3590	e2400	e2600	e2800
16	4240	3430	5390	11500	3420	3830	3000	5320	3660	e2400	e2800	e2800
17	4190	3440	8330	12900	3290	3720	2910	5390	3500	e2400	e2600	e2800
18	3980	3600	6800	11400	3200	3570	2870	5220	3210	e2400	e2600	e2800
19	3730	3630	5350	11600	3230	3480	2920	5110	3190	e2400	e2600	e3000
20	3700	3700	4560	11200	3340	3450	2910	5170	3080	e2400	e2600	e3000
21	3680	3810	4470	10300	4910	3480	2900	5290	2970	e2400	e2600	e2800
22	3630	3840	3990	9870	4790	4690	3000	5210	2990	e2600	e2600	e2800
23	3670	3900	3460	10200	4120	5850	3220	5040	2930	e2400	e2600	e2800
24	3650	4270	3250	9960	3740	6070	3490	4840	2990	e2400	e2600	e2800
25	3600	4340	3200	9990	3590	5630	3330	5220	3150	e2400	e2600	e2800
26	3530	4210	3160	9650	3430	5100	3130	5180	3420	e2400	e2600	e3000
27	3540	3940	3110	9360	3300	4540	3020	5080	3260	e2400	e2600	e2800
28	3560	3740	3060	8760	3550	4110	3060	4960	3150	e2200	e2600	e2800
29	4550	3780	3050	8100	---	3940	3160	5270	3050	e2200	e2400	e2800
30	6390	3840	2980	7060	---	3780	3280	6230	3010	e2400	e2400	e3000
31	8890	---	2970	5940	---	3720	---	6210	---	e2200	e2600	---
TOTAL	127600	136710	111440	253180	102700	127470	95820	137600	109950	79140	80200	83400
MEAN	4116	4557	3595	8167	3668	4112	3194	4439	3665	2553	2587	2780
MAX	8890	7130	8330	12900	5390	6070	3630	6230	5480	3000	2800	3000
MIN	3150	3430	2590	3150	3180	3450	2870	3200	2930	2200	2200	2400
AC-FT	253100	271200	221000	502200	203700	252800	190100	272900	218100	157000	159100	165400

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

	MEAN	2835	4711	6293	6107	4913	4499	4302	4462	3572	2698	2785	2640
MAX	4116	8718	12370	10430	11510	11210	7097	6567	6604	3529	3510	3358	
(WY)	1998	1985	1978	1997	1996	1972	1993	1969	1974	1974	1971	1972	
MIN	1640	1925	1865	1752	1542	2351	2671	2268	2180	2138	1907	2019	
(WY)	1993	1988	1977	1977	1977	1992	1977	1992	1973	1991	1992	1992	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1969 - 1998

ANNUAL TOTAL	1815540	1445210										
ANNUAL MEAN	4974	3959										
HIGHEST ANNUAL MEAN			4149									
LOWEST ANNUAL MEAN			6014									1997
HIGHEST DAILY MEAN	16100	Jan 4	12900	Jan 17	27200	Feb 7	1996					
LOWEST DAILY MEAN	2520	Jul 29	2200	Jul 28	1330	Feb 19	1977					
ANNUAL SEVEN-DAY MINIMUM	2550	Aug 4	2260	Jul 27	1350	Oct 23	1992					
ANNUAL RUNOFF (AC-FT)	3601000		2867000		3006000							
10 PERCENT EXCEEDS	8690		5880		7120							
50 PERCENT EXCEEDS	3920		3450		3240							
90 PERCENT EXCEEDS	2950		2600		2300							

e Estimated

WILLAMETTE RIVER BASIN

14163150 MCKENZIE RIVER BELOW LEABURG DAM, NEAR LEABURG, OR

LOCATION.--Lat 44°07'26", long 122°37'35", in NE 1/4 NE 1/4 sec.1, T.17 S., R.1 E., Lane County, Hydrologic Unit 17090004, on right bank 1.4 mi downstream from Leaburg Dam, 3.0 mi northeast of Leaburg, and at mile 37.4.

DRAINAGE AREA.--1,030 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 710 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Smith River Reservoir (station 14158795) and Cougar Lake (station 14159400), and since 1968 by Blue River Lake (station 14162100). Diversion upstream from station through the Leaburg Power canal. Continuous water temperature records for the period June 1992 to September 1993 have been collected at this location.

AVERAGE DISCHARGE.--9 years (water years 1990-98), 2,643 ft³/s, 1,915,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 50,900 ft³/s Feb. 7, 1996, gage height, 17.95 ft; minimum discharge, 457 ft³/s Aug. 29, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,900 ft³/s Jan. 17, gage height, 10.25 ft; minimum discharge, 930 ft³/s June 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1240	5790	1850	1450	4000	3230	2060	1660	3730	991	1030	1230
2	1550	4750	1500	2250	3250	3570	1960	1760	3100	992	1020	1200
3	1600	4320	1440	2200	2420	3880	1900	1660	2780	982	1100	1110
4	1840	4390	1390	2340	2260	3810	1760	1490	2660	980	1400	1010
5	2640	4250	1310	2250	1990	3250	1690	1690	2410	983	1400	1010
6	2010	4040	1150	2490	1940	2660	1600	1540	2090	989	1160	1000
7	1650	4320	1150	4080	1850	2330	1630	1430	1940	997	1010	1000
8	1700	4380	1170	3840	1700	2340	1540	1520	1920	988	1000	1020
9	2710	4180	1230	3210	1600	2240	1440	1650	1730	1020	1000	1030
10	2430	3410	1250	3120	1500	2090	1760	1520	1750	1080	1010	1010
11	2700	2110	1150	8860	1510	2090	2030	1480	1770	1040	1010	1010
12	2860	2140	1170	9040	1540	2240	1970	1830	1650	1040	998	1010
13	2590	2030	1180	11500	1900	2340	1830	2000	1520	1050	1020	1010
14	2400	1900	1180	11600	1910	2410	1670	2110	1390	1270	1010	1030
15	2360	1660	1230	13100	2210	2350	1570	3300	1400	1080	1010	1030
16	2390	1580	4070	11300	2040	2320	1420	3770	1470	1150	1010	1030
17	2330	1610	7950	13000	1810	2170	1300	3860	1310	1190	1000	1020
18	2130	1770	5730	10900	1800	1980	1240	3740	1030	1110	1010	1020
19	1850	1850	4080	11100	1740	1870	1280	3560	1020	1090	1010	1040
20	1800	1970	3160	10500	1960	1820	1250	3590	1010	1070	1010	1010
21	1780	2080	2970	9410	4280	1860	1200	3840	1020	1050	1020	1020
22	1730	2080	2480	8840	4310	3200	1250	3690	1020	1310	1010	1020
23	1810	2150	1880	9320	3250	4560	1530	3370	1000	1030	1010	1020
24	1810	2610	1640	9010	2630	4840	1920	3120	1010	1030	1010	1030
25	1750	2680	1570	9220	2350	4250	1760	3580	1010	1030	1010	1040
26	1670	2530	1500	8850	2100	3710	1520	3440	1260	1030	1010	1060
27	1680	2250	1440	8510	1910	3190	1380	3260	1090	1020	1020	1030
28	1700	1990	1370	7750	2380	2700	1380	3050	985	1020	1040	1030
29	2940	2030	1360	6960	---	2490	1470	3560	984	1020	1120	1030
30	5260	2110	1270	5840	---	2290	1550	4850	994	1040	1110	1040
31	8290	---	1240	4640	---	2220	---	4630	---	1030	1220	---
TOTAL	73200	84960	63060	226480	64140	86300	47860	85550	48053	32702	32798	31150
MEAN	2361	2832	2034	7306	2291	2784	1595	2760	1602	1055	1058	1038
MAX	8290	5790	7950	13100	4310	4840	2060	4850	3730	1310	1400	1230
MIN	1240	1580	1150	1450	1500	1820	1200	1430	984	980	998	1000
AC-FT	145200	168500	125100	449200	127200	171200	94930	169700	95310	64860	65050	61790

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1998, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	1210	3126	4637	4879	3854	2934	3147	3025	1870
MAX	2361	7467	12250	9241	11880	6149	6042	5410	3393
(WY)	1998	1997	1996	1995	1994	1993	1992	1991	1990
MIN	610	741	1269	1380	1330	897	1595	1099	1161
(WY)	1990	1990	1990	1992	1993	1992	1998	1994	1992

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1990 - 1998

ANNUAL TOTAL	1211980	876253	2643
ANNUAL MEAN	3320	2401	4550
HIGHEST ANNUAL MEAN			1415
LOWEST ANNUAL MEAN			1997
HIGHEST DAILY MEAN	16200	Feb 1	42700
LOWEST DAILY MEAN	1120	Jun 24	478
ANNUAL SEVEN-DAY MINIMUM	1140	Jun 22	486
ANNUAL RUNOFF (AC-FT)	2404000	1738000	1915000
10 PERCENT EXCEEDS	7490	4290	5730
50 PERCENT EXCEEDS	2110	1740	1390
90 PERCENT EXCEEDS	1160	1010	834

WILLAMETTE RIVER BASIN

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14163900 MCKENZIE RIVER NEAR WALTERVILLE, OR

LOCATION.--Lat 44°04'13", long 122°46'12", in NW 1/4 NE 1/4 sec.26, T.17 S., R.1 W., Lane County, Hydrologic Unit 17090004, on right bank 0.8 mi downstream from Walterville Power Canal Diversion, 1.7 mi east of Walterville, and at mile 27.7.

DRAINAGE AREA.--1,081 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 600 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1963 by Smith River Reservoir (station 14158795) and Cougar Lake (station 14159400), and since 1968 by Blue River Lake (station 14162100). Diversion upstream from station through the Walterville Power Canal. Continuous water-quality records for period June 1992 to September 1993 have been collected at this location.

AVERAGE DISCHARGE.--9 years (water years 1990-98), 2,923 ft³/s, 2,117,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 56,100 ft³/s Feb. 7, 1996, gage height, 16.18 ft; minimum discharge, 420 ft³/s Nov. 8, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,400 ft³/s Jan. 17, gage height, 9.07 ft; minimum recorded discharge, 780 ft³/s July 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1500	6390	2370	1720	4530	3840	2470	1790	4080	1150	1150	1150
2	1960	5240	1970	2370	3810	4190	2210	1790	3360	1170	1160	1140
3	1980	4730	1890	2420	2880	4620	2120	1680	2950	1150	1170	1160
4	2200	4830	1820	2670	2920	4900	1970	1520	2780	1150	1160	1160
5	3010	4700	1780	2530	3710	5350	1870	1670	2510	1150	1160	1150
6	2530	4440	1540	2760	4170	5130	2500	1560	2150	1160	1160	1160
7	2110	4660	1490	4240	4070	4740	3560	1450	1960	1160	1160	1160
8	2110	4750	1590	4230	3900	4690	3730	1500	1970	1160	1160	1170
9	3140	4570	1690	3630	2740	3620	3680	1630	1790	1150	1170	1290
10	2900	4290	1730	3470	1830	2750	4010	1550	1810	1160	1160	1150
11	3190	3880	1460	8600	1780	2700	4360	1500	1820	1150	1160	1160
12	3370	4300	1320	9540	1790	2810	4340	1760	1710	1160	1150	1150
13	3100	4210	1270	12100	2160	2880	3540	1950	1610	1160	1160	1150
14	2880	4100	1240	12200	2170	2940	2240	2020	1490	1220	1160	1160
15	2770	3120	1390	13900	2480	2880	1970	3140	1470	1160	1160	1150
16	2820	2270	3850	12200	2500	2830	1800	3770	1550	1160	1150	1160
17	2740	2060	8000	13600	2430	2690	1640	3910	1450	1160	1150	1160
18	2580	2200	6380	11700	2260	2470	1560	3950	1200	1160	1160	1160
19	2280	2270	4810	11800	2310	2330	1580	3750	1170	1150	1150	1160
20	2220	2350	3850	11300	2570	2280	1550	3790	1140	1160	1160	1150
21	2200	2480	3620	10100	4930	2310	1490	4060	1170	1160	1160	1160
22	2140	2510	3210	9410	5500	3490	1560	3940	1160	1260	1160	1150
23	2190	2610	2540	9860	4280	4940	1830	3620	1150	1150	1160	1150
24	2180	3070	2270	9560	3530	5390	2210	3340	1170	1150	1150	1160
25	2140	3180	2170	9870	3140	4800	2130	3790	1180	1150	1150	1160
26	2060	3050	2090	9540	2820	4300	1890	3670	1370	1150	1150	1150
27	2060	2800	2010	9210	2570	3800	1720	3470	1240	1150	1150	1150
28	2070	2500	1930	8480	2930	3300	1680	3230	1150	1160	1150	2160
29	3010	2500	1890	7620	---	3040	1740	3710	1150	1160	1160	2730
30	5190	2610	1800	6570	---	2820	1810	5110	1150	1160	1150	1900
31	8810	---	1750	5290	---	2750	---	4980	---	1150	1160	---
TOTAL	85440	106670	76720	242490	86710	111580	70760	88600	51860	36000	35870	38120
MEAN	2756	3556	2475	7822	3097	3599	2359	2858	1729	1161	1157	1271
MAX	8810	6390	8000	13900	5500	5390	4360	5110	4080	1260	1170	2730
MIN	1500	2060	1240	1720	1780	2280	1490	1450	1140	1150	1150	1140
AC-FT	169500	211600	152200	481000	172000	221300	140400	175700	102900	71410	71150	75610

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1998, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	1451	3550	4907	5122	4233	3512	4024	3097	1681	1204	1223
MAX	2756	7816	13640	10030	12560	7079	7133	4841	3104	1692	2295
(WY)	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988
MIN	683	1363	1249	1181	1216	1408	2359	1420	1117	1076	964
(WY)	1990	1990	1990	1990	1992	1993	1998	1994	1993	1990	1990

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1990 - 1998
ANNUAL TOTAL	1387930	1030820	
ANNUAL MEAN	3803	2824	
HIGHEST ANNUAL MEAN			5034
LOWEST ANNUAL MEAN			1653
HIGHEST DAILY MEAN	18000	Feb 1	44600
LOWEST DAILY MEAN	1230	Jun 23	499
ANNUAL SEVEN-DAY MINIMUM	1240	Jun 23	516
ANNUAL RUNOFF (AC-FT)	2753000		2117000
10 PERCENT EXCEEDS	8460		6360
50 PERCENT EXCEEDS	2530		1580
90 PERCENT EXCEEDS	1250		967

WILLAMETTE RIVER BASIN

14166000 WILLAMETTE RIVER AT HARRISBURG, OR

LOCATION.--Lat 44°16'14", long 123°10'21", in NW 1/4 NE 1/4 sec.16, T.15 S., R.4 W., Linn County, Hydrologic Unit 17090003, on right bank 75 ft north of intersection of First Street and Kesling Street in Harrisburg and at mile 161.0.

DRAINAGE AREA.--3,420 mi², approximately.

PERIOD OF RECORD.--October 1944 to current year. Gage-height records collected at same site in 1927-28, 1931, 1934, are contained in reports of National Weather Service.

GAGE.--Water-stage recorder. Datum of gage is 288.39 ft above sea level. Oct 1 to Nov. 14, 1944, nonrecording gage at bridge 1,110 ft upstream at different datum. Nov. 15, 1944, to Aug. 15, 1973, at site 1,100 ft upstream at datum 2.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by 8 reservoirs upstream from station. Many small diversions upstream from station for irrigation. Continuous water-quality records for the period June 1961 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--24 years (water years 1945-68), 12,320 ft³/s, 8,927,000 acre-ft/yr.
30 years (water years 1969-98), 11,490 ft³/s, 8,327,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 210,000 ft³/s Dec. 29, 1945, gage height, 19.69 ft, from rating curve extended above 115,000 ft³/s; minimum discharge, 1,990 ft³/s Oct. 30, 1944.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood stage of 20.5 ft was reached in December 1861, and 20.1 ft in February 1890 (information from Corps of Engineers). Flood of Jan. 1, 1943, reached a stage of 19.1 ft from National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 40,400 ft³/s Jan. 15, gage height, 10.44 ft; minimum discharge, 4,480 ft³/s Sept. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7950	18800	9800	7090	15200	11600	8570	5660	23500	5340	5640	4730
2	8880	17400	9240	9080	13200	12900	7850	5820	18400	5340	5500	4690
3	8900	14800	8810	10600	10600	15300	7560	6010	15300	5290	4880	4690
4	9120	14100	8570	12100	9940	16900	7300	5600	13800	5280	5020	4800
5	9730	13700	8490	11900	9060	15000	7050	5380	12500	5350	5110	4890
6	9960	13300	7500	11700	9300	12500	6970	5260	10700	5570	5160	4850
7	9170	13300	7230	13000	8390	10900	6850	5080	9580	5550	5130	4900
8	8900	13700	7550	15200	7720	10200	6900	5010	9120	5490	5140	4900
9	9930	13300	7820	14000	7460	9840	6690	5250	9080	5430	5060	5350
10	10400	12900	8210	13200	7190	9110	7620	5180	8970	5140	5090	5720
11	10600	10500	7380	19000	7340	8820	9700	5080	8530	5200	5090	5730
12	10900	9410	6580	26900	7290	8850	10300	5330	8360	5140	5070	5150
13	10700	9150	5840	32000	9030	9420	9570	6740	7760	5090	5040	5690
14	10400	8980	5310	37800	9150	9250	8890	8420	7160	4930	5000	5670
15	10300	8690	5460	38800	10100	8670	8170	10300	7090	4990	5100	5270
16	10200	8460	6950	34700	10600	8360	7440	15100	8180	4940	5080	5360
17	9840	8490	19300	32000	9760	7980	6930	16900	8040	4890	5080	5460
18	9430	8680	19700	32900	8910	7320	6410	17500	6820	4860	4960	5440
19	8710	9130	16700	37100	8570	6920	6120	16200	6490	4940	4930	5530
20	8260	9710	13800	38400	9030	6700	5940	17900	6100	5360	4940	5500
21	8000	10300	13200	37100	16800	6800	5690	21000	5530	5620	4920	5450
22	7790	9950	11300	35900	24800	9590	5490	20200	5480	5640	4920	5390
23	7550	9840	10000	37700	19400	16300	5790	16900	5470	5650	4950	5330
24	7530	10800	9910	36600	15400	18400	7210	15100	5510	5600	4990	5240
25	7510	11600	9200	38700	13300	15700	8770	17400	5730	5610	4920	5390
26	7480	11800	8310	35900	12100	14100	7910	17500	6020	5570	4970	5550
27	7410	11300	7450	31700	10400	13500	6590	15800	6090	5570	4890	5500
28	7390	10200	7130	27800	9930	12200	6110	14600	5850	5580	4920	5290
29	7800	9850	6950	25900	---	10600	5900	18500	5530	5610	4770	5340
30	11200	10100	6900	23900	---	9550	5710	29500	5370	5660	4690	5620
31	18200	---	6750	18500	---	9260	---	28900	---	5650	4740	---
TOTAL	290140	342240	287340	797170	309970	342540	218000	389120	262060	165880	155700	158420
MEAN	9359	11410	9269	25720	11070	11050	7267	12550	8735	5351	5023	5281
MAX	18200	18800	19700	38800	24800	18400	10300	29500	23500	5660	5640	5730
MIN	7390	8460	5310	7090	7190	6700	5490	5010	5370	4860	4690	4690
AC-FT	575500	678800	569900	1581000	614800	679400	432400	771800	519800	329000	308800	314200

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

	MEAN	7828	14690	21480	20790	14820	12890	10900	10030	7611	4889	5303	6796
MAX	10970	30850	48480	36750	33520	36070	21680	17120	16150	6283	7117	8986	
(WY)	1985	1985	1997	1971	1996	1972	1993	1996	1984	1969	1971	1972	
MIN	4203	4924	3848	3695	2859	5168	4823	4009	3658	3883	4249	4305	
(WY)	1993	1988	1977	1977	1977	1992	1977	1987	1987	1978	1987	1992	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1969 - 1998

ANNUAL TOTAL	4527810	3718580		
ANNUAL MEAN	12400	10190		
HIGHEST ANNUAL MEAN			11490	
LOWEST ANNUAL MEAN			17800	1972
HIGHEST DAILY MEAN	58600	Jan 1	38800	Jan 15
LOWEST DAILY MEAN	4830	Jul 30	4690	Aug 30
ANNUAL SEVEN-DAY MINIMUM	4970	Jul 28	4730	Aug 29
ANNUAL RUNOFF (AC-FT)	8981000		7376000	8327000
10 PERCENT EXCEEDS	24200		17700	24800
50 PERCENT EXCEEDS	8710		8180	7880
90 PERCENT EXCEEDS	5510		5080	4580

LOCATION.--Lat 44°03'00", long 123°25'30", in SE 1/4 NW 1/4 sec.33, T.17 S., R.6 W., Lane County, Hydrologic Unit 17090003, on left bank 0.2 mi upstream from Southern Pacific Railroad bridge, 0.8 mi downstream from Noti Creek, 1.3 mi southeast of Noti, and at mile 37.4.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 22	0330	*1,770	*12.24				
Minimum discharge, 11 ft ³ /s Sept. 15.							

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	257	240	181	419	509	316	125	193	61	22	15
2	79	173	217	224	438	474	290	138	166	61	21	14
3	79	134	196	216	417	505	272	129	148	59	23	13
4	101	113	178	345	411	653	260	122	136	58	23	14
5	147	98	163	364	393	610	250	117	129	55	20	16
6	100	91	152	514	440	526	247	111	118	52	22	14
7	67	87	168	484	448	423	238	106	111	49	22	15
8	59	81	182	413	513	412	222	109	105	50	22	14
9	169	76	165	353	652	374	219	109	100	48	22	14
10	209	72	182	313	575	344	270	107	98	47	22	15
11	133	70	175	486	660	331	271	104	95	46	20	14
12	100	67	166	675	730	312	253	113	91	44	19	14
13	82	65	158	1000	1130	333	235	126	85	62	19	15
14	69	64	163	1260	973	298	220	118	82	68	18	14
15	60	61	173	1220	810	286	214	133	80	44	18	13
16	55	60	413	993	728	271	199	159	78	40	19	20
17	51	102	1020	1140	640	256	187	171	77	36	20	14
18	46	154	616	1140	558	243	180	147	73	35	20	16
19	43	209	419	907	526	230	173	134	73	35	19	31
20	40	435	368	692	524	221	165	152	70	33	18	25
21	38	346	342	548	1220	253	160	211	69	32	17	22
22	36	241	292	538	1660	938	156	199	66	31	18	19
23	35	387	274	721	1170	1080	174	170	66	28	19	18
24	35	1070	269	924	849	966	171	162	70	22	19	18
25	34	625	245	1170	658	702	154	162	78	23	19	19
26	34	423	226	1030	547	544	144	155	75	22	18	21
27	34	325	212	796	467	475	138	168	71	23	17	20
28	33	266	197	648	471	434	133	152	65	21	16	19
29	67	256	186	572	---	385	131	193	62	20	16	16
30	213	277	178	520	---	348	126	277	59	20	15	16
31	482	---	171	446	---	348	---	231	---	22	16	---
TOTAL	2766	6685	8106	20833	19027	14084	6168	4610	2789	1247	599	508
MEAN	89.2	223	261	672	680	454	206	149	93.0	40.2	19.3	16.9
MAX	482	1070	1020	1260	1660	1080	316	277	193	68	23	31
MIN	33	60	152	181	393	221	126	104	59	20	15	13
AC-FT	5490	13260	16080	41320	37740	27940	12230	9140	5530	2470	1190	1010
CFSM	1.00	2.50	2.93	7.53	7.61	5.09	2.30	1.67	1.04	.45	.22	.19
IN.	1.15	2.78	3.38	8.68	7.93	5.87	2.57	1.92	1.16	.52	.25	.21

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1998, BY WATER YEAR (WY)

MEAN	40.5	204	465	579	554	412	254	128	66.8	30.8	17.0	17.6
MAX	300	708	1425	1260	1283	923	684	340	164	65.2	35.5	34.5
(WY)	1948	1974	1956	1956	1996	1938	1937	1963	1937	1937	1993	1997
MIN	8.00	16.6	23.8	25.2	62.5	131	57.2	54.6	24.7	6.20	3.61	7.42
(WY)	1988	1937	1977	1977	1977	1992	1977	1977	1977	1977	1977	1967

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1936 - 1998
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ANNUAL TOTAL	93113		87422				
ANNUAL MEAN	255		240			229	
HIGHEST ANNUAL MEAN						424	1974
LOWEST ANNUAL MEAN						45.5	1977
HIGHEST DAILY MEAN	3780	Jan 1	1660	Feb 22	5850		Dec 22 1964
LOWEST DAILY MEAN	17	Aug 15	13	Sep 3		.04	Aug 13 1977
ANNUAL SEVEN-DAY MINIMUM	18	Sep 3	14	Sep 9		.06	Aug 8 1977
ANNUAL RUNOFF (AC-FT)	184700		173400		166200		
ANNUAL RUNOFF (CFSM)	2.86		2.68		2.57		
ANNUAL RUNOFF (INCHES)	38.79		36.42		34.90		
10 PERCENT EXCEEDS	566		620		576		
50 PERCENT EXCEEDS	147		147		93		
90 PERCENT EXCEEDS	27		19		15		

WILLAMETTE RIVER BASIN

14168000 FERN RIDGE LAKE NEAR ELMIRA, OR

LOCATION.--Lat 44°07'15", long 123°18'00", near center of sec.4, T.17 S., R.5 W., Lane County, Hydrologic Unit 17090003, in control house at spillway section of dam across Long Tom River and Coyote Creek, 4.5 mi northeast of Elmira, and at mile 25.7.

DRAINAGE AREA.--252 mi², not including Amazon Creek basin (see REMARKS).

PERIOD OF RECORD.--October 1941 to current year. Prior to October 1971, published as Fern Ridge Reservoir near Elmira.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by earth-fill dam with concrete outlet and spillway, completed in 1941 by Corps of Engineers; storage began Nov. 13, 1941. Total capacity (new capacity table put into use Oct. 1, 1992 based on Dec. 1992 resurvey), 107,400 acre-ft at elevation 375.1 ft, maximum pool elevation. Usable capacity, 93,350 acre-ft between elevations 340.0 ft, sill of outlet gate, and 373.5 ft, normal maximum operating pool level. Reservoir used for flood control and improvement of navigation. Since November 1951, most of flow of Amazon Creek has been diverted in SE 1/4 sec.29, T.17 S., R.4 W., and discharged into Fern Ridge Lake; drainage area at point of diversion, 21.3 mi².

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 124,500 acre-ft Dec. 27, 1955, elevation, 375.83 ft; minimum contents since first filling in 1942, 163 acre-ft Nov. 11, 1950, elevation, 344.00 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 95,380 acre-ft May 20, elevation, 373.74 ft; minimum contents, 2,820 acre-ft Dec. 1, elevation, 352.84 ft.

Capacity table (elevation, in feet, and usable contents, in acre-feet)

349	439	356	6,810	364	30,560	372	81,180
350	835	358	10,680	366	40,480	374	97,590
352	2,090	360	15,830	368	52,350	375	106,400
354	4,030	362	22,410	370	65,980		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	371.43	361.46	352.95	355.28	356.12	367.09	371.69	373.61	373.41	373.38	372.87	372.05
2	371.18	361.06	353.07	355.36	356.61	367.15	371.82	373.62	373.40	373.38	372.85	372.03
3	370.94	360.63	353.09	355.48	357.26	367.45	371.94	373.60	373.39	373.37	372.83	372.00
4	370.67	360.19	353.02	355.59	357.77	367.78	372.06	373.59	373.38	373.37	372.80	371.98
5	370.37	359.73	352.95	355.49	358.23	368.00	372.20	373.56	373.38	373.37	372.77	371.95
6	370.10	359.28	352.99	355.61	358.80	368.12	372.32	373.54	373.38	373.36	372.74	371.92
7	369.82	358.84	353.32	355.49	359.14	368.25	372.44	373.52	373.36	373.36	372.70	371.89
8	369.54	358.28	353.19	355.25	359.62	368.38	372.53	373.52	373.34	373.35	372.68	371.86
9	369.33	357.58	353.12	354.97	360.18	368.50	372.67	373.53	373.32	373.35	372.65	371.83
10	369.02	356.91	353.17	354.82	360.83	368.62	372.89	373.53	373.30	373.33	372.63	371.80
11	368.67	356.25	353.43	355.39	361.49	368.72	373.04	373.54	373.30	373.32	372.60	371.77
12	368.29	355.52	353.71	356.23	362.10	368.85	373.17	373.60	373.31	373.31	372.58	371.75
13	367.89	354.88	354.01	357.57	362.79	369.01	373.27	373.62	373.32	373.30	372.55	371.72
14	367.48	354.34	354.33	358.29	363.19	369.14	373.37	373.63	373.32	373.29	372.52	371.70
15	367.12	353.83	354.72	358.94	363.28	369.26	373.44	373.65	373.32	373.28	372.49	371.68
16	366.84	353.32	355.10	359.13	363.29	369.38	373.47	373.69	373.32	373.26	372.47	371.65
17	366.53	353.37	355.59	359.28	363.50	369.50	373.49	373.68	373.33	373.24	372.44	371.62
18	366.25	353.51	355.56	359.27	363.80	369.61	373.49	373.64	373.33	373.21	372.41	371.62
19	365.95	353.93	355.42	358.99	364.19	369.72	373.50	373.65	373.32	373.19	372.39	371.60
20	365.64	354.31	355.38	358.32	364.61	369.82	373.51	373.73	373.32	373.17	372.36	371.58
21	365.30	354.21	355.34	357.67	366.09	370.12	373.52	373.68	373.32	373.15	372.33	371.56
22	364.91	353.92	355.36	357.34	367.76	370.75	373.55	373.57	373.32	373.12	372.31	371.54
23	364.52	354.50	355.45	357.35	368.14	371.04	373.62	373.47	373.32	373.09	372.28	371.51
24	364.12	355.30	355.54	357.82	368.00	371.20	373.65	373.46	373.36	373.07	372.25	371.49
25	363.69	354.99	355.49	358.29	367.81	371.23	373.65	373.46	373.37	373.05	372.23	371.48
26	363.23	354.07	355.40	358.44	367.73	371.12	373.64	373.47	373.39	373.03	372.20	371.45
27	362.79	353.70	355.27	358.14	367.44	371.05	373.64	373.46	373.39	373.02	372.18	371.44
28	362.35	353.25	355.14	357.54	367.24	371.02	373.63	373.48	373.39	372.99	372.16	371.42
29	362.06	353.08	355.09	356.62	---	371.13	373.62	373.50	373.39	372.96	372.12	371.23
30	361.91	352.90	355.04	355.83	---	371.34	373.61	373.46	373.38	372.93	372.10	371.03
31	361.76	---	355.03	355.74	---	371.54	---	373.45	---	372.90	372.08	---
MAX	371.43	361.46	355.59	359.28	368.14	371.54	373.65	373.73	373.41	373.38	372.87	372.05
MIN	361.76	352.90	352.95	354.82	356.12	367.09	371.69	373.45	373.30	372.90	372.08	371.03
(†)	21540	2870	5340	6390	47620	77590	94280	92930	92350	88380	81800	73660
(‡)	-56050	-18670	+2470	+1050	+41230	+29970	+16690	-1350	-580	-3970	-6580	-8140

CAL YR 1997 MAX 373.56 MIN 352.90 AC-FT‡ -55390
WTR YR 1998 MAX 373.73 MIN 352.90 AC-FT‡ -3930

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

‡ Change in contents, in acre-feet.

14169000 LONG TOM RIVER NEAR ALVADORE, OR

LOCATION.--Lat 44°07'25", long 123°17'55", in SW 1/4 NE 1/4 sec.4, T.17 S., R.5 W., Lane County, Hydrologic Unit 17090003, on left bank 0.2 mi downstream from Fern Ridge Dam, 1.7 mi west of Alvadore, and at mile 25.5.

DRAINAGE AREA.--252 mi², not including Amazon Creek basin.

PERIOD OF RECORD.--August 1939 to current year. Prior to October 1943, published as "at Smithfield," and October 1943 to September 1959, as "below Fern Ridge Dam, near Smithfield." Prior to October 1985, published figures included diversion from Fern Ridge Reservoir into Coyote Creek channel (station 14169001).

REVISED RECORDS.--WSP 1248: 1940-41, 1948.

GAGE.--Water-stage recorder and masonry control. Datum of gage is 332.00 ft above sea level (levels by Corps of Engineers). Prior to Sept. 21, 1939, nonrecording gage and Sept. 21, 1939, to Sept. 30, 1943, water-stage recorder at site 2.5 mi downstream at datum 11.09 ft lower.

REMARKS.--No estimated daily discharges. Records fair. Flow regulated since 1941 by Fern Ridge Lake (station 14168000). Several small diversions for irrigation upstream from station. Approximately 7 ft³/s diverted from Fern Ridge Reservoir into Coyote Creek channel. Discharge not adjusted for storage or release from Fern Ridge Lake as evaporation from reservoir at times exceeds natural flow and diversions, and beginning in November 1951, most of flow of Amazon Creek has been diverted into Fern Ridge Lake.

AVERAGE DISCHARGE.--55 years (water years 1944-98), 519 ft³/s, 376,000 acre-ft/yr (river only), unadjusted.
13 years (water years 1986-98), 467 ft³/s, 338,500 acre-ft/yr, regulated period without diversions.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,500 ft³/s Jan. 1, 1943, gage height, 15.12 ft, site and datum then in use; minimum daily discharge, 2 ft³/s Aug. 7, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,030 ft³/s Feb. 27, gage height, 6.88 ft; minimum discharge, 22 ft³/s July 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	793	959	480	319	732	1320	94	254	723	46	55	49
2	965	938	362	654	487	900	94	263	503	46	54	49
3	1060	906	362	687	434	718	70	294	402	46	56	49
4	1100	871	362	922	444	699	43	294	274	46	58	49
5	1100	842	325	973	453	777	43	280	247	46	54	49
6	1080	834	243	893	396	777	43	235	247	35	53	54
7	1070	817	288	1030	534	661	44	235	245	28	53	53
8	1050	870	517	1010	534	566	45	157	243	33	54	53
9	1050	945	457	940	458	480	45	147	243	41	56	53
10	1180	879	349	899	367	384	45	146	234	38	54	53
11	1290	824	182	1130	520	385	45	147	156	35	53	53
12	1280	799	145	1220	856	312	45	149	59	35	53	52
13	1270	652	110	1570	997	200	45	236	49	35	54	51
14	1260	486	91	2360	1260	200	73	237	49	35	55	52
15	1090	413	107	2070	1530	200	157	329	49	53	56	51
16	886	401	569	2200	1380	128	244	545	49	57	57	51
17	881	269	1380	2420	888	68	292	667	49	57	58	51
18	875	215	1460	2420	559	46	291	625	52	57	58	50
19	870	217	1100	2410	544	46	244	460	46	57	58	48
20	861	580	982	2360	480	45	189	543	46	57	58	48
21	909	768	951	2010	643	45	189	887	46	56	58	48
22	958	715	739	1620	378	513	189	1000	46	58	58	50
23	942	694	693	1570	2150	1850	189	917	46	58	58	54
24	945	1120	693	1580	2610	1930	237	655	46	51	59	53
25	956	1440	693	1740	2110	1980	292	724	45	44	58	53
26	937	1410	651	2160	1360	1790	294	528	45	44	55	53
27	923	910	616	2400	1810	1430	253	415	45	44	52	53
28	918	778	568	2360	1460	1080	252	378	45	42	50	53
29	897	711	466	2400	---	507	252	1070	45	45	50	669
30	878	714	427	1950	---	72	255	1160	46	55	49	762
31	928	---	350	1090	---	94	---	890	---	55	49	---
TOTAL	31202	22977	16718	49367	26374	20203	4593	14867	4420	1435	1703	2866
MEAN	1007	766	539	1592	942	652	153	480	147	46.3	54.9	95.5
MAX	1290	1440	1460	2420	2610	1980	294	1160	723	58	59	762
MIN	793	215	91	319	367	45	43	146	45	28	49	48
AC-FT	61890	45570	33160	97920	52310	40070	9110	29490	8770	2850	3380	5680

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1998, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	811	727	870	1303	832	376	187	213	102	60.8	56.3	75.3	
MAX	1007	1475	2851	2973	3148	1026	895	497	469	150	73.6	259	
(WY)	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986
MIN	469	218	103	308	57.6	21.3	24.5	20.8	34.7	39.1	40.5	38.3	
(WY)	1988	1994	1990	1992	1989	1988	1987	1990	1991	1986	1986	1990	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1986 - 1998

ANNUAL TOTAL	230850	196725	
ANNUAL MEAN	632	539	467
HIGHEST ANNUAL MEAN			871
LOWEST ANNUAL MEAN			213
HIGHEST DAILY MEAN	5570	2610	5570
LOWEST DAILY MEAN	42	28	16
ANNUAL SEVEN-DAY MINIMUM	42	35	17
ANNUAL RUNOFF (AC-FT)	457900	390200	338500
10 PERCENT EXCEEDS	1680	1300	1220
50 PERCENT EXCEEDS	100	312	72
90 PERCENT EXCEEDS	53	46	36

WILLAMETTE RIVER BASIN

14170000 LONG TQM RIVER AT MONROE, OR

LOCATION.--Lat 44°18'47", long 123°17'43", in NE 1/4 sec.33, T.14 S., R.5 W., Benton County, Hydrologic Unit 17090003, on left bank in canalized river channel at Monroe, 110 ft upstream from bridge on State Highway 99W, 0.1 mi downstream from Shafer Creek, and at mile 6.8.

DRAINAGE AREA.--391 mi².

PERIOD OF RECORD.--November 1920 to July 1921, October 1921 to April 1926, November 1926 to May 1927, October 1927 to current year. Prior to October 1930, published as "near Monroe."

REVISED RECORDS.--WSP 654: Drainage area. WSP 1248: 1923, 1927, 1928(M). WSP 1288: 1952.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 270.57 ft above sea level. Prior to Nov. 24, 1944, nonrecording gage at various sites ranging from present site to 1.5 mi downstream at different datums.

REMARKS.--No estimated daily discharges. Records good except for flows below 100 ft³/s, which are fair. Flow regulated since 1941 by Fern Ridge Lake (station 14168000). Several small diversions upstream from station.

AVERAGE DISCHARGE.--75 years (water years 1922-25, 1928-98), 755 ft³/s, 546,700 acre-ft/yr, unadjusted. 57 years (water years 1942-98), 775 ft³/s, 561,700 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,300 ft³/s Jan. 2, 1943, gage height, 17.14 ft, site and datum then in use, from graph based on gage readings, includes some overflow from Willamette River near Junction City; no flow Oct. 20-22, 1944 (water filling pool at gage); minimum discharge observed prior to regulation, 7 ft³/s Sept. 29, Oct. 1, 1939.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,260 ft³/s Jan. 14, 15, gage height, 7.81 ft; minimum discharge, 24 ft³/s July 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	718	1170	775	476	1200	2110	415	342	941	67	44	45
2	1040	1070	562	791	1030	1430	368	352	662	72	54	42
3	1140	1010	529	898	911	1280	340	391	545	70	51	44
4	1220	944	507	1320	931	1310	288	382	446	76	53	44
5	1230	898	482	1410	862	1190	273	374	370	81	54	49
6	1200	853	371	1440	1030	1090	307	323	359	66	54	46
7	1170	881	404	1490	992	970	294	313	344	47	46	55
8	1160	867	675	1460	1100	904	273	277	319	40	49	53
9	1210	1030	679	1290	1130	811	266	242	303	40	48	55
10	1320	965	637	1190	898	643	516	240	309	51	47	54
11	1470	845	437	2030	1200	635	454	239	278	48	50	51
12	1450	818	337	2240	1560	599	348	242	151	57	49	56
13	1430	714	306	3240	2280	519	295	332	111	47	41	69
14	1400	533	262	3870	2130	470	276	338	114	40	38	61
15	1310	436	269	3770	2660	448	326	370	104	35	37	57
16	932	429	881	3210	2390	398	394	637	92	50	46	55
17	920	425	2450	3840	1770	291	463	780	94	50	53	52
18	910	371	2350	3570	984	237	458	768	88	49	47	56
19	899	435	1870	3360	1080	233	432	573	85	60	42	62
20	888	964	1340	3130	983	217	341	655	80	54	35	72
21	911	1100	1540	2860	2990	310	336	1090	81	49	40	66
22	1020	957	1080	2550	2300	2180	322	1300	78	42	46	60
23	998	1130	937	2840	2920	3290	342	1220	74	43	54	67
24	984	2160	961	3140	3410	3280	400	789	86	42	50	70
25	1020	2280	911	3300	3110	3200	426	948	111	37	48	87
26	987	2050	841	3350	2140	2770	417	754	99	37	46	96
27	958	1480	756	3340	2230	2350	373	611	96	32	46	81
28	958	1080	727	3120	2260	1780	346	516	90	29	60	72
29	948	941	596	3050	---	1110	355	1080	79	27	50	444
30	1030	1130	566	2910	---	439	348	1860	69	31	49	819
31	1220	---	507	1800	---	463	---	1250	---	43	46	---
TOTAL	34051	29966	25545	76285	48481	36957	10792	19588	6658	1512	1473	2940
MEAN	1098	999	824	2461	1731	1192	360	632	222	48.8	47.5	98.0
MAX	1470	2280	2450	3870	3410	3290	516	1860	941	81	60	819
MIN	718	371	262	476	862	217	266	239	69	27	35	42
AC-FT	67540	59440	50670	151300	96160	73300	21410	38850	13210	3000	2920	5830

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1998, BY WATER YEAR (WY)

	MEAN	770	952	1771	2156	1628	913	474	257	98.7	44.3	73.8	198
MAX	1895	3437	5355	6222	4683	2761	2277	1193	697	148	524	960	
(WY)	1948	1951	1956	1956	1996	1957	1963	1963	1993	1993	1951	1955	
MIN	27.1	91.5	55.5	43.5	44.1	136	54.5	50.3	28.6	23.0	20.0	12.4	
(WY)	1942	1953	1977	1977	1977	1978	1977	1987	1987	1965	1944	1943	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1942 - 1998

ANNUAL TOTAL	299963			294248								
ANNUAL MEAN	822			806								
HIGHEST ANNUAL MEAN										775		
LOWEST ANNUAL MEAN										1517		1956
HIGHEST DAILY MEAN	5980	Jan 1		3870	Jan 14					16400	Jan 2	1943
LOWEST DAILY MEAN	32	Jul 9		27	Jul 29					.00	Oct 20	1944
ANNUAL SEVEN-DAY MINIMUM	38	Jul 4		34	Jul 24					8.4	Oct 17	1944
ANNUAL RUNOFF (AC-FT)	595000			583600						561700		
10 PERCENT EXCEEDS	2480			2230						2390		
50 PERCENT EXCEEDS	291			463						238		
90 PERCENT EXCEEDS	47			48						37		

14174000 WILLAMETTE RIVER AT ALBANY, OR

LOCATION.--Lat 44°38'20", long 123°06'20", in SW 1/4 sec. 6, T.11 S., R.3 W., Linn County, Hydrologic Unit 17090003, on right bank 5 ft upstream from bridge on U.S. Highway 20 (Ellsworth Street) in Albany, 0.2 mi downstream from Calapooia River, and at mile 119.31.

DRAINAGE AREA.--4,840 mi², approximately.

PERIOD OF RECORD.--November 1878 to April 1888 (fragmentary), January to June 1892, November 1892 to September 1894, December 1894 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 694: Drainage area. WSP 904: 1939. WSP 964: 1881, 1890, 1894, 1897, 1901, 1903, 1908, 1910, 1916, 1923, 1927, 1932(M). WSP 984: 1916. WSP 1248: 1895, 1902, 1907, 1915(M), 1917(M), 1918-19, 1934(M). WSP 1318 (monthly and annual figures only): 1894, 1897, 1901-3, 1907-8, 1910, 1916, 1918-19, 1923, 1927.

GAGE.--Water-stage recorder. Datum of gage is 167.18 ft above sea level. Prior to Sept. 27, 1906, nonrecording gage at site 0.2 mi upstream at datum 5.00 ft higher. Sept. 27, 1906, to Nov. 12, 1934, nonrecording gage at site 300 ft upstream at datum 5.00 ft higher. Nov. 14, 1934, to Sept. 30, 1962, at datum 5.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Discharges for period Oct. 1-14 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) system. Flow regulated by nine reservoirs upstream from station. Albany power canal diverts water from South Santiam River at Lebanon and discharges into Calapooia River near mouth; small diversions for irrigation and municipal water supply.

AVERAGE DISCHARGE.--104 years (water years 1894, 1896-1998), 14,370 ft³/s, 40.32 in/yr, 10,411,000 acre-ft/yr. 30 years (water years 1969-98), 14,330 ft³/s, 40.22 in/yr, 10,380,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 266,000 ft³/s Jan. 14, 1881, gage height, 37.8 ft, present datum; minimum discharge, 1,840 ft³/s Sept. 1, 2, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 4, 1861, reached a stage of 41.0 ft, discharge, 340,000 ft³/s, from rating curve extended above 220,000 ft³/s. Flood of Feb. 4, 1890, reached a stage of 38.9 ft, discharge, 291,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 52,800 ft³/s Jan. 15, gage height, 18.52 ft; minimum discharge, 5,140 ft³/s Sept. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8740	22500	13600	9140	21900	17700	12500	7900	28600	6400	6250	5380
2	9720	21200	12600	10700	19000	19400	11500	7930	23200	6350	6230	5330
3	10400	18700	11700	13300	16500	20800	10700	8320	18900	6320	5980	5320
4	10700	16700	11100	15600	14900	23800	10500	8100	16300	6270	5520	5250
5	11200	16000	10800	17400	13900	22400	10000	7660	15000	6250	5700	5440
6	12200	15500	10200	17200	14200	19300	9840	7500	13200	6390	5740	5450
7	11400	15200	9390	17300	14100	16600	9740	7200	11800	6440	5730	5440
8	10900	15500	10000	19700	12900	15400	9690	7040	10800	6360	5720	5480
9	11300	15500	10800	19200	13200	14800	9430	7040	10600	6280	5690	5600
10	13100	15100	12000	17800	12300	13700	10000	7130	10500	6130	5690	6100
11	12900	13900	11600	21300	13500	12800	12500	7010	10300	5960	5670	6230
12	13200	11600	9980	34200	13700	12400	13800	7000	9930	5970	5640	6170
13	13300	11200	8930	39200	18100	13100	13100	7900	9250	5960	5620	6210
14	12900	10700	7990	48000	18300	13000	12100	9520	8870	5840	5580	6210
15	12600	10300	7730	52600	18300	12300	11300	10900	8200	5710	5580	6070
16	12100	9950	9330	51600	18600	11600	10600	14400	8710	5700	5650	5800
17	11800	10100	20400	47700	16900	11100	9970	18200	9310	5740	5680	5950
18	11200	10400	29600	45100	14600	10300	9420	19300	8550	5700	5640	6080
19	10700	11200	25100	45100	14000	9610	8980	19500	7770	5680	5590	6080
20	10100	14300	21000	46000	14500	9190	8640	19800	7600	5880	5580	6130
21	9750	15200	19600	44700	20800	9370	8350	24200	6980	6240	5580	6110
22	9580	14300	17300	43300	39000	17900	8060	27100	6710	6340	5580	6030
23	9320	14100	15100	44200	36500	26600	8030	23600	6610	6300	5600	5970
24	9170	18100	14600	47600	28400	31200	8940	19600	6630	6270	5640	5880
25	9170	19800	13800	50200	23100	27900	10600	19500	6790	6250	5610	5930
26	9130	18600	12500	48700	19900	24000	10900	22000	6970	6260	5580	6080
27	9030	17100	11200	44300	17200	21600	9650	20200	7270	6220	5580	6190
28	8980	15000	10400	39200	16400	19600	8740	18100	7170	6180	5550	6080
29	9280	13900	9870	34500	---	16900	8360	17800	6870	6200	5520	5950
30	11700	14200	9560	32800	---	14300	8100	26600	6550	6250	5380	6580
31	17800	---	9340	27800	---	13100	---	32200	---	6260	5360	---
TOTAL	343370	445850	407120	1045440	514700	521770	304040	460250	315940	190100	175460	176520
MEAN	11080	14860	13130	33720	18380	16830	10130	14850	10530	6132	5660	5884
MAX	17800	22500	29600	52600	39000	31200	13800	32200	28600	6440	6250	6580
MIN	8740	9950	7730	9140	12300	9190	8030	7000	6550	5680	5360	5250
AC-FT	681100	884300	807500	2074000	1021000	1035000	603100	912900	626700	377100	348000	350100
CFSM	2.29	3.07	2.71	6.97	3.80	3.48	2.09	3.07	2.18	1.27	1.17	1.22
IN.	2.64	3.43	3.13	8.04	3.96	4.01	2.34	3.54	2.43	1.46	1.35	1.36

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

	MEAN	8870	17290	28220	27750	21100	17260	13740	11450	8531	5341	5583	7054
MAX	11780	40850	64060	47270	50470	43270	26860	19950	18460	7333	7313	8985	
(WY)	1985	1985	1997	1997	1996	1972	1993	1996	1993	1969	1971	1972	
MIN	4915	5425	4150	3901	3208	6808	5630	4733	4091	4084	4375	4347	
(WY)	1993	1988	1977	1977	1977	1978	1977	1973	1987	1978	1992	1992	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1969 - 1998
ANNUAL TOTAL	5720310	4900560	
ANNUAL MEAN	15670	13430	14330
HIGHEST ANNUAL MEAN			22550
LOWEST ANNUAL MEAN			5831
HIGHEST DAILY MEAN	95100	Jan 2	117000
LOWEST DAILY MEAN	5420	Jul 30	2570
ANNUAL SEVEN-DAY MINIMUM	5520	Jul 29	2680
ANNUAL RUNOFF (AC-FT)	11350000	9720000	10380000
ANNUAL RUNOFF (CFSM)	3.24	2.77	2.96
ANNUAL RUNOFF (INCHES)	43.97	37.67	40.22
10 PERCENT EXCEEDS	34000	23400	32800
50 PERCENT EXCEEDS	10400	10600	9150
90 PERCENT EXCEEDS	6190	5700	5010

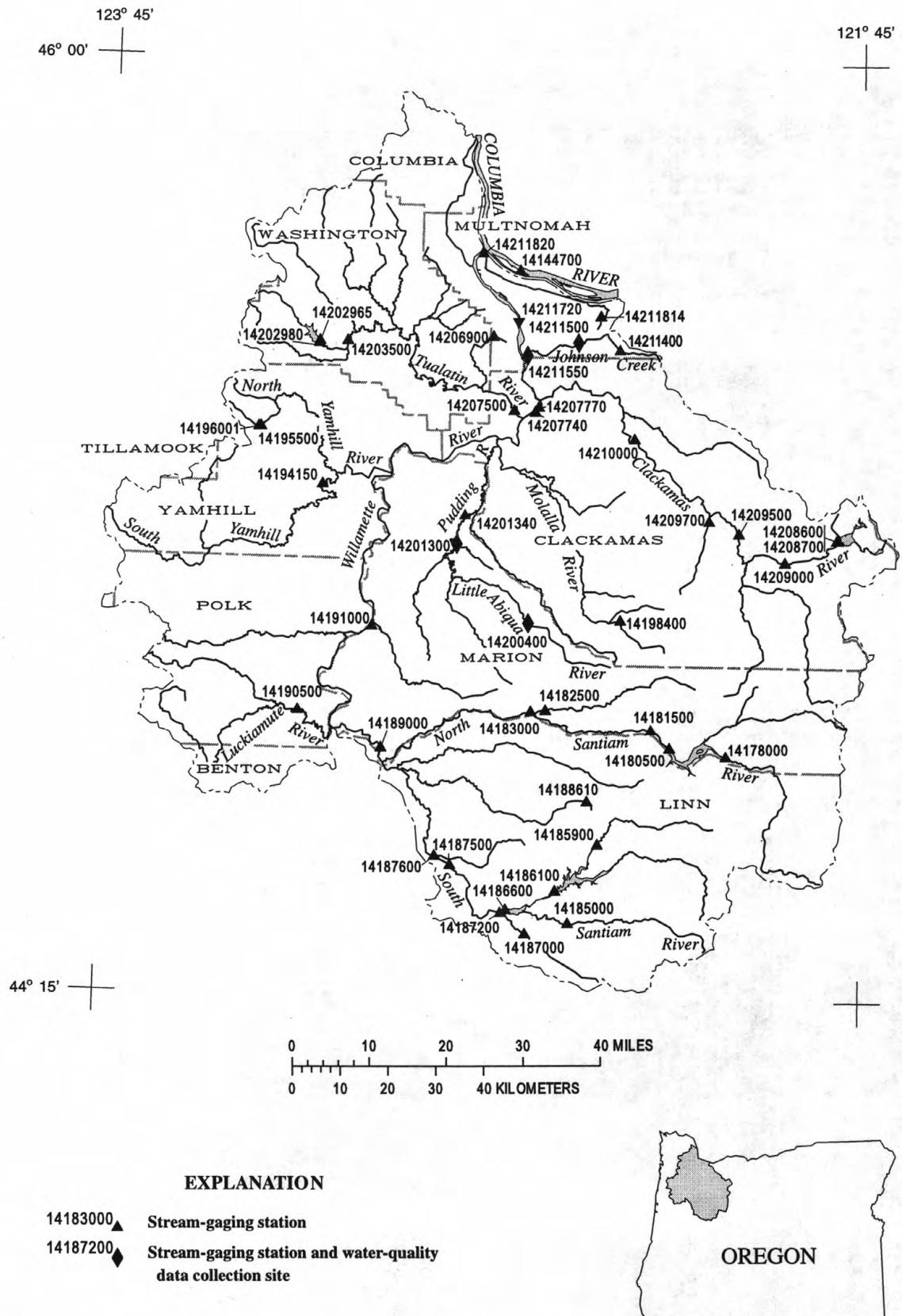


Figure 25. Location of surface-water and water-quality stations in the Willamette River Basin, downstream from the Luckiamute River.

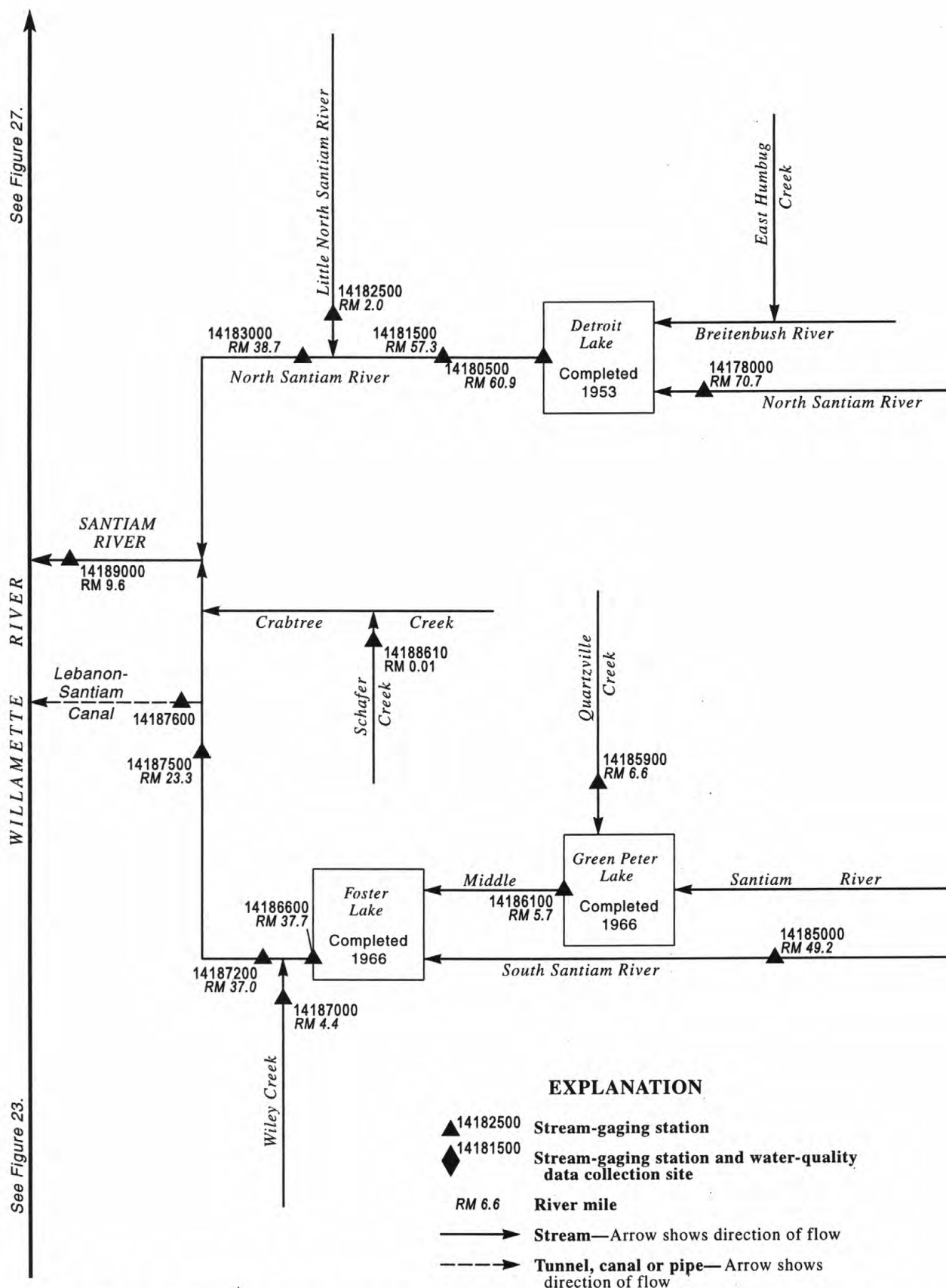


Figure 26. Schematic diagram showing gaging stations and diversions in the Santiam River Basin.

WILLAMETTE RIVER BASIN

14178000 NORTH SANTIAM RIVER BELOW BOULDER CREEK, NEAR DETROIT, OR

LOCATION.--Lat 44°42'25", long 122°06'00", in SE 1/4 NW 1/4 sec.17, T.10 S., R.6 E., Marion County, Hydrologic Unit 17090005, on right bank 0.5 mi downstream from Boulder Creek, 3.0 mi southeast of Detroit, and at mile 70.7.

DRAINAGE AREA.--216 mi².

PERIOD OF RECORD.--January 1907 to October 1909, October 1928 to current year. Monthly discharge only
January 1907, published in WSP 1318. Prior to October 1952, published as "at Detroit."

REVISED RECORDS.--WSP 814: Drainage area at former site. WSP 1248: 1931. WDR OR-85-2: 1982-82(P).

GAGE.--Water-stage recorder. Datum of gage is 1,590.07 ft above sea level. See WSP 1738 for history of changes prior to Oct. 1, 1952.

REMARKS.--No estimated daily discharges. Records fair. Discharges for periods Dec. 3-9, July 28-31, Sept. 29, 30, computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. No regulation or diversion upstream from station. Continuous water-quality records for the period April 1951 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--72 years (water years 1908, 1909, 1929-98), 1,006 ft³/s, 63.26 in/yr, 728,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,700 ft³/s Dec. 22, 1964, slope-area measurement of peak flow, gage height, 13.76 ft, temporary backwater from debris; minimum discharge, 250 ft³/s Sept. 13, 1909.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	2200	*6,300	*7.05	Jan. 17	1200	4,940	6.45
Jan. 14	1830	4,210	6.09				

Minimum discharge, 405 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	542	2130	910	784	1590	1190	1080	1440	1410	793	551	461
2	660	1560	864	893	1450	1280	1030	1840	1340	764	542	463
3	683	1270	821	845	1360	1260	1010	1560	1260	737	536	461
4	828	1110	778	837	1300	1190	974	1360	1200	723	540	461
5	1290	990	754	813	1240	1100	942	1490	1130	701	544	458
6	975	911	733	822	1280	1040	924	1400	1080	688	533	454
7	822	1030	745	957	1260	984	920	1270	1060	679	520	453
8	812	935	746	915	1190	981	883	1220	1040	676	514	451
9	1050	867	718	862	1130	932	893	1140	1020	658	511	450
10	921	821	702	964	1110	903	967	1060	1080	654	511	444
11	904	785	687	1900	1120	917	1000	1010	1060	647	507	440
12	950	755	672	1900	1260	990	963	1030	999	635	505	440
13	868	728	660	2200	1500	1080	923	1030	956	631	505	439
14	809	707	659	3030	1400	1140	903	1060	916	626	508	439
15	757	685	693	3320	1330	1210	876	1180	896	626	506	440
16	719	667	1390	2770	1230	1250	845	1160	878	625	497	439
17	688	754	1870	4580	1160	1200	826	1150	830	628	489	439
18	661	762	1420	3540	1130	1120	829	1130	813	605	484	462
19	638	781	1210	2880	1180	1070	876	1170	810	593	482	523
20	616	932	1110	2310	1170	1060	882	1310	781	583	483	473
21	598	989	1020	1970	1520	1190	921	1350	786	574	481	448
22	586	922	937	1890	1440	1220	1000	1290	780	574	478	433
23	592	980	896	2180	1300	2590	1220	1210	759	577	479	427
24	584	1630	848	2180	1190	2350	1260	1200	773	568	479	423
25	567	1550	807	2170	1120	2000	1130	1360	845	562	476	453
26	557	1340	776	2260	1060	1790	1040	1270	946	561	475	466
27	547	1170	760	2310	996	1590	1020	1200	851	569	471	439
28	543	1070	760	2090	1070	1410	1080	1130	796	564	469	428
29	1260	1020	762	2030	---	1280	1210	1390	770	568	471	419
30	3160	983	745	1950	---	1190	1320	1740	767	570	466	412
31	3760	---	732	1730	---	1130	---	1520	---	557	463	---
TOTAL	28947	30834	27185	59882	35086	40637	29747	39670	28632	19516	15476	13438
MEAN	934	1028	877	1932	1253	1311	992	1280	954	630	499	448
MAX	3760	2130	1870	4580	1590	2590	1320	1840	1410	793	551	523
MIN	542	667	659	784	996	903	826	1010	759	557	463	412
AC-FT	57420	61160	53920	118800	69590	80600	59000	78690	56790	38710	30700	26650
CFSM	4.32	4.76	4.06	8.94	5.80	6.07	4.59	5.92	4.42	2.91	2.31	2.07
IN.	4.99	5.31	4.68	10.31	6.04	7.00	5.12	6.83	4.93	3.36	2.67	2.32

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1998, BY WATER YEAR (WY)

MEAN	511	989	1375	1323	1307	1195	1355	1414	1085	625	472	436
MAX	1215	2167	3840	2991	3552	2865	2137	2762	2759	1101	663	595
(WY)	1951	1951	1965	1953	1996	1972	1943	1949	1933	1950	1974	1971
MIN	312	335	432	383	404	616	610	600	412	363	319	309
(WY)	1981	1994	1977	1937	1977	1941	1941	1992	1992	1992	1992	1999

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1908 - 1998
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ANNUAL TOTAL	465483		369050				
ANNUAL MEAN	1275		1011			1006	
HIGHEST ANNUAL MEAN						1506	1974
LOWEST ANNUAL MEAN						569	1977
HIGHEST DAILY MEAN	8740	Jan 1	4580	Jan 17	19400		Dec 22 1964
LOWEST DAILY MEAN	507	Sep 9	412	Sep 30	250		Sep 13 1909
ANNUAL SEVEN-DAY MINIMUM	519	Sep 4	434	Sep 24	273		Sep 7 1909
ANNUAL RUNOFF (AC-FT)	923300		732000		728500		
ANNUAL RUNOFF (CFSM)	5.90		4.68		4.66		
ANNUAL RUNOFF (INCHES)	80.17		63.56		63.26		
10 PERCENT EXCEEDS	2150		1560		1800		
50 PERCENT EXCEEDS	1010		911		784		
90 PERCENT EXCEEDS	566		477		401		

WILLAMETTE RIVER BASIN

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14180500 DETROIT LAKE NEAR DETROIT, OR

LOCATION.--Lat 44°43'20", long 122°14'55", in SW 1/4 NW 1/4 sec.7, T.10 S., R.5 E., Marion County, Hydrologic Unit 17090005, in control house near right abutment of Detroit Dam on North Santiam River, 4.9 mi west of Detroit, and at mile 60.9.

DRAINAGE AREA.--437 mi².

PERIOD OF RECORD.--January 1953 to current year. Prior to October 1971, published as Detroit Reservoir near Detroit.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by concrete, gravity-type dam with six 42-ft by 28-ft control gates. Length of dam is 1,580 ft, built by Corps of Engineers. Storage began in January 1953. Total capacity is 455,100 acre-ft and usable capacity is 340,100 acre-ft between elevations 1,425.0 ft, proposed lower limit of operation, and 1,569.0 ft, top of spillway gates. Reservoir used for flood control, power development, irrigation, improvement of navigation, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 457,900 acre-ft July 13, 1972, elevation, 1,569.79 ft; minimum contents, 115,500 acre-ft Jan. 30, 1969, elevation, 1,425.37 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 439,700 acre-ft June 27, 28, elevation, 1,564.56 ft; minimum contents, 156,800 acre-ft Jan. 10, elevation, 1,451.42 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

1,425	115,000	1,480	210,900	1,530	331,500
1,430	122,200	1,490	232,000	1,540	360,200
1,440	137,700	1,500	254,600	1,550	390,900
1,450	154,400	1,510	278,700	1,560	424,000
1,460	172,200	1,520	304,400	1,570	458,600

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1541.75	1513.84	1464.16	1456.08	1460.15	1509.71	1544.73	1561.64	1563.42	1563.91	1562.45	1557.34
2	1540.62	1512.95	1462.93	1456.72	1461.64	1511.93	1545.17	1562.55	1563.62	1563.88	1562.32	1557.12
3	1538.92	1511.03	1461.46	1456.31	1463.49	1513.86	1545.59	1563.09	1563.84	1563.81	1562.16	1556.93
4	1537.64	1508.42	1459.96	1455.26	1465.18	1515.41	1545.93	1563.39	1563.86	1563.72	1562.06	1556.73
5	1537.22	1505.52	1458.29	1454.19	1466.78	1516.63	1546.14	1563.46	1563.73	1563.62	1561.91	1556.50
6	1535.91	1502.46	1456.95	1453.21	1468.40	1517.72	1546.38	1563.50	1563.74	1563.50	1561.79	1556.31
7	1534.26	1499.17	1455.94	1453.40	1470.01	1518.63	1546.87	1563.44	1563.71	1563.45	1561.67	1556.10
8	1532.76	1495.21	1454.77	1453.33	1471.47	1519.57	1547.31	1563.42	1563.70	1563.46	1561.50	1555.84
9	1531.62	1491.08	1453.40	1452.35	1472.80	1520.38	1547.80	1563.29	1563.60	1563.48	1561.33	1555.66
10	1529.68	1487.66	1452.60	1451.72	1474.27	1521.15	1548.51	1563.24	1563.65	1563.54	1561.21	1555.22
11	1527.36	1486.13	1452.50	1456.05	1475.75	1521.98	1549.16	1563.25	1563.62	1563.59	1561.03	1554.78
12	1525.07	1484.77	1452.83	1459.30	1477.97	1523.06	1549.68	1563.28	1563.63	1563.58	1560.90	1554.33
13	1522.51	1483.26	1453.24	1462.72	1481.05	1524.38	1550.12	1563.28	1563.68	1563.62	1560.72	1553.88
14	1520.27	1481.70	1453.56	1468.30	1483.45	1525.68	1550.48	1563.45	1563.65	1563.60	1560.53	1553.18
15	1518.21	1480.05	1454.24	1473.42	1485.47	1527.12	1550.94	1563.73	1563.59	1563.60	1560.38	1552.48
16	1516.67	1478.36	1457.54	1476.48	1487.26	1528.49	1551.36	1563.43	1563.61	1563.57	1560.20	1551.77
17	1515.39	1477.12	1458.37	1482.75	1488.65	1529.71	1551.74	1563.21	1563.62	1563.57	1560.00	1551.06
18	1514.54	1475.79	1456.72	1484.93	1490.11	1530.73	1552.11	1563.40	1563.59	1563.50	1559.83	1550.46
19	1514.16	1474.50	1455.13	1484.77	1491.75	1531.59	1552.61	1563.73	1563.63	1563.49	1559.67	1549.92
20	1513.96	1474.13	1454.76	1482.47	1493.45	1532.43	1553.09	1563.83	1563.66	1563.41	1559.47	1549.25
21	1513.14	1473.84	1454.06	1479.16	1496.66	1533.52	1553.62	1563.76	1563.69	1563.36	1559.32	1548.39
22	1511.73	1473.19	1453.03	1475.81	1499.18	1536.62	1554.22	1563.68	1563.74	1563.27	1559.15	1547.24
23	1510.18	1472.95	1452.63	1473.46	1501.12	1539.56	1555.19	1563.35	1563.75	1563.17	1558.99	1546.08
24	1508.56	1474.34	1452.83	1471.13	1502.76	1541.21	1556.26	1563.42	1563.80	1563.15	1558.83	1544.90
25	1506.85	1473.67	1452.91	1468.76	1504.15	1542.27	1557.02	1563.38	1563.93	1563.05	1558.61	1543.79
26	1505.14	1472.05	1453.25	1467.17	1505.32	1542.51	1557.68	1563.38	1564.15	1562.95	1558.40	1542.65
27	1503.40	1469.80	1453.57	1465.32	1506.28	1542.39	1558.24	1563.50	1564.21	1562.91	1558.23	1541.45
28	1501.65	1467.11	1453.91	1462.41	1507.64	1542.76	1558.93	1563.63	1564.20	1562.83	1558.05	1540.21
29	1502.62	1466.14	1454.39	1459.44	---	1543.18	1559.78	1563.63	1564.02	1562.73	1557.88	1538.99
30	1508.58	1465.24	1455.03	1458.31	---	1543.70	1560.73	1563.56	1563.95	1562.66	1557.70	1537.72
31	1513.66	---	1455.61	1458.96	---	1544.28	---	1563.46	---	1562.54	1557.52	---
MAX	1541.75	1513.84	1464.16	1484.93	1507.64	1544.28	1560.73	1563.83	1564.21	1563.91	1562.45	1557.34
MIN	1501.65	1465.24	1452.50	1451.72	1460.15	1509.71	1544.73	1561.64	1563.42	1562.54	1557.52	1537.72
(†)	287900	182000	164200	170300	272900	373100	426500	435900	437600	432700	415500	353600
(‡)	-81400	-105900	-17800	+6100	+102600	+100200	+53400	+9400	+1700	-4900	-17200	-61900

CAL YR 1997 MAX 1565.18 MIN 1427.50 AC-FT+ -169500

WTR YR 1998 MAX 1564.21 MIN 1451.72 AC-FT+ -15700

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

14181500 NORTH SANTIAM RIVER AT NIAGARA, OR

LOCATION.--Lat 44°45'10", long 122°17'50", in NE 1/4 NE 1/4 sec.34, T.9 S., R.4 E., Linn County, Hydrologic Unit 17090005, on left bank 0.1 mi downstream from Little Sardine Creek, 0.8 mi downstream from Big Cliff Dam, 2.1 mi east of Niagara, and at mile 57.3.

DRAINAGE AREA.--453 mi².

PERIOD OF RECORD.--December 1908 to January 1920, October 1921 to March 1922, October 1938 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as "North Fork of Santiam River near Niagara" prior to October 1913, and as "above Mayflower Creek, near Detroit" October 1938 to September 1952.

REVISED RECORDS.--WSP 1288: 1914-18, 1920. WSP 1718: 1953-54.

GAGE.--Water-stage recorder. Datum of gage is 1,093.78 ft above sea level (Federal Highway Administration bench mark). See WSP 1738 for history of changes prior to Oct. 1, 1952.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1953 by Detroit Lake (station 14180500) and Big Cliff Reservoir, usable capacity for reregulating purposes, 2,930 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--70 years (water years 1910-19, 1939-98), 2,323 ft³/s, 69.64 in/yr, 1,683,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 63,200 ft³/s Nov. 22, 1909, gage height, 16.4 ft, from floodmark, site and datum then in use, from rating curve extended above 35,000 ft³/s; minimum discharge, 19 ft³/s Aug. 21, 1963; minimum daily, 395 ft³/s Mar. 25, 26, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,170 ft³/s Jan. 22, 23, gage height, 6.90 ft; minimum discharge, 494 ft³/s Feb. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2970	4500	2950	1460	2470	986	1420	1450	3120	1430	942	922
2	3100	4440	2920	1760	1670	988	1420	2040	2320	1310	941	931
3	4130	5080	2920	2490	1030	996	1410	2130	2260	1310	939	932
4	4210	5590	2970	2880	1010	995	1430	2160	2390	1350	936	933
5	4290	5570	3020	2880	1030	995	1440	2710	2480	1340	936	928
6	4220	5590	2510	2870	1000	1000	1430	2470	2050	1290	933	925
7	4210	6160	2500	2600	997	1000	1040	2520	2040	1170	928	925
8	4180	6600	2470	2570	999	994	1030	2340	2030	1040	929	926
9	4500	6500	2510	2930	997	986	1010	2300	2000	1000	931	947
10	5080	5450	2180	2970	909	989	1050	2050	1950	932	932	1320
11	5660	3160	1430	2720	987	989	1350	1790	2000	928	935	1350
12	5650	2930	958	2450	988	992	1330	1810	1800	935	932	1360
13	5610	2910	940	3180	984	1000	1310	1870	1570	949	932	1350
14	4820	2910	953	4490	985	998	1320	1870	1610	925	932	1780
15	4320	2930	964	4430	987	994	1060	2230	1590	931	933	1820
16	3500	2930	2020	4230	990	1000	1010	3160	1550	924	933	1800
17	3000	2950	5400	5890	998	995	1010	2910	1370	926	930	1820
18	2300	2880	5340	6540	995	992	1000	2240	1330	933	930	1860
19	1630	2960	4370	7330	992	995	979	2020	1380	928	934	1870
20	1340	2910	2880	8050	993	994	973	2760	1280	924	933	1910
21	2060	2920	2870	8090	1020	995	953	3220	1180	926	931	2130
22	2870	2900	2890	8130	996	995	955	3080	1190	927	932	2560
23	3020	2920	2190	8080	992	2030	970	3150	1250	932	922	2580
24	3030	3870	1600	8090	984	2910	1000	2390	1240	928	928	2580
25	2980	5020	1560	8030	973	2780	1010	3180	1350	928	935	2560
26	3010	4970	1210	8060	999	3590	996	2710	1600	918	933	2590
27	3040	4960	1210	8060	976	3730	990	2320	1550	917	938	2590
28	3060	5010	1190	8050	988	2520	981	1930	1490	925	906	2590
29	3070	3190	1220	7620	---	1970	954	3200	1580	933	897	2590
30	3020	2910	997	5710	---	1670	974	4220	1540	938	902	2560
31	2870	---	998	3310	---	1450	---	3400	---	942	917	---
TOTAL	110750	123620	70140	155950	29939	44518	33805	77630	52090	31689	28812	51939
MEAN	3573	4121	2263	5031	1069	1436	1127	2504	1736	1022	929	1731
MAX	5660	6600	5400	8130	2470	3730	1440	4220	3120	1430	942	2590
MIN	1340	2880	940	1460	909	986	953	1450	1180	917	897	922
AC-FT	219700	245200	139100	309300	59380	88300	67050	154000	103300	62860	57150	103000
MEAN†	2249	2342	1972	5128	2918	3065	2024	2657	1765	942	650	691
CFSM†	4.96	5.17	4.35	11.32	6.44	6.77	4.47	5.87	3.90	2.08	1.43	1.53
IN.†	5.72	5.77	5.02	13.05	6.71	7.80	4.98	6.76	4.35	2.40	1.65	1.70
AC-FT†	138300	139300	121300	315400	162000	188500	120400	163400	105000	57960	39950	41100

CAL YR 1997 TOTAL 1090926 MEAN 2989 MAX 15100 MIN 905 AC-FT 2164000 MEAN† 2754 CFSM† 6.08 IN.† 82.53 AC-FT† 1994000
WTR YR 1998 TOTAL 810882 MEAN 2222 MAX 8130 MIN 897 AC-FT 1608000 MEAN† 2199 CFSM† 4.85 IN.† 65.89 AC-FT† 1592000

† Adjusted for change in contents, in Detroit Lake.

e Estimated

WILLAMETTE RIVER BASIN

14183000 NORTH SANTIAM RIVER AT MEHAMA, OR

LOCATION.--Lat 44°47'20", long 122°37'00", in NW 1/4 sec.18, T.9 S., R.2 E., Marion County, Hydrologic Unit 17090005, on right bank 300 ft downstream from highway bridge at Mehama, 0.5 mi downstream from Little North Santiam River, and at mile 38.71.

DRAINAGE AREA.--655 mi², at cableway 0.8 mi downstream.

PERIOD OF RECORD.--July 1905 to March 1907, October 1910 to September 1914, September 1921 to current year. Monthly discharge only September 1921, published in WSP 1318. Prior to October 1913, published as North Fork of Santiam River at Mehama.

REVISED RECORDS.--WSP 739: 1922-23(M). WSP 1044: 1943. WSP 1248: 1906, 1911-14, 1924(M), 1926, 1934-36(M), 1937, 1938(M), 1942(M). WSP 2135: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 602.49 ft above sea level. Prior to June 15, 1933, nonrecording gage at site 100 ft upstream at same datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since 1953 by Detroit Lake (station 14180500) and Big Cliff Reservoir, usable capacity for reregulating purposes, 2,930 acre-ft. No diversion upstream from station. All records given herein are for measuring site. Continuous water-quality records for the period April 1985 to September 1986 have been collected at this location.

AVERAGE DISCHARGE.--82 years (water years 1906, 1911-14, 1922-98), 3,367 ft³/s, 2,439,000 acre-ft/yr.
45 years (water years 1954-98), 3,461 ft³/s, 2,508,00 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,600 ft³/s Dec. 28, 1945, gage height, 15.37 ft, from rating curve extended above 36,000 ft³/s, on basis of slope-area measurement of peak flow; maximum gage height, 17.5 ft Nov. 20, 1921, from graph based on gage readings, and Jan. 6, 1923, from floodmark, at site then in use; minimum discharge, 254 ft³/s Aug. 3, 1970; minimum daily, 420 ft³/s Sept. 18, 1924.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 18,000 ft³/s Oct. 30, gage height, 8.79 ft; minimum discharge, 959 ft³/s Aug. 29, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3140	6710	3770	2160	3890	4320	2390	2230	4480	1950	1100	1010
2	3810	5870	3650	2970	3030	4260	2310	3090	3590	1780	1100	1010
3	5020	6000	3580	3480	2240	3760	2320	3180	3270	1730	1090	1010
4	6120	6450	3560	3850	2000	3210	2300	3020	3260	1750	1080	1010
5	7090	6270	3570	3850	1950	2800	2260	3330	3250	1730	1070	1010
6	5670	6190	3100	3920	1970	2500	2230	3160	2850	1680	1070	1000
7	5150	6650	3020	4610	1920	2280	2020	3090	2720	1550	1060	1000
8	5020	7100	3050	4170	1900	2270	1880	2940	2680	1360	1060	1000
9	6130	5990	3020	4080	1890	2250	1890	2890	2640	1320	1060	1020
10	6330	6170	2860	4290	1840	2150	2230	2670	2630	1220	1060	1340
11	6810	3930	2100	8030	2210	2240	2820	2360	2640	1200	1060	1450
12	6990	3380	1610	6240	2480	2500	2700	2370	2460	1200	1060	1460
13	6720	3380	1480	7330	3260	2550	2490	2450	2070	1210	1050	1450
14	5850	3340	1470	9880	2670	2450	2360	e2550	2070	1170	1050	1790
15	5050	3330	1570	9360	2560	2360	2080	e3400	2050	1170	1050	1900
16	4320	3310	4730	7690	2330	2270	1900	e4600	2010	1150	1050	1910
17	3560	3430	9260	10900	2160	2130	1820	e4400	1850	1140	1040	1900
18	2920	3390	7480	10200	2150	1970	1770	e3800	1740	1130	1040	1930
19	2210	3520	6040	10500	2420	1860	1810	e3500	1800	1140	1040	2330
20	1760	4480	4350	10500	2470	1790	1770	4100	1710	1120	1040	2140
21	2300	4580	4020	9950	3540	1860	1730	4890	1570	1120	1040	2250
22	3090	4110	3860	10200	3310	3110	1770	4620	1560	1110	1040	2510
23	3360	4070	3210	11100	2770	4050	2120	4490	1590	1120	1030	2600
24	3350	6150	2580	11000	2430	4910	2550	3770	1670	1110	1020	2580
25	3280	6920	2360	10900	2230	4270	2390	4710	1790	1100	1040	2600
26	3310	6380	2010	11000	2100	4860	2140	4340	2630	1090	1040	2640
27	3300	6050	1950	10800	1950	5200	1980	3790	2580	1080	1030	2620
28	3340	5880	1900	10200	2700	3960	1920	3120	2190	1080	1010	2620
29	4870	4340	1960	9600	---	3270	1940	4340	2160	1090	975	2610
30	9640	3840	1800	7840	---	2840	1920	6210	2040	1100	986	2600
31	7480	---	1720	5210	---	2550	---	5160	---	1100	995	---
TOTAL	146990	152210	100640	235810	68370	92800	63810	112570	71550	39800	32436	54300
MEAN	4742	5074	3246	7607	2442	2994	2127	3631	2385	1284	1046	1810
MAX	9640	7100	9260	11100	3890	5200	2820	6210	4480	1950	1100	2640
MIN	1760	3310	1470	2160	1840	1790	1730	2230	1560	1080	975	1000
AC-FT	291600	301900	199600	467700	135600	184100	126600	223300	141900	78940	64340	107700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1954 - 1998, BY WATER YEAR (WY)

	MEAN	2991	5338	6282	5590	4199	3319	3296	3488	2497	1375	1240	1962
MAX	5109	9857	14300	11430	12360	10890	6128	5897	5521	2528	1833	2800	
(WY)	1960	1974	1978	1956	1996	1972	1993	1960	1955	1983	1968	1959	
MIN	1796	1545	1183	1212	1048	1467	1624	1136	956	757	699	996	
(WY)	1988	1994	1977	1977	1977	1992	1973	1973	1992	1992	1992	1992	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1954 - 1998

ANNUAL TOTAL	1534930	1171286	
ANNUAL MEAN	4205	3209	3461
HIGHEST ANNUAL MEAN			5255
LOWEST ANNUAL MEAN			1743
HIGHEST DAILY MEAN	17800	Jan 4	46700
LOWEST DAILY MEAN	1090	Aug 20	682
ANNUAL SEVEN-DAY MINIMUM	1130	Aug 10	693
ANNUAL RUNOFF (AC-FT)	3045000	2323000	2508000
10 PERCENT EXCEEDS	7710	6250	6970
50 PERCENT EXCEEDS	3210	2550	2440
90 PERCENT EXCEEDS	1230	1080	1170

e Estimated

LOCATION.--Lat 44°23'31", long 122°29'47", in NW 1/4 SW 1/4 sec.31, T.13 S., R.3 E., Linn County, Hydrologic Unit 17090006, on left bank, 0.2 mi upstream from Mouse Creek, 0.8 mi southwest of Cascadia, and at mile 49.2.

PERIOD OF RECORD.--September 1935 to current year. Monthly discharge only September 1935, published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 775 ft above sea level, from topographic map. Prior to Sept. 26, 1989, at site 0.7 mi downstream at datum 759.88 above sea level. Prior to Nov. 1, 1935, nonrecording gage at site 0.7 mi downstream at different datum.

REMARKS.--Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period June 1962 to September 1967 and February 1969 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--63 years (water years 1936-98), 819 ft³/s, 63.94 in/yr, 593,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 31,700 ft³/s Feb. 7, 1996, gage height, 18.11 ft, from rating curve extended above 10,000 ft³/s; minimum discharge, 23 ft³/s Dec. 1, 2, 1936, site then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 11	1200	6,730	8.40	Jan. 17	0400	*6,780	*8.43

Minimum discharge, 39 ft³/s Sept. 17, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	158	1760	543	514	1070	2040	651	634	1300	309	98	48
2	389	1130	489	890	910	2160	602	650	1050	294	93	47
3	388	837	442	788	791	1930	622	573	878	281	88	46
4	524	678	405	807	700	1550	600	496	778	266	85	45
5	1390	560	374	708	633	1250	569	609	669	249	82	45
6	799	486	348	681	642	1020	553	497	586	233	80	44
7	514	606	385	1550	595	856	582	442	532	220	79	43
8	450	540	455	1330	544	813	562	423	493	210	77	43
9	1010	467	433	996	e500	760	589	401	452	199	75	45
10	827	416	464	1130	e520	705	885	375	477	191	73	45
11	773	380	445	4770	589	757	1180	377	476	185	71	44
12	893	353	408	3490	722	930	1090	480	425	177	69	43
13	705	325	378	3430	1210	996	903	555	378	169	67	42
14	550	302	373	3740	1070	978	795	710	346	163	65	42
15	444	281	468	3930	1120	977	725	1240	331	154	64	41
16	372	264	1770	3330	1000	976	653	1310	322	147	65	40
17	322	343	2930	5650	835	873	596	1320	302	141	63	40
18	288	385	1630	3480	750	751	564	1370	282	135	62	43
19	261	459	1150	2640	1020	661	606	1370	279	131	61	79
20	237	693	989	1980	1080	619	582	1380	263	128	60	76
21	216	726	886	1580	2510	709	580	1680	253	124	61	57
22	200	620	758	1540	2100	1970	609	1470	241	119	61	51
23	209	650	685	2040	1480	2490	795	1180	232	115	59	48
24	207	1490	619	2100	1120	2130	1040	1090	278	111	61	45
25	182	1280	556	2570	927	1540	911	1540	376	108	59	71
26	169	1020	506	2540	786	1310	765	1490	608	105	57	111
27	159	813	487	2410	685	1200	681	1230	502	100	55	75
28	154	676	470	1980	1180	1030	669	1000	417	96	53	62
29	1080	628	472	1800	---	880	687	1300	359	96	52	56
30	2560	629	467	1570	---	775	670	2240	325	101	50	53
31	3480	---	443	1280	---	721	---	1680	---	98	49	---
TOTAL	19910	19797	21228	67244	27089	36357	21316	31112	14210	5155	2094	1570
MEAN	642	660	685	2169	967	1173	711	1004	474	166	67.5	52.3
MAX	3480	1760	2930	5650	2510	2490	1180	2240	1300	309	98	111
MIN	154	264	348	514	500	619	553	375	232	96	49	40
AC-FT	39490	39270	42110	133400	53730	72110	42280	61710	28190	10220	4150	3110
CSFM	3.69	3.79	3.94	12.5	5.56	6.74	4.08	5.77	2.72	.96	.39	.30

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1998, BY WATER YEAR (WY)

MEAN	302	1108	1518	1452	1383	1172	1139	924	517	169	80.8	96.2
MAX	1296	2442	4319	3278	3326	2913	2053	1639	1261	466	222	318
(WY)	1951	1943	1965	1953	1996	1972	1937	1960	1937	1983	1968	1959
MIN	31.6	27.6	82.3	107	130	324	356	282	101	54.2	35.9	40.9
(WY)	1988	1937	1977	1977	1977	1941	1941	1987	1992	1940	1992	1987

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1936 - 1998
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ANNUAL TOTAL	308743		267082				
ANNUAL MEAN	846		732			819	
HIGHEST ANNUAL MEAN						1280	1972
LOWEST ANNUAL MEAN						359	1977
HIGHEST DAILY MEAN	9950	Jan 31	5650	Jan 17	23200	Feb 7	1996
LOWEST DAILY MEAN	60	Sep 9	40	Sep 16	23	Dec 1	1936
ANNUAL SEVEN-DAY MINIMUM	63	Sep 4	42	Sep 12	24	Nov 25	1936
ANNUAL RUNOFF (AC-FT)	612400		529800		593200		
ANNUAL RUNOFF (CFSM)	4.86		4.21		4.71		
ANNUAL RUNOFF (INCHES)	66.01		57.10		63.94		
10 PERCENT EXCEEDS	1760		1560		1820		
50 PERCENT EXCEEDS	514		553		505		
90 PERCENT EXCEEDS	95		61		62		

e Estimated

WILLAMETTE RIVER BASIN

14185900 QUARTZVILLE CREEK NEAR CASCADIA, OR

LOCATION.--Lat 44°32'25", long 122°26'05", in NW 1/4 sec.10, T.12 S., R.3 E., Linn County, Hydrologic Unit 17090006, on Bureau of Land Management land, on right bank 80 ft downstream from Panther Creek, 10 mi north of Cascadia, and at mile 6.6.

DRAINAGE AREA.--99.2 mi².

PERIOD OF RECORD.--August 1963 to November 1964 (destroyed by flood of December 1964); October 1965 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,050 ft above sea level, from topographic map. Aug. 13, 1963, to Dec. 22, 1964, water-stage recorder on left bank at present datum.

REMARKS.--No estimated daily discharges. Records good. Discharge for the period Oct. 8-28 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. No regulation or diversion upstream from station. Continuous water-quality records for the period August 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--34 years (water years 1964, 1966-98), 656 ft³/s, 89.81 in/yr, 475,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,700 ft³/s Feb. 7, 1996, gage height, 20.54 ft, from rating curve extended above 8,000 ft³/s on the basis of slope-area measurement of peak flow; minimum discharge, 14 ft³/s Aug. 19-23, 1973.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 36,500 ft³/s Dec. 22, 1964, from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1930	*7,430	*11.83	Jan. 11	1100	5,190	10.25
Dec. 16	2130	5,040	10.14	Jan. 14	1800	6,610	11.28

Minimum discharge, 21 ft³/s Sept. 16, 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	176	1180	465	448	718	2210	441	351	622	164	55	29
2	544	727	396	797	608	2120	405	399	500	152	53	28
3	730	540	341	586	528	1480	398	372	416	145	51	28
4	1190	432	300	545	469	1060	372	298	354	138	49	27
5	1940	357	267	536	431	820	350	277	309	131	48	27
6	891	307	240	702	466	669	339	247	275	123	46	26
7	557	332	268	1670	439	565	362	221	256	118	45	25
8	669	294	320	1020	403	610	352	209	234	112	45	25
9	1390	256	288	696	390	621	369	202	212	107	44	25
10	898	228	298	761	433	571	651	183	230	104	42	25
11	807	205	305	3970	640	739	835	177	232	101	42	25
12	1050	187	275	2550	838	1060	727	192	202	98	41	25
13	799	170	251	3310	1320	1060	591	226	185	94	40	25
14	602	157	255	4280	916	939	520	390	172	90	39	24
15	473	144	378	3430	924	874	478	836	165	88	38	23
16	391	134	3180	2400	822	794	438	686	161	84	39	22
17	341	399	3110	3800	668	657	403	708	149	81	38	22
18	304	450	1380	2290	661	546	386	794	141	78	37	46
19	276	394	866	1950	884	467	423	755	145	74	36	126
20	253	1050	684	1460	919	441	399	738	136	73	36	65
21	232	938	557	1130	1880	544	395	891	131	70	38	43
22	217	675	461	1390	1400	1850	416	775	128	68	37	36
23	211	836	408	1990	1010	1910	566	617	125	66	35	32
24	203	2340	356	1530	769	1490	635	580	144	64	36	31
25	187	1510	316	1700	652	1050	527	846	194	63	35	44
26	177	965	288	2220	561	915	433	738	462	60	34	77
27	168	681	289	2020	494	858	386	605	350	59	32	51
28	170	548	292	1470	1230	717	385	503	252	57	32	40
29	1970	506	323	1240	---	606	392	755	206	55	31	36
30	3700	557	340	1140	---	535	377	1210	181	54	30	33
31	2860	---	312	886	---	486	---	825	---	54	30	---
TOTAL	24376	17499	17809	53917	21473	29264	13751	16606	7269	2825	1234	1091
MEAN	786	583	574	1739	767	944	458	536	242	91.1	39.8	36.4
MAX	3700	2340	3180	4280	1880	2210	835	1210	622	164	55	126
MIN	168	134	240	448	390	441	339	177	125	54	30	22
AC-FT	48350	34710	35320	106900	42590	58050	27280	32940	14420	5600	2450	2160
CFSM	7.93	5.88	5.79	17.5	7.73	9.52	4.62	5.40	2.44	.92	.40	.37
IN.	9.14	6.56	6.68	20.22	8.05	10.97	5.16	6.23	2.73	1.06	.46	---

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1998, BY WATER YEAR (WY)

MEAN	268	1013	1259	1281	1097	955	850	597	317	102	58.4	88.7
MAX	786	2224	2897	2450	2441	2018	1600	1114	817	336	240	268
(WY)	1998	1974	1974	1970	1982	1972	1993	1971	1984	1983	1968	1971
MIN	20.8	57.6	110	157	208	204	382	182	63.1	36.8	20.9	28.0
(WY)	1988	1994	1977	1977	1977	1992	1968	1992	1992	1992	1992	1987

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1964 - 1998
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ANNUAL TOTAL	243148		207114				
ANNUAL MEAN	666		567			656	
HIGHEST ANNUAL MEAN						1113	1974
LOWEST ANNUAL MEAN						311	1977
HIGHEST DAILY MEAN	7460	Jan 31	4280	Jan 14	16000		Feb 7 1996
LOWEST DAILY MEAN	29	Sep 9	22	Sep 16	14		Aug 19 1973
ANNUAL SEVEN-DAY MINIMUM	32	Sep 4	24	Sep 11	14		Aug 17 1973
ANNUAL RUNOFF (AC-FT)	482300		410800		475000		
ANNUAL RUNOFF (CFSM)	6.72		5.72		6.61		
ANNUAL RUNOFF (INCHES)	91.18		77.67		89.81		
10 PERCENT EXCEEDS	1490		1340		1510		
50 PERCENT EXCEEDS	399		378		360		
90 PERCENT EXCEEDS	61		38		39		

WILLAMETTE RIVER BASIN

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14186100 GREEN PETER LAKE NEAR FOSTER, OR

LOCATION.--Lat 44°27'10", long 122°32'40", in NE 1/4 SE 1/4 sec.10, T.13 S., R.2 E., Linn County, Hydrologic Unit 17090006, in Green Peter Dam on Middle Santiam River, 7.0 mi northeast of Foster, and at mile 5.7.

DRAINAGE AREA.--273 mi².

PERIOD OF RECORD.--October 1966 to current year. Prior to October 1971, published as Green Peter Reservoir near Foster.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by concrete, gravity-type dam with ogee spillway completed in 1966 by Corps of Engineers; controlled storage began Oct. 6, 1966. Total capacity, 428,100 acre-ft, usable capacity 330,800 acre-ft between elevations 887.0 ft, proposed lower limit of operation, and 1,015.0 ft, top of spillway gates. Reservoir used for flood control, power development, improvement of navigation, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 426,700 acre-ft April 29, 1990, elevation, 1,014.61 ft; minimum contents, 116,900 acre-ft Dec. 15, 1972, elevation, 899.20 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 421,000 acre-ft May 19, elevation, 1,013.07 ft; minimum contents, 163,500 acre-ft Jan. 6, elevation, 923.76 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

899	116,600	960	251,100
900	118,300	980	309,700
920	155,700	1,000	374,800
940	199,900	1,015	428,100

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	982.53	971.19	942.00	925.50	929.04	969.42	996.21	1005.96	1010.13	1010.76	1004.34	995.57
2	982.29	970.20	941.16	926.28	929.28	972.60	996.57	1006.32	1009.86	1010.70	1004.07	995.03
3	982.26	968.49	940.20	925.92	930.63	974.46	996.90	1006.59	1009.86	1010.67	1003.83	994.46
4	982.65	966.45	939.15	925.17	931.86	975.21	997.14	1006.83	1009.86	1010.61	1003.65	993.92
5	983.97	964.14	938.01	924.33	933.00	975.87	997.29	1007.25	1010.22	1010.52	1003.44	993.35
6	984.24	961.77	936.81	923.79	933.78	976.56	997.32	1007.46	1010.34	1010.40	1003.23	992.75
7	984.12	959.43	935.73	925.08	934.83	977.10	997.41	1007.61	1010.43	1010.31	1002.99	992.06
8	984.09	956.91	934.65	925.77	935.10	977.70	997.41	1007.82	1010.55	1010.16	1002.75	991.40
9	984.60	954.30	933.54	925.86	936.00	978.24	997.56	1008.00	1010.58	1009.98	1002.36	990.78
10	984.51	952.53	932.40	925.83	936.99	978.96	998.07	1008.12	1010.52	1009.83	1002.09	990.15
11	983.73	951.51	931.68	923.19	938.19	979.86	998.70	1008.27	1010.40	1009.65	1001.86	989.55
12	983.25	950.43	931.14	925.82	939.51	981.03	999.21	1008.48	1010.25	1009.50	1001.59	988.92
13	982.44	949.29	930.51	928.97	941.61	981.96	999.57	1008.69	1010.13	1009.26	1001.35	988.35
14	981.39	948.12	929.94	942.99	943.26	982.77	999.93	1009.20	1010.04	1009.08	1001.08	987.78
15	980.34	946.92	929.76	945.84	945.00	983.55	1000.38	1010.07	1009.92	1008.87	1000.81	987.09
16	979.02	945.66	933.87	946.44	946.50	984.21	1000.77	1010.85	1009.89	1008.66	1000.57	986.37
17	977.61	944.79	937.47	951.30	947.76	984.72	1001.10	1011.66	1009.86	1008.45	1000.27	985.77
18	976.14	943.92	938.49	951.93	949.02	985.35	1001.43	1012.56	1009.86	1008.21	999.97	985.26
19	974.64	942.96	938.64	950.22	950.58	985.89	1001.79	1012.77	1009.86	1008.00	999.61	984.78
20	973.05	942.90	938.31	949.89	952.14	986.40	1002.12	1011.75	1009.83	1007.76	999.28	984.21
21	971.79	942.78	937.83	945.29	955.20	987.09	1002.42	1010.85	1009.77	1007.55	998.98	983.61
22	970.62	942.30	936.66	940.72	957.57	989.01	1002.84	1010.58	1009.71	1007.31	998.71	983.01
23	969.48	942.03	935.55	937.08	959.37	991.41	1003.38	1010.49	1009.62	1007.13	998.41	982.39
24	968.31	943.80	934.26	933.06	960.78	993.12	1003.92	1010.43	1009.65	1006.77	998.11	981.79
25	967.20	944.64	932.70	929.75	962.01	994.11	1004.25	1010.64	1009.74	1006.50	997.84	981.34
26	966.06	944.73	930.96	927.73	963.09	994.71	1004.52	1010.70	1010.31	1006.17	997.58	980.83
27	964.95	944.43	929.22	926.22	964.02	995.52	1004.82	1010.61	1010.55	1005.93	997.31	980.29
28	963.87	943.89	927.33	926.34	966.15	995.82	1005.12	1010.40	1010.64	1005.60	996.98	979.69
29	965.22	943.32	925.86	927.63	---	995.94	1005.42	1010.37	1010.67	1005.30	996.68	979.06
30	968.76	942.75	925.32	927.99	---	996.03	1005.69	1010.55	1010.70	1005.00	996.41	978.46
31	971.10	---	925.29	928.50	---	996.03	---	1010.40	---	1004.70	996.11	---
MAX	984.60	971.19	942.00	951.93	966.15	996.03	1005.69	1012.77	1010.70	1010.76	1004.34	995.57
MIN	963.87	942.03	925.29	923.79	929.04	969.42	996.21	1005.96	1009.62	1004.70	996.11	978.46
(†)	282800	206500	166800	173700	268400	361400	394500	411300	412400	391000	361600	305000
(‡)	-36000	-76300	-39700	+6900	+94700	+93000	+33100	+16800	+1100	-21400	-29400	-56600

CAL YR 1997 MAX 1010.78 MIN 922.45 AC-FT† -176100
WTR YR 1998 MAX 1012.77 MIN 923.79 AC-FT† -13800

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

14186600 FOSTER LAKE AT FOSTER, OR

LOCATION.--Lat 44°25'00", long 122°40'25", in NW 1/4 NE 1/4 sec.27, T.13 S., R.1 E., Linn County, Hydrologic Unit 17090006, in Foster Dam on South Santiam River, 0.3 mi above Wiley Creek, 0.5 mi north of Foster, and at mile 37.7.

DRAINAGE AREA.--492 mi².

PERIOD OF RECORD.--December 1966 to current year. Prior to October 1971, published as Foster Reservoir at Foster.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Lake is formed by rockfill embankment with an impervious core and ogee spillway completed in 1966 by Corps of Engineers; controlled storage began in November 1966. Total capacity, 60,780 acre-ft and usable capacity 33,210 acre-ft between elevations 609.0 ft, proposed lower limit of operation, and 641.0 ft, top of spillway gates. Lake used for reregulation of water released from Green Peter Lake, flood control, power development, pollution abatement, and other purposes. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 60,350 acre-ft Apr. 28, 1990, elevation, 640.66 ft; minimum contents, 26,590 acre-ft Nov. 15, 16, 1971, elevation, 607.85 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 56,860 acre-ft Oct. 5, elevation, 637.82 ft; minimum contents, 30,460 acre-ft Jan. 29, elevation, 612.32 ft.

Capacity table (elevation, in feet, and total contents, in acre-feet)

607	25,880	630	47,860
610	28,430	635	53,510
615	32,870	640	59,530
620	37,570	641	60,780
625	42,550		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	636.96	620.42	614.21	614.67	614.24	621.59	618.64	614.23	636.77	636.86	637.16	636.83
2	637.17	619.76	614.12	615.15	614.57	621.77	618.70	614.26	636.74	636.92	637.13	636.80
3	637.00	618.98	614.21	614.43	614.24	622.61	618.97	614.17	637.07	636.86	636.95	636.68
4	637.40	618.23	614.18	614.43	614.01	623.60	618.85	614.11	636.59	636.89	636.80	636.56
5	637.70	617.75	614.18	614.37	613.47	623.00	618.76	613.96	637.04	636.89	636.65	636.47
6	637.41	617.33	614.21	614.40	613.74	621.95	618.01	613.99	637.01	636.86	636.50	636.41
7	637.15	616.94	614.24	615.45	613.08	622.49	617.29	614.23	637.01	636.83	636.44	636.62
8	637.10	616.55	614.21	615.34	614.07	622.88	617.11	614.14	637.22	636.92	636.41	636.74
9	637.61	616.01	614.27	614.41	613.14	622.82	616.57	614.14	637.07	636.95	636.77	636.74
10	637.73	614.93	614.30	615.28	613.02	622.82	616.27	614.17	636.98	636.86	636.74	636.77
11	637.13	614.90	614.12	619.48	613.17	623.45	615.64	614.23	636.89	636.86	636.68	636.80
12	636.95	614.84	614.45	614.71	613.98	623.60	614.86	614.23	636.92	636.77	636.65	636.71
13	636.89	614.69	614.48	614.65	615.45	623.81	614.35	614.11	636.98	636.92	636.62	636.65
14	636.80	614.57	614.42	614.11	616.53	624.38	614.20	614.35	637.13	636.86	636.56	636.56
15	636.71	614.33	614.57	614.11	617.55	624.56	614.02	614.47	637.34	636.83	636.53	636.74
16	636.95	614.18	615.74	615.37	617.70	624.50	614.23	614.26	637.31	636.80	636.50	636.95
17	636.29	614.24	614.15	614.32	617.34	623.90	614.65	614.27	637.16	636.77	636.53	636.86
18	635.09	614.18	614.54	613.99	617.73	623.21	614.44	614.24	637.13	636.74	636.53	636.83
19	633.74	614.21	614.54	614.23	618.54	622.88	614.32	616.70	636.95	636.74	636.68	636.86
20	632.66	614.18	614.81	614.20	618.90	622.76	614.41	626.06	636.92	636.77	636.92	636.89
21	631.28	614.15	614.30	614.27	620.28	622.76	614.41	635.12	636.92	636.65	637.01	636.86
22	630.11	614.15	614.69	614.21	619.59	623.84	614.41	637.13	636.86	636.62	636.98	636.80
23	629.18	614.21	614.78	614.21	619.23	622.70	614.56	636.74	636.86	636.47	637.01	636.86
24	628.07	614.24	614.54	614.30	619.53	622.01	614.23	636.80	636.92	636.71	637.04	636.77
25	626.72	614.45	614.61	614.24	619.73	620.71	614.23	636.98	637.25	636.80	637.04	636.74
26	625.31	614.18	614.61	614.30	620.00	619.75	614.11	636.68	637.16	637.04	637.01	636.68
27	623.96	614.27	614.58	614.48	620.27	618.76	614.29	636.74	637.28	636.98	636.98	636.56
28	622.73	614.24	614.61	614.00	621.08	618.85	614.29	636.44	637.25	636.98	637.07	636.56
29	622.55	614.24	614.67	613.43	---	619.54	614.32	636.77	637.19	636.98	637.04	636.53
30	622.85	614.27	614.82	614.15	---	619.06	614.35	637.31	636.95	636.98	636.98	636.50
31	621.41	---	614.91	614.06	---	619.24	---	637.04	---	637.01	636.95	---
MEAN	632.79	615.45	614.49	614.60	616.58	622.25	615.58	622.65	637.03	636.84	636.80	636.71
MAX	637.73	620.42	615.74	619.48	621.08	624.56	618.97	637.31	637.34	637.04	637.16	636.95
MIN	621.41	614.15	614.12	613.43	613.02	618.76	614.02	613.96	636.59	636.47	636.41	636.41
(†)	38940	32210	32790	32020	38620	36840	32280	55810	55810	55880	55810	55280
(‡)	-17180	-6730	+580	-770	+6600	-1780	-4560	+23640	-110	+70	-70	-530
CAL YR 1997	MEAN 625.02	MAX 637.73	MIN 612.67	AC-FT†	+910							
WTR YR 1998	MEAN 625.21	MAX 637.73	MIN 613.02	AC-FT†	-840							

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

211

14187000 WILEY CREEK NEAR FOSTER, OR

LOCATION.--Lat 44°22'20", long 122°37'20", in NE 1/4 NE 1/4 sec.12, T.14 S., R.1 E., Linn County, Hydrologic Unit 17090006, on right bank 0.5 mi downstream from Little Wiley Creek, 3.5 mi southeast of Foster, and at mile 4.4.

DRAINAGE AREA.--51.8 mi².

PERIOD OF RECORD.--October 1947 to July 1973, July 1988 to current year.

REVISED RECORDS.--WDR OR-90-2: 1989 (M), WDR OR-93-1: 1992.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 720 ft above sea level, from topographic map. Prior to April 6, 1965, water-stage recorder at present site at datum of 718.08 ft above sea level (Corps of Engineers bench mark). Apr. 6, 1965, to July 1973, water-stage recorder at present site at datum 2.00 ft lower than previous datum.

REMARKS.--Records good except those for the period June 23 to Aug. 4, which are fair. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--35 years (water years 1948-72, 1989-98), 216 ft³/s, 56.75 in/yr, 156,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s Jan. 21, 1972, gage height, 9.28 ft, datum then in use, from rating curve extended above 3,700 ft³/s; maximum gage height, 9.80 ft, Dec. 21, 1964 (backwater from debris), datum then in use; minimum discharge, 2.9 ft³/s August 28-31, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 14	2130	*1,490	*4.82				

Minimum discharge, 5.5 ft³/s Sept. 16-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	469	137	149	297	550	189	122	325	59	18	6.7
2	93	281	125	261	248	653	177	122	257	57	15	6.5
3	89	196	113	235	222	634	189	111	210	55	14	6.4
4	116	155	103	282	187	527	184	102	185	53	14	6.3
5	278	e130	95	229	171	421	180	111	159	49	13	6.2
6	147	e120	88	219	167	333	177	96	141	45	12	6.2
7	107	162	114	398	150	271	185	89	126	44	12	6.0
8	109	137	155	370	141	266	176	91	114	43	12	6.0
9	218	119	158	284	132	239	182	101	104	39	12	6.4
10	172	105	173	306	143	220	342	94	129	40	11	6.5
11	140	95	155	1040	177	228	428	97	125	39	11	6.3
12	137	87	137	908	237	255	366	125	104	35	10	6.2
13	118	80	125	1150	379	251	302	147	93	34	9.8	6.1
14	102	74	122	1190	358	231	265	195	85	30	9.6	6.0
15	87	68	154	1160	398	221	243	323	80	29	9.5	5.8
16	75	64	514	900	335	214	213	358	76	28	10	5.6
17	66	97	911	1220	275	192	191	396	69	27	9.7	5.5
18	61	103	533	880	242	172	174	432	64	26	9.3	6.0
19	56	117	359	733	317	156	170	472	64	25	9.1	12
20	51	149	311	574	379	144	155	552	60	25	9.1	11
21	47	147	259	470	1140	165	143	746	56	24	9.2	8.3
22	44	130	209	429	852	502	134	572	54	23	9.3	7.3
23	47	162	193	458	562	574	201	427	53	22	9.4	6.7
24	49	419	182	587	418	487	356	424	74	21	10	6.5
25	43	343	162	766	335	398	289	625	89	21	9.5	11
26	40	261	147	736	275	367	229	571	110	18	8.8	20
27	37	195	137	720	232	372	192	437	89	16	8.3	11
28	36	161	129	590	372	316	168	335	75	17	8.0	9.0
29	280	158	124	520	---	262	150	443	63	15	7.4	8.2
30	553	156	117	434	---	227	135	552	60	16	7.2	7.9
31	872	---	110	353	---	213	---	424	---	18	7.0	---
TOTAL	4310	4940	6351	18551	9141	10061	6485	9692	3293	993	324.2	229.6
MEAN	139	165	205	598	326	325	216	313	110	32.0	10.5	7.65
MAX	872	469	911	1220	1140	653	428	746	325	59	18	20
MIN	36	64	88	149	132	144	134	89	53	15	7.0	5.5
AC-FT	8550	9800	12600	36800	18130	19960	12860	19220	6530	1970	643	455
CFSM	2.68	3.18	3.96	11.6	6.30	6.27	4.17	6.04	2.12	.62	.20	.15
IN.	3.10	3.55	4.56	13.32	6.56	7.23	4.66	6.96	2.36	.71	.23	.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1998, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1948	85.5	397	1951	8.08	1989
1949	276	620	1952	15.7	1990
1950	408	1107	1953	109	1991
1951	450	842	1954	82.1	1992
1952	387	944	1955	113	1993
1953	345	625	1956	85.0	1994
1954	271	490	1957	133	1995
1955	192	353	1958	62.8	1996
1956	89.1	286	1959	20.2	1997
1957	32.5	75.9	1960	11.8	1998
1958	16.9	53.4	1961	4.40	1999
1959	18.8	67.8	1962	5.15	2000
1960		1968		1992	
1961		1969		1993	
1962		1970		1994	
1963		1971		1995	
1964		1972		1996	
1965		1973		1997	
1966		1974		1998	

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1948 - 1998
ANNUAL TOTAL	71555.9	74370.8	
ANNUAL MEAN	196	204	216
HIGHEST ANNUAL MEAN			318
LOWEST ANNUAL MEAN			104
HIGHEST DAILY MEAN	2070	1220	6410
LOWEST DAILY MEAN	8.6	5.5	2.9
ANNUAL SEVEN-DAY MINIMUM	9.2	5.9	3.0
ANNUAL RUNOFF (AC-FT)	141900	147500	156700
ANNUAL RUNOFF (CFSM)	3.78	3.93	4.18
ANNUAL RUNOFF (INCHES)	51.39	53.41	56.75
10 PERCENT EXCEEDS	479	493	495
50 PERCENT EXCEEDS	119	137	119
90 PERCENT EXCEEDS	15	9.4	12

e Estimated

WILLAMETTE RIVER BASIN

14187200 SOUTH SANTIAM RIVER NEAR FOSTER, OR

LOCATION.--Lat 44°24'45", long 122°41'15", in SE 1/4 NE 1/4 sec.28, T.13 S., R.1 E., Linn County, Hydrologic Unit 17090006, on left bank 0.6 mi downstream from Wiley Creek and at mile 37.0.

DRAINAGE AREA.--557 mi².

PERIOD OF RECORD.--August 1973 to current year. Records for October 1966 to July 1973 (published as South Santiam River at Foster, station 14186700) at site 0.5 mi upstream not equivalent owing to inflow between sites.

GAGE.--Water-stage recorder. Elevation of gage is 560 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1966 by Green Peter Lake (station 14186100) and since December 1966 by Foster Lake (station 14186600). No diversion upstream from station. Continuous water-quality records for the period July 1973 to September 1997 have been collected at this location.

AVERAGE DISCHARGE.--25 years (water years 1974-98), 2,867 ft³/s, 69.90 in/yr, 2,077,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,700 ft³/s Feb. 7, 1996, gage height, 18.74 ft, from rating curve extended above 16,000 ft³/s; minimum discharge, 410 ft³/s June 3, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,300 ft³/s Jan. 24, gage height, 15.31 ft; minimum discharge, 566 ft³/s June 5, Aug. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1450	5890	2840	1770	2960	2580	2190	1390	4050	865	782	1090
2	1740	5330	2780	1970	2790	2980	1460	1280	3340	872	777	1090
3	1910	5530	2640	3220	1410	3450	1410	1260	2290	872	773	1100
4	1760	5530	2660	3410	1230	3650	1660	1130	2580	871	687	1110
5	2820	5330	2580	3260	1260	3670	1680	988	1040	866	668	1090
6	2430	5200	2580	3190	1250	3030	2130	948	1580	857	662	1100
7	2140	5410	2650	3770	1240	2000	2070	956	1410	842	656	1100
8	2030	5280	2850	3760	1240	1970	1940	901	1270	841	672	1110
9	2480	5250	2810	3570	1230	2110	1960	916	1380	842	661	1100
10	2830	4200	2890	3290	890	1540	2500	894	1740	835	666	1110
11	4160	2530	2410	6530	901	1240	3040	886	1690	838	679	1090
12	4030	2500	1950	9560	942	1640	2940	975	1550	837	669	1100
13	3780	2500	1930	9030	1110	2080	2550	1190	1320	828	661	1110
14	3590	2490	1980	10400	1110	1920	2090	1140	1170	839	665	1100
15	3260	2480	2050	10400	1250	2050	1710	1850	1120	833	671	1100
16	3230	2450	3380	10100	1480	2250	1420	2120	1060	828	655	1110
17	3640	2470	7310	10400	1470	2340	1250	2110	1050	820	652	1110
18	3910	2590	4410	9990	1020	1800	1430	2240	906	793	656	1110
19	3970	2600	3830	10900	1120	1490	1450	2320	972	788	660	1120
20	3770	2960	3740	7110	1490	1340	1270	1340	871	784	656	1120
21	3440	3000	3700	11500	3350	1410	1300	1580	871	781	663	1120
22	3060	2860	3650	11700	3680	2780	1230	3570	863	778	661	1110
23	2930	2920	3640	11800	2540	3790	1520	3780	869	776	661	1090
24	3030	4120	3640	11900	1670	3510	2340	3410	891	777	660	1100
25	2950	3750	3630	12000	1430	3590	2100	4050	900	779	659	1110
26	2860	3600	3600	11100	1180	3570	1860	4210	950	768	655	1120
27	2840	3120	3590	9820	1020	3090	1430	3560	946	768	654	1120
28	2800	2990	3590	6760	1340	2810	1450	3400	1010	809	657	1120
29	3310	2900	3160	4690	---	2340	1410	3860	1010	816	658	1120
30	5520	2930	2180	4450	---	2700	1390	5430	955	820	657	1120
31	8480	---	1480	3740	---	2370	---	4910	---	806	654	---
TOTAL	100150	110710	96130	225090	43603	77090	54180	68594	41654	25429	20867	33200
MEAN	3231	3690	3101	7261	1557	2487	1806	2213	1388	820	673	1107
MAX	8480	5890	7310	12000	3680	3790	3040	5430	4050	872	782	1120
MIN	1450	2450	1480	1770	890	1240	1230	886	863	768	652	1090
AC-FT	198600	219600	190700	446500	86490	152900	107500	136100	82620	50440	41390	65850
MEAN†	2365	2295	2465	7361	3381	3970	2286	2871	1405	473	194	146
CFSM†	4.25	4.12	4.43	13.2	6.07	7.13	4.10	5.16	2.52	0.85	0.35	0.26
IN.†	4.90	4.60	5.10	15.24	6.32	8.22	4.58	5.94	2.82	0.98	0.40	0.29
AC-FT†	145420	136570	151580	452630	187790	244120	136040	176540	83610	29110	11920	8720

CAL YR 1997 TOTAL 1139226 MEAN 3121 MAX 16400 MIN 599 AC-FT 2260000 MEAN† 2880 CFSM† 5.17 IN.† 70.20 AC-FT† 2084810
WTR YR 1998 TOTAL 896697 MEAN 2457 MAX 12000 MIN 652 AC-FT 1779000 MEAN† 2437 CFSM† 4.38 IN.† 59.41 AC-FT† 1764360

† Adjusted for change in contents in Green Peter Lake and Foster Lake.

WILLAMETTE RIVER BASIN

213

14187500 SOUTH SANTIAM RIVER AT WATERLOO, OR

LOCATION.--Lat 44°29'55", long 122°49'20", in SW 1/4 NW 1/4 sec.28, T.12 S., R.1 W., Linn County, Hydrologic Unit 17090006, on left bank 0.1 mi downstream from highway bridge at Waterloo, 2.1 mi upstream from Hamilton Creek, and at mile 23.3.

DRAINAGE AREA.--640 mi².

PERIOD OF RECORD.--July 1905 to March 1907, October 1910 to December 1911 (gage heights only January to December 1911), July 1923 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as South Fork of Santiam River at Waterloo 1905-07, 1910-11.

REVISED RECORDS.--WSP 1248: 1907, 1924-30, 1932.

GAGE.--Water-stage recorder. Datum of gage is 370.39 ft above sea level. Prior to Dec. 31, 1911, nonrecording gage at site 0.5 mi downstream at datum about 5.0 ft lower. July 1, 1923, to Nov. 12, 1934, nonrecording gage, at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since October 1966 by Green Peter Lake (station 14186100) and since December 1966 by Foster Lake (station 14186600). Some diversion upstream from station. Continuous water-quality records for the period October 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--76 years (water years 1906, 1924-98), 2,940 ft³/s, 2,130,000 acre-ft/yr (unadjusted).
31 years (water years 1968-98), 3,019 ft³/s, 2,187,000 acre-ft/yr (regulated period).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 95,200 ft³/s Dec. 22, 1964, gage height, 24.50 ft; minimum discharge, 61 ft³/s Oct. 12, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,700 ft³/s Jan. 24, gage height, 8.63 ft; minimum discharge, 642 ft³/s Aug. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1540	6350	3090	1920	3510	3060	2550	1570	4450	957	842	939
2	1760	5470	3030	2230	3300	3660	1850	1450	3840	960	828	1130
3	2100	5530	2890	3100	2050	4090	1640	1430	2730	958	824	1140
4	1870	5690	2860	3740	1590	4210	1910	1320	2890	951	750	1150
5	2720	5440	2840	3590	1610	4230	1960	1140	1400	951	697	1160
6	2750	5300	2770	3410	1620	3660	2260	1070	1850	940	689	1150
7	2320	5550	2810	4010	1570	2500	2360	1070	1680	925	682	1160
8	2120	5420	3040	4120	1530	2390	2180	1020	1510	922	686	1170
9	2520	5370	3040	3980	1510	2540	2190	1030	1540	922	694	1170
10	3040	4670	3170	3500	1230	2020	2750	1010	1890	915	684	1170
11	3940	2770	2780	5590	1180	1610	3490	1000	1930	913	698	1150
12	4260	2690	2260	9950	1240	1870	3400	1040	1760	913	693	1150
13	4010	2670	2140	9300	1510	2280	2950	1240	1540	904	679	1160
14	3810	2670	2200	11000	1500	2310	2560	1310	1310	890	677	1160
15	3470	2690	2250	11000	1610	2250	2080	1850	1270	899	694	1150
16	3330	2650	3130	10700	1930	2540	1770	2400	1190	891	676	1150
17	3670	2680	6700	10900	1900	2540	1480	2450	1170	884	673	1160
18	4040	2730	4990	10400	1440	2160	1580	2570	1040	863	666	1160
19	4130	2820	4220	11100	1450	1730	1730	2700	1050	847	674	1180
20	3880	3010	4120	7550	1890	1570	1460	1950	976	843	667	1180
21	3710	3260	4080	11300	3960	1540	1490	2340	955	838	676	1170
22	3230	3080	3990	11700	4630	2850	1430	3330	946	836	673	1170
23	3100	3110	3980	11900	3400	4340	1650	4290	942	828	676	1140
24	3150	4150	3990	12200	2350	3970	2590	3860	976	828	674	1140
25	3140	4220	3960	12300	1960	4040	2430	4480	1010	828	669	1160
26	3020	3920	3940	11600	1680	4030	2200	4790	1080	824	666	1170
27	3010	3440	3900	10200	1420	3720	1700	4080	1060	817	666	1170
28	2940	3260	3880	7540	1650	3070	1660	3820	1100	844	668	1160
29	3130	3160	3580	5640	---	2820	1610	4180	1090	865	668	1160
30	5180	3210	2520	5030	---	3000	1590	5840	1100	866	676	1170
31	7840	---	1850	4420	---	2750	---	5510	---	865	673	---
TOTAL	102730	116980	104000	234920	56220	89350	62500	77140	47275	27487	21558	34549
MEAN	3314	3899	3355	7578	2008	2882	2083	2488	1576	887	695	1152
MAX	7840	6350	6700	12300	4630	4340	3490	5840	4450	960	842	1180
MIN	1540	2650	1850	1920	1180	1540	1430	1000	942	817	666	939
AC-FT	203800	232000	206300	466000	111500	177200	124000	153000	93770	54520	42760	68530

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

	MEAN	2194	4834	6458	5675	3852	3313	2988	2354	1600	798	796	1402
MAX	5530	9509	12910	9338	10430	9649	6529	4148	6529	4300	1527	1239	2769
(WY)	1969	1985	1978	1997	1996	1972	1993	1984	1984	1983	1969	1968	
MIN	852	827	1126	713	597	865	1059	792	616	514	568	849	
(WY)	1988	1988	1977	1977	1977	1992	1968	1987	1992	1972	1974	1979	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1968 - 1998

ANNUAL TOTAL	1210765	974709	
ANNUAL MEAN	3317	2670	3019
HIGHEST ANNUAL MEAN			4666
LOWEST ANNUAL MEAN			1407
HIGHEST DAILY MEAN	16400	Jan 5	26000
LOWEST DAILY MEAN	620	May 21	428
ANNUAL SEVEN-DAY MINIMUM	743	Jul 15	452
ANNUAL RUNOFF (AC-FT)	2402000		2187000
10 PERCENT EXCEEDS	7270		7000
50 PERCENT EXCEEDS	2360		1840
90 PERCENT EXCEEDS	764		721

WILLAMETTE RIVER BASIN

14187600 LEBANON SANTIAM CANAL NEAR LEBANON, OR

LOCATION.--Lat 44°30'54", long 122°51'49", in SW 1/4 NW 1/4 sec.19, T.12 S., R.1 W., Linn County, Hydrologic Unit 17090006, near right bank, on downstream side of bridge on Headgate Road, 2.2 mi east of Lebanon.

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

GAGE.--Water-stage recorder. Elevation of gage is 370 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 191 ft³/s Mar. 8, 1994; minimum daily discharge, 25 ft³/s Jan. 18, 1994.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	69	70	75	76	78	63	96	83	103	110	131
2	90	66	62	78	80	80	51	93	89	104	109	112
3	87	75	60	79	78	80	52	92	89	106	110	112
4	85	87	86	66	79	80	73	89	90	107	110	113
5	93	83	85	65	79	80	70	83	78	106	109	114
6	91	83	85	64	74	77	53	81	92	106	109	114
7	88	84	85	73	61	69	60	81	90	106	109	114
8	86	83	86	79	61	69	74	79	88	107	111	115
9	87	83	83	78	65	74	59	79	89	110	111	115
10	86	80	84	77	63	73	81	78	93	109	111	115
11	92	70	81	60	63	73	87	78	93	110	113	114
12	93	77	77	52	65	80	85	80	91	109	113	114
13	91	88	76	52	73	64	86	87	88	109	111	115
14	90	88	76	53	71	85	89	83	85	109	112	114
15	88	88	69	55	73	85	83	89	87	109	115	114
16	87	71	56	55	77	92	79	82	88	109	112	115
17	90	44	70	55	76	96	74	83	90	109	112	115
18	92	44	67	54	69	97	76	84	90	108	111	113
19	92	45	70	62	70	96	78	86	98	108	112	110
20	91	59	77	62	75	93	81	79	103	109	110	110
21	90	76	77	69	72	89	91	71	103	110	112	110
22	87	75	76	63	72	68	89	81	102	109	112	109
23	87	76	76	53	73	56	92	92	102	109	112	108
24	87	79	76	54	77	61	96	82	103	109	112	108
25	86	72	75	53	76	68	89	87	104	109	113	109
26	85	76	75	60	77	74	86	86	106	108	113	110
27	82	78	75	68	68	73	90	82	105	108	113	110
28	79	77	75	66	65	69	99	80	106	110	113	109
29	76	70	80	65	---	68	97	83	105	110	113	109
30	73	64	80	72	---	69	96	91	105	110	114	109
31	74	---	74	81	---	67	---	88	---	110	113	---
TOTAL	2695	2210	2344	1998	2008	2383	2379	2605	2835	3355	3460	3380
MEAN	86.9	73.7	75.6	64.5	71.7	76.9	79.3	84.0	94.5	108	112	113
MAX	93	88	86	81	80	97	99	96	106	110	115	131
MIN	73	44	56	52	61	56	51	71	78	103	109	108
AC-FT	5350	4380	4650	3960	3980	4730	4720	5170	5620	6650	6860	6700
CAL YR 1997	TOTAL 33233	MEAN 91.0	MAX 136	MIN 43	AC-FT 65920							
WTR YR 1998	TOTAL 31652	MEAN 86.7	MAX 131	MIN 44	AC-FT 62780							

WILLAMETTE RIVER BASIN

215

14188610 SCHAFER CREEK NEAR LACOMB, OR

LOCATION.--Lat 44°37'11", long 122°27'53", in NE 1/4 SE 1/4 sec.8, T.11 S., R.3 E., Linn County, Hydrologic Unit 17090006, on right bank, 40 ft upstream from Crabtree Creek, and 8.0 mi east of LaComb.

DRAINAGE AREA.--1.03 mi².

PERIOD OF RECORD.--July 1993 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,900 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--5 years (water years 1994-98), 8.22 ft³/s, 108.41 in/yr, 5,950 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 400 ft³/s Feb. 7, 1996, gage height, 7.93 ft, from rating curve extended above 110 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 0.06 ft³/s Sept. 6, 1996.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 130 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1800	*72	*5.60	No other peak greater than base discharge.			
Minimum daily discharge, 0.10 ft ³ /s many days in August and September.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.1	11	4.7	6.2	5.7	35	2.8	5.5	7.1	3.2	e.3	e.1
2	7.0	6.1	3.9	8.9	4.7	31	2.7	5.3	5.2	e2.8	e.3	e.1
3	8.3	4.3	3.2	5.9	4.1	16	2.8	4.1	4.2	2.4	e.3	e.1
4	13	3.4	2.7	4.5	3.7	9.2	2.9	3.4	3.5	e2.2	e.3	e.1
5	19	2.7	2.4	3.6	3.6	6.2	2.7	3.1	3.1	e2.0	e.2	e.1
6	10	2.3	2.1	4.1	4.4	4.6	2.7	2.8	2.7	e1.8	e.2	e.1
7	6.0	2.4	2.6	15	4.2	3.8	2.9	2.6	2.4	e1.7	e.2	e.1
8	10	2.3	3.0	9.6	3.7	3.6	2.9	2.5	2.1	e1.5	e.2	e.1
9	22	2.0	2.7	6.0	3.4	3.5	3.7	2.3	1.9	e1.4	e.2	e.1
10	15	1.8	e2.6	9.5	4.2	3.5	6.3	2.1	2.3	e1.3	e.2	e.1
11	16	1.7	e2.5	48	5.6	5.3	8.6	2.1	2.8	e1.2	e.2	e.1
12	16	1.5	2.3	26	12	10	7.2	2.2	2.4	e1.1	e.2	e.1
13	10	1.4	2.3	25	15	13	5.5	2.7	2.2	e1.0	e.2	e.1
14	6.3	1.3	2.8	33	11	12	4.8	6.8	2.0	e.9	e.2	e.1
15	4.3	1.2	4.4	24	9.7	12	4.5	13	1.8	e.9	e.2	e.1
16	3.2	1.2	21	19	7.7	10	4.3	11	1.7	e.8	e.1	e.1
17	2.5	5.4	24	29	6.1	8.0	4.2	12	1.6	e.7	e.1	e.1
18	2.2	6.0	11	20	6.5	5.7	4.6	13	1.5	e.7	e.1	.47
19	1.9	5.3	6.5	18	13	4.8	7.2	12	1.8	e.6	e.1	1.4
20	1.7	15	4.6	11	14	5.0	6.6	12	1.6	e.6	e.1	e.5
21	1.5	14	3.4	7.5	21	7.9	7.1	16	1.5	e.6	e.1	e.3
22	1.3	9.2	2.7	10	11	26	8.4	12	1.4	e.5	e.1	e.3
23	1.3	12	2.4	17	7.7	25	15	8.9	1.3	e.5	e.1	e.2
24	1.2	24	2.1	14	5.7	16	14	8.5	1.5	e.5	e.1	e.2
25	1.1	16	1.9	14	4.5	12	10	12	e3.4	e.4	e.1	.73
26	1.0	9.6	1.7	26	3.8	9.6	7.5	10	e9.2	e.4	e.1	.86
27	.94	6.3	2.0	20	3.3	7.6	6.5	8.0	8.4	e.4	e.1	e.6
28	.94	4.7	2.0	13	20	5.6	7.0	6.1	e5.8	e.4	e.1	e.4
29	17	5.0	2.3	13	---	4.3	6.9	9.5	e4.4	e.3	e.1	e.4
30	37	5.7	2.8	11	---	3.5	6.1	14	e3.6	e.3	e.1	e.3
31	28	---	2.9	7.8	---	3.1	---	9.9	---	e.3	e.1	---
TOTAL	268.78	184.8	137.5	479.6	219.3	322.8	178.4	235.4	94.4	33.4	5.0	8.36
MEAN	8.67	6.16	4.44	15.5	7.83	10.4	5.95	7.59	3.15	1.08	.16	.28
MAX	37	24	24	48	21	35	15	16	9.2	3.2	.30	1.4
MIN	.94	1.2	1.7	3.6	3.3	3.1	2.7	2.1	1.3	.30	.10	.10
AC-FT	533	367	273	951	435	640	354	467	187	66	9.9	.17
CFSM	8.42	5.98	4.31	15.0	7.60	10.1	5.77	7.37	3.06	1.05	.16	.27
IN.	9.71	6.67	4.97	17.32	7.92	11.66	6.44	8.50	3.41	1.21	.18	.30

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1998, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998
MEAN	6.62	12.6	16.0	15.3	14.1
MAX	9.18	28.8	24.2	20.5	23.7
(WY)	1997	1996	1997	1995	1996
MIN	.33	.97	4.44	10.7	7.00
(WY)	1994	1994	1998	1996	1997

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1994 - 1998

ANNUAL TOTAL	2501.25	2167.74	
ANNUAL MEAN	6.85	5.94	8.22
HIGHEST ANNUAL MEAN			10.5
LOWEST ANNUAL MEAN			5.94
HIGHEST DAILY MEAN	71	48	152
LOWEST DAILY MEAN	.13	.10	.08
ANNUAL SEVEN-DAY MINIMUM	.16	.10	.10
ANNUAL RUNOFF (AC-FT)	4960	4300	5950
ANNUAL RUNOFF (CFSM)	6.65	5.77	7.98
ANNUAL RUNOFF (INCHES)	90.34	78.29	108.41
10 PERCENT EXCEEDS	16	15	20
50 PERCENT EXCEEDS	3.5	3.4	3.3
90 PERCENT EXCEEDS	.33	.20	.23

e Estimated

WILLAMETTE RIVER BASIN

14189000 SANTIAM RIVER AT JEFFERSON, OR

LOCATION.--Lat 44°42'55", long 123°00'40", in SE 1/4 sec.11, T.10 S., R.3 W., Marion County, Hydrologic Unit 17090005, on right bank 350 ft upstream from Southern Pacific railroad bridge at Jefferson, 2.1 mi downstream from confluence of North and South Santiam Rivers, and at mile 9.62.

DRAINAGE AREA.--1,790 mi², approximately.

PERIOD OF RECORD.--October 1905 to June 1906 (gage heights and discharge measurements only), October 1907 to September 1916, October 1939 to current year. Gage-height records collected at same site since 1907 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 904: Drainage area. WSP 1094: 1908, 1910, 1912, 1943. WSP 1248: 1911, 1915-16(M). WSP 1935: 1909, WDR OR-93-1: 1974.

GAGE.--Water-stage recorder. Datum of gage is 199.63 ft above sea level. Prior to Sept. 22, 1940, nonrecording gages at sites within 350 ft downstream at datum 3.00 ft higher.

REMARKS.--Records good. Discharge for period May 25 to June 16 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated since 1953 by Detroit Lake (station 14180500), since 1966 by Green Peter Lake (station 14186100) and by Foster Lake (station 14186600). Salem Canal diverts from North Santiam River at Stayton for irrigation and power; most of this water reaches Willamette River by way of Mill Creek at Salem. Stayton Canal diverts from North Santiam River at Stayton for irrigation of lands near town of West Stayton; some return flow reaches North Santiam River upstream from station. Albany power canal diverts from South Santiam River at Lebanon; return flow reaches Willamette River at Albany. Continuous water-quality records for the period October 1963 to September 1987 have been collected at this location. Periodic suspended sediment data are available for the period October 1991 to September 1993.

AVERAGE DISCHARGE.--68 years (water years 1908-16, 1940-98), 7,765 ft³/s, 5,626,000 acre-ft/yr (unadjusted). 32 years (water years 1967-98), 7,735 ft³/s, 5,604,000 acre-ft/yr (regulated period).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 197,000 ft³/s Dec. 22, 1964, gage height, 24.22 ft; minimum discharge observed, 260 ft³/s Aug. 15-22, Aug. 24 to Sept. 2, 1940.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood stage of 25.0 ft was reached in December 1861, and 23.4 ft in February 1890 (information from Corps of Engineers). On Nov. 21, 1921, the stage reached 19.5 ft at gage on railroad bridge 350 ft downstream, corresponding gage height at present site and datum, 24.4 ft, from curve of relation, discharge, 202,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 33,000 ft³/s Jan. 15, gage height, 12.66 ft; minimum discharge, 1,120 ft³/s Aug. 28, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4390	16000	8000	4640	9800	10500	6120	4080	10700	2920	1460	1320
2	5790	12700	7670	6320	8530	11800	5370	4540	9170	2720	1450	1650
3	7040	12100	7370	7530	6860	11800	4900	4890	7440	2580	1410	1670
4	8270	12800	7140	9220	5270	10700	5110	4610	6910	2580	1350	1690
5	10500	12100	7050	8840	4950	9790	5010	4530	5910	2540	1260	1700
6	9620	11900	6630	8690	5190	8680	5150	4490	5300	2440	1230	1720
7	8190	12400	6470	10400	4910	7030	5500	4250	4930	2290	1220	1720
8	7600	13000	7160	10100	4670	6610	4940	4100	4580	2140	1210	1720
9	9470	12700	6950	9480	4740	6690	4870	4060	4400	2000	1240	1730
10	10200	12000	7210	9350	4400	5990	6130	3870	4760	1920	1220	1830
11	11000	8040	6090	17900	4960	5450	7990	3600	5190	1880	1200	2040
12	12000	6680	5040	21300	5020	5570	7990	3530	4680	1850	1200	2080
13	11400	6560	4440	22400	7870	6300	7110	3960	4100	1820	1180	2100
14	10500	6400	4400	27000	6740	6260	6430	4400	3660	1780	1170	2240
15	9100	6340	4580	28400	6520	5780	5460	6400	3550	1730	1170	2480
16	8510	6260	7860	23600	6220	5980	4930	7780	3420	1690	1200	2530
17	7690	6640	19500	26400	5820	5630	4270	8480	e3000	1630	1190	2540
18	7600	6900	15900	25100	5370	5280	4150	8530	e2800	1600	1160	2610
19	6920	7150	12400	26000	5810	4540	4350	8370	e3000	1600	1160	2970
20	6110	8380	10600	22400	6540	4200	4010	8500	e2800	1580	1160	3030
21	6260	9300	9960	23500	11000	4150	3870	11300	e2600	1530	1180	2980
22	6270	8440	9290	24500	13200	8550	3780	11000	e2400	1500	1180	3130
23	6630	8290	8770	26400	10200	11600	4270	11000	2410	1480	1190	3350
24	6590	12400	8190	27700	7840	11900	6480	9740	2570	1470	1200	3300
25	6640	13600	7560	28000	6530	10500	6190	11600	2780	1460	1170	3410
26	6400	12100	7130	27300	5900	10400	5480	11600	3700	1470	1170	3560
27	6450	10900	6870	24900	5130	10900	4680	9910	4060	1450	1150	3550
28	6340	10200	6720	22000	5810	8830	4320	8580	3500	1410	1150	3500
29	7620	9170	6550	18400	---	7880	4160	9360	3340	1420	1160	3470
30	14400	8490	5410	15600	---	7140	3990	14500	3090	1440	1190	3480
31	20900	---	4600	12700	---	6740	---	13300	---	1480	1190	---
TOTAL	266400	299940	243510	576070	185800	243170	157010	228860	130750	57400	37770	75100
MEAN	8594	9998	7855	18580	6636	7844	5234	7383	4358	1852	1218	2503
MAX	20900	16000	19500	28400	13200	11900	7990	14500	10700	2920	1460	3560
MIN	4390	6260	4400	4640	4400	4150	3780	3530	2400	1410	1150	1320
AC-FT	528400	594900	483000	1143000	368500	482300	311400	453900	259300	113900	74920	149000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1998, BY WATER YEAR (WY)

	5193	11950	15890	14710	11120	8925	7625	6563	4348	1899	1637	3132
MEAN	5193	11950	15890	14710	11120	8925	7625	6563	4348	1899	1637	3132
MAX	11890	26850	31700	24520	32350	25700	16150	11270	11150	4825	2883	5325
(WY)	1969	1974	1978	1974	1996	1972	1993	1984	1984	1983	1968	1968
MIN	2490	2882	2420	2178	1897	3245	3874	2115	1287	958	1004	1553
(WY)	1988	1988	1977	1977	1977	1992	1968	1973	1992	1992	1994	1967

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1967 - 1998

	3208010	2501780	7735	12310	1974
ANNUAL TOTAL	3208010	2501780	7735	12310	1974
ANNUAL MEAN	8789	6854	3512	3512	1977
HIGHEST ANNUAL MEAN			115000		Feb 7 1996
LOWEST ANNUAL MEAN			764		Jul 29 1992
HIGHEST DAILY MEAN	46300	Feb 1	1170		Jul 28 1992
LOWEST DAILY MEAN	1460	Jul 21	1150		
ANNUAL SEVEN-DAY MINIMUM	1490	Aug 11	1170		
ANNUAL RUNOFF (AC-FT)	6363000	4962000	5604000		
10 PERCENT EXCEEDS	19000	12400	17200		
50 PERCENT EXCEEDS	6450	5810	4980		
90 PERCENT EXCEEDS	1620	1460	1550		

e Estimated

WILLAMETTE RIVER BASIN

14190500 LUCKIAMUTE RIVER NEAR SUVER, OR

LOCATION.--Lat 44°47'00", long 123°14'00", in SW 1/4 SW 1/4 sec.18, T.9 S., R.4 W., Polk County, Hydrologic Unit 17090003, on right bank 10 ft upstream from highway bridge at Helmick State Park, 3.0 mi northwest of Suver, 4.7 mi downstream from Little Luckiamute River, and at mile 13.5.

DRAINAGE AREA.--240 mi².

PERIOD OF RECORD.--August 1905 to October 1911, July 1940 to current year.

REVISED RECORDS.--WSP 1044: Drainage area. WSP 1094: 1945-46. WSP 1248: 1905-11.

GAGE.--Water-stage recorder. Datum of gage is 171.92 ft above sea level. Aug. 18, 1905, to Oct. 31, 1911, nonrecording gage at present site at different datum, Aug. 20 to Oct. 15, 1940, nonrecording gage at present site and datum.

REMARKS.--Records fair. Discharges for period Jan. 18 to Mar. 2 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Some diurnal fluctuation during periods of low flow caused by millpond upstream from station. A few small diversions for irrigation upstream from station. Continuous water-quality records for the period October 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--64 years (water years 1906-11, 1941-98), 892 ft³/s, 50.49 in/yr, 646,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 32,900 ft³/s Dec. 22, 1964, gage height, 34.52 ft; minimum discharge, 0.65 ft³/s Aug. 13, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 17	1830	*5,950	*25.90				
Minimum discharge, 11 ft ³ /s Sept. 9.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	163	2570	1290	742	1320	2360	1020	317	388	140	55	24
2	232	1500	1140	1040	1280	2300	919	328	361	138	60	21
3	398	1140	1010	904	1210	2400	851	390	343	133	58	21
4	819	969	905	989	1120	2520	808	339	324	131	47	19
5	1490	822	818	1410	1100	2130	753	312	313	137	42	18
6	1040	737	747	2430	1360	1810	709	299	299	130	40	20
7	676	730	727	2630	1380	1560	671	286	285	116	40	24
8	537	649	1030	2140	1410	1600	627	280	271	111	38	21
9	979	590	912	1720	1720	1580	600	280	261	105	42	17
10	1620	547	1060	1440	1560	1480	626	273	258	98	42	19
11	1250	507	986	2290	2100	1450	756	266	256	96	37	18
12	955	473	906	3020	2280	1340	755	262	240	99	39	18
13	767	443	832	3790	3210	1400	707	286	227	99	37	23
14	643	416	790	4910	3110	1240	e660	284	219	89	34	28
15	552	392	827	5200	2670	1140	e680	341	212	88	32	22
16	484	374	2210	4150	2290	1050	601	353	204	87	40	22
17	430	570	5320	4610	1950	956	566	383	200	79	44	17
18	398	760	4560	5090	1810	882	538	370	192	71	38	20
19	364	1110	2710	3950	1860	819	519	349	190	75	38	87
20	335	3670	2040	3570	1780	762	490	400	183	77	39	91
21	312	3630	1800	3060	2960	767	465	901	176	68	36	60
22	295	2200	1480	2940	4150	1820	446	876	169	63	37	44
23	282	1930	1320	3420	3540	2370	436	665	163	60	38	37
24	269	2920	1330	3800	2580	2840	421	600	167	57	41	31
25	256	2590	1170	4870	2050	2300	399	624	185	57	39	33
26	247	2070	1050	4070	1730	1840	382	564	190	62	39	34
27	243	1650	993	2950	1480	1660	367	524	196	64	35	38
28	235	1450	911	2280	1640	1490	354	470	172	52	33	39
29	332	1430	845	1910	---	1310	342	441	157	53	31	34
30	1170	1500	788	1710	---	1170	329	494	144	52	30	34
31	3790	---	737	1470	---	1130	---	429	---	55	31	---
TOTAL	21563	40339	43244	88505	56650	49476	17797	12986	6945	2742	1232	934
MEAN	696	1345	1395	2855	2023	1596	593	419	232	88.5	39.7	31.1
MAX	3790	3670	5320	5200	4150	2840	1020	901	388	140	60	91
MIN	163	374	727	742	1100	762	329	262	144	52	30	17
AC-FT	42770	80010	85770	175500	112400	98140	35300	25760	13780	5440	2440	1850
CFSM	2.90	5.60	5.81	11.9	8.43	6.65	2.47	1.75	.96	.37	.17	.13
IN.	3.34	6.25	6.70	13.72	8.78	7.67	2.76	2.01	1.08	.43	.19	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1998, BY WATER YEAR (WY)

	185	1081	2078	2256	2060	1433	863	423	203	80.9	42.9	54.1
MEAN	185	1081	2078	2256	2060	1433	863	423	203	80.9	42.9	54.1
MAX	1241	4574	5112	4727	4769	3002	1847	1026	512	184	85.0	191
(WY)	1948	1910	1965	1956	1949	1961	1955	1963	1984	1906	1906	1959
MIN	20.2	49.4	106	151	253	391	312	190	74.3	30.0	9.45	17.0
(WY)	1953	1994	1977	1977	1977	1941	1977	1966	1992	1967	1967	1967

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1906 - 1998
ANNUAL TOTAL	353773	342413	
ANNUAL MEAN	969	938	892
HIGHEST ANNUAL MEAN			1464
LOWEST ANNUAL MEAN			230
HIGHEST DAILY MEAN	9100	5320	25200
LOWEST DAILY MEAN	34	17	2.6
ANNUAL SEVEN-DAY MINIMUM	38	20	4.3
ANNUAL RUNOFF (AC-FT)	701700	679200	646100
ANNUAL RUNOFF (CFSM)	4.04	3.91	3.72
ANNUAL RUNOFF (INCHES)	54.83	53.07	50.49
10 PERCENT EXCEEDS	2290	2410	2350
50 PERCENT EXCEEDS	609	537	352
90 PERCENT EXCEEDS	62	38	36

e Estimated

WILLAMETTE RIVER BASIN

219

14191000 WILLAMETTE RIVER AT SALEM, OR

LOCATION.--Lat 44°56'40", long 123°02'30", in SE 1/4 SW 1/4 sec. 22, T.7 S., R.3 W., Marion County, Hydrologic Unit 17090007, on right bank 300 ft upstream from Center Street Bridge in Salem and at mile 84.16.

DRAINAGE AREA.--7,280 mi², approximately.

PERIOD OF RECORD.--October 1909 to December 1916, January 1923 to current year. Monthly discharge only January 1923 to September 1927, published in WSP 1318. Gage-height records collected at about the same site since 1892 are contained in reports of National Weather Service.

REVISED RECORDS.--WSP 1318: 1915(M).

GAGE.--Water-stage recorder. Datum of gage is 106.14 ft above sea level. Oct. 1, 1909, to Dec. 31, 1916, nonrecording gage at site 0.5 mi upstream at datum 8.00 ft higher. Jan. 1, 1923, to Nov. 26, 1934, nonrecording gage at Center Street Bridge at datum 8.00 ft higher. Nov. 27, 1934, to Sept. 30, 1962, water-stage recorder at present site at datum 8.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated by 12 reservoirs upstream from station (see elsewhere in this report). Many small diversions for irrigation upstream from station; part of flow of Salem Canal, which diverts water from North Santiam River, returns to Willamette River downstream from station, through Mill Creek at Salem.

AVERAGE DISCHARGE.--82 years (water years 1910-16, 1924-98), 23,470 ft³/s, 43.81 in/yr, 17,000,000 acre-ft/yr.
30 years (water years 1969-98) 23,850 ft³/s, 44.51 in/yr, 17,280,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 348,000 ft³/s Jan. 8, 1923, gage height, 38.3 ft, present datum; minimum discharge, 2,470 ft³/s Aug. 27, 1940, gage height, 3.55 ft, present datum.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 500,000 ft³/s Dec. 4, 1861, gage height, about 47 ft present datum, from rating curve extended above 250,000 ft³/s in 1916. Floods of Jan. 16, 1881, and Feb. 5, 1890, reached stages of 44.3 ft, discharge, 428,000 ft³/s, and 45.1 ft, discharge, 448,000 ft³/s, respectively, from floodmarks and information by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 90,500 ft³/s Jan. 15, gage height, 21.28 ft; minimum discharge, 6,950 ft³/s Aug. 30, 31, Sept. 1, gage height, 5.62 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13600	43600	24800	15500	37300	31600	20300	12100	42300	9560	7840	6960
2	15500	37500	23000	17700	31800	35700	18600	12300	35100	9300	7840	7170
3	17400	33700	21500	21000	28000	37700	16900	13100	28100	9120	7760	7230
4	19300	31300	20400	25300	23900	40100	16500	13000	23800	9030	7260	7220
5	22400	29900	19800	28300	22400	38000	16000	12300	21800	9020	7210	7320
6	24000	28900	19100	30100	22500	33300	15600	12200	19000	9010	7240	7400
7	21500	28500	17700	31500	22300	28400	16000	11700	17200	8950	7240	7440
8	19800	29500	18700	33200	21200	25900	15400	11400	15700	8750	7200	7450
9	21100	29300	19400	32300	22000	25300	14900	11200	15000	8540	7230	7490
10	25000	28700	20700	30100	20800	23700	15600	11300	14900	8350	7210	7830
11	25400	25000	20400	36300	22500	22100	19500	11000	15400	8120	7180	8340
12	26600	20200	17900	56700	23500	21100	22000	10800	14700	8090	7160	8400
13	26200	19000	15900	66700	30400	21900	21100	11400	13700	8050	7130	8430
14	25000	18300	14800	77600	32000	22300	19300	13000	12800	7890	7070	8480
15	23100	17800	14300	88700	30200	21000	17700	15500	12000	7720	7040	8680
16	21900	17300	18500	87100	29500	20200	16300	19600	11900	7650	7170	8470
17	20500	17600	40000	84500	27500	19400	15000	25200	12400	7580	7210	8540
18	19900	18700	53700	82000	24700	18400	14200	27200	12000	7510	7180	8750
19	18900	19800	45700	79200	23800	16900	13800	27600	11000	7470	7110	9010
20	17600	26500	37600	78600	24700	16000	13300	28200	10700	7550	7090	9350
21	16800	30500	33700	74000	33400	15700	12700	35500	10100	7730	7090	9210
22	16600	27600	30800	73700	56700	25900	12400	40600	9520	7860	7140	9210
23	16800	25500	27400	75700	58300	41500	12300	37700	9340	7840	7150	9390
24	16500	32500	25700	80600	45500	48900	14100	31900	9430	7810	7210	9340
25	16600	38100	24300	86800	36000	45200	16100	30600	9690	7790	7190	9360
26	16300	35600	22400	86400	31000	38900	16400	34500	10200	7800	7140	9520
27	16200	32100	20700	81100	26900	36000	14900	32100	11200	7780	7160	9760
28	16000	28800	19400	71700	25400	32300	13400	28000	10900	7700	7110	9670
29	16500	26600	18600	60800	---	27900	12800	26200	10400	7690	7100	9470
30	23600	25700	17500	54100	---	23800	12400	36700	9870	7750	6990	9760
31	39000	---	16300	47500	---	21700	---	46100	---	7820	6970	---
TOTAL	635600	824100	740700	1794800	835200	876800	475500	690000	460150	252830	223600	254650
MEAN	20500	27470	23890	57900	29830	28280	15850	22260	15340	8156	7213	8488
MAX	39000	43600	53700	88700	58300	48900	22000	46100	42300	9560	7840	9760
MIN	13600	17300	14300	15500	20800	15700	12300	10800	9340	7470	6970	6960
AC-FT	1261000	1635000	1469000	3560000	1657000	1739000	943200	1369000	912700	501500	443500	505100
CFSM	2.82	3.77	3.28	7.95	4.10	3.89	2.18	3.06	2.11	1.12	.99	1.17
IN.	3.25	4.21	3.78	9.17	4.27	4.48	2.43	3.53	2.35	1.29	1.14	1.30

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

	MEAN	14140	30620	48630	46990	35950	29240	23380	19020	13610	7602	7335	10140
MAX	24390	70400	106000	79800	90630	73670	46440	31280	30910	12410	9540	13340	
(WY)	1969	1974	1997	1997	1996	1972	1993	1993	1984	1983	1971	1978	
MIN	7935	8444	6780	6377	5313	11270	10260	7701	5657	5737	5734	6155	
(WY)	1988	1988	1977	1977	1977	1992	1977	1973	1992	1992	1992	1992	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1969 - 1998
ANNUAL TOTAL	9953490	8063930	
ANNUAL MEAN	27270	22090	23850
HIGHEST ANNUAL MEAN			37960
LOWEST ANNUAL MEAN			9792
HIGHEST DAILY MEAN	167000	Jan 2	226000
LOWEST DAILY MEAN	8550	Aug 12	4140
ANNUAL SEVEN-DAY MINIMUM	8630	Aug 7	4340
ANNUAL RUNOFF (AC-FT)	19740000	15990000	17280000
ANNUAL RUNOFF (CFSM)	3.75	3.03	3.28
ANNUAL RUNOFF (INCHES)	50.86	41.21	44.51
10 PERCENT EXCEEDS	54100	38400	55200
50 PERCENT EXCEEDS	18900	17900	15100
90 PERCENT EXCEEDS	9490	7460	6850

WILLAMETTE RIVER BASIN

14194150 SOUTH YAMHILL RIVER AT MCMINNVILLE, OR

LOCATION.--Lat 45°12'21", long 123°10'53", in SE 1/4 sec. 21, T.4 S., R.4 W., Yamhill County, Hydrologic Unit 17090008, on left bank 0.3 mi downstream from Cozine Creek, at Highway 18 McMinnville Spur bridge, in McMinnville, and at mile 5.6.

DRAINAGE AREA.--528 mi².

PERIOD OF RECORD.--October 1994 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 50 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--4 years (water years 1995-98), 2,353 ft³/s, 60.55 in/yr, 1,705,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,100 ft³/s Feb. 9, 1996, gage height, 59.33; minimum discharge, 12 ft³/s Oct. 12, 1994, but may have been lower during period of missing record Oct. 5-12, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 16	0400	*11,300	*40.96	No other peak greater than base discharge.			
Minimum discharge, 21 ft ³ /s Sept. 4.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	290	5480	3580	1510	2500	3590	1930	570	753	220	66	28
2	502	3160	3040	2530	2380	3850	1730	549	687	210	70	27
3	1070	2160	2590	2440	2250	3890	1590	582	637	203	70	25
4	1350	1760	2240	2500	2140	4080	1510	570	597	194	62	23
5	2540	1500	1970	2910	2080	3650	1410	516	558	195	51	24
6	2550	1340	1760	5050	2610	3160	1350	487	529	187	45	28
7	1640	1440	1610	6180	3290	2740	1280	452	497	172	42	27
8	1210	1390	1870	5570	2950	2560	1200	429	464	157	46	27
9	1560	1210	1830	4310	3210	2610	1120	418	434	148	51	26
10	4580	1110	1820	3390	3090	2750	1200	408	422	140	49	24
11	4350	1020	1810	3750	3930	2670	1630	395	426	131	45	25
12	2840	939	1680	5740	4560	2470	1830	385	417	128	43	27
13	2060	872	1560	6520	5770	2600	1710	399	370	128	40	30
14	1630	818	1470	8960	6320	2460	1530	421	339	124	40	31
15	1340	770	1520	10800	5530	2220	1530	477	320	119	38	29
16	1150	731	2970	10900	4550	2000	1440	715	306	114	38	28
17	1010	883	7910	9990	3750	1830	1310	856	305	108	39	28
18	880	1860	9280	9620	3240	1660	1210	977	289	101	38	40
19	796	2210	7050	8420	3670	1530	1120	829	275	97	37	37
20	728	7230	4590	7010	3880	1420	1060	931	281	95	35	188
21	664	9880	4090	5730	5180	1360	991	1790	272	90	36	118
22	608	8230	3450	4680	7610	2490	930	2290	263	82	38	78
23	569	5530	2970	5060	7200	3860	884	1850	241	75	40	64
24	545	7030	2940	6300	5280	5510	841	1490	244	73	38	63
25	515	7760	2670	8260	3850	4790	802	1400	266	72	38	62
26	487	6520	2380	9030	3230	3590	752	1300	287	72	39	54
27	474	4780	2160	7820	2750	3090	708	1200	359	71	39	50
28	471	3660	1990	5650	2710	2740	671	1090	310	67	36	60
29	560	3640	1840	4090	---	2390	640	965	258	59	35	55
30	1930	4020	1700	3320	---	2120	606	893	234	60	35	48
31	5310	---	1580	2860	---	2020	---	823	---	62	32	---
TOTAL	46209	98933	89920	180900	109510	87700	36515	26457	11640	3754	1351	1374
MEAN	1491	3298	2901	5835	3911	2829	1217	853	388	121	43.6	45.8
MAX	5310	9880	9280	10900	7610	5510	1930	2290	753	220	70	188
MIN	290	731	1470	1510	2080	1360	606	385	234	59	32	23
AC-FT	91660	196200	178400	358800	217200	174000	72430	52480	23090	7450	2680	2730
CFSM	2.82	6.25	5.49	11.1	7.41	5.36	2.31	1.62	.73	.23	.08	.09
IN.	3.26	6.97	6.34	12.75	7.72	6.18	2.57	1.86	.82	.26	.10	.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1995 - 1998, BY WATER YEAR (WY)

	1995	1996	1997	1998	1995	1996	1997	1998	1995	1996	1997	1998
MEAN	680	3167	6370	5781	5450	3131	2107	1010	421	116	41.4	119
MAX	1491	3683	9904	6141	9541	4229	3832	1669	530	163	62.9	281
(WY)	1998	1997	1997	1996	1996	1997	1996	1996	1997	1997	1997	1997
MIN	278	2814	2901	5099	3378	1966	1217	666	257	74.0	26.4	45.8
(WY)	1995	1995	1998	1995	1997	1996	1998	1995	1995	1995	1996	1998

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1995 - 1998
ANNUAL TOTAL	755811	694263	
ANNUAL MEAN	2071	1902	2353
HIGHEST ANNUAL MEAN			2796
LOWEST ANNUAL MEAN			1902
HIGHEST DAILY MEAN	22600	Jan 1	40300
LOWEST DAILY MEAN	34	Aug 19	12
ANNUAL SEVEN-DAY MINIMUM	37	Aug 13	16
ANNUAL RUNOFF (AC-FT)	1499000	1377000	1705000
ANNUAL RUNOFF (CFSM)	3.92	3.60	4.46
ANNUAL RUNOFF (INCHES)	53.25	48.91	60.55
10 PERCENT EXCEEDS	5330	5220	6500
50 PERCENT EXCEEDS	1210	1120	1090
90 PERCENT EXCEEDS	69	40	40

WILLAMETTE RIVER BASIN

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14195500 HASKINS CREEK RESERVOIR NEAR MCMINNVILLE, OR

LOCATION.--Lat 45°18'43", long 123°21'23", in SW 1/4 NW 1/4 sec.18, T.3 S., R.5 W., Yamhill County, Hydrologic Unit 17090008, on control tower 250 ft upstream from dam on Haskins Creek, 11 mi northwest of McMinnville, and at mile 5.1.

DRAINAGE AREA.--6.88 mi².

PERIOD OF RECORD.--October 1951 to current year.

REVISED RECORDS.--WSP 1738: Drainage area. WDR OR-79-1: 1978 (maximum contents).

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by city of McMinnville). Prior to February 1981, at datum 20.0 ft lower.

REMARKS.--Reservoir is formed by earthfill dam equipped with five siphon spillways which act as overflow weirs until priming occurs, approximately 815.0 ft elevation. Capacity of reservoir (based on May 1992 resurvey, new capacity table put into use Oct. 1, 1991), 721 acre-ft between elevations 741.5 ft, invert of outlet tunnel, and 815.0 ft, crest of siphon spillways. Dead storage negligible. Rated capacity of three siphons is 700 ft³/s each and remaining two siphons 350 ft³/s each. Water is used for municipal supply of City of McMinnville.

COOPERATION.--Elevation and capacity table furnished by City of McMinnville Water and Light Department. Elevations based on once-daily staff gage readings.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed contents, 748 acre-ft Nov. 17, 1954, elevation, 815.65 ft, present datum; no contents at times during winter months.

EXTREMES FOR CURRENT YEAR.--Maximum observed contents, 721 acre-ft Oct. 2, Jan. 8, 15-19, Mar. 9 to June 11, elevation, 815.0 ft; no contents, Feb. 11-25, elevation, 750.0 ft.

MONTHEND ELEVATIONS AND CONTENTS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	814.3	702	-
Oct. 31.....	815.0	721	+19
Nov. 30.....	815.0	721	0
Dec. 31.....	815.0	721	0
CAL YR 1997.....	-	-	0
Jan. 31.....	797.6	385	-336
Feb. 28.....	790.7	289	-96
Mar. 31.....	815.0	721	+432
Apr. 30.....	815.0	721	0
May 31.....	815.0	721	0
June 30.....	811.1	630	-91
July 31.....	807.5	556	-74
Aug. 31.....	810.2	611	+55
Sept. 30.....	810.1	609	-2
WTR YR 1998.....	-	-	-93

WILLAMETTE RIVER BASIN

14196001 HASKINS CREEK BELOW RESERVOIR, NEAR MCMINNVILLE, OR

LOCATION.--Lat 45°18'39", long 123°21'06", in SE 1/4 NW 1/4 sec.18, T.3 S., R.5 W., Yamhill County, Hydrologic Unit 17090008, on right bank 800 ft downstream from Haskins Creek Reservoir, 11 mi northwest of McMinnville, and at mile 5.0.

DRAINAGE AREA.--6.90 mi².

PERIOD OF RECORD.--October 1951 to current year.

REVISED RECORDS.--WSP 1738: Drainage area. Maximum discharge for water year 1957, published in WSP 1518, has been found to be unreliable and should not be used.

GAGE.--Water-stage recorder and concrete control. Elevation of gage is 707 ft above sea level, topographic survey of 1955. Prior to Aug. 5, 1952, water-stage recorder at site 600 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records fair. All records given herein include flow in pipeline which diverts 600 ft upstream from station for municipal supply of McMinnville. Flow regulated by Haskins Creek Reservoir (station 14195500). Water from McGuire Lake (station 14302800) on the Nestucca River is diverted through a tunnel to Haskins Creek Reservoir to augment summer flows.

COOPERATION.--Meter readings for diversion and elevations of Haskins Creek Reservoir furnished by city of McMinnville.

AVERAGE DISCHARGE.--47 years (water years 1952-98), 31.0 ft³/s, 61.01 in/yr, 22,460 acre-ft/yr, adjusted for storage and diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,050 ft³/s Feb. 8, 1996, gage height, 6.01 ft, from floodmark, from rating curve extended above 60 ft³/s on basis of slope-area measurement of peak flow; maximum daily discharge, 615 ft³/s Feb. 8, 1996; minimum daily, 0.10 ft³/s Oct. 27, 28, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 230 ft³/s Jan. 17; minimum daily, 7.3 ft³/s Mar. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.0	55	58	35	72	41	37	16	14	12	14	15
2	17	48	44	23	70	46	35	16	14	11	14	15
3	24	41	27	68	48	35	17	13	11	14	15	15
4	38	33	39	36	64	53	33	16	12	11	14	15
5	37	28	38	60	61	56	31	15	13	10	15	14
6	30	29	35	79	73	32	29	14	12	9.7	18	14
7	23	29	38	70	83	7.3	27	14	11	12	17	15
8	27	24	31	61	74	24	25	13	11	13	14	14
9	110	23	30	56	71	45	26	13	11	13	14	13
10	79	21	34	60	72	54	30	13	11	15	15	12
11	50	20	30	60	71	46	34	13	11	12	15	12
12	44	20	29	62	98	51	32	13	10	15	16	12
13	37	17	27	67	116	49	30	14	9.6	14	17	13
14	32	17	27	162	99	40	29	15	9.6	13	17	12
15	28	16	32	190	85	45	28	18	9.8	13	15	12
16	24	16	112	188	74	41	27	17	9.6	14	14	12
17	22	27	108	230	66	29	26	19	9.2	14	14	14
18	20	21	69	178	68	34	25	17	11	16	15	12
19	19	138	60	144	75	31	24	17	11	17	13	9.8
20	17	208	59	137	86	30	23	21	11	16	14	9.7
21	16	115	46	132	151	41	22	27	11	15	14	11
22	15	81	45	126	146	42	21	23	13	15	13	10
23	15	125	35	123	106	71	21	21	13	16	14	11
24	14	128	27	130	83	65	20	21	12	16	14	10
25	13	106	25	134	49	53	19	20	10	15	13	11
26	14	85	25	151	9.9	54	19	19	9.5	15	13	10
27	13	61	23	157	14	45	18	18	9.1	16	13	9.7
28	14	64	22	130	26	49	17	16	9.4	18	14	10
29	31	65	20	97	---	37	17	16	10	19	14	10
30	118	56	19	90	---	37	16	15	12	16	14	10
31	99	---	18	81	---	39	---	15	---	11	15	---
TOTAL	1049.0	1710	1246	3276	2130.9	1335.3	776	522	332.8	433.7	450	363.2
MEAN	33.8	57.0	40.2	106	76.1	43.1	25.9	16.8	11.1	14.0	14.5	12.1
MAX	118	208	112	230	151	71	37	27	14	19	18	15
MIN	9.0	16	18	23	9.9	7.3	16	13	9.1	9.7	13	9.7
AC-FT	2080	3390	2470	6500	4230	2650	1540	1040	660	860	893	720
MEAN†	34.1	57.0	40.2	100	74.4	50.1	25.9	16.9	9.56	6.93	5.68	4.57
CFSM†	4.95	8.26	5.82	14.5	10.8	7.26	3.75	2.45	1.39	1.00	.823	.662
IN.†	5.71	9.21	6.71	16.75	11.24	8.38	4.19	2.83	1.55	1.16	0.95	0.74
AC-FT†	2099	3390	2470	6164	4134	3082	1540	1040	569	426	349	272

CAL YR 1997 TOTAL 13222.4 MEAN 36.2 MAX 332 MIN 8.0 AC-FT 26230 MEAN† 35.0 CFSM† 5.07 IN.† 68.87 AC-FT† 25337
WTR YR 1998 TOTAL 13624.9 MEAN 37.3 MAX 230 MIN 7.3 AC-FT 27020 MEAN† 35.3 CFSM† 5.11 IN.† 69.37 AC-FT† 25522

† Adjusted for change in contents in Haskins Creek Reservoir and diversion from McGuire Lake.

14198400 BULL CREEK NEAR WILHOIT, OR

LOCATION.--Lat 44°57'42", long 122°22'59", in NW 1/4 SE 1/4 sec.13, T.7 S., R.3 E., Clackamas County, Hydrologic Unit 17090009, on left bank 0.5 mi upstream from mouth, 11 mi southeast of Wilhoit and at mile 0.43.

DRAINAGE AREA.--0.66 mi².

PERIOD OF RECORD.--April 1993 to current year.

REVISED RECORDS.--WDR OR-97-1. Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,680 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records fair except for the period June 4 to Aug. 18, which are poor. No regulation or diversion.

AVERAGE DISCHARGE.--5 years (water years 1994-98), 2.18 ft³/s, 44.79 in/yr, 1,580 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 250 ft³/s Feb. 7, 1996, gage height, 7.55 ft, from rating curve extended above 70 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.02 ft³/s Sept. 25-28, 1994, Sept. 21-24, 1995, Sept. 28-30, 1996, Oct. 1-4, 7-12, 1996, Sept. 15-17, 1998.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 18 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 16	2330	21	5.36	May 18	0530	19	5.32
Jan. 14	2015	*24	*5.46				

Minimum discharge, 0.02 ft³/s Sept. 15-17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.50	4.5	1.0	1.3	2.8	3.7	1.3	1.2	3.5	.62	.17	.04
2	.55	2.7	.89	1.5	2.4	4.3	1.2	2.1	2.5	.58	.15	.04
3	.51	1.6	.80	1.7	2.3	4.3	1.2	2.0	2.0	.56	.15	.04
4	.96	1.2	.70	2.3	1.8	4.2	1.2	1.9	1.7	.53	.13	.04
5	2.8	1.0	.65	2.8	1.5	3.8	1.2	1.7	1.3	.49	.12	.04
6	1.6	.87	.59	3.7	1.6	3.3	1.2	1.3	1.1	.46	.12	.04
7	1.1	.95	.66	4.2	1.5	2.6	1.4	1.2	1.0	.44	.12	.03
8	1.6	.83	.65	3.9	1.5	2.5	1.5	1.1	.93	.42	.11	.03
9	4.0	.75	.61	3.1	1.4	2.5	1.8	1.1	.88	.38	.11	.03
10	3.2	.68	.60	3.0	2.0	2.4	3.0	1.1	.92	.37	.10	.03
11	2.5	.62	.60	12	3.4	2.5	4.6	1.3	.79	.35	.10	.03
12	2.6	.56	.60	11	5.7	2.5	4.6	1.6	.71	.32	.09	.04
13	2.1	.51	.57	10	9.7	2.3	3.8	1.9	.67	.30	.09	.03
14	1.4	.45	.65	16	5.6	1.9	3.2	2.4	.63	.28	.09	.03
15	1.1	.41	.88	17	4.1	1.4	2.5	3.2	.61	.27	.09	.03
16	.87	.40	7.0	8.8	3.4	1.3	2.1	4.1	.64	.25	.10	.03
17	.77	.52	15	9.5	2.8	1.1	1.8	8.2	.59	.23	.09	.03
18	.71	.43	6.4	9.3	2.6	1.1	1.5	16	.55	.23	.08	.22
19	.69	.85	3.9	10	3.4	.98	1.3	8.4	.58	.22	.08	.21
20	.64	1.9	3.1	7.3	3.6	.92	1.1	5.8	.54	.21	.08	.08
21	.56	1.8	2.4	5.1	10	.99	1.1	6.5	.52	.20	.09	.06
22	.52	1.5	1.8	4.1	9.3	2.7	.98	5.6	.50	.19	.07	.05
23	.52	2.5	1.6	4.0	5.7	5.3	1.2	4.1	.49	.18	.08	.05
24	.47	5.8	1.5	5.3	4.2	5.9	1.8	3.4	.58	.18	.08	.05
25	.44	4.0	1.5	7.1	3.5	4.0	2.0	3.6	.67	.17	.07	.16
26	.41	3.0	1.4	6.9	2.8	3.4	1.9	3.5	.79	.16	.07	.12
27	.39	1.9	1.3	6.9	2.3	2.6	1.6	3.3	.81	.15	.07	.06
28	.40	1.4	1.3	5.6	2.4	2.2	1.3	2.5	.79	.16	.06	.05
29	1.2	1.3	1.3	4.4	---	1.9	1.1	2.6	.72	.16	.05	.05
30	7.4	1.1	1.2	3.7	---	1.7	1.0	5.1	.67	.16	.05	.04
31	11	---	1.1	3.1	---	1.4	---	4.8	---	.17	.05	---
TOTAL	53.51	46.03	62.25	194.6	103.3	81.69	55.48	112.6	28.68	9.39	2.91	1.78
MEAN	1.73	1.53	2.01	6.28	3.69	2.64	1.85	3.63	.96	.30	.094	.059
MAX	11	5.8	15	17	10	5.9	4.6	16	3.5	.62	.17	.22
MIN	.39	.40	.57	1.3	1.4	.92	.98	1.1	.49	.15	.05	.03
AC-FT	106	91	123	386	205	162	110	223	57	19	5.8	3.5
CFSM	2.62	2.32	3.04	9.51	5.59	3.99	2.80	5.50	1.45	.46	.14	.09
IN.	3.02	2.59	3.51	10.97	5.82	4.60	3.13	6.35	1.62	.53	.16	.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1998, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
MEAN	.80	3.33	5.13	4.46	4.71	3.08	1.98	1.69	.63	.24	.086	.11
MAX	1.73	5.85	12.0	6.28	10.8	6.49	3.11	3.63	.96	.30	.10	.25
(WY)	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987
MIN	.087	.13	.91	1.25	1.27	1.14	.95	.32	.44	.20	.052	.055
(WY)	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1994	1996

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1994 - 1998

ANNUAL TOTAL	724.31	752.22	
ANNUAL MEAN	1.98	2.06	
HIGHEST ANNUAL MEAN			2.18
LOWEST ANNUAL MEAN			3.10
HIGHEST DAILY MEAN	35	Mar 10	.58
LOWEST DAILY MEAN	.05	Sep 9	100
ANNUAL SEVEN-DAY MINIMUM	.06	Sep 4	.02
ANNUAL RUNOFF (AC-FT)	1440	1490	.02
ANNUAL RUNOFF (CFSM)	3.01	3.12	Sep 27 1996
ANNUAL RUNOFF (INCHES)	40.82	42.40	1580
10 PERCENT EXCEEDS	4.1	5.1	3.30
50 PERCENT EXCEEDS	.73	1.2	44.79
90 PERCENT EXCEEDS	.12	.08	5.0
			.77
			.07

WILLAMETTE RIVER BASIN

14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR

LOCATION.--Lat 44°57'21", long 122°37'38", in SW 1/4 SE 1/4 sec.13, T.7 S., R.1 E, Marion County, Hydrologic Unit 17090009, on left bank, 4 mi south of Scotts Mills, and 0.1 mi upstream from mouth.

DRAINAGE AREA.--9.81 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1993 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 800 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--5 years (water years 1994-98), 39.3 ft³/s, 54.50 in/yr, 28,510 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,500 ft³/s Feb. 7, 1996, gage height, 6.19 ft from rating curve extended above 340 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 6.57 ft Feb. 7, 1996; minimum discharge, 1.9 ft³/s Oct. 2-4, 1993.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 250 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1630	*207	*3.53	No other peak greater than base discharge.			

Minimum discharge, 2.9 ft³/s several days in September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	92	30	29	62	e140	38	22	46	9.6	4.5	3.0
2	26	77	28	30	58	e125	36	29	42	9.3	4.2	2.9
3	34	66	25	32	54	e110	38	22	38	9.0	4.0	3.0
4	53	56	23	38	48	e100	35	20	34	9.0	3.9	2.9
5	85	47	21	42	44	e95	33	20	31	8.5	3.8	2.9
6	55	42	20	46	44	84	34	19	28	7.9	3.8	2.9
7	44	46	24	48	38	74	37	18	26	7.6	3.8	2.9
8	49	37	25	44	37	72	34	18	23	7.3	3.7	3.0
9	65	34	21	42	35	65	35	18	21	7.0	3.7	3.0
10	55	29	20	51	37	60	46	19	27	7.3	3.7	3.0
11	53	25	18	97	40	56	49	19	22	6.9	3.6	3.0
12	47	22	17	102	50	53	47	19	19	6.6	3.5	3.0
13	43	20	17	138	e120	e50	45	23	16	6.4	3.5	3.0
14	40	18	17	175	e90	e50	43	31	15	6.2	3.4	3.0
15	37	15	20	180	e70	e45	40	38	15	5.9	3.5	2.9
16	34	14	67	165	e60	e40	37	46	14	5.7	3.6	2.9
17	32	21	88	157	e50	37	35	73	13	5.4	3.5	3.0
18	31	15	65	148	e45	34	33	98	12	5.4	3.4	13
19	29	23	55	147	e65	33	32	83	12	5.3	3.4	11
20	27	42	57	135	e65	31	29	80	11	5.2	3.4	4.3
21	26	33	50	120	e110	34	27	88	10	5.0	4.0	3.6
22	24	29	44	118	e95	e70	26	81	10	4.9	3.6	3.3
23	25	42	42	109	e80	e80	37	71	10	4.8	3.5	3.0
24	24	60	39	112	e70	58	39	71	14	4.7	3.6	3.0
25	23	55	35	106	e60	53	32	70	14	4.6	3.4	3.8
26	23	48	32	103	e50	53	29	62	18	4.5	3.3	4.5
27	22	41	32	94	e45	51	27	55	14	4.4	3.3	3.4
28	23	37	28	85	e80	47	26	49	11	4.3	3.2	3.2
29	56	39	26	84	---	44	24	58	10	4.2	3.0	3.0
30	111	35	24	77	---	42	22	59	9.6	4.4	3.0	3.0
31	121	---	23	68	---	42	---	49	---	4.4	3.0	---
TOTAL	1334	1160	1033	2922	1702	1928	1045	1428	585.6	191.7	110.8	112.4
MEAN	43.0	38.7	33.3	94.3	60.8	62.2	34.8	46.1	19.5	6.18	3.57	3.75
MAX	121	92	88	180	120	140	49	98	46	9.6	4.5	13
MIN	17	14	17	29	35	31	22	18	9.6	4.2	3.0	2.9
AC-FT	2650	2300	2050	5800	3380	3820	2070	2830	1160	380	220	223
CFSM	4.39	3.94	3.40	9.61	6.20	6.34	3.55	4.70	1.99	.63	.36	.38
IN.	5.06	4.40	3.92	11.08	6.45	7.31	3.96	5.42	2.22	.73	.42	.43

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1998, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998
MEAN	21.9	59.5	73.9	76.5	81.4
MAX	43.0	89.1	141	94.3	143
(WY)	1998	1996	1997	1998	1997
MIN	3.06	5.09	27.4	50.5	50.6
(WY)	1994	1994	1994	1994	1995

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1994 - 1998

	1997	1998	1994-1998
ANNUAL TOTAL	13926.3	13552.5	
ANNUAL MEAN	38.2	37.1	39.3
HIGHEST ANNUAL MEAN			50.5
LOWEST ANNUAL MEAN			21.5
HIGHEST DAILY MEAN	214	180	850
LOWEST DAILY MEAN	3.6	2.9	1.9
ANNUAL SEVEN-DAY MINIMUM	3.7	2.9	2.1
ANNUAL RUNOFF (AC-FT)	27620	26880	28510
ANNUAL RUNOFF (CFSM)	3.89	3.78	4.01
ANNUAL RUNOFF (INCHES)	52.81	51.39	54.50
10 PERCENT EXCEEDS	83	83	96
50 PERCENT EXCEEDS	28	31	23
90 PERCENT EXCEEDS	4.5	3.5	3.2

e Estimated

WILLAMETTE RIVER BASIN

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14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1993 to Sept. 1997 (discontinued).

WATER TEMPERATURE: July 1993 to current year.

INSTRUMENTATION.--Water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 63 microsiemens Sept. 29, 30, 1993; minimum recorded, 8 microsiemens Feb. 5-7, 1996.

WATER TEMPERATURE: Maximum, 19.0°C July 23, 1994, minimum, 0.0°C Nov. 24-26, 1993.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 49 microsiemens Aug. 17, 26; minimum recorded, 15 microsiemens Jan. 31.

WATER TEMPERATURE: Maximum, 18.5°C July 27, 28; minimum, 4.0°C Dec. 11, 12, 26, 31.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.5	11.0	12.0	10.0	8.5	9.0	7.0	5.5	6.0	7.5	6.5	7.0
2	12.0	11.0	11.5	10.0	8.0	9.0	6.0	5.0	5.0	6.5	5.0	5.5
3	12.0	11.0	11.5	10.5	8.5	9.5	6.0	4.5	5.0	6.0	4.5	5.5
4	12.0	11.5	11.5	10.5	9.5	10.0	6.5	5.5	6.0	6.0	5.0	5.5
5	11.5	10.0	11.0	10.5	9.5	10.0	6.0	5.0	5.5	6.5	5.5	6.0
6	10.0	9.5	10.0	11.0	10.0	10.5	6.0	4.5	5.0	7.0	6.5	6.5
7	10.0	9.0	9.5	11.0	8.5	10.0	7.0	6.0	6.5	7.0	5.5	7.0
8	10.0	9.0	9.5	8.5	7.0	8.0	6.5	5.5	6.0	5.5	5.0	5.0
9	9.5	9.0	9.0	8.5	6.5	7.5	6.5	5.0	6.0	6.0	4.5	5.0
10	9.5	8.5	9.0	8.5	7.5	8.0	6.5	5.0	6.0	6.5	5.5	6.0
11	9.5	8.5	9.0	9.0	7.5	8.5	5.0	4.0	4.5	7.0	6.0	6.5
12	10.0	9.0	9.5	9.0	7.5	8.5	5.0	4.0	4.5	7.0	6.0	6.5
13	10.0	8.5	9.0	8.0	6.5	7.5	5.0	4.5	4.5	7.5	7.0	7.0
14	10.0	8.0	9.0	9.0	7.5	8.0	6.5	4.5	5.5	8.0	7.5	7.5
15	10.5	8.5	9.5	7.5	6.5	7.0	6.5	5.0	6.0	8.0	7.0	7.5
16	11.0	9.0	10.0	8.0	6.5	7.0	8.5	6.5	7.5	8.5	7.0	8.0
17	11.0	9.0	10.0	8.5	7.5	8.0	8.0	6.5	7.5	8.5	8.0	8.5
18	10.5	9.5	10.0	8.0	6.5	7.5	6.5	5.5	6.0	8.5	8.0	8.5
19	10.5	9.0	9.5	8.0	7.5	7.5	6.5	5.5	6.0	8.0	7.5	7.5
20	9.5	7.5	8.5	8.5	7.5	8.0	7.0	6.0	6.5	8.0	7.0	7.5
21	9.0	7.0	8.0	9.0	7.5	8.0	6.5	5.5	6.0	8.0	7.0	7.5
22	9.5	7.5	8.5	8.5	7.5	8.0	5.5	4.5	5.0	8.5	7.5	8.0
23	9.5	8.5	9.0	9.5	8.5	9.0	6.5	5.0	5.5	9.0	8.0	8.5
24	8.5	7.5	8.0	9.0	8.0	8.5	6.5	6.0	6.0	8.0	7.5	8.0
25	8.5	6.5	7.5	8.0	7.0	7.5	6.0	5.0	5.5	8.5	7.5	8.0
26	8.5	7.0	8.0	8.5	7.0	8.0	5.5	4.0	4.5	9.0	8.5	8.5
27	9.5	8.5	9.0	8.5	6.5	7.5	6.5	5.5	6.0	9.0	8.0	8.5
28	9.5	8.0	8.5	9.5	8.0	8.5	7.5	6.5	7.0	9.0	8.0	8.5
29	10.5	9.5	10.0	9.0	7.5	8.5	7.0	5.5	6.5	9.5	8.0	8.5
30	11.5	10.0	10.5	8.0	7.0	7.5	6.5	4.5	5.5	8.5	7.0	8.0
31	11.0	9.0	10.5	---	---	---	6.5	4.0	5.0	8.5	6.5	7.5
MONTH	12.5	6.5	9.5	11.0	6.5	8.3	8.5	4.0	5.7	9.5	4.5	7.2

WILLAMETTE RIVER BASIN

14200400 LITTLE ABIQUA CREEK NEAR SCOTTS MILLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.5	7.0	7.5	9.0	7.5	8.0	8.0	6.5	7.0	15.5	12.0	13.5
2	8.0	6.5	7.5	8.0	6.0	7.5	8.5	6.5	7.5	13.5	11.5	12.5
3	8.5	7.5	8.0	6.5	6.0	6.0	8.0	7.0	7.5	13.5	11.5	12.5
4	9.0	7.5	8.0	7.0	6.0	6.5	9.0	6.5	8.0	12.0	11.0	11.5
5	9.0	7.5	8.0	7.0	5.5	6.0	9.0	7.0	8.0	12.0	11.0	11.5
6	9.5	8.0	8.5	7.5	5.0	6.0	9.5	7.0	8.0	12.5	11.0	12.0
7	8.5	7.0	7.5	7.5	5.0	6.0	9.0	7.0	7.5	12.5	11.0	11.5
8	8.0	7.0	7.5	7.5	6.5	7.0	9.0	5.5	7.0	11.5	9.5	10.5
9	8.0	6.5	7.5	8.0	6.5	7.0	9.5	6.5	8.0	9.5	9.0	9.5
10	7.5	6.5	7.0	8.0	5.5	7.0	9.5	7.0	8.0	9.5	9.0	9.5
11	8.5	7.0	7.5	11.0	7.5	9.0	9.0	7.0	8.0	10.0	9.0	9.5
12	9.0	7.5	8.0	9.5	8.0	9.0	9.0	6.5	7.5	9.5	9.0	9.0
13	8.5	7.0	7.5	10.0	---	---	9.0	6.0	7.5	9.5	9.0	9.0
14	8.5	7.5	8.0	---	---	---	8.5	6.5	7.5	9.0	8.5	9.0
15	8.0	7.5	7.5	---	---	---	9.0	7.0	7.5	9.0	8.0	8.5
16	8.0	6.5	7.5	9.0	---	---	10.0	6.5	8.0	8.5	8.0	8.0
17	8.0	7.0	7.5	9.0	6.0	7.0	10.5	6.0	8.0	9.0	8.0	8.5
18	9.0	7.0	8.0	9.5	5.5	7.5	10.5	8.0	9.0	11.0	8.0	9.0
19	9.0	7.5	8.0	10.0	6.0	8.0	11.0	7.0	9.0	10.0	9.0	9.5
20	8.0	7.5	7.5	11.0	7.5	9.0	12.0	6.5	9.0	9.5	9.0	9.5
21	7.5	6.5	7.0	9.0	7.5	8.5	12.0	7.5	10.0	9.5	8.5	9.0
22	8.0	6.5	7.0	10.0	---	---	12.5	9.0	10.5	10.0	8.5	9.0
23	8.0	6.0	7.0	---	---	---	11.5	9.0	10.5	10.5	9.0	9.5
24	7.5	6.0	6.5	10.0	8.0	9.0	10.0	8.0	9.0	10.5	9.0	9.5
25	7.5	6.0	6.5	10.0	8.0	9.0	10.0	7.0	8.5	9.0	8.5	9.0
26	7.5	5.5	6.5	8.0	7.0	7.5	11.0	6.5	9.0	9.5	7.5	8.5
27	7.5	5.0	6.0	8.0	6.0	7.0	12.5	8.0	10.0	10.5	8.0	9.0
28	8.5	7.0	7.5	8.0	6.0	6.5	14.0	9.0	11.5	11.0	7.5	9.5
29	---	---	---	9.0	5.0	6.5	14.5	10.5	12.5	10.0	9.0	9.5
30	---	---	---	7.5	5.5	6.5	14.5	11.5	13.0	10.5	9.0	9.5
31	---	---	---	7.5	6.5	7.0	---	---	---	12.5	8.5	10.0
MONTH	9.5	5.0	7.4	---	---	---	14.5	5.5	8.7	15.5	7.5	9.9

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	13.0	9.5	11.0	13.0	12.0	12.5	16.0	14.0	15.0	16.5	13.5	15.0
2	11.0	10.0	10.5	13.0	12.0	12.5	16.0	12.5	14.5	16.0	13.0	14.5
3	12.5	10.0	11.0	13.0	12.0	12.5	16.5	13.0	15.0	16.0	13.5	14.5
4	11.5	10.5	10.5	12.5	12.0	12.0	17.0	14.0	15.5	16.0	13.5	14.5
5	12.5	9.5	11.0	13.5	12.0	13.0	17.0	14.5	15.5	15.5	12.5	14.0
6	13.5	9.5	11.5	15.0	12.0	13.5	16.5	14.5	15.0	15.0	12.0	13.5
7	14.0	10.5	12.0	14.5	13.5	14.0	15.5	13.0	14.0	15.0	12.0	13.5
8	12.5	11.0	11.5	15.0	12.5	14.0	15.5	12.0	14.0	14.0	12.5	13.5
9	13.5	10.5	12.0	15.5	13.0	14.0	16.0	12.5	14.0	13.0	10.5	12.0
10	12.5	11.0	11.5	14.5	13.5	14.0	16.0	12.5	14.0	13.0	10.5	12.0
11	11.5	10.5	11.0	14.5	13.0	13.5	16.5	13.5	15.0	13.5	10.5	12.0
12	13.5	11.0	12.0	14.5	13.0	13.5	17.0	14.0	15.0	14.0	11.5	12.5
13	12.5	11.0	12.0	15.0	13.0	14.0	17.0	14.0	15.5	14.0	11.5	13.0
14	13.0	10.5	11.5	14.5	13.0	14.0	17.5	14.5	16.0	14.0	11.5	13.0
15	12.0	11.0	12.0	15.5	13.0	14.5	16.0	14.5	15.5	14.5	11.5	13.0
16	11.5	10.0	11.0	16.5	13.5	15.0	15.0	14.0	14.5	14.0	12.0	13.0
17	12.5	9.5	11.0	16.5	14.0	15.0	15.0	12.5	13.5	13.5	11.5	12.5
18	12.0	10.0	10.5	16.5	14.0	15.0	15.0	12.0	13.5	13.0	12.0	12.5
19	12.0	10.0	11.0	16.0	14.0	15.0	15.0	11.5	13.0	13.5	12.0	13.0
20	13.5	10.5	11.5	16.0	13.0	14.5	15.5	12.5	14.0	13.0	12.0	12.5
21	14.0	11.5	13.0	16.0	13.0	14.5	15.5	13.5	14.5	13.0	10.5	11.5
22	14.0	12.5	13.0	17.0	14.0	15.5	15.5	12.5	14.0	13.0	10.5	11.5
23	13.0	12.0	12.5	16.5	14.0	15.5	14.0	13.0	13.5	13.0	11.0	12.0
24	12.0	11.5	12.0	16.0	13.5	15.0	15.0	12.0	13.5	12.5	11.0	12.0
25	12.0	11.0	11.5	16.5	13.5	15.0	14.5	12.0	13.5	12.5	11.5	12.0
26	12.0	10.5	11.0	17.0	14.0	15.5	15.0	12.0	13.5	11.5	10.0	11.0
27	13.0	10.0	11.5	18.5	15.5	16.5	15.0	12.0	13.5	12.5	10.0	11.0
28	14.0	10.5	12.0	18.5	15.5	17.0	16.0	12.5	14.0	12.5	10.5	11.5
29	14.5	12.0	13.0	17.5	15.5	16.5	15.5	12.5	14.0	12.0	10.5	11.0
30	13.5	12.5	13.0	16.5	14.5	15.5	15.5	12.5	14.0	12.0	10.0	11.0
31	---	---	---	16.0	14.5	15.0	16.0	13.0	14.5	---	---	---
MONTH	14.5	9.5	11.6	18.5	12.0	14.4	17.5	11.5	14.3	16.5	10.0	12.6

WILLAMETTE RIVER BASIN

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14201300 ZOLLNER CREEK NEAR MOUNT ANGEL, OR

LOCATION.--Lat 45°06'02", long 122°49'14", in SW 1/4 SW 1/4 sec. 28, T.5 S., R.1 W., Marion County, Hydrologic Unit 17090009, on left bank downstream corner of Monitor-McKee Road bridge, 2.3 mi north-northwest of Mount Angel and at mile 0.4.

DRAINAGE AREA.--15.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1993 to current year.

REVISED RECORD.--WDR OR-96-1: 1994 (M).

GAGE.--Water-stage recorder. Elevation of gage is 120 ft above sea level, from topographic map.

REMARKS.--Records poor. Flows subject to backwater from the Pudding River (14201340). Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--5 years (water years 1994-98), 29.1 ft³/s, 26.35 in/yr, 21,070 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,890 ft³/s Nov. 19, 1996, gage height 16.93; maximum gage height, 21.33 ft, Feb. 8, 1996, from floodmark (backwater from Pudding River); minimum discharge, 0.02 ft³/s Sept. 22, 1994.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 17	0300	*335	9.35	Jan. 17	0730	(a)	*13.12

Minimum discharge, 0.28 ft³/s Aug. 23.
a Backwater from Pudding River.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	99	17	9.7	e14	115	12	4.6	8.6	2.8	.84	.63
2	9.3	22	15	13	12	e130	11	11	7.7	2.7	.64	.50
3	4.6	13	14	14	13	e100	12	6.7	7.0	3.1	.49	.57
4	8.6	9.1	12	39	12	e65	12	5.9	7.2	3.1	.68	.48
5	23	7.9	12	20	11	e48	11	5.4	6.7	3.0	.80	.59
6	12	7.4	11	21	26	e36	11	4.6	6.5	2.6	.67	2.0
7	13	13	12	34	19	e26	10	4.1	6.0	2.5	.59	.73
8	8.6	15	14	19	15	e20	9.6	4.8	5.4	1.8	.86	.79
9	13	13	13	14	13	e16	9.6	4.7	4.7	1.4	.53	.81
10	14	11	12	13	14	14	11	4.2	6.8	1.5	.46	.77
11	11	8.8	12	121	19	14	11	4.2	6.2	1.7	.43	.85
12	8.4	7.4	12	e75	23	14	11	4.2	4.7	1.7	.39	.93
13	7.0	6.6	11	e90	60	13	9.0	5.3	4.4	1.5	.40	.93
14	5.2	5.9	11	e150	56	12	8.1	5.5	4.3	1.4	.55	1.5
15	4.4	5.7	10	e80	31	12	7.4	7.5	4.4	1.8	.56	1.7
16	5.6	5.5	38	e70	17	11	6.9	8.9	4.2	2.3	.59	1.6
17	4.0	16	e250	e66	15	10	6.4	19	3.6	1.2	.46	1.3
18	3.4	19	e70	e64	14	9.6	6.5	15	2.9	1.0	.47	2.1
19	2.9	25	e40	e50	18	9.3	6.4	13	2.6	.92	.40	4.6
20	3.0	67	e50	e36	18	8.7	6.4	13	2.7	1.2	.32	2.2
21	3.0	50	e40	e28	177	10	5.9	19	2.5	1.4	.36	1.6
22	3.8	28	e22	e24	e140	176	5.9	26	2.5	1.7	.31	1.3
23	4.4	28	18	e26	e66	e130	7.5	16	2.3	1.3	.33	1.1
24	4.7	70	15	e22	e40	e70	6.9	13	3.9	.85	.32	1.1
25	3.9	61	14	e38	e26	e30	5.4	16	5.3	.61	.34	1.2
26	4.7	42	13	e28	e18	e22	4.9	14	8.1	.72	.58	1.1
27	4.2	22	12	e22	e16	17	4.5	12	5.3	.71	.68	.94
28	4.8	16	11	e18	23	16	4.9	11	4.0	.74	.69	.93
29	15	18	10	e18	---	15	5.1	11	3.6	.62	.57	.94
30	42	21	9.7	e20	---	13	5.0	11	3.1	.75	.50	.94
31	129	---	9.4	e16	---	13	---	9.4	---	.66	.36	---
TOTAL	385.3	733.3	810.1	1258.7	926	1195.6	244.3	310.0	147.2	49.28	16.17	36.73
MEAN	12.4	24.4	26.1	40.6	33.1	38.6	8.14	10.0	4.91	1.59	.52	1.22
MAX	129	99	250	150	177	176	12	26	8.6	3.1	.86	4.6
MIN	2.9	5.5	9.4	9.7	11	8.7	4.5	4.1	2.3	.61	.31	.48
AC-FT	764	1450	1610	2500	1840	2370	485	615	292	98	32	73
CFSM	.83	1.63	1.74	2.71	2.20	2.57	.54	.67	.33	.11	.03	.08
IN.	.96	1.82	2.01	3.12	2.30	2.97	.61	.77	.37	.12	.04	.09

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1998, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998
MEAN	12.7	61.0	78.4	67.3	59.5
MAX	23.1	121	187	103	114
(WY)	1997	1997	1997	1996	1997
MIN	1.67	1.89	26.1	40.6	33.1
(WY)	1994	1994	1998	1998	1998

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1994 - 1998

ANNUAL TOTAL	9598.66	6112.68	
ANNUAL MEAN	26.3	16.7	29.1
HIGHEST ANNUAL MEAN			48.8
LOWEST ANNUAL MEAN			14.9
HIGHEST DAILY MEAN	340	Feb 1	1510
LOWEST DAILY MEAN	.55	Sep 5	.04
ANNUAL SEVEN-DAY MINIMUM	.69	Jul 21	.08
ANNUAL RUNOFF (AC-FT)	19040	12120	21070
ANNUAL RUNOFF (CFSM)	1.75	1.12	1.94
ANNUAL RUNOFF (INCHES)	23.80	15.16	26.35
10 PERCENT EXCEEDS	70	39	77
50 PERCENT EXCEEDS	9.4	8.8	7.4
90 PERCENT EXCEEDS	1.0	.70	.56

e Estimated

WILLAMETTE RIVER BASIN

14201300 ZOLLNER CREEK NEAR MOUNT ANGEL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: July 1993 to September 1997 (discontinued).

WATER TEMPERATURE: July 1993 to current year.

INSTRUMENTATION.--Water-quality monitor.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 611 microsiemens Oct. 6, 1995, but may have been greater during periods of missing record; minimum recorded, 77 microsiemens Feb. 6, 1996, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum, 24.5°C July 21-23, 1994, July 26, 1996, July 28, 1998, but may have been higher during periods of missing record during the 1996 water year; minimum, 0.5°C Nov. 25, 26, 1993.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 609 microsiemens Sept. 17, but may have been greater during periods of missing record; minimum recorded, 83 microsiemens Jan. 31, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum, 24.5°C July 28; minimum, 5.0°C Dec. 6, but may have been lower during period of missing record January 6-8.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	15.5	14.5	15.5	12.5	11.5	12.0	9.0	8.5	9.0	8.5	7.0	8.0
2	15.5	14.5	14.5	11.5	11.0	11.5	8.5	7.0	7.5	8.0	7.0	7.0
3	15.5	14.5	15.0	11.5	11.0	11.0	7.0	6.0	6.5	7.0	6.5	7.0
4	15.0	14.0	15.0	12.5	11.5	12.0	7.0	6.5	6.5	7.0	6.5	7.0
5	15.0	14.0	14.5	13.0	12.0	12.5	6.5	5.5	6.0	---	---	---
6	14.5	13.5	14.0	13.5	12.5	13.0	6.0	5.0	5.5	---	---	---
7	14.0	13.0	13.5	13.0	11.5	12.5	6.5	5.5	6.0	---	---	---
8	13.5	13.0	13.0	11.5	10.5	11.0	6.5	6.0	6.0	---	---	---
9	13.0	12.0	12.5	11.0	10.0	10.5	7.0	6.0	6.5	7.0	6.5	6.5
10	12.5	11.5	12.0	10.5	9.5	10.0	7.0	6.5	7.0	7.0	6.5	7.0
11	12.5	11.5	12.0	10.0	9.5	10.0	6.5	6.5	6.5	6.5	5.5	6.0
12	12.5	12.0	12.0	10.5	10.0	10.0	6.5	6.0	6.5	6.5	6.0	6.0
13	13.0	12.0	12.5	10.0	8.5	9.0	6.0	5.5	5.5	8.0	6.0	7.0
14	12.5	11.5	12.0	9.5	8.5	9.0	6.5	5.5	6.0	8.5	8.0	8.5
15	13.0	11.5	12.5	9.0	8.0	8.0	7.0	6.0	6.0	8.5	8.0	8.0
16	13.0	12.0	12.5	8.5	7.5	8.0	9.5	7.0	8.0	9.0	8.5	8.5
17	13.0	11.5	12.0	9.5	8.5	9.0	9.0	8.5	8.5	9.5	9.0	9.5
18	13.0	12.0	12.5	9.5	8.5	9.0	8.5	8.0	8.0	9.5	9.5	9.5
19	12.5	11.0	11.5	10.0	9.0	9.5	8.0	7.5	8.0	9.5	8.5	9.0
20	11.0	10.0	10.5	11.0	10.0	10.0	8.0	7.0	7.5	8.5	8.5	8.5
21	10.0	9.0	9.5	11.5	10.5	11.0	8.0	7.5	7.5	8.5	8.0	8.5
22	10.0	8.5	9.0	11.0	10.5	10.5	7.5	6.5	7.0	9.0	8.5	8.5
23	10.5	10.0	10.5	11.0	10.5	11.0	7.0	6.5	6.5	9.0	9.0	9.0
24	10.5	9.0	10.0	11.0	11.0	11.0	7.0	7.0	7.0	9.0	8.5	9.0
25	9.0	8.0	9.0	11.0	10.5	10.5	7.0	6.5	7.0	9.0	8.5	9.0
26	9.0	8.0	8.5	10.5	9.5	10.0	6.5	6.5	6.5	9.5	9.0	9.5
27	10.0	9.0	9.5	10.0	8.5	9.5	7.5	6.5	7.0	9.5	9.5	9.5
28	10.0	9.5	10.0	10.5	10.0	10.5	8.5	7.5	8.0	9.5	9.0	9.5
29	11.5	10.0	11.0	10.5	10.0	10.0	8.5	8.0	8.0	9.5	9.0	9.5
30	13.0	11.5	12.5	10.0	9.0	9.5	8.5	7.0	8.0	9.5	9.0	9.5
31	13.5	12.5	13.0	---	---	---	7.5	7.0	7.0	9.0	8.0	8.5
MONTH	15.5	8.0	12.0	13.5	7.5	10.4	9.5	5.0	7.0	---	---	---

WILLAMETTE RIVER BASIN

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14201300 ZOLLNER CREEK NEAR MOUNT ANGEL, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	8.5	8.0	8.5	9.5	9.0	9.0	10.5	9.0	10.0	19.5	17.0	18.0
2	8.5	8.0	8.5	9.5	8.5	9.0	11.0	10.0	10.5	18.5	17.0	17.5
3	9.0	8.5	8.5	8.5	7.5	8.0	11.0	10.5	10.5	17.5	16.5	17.0
4	9.5	9.0	9.0	8.5	7.5	8.0	11.5	10.0	10.5	17.5	16.0	16.5
5	9.5	9.0	9.0	8.5	7.5	8.0	12.0	10.5	11.0	17.0	16.0	16.5
6	10.0	9.0	9.5	8.5	7.5	8.0	12.5	11.0	12.0	17.5	16.5	17.0
7	10.0	8.5	9.0	8.5	8.0	8.0	13.0	11.5	12.0	17.5	16.0	16.5
8	9.0	8.5	8.5	9.0	8.5	8.5	12.0	10.5	11.5	17.0	14.5	15.5
9	9.0	8.0	8.5	9.5	9.0	9.0	12.5	11.0	11.5	14.5	13.0	13.5
10	8.5	8.0	8.0	9.0	8.0	8.5	12.5	11.0	12.0	13.0	12.5	13.0
11	9.0	8.0	8.5	11.0	9.0	10.0	12.5	11.0	11.5	13.0	12.5	12.5
12	9.5	9.0	9.0	11.0	10.5	11.0	11.5	10.5	11.0	13.0	12.0	12.5
13	9.5	8.5	9.0	12.0	11.0	11.5	11.5	10.0	11.0	12.0	11.5	12.0
14	9.5	9.0	9.0	12.5	11.0	12.0	12.0	10.5	11.0	12.0	11.5	11.5
15	9.0	8.5	9.0	12.5	12.0	12.0	12.5	10.5	11.5	12.5	11.5	12.0
16	9.0	8.0	8.5	12.0	11.5	12.0	13.0	10.5	12.0	12.5	11.5	12.0
17	9.0	8.5	9.0	11.5	10.5	11.0	13.5	11.0	12.5	12.5	11.5	12.0
18	9.5	8.5	9.0	12.0	10.0	11.0	13.5	12.5	13.0	14.0	12.0	13.0
19	10.0	9.0	9.5	12.0	10.0	11.0	14.0	11.5	13.0	14.0	13.5	14.0
20	10.0	8.5	9.0	13.0	11.0	12.0	14.5	11.5	13.0	14.0	13.5	14.0
21	8.5	8.0	8.0	12.0	11.5	12.0	15.5	12.5	14.0	13.5	12.5	12.5
22	8.5	8.0	8.0	12.5	11.5	12.0	16.0	14.0	15.0	13.5	12.5	13.0
23	8.5	8.0	8.5	12.0	11.5	11.5	15.5	14.0	15.0	14.0	13.5	13.5
24	8.5	7.5	8.0	11.5	11.0	11.5	14.0	13.0	13.5	14.0	13.5	14.0
25	8.5	8.0	8.5	12.0	11.0	11.5	14.0	12.0	13.0	13.5	13.0	13.0
26	8.5	7.5	8.0	11.5	10.5	11.0	14.5	12.0	13.0	13.0	12.5	13.0
27	8.0	7.0	7.5	10.5	9.5	10.0	16.0	13.0	14.0	14.0	12.5	13.0
28	9.0	8.0	8.5	10.5	9.0	9.5	17.0	14.0	15.5	15.0	13.0	14.0
29	---	---	---	10.5	8.5	9.5	18.0	15.5	16.5	15.0	14.0	14.5
30	---	---	---	10.5	9.5	10.0	18.5	16.5	17.5	14.5	13.5	14.0
31	---	---	---	10.0	9.5	10.0	---	---	---	16.0	13.5	15.0
MONTH	10.0	7.0	8.6	13.0	7.5	10.2	18.5	9.0	12.6	19.5	11.5	14.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	17.0	15.5	16.0	17.5	16.5	17.0	20.5	19.5	20.0	20.5	17.5	19.0
2	17.0	16.0	16.5	17.5	16.5	17.0	21.0	19.0	20.0	21.0	17.0	19.0
3	17.0	15.5	16.5	17.5	17.0	17.0	21.5	19.0	20.5	21.0	17.5	19.5
4	17.0	16.0	16.5	17.0	16.5	16.5	22.0	20.0	21.0	21.0	18.0	19.5
5	17.0	15.5	16.0	18.0	16.5	17.0	22.5	21.0	21.5	20.5	17.0	18.5
6	17.5	16.0	16.5	19.5	17.0	18.0	22.0	20.5	21.5	18.5	16.5	17.5
7	18.5	17.0	17.5	19.5	19.0	19.5	21.5	19.5	20.5	19.0	16.0	17.5
8	18.5	17.5	17.5	20.0	19.0	19.5	21.0	19.0	20.0	18.0	16.5	17.5
9	18.5	17.0	17.5	20.5	19.0	20.0	21.5	19.0	20.0	17.0	15.0	16.0
10	18.0	17.0	17.5	20.5	18.5	19.5	21.5	19.0	20.5	16.5	14.0	15.5
11	17.5	16.5	17.0	19.0	18.0	18.5	22.0	19.5	21.0	16.5	14.0	15.5
12	18.0	17.0	17.5	19.0	18.5	18.5	23.0	20.0	21.5	17.5	14.5	16.0
13	18.0	17.0	17.5	19.5	18.5	19.0	23.5	20.5	22.0	17.5	15.0	16.5
14	18.5	16.5	17.5	19.5	19.0	19.5	23.5	21.0	22.0	17.5	15.5	16.5
15	18.5	17.5	18.0	20.5	19.0	19.5	22.5	21.5	22.0	17.5	16.0	16.5
16	18.0	16.5	17.0	21.5	19.5	20.5	21.5	20.0	20.5	17.5	16.0	16.5
17	18.0	16.0	17.0	22.0	20.5	21.5	20.5	18.5	19.5	17.0	15.5	16.0
18	18.0	16.0	16.5	22.0	20.5	21.5	20.0	18.0	19.0	16.5	15.5	16.0
19	16.5	15.5	16.0	21.5	20.5	21.0	19.5	17.5	18.5	16.0	15.5	16.0
20	17.5	15.5	16.5	20.5	19.5	20.0	19.5	16.0	18.0	16.5	15.5	16.0
21	19.0	17.0	17.5	21.0	19.5	20.0	19.0	17.5	18.0	16.5	14.5	15.5
22	19.0	17.5	18.0	22.0	20.5	21.0	20.0	16.5	18.5	16.0	14.0	15.0
23	17.5	17.0	17.0	22.0	21.0	21.5	19.0	17.5	18.0	16.5	14.0	15.5
24	17.0	16.0	16.5	22.5	21.0	21.5	19.5	16.5	18.0	15.5	14.0	14.5
25	16.5	15.5	16.0	22.0	20.5	21.0	19.5	16.0	17.5	15.5	14.5	15.0
26	16.5	15.0	15.5	22.0	20.5	21.5	19.0	16.0	17.5	15.5	13.5	14.5
27	17.5	15.5	16.5	23.5	21.5	22.5	19.0	15.5	17.0	15.5	13.5	14.5
28	18.5	16.0	17.0	24.5	22.0	23.0	19.5	16.0	17.5	15.5	13.5	14.5
29	19.0	17.0	18.0	23.5	22.0	23.0	20.0	16.0	18.0	14.5	13.5	14.0
30	19.0	17.0	17.5	23.0	21.0	21.5	20.5	16.5	18.5	15.0	13.0	14.0
31	---	---	---	21.0	20.0	20.5	21.0	17.0	19.0	---	---	---
MONTH	19.0	15.0	16.9	24.5	16.5	19.9	23.5	15.5	19.6	21.0	13.0	16.3

WILLAMETTE RIVER BASIN

14201340 PUDDING RIVER NEAR WOODBURN, OR

LOCATION.--Lat 45°09'05", long 122°48'11", in NW 1/4 SW 1/4 sec. 10, T.5 S., R.1 W., Marion County, Hydrologic Unit 17090009, on left bank 1.0 mile east of Woodburn, and at mile 23.4.

DRAINAGE AREA.--314 mi².

PERIOD OF RECORD.--October 1997 to September 1998.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 130 ft above sea level, from topographic map.

REMARKS.--Records fair. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--1 year (water year 1998), 854 ft³/s, 618,200 acre-ft/yr.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 8, 1996 reached a stage of 32.76 ft, from floodmark, discharge not determined.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,510 ft³/s, gage height, 24.68 ft; minimum discharge, 26 ft³/s Sept. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e150	2090	996	669	1800	1840	969	468	1060	231	44	34
2	e250	1670	890	770	1520	2350	895	480	930	223	53	30
3	520	1290	808	837	1320	2630	833	518	836	218	54	30
4	644	1000	739	932	1200	2690	829	463	758	203	48	29
5	1030	843	685	1050	1090	2630	783	429	695	202	43	34
6	1220	737	640	1120	1080	2440	731	413	642	190	40	41
7	951	694	609	1260	1190	2180	719	387	590	163	41	40
8	750	737	664	1360	1100	1930	726	362	543	139	43	41
9	797	675	707	1260	1020	1740	698	360	504	133	42	39
10	1050	613	658	1150	972	1550	716	367	e490	127	47	36
11	954	566	633	1430	1060	1410	873	369	e500	125	48	33
12	861	525	605	2300	1190	1310	975	375	e490	124	41	29
13	753	490	581	2680	1570	1250	941	388	448	124	39	28
14	665	463	566	3130	1810	1180	877	435	407	115	36	29
15	596	439	568	3430	1730	1090	819	547	373	108	31	28
16	543	414	710	3480	1570	1020	762	692	351	101	29	28
17	495	447	2120	3490	1400	945	707	846	337	91	32	28
18	458	578	2520	3480	1240	864	662	1190	316	79	34	28
19	427	606	2230	3440	1250	793	632	1350	291	74	34	37
20	395	843	1930	3380	1350	738	608	1290	278	76	34	119
21	361	1260	1820	3250	1800	707	572	1380	257	71	34	82
22	333	1180	1600	3050	2610	1260	543	1670	242	67	33	64
23	313	1020	1360	2950	2760	2350	534	1630	223	64	38	55
24	303	1270	1180	2940	2600	2670	655	1400	230	62	41	49
25	294	1580	1050	3150	2320	2360	700	1380	291	57	41	47
26	266	1550	945	3140	2030	1830	642	1410	351	58	41	48
27	250	1360	871	3030	1730	1530	590	1270	410	59	40	56
28	241	1140	835	2800	1490	1380	554	1100	380	56	40	59
29	259	998	779	2510	---	1230	524	973	304	47	36	53
30	593	1010	735	2300	---	1100	496	1100	257	41	35	50
31	1870	---	699	2080	---	1020	---	1190	---	43	35	---
TOTAL	18592	28088	31733	71848	43802	50017	21565	26232	13784	3471	1227	1304
MEAN	600	936	1024	2318	1564	1613	719	846	459	112	39.6	43.5
MAX	1870	2090	2520	3490	2760	2690	975	1670	1060	231	54	119
MIN	150	414	566	669	972	707	496	360	223	41	29	28
AC-FT	36880	55710	62940	142500	86880	99210	42770	52030	27340	5880	2430	2590

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1998, BY WATER YEAR (WY)

	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998
MEAN	600	936	1024	2318	1564	1613	719	846	459	112	39.6	43.5
MAX	600	936	1024	2318	1564	1613	719	846	459	112	39.6	43.5
(WY)	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998
MIN	600	936	1024	2318	1564	1613	719	846	459	112	39.6	43.5
(WY)	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998

SUMMARY STATISTICS

FOR 1998 WATER YEAR

ANNUAL TOTAL
ANNUAL MEAN
HIGHEST DAILY MEAN
LOWEST DAILY MEAN
ANNUAL SEVEN-DAY MINIMUM
ANNUAL RUNOFF (AC-FT)
10 PERCENT EXCEEDS
50 PERCENT EXCEEDS
90 PERCENT EXCEEDS

311663
854
3490 Jan 17
28 Sep 13
28 Sep 12
618200
2080
664
41

e Estimated

WILLAMETTE RIVER BASIN

231

14202980 SCOGGINS CREEK BELOW HENRY HAGG LAKE, NEAR GASTON, OR

LOCATION.--Lat 45°28'10", long 123°11'56", in SE 1/4 NE 1/4 sec.20, T.1 S., R.4 W., Washington County, Hydrologic Unit 17090010, on left bank 600 ft downstream from Scoggins Dam, 800 ft upstream from small left bank tributary, 3.7 mi northwest of Gaston, and at mile 4.8.

DRAINAGE AREA.--38.8 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 187.48 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Flow completely regulated by Henry Hagg Lake since January 1975. Discharge not adjusted for storage or release from Henry Hagg Lake as evaporation from reservoir at times exceeds natural flow.

AVERAGE DISCHARGE.--23 years (water years 1976-98), 112 ft³/s, 81,040 acre-ft, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,210 ft³/s Apr. 23, 1996, gage height, 16.88 ft; minimum discharge, 0.72 ft³/s Nov. 4, 5, 1996, Dec. 16, 1997.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,070 ft³/s Jan. 30, gage height, 12.77 ft; minimum discharge, 0.72 ft³/s Dec. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	137	37	364	100	842	274	31	11	28	109	140	179
2	145	37	427	211	932	274	14	11	15	95	140	184
3	145	37	514	251	1010	276	14	26	15	92	133	199
4	145	37	602	253	1000	295	14	48	25	92	133	214
5	145	37	624	175	983	335	14	54	46	91	137	213
6	133	38	572	9.5	610	339	15	51	54	91	137	212
7	111	38	524	11	365	268	15	56	54	102	130	212
8	100	38	570	11	365	268	15	52	44	114	128	206
9	157	38	549	135	177	268	15	52	37	120	127	202
10	194	38	440	209	50	231	36	52	37	120	127	201
11	193	38	374	211	80	186	54	53	27	120	136	200
12	151	38	224	274	100	170	54	74	15	120	143	200
13	109	38	99	170	60	184	87	97	11	120	149	199
14	81	38	99	14	48	193	130	16	11	104	164	199
15	68	38	100	13	49	193	120	40	11	101	174	198
16	61	38	48	14	49	115	72	63	11	133	174	202
17	51	38	11	14	130	55	54	62	18	147	163	205
18	44	38	12	14	135	32	54	73	66	147	145	201
19	44	41	12	15	166	19	54	70	91	147	145	192
20	37	29	13	15	238	19	54	85	91	146	149	191
21	35	24	13	212	65	19	40	165	91	146	155	183
22	36	24	246	501	16	63	31	104	93	159	155	168
23	36	25	378	621	15	131	34	104	98	183	155	161
24	36	25	376	401	96	161	36	104	98	183	149	161
25	36	25	374	668	202	211	36	104	86	183	149	156
26	36	62	372	666	325	239	37	93	79	182	154	151
27	36	129	370	752	356	250	35	73	78	182	154	150
28	36	270	369	800	273	249	33	72	78	181	162	150
29	37	368	444	770	---	249	29	59	99	169	171	150
30	37	366	473	880	---	167	12	51	121	149	170	149
31	37	---	303	908	---	86	---	51	---	141	175	---
TOTAL	2649	2067	9896	9298.5	8737	5819	1239	2026	1628	4169	4623	5588
MEAN	85.5	68.9	319	300	312	188	41.3	65.4	54.3	134	149	186
MAX	194	368	624	908	1010	339	130	165	121	183	175	214
MIN	35	24	11	9.5	15	19	12	11	11	91	127	149
AC-FT	5250	4100	19630	18440	17330	11540	2460	4020	3230	8270	9170	11080

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1998, BY WATER YEAR (WY)

	MEAN	93.5	68.5	160	173	119	123	84.3	59.7	57.3	123	150	129
MAX	155	233	571	700	639	326	272	122	121	201	216	206	
(WY)	1980	1985	1996	1997	1996	1983	1996	1996	1992	1994	1996	1993	
MIN	26.2	16.7	10.9	9.85	9.50	10.8	12.0	19.9	14.3	52.3	83.4	72.9	
(WY)	1978	1988	1991	1992	1977	1977	1985	1977	1977	1993	1977	1977	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1976 - 1998

ANNUAL TOTAL	67620.8	57739.5	
ANNUAL MEAN	185	158	112
HIGHEST ANNUAL MEAN			212
LOWEST ANNUAL MEAN			40.4
HIGHEST DAILY MEAN	1940	Jan 3	1940
LOWEST DAILY MEAN	7.1	Jun 10	5.3
ANNUAL SEVEN-DAY MINIMUM	9.3	Apr 2	5.8
ANNUAL RUNOFF (AC-FT)	134100	14	81040
10 PERCENT EXCEEDS	374	114500	220
50 PERCENT EXCEEDS	113	365	77
90 PERCENT EXCEEDS	17	17	13

LOCATION.--Lat 45°21'24", long 122°41'02", in NW 1/4 NE 1/4 sec.14, T.2 S., R.1 E., Washington County, Hydrologic Unit 17090010, on left bank, mounted to a wooden dock, 1.5 mi southeast of Scholls, and at mile 24.5.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1997 to current year (seasonal records)

pH: May 1997 to current year (seasonal records)

WATER TEMPERATURE: May 1997 to current year (seasonal records).

DISSOLVED OXYGEN: May 1997 to current year (seasonal records).

INSTRUMENTATION.--Water-quality monitor and electronic data logger with sixty-minute interval. Water-quality probes are suspended from a float approximately 30 ft from left bank.

EXTREMES FOR CURRENT YEAR (OCTOBER, APRIL TO SEPTEMBER).--

SPECIFIC CONDUCTANCE: Maximum recorded, 258 microsiemens July 19; minimum recorded, 92 microsiemens Oct. 12, 13.

pH: Maximum recorded, 7.6 units July 29, Aug. 7-10; minimum recorded, 6.8 units several days during October.

WATER TEMPERATURE: Maximum recorded, 22.5°C several days during July and August; minimum recorded, 10.0°C Oct. 25-29.

DISSOLVED OXYGEN: Maximum recorded, 12.1 mg/L Aug. 9, minimum recorded, 6.7 mg/L Aug. 14, 15.

[illegible]

WILLAMETTE RIVER BASIN

14206694 TUALATIN RIVER AT RIVER MILE 24.5, NEAR SCHOLLS, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	153	135	146
2	---	---	---	---	---	---	---	---	---	158	141	151
3	---	---	---	---	---	---	---	---	---	169	145	160
4	---	---	---	---	---	---	---	---	---	151	134	143
5	---	---	---	---	---	---	---	---	---	154	137	149
6	---	---	---	---	---	---	---	---	---	158	142	152
7	---	---	---	---	---	---	---	---	---	161	141	154
8	---	---	---	---	---	---	---	---	---	162	142	153
9	---	---	---	---	---	---	---	---	---	165	147	157
10	---	---	---	---	---	---	---	---	---	167	149	160
11	---	---	---	---	---	---	---	---	---	165	142	155
12	---	---	---	---	---	---	---	---	---	166	143	157
13	---	---	---	---	---	---	---	---	---	173	146	159
14	---	---	---	---	---	---	---	---	---	175	154	165
15	---	---	---	---	---	---	---	---	---	155	139	147
16	---	---	---	---	---	---	---	---	---	159	142	151
17	---	---	---	---	---	---	---	---	---	157	143	152
18	---	---	---	---	---	---	---	---	---	154	122	138
19	---	---	---	---	---	---	---	---	---	131	122	127
20	---	---	---	---	---	---	---	---	---	141	122	133
21	---	---	---	---	---	---	---	---	---	140	126	133
22	---	---	---	---	---	---	---	---	---	126	112	120
23	---	---	---	---	---	---	---	---	---	113	110	111
24	---	---	---	---	---	---	---	---	---	118	111	116
25	---	---	---	---	---	---	---	---	---	127	113	122
26	---	---	---	---	---	---	---	---	---	123	109	119
27	---	---	---	---	---	---	---	---	---	119	109	116
28	---	---	---	---	---	---	141	125	135	121	114	118
29	---	---	---	---	---	---	153	129	142	126	116	122
30	---	---	---	---	---	---	148	132	143	142	120	131
31	---	---	---	---	---	---	---	---	---	134	124	129
MONTH	---	---	---	---	---	---	---	---	---	175	109	140
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	132	117	126	189	166	184	209	172	194	210	161	183
2	134	125	130	198	171	187	198	181	189	217	179	199
3	147	126	138	204	170	192	192	163	179	205	176	191
4	152	136	145	190	169	182	190	159	177	219	180	208
5	153	140	148	198	166	182	186	164	177	230	200	218
6	152	141	148	189	151	172	205	179	186	225	196	213
7	157	138	149	174	148	165	224	200	211	221	176	201
8	159	141	151	175	149	169	224	196	210	210	171	192
9	162	143	154	198	159	186	217	186	202	204	161	183
10	165	148	157	211	155	189	215	180	201	204	170	190
11	183	156	170	219	182	202	218	183	202	194	166	182
12	176	154	162	217	192	208	216	186	206	183	161	175
13	170	152	161	217	186	204	227	188	206	215	174	190
14	182	159	170	214	176	198	230	194	217	216	175	198
15	190	165	177	204	179	195	229	200	218	222	176	201
16	192	172	183	217	186	201	228	200	215	221	180	197
17	190	178	185	227	198	212	230	196	216	202	177	193
18	197	180	190	246	211	226	213	165	186	200	180	191
19	200	181	193	258	224	243	186	154	171	198	168	184
20	218	184	201	241	201	223	184	154	169	219	167	193
21	207	166	189	214	177	194	198	168	181	187	142	159
22	189	160	176	194	170	185	227	198	211	179	144	166
23	187	161	177	201	173	189	234	204	222	172	144	164
24	185	166	178	216	186	202	219	182	203	186	148	170
25	207	172	188	226	194	213	213	169	191	196	168	185
26	198	161	176	218	187	204	198	165	184	206	179	195
27	172	150	163	208	177	194	205	167	182	201	174	192
28	175	148	159	198	164	184	207	173	191	213	178	196
29	177	153	167	187	165	178	201	176	191	212	174	195
30	187	162	177	196	167	184	211	187	201	208	177	193
31	---	---	---	196	175	189	209	173	194	---	---	---
MONTH	218	117	166	258	148	195	234	154	196	230	142	190

WILLAMETTE RIVER BASIN

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14206694 TUALATIN RIVER AT RIVER MILE 24.5, NEAR SCHOLLS, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7.0	7.0	---	---	---	---	---	---	---	---	---	---
2	7.0	7.0	---	---	---	---	---	---	---	---	---	---
3	7.0	6.9	---	---	---	---	---	---	---	---	---	---
4	6.9	6.9	---	---	---	---	---	---	---	---	---	---
5	7.0	6.9	---	---	---	---	---	---	---	---	---	---
6	6.9	6.8	---	---	---	---	---	---	---	---	---	---
7	6.9	6.8	---	---	---	---	---	---	---	---	---	---
8	6.9	6.9	---	---	---	---	---	---	---	---	---	---
9	7.0	6.9	---	---	---	---	---	---	---	---	---	---
10	7.0	6.9	---	---	---	---	---	---	---	---	---	---
11	6.9	6.8	---	---	---	---	---	---	---	---	---	---
12	6.8	6.8	---	---	---	---	---	---	---	---	---	---
13	6.8	6.8	---	---	---	---	---	---	---	---	---	---
14	6.8	6.8	---	---	---	---	---	---	---	---	---	---
15	6.8	6.8	---	---	---	---	---	---	---	---	---	---
16	6.8	6.8	---	---	---	---	---	---	---	---	---	---
17	6.9	6.8	---	---	---	---	---	---	---	---	---	---
18	6.9	6.9	---	---	---	---	---	---	---	---	---	---
19	6.9	6.9	---	---	---	---	---	---	---	---	---	---
20	7.0	6.9	---	---	---	---	---	---	---	---	---	---
21	7.0	7.0	---	---	---	---	---	---	---	---	---	---
22	7.0	6.9	---	---	---	---	---	---	---	---	---	---
23	7.0	6.9	---	---	---	---	---	---	---	---	---	---
24	7.0	7.0	---	---	---	---	---	---	---	---	---	---
25	7.0	7.0	---	---	---	---	---	---	---	---	---	---
26	7.0	7.0	---	---	---	---	---	---	---	---	---	---
27	7.1	7.0	---	---	---	---	---	---	---	---	---	---
28	7.1	7.1	---	---	---	---	---	---	---	---	---	---
29	7.1	7.1	---	---	---	---	---	---	---	---	---	---
30	7.1	6.9	---	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	7.2	7.2	7.2	7.1	7.2	7.2	7.3	7.2	7.2	7.2
2	---	---	7.2	7.2	7.2	7.1	7.3	7.2	7.3	7.2	7.2	7.2
3	---	---	7.2	7.1	7.2	7.2	7.3	7.2	7.4	7.2	7.2	7.2
4	---	---	7.2	7.1	7.3	7.1	7.3	7.2	7.3	7.3	7.2	7.2
5	---	---	7.2	7.2	7.2	7.1	7.3	7.3	7.5	7.2	7.2	7.2
6	---	---	7.2	7.2	7.2	7.1	7.3	7.2	7.5	7.3	7.2	7.2
7	---	---	7.3	7.2	7.2	7.2	7.2	7.2	7.6	7.3	7.2	7.1
8	---	---	7.3	7.2	7.2	7.2	7.2	7.2	7.6	7.4	7.3	7.1
9	---	---	7.3	7.3	7.2	7.1	7.4	7.2	7.6	7.4	7.3	7.3
10	---	---	7.3	7.3	7.2	7.1	7.4	7.3	7.6	7.3	7.3	7.3
11	---	---	7.3	7.3	7.2	7.2	7.4	7.3	7.5	7.3	7.3	7.3
12	---	---	7.3	7.3	7.2	7.2	7.4	7.4	7.5	7.3	7.3	7.2
13	---	---	7.3	7.3	7.2	7.2	7.5	7.3	7.5	7.2	7.2	7.2
14	---	---	7.3	7.3	7.2	7.2	7.3	7.3	7.4	7.1	7.2	7.2
15	---	---	7.3	7.3	7.2	7.2	7.3	7.3	7.4	7.2	7.2	7.2
16	---	---	7.3	7.3	7.2	7.2	7.4	7.3	7.5	7.3	7.2	7.2
17	---	---	7.3	7.3	7.2	7.2	7.4	7.3	7.5	7.3	7.2	7.1
18	---	---	7.3	7.2	7.2	7.2	7.3	7.3	7.4	7.3	7.3	7.2
19	---	---	7.2	7.2	7.2	7.2	7.4	7.3	7.4	7.3	7.2	7.2
20	---	---	7.2	7.2	7.3	7.2	7.4	7.3	7.4	7.3	7.2	7.1
21	---	---	7.2	7.1	7.3	7.2	7.4	7.3	7.4	7.3	7.2	7.1
22	---	---	7.2	7.1	7.2	7.2	7.4	7.2	7.4	7.3	7.2	7.2
23	---	---	7.1	7.1	7.3	7.2	7.3	7.2	7.5	7.3	7.2	7.2
24	---	---	7.1	7.1	7.3	7.2	7.3	7.2	7.4	7.3	7.2	7.2
25	---	---	7.2	7.1	7.3	7.3	7.3	7.3	7.3	7.2	7.2	7.2
26	---	---	7.2	7.2	7.3	7.3	7.3	7.3	7.3	7.2	7.2	7.2
27	---	---	7.2	7.2	7.3	7.3	7.3	7.3	7.3	7.2	7.2	7.1
28	7.2	7.2	7.2	7.2	7.3	7.3	7.3	7.3	7.3	7.2	7.1	7.1
29	7.2	7.2	7.2	7.2	7.3	7.3	7.6	7.2	7.3	7.2	7.1	7.1
30	7.2	7.2	7.2	7.2	7.3	7.2	7.3	7.1	7.3	7.2	7.1	7.1
31	---	---	7.2	7.2	---	---	7.2	7.2	7.2	7.2	---	---
MONTH	---	---	7.3	7.1	7.3	7.1	7.6	7.1	7.6	7.1	7.3	7.1

WILLAMETTE RIVER BASIN

14206694 TUALATIN RIVER AT RIVER MILE 24.5, NEAR SCHOLLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.5	16.0	16.0	---	---	---	---	---	---	---	---	---
2	16.0	15.5	16.0	---	---	---	---	---	---	---	---	---
3	16.0	15.5	15.5	---	---	---	---	---	---	---	---	---
4	15.5	15.0	15.0	---	---	---	---	---	---	---	---	---
5	15.0	14.5	15.0	---	---	---	---	---	---	---	---	---
6	14.5	13.5	14.0	---	---	---	---	---	---	---	---	---
7	13.5	13.0	13.0	---	---	---	---	---	---	---	---	---
8	13.0	12.5	12.5	---	---	---	---	---	---	---	---	---
9	12.5	12.0	12.5	---	---	---	---	---	---	---	---	---
10	12.0	11.5	12.0	---	---	---	---	---	---	---	---	---
11	11.5	11.0	11.5	---	---	---	---	---	---	---	---	---
12	11.5	11.0	11.5	---	---	---	---	---	---	---	---	---
13	11.5	11.0	11.5	---	---	---	---	---	---	---	---	---
14	12.0	11.5	11.5	---	---	---	---	---	---	---	---	---
15	12.5	12.0	12.0	---	---	---	---	---	---	---	---	---
16	13.0	12.5	12.5	---	---	---	---	---	---	---	---	---
17	13.0	12.5	13.0	---	---	---	---	---	---	---	---	---
18	13.0	12.5	13.0	---	---	---	---	---	---	---	---	---
19	13.0	12.5	12.5	---	---	---	---	---	---	---	---	---
20	12.5	12.0	12.0	---	---	---	---	---	---	---	---	---
21	12.0	11.5	11.5	---	---	---	---	---	---	---	---	---
22	11.5	11.0	11.5	---	---	---	---	---	---	---	---	---
23	11.5	11.0	11.0	---	---	---	---	---	---	---	---	---
24	11.0	10.5	10.5	---	---	---	---	---	---	---	---	---
25	10.5	10.0	10.5	---	---	---	---	---	---	---	---	---
26	10.5	10.0	10.0	---	---	---	---	---	---	---	---	---
27	10.0	10.0	10.0	---	---	---	---	---	---	---	---	---
28	10.0	10.0	10.0	---	---	---	---	---	---	---	---	---
29	10.5	10.0	10.5	---	---	---	---	---	---	---	---	---
30	12.0	10.5	11.5	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	17.5	16.5	17.0
2	---	---	---	---	---	---	---	---	---	17.5	17.5	17.5
3	---	---	---	---	---	---	---	---	---	17.5	17.5	17.5
4	---	---	---	---	---	---	---	---	---	17.5	17.0	17.5
5	---	---	---	---	---	---	---	---	---	17.5	17.0	17.0
6	---	---	---	---	---	---	---	---	---	17.0	16.5	16.5
7	---	---	---	---	---	---	---	---	---	16.5	16.0	16.5
8	---	---	---	---	---	---	---	---	---	16.5	15.5	16.0
9	---	---	---	---	---	---	---	---	---	15.5	14.5	15.0
10	---	---	---	---	---	---	---	---	---	14.5	13.5	14.0
11	---	---	---	---	---	---	---	---	---	13.5	13.0	13.5
12	---	---	---	---	---	---	---	---	---	13.0	12.5	12.5
13	---	---	---	---	---	---	---	---	---	12.5	12.0	12.0
14	---	---	---	---	---	---	---	---	---	12.5	12.0	12.0
15	---	---	---	---	---	---	---	---	---	12.0	12.0	12.0
16	---	---	---	---	---	---	---	---	---	12.0	12.0	12.0
17	---	---	---	---	---	---	---	---	---	12.5	12.0	12.0
18	---	---	---	---	---	---	---	---	---	12.5	12.0	12.5
19	---	---	---	---	---	---	---	---	---	13.0	12.5	12.5
20	---	---	---	---	---	---	---	---	---	13.0	13.0	13.0
21	---	---	---	---	---	---	---	---	---	13.0	12.5	13.0
22	---	---	---	---	---	---	---	---	---	12.5	12.5	12.5
23	---	---	---	---	---	---	---	---	---	12.5	12.0	12.5
24	---	---	---	---	---	---	---	---	---	12.5	12.5	12.5
25	---	---	---	---	---	---	---	---	---	13.0	12.5	12.5
26	---	---	---	---	---	---	---	---	---	13.0	12.5	12.5
27	---	---	---	---	---	---	---	---	---	12.5	12.0	12.5
28	---	---	---	---	---	---	14.0	13.0	13.5	13.0	12.5	12.5
29	---	---	---	---	---	---	15.5	14.0	14.5	13.0	13.0	13.0
30	---	---	---	---	---	---	17.0	15.5	16.0	13.5	13.0	13.5
31	---	---	---	---	---	---	---	---	---	14.0	13.5	14.0
MONTH	---	---	---	---	---	---	---	---	---	17.5	12.0	13.9

WILLAMETTE RIVER BASIN

14206694 TUALATIN RIVER AT RIVER MILE 24.5, NEAR SCHOLLS, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	---	---	---	8.9	8.5	8.7
2	---	---	---	---	---	---	---	---	---	8.5	7.9	8.2
3	---	---	---	---	---	---	---	---	---	7.9	7.0	7.4
4	---	---	---	---	---	---	---	---	---	7.7	7.0	7.4
5	---	---	---	---	---	---	---	---	---	8.0	7.6	7.8
6	---	---	---	---	---	---	---	---	---	8.1	7.8	7.9
7	---	---	---	---	---	---	---	---	---	8.2	8.0	8.1
8	---	---	---	---	---	---	---	---	---	8.2	8.0	8.1
9	---	---	---	---	---	---	---	---	---	8.2	8.0	8.1
10	---	---	---	---	---	---	---	---	---	8.4	8.1	8.2
11	---	---	---	---	---	---	---	---	---	8.8	8.4	8.6
12	---	---	---	---	---	---	---	---	---	8.9	8.5	8.7
13	---	---	---	---	---	---	---	---	---	8.9	8.5	8.8
14	---	---	---	---	---	---	---	---	---	8.8	8.3	8.6
15	---	---	---	---	---	---	---	---	---	9.1	8.8	9.0
16	---	---	---	---	---	---	---	---	---	9.0	8.8	8.9
17	---	---	---	---	---	---	---	---	---	9.1	8.8	9.0
18	---	---	---	---	---	---	---	---	---	9.1	8.9	9.0
19	---	---	---	---	---	---	---	---	---	9.1	8.9	9.0
20	---	---	---	---	---	---	---	---	---	9.0	8.7	8.8
21	---	---	---	---	---	---	---	---	---	8.9	8.7	8.8
22	---	---	---	---	---	---	---	---	---	9.0	8.7	8.9
23	---	---	---	---	---	---	---	---	---	9.2	9.0	9.1
24	---	---	---	---	---	---	---	---	---	9.1	9.0	9.1
25	---	---	---	---	---	---	---	---	---	9.1	8.9	9.0
26	---	---	---	---	---	---	---	---	---	9.1	8.9	9.0
27	---	---	---	---	---	---	---	---	---	9.2	9.0	9.1
28	---	---	---	---	---	---	10.0	9.6	9.8	9.2	9.0	9.2
29	---	---	---	---	---	---	9.6	9.1	9.3	9.1	9.0	9.0
30	---	---	---	---	---	---	9.2	8.6	9.0	9.0	8.6	8.8
31	---	---	---	---	---	---	---	---	---	8.8	8.4	8.7
MONTH	---	---	---	---	---	---	---	---	---	9.2	7.0	8.6
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	8.8	8.5	8.6	7.5	7.3	7.4	7.9	7.5	7.7	7.9	7.6	7.7
2	8.5	8.2	8.4	7.6	7.3	7.4	8.2	7.3	7.7	7.9	7.5	7.7
3	8.3	8.0	8.1	7.6	7.5	7.6	8.5	7.8	8.2	7.8	7.4	7.6
4	8.1	7.8	8.0	7.7	7.5	7.6	8.5	7.9	8.2	7.8	7.4	7.5
5	8.2	8.0	8.1	7.9	7.6	7.8	8.6	7.7	8.1	7.7	7.3	7.5
6	8.3	8.1	8.2	8.2	7.9	8.1	8.8	7.7	8.2	7.7	7.3	7.5
7	8.5	8.0	8.2	8.2	8.0	8.1	10.2	7.8	8.6	7.9	7.4	7.6
8	8.4	8.1	8.2	8.0	7.8	7.9	10.3	8.3	9.3	8.2	7.8	8.0
9	8.3	7.9	8.1	7.9	7.5	7.7	12.1	7.8	9.3	8.4	8.0	8.2
10	8.2	7.8	8.0	7.7	7.4	7.5	11.1	8.1	9.2	8.6	8.2	8.3
11	8.1	7.6	7.9	7.7	7.2	7.4	10.3	7.6	8.4	8.6	8.4	8.5
12	8.2	7.5	7.8	8.1	7.4	7.7	9.5	7.1	7.9	8.7	8.4	8.6
13	8.4	8.0	8.2	8.4	7.8	8.1	9.4	7.5	8.2	8.5	8.3	8.4
14	8.4	8.0	8.2	8.1	7.9	8.0	8.4	6.7	7.0	8.4	8.2	8.3
15	8.3	8.0	8.1	8.1	7.8	7.9	7.5	6.7	7.0	8.6	8.3	8.4
16	8.0	7.7	7.8	8.4	7.9	8.1	7.5	7.1	7.3	8.6	8.3	8.4
17	7.9	7.6	7.7	8.3	7.7	7.9	7.3	6.8	7.0	8.4	7.9	8.2
18	7.7	7.6	7.7	8.2	7.5	7.7	7.6	6.9	7.3	8.2	8.0	8.1
19	7.7	7.5	7.6	8.1	7.3	7.7	8.1	7.4	7.8	8.3	8.0	8.1
20	8.0	7.5	7.8	8.0	7.5	7.8	8.2	7.8	8.0	8.3	7.2	7.5
21	8.2	7.9	8.1	8.2	7.8	8.0	---	---	---	8.0	7.3	7.7
22	8.1	7.8	7.9	8.3	7.9	8.1	---	---	---	8.2	7.9	8.0
23	7.9	7.7	7.8	8.3	7.9	8.1	---	---	---	8.2	8.0	8.1
24	7.8	7.5	7.7	8.0	7.6	7.8	---	---	---	8.2	8.0	8.1
25	7.7	7.3	7.5	7.8	7.4	7.7	---	---	---	8.1	8.0	8.0
26	7.8	7.3	7.6	8.1	7.5	7.8	---	---	---	8.1	8.0	8.0
27	7.9	7.8	7.9	8.2	7.9	8.0	---	---	---	8.2	8.0	8.1
28	8.0	7.8	7.9	8.7	8.0	8.3	---	---	---	8.2	8.1	8.1
29	8.0	7.8	7.9	9.5	7.9	8.7	7.6	7.3	7.5	8.1	7.9	8.1
30	7.9	7.5	7.6	8.9	7.8	8.1	7.7	7.3	7.5	8.1	7.8	8.0
31	---	---	---	7.9	7.4	7.6	7.8	7.4	7.5	---	---	---
MONTH	8.8	7.3	8.0	9.5	7.2	7.9	---	---	---	8.7	7.2	8.0

14206900 FANNO CREEK AT 56TH AVENUE, PORTLAND, OR

LOCATION.--Lat 45°29'17", long 122°44'01", in NE 1/4 NW 1/4 sec.18, T.1 S., R.1 E., Multnomah County, Hydrologic Unit 17090010, on bridge at SW 56th Ave., in Portland, and at mile 11.9.

DRAINAGE AREA.--2.37 mi².

PERIOD OF RECORD.--Annual maximums, 1975-77. October 1990 to current year.

REVISED RECORDS.--WDR OR-92-1: 1991, 1991(m).

GAGE.--Water-stage recorder. Elevation of gage is 250 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--8 years (water years 1991-98), 3.45 ft³/s, 19.78 in/yr, 2,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 733 ft³/s Feb. 8, 1996, gage height, 13.2 ft, from floodmark, from rating curve extended above 200 ft³/s; minimum discharge, 0.07 ft³/s many days in October 1991 and September 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 29	0800	170	11.00	Feb. 21	0130	163	11.05
Oct. 30	1400	158	11.02	May 20	1830	155	11.00
Jan. 14	1230	*236	*11.46	June 25	1700	179	11.15

Minimum discharge, 0.09 ft³/s Sept. 10-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	1.5	2.3	4.4	4.8	13	1.9	2.5	1.6	.83	.40	.26
2	1.6	1.2	2.1	2.0	2.6	19	1.7	9.3	1.5	.64	.38	.20
3	3.5	1.1	1.9	5.0	3.5	11	2.3	1.0	1.4	.62	.38	.20
4	7.4	1.1	1.8	9.0	2.3	7.3	1.7	.92	1.3	.73	.35	.21
5	3.3	1.1	1.9	12	3.1	4.7	1.6	.85	1.2	.60	.34	.22
6	.96	3.5	1.5	10	12	3.8	1.4	.79	1.1	.58	.34	.15
7	.72	7.9	4.9	5.8	3.2	3.4	1.5	.79	1.1	.56	.34	.15
8	5.8	1.7	2.2	3.2	3.2	7.2	1.3	2.8	1.0	.53	.33	.14
9	6.7	1.8	3.7	2.5	2.3	3.4	1.2	.91	1.0	.54	.28	.16
10	3.0	1.7	2.9	6.5	10	5.0	2.2	2.1	7.8	.54	.29	.13
11	1.4	1.7	1.5	5.6	5.1	3.1	2.5	.98	1.4	.54	.29	.14
12	.87	1.7	1.3	2.8	12	2.8	1.3	5.8	1.1	.53	.34	.14
13	.74	1.7	1.2	32	5.4	2.6	1.2	5.8	.96	.52	.32	.15
14	.63	1.7	1.5	59	6.2	2.3	1.1	4.9	.86	.47	.31	.16
15	.58	1.5	5.6	11	3.5	2.1	1.0	2.4	.90	.41	.27	.16
16	.51	2.9	29	34	3.0	1.9	.95	10	.97	.43	.25	.16
17	.52	4.9	10	18	2.5	1.7	.92	17	.84	.41	.26	.19
18	.42	1.4	3.4	21	9.3	1.7	1.5	2.9	1.0	.41	.26	5.7
19	.38	23	2.4	9.5	6.1	1.6	.96	7.8	.84	.42	.27	1.1
20	e.36	16	8.7	5.9	14	1.5	.89	22	.74	.41	.24	.39
21	.39	4.5	2.6	5.8	40	6.9	.81	6.2	.70	.38	.25	.33
22	.41	2.2	2.1	8.4	9.7	18	.82	3.3	.69	.37	.22	.31
23	.45	11	3.5	14	4.9	15	2.6	2.6	.81	.39	.22	.31
24	.44	7.5	2.1	24	3.8	5.1	1.2	13	6.0	.38	.23	.38
25	.40	4.1	1.8	12	5.0	3.2	.87	4.8	12	.39	.21	.54
26	.67	2.3	2.4	7.8	3.1	3.3	.81	2.9	1.4	.37	.25	.32
27	.48	1.8	2.1	5.4	2.7	3.4	.79	2.2	.89	.36	.23	.26
28	1.3	2.3	1.5	4.2	19	2.4	.76	1.9	.75	.36	.20	.27
29	19	7.8	1.4	4.4	---	2.0	.70	5.9	.70	.36	.20	.23
30	24	3.1	1.4	3.0	---	2.2	.70	2.4	.65	1.1	.20	.18
31	4.5	---	1.3	2.6	---	2.9	---	1.9	---	.44	.20	---
TOTAL	105.43	125.7	112.0	350.8	202.3	163.5	39.18	148.64	53.20	15.62	8.65	13.24
MEAN	3.40	4.19	3.61	11.3	7.22	5.27	1.31	4.79	1.77	.50	.28	.44
MAX	24	23	29	59	40	19	2.6	22	12	1.1	.40	5.7
MIN	.36	1.1	1.2	2.0	2.3	1.5	.70	.79	.65	.36	.20	.13
AC-FT	209	249	222	696	401	324	78	295	106	31	17	26
CFSM	1.44	1.77	1.52	4.77	3.05	2.23	.55	2.02	.75	.21	.12	.19
IN.	1.65	1.97	1.76	5.51	3.18	2.57	.61	2.33	.84	.25	.14	.21

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1998, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	2.14	5.26	6.89	6.98	6.93	4.53	3.36	2.57
MAX	4.11	14.3	20.1	11.4	16.6	9.47	5.20	4.79
(WY)	1995	1997	1997	1997	1996	1997	1998	1997
MIN	.60	1.06	3.29	3.02	1.54	1.73	1.31	.73
(WY)	1992	1994	1991	1994	1993	1994	1998	1994

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1991 - 1998
ANNUAL TOTAL	1354.57	1338.26	
ANNUAL MEAN	3.71	3.67	3.45
HIGHEST ANNUAL MEAN			5.95
LOWEST ANNUAL MEAN			1.75
HIGHEST DAILY MEAN	68 Jan 17	59 Jan 14	202 Nov 19 1996
LOWEST DAILY MEAN	.20 Aug 7	.13 Sep 10	.07 Oct 1 1991
ANNUAL SEVEN-DAY MINIMUM	.20 Aug 7	.14 Sep 6	.07 Oct 1 1991
ANNUAL RUNOFF (AC-FT)	2690	2650	2500
ANNUAL RUNOFF (CFSM)	1.57	1.55	1.46
ANNUAL RUNOFF (INCHES)	21.26	21.01	19.78
10 PERCENT EXCEEDS	9.6	9.6	7.9
50 PERCENT EXCEEDS	1.6	1.5	1.3
90 PERCENT EXCEEDS	.25	.27	.21

e Estimated

452359122454500 UNIFIED SEWERAGE AGENCY (USA) DURHAM WASTEWATER TREATMENT FACILITY

DURHAM, OREGON

LOCATION.--Lat 45°23'59", long 122°45'45", SW 1/4 NE 1/4, sec.13, T.2 S., R.1 W., Washington County, Hydrologic Unit 17090010, located on the roof of the Solids Building at the USA Durham Wastewater Treatment Facility in Durham.

PERIOD OF RECORD.--May 1991 to November 1993, May 1994 to current year (partial record only, May through November each year).

INSTRUMENTATION.--A quantum sensor interfaced with a micrologger, modem, and phone line. The quantum sensor measures photosynthetically active radiation (PAR) on a flat surface in the 400 to 700 nanometer (nm) waveband. The unit of measurement is microeinsteins per square meter per second ($\mu\text{E}/\text{m}^2/\text{second}$).

REMARKS.--Continuous data for period May 1991 to September 1993 published in USGS Open-File Report 96-173, "Water-quality, Streamflow, and Meteorological Data for the Tualatin River Basin, Oregon, 1991-1993." Daily record data for period May 1994 to November 1994 and May 1995 to November 1995 published in USGS Open-File Report 96-316, "Water-Temperature, Specific Conductance, and Meteorological Data for the Tualatin River Basin, Oregon, 1994-1995".

EXTREMES FOR CURRENT YEAR.--Maximum hourly PAR value recorded for period May to November 1998, 1,880 microeinsteins per square meter per second ($\mu\text{E}/\text{m}^2/\text{second}$) July 13 at 1400 hrs; maximum recorded mean daily PAR value, 315 microeinsteins per meter square per second ($\mu\text{E}/\text{m}^2/\text{second}$) May 31, 1998.

LIGHT INCIDENT, 400-700NM, INTENSITY (UE/M2/SC), MAY TO NOVEMBER 1998

DAY	MAX	MEAN	MAX	MEAN	MAX	MEAN
MAY			JUNE		JULY	
1	1600	226	1760	282	695	87.6
2	1180	161	1730	238	1590	194
3	1800	150	1780	221	439	71.1
4	1190	157	733	82.6	803	91.1
5	1200	129	1530	215	1470	185
6	1490	139	1770	273	1710	303
7	1670	234	1720	305	1720	220
8	701	64.2	1580	208	1620	279
9	397	53.6	1660	200	1800	283
10	305	39.4	706	95.1	863	116
11	550	90.8	1360	165	1330	192
12	164	24.6	1770	251	1520	186
13	415	57.2	1390	236	1880	236
14	1040	145	1610	243	1120	181
15	1270	181	1730	215	1770	279
16	405	61.7	1710	202	1750	304
17	974	125	1740	300	1750	304
18	1560	239	790	100	1760	237
19	1270	139	1690	230	1310	173
20	219	32.7	1760	286	1760	290
21	592	77.0	1770	300	1730	296
22	1100	146	1240	153	1740	296
23	795	118	865	129	1730	290
24	617	82.0	776	111	1720	279
25	1780	210	894	101	1720	205
26	1420	163	1590	164	1720	277
27	1460	227	1730	308	1700	263
28	1690	263	1730	307	1680	287
29	227	30.8	1710	299	1750	201
30	1190	152	1010	113	1440	137
31	1800	315	---	---	749	81.2
MONTH	1800	137	1780	211	1880	220

DAY	MAX	MEAN	MAX	MEAN	MAX	MEAN	MAX	MEAN
AUGUST		SEPTEMBER		OCTOBER		NOVEMBER		
1	1650	192	1460	221	---	---	259	27.0
2	1710	277	1520	234	---	---	785	74.4
3	1680	282	1490	228	562	45.9	256	27.7
4	1700	281	1490	227	1090	110	390	33.6
5	1720	283	1480	224	1090	135	656	51.7
6	1750	245	1480	224	1100	139	440	39.9
7	1640	253	1470	204	945	112	144	15.9
8	1700	278	1050	150	647	64.6	379	33.4
9	1670	273	1380	197	392	34.4	350	37.0
10	1690	277	1430	215	786	67.3	180	17.1
11	1680	262	1430	209	740	72.8	422	31.9
12	1680	276	1430	212	223	25.6	248	23.4
13	1660	271	1420	210	963	88.1	91.5	10.4
14	1660	269	1400	205	631	79.9	580	43.7
15	1250	131	1390	198	659	75.9	454	33.3
16	957	157	1490	159	840	72.7	228	25.2
17	1610	240	1160	82.0	451	36.6	628	52.2
18	1430	203	1130	101	960	99.5	542	47.7
19	1590	250	1200	123	968	120	196	17.5
20	1510	221	1290	185	983	122	74.0	8.51
21	1420	168	767	110	972	121	127	11.5
22	1650	243	1240	176	925	112	291	22.3
23	807	96.7	569	64.4	786	58.0	205	16.0
24	1570	237	626	76.1	352	36.4	511	36.2
25	1540	228	1170	141	900	75.8	119	10.2
26	1230	129	1170	164	902	99.7	361	27.7
27	1510	235	1130	157	277	21.2	482	37.8
28	1490	229	1110	108	857	75.1	218	19.0
29	1500	233	1110	153	837	72.4	318	22.4
30	1530	228	442	35.0	777	70.5	374	22.3
31	1490	227	---	---	133	13.6	---	---
MONTH	1750	231	1520	166	---	---	785	29.2

WILLAMETTE RIVER BASIN

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14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR

WATER-QUALITY RECORDS

LOCATION.--45°21'24", long 122°41'02", in SE 1/4 NE 1/4 sec.33 T.2 S., R. 1 E., Clackamas County, Hydrologic Unit 17090010, on left bank, mounted to the fish ladder at the Lake Oswego Dam, and at mile 3.4.

DRAINAGE AREA.--706 mi², at gage 1.6 mi downstream.

PERIOD OF RECORD.--May 1991 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: May 1993 to current year.

pH: May 1993 to current year.

WATER TEMPERATURE: October 1993 to current year.

DISSOLVED OXYGEN: May 1993 to current year.

AIR TEMPERATURE: May 1993 to current year.

INSTRUMENTATION.--Water-quality monitor since May 1991. Electronic data logger with 60 minute recording interval.

REMARKS.--Continuous data for period May 1991 to September 1993 published in USGS Open-File Report 96-173, "Water-quality, Streamflow, and Meteorological Data for the Tualatin River Basin, Oregon, 1991-93".

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 365 microsiemens July 7, 1995; minimum recorded, 70 microsiemens Dec. 19, 1995, Jan. 20, 21, 1998.

pH: Maximum recorded, 9.5 units June 24, 1995; minimum recorded, 6.2 units Oct. 18, 19, 1993, Feb. 28, 1994.

WATER TEMPERATURE: Maximum recorded, 27.0°C July 22, 1994; minimum recorded, 0.5°C Jan. 15, 1993.

DISSOLVED OXYGEN: Maximum recorded, 21.8 mg/L June 23, 1992; minimum recorded, 3.2 mg/L Nov. 19, 1992.

AIR TEMPERATURE: Maximum recorded, 43.0°C July 28, 1998; minimum recorded, -7.6°C Feb. 2, 1996.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 272 microsiemens Aug. 23, 24; minimum recorded, 70 microsiemens Jan. 20, 21.

pH: Maximum, 8.4 units July 16-18; minimum recorded, 6.7 units Nov. 27 to Dec. 3.

WATER TEMPERATURE: Maximum, 25.5°C July 28; minimum recorded, 4.0°C Jan. 13, 14.

DISSOLVED OXYGEN: Maximum, 14.9 mg/L July 18; minimum recorded, 4.8 mg/L Sept. 20.

AIR TEMPERATURE: Maximum, 43.0°C July 28; minimum recorded, -3.3°C Jan. 12.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	216	200	209	173	116	140	94	91	93	116	110	112
2	218	160	199	116	91	100	95	91	93	116	111	113
3	180	151	169	94	89	91	93	91	93	123	110	114
4	179	167	175	99	91	97	95	92	93	123	112	117
5	198	163	181	109	98	104	96	93	95	112	105	108
6	164	152	156	121	106	113	100	95	97	109	104	106
7	159	130	144	129	120	124	104	97	100	106	99	103
8	135	114	124	138	125	130	104	97	100	99	94	97
9	125	118	122	146	138	141	105	97	103	94	88	90
10	133	124	128	146	129	137	108	104	106	88	84	86
11	147	132	142	142	134	139	111	104	108	88	84	86
12	135	111	120	147	137	141	112	106	109	94	87	91
13	112	106	108	144	135	140	115	106	110	94	91	92
14	117	103	109	149	144	147	118	110	112	92	88	89
15	122	111	114	156	147	151	125	112	116	95	92	93
16	128	118	123	159	146	153	127	118	122	92	83	88
17	135	128	132	161	146	154	120	111	116	83	78	80
18	146	131	139	156	144	151	117	94	106	78	74	75
19	155	140	148	160	148	154	94	85	88	75	73	74
20	163	147	157	148	116	129	86	83	84	74	70	72
21	169	148	161	126	108	119	85	82	83	72	70	71
22	175	160	166	108	91	96	87	84	85	74	71	72
23	180	172	176	91	85	88	92	86	89	77	74	75
24	190	173	181	89	83	86	96	91	93	81	77	79
25	193	174	185	93	89	92	97	93	95	82	80	81
26	199	177	189	91	89	90	97	94	96	83	81	82
27	200	186	195	89	83	86	99	97	98	81	78	80
28	204	194	200	86	83	85	101	98	100	78	77	78
29	203	187	198	88	82	85	105	101	103	78	77	78
30	187	145	164	93	86	88	108	102	105	---	---	---
31	173	135	151	---	---	---	114	106	109	---	---	---
MONTH	218	103	157	173	82	118	127	82	100	---	---	---

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	93	87	89	111	104	108	173	158	167
2	---	---	---	94	93	93	119	110	115	180	154	170
3	---	---	---	95	92	93	121	112	116	174	159	166
4	---	---	---	93	90	91	129	118	121	176	161	170
5	---	---	---	91	89	90	133	123	127	187	167	179
6	---	---	---	90	87	88	137	124	131	196	182	190
7	100	92	95	91	87	89	137	122	131	186	171	179
8	100	95	97	92	89	91	140	129	136	188	176	182
9	97	93	94	95	90	92	143	131	138	192	177	186
10	99	96	97	98	95	97	144	137	141	199	180	190
11	98	94	96	100	97	98	145	135	141	194	178	188
12	105	96	101	103	100	101	153	136	142	197	183	191
13	103	98	100	103	99	101	153	133	142	198	180	193
14	103	98	101	106	101	103	141	124	133	189	172	180
15	98	90	93	106	102	104	137	125	132	185	169	177
16	90	86	87	107	102	104	138	126	134	189	169	182
17	88	85	87	110	104	107	137	125	132	190	143	166
18	90	86	88	114	105	109	135	124	131	166	149	155
19	93	89	91	121	110	114	142	131	138	166	160	164
20	98	93	96	125	117	119	146	137	143	166	136	151
21	97	88	92	131	120	123	151	143	146	137	124	132
22	94	89	92	131	116	121	151	143	147	148	135	144
23	90	84	87	130	114	121	156	148	151	145	132	137
24	85	82	83	122	110	116	159	146	152	136	123	128
25	82	79	81	113	106	109	155	147	151	132	122	126
26	82	78	80	106	96	99	161	147	155	138	125	131
27	85	82	84	99	95	97	169	153	162	139	133	137
28	89	85	87	101	96	98	162	149	158	136	124	131
29	---	---	---	101	97	99	168	148	162	137	126	132
30	---	---	---	104	97	101	171	151	165	138	131	135
31	---	---	---	108	100	104	---	---	---	141	133	138
MONTH	---	---	---	131	87	102	171	104	139	199	122	161

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	156	141	148	204	189	199	252	240	245	259	251	255
2	151	139	146	204	189	198	245	233	240	251	243	247
3	149	141	144	203	197	201	233	223	228	243	237	240
4	157	146	153	210	198	205	223	220	221	239	237	237
5	159	151	157	212	199	207	220	218	218	249	239	243
6	174	158	169	212	206	210	225	219	220	258	249	254
7	181	158	172	215	212	214	228	224	226	262	257	260
8	184	164	176	220	214	218	232	228	231	263	261	262
9	178	167	174	215	213	214	241	232	237	261	249	255
10	185	169	177	217	213	215	242	240	241	252	243	249
11	191	171	180	222	217	219	240	234	237	250	243	246
12	185	170	177	220	213	217	234	232	233	252	246	247
13	190	177	185	215	210	212	236	233	234	262	252	257
14	206	181	192	215	210	212	244	235	237	263	259	261
15	206	199	203	220	214	217	254	239	244	259	245	251
16	201	187	196	226	219	222	255	252	253	245	226	235
17	198	184	193	233	224	228	264	255	260	233	223	226
18	205	197	200	246	232	237	265	261	263	233	221	228
19	214	205	208	249	240	244	261	255	259	233	220	226
20	218	207	213	250	242	246	257	253	254	240	220	229
21	221	211	217	250	240	243	258	253	255	236	219	228
22	223	211	217	242	236	241	264	257	259	237	218	228
23	224	210	219	240	236	238	272	264	268	223	212	220
24	231	216	222	247	238	243	272	265	268	219	212	216
25	233	210	222	266	246	254	271	259	267	234	210	222
26	210	193	203	269	261	265	259	245	254	233	219	224
27	197	181	190	261	243	253	245	226	237	224	213	216
28	207	185	197	243	228	236	227	225	226	219	207	212
29	213	207	209	---	---	---	235	226	230	219	208	212
30	210	194	200	---	---	---	252	235	242	214	208	211
31	---	---	---	243	233	238	258	252	255	---	---	---
MONTH	233	139	189	---	---	---	272	218	243	263	207	237

WILLAMETTE RIVER BASIN

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14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	7.2	7.2	7.1	7.0	6.7	6.7	7.2	7.1	---	---	7.0	7.0
2	7.2	7.1	7.0	6.9	6.8	6.7	7.2	7.2	---	---	7.0	7.0
3	7.1	7.1	6.9	6.9	6.8	6.7	7.2	7.2	---	---	7.0	6.9
4	7.2	7.1	6.9	6.9	6.8	6.8	7.2	7.2	---	---	7.0	7.0
5	7.2	7.1	6.9	6.9	6.9	6.8	7.2	7.2	---	---	7.0	7.0
6	7.2	7.1	6.9	6.9	6.9	6.8	7.2	7.2	---	---	7.0	7.0
7	7.2	7.1	6.9	6.9	6.9	6.9	7.2	7.1	7.0	6.9	7.0	7.0
8	7.1	7.1	7.0	6.9	6.9	6.9	7.1	7.1	7.0	7.0	7.1	7.0
9	7.1	7.1	7.0	7.0	6.9	6.9	7.1	7.1	7.0	6.9	7.1	7.1
10	7.1	7.1	7.0	7.0	6.9	6.9	7.1	7.1	7.0	7.0	7.1	7.1
11	7.2	7.1	7.0	7.0	6.9	6.9	7.1	7.1	7.0	6.9	7.2	7.1
12	7.1	6.9	7.1	7.0	7.0	6.9	7.2	7.1	7.0	6.9	7.2	7.0
13	6.9	6.9	7.1	7.1	7.0	6.9	7.2	7.1	7.0	6.9	7.0	7.0
14	6.9	6.8	7.1	7.1	7.0	6.9	7.1	7.1	7.0	6.9	7.0	7.0
15	6.9	6.9	7.2	7.1	7.0	6.9	7.1	7.0	7.0	6.9	7.0	7.0
16	6.9	6.9	7.2	7.1	7.0	6.9	7.0	7.0	7.0	6.9	7.0	7.0
17	6.9	6.8	7.2	7.2	6.9	6.9	7.0	7.0	7.0	7.0	7.1	7.0
18	6.8	6.8	7.2	7.1	6.9	6.9	7.0	6.9	7.0	6.9	7.1	7.0
19	6.8	6.8	7.2	7.1	6.9	6.8	6.9	6.9	7.0	6.9	7.1	7.0
20	6.9	6.8	7.2	7.0	6.9	6.8	6.9	6.9	7.0	7.0	7.0	7.0
21	7.0	6.9	7.0	7.0	6.8	6.8	6.9	6.9	7.0	7.0	7.0	7.0
22	7.0	7.0	7.0	6.9	6.9	6.8	6.9	6.9	7.0	6.9	7.0	7.0
23	7.0	7.0	6.9	6.8	7.2	6.8	6.9	6.9	7.0	6.9	7.0	7.0
24	7.0	7.0	6.9	6.8	7.1	7.1	7.0	6.9	7.0	7.0	7.0	7.0
25	7.0	7.0	6.9	6.9	7.1	7.1	7.0	6.9	7.0	7.0	7.0	7.0
26	7.0	7.0	6.9	6.8	7.1	7.1	7.0	6.9	7.0	7.0	7.0	7.0
27	7.1	7.0	6.8	6.7	7.2	7.1	---	---	7.0	7.0	7.1	7.0
28	7.3	7.0	6.7	6.7	7.2	7.1	---	---	7.0	7.0	7.1	7.1
29	7.3	7.2	6.7	6.7	7.1	7.1	---	---	---	---	7.1	7.1
30	7.2	7.1	6.7	6.7	7.1	7.1	---	---	---	---	7.1	7.1
31	7.1	7.0	---	---	7.1	7.1	---	---	---	---	7.1	7.1
MONTH	7.3	6.8	7.2	6.7	7.2	6.7	---	---	---	---	7.2	6.9
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.1	7.0	7.1	7.1	7.1	7.1	7.1	7.0	7.2	7.0	7.4	7.1
2	7.1	7.1	7.1	7.0	7.1	7.1	7.1	7.1	7.1	7.0	7.3	7.2
3	7.1	7.1	7.1	7.0	7.1	7.0	7.1	7.1	7.2	7.1	7.3	7.2
4	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.1	7.4	7.2	7.2	7.1
5	7.1	7.1	7.1	7.0	7.1	7.1	7.2	7.1	7.5	7.1	7.2	7.1
6	7.1	7.1	7.0	6.9	7.2	7.1	7.2	7.1	7.3	7.1	7.2	7.1
7	7.1	7.1	6.9	6.9	7.2	7.1	7.3	7.1	7.4	7.2	7.1	7.1
8	7.2	7.1	7.0	6.9	7.2	7.2	7.3	7.1	7.3	7.1	7.2	7.1
9	7.2	7.1	7.0	6.9	7.2	7.2	7.5	7.1	7.4	7.1	7.1	7.1
10	7.2	7.1	7.0	7.0	7.2	7.2	7.4	7.2	7.7	7.1	7.1	7.1
11	7.2	7.1	7.0	7.0	7.2	7.1	7.3	7.2	8.0	7.1	7.2	7.1
12	7.2	7.1	7.0	7.0	7.2	7.1	7.4	7.2	8.1	7.1	7.2	7.1
13	7.1	7.1	7.1	7.0	7.3	7.2	7.4	7.2	8.3	7.2	7.2	7.1
14	7.1	7.1	7.1	7.1	7.4	7.3	7.6	7.2	8.2	7.2	7.1	7.1
15	7.1	7.1	7.2	7.1	7.3	7.3	7.5	7.3	7.5	7.2	7.1	7.1
16	7.1	7.1	7.2	7.1	7.3	7.2	8.4	7.4	7.4	7.2	7.1	7.1
17	7.1	7.1	7.2	7.1	7.4	7.3	8.4	7.7	7.3	7.2	7.1	7.1
18	7.1	7.1	7.1	7.1	7.4	7.3	8.4	7.5	7.4	7.2	7.1	7.1
19	7.1	7.1	7.2	7.1	7.4	7.3	7.5	7.3	7.3	7.2	7.1	7.0
20	7.1	7.0	7.2	7.1	7.4	7.3	7.6	7.3	7.3	7.2	7.0	6.9
21	7.1	7.0	7.1	7.0	7.3	7.3	7.3	7.2	7.3	7.2	7.0	7.0
22	7.1	7.1	7.1	7.1	7.3	7.2	7.6	7.2	7.3	7.2	7.2	7.0
23	7.1	7.0	7.1	7.1	7.3	7.2	7.6	7.3	7.3	7.1	7.2	7.1
24	7.1	7.0	7.1	7.1	7.3	7.2	7.5	7.2	7.2	7.1	7.1	7.1
25	7.1	7.0	7.1	7.0	7.3	7.0	7.4	7.1	7.2	7.1	7.1	7.1
26	7.1	7.1	7.1	7.0	7.1	7.0	7.2	7.1	7.2	7.1	7.1	7.0
27	7.1	7.1	7.1	7.1	7.1	7.0	7.5	7.1	7.2	7.1	7.0	7.0
28	7.1	7.1	7.1	7.1	7.1	7.0	7.6	7.2	7.1	7.1	7.1	7.0
29	7.1	7.1	7.1	7.1	7.1	7.0	7.5	7.2	7.2	7.1	7.2	7.0
30	7.1	7.1	7.1	7.1	7.1	7.0	7.3	7.2	7.2	7.1	7.2	7.0
31	---	---	7.1	7.1	---	---	7.2	7.1	7.2	7.1	---	---
MONTH	7.2	7.0	7.2	6.9	7.4	7.0	8.4	7.0	8.3	7.0	7.4	6.9

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.5	17.0	17.5	12.0	12.0	12.0	9.0	9.0	9.0	8.0	7.5	7.5
2	17.0	16.0	17.0	12.0	11.0	11.5	9.0	8.5	9.0	8.0	7.0	7.5
3	16.5	16.0	16.5	11.0	11.0	11.0	8.5	8.0	8.5	7.0	7.0	7.0
4	16.0	16.0	16.0	11.0	11.0	11.0	8.0	7.5	8.0	7.0	7.0	7.0
5	16.0	15.5	16.0	11.5	11.0	11.0	7.5	7.0	7.0	7.0	6.5	6.5
6	15.5	15.0	15.5	11.5	11.0	11.5	7.0	7.0	7.0	7.0	6.5	6.5
7	15.0	14.5	14.5	12.0	11.5	12.0	7.0	6.5	6.5	7.0	7.0	7.0
8	14.5	13.5	14.0	12.0	12.0	12.0	7.0	6.5	6.5	7.5	7.0	7.0
9	13.5	13.0	13.0	12.0	12.0	12.0	7.0	6.5	7.0	7.0	6.5	7.0
10	13.0	12.5	12.5	12.0	11.5	11.5	7.0	7.0	7.0	6.5	6.0	6.5
11	12.5	12.0	12.5	11.5	11.0	11.0	7.0	7.0	7.0	6.0	5.0	5.5
12	12.5	11.5	12.0	11.0	10.0	10.5	7.0	7.0	7.0	5.0	4.5	5.0
13	12.0	11.5	12.0	10.5	10.0	10.0	7.0	6.5	7.0	4.5	4.0	4.0
14	12.0	11.5	12.0	10.0	9.5	10.0	6.5	6.5	6.5	5.0	4.0	4.5
15	12.5	12.0	12.0	9.5	9.5	9.5	6.5	6.0	6.5	5.5	5.0	5.0
16	12.5	12.0	12.5	9.5	9.0	9.5	7.5	6.5	7.0	6.0	5.5	5.5
17	13.0	12.5	12.5	9.5	9.0	9.5	8.0	7.5	7.5	6.5	6.0	6.0
18	13.0	13.0	13.0	9.5	9.0	9.0	8.0	7.5	8.0	7.0	6.5	6.5
19	13.0	13.0	13.0	9.5	9.0	9.0	8.0	7.5	8.0	7.0	7.0	7.0
20	13.0	12.5	13.0	9.5	9.5	9.5	7.5	7.0	7.5	7.5	7.0	7.0
21	13.0	12.5	12.5	10.0	9.5	10.0	7.0	6.5	6.5	7.5	7.5	7.5
22	12.5	12.0	12.5	10.0	10.0	10.0	6.5	6.0	6.5	7.5	7.5	7.5
23	12.5	12.0	12.0	10.0	10.0	10.0	6.0	6.0	6.0	7.5	7.5	7.5
24	12.0	11.5	12.0	10.0	10.0	10.0	6.0	6.0	6.0	8.0	7.5	7.5
25	11.5	11.0	11.5	10.0	10.0	10.0	6.0	6.0	6.0	8.0	7.5	8.0
26	11.5	11.0	11.0	10.0	9.5	9.5	6.0	6.0	6.0	8.0	8.0	8.0
27	11.0	11.0	11.0	9.5	9.5	9.5	6.0	6.0	6.0	8.0	8.0	8.0
28	11.0	11.0	11.0	9.5	9.0	9.0	6.5	6.0	6.5	8.5	8.0	8.5
29	11.0	11.0	11.0	9.0	9.0	9.0	6.5	6.0	6.5	8.5	8.5	8.5
30	12.0	11.0	12.0	9.0	9.0	9.0	7.0	6.5	7.0	---	---	---
31	12.5	12.0	12.0	---	---	---	7.5	7.0	7.5	---	---	---
MONTH	17.5	11.0	13.1	12.0	9.0	10.3	9.0	6.0	7.0	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	8.5	8.0	8.5	10.0	9.0	9.5	16.5	15.5	16.0
2	---	---	---	8.5	8.5	8.5	10.0	9.5	9.5	17.0	16.0	16.5
3	---	---	---	9.0	8.5	9.0	10.0	9.5	10.0	17.5	17.0	17.0
4	---	---	---	9.0	8.5	9.0	10.5	10.0	10.0	17.5	17.5	17.5
5	---	---	---	8.5	8.0	8.5	10.5	10.5	10.5	18.0	17.5	17.5
6	---	---	---	8.0	8.0	8.0	11.0	10.5	11.0	18.0	17.5	18.0
7	8.5	8.5	8.5	8.0	8.0	8.0	11.0	10.5	11.0	18.0	17.5	18.0
8	8.5	8.5	8.5	8.0	8.0	8.0	11.5	10.5	11.0	18.0	17.0	17.5
9	8.5	8.5	8.5	8.5	8.0	8.5	11.5	10.5	11.0	17.0	16.0	16.5
10	8.5	8.0	8.5	8.5	8.0	8.5	11.5	11.0	11.0	16.0	15.5	15.5
11	8.5	8.0	8.5	9.0	8.5	9.0	11.5	11.0	11.0	15.5	15.0	15.0
12	8.5	8.0	8.5	9.5	9.0	9.5	11.5	10.5	11.0	15.0	14.0	14.5
13	8.5	8.5	8.5	10.0	9.5	9.5	11.0	10.5	11.0	14.0	13.5	14.0
14	9.0	8.5	8.5	11.0	10.0	10.5	11.0	10.5	10.5	13.5	13.0	13.0
15	9.0	8.5	8.5	11.5	11.0	11.0	11.0	10.5	11.0	13.0	13.0	13.0
16	9.0	8.5	8.5	11.5	11.0	11.5	11.0	10.5	10.5	13.0	12.5	12.5
17	9.0	8.5	8.5	11.5	11.0	11.0	11.5	10.5	11.0	12.5	12.5	12.5
18	9.0	8.5	8.5	11.5	11.0	11.0	11.5	11.0	11.0	13.5	12.0	12.5
19	9.0	9.0	9.0	11.5	10.5	11.0	12.0	11.0	11.5	13.5	13.0	13.5
20	9.0	9.0	9.0	11.0	10.5	11.0	12.5	11.5	12.0	13.5	13.0	13.0
21	9.0	8.5	9.0	11.0	10.5	11.0	13.0	12.0	12.5	13.0	12.5	13.0
22	9.0	8.5	8.5	11.5	11.0	11.5	13.5	13.0	13.5	13.5	13.0	13.0
23	8.5	8.0	8.0	12.0	11.5	11.5	13.5	13.0	13.5	13.0	13.0	13.0
24	8.0	8.0	8.0	12.0	11.5	11.5	13.5	13.0	13.0	13.0	12.5	13.0
25	8.0	8.0	8.0	11.5	11.5	11.5	13.5	13.0	13.0	13.5	13.0	13.0
26	8.0	8.0	8.0	11.5	10.5	11.0	14.0	13.0	13.5	13.5	13.0	13.0
27	8.0	8.0	8.0	10.5	10.5	10.5	14.0	13.5	14.0	14.0	13.0	13.5
28	8.0	8.0	8.0	10.5	10.0	10.0	14.5	14.0	14.0	14.0	13.0	13.5
29	---	---	---	10.0	9.5	10.0	14.5	14.0	14.5	14.0	13.5	13.5
30	---	---	---	9.5	9.0	9.5	15.5	14.5	15.0	14.0	13.0	13.5
31	---	---	---	9.5	9.0	9.5	---	---	---	15.0	13.5	14.0
MONTH	---	---	---	12.0	8.0	9.9	15.5	9.0	11.7	18.0	12.0	14.5

WILLAMETTE RIVER BASIN

245

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	16.0	14.5	15.0	19.0	18.5	19.0	22.5	22.0	22.5	22.0	20.5	21.0
2	16.0	15.5	15.5	18.5	18.5	18.5	22.0	22.0	22.0	21.5	21.0	21.0
3	16.5	15.5	16.0	19.0	18.5	18.5	22.5	22.0	22.0	22.0	21.0	21.0
4	16.5	16.5	16.5	19.0	18.5	19.0	23.5	22.5	22.5	21.5	21.0	21.0
5	17.0	16.5	16.5	19.0	18.5	19.0	23.5	22.5	22.5	21.5	21.0	21.0
6	17.5	17.0	17.5	19.5	19.0	19.0	23.0	22.5	22.5	21.5	21.0	21.0
7	18.5	17.5	18.0	20.5	19.5	20.0	23.0	22.0	22.5	21.5	21.0	21.0
8	18.5	18.0	18.5	20.5	20.0	20.0	22.5	22.0	22.0	21.0	20.5	21.0
9	18.5	18.0	18.5	21.0	20.0	20.5	22.5	22.0	22.0	20.5	20.0	20.5
10	19.0	18.0	18.5	21.0	20.5	20.5	23.5	22.0	22.0	20.5	19.5	20.0
11	18.0	18.0	18.0	20.5	20.0	20.5	23.0	22.0	22.5	20.0	19.5	20.0
12	18.5	18.0	18.0	20.5	20.0	20.0	24.0	22.0	22.5	20.0	19.5	20.0
13	19.0	18.0	18.5	20.5	20.0	20.5	24.0	22.5	23.0	20.0	19.5	20.0
14	19.0	18.0	18.5	21.0	20.5	20.5	24.0	22.5	23.0	20.0	19.5	20.0
15	19.0	18.5	18.5	21.5	20.5	21.0	23.5	23.0	23.0	20.0	19.5	19.5
16	18.5	18.0	18.5	23.0	21.0	22.0	23.0	22.0	22.5	19.5	19.0	19.5
17	19.0	18.0	18.5	23.0	22.0	22.5	22.0	21.5	22.0	19.5	19.0	19.0
18	19.0	18.5	18.5	24.0	22.5	23.0	21.5	21.5	21.5	19.0	18.5	19.0
19	18.5	18.0	18.5	23.0	22.0	22.5	21.5	21.0	21.0	18.5	18.0	18.5
20	19.0	18.0	18.0	22.5	22.0	22.0	21.5	21.0	21.5	18.0	18.0	18.0
21	19.5	18.5	19.0	22.5	22.0	22.0	21.5	21.5	21.5	18.0	18.0	18.0
22	20.0	19.5	19.5	23.0	22.0	22.5	21.5	21.0	21.5	18.0	18.0	18.0
23	19.5	19.0	19.5	24.0	22.5	23.0	21.5	21.0	21.5	18.0	17.5	17.5
24	19.0	19.0	19.0	24.0	23.0	23.0	21.5	21.0	21.0	17.5	17.5	17.5
25	19.0	18.0	18.0	23.5	23.0	23.0	21.0	20.5	20.5	17.5	17.0	17.5
26	18.0	18.0	18.0	24.0	23.0	23.5	20.5	20.0	20.5	17.0	17.0	17.0
27	18.0	17.5	18.0	25.0	23.5	24.0	20.5	20.0	20.0	17.0	16.5	17.0
28	19.0	18.0	18.5	25.5	24.0	24.5	20.0	19.5	20.0	17.0	16.5	16.5
29	19.5	18.5	19.0	24.5	24.0	24.0	20.0	20.0	20.0	17.0	17.0	17.0
30	19.0	19.0	19.0	24.0	23.5	23.5	20.5	20.0	20.5	17.0	16.5	16.5
31	---	---	---	23.5	22.5	23.0	21.0	20.5	20.5	---	---	---
MONTH	20.0	14.5	18.0	25.5	18.5	21.4	24.0	19.5	21.7	22.0	16.5	19.1

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	7.1	6.6	6.9	8.2	8.0	8.1	8.8	8.7	8.7	10.4	10.3	10.4
2	6.7	6.5	6.6	8.6	8.1	8.2	8.9	8.7	8.8	10.5	10.3	10.4
3	6.8	6.5	6.6	8.7	8.5	8.6	9.2	8.9	9.0	10.7	10.4	10.5
4	7.1	6.7	6.9	8.7	8.6	8.7	9.4	9.2	9.3	10.5	10.4	10.4
5	7.2	7.0	7.1	8.7	8.5	8.6	9.7	9.4	9.6	11.0	10.4	10.8
6	7.9	7.0	7.5	8.5	8.2	8.3	9.7	9.7	9.7	11.0	10.8	11.0
7	8.0	7.8	7.9	8.3	8.2	8.2	9.8	9.7	9.7	10.8	10.6	10.7
8	8.3	8.0	8.2	8.4	8.2	8.3	9.9	9.8	9.8	10.8	10.6	10.7
9	8.3	8.1	8.2	8.4	8.3	8.4	10.1	9.9	10.0	10.7	10.6	10.6
10	8.4	8.1	8.3	8.6	8.4	8.5	10.1	10.0	10.1	10.9	10.6	10.8
11	8.2	8.0	8.1	8.9	8.6	8.7	10.3	10.1	10.2	11.1	10.8	11.1
12	8.2	7.9	8.1	9.1	8.9	9.0	10.4	10.3	10.4	11.3	11.1	11.1
13	8.3	8.1	8.2	9.1	9.1	9.1	10.6	10.4	10.5	11.7	11.3	11.5
14	8.9	8.2	8.7	9.1	9.1	9.1	10.7	10.5	10.6	11.8	11.4	11.6
15	8.8	8.7	8.7	9.2	9.1	9.1	10.8	10.6	10.7	11.5	11.1	11.4
16	8.8	8.5	8.6	9.3	9.2	9.2	10.7	10.5	10.6	11.2	11.0	11.1
17	8.5	8.3	8.4	9.3	9.2	9.3	10.5	10.3	10.4	11.0	10.7	10.9
18	8.5	8.3	8.4	9.5	9.3	9.4	10.4	10.3	10.3	10.8	10.4	10.6
19	8.6	8.2	8.3	9.7	9.4	9.5	10.4	10.3	10.4	10.4	10.1	10.2
20	8.3	8.2	8.3	9.7	9.6	9.6	10.7	10.4	10.5	10.3	10.1	10.1
21	8.3	8.2	8.3	9.6	9.1	9.2	10.7	10.7	10.7	10.1	10.0	10.0
22	8.5	8.2	8.4	9.2	9.0	9.1	10.8	10.7	10.7	10.0	9.4	9.8
23	8.5	8.2	8.3	9.1	9.0	9.0	10.8	10.4	10.6	10.1	9.2	9.6
24	8.5	8.3	8.4	9.0	8.9	8.9	10.7	10.5	10.6	10.3	10.1	10.1
25	8.9	8.4	8.7	8.9	8.8	8.9	10.8	10.7	10.7	10.3	10.2	10.3
26	9.0	8.6	8.8	8.8	8.7	8.7	10.9	10.7	10.8	10.2	10.1	10.1
27	8.9	8.6	8.8	8.7	8.6	8.7	11.0	10.8	10.8	10.1	9.9	10.0
28	8.8	8.5	8.6	8.8	8.7	8.7	10.9	10.8	10.8	10.0	9.9	10.0
29	8.5	8.3	8.4	8.9	8.7	8.8	11.0	10.8	10.9	9.9	9.9	9.9
30	8.5	8.3	8.4	8.9	8.7	8.8	11.0	10.7	10.8	---	---	---
31	8.4	8.1	8.3	---	---	---	10.8	10.4	10.5	---	---	---
MONTH	9.0	6.5	8.1	9.7	8.0	8.8	11.0	8.7	10.2	---	---	---

WILLAMETTE RIVER BASIN

14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	10.8	10.7	10.8	10.0	9.8	9.9	9.9	9.2	9.5
2	---	---	---	10.7	10.5	10.6	9.9	9.7	9.8	9.5	7.8	9.0
3	---	---	---	10.5	10.4	10.5	9.7	9.5	9.6	8.8	7.8	8.3
4	---	---	---	10.5	10.4	10.5	9.7	9.4	9.5	8.9	8.2	8.6
5	---	---	---	10.8	10.5	10.7	9.6	9.3	9.4	8.2	7.4	7.9
6	---	---	---	11.0	10.8	10.9	9.5	9.2	9.3	7.4	6.4	7.0
7	10.0	9.9	10.0	11.1	10.9	11.0	9.5	9.2	9.4	7.1	6.3	6.7
8	10.1	9.9	10.0	11.0	10.8	10.9	9.5	9.2	9.3	7.6	6.8	7.3
9	10.2	10.0	10.1	11.0	10.8	10.9	9.6	9.3	9.5	7.3	6.9	7.1
10	10.4	10.2	10.3	10.8	10.7	10.7	9.5	9.3	9.4	7.3	6.9	7.1
11	10.5	10.4	10.4	10.7	10.0	10.3	9.6	9.2	9.4	7.3	6.9	7.1
12	10.4	10.3	10.4	10.1	9.9	9.9	9.7	9.4	9.5	7.4	7.0	7.3
13	10.4	10.3	10.3	9.9	9.6	9.8	9.7	9.3	9.5	7.6	7.3	7.4
14	10.3	10.1	10.2	9.6	9.4	9.4	9.5	9.2	9.3	8.2	7.6	8.0
15	10.3	10.2	10.3	9.4	9.3	9.3	9.6	9.2	9.4	8.4	8.2	8.3
16	10.4	10.3	10.3	9.4	9.2	9.3	9.9	9.5	9.7	8.4	8.0	8.3
17	10.4	10.3	10.4	9.4	9.3	9.3	10.1	9.7	9.9	8.8	7.7	8.3
18	10.4	10.3	10.3	9.5	9.3	9.4	10.0	9.9	10.0	8.8	8.6	8.7
19	10.4	10.2	10.3	9.5	9.3	9.4	10.1	9.8	9.9	8.9	8.7	8.8
20	10.3	10.2	10.2	9.5	9.2	9.4	10.1	9.8	9.9	8.7	8.6	8.6
21	10.4	10.3	10.3	9.2	8.9	9.2	10.0	9.6	9.8	8.8	8.7	8.7
22	10.4	10.3	10.3	9.0	8.8	8.9	9.9	9.6	9.7	8.9	8.8	8.8
23	10.6	10.4	10.5	8.9	8.4	8.6	9.7	9.2	9.4	8.8	8.7	8.7
24	10.7	10.5	10.6	8.8	8.6	8.7	9.3	8.9	9.1	9.0	8.8	8.9
25	10.7	10.5	10.6	9.0	8.7	8.8	9.3	8.9	9.1	9.0	8.8	8.9
26	10.8	10.7	10.7	9.4	9.0	9.2	9.0	8.8	8.9	9.0	8.9	8.9
27	10.8	10.7	10.8	9.6	9.3	9.4	9.1	8.8	8.9	9.0	8.8	8.9
28	10.8	10.7	10.8	9.7	9.4	9.6	9.5	8.9	9.2	9.0	8.8	8.9
29	---	---	---	9.9	9.7	9.8	9.7	9.3	9.5	9.0	8.7	8.8
30	---	---	---	10.1	9.9	10.0	9.9	9.4	9.6	8.8	8.6	8.7
31	---	---	---	10.1	9.9	10.0	---	---	---	8.9	8.7	8.8
MONTH	---	---	---	11.1	8.4	9.8	10.1	8.8	9.5	9.9	6.3	8.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	8.8	8.3	8.6	7.7	7.3	7.5	7.0	5.1	6.3	9.3	6.9	7.8
2	8.4	8.2	8.3	7.7	7.1	7.3	6.5	5.1	5.9	8.5	7.7	8.0
3	8.3	8.0	8.2	7.8	7.1	7.4	7.8	6.5	7.0	8.3	7.3	7.8
4	8.3	8.0	8.1	7.9	7.5	7.7	9.0	7.5	8.0	8.2	7.5	7.8
5	8.2	8.0	8.1	8.1	7.4	7.6	9.9	7.7	8.5	8.2	7.4	7.7
6	8.4	8.0	8.2	8.4	7.3	7.8	9.1	7.9	8.5	8.1	7.1	7.5
7	8.8	8.2	8.5	9.0	7.7	8.1	9.6	7.8	8.4	7.8	6.9	7.2
8	9.0	8.5	8.8	10.5	7.7	8.8	9.3	7.4	8.3	7.6	6.9	7.2
9	9.5	8.7	9.1	11.3	8.5	9.6	9.7	7.7	8.7	7.3	6.6	6.9
10	9.3	8.5	9.0	11.1	9.3	9.9	11.3	7.4	8.8	7.3	6.9	7.1
11	8.9	8.3	8.5	10.5	9.6	10.1	12.5	7.7	9.0	7.7	7.1	7.3
12	8.9	8.4	8.7	11.0	9.3	9.9	11.9	7.9	9.7	7.7	6.9	7.3
13	9.3	8.7	9.0	11.2	9.9	10.6	13.1	8.2	10.0	7.7	7.1	7.3
14	9.8	8.7	9.1	12.1	9.6	10.6	12.7	7.9	9.8	7.4	6.9	7.1
15	8.7	8.2	8.5	11.5	10.0	10.5	10.4	8.2	9.1	7.2	6.7	7.0
16	9.4	8.0	8.7	14.1	10.8	12.0	10.2	7.5	8.7	7.3	6.8	7.0
17	10.3	8.9	9.5	14.1	11.6	12.9	8.4	7.0	7.9	7.4	7.1	7.2
18	10.1	9.3	9.7	14.9	11.2	13.4	9.1	7.7	8.2	7.2	6.8	7.1
19	9.8	9.0	9.3	11.3	9.8	10.3	8.1	7.6	7.8	6.8	6.5	6.7
20	9.7	8.6	9.0	11.4	9.8	10.5	8.5	7.5	7.8	6.5	4.8	5.5
21	10.0	8.7	9.1	10.8	9.7	10.2	8.5	7.6	7.9	6.4	5.6	6.0
22	9.3	8.5	8.8	11.9	10.1	10.7	8.1	7.3	7.7	6.8	6.3	6.6
23	9.3	7.9	8.5	11.9	10.3	10.9	8.1	6.5	7.3	7.1	6.6	6.8
24	8.8	8.3	8.5	11.3	9.8	10.6	7.4	6.3	6.8	7.0	6.8	6.9
25	8.3	7.3	7.7	11.1	9.3	10.1	7.0	6.0	6.5	6.8	6.3	6.6
26	7.8	7.3	7.5	10.5	9.3	9.8	6.8	5.9	6.5	6.3	5.7	5.9
27	8.0	7.2	7.5	10.4	8.9	9.5	6.6	5.9	6.3	6.3	5.7	5.9
28	8.8	7.7	8.1	10.5	9.4	9.7	6.6	5.9	6.2	6.6	6.1	6.3
29	8.4	7.6	7.8	9.9	8.1	8.9	7.5	6.5	6.9	6.7	6.3	6.5
30	7.9	7.3	7.6	8.9	7.0	7.8	7.5	6.6	7.0	7.2	6.4	6.7
31	---	---	---	7.4	6.7	7.2	7.8	6.7	7.1	---	---	---
MONTH	10.3	7.2	8.5	14.9	6.7	9.6	13.1	5.1	7.8	9.3	4.8	7.0

WILLAMETTE RIVER BASIN

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14207200 TUALATIN RIVER AT OSWEGO DAM, NEAR WEST LINN, OR--Continued

TEMPERATURE, AIR, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.0	9.6	13.5	17.4	5.9	10.3	9.7	3.7	6.3	9.5	4.7	7.9
2	21.0	9.4	13.8	17.9	3.6	8.9	12.6	5.8	8.3	7.9	.2	4.1
3	16.0	12.0	14.1	15.4	5.7	10.6	9.5	4.0	6.0	6.7	.3	3.5
4	15.3	12.2	13.5	21.5	10.8	14.0	9.4	2.3	5.6	7.2	2.1	5.1
5	18.6	8.5	12.4	22.3	9.0	13.4	8.1	2.6	5.5	7.9	5.6	6.5
6	16.6	7.4	10.6	16.3	11.2	13.2	9.2	.3	4.2	7.8	5.8	6.7
7	16.3	6.4	10.4	13.0	6.7	10.1	5.4	3.2	4.5	8.9	.2	5.5
8	15.0	8.7	10.3	18.6	5.9	10.1	5.8	2.8	4.0	4.9	.0	2.0
9	12.8	8.6	10.3	19.2	8.2	12.2	6.9	3.6	5.2	5.6	-1.3	2.0
10	12.3	6.6	9.4	17.2	8.1	12.3	9.9	1.3	6.2	3.0	.8	2.2
11	17.0	7.8	10.8	14.7	7.8	10.8	4.8	-.6	1.3	.8	-2.9	-1.1
12	14.0	9.3	11.3	17.4	6.8	9.7	3.2	-.4	1.0	.4	-3.3	-1.7
13	18.0	7.4	12.2	15.0	4.5	9.1	5.4	.0	2.3	7.4	.2	4.4
14	21.8	6.0	12.3	17.1	5.9	9.6	8.9	1.2	5.1	7.8	5.1	6.4
15	23.6	8.3	13.9	14.4	4.3	7.6	8.4	1.1	4.5	9.4	4.1	6.1
16	26.6	7.8	13.7	9.8	3.4	6.5	11.4	7.3	9.5	11.7	4.7	8.2
17	14.2	10.1	12.1	10.5	5.8	9.1	10.4	3.4	6.7	11.3	7.7	9.0
18	17.0	7.2	11.7	11.9	3.1	7.5	4.2	1.5	3.0	11.2	7.0	8.8
19	20.0	6.2	10.8	10.4	7.1	9.3	5.4	1.5	3.3	8.1	6.0	6.8
20	22.5	6.4	11.0	11.6	9.0	9.8	7.5	.6	4.8	9.9	4.2	6.2
21	20.2	3.4	9.4	13.0	5.9	9.0	7.9	-.6	2.9	7.6	3.9	6.1
22	13.5	5.1	9.4	12.0	5.9	9.0	3.5	-1.1	.9	9.2	6.8	8.1
23	15.5	6.3	9.6	14.2	8.7	10.5	6.8	.4	4.0	10.1	6.9	8.4
24	15.1	4.0	7.7	10.9	6.6	8.8	5.7	3.6	4.5	9.9	6.5	7.8
25	17.5	2.0	7.5	13.2	5.5	7.8	4.9	-1.1	1.8	12.0	6.4	8.8
26	12.4	3.8	8.1	11.9	1.8	7.6	6.4	-1.2	1.7	11.0	6.6	8.7
27	19.2	5.7	10.4	12.7	1.0	7.5	7.6	4.2	6.0	12.6	7.4	9.1
28	13.5	5.7	9.6	12.4	8.7	10.3	11.1	5.3	8.6	12.8	7.1	9.7
29	13.6	10.6	12.3	10.1	5.3	8.6	9.1	4.8	7.0	12.7	7.6	9.7
30	15.0	11.1	13.2	9.9	3.5	6.0	8.5	1.8	5.4	14.5	5.4	9.0
31	17.0	8.7	12.2	---	---	---	6.3	2.5	4.1	16.7	6.1	10.4
MONTH	26.6	2.0	11.2	22.3	1.0	9.6	12.6	-1.2	4.7	16.7	-3.3	6.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.8	3.8	8.1	11.9	8.2	9.8	12.9	1.2	6.7	29.2	12.9	18.8
2	11.9	3.8	7.6	9.5	4.6	6.8	15.1	6.0	8.8	22.3	12.6	15.5
3	11.4	6.4	8.8	7.0	3.8	4.7	8.8	6.7	7.7	19.8	13.3	16.1
4	16.0	5.7	10.1	10.6	2.4	5.7	12.5	6.8	9.1	20.7	11.1	15.9
5	13.5	5.7	9.4	12.8	.7	5.4	16.5	5.4	10.0	21.4	12.7	15.8
6	16.8	7.9	10.8	13.0	-.7	4.6	16.6	6.9	10.3	23.5	13.9	16.8
7	10.4	3.8	7.3	11.4	-1.0	5.0	14.5	3.7	8.1	21.5	11.3	14.9
8	10.1	6.2	8.3	11.2	5.5	7.4	14.6	2.5	8.3	13.1	8.8	11.5
9	10.1	3.8	6.6	11.0	5.5	8.2	17.0	6.6	10.3	11.3	8.2	9.9
10	9.3	4.9	7.4	9.3	3.4	6.8	14.7	6.0	9.4	12.9	9.9	10.9
11	12.7	5.2	8.1	20.5	7.4	12.4	15.2	6.2	9.3	14.6	8.9	11.3
12	12.6	7.3	8.8	16.1	7.8	11.9	13.0	5.0	8.1	10.6	8.7	9.7
13	14.8	5.2	8.1	17.6	9.5	12.3	12.9	5.2	8.3	12.5	9.2	10.3
14	11.5	6.5	7.9	18.3	8.0	12.5	13.9	5.0	8.4	15.2	8.2	10.1
15	11.4	5.8	7.8	14.7	9.6	11.4	15.3	4.7	8.7	16.4	7.6	10.6
16	12.6	5.7	8.4	16.1	4.4	10.1	15.4	3.8	9.2	10.6	7.7	9.0
17	14.8	6.3	9.0	15.3	1.0	7.4	20.2	3.1	10.6	14.0	8.4	10.5
18	10.4	5.9	8.3	20.2	4.1	10.8	17.1	7.4	11.3	22.7	8.8	13.5
19	11.8	6.9	9.0	21.6	5.4	12.9	17.1	3.2	9.6	18.3	10.2	13.0
20	10.1	6.5	7.6	23.0	6.4	13.2	23.7	3.0	12.2	12.6	9.8	11.8
21	8.0	5.0	6.5	13.1	7.7	10.5	25.2	5.6	14.2	13.6	9.5	11.2
22	10.6	3.7	6.2	16.5	10.9	12.8	22.3	10.5	15.4	15.9	9.2	12.4
23	11.8	1.6	5.7	15.4	8.4	11.5	13.9	8.4	11.5	20.5	11.7	14.5
24	11.6	.0	5.1	16.4	8.8	11.0	15.8	6.5	10.0	16.0	9.7	12.8
25	12.0	2.1	6.1	14.1	5.8	9.7	15.1	3.6	9.5	16.1	8.1	10.9
26	11.1	.6	4.2	12.7	5.4	8.4	21.3	3.3	11.7	15.8	7.6	11.0
27	13.1	-.7	5.5	10.3	2.8	5.6	26.6	8.0	15.6	21.3	7.5	12.5
28	11.1	6.1	8.8	11.9	.3	4.8	30.2	9.2	17.1	24.5	8.4	15.5
29	---	---	---	16.4	-.4	6.8	32.2	10.2	18.6	15.3	11.7	12.8
30	---	---	---	11.4	3.7	6.8	31.3	12.3	20.3	18.8	11.2	14.0
31	---	---	---	12.0	3.7	7.1	---	---	---	30.5	10.5	17.5
MONTH	16.8	-.7	7.7	23.0	-1.0	8.8	32.2	1.2	10.9	30.5	7.5	12.9

14207500 TUALATIN RIVER AT WEST LINN, OR

LOCATION.--Lat 45°21'03", long 122°40'30", in SW 1/4 sec.34, T.2 S., R.1 E., Clackamas County, Hydrologic Unit 17090010, on left bank 300 ft upstream from bridge on State Highway 212, 0.4 mi west of West Linn city limits, and at mile 1.8.

DRAINAGE AREA.--706 mi².

PERIOD OF RECORD.--July 1928 to current year. Prior to October 1960, published as "near Willamette."

REVISED RECORDS.--WSP 1014: 1943. WSP 1184: 1947. WSP 1248: 1941. WSP 1935: Drainage area. WDR OR-75-1: 1974(M). WDR OR-77-1: 1971-73, 1975, 1976(M).

GAGE.--Water-stage recorder. Datum of gage is 85.61 ft above sea level (levels by Corps of Engineers). Prior to June 12, 1941, nonrecording gage at datum 1.02 ft higher.

REMARKS.--No estimated daily discharges. Water-discharge records good. October 1951 to September 1970, records published for this station included the daily flow in Oswego Canal, which diverts at point 5.0 mi upstream from station for development of power between outlet of Lake Oswego and Willamette River. Adjustment for diversion to Lake Oswego are published for the 1971-95 water years. Some regulation in low-water season by flashboards on crest of diversion dam for Oswego Canal and regulation by Henry Hagg Lake since January 1975. Several diversions upstream from station for irrigation. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--23 years (water years 1976-98), 1,429 ft³/s, 1,036,000 acre-ft/yr, river only, not adjusted for diversion to Oswego Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,400 ft³/s Feb. 10, 1996, gage height, 18.32 ft, does not include an estimated 3,600 ft³/s flowing in Oswego Canal; minimum daily discharge, 0.20 ft³/s July 30 to Aug. 2, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,670 ft³/s Jan. 20, gage height, 11.56 ft; minimum discharge, .165 ft³/s July 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	434	2550	4870	1970	6250	4960	2230	563	1200	343	286	218
2	633	2740	4580	1980	5780	4870	1950	730	1060	364	281	211
3	708	2700	4310	2000	5350	4810	1690	729	928	365	272	199
4	867	2520	4020	2110	4890	4760	1520	671	835	349	226	189
5	1040	2160	3710	2470	4500	4620	1420	588	772	357	207	189
6	1400	1730	3390	3270	4420	4480	1350	547	737	383	201	194
7	1390	1570	3140	3800	4250	4290	1260	524	691	372	197	202
8	1200	1490	2930	3920	4120	4130	1190	506	663	340	199	215
9	1150	1350	2660	4000	3970	3940	1130	514	618	313	196	226
10	1440	1180	2450	4110	3830	3680	1120	510	641	289	194	233
11	1920	1070	2290	4430	3930	3440	1190	511	686	276	192	236
12	2040	984	2130	4320	3890	3230	1310	515	690	269	190	232
13	1970	906	1950	4770	4050	3060	1350	655	609	279	185	230
14	1740	830	1730	5510	4110	2880	1290	771	529	292	182	297
15	1420	758	1560	5890	4180	2720	1250	798	478	287	180	297
16	1130	722	2040	6170	4220	2550	1240	771	448	220	186	253
17	914	869	3320	7250	4260	2370	1170	1130	419	179	208	230
18	758	963	3820	8040	4270	2150	1080	1240	398	211	232	260
19	658	1400	3910	9160	4330	1890	1020	1260	388	250	239	339
20	597	2830	4140	9630	4250	1670	961	1340	394	260	234	396
21	558	3650	4220	9300	5070	1560	897	1740	423	276	221	419
22	494	3850	4160	8600	5370	2050	855	1960	411	293	214	380
23	457	4120	4020	8040	5410	2590	838	1950	376	294	212	332
24	421	4620	3790	7750	5490	3100	833	1730	444	265	219	295
25	409	5020	3510	7540	5550	3220	835	1700	529	260	227	277
26	405	5210	3250	7400	5460	3190	781	1700	635	267	228	268
27	402	5390	3000	7400	5210	3120	720	1670	618	276	221	267
28	402	5430	2700	7480	5100	3020	677	1490	527	281	216	263
29	626	5410	2430	7410	---	2860	634	1360	454	279	211	258
30	1200	5180	2190	7130	---	2650	603	1350	378	274	209	249
31	2050	---	2020	6720	---	2470	---	1310	---	280	216	---
TOTAL	30833	79202	98240	179570	131510	100330	34394	32833	17979	9043	6681	7854
MEAN	995	2640	3169	5793	4697	3236	1146	1059	599	292	216	262
MAX	2050	5430	4870	9630	6250	4960	2230	1960	1200	383	286	419
MIN	402	722	1560	1970	3830	1560	603	506	376	179	180	189
AC-FT	61160	157100	194900	356200	260900	199000	68220	65120	35660	17940	13250	15580

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1998, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	286	1141	3082	3408	3478	2604	1606	749	370	178	150	203											
MAX	995	3062	7035	7845	9490	5130	3758	2437	762	292	254	420											
(WY)	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MIN	71.7	130	158	163	180	1043	354	229	147	59.9	79.9	79.1											
(WY)	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1976 - 1998
ANNUAL TOTAL	797941	728469	
ANNUAL MEAN	2186	1996	1429
HIGHEST ANNUAL MEAN			2698
LOWEST ANNUAL MEAN			278
HIGHEST DAILY MEAN	20400	Jan 2	25900
LOWEST DAILY MEAN	134	Aug 10	18
ANNUAL SEVEN-DAY MINIMUM	185	Aug 5	24
ANNUAL RUNOFF (AC-FT)	1583000	1445000	1036000
10 PERCENT EXCEEDS	5260	4920	4140
50 PERCENT EXCEEDS	1150	1180	557
90 PERCENT EXCEEDS	253	228	120

WILLAMETTE RIVER BASIN

14207740 WILLAMETTE RIVER ABOVE FALLS, AT OREGON CITY, OR

LOCATION.--Lat 45°20'55", long 122°37'08", in SW 1/4 SW 1/4 sec.31, T.2 S., R.2 E., Clackamas County, Hydrologic Unit 17090007, on right bank 0.2 mi above Willamette Falls, 1.6 mi downstream from Tualatin River, and at mile 26.8.

DRAINAGE AREA.--10,000 mi², approximately.

PERIOD OF RECORD.--October 1976 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is sea level.

REMARKS.--Gage heights for the periods May 21-23, May 25 to June 17 computed from data obtained through U.S. Army Corps of Engineers Columbia River Operational Hydromet System (CROHMS) database. Flow regulated by many reservoirs upstream. Gage height elevations possibly affected by Portland General Electric powerplant operations throughout the year and by Army Corps of Engineers locks operation during summer months.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 69.47 ft Feb. 9, 1996; minimum, 52.51 ft July 12, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum recorded gage height, 61.66 ft Jan. 17; minimum, 53.47 ft July 14.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55.73	58.51	57.01	55.32	58.26	57.37	56.23	54.57	57.84	54.00	55.06	54.71
2	55.92	58.12	56.79	55.57	57.61	57.95	56.02	54.60	57.41	53.94	---	54.72
3	56.22	57.60	56.56	55.91	57.24	58.16	55.77	54.69	56.86	53.86	---	55.11
4	56.52	57.25	56.37	56.32	56.83	58.30	55.63	54.76	56.35	53.78	---	55.13
5	56.88	57.05	56.21	56.77	56.51	58.20	55.55	54.66	56.06	53.77	---	54.85
6	57.16	56.87	56.08	57.27	56.54	57.84	55.43	54.58	55.78	53.77	---	54.84
7	56.96	56.80	55.92	57.57	56.68	57.37	55.40	54.48	55.52	53.74	---	54.86
8	56.69	56.83	55.90	57.65	56.50	57.01	55.38	54.40	55.26	53.67	---	54.88
9	56.70	56.83	56.01	57.56	56.43	56.87	55.32	54.37	55.05	53.61	---	54.89
10	57.17	56.77	55.99	57.30	56.41	56.77	55.32	54.36	54.97	53.57	---	54.91
11	57.38	56.61	56.08	57.48	56.54	56.59	55.69	54.33	55.00	53.59	---	55.02
12	57.25	56.15	55.87	58.80	56.83	56.40	56.17	54.30	55.04	53.55	---	55.10
13	57.18	55.82	55.56	59.71	57.35	56.38	56.21	54.38	54.92	53.51	---	55.10
14	57.03	55.69	55.32	60.44	57.90	56.43	56.02	54.59	54.69	53.83	---	55.13
15	56.85	55.57	55.15	61.26	57.70	56.30	55.84	54.97	54.54	54.88	---	55.16
16	56.66	55.49	55.60	61.50	57.47	56.14	55.63	55.50	54.41	55.04	---	55.19
17	56.50	55.54	57.81	61.62	57.26	56.03	55.40	56.17	54.45	55.06	---	55.17
18	56.36	55.89	59.15	61.51	56.95	55.83	55.20	56.61	54.48	55.05	54.83	55.18
19	56.26	55.99	59.03	61.32	56.83	55.59	55.07	56.69	54.31	55.04	54.82	55.25
20	56.13	57.10	58.26	61.08	56.90	55.37	55.12	56.72	54.19	55.05	54.83	55.35
21	55.99	57.91	57.75	60.78	57.49	55.25	54.91	57.11	54.13	55.07	54.84	55.38
22	55.94	57.77	57.45	60.47	59.07	55.92	54.77	57.77	53.99	55.12	54.79	55.51
23	55.91	57.30	57.10	60.48	59.81	57.74	54.73	57.74	53.92	55.14	54.78	55.32
24	55.90	57.66	56.83	60.73	59.28	58.82	54.87	---	53.92	55.12	54.80	55.31
25	55.88	58.35	56.67	61.21	58.36	58.82	55.25	57.00	54.01	55.10	54.82	55.31
26	55.86	58.30	56.44	61.43	57.72	58.26	55.38	57.17	54.14	55.10	54.80	55.33
27	55.84	57.89	56.21	61.29	57.24	57.81	55.27	57.22	54.38	55.12	54.79	55.38
28	55.83	57.48	56.00	60.79	56.95	57.53	54.99	56.87	54.43	55.10	54.79	55.39
29	55.90	57.22	55.83	60.06	---	57.13	54.78	56.55	54.28	55.05	54.77	55.37
30	56.48	57.13	55.68	59.39	---	56.72	54.67	56.77	54.13	55.05	54.76	55.35
31	58.02	---	55.47	58.94	---	56.42	---	57.68	---	55.06	54.73	---
MEAN	56.49	56.98	56.52	59.28	57.38	57.01	55.40	---	54.95	54.46	---	55.14
MAX	58.02	58.51	59.15	61.62	59.81	58.82	56.23	---	57.84	55.14	---	55.51
MIN	55.73	55.49	55.15	55.32	56.41	55.25	54.67	---	53.92	53.51	---	54.71

CAL YR 1997 MEAN 56.36 MAX 66.30 MIN 53.46

WILLAMETTE RIVER BASIN

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14207770 WILLAMETTE RIVER BELOW FALLS, AT OREGON CITY, OR

LOCATION.--Lat 45°21'28", long 122°36'35", in NE 1/4 NW 1/4 sec.31, T.2 S., R.2 E., Clackamas County, Hydrologic Unit 17090007, on right bank 0.5 mi below Willamette Falls, 1.4 mi upstream from Clackamas River, and at mile 26.2.

DRAINAGE AREA.--10,000 mi², approximately.

PERIOD OF RECORD.--November 1976 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (Oregon State Highway Division bench mark).

REMARKS.--Flow regulated by many reservoirs upstream. Gage out of operation during period October 1993 to January 1994 and July to September 1994.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 46.04 ft Feb. 9, 1996, from high-water mark; minimum, 1.55 ft Sept. 7, 1992.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 22.57 ft Jan. 17; minimum, 2.45 ft Aug. 28.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	8.99	5.50	7.02	14.31	13.73	13.97	11.50	10.06	10.60	10.67	7.78	8.85
2	9.49	6.62	7.70	13.73	11.87	12.68	10.86	9.57	10.19	10.19	7.88	8.93
3	10.17	7.02	8.26	11.99	10.92	11.44	10.79	9.20	9.77	10.03	8.37	9.22
4	10.10	8.13	8.88	11.24	10.13	10.68	10.28	9.26	9.75	10.63	8.74	9.69
5	10.55	8.08	9.12	10.75	9.71	10.17	9.79	8.67	9.18	11.47	9.51	10.53
6	10.45	9.22	9.73	10.51	9.44	9.92	9.47	8.13	8.81	12.63	11.29	11.93
7	10.11	8.27	9.14	10.27	9.42	9.87	9.34	7.59	8.48	13.44	12.38	12.76
8	9.58	7.68	8.47	10.21	9.10	9.54	9.70	7.94	8.71	12.93	11.98	12.37
9	10.09	8.69	9.19	9.67	8.58	9.13	9.54	7.78	8.50	12.88	11.82	12.23
10	10.16	9.54	9.89	10.32	8.65	9.38	10.04	7.96	8.76	12.79	11.54	12.09
11	10.54	9.62	10.04	10.46	8.52	9.33	10.03	8.44	9.00	13.78	11.72	12.70
12	10.81	9.69	10.31	10.17	7.89	8.87	10.02	8.34	8.95	16.20	13.78	15.12
13	11.00	10.02	10.51	10.05	7.29	8.40	10.45	8.19	9.08	18.34	16.12	17.23
14	10.62	9.14	9.92	10.38	7.54	8.63	11.06	8.25	9.18	21.09	18.25	19.35
15	10.90	9.27	9.96	9.76	7.19	8.30	10.33	7.74	8.73	21.82	21.09	21.47
16	10.86	8.92	9.80	9.57	6.72	7.83	12.12	8.29	9.95	21.91	21.36	21.63
17	10.85	8.86	9.62	10.08	6.86	8.27	15.31	11.65	13.70	22.57	21.62	22.18
18	10.34	8.45	9.31	9.66	7.63	8.46	16.48	15.30	15.94	22.43	21.42	21.87
19	9.47	7.10	8.28	9.94	7.46	8.38	16.47	14.87	15.58	21.58	20.56	21.13
20	8.82	6.83	7.71	11.84	9.38	10.47	14.87	13.16	13.79	20.66	20.05	20.32
21	7.96	6.01	6.82	12.45	11.76	12.10	13.16	11.94	12.33	20.16	19.09	19.61
22	7.34	5.54	6.33	12.50	11.25	11.82	12.07	11.30	11.66	19.22	18.66	18.95
23	7.13	5.05	6.09	11.43	10.63	11.06	11.50	10.11	10.80	19.46	18.66	19.12
24	7.04	5.64	6.33	12.97	11.00	12.11	10.51	9.45	9.98	20.36	19.25	19.84
25	6.97	5.14	6.08	13.87	12.97	13.47	10.19	9.00	9.50	21.09	20.26	20.70
26	6.88	4.53	5.61	13.83	13.05	13.47	9.80	8.42	9.02	21.44	20.73	21.04
27	7.58	5.18	6.17	13.12	11.82	12.52	9.95	8.32	8.87	21.14	20.41	20.76
28	7.98	5.28	6.54	12.24	10.88	11.54	9.96	7.98	8.65	20.44	19.40	19.85
29	9.12	6.18	7.42	12.15	10.68	11.22	10.06	7.62	8.48	19.40	17.77	18.52
30	12.11	7.15	9.28	11.69	10.13	10.80	10.17	7.72	8.59	17.77	16.74	17.21
31	14.28	12.11	13.36	---	---	---	10.09	7.77	8.63	16.74	15.51	16.06
MONTH	14.28	4.53	8.48	14.31	6.72	10.46	16.48	7.59	10.10	22.57	7.78	16.56

WILLAMETTE RIVER BASIN

14207770 WILLAMETTE RIVER BELOW FALLS, AT OREGON CITY, OR--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	15.59	13.73	14.53	13.49	11.92	12.77	10.99	9.35	10.07	9.86	8.53	9.07
2	13.90	12.45	13.13	14.35	13.14	13.80	10.14	8.55	9.23	9.73	8.13	8.92
3	13.12	11.86	12.42	14.35	13.71	14.08	9.33	7.82	8.56	9.54	8.89	9.15
4	12.33	10.88	11.61	14.37	13.78	14.07	8.40	6.97	7.71	9.95	9.27	9.70
5	11.68	10.36	10.97	14.20	13.48	13.91	8.07	6.68	7.47	10.43	9.76	10.19
6	11.79	10.33	10.91	13.66	12.39	13.10	8.16	6.73	7.53	10.92	10.11	10.68
7	12.40	10.64	11.57	12.56	10.87	11.87	8.49	6.90	7.71	11.60	10.53	11.34
8	12.40	10.97	11.60	11.08	10.10	10.69	8.38	7.02	7.66	12.38	11.54	12.03
9	11.56	10.45	10.97	11.11	10.08	10.53	8.58	6.84	7.55	12.74	11.66	12.16
10	12.26	10.60	11.22	10.69	9.72	10.23	8.69	6.51	7.57	13.07	12.16	12.58
11	12.26	10.98	11.53	10.64	9.62	10.08	9.64	7.00	8.40	13.00	11.57	12.27
12	12.95	11.27	12.04	10.77	9.62	10.10	10.00	8.23	9.03	12.03	10.87	11.39
13	14.32	12.35	13.37	10.70	9.48	10.04	10.07	8.42	9.10	11.74	10.80	11.17
14	14.36	13.82	14.08	10.76	9.60	10.10	9.90	8.02	8.78	12.11	10.98	11.45
15	13.96	12.74	13.30	10.47	9.07	9.68	9.51	7.82	8.44	12.97	12.11	12.52
16	12.84	12.09	12.45	9.93	8.56	9.12	8.63	6.87	7.65	12.91	12.00	12.53
17	12.55	11.58	12.02	9.85	8.73	9.22	8.08	6.41	7.15	13.14	12.56	12.86
18	11.93	11.06	11.50	9.59	8.58	9.02	7.92	6.39	7.07	13.31	12.90	13.03
19	11.68	10.76	11.20	9.28	8.22	8.72	7.37	5.68	6.59	13.66	12.83	13.38
20	11.89	11.35	11.54	8.70	7.68	8.19	7.22	5.43	6.39	13.42	12.96	13.24
21	14.28	11.58	12.90	8.37	7.17	7.78	7.31	5.65	6.56	14.78	13.24	14.21
22	17.19	14.28	16.02	10.32	7.80	8.74	7.55	5.66	6.58	15.57	14.78	15.23
23	17.70	17.11	17.48	13.78	10.32	12.37	8.23	5.64	7.14	15.27	14.23	14.77
24	17.11	15.19	16.41	15.53	13.78	14.88	9.16	6.87	8.16	14.80	13.90	14.25
25	15.19	13.97	14.69	15.52	14.77	15.28	9.90	7.96	8.99	14.91	13.95	14.40
26	13.97	12.85	13.42	14.88	14.15	14.51	10.17	8.10	9.01	15.06	14.04	14.45
27	13.19	11.99	12.62	15.05	14.05	14.55	10.21	8.20	8.93	15.44	14.32	14.90
28	12.44	11.49	11.97	14.99	13.61	14.30	10.18	8.04	8.90	16.22	15.44	15.86
29	---	---	---	13.74	12.06	12.97	9.94	7.80	8.70	16.51	16.08	16.25
30	---	---	---	12.17	10.57	11.36	9.72	7.96	8.68	17.43	16.51	16.86
31	---	---	---	11.59	9.97	10.64	---	---	---	18.15	17.43	17.88
MONTH	17.70	10.33	12.77	15.53	7.17	11.51	10.99	5.43	8.04	18.15	8.13	12.86

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	18.23	17.86	18.10	8.60	7.61	8.05	---	---	---	5.95	2.93	4.16
2	17.87	16.92	17.48	8.84	7.56	8.15	---	---	---	6.43	3.54	4.70
3	16.94	16.29	16.60	8.49	6.03	7.17	---	---	---	6.95	3.32	4.98
4	16.35	15.40	15.93	7.63	6.35	7.00	---	---	---	6.93	3.08	4.86
5	15.57	14.32	15.17	8.41	6.11	7.26	---	---	---	6.82	2.84	4.73
6	14.53	13.85	14.22	7.80	5.94	6.78	---	---	---	6.91	3.26	5.00
7	14.35	13.08	13.88	8.28	5.99	6.86	---	---	---	7.36	3.44	5.25
8	13.43	12.02	12.64	8.41	6.02	7.10	---	---	---	6.91	3.09	4.95
9	12.78	11.96	12.31	8.92	6.69	7.53	---	---	---	6.97	3.34	5.05
10	13.08	11.92	12.39	8.94	6.48	7.50	---	---	---	6.50	2.84	4.57
11	12.57	11.55	11.99	8.69	5.83	7.08	---	---	---	6.77	3.04	4.48
12	12.40	11.19	11.77	8.38	5.38	6.62	---	---	---	6.84	3.54	4.72
13	12.00	10.91	11.45	8.45	5.97	7.02	---	---	---	6.66	3.31	4.42
14	11.39	10.34	10.91	8.41	6.01	6.97	---	---	---	6.51	3.26	4.37
15	10.97	10.06	10.56	8.29	6.14	7.06	---	---	---	6.38	3.44	4.72
16	10.54	8.38	9.40	8.58	6.23	7.09	---	---	---	7.07	3.86	5.26
17	9.28	7.35	8.16	8.65	5.71	6.79	---	3.68	---	7.31	4.29	5.62
18	8.94	8.17	8.55	8.35	5.47	6.53	7.11	3.59	5.05	7.45	3.83	5.50
19	9.28	7.86	8.52	8.45	5.34	6.58	7.12	3.59	5.03	7.54	4.17	5.55
20	9.52	7.96	8.82	8.29	5.42	6.74	7.42	3.82	5.45	7.12	3.81	5.28
21	10.34	8.47	9.36	8.71	5.81	6.88	7.79	4.33	5.71	6.72	3.57	5.03
22	9.95	7.88	8.73	8.76	5.65	6.91	7.79	4.25	5.65	6.46	3.46	4.69
23	9.79	7.05	8.18	9.08	6.20	7.22	7.62	3.93	5.42	6.44	3.25	4.59
24	9.91	7.06	8.59	---	---	---	7.32	4.05	5.44	6.22	3.18	4.51
25	10.80	8.76	9.69	---	---	---	6.73	3.38	5.00	6.26	3.12	4.51
26	10.43	8.82	9.56	---	---	---	6.38	3.28	4.70	6.56	3.31	4.56
27	10.51	9.37	9.87	---	---	---	5.86	2.86	4.23	6.09	3.63	4.55
28	10.22	8.96	9.65	---	---	---	5.63	2.45	3.86	5.50	3.05	3.99
29	9.57	8.39	9.07	---	---	---	5.89	3.05	4.06	5.54	2.81	3.85
30	9.09	7.21	8.04	---	---	---	5.84	3.16	4.11	5.61	3.12	4.18
31	---	---	---	---	---	---	5.75	2.85	3.81	---	---	---
MONTH	18.23	7.05	11.32	---	---	---	---	---	---	7.54	2.81	4.75

WILLAMETTE RIVER BASIN

253

14208600 TIMOTHY LAKE NEAR GOVERNMENT CAMP, OR

LOCATION.--Lat 45°06'50", long 121°48'35", in NE 1/4 sec.27, T.5 S., R.8 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, in intake structure 350 ft upstream from dam on Oak Grove Fork, 0.4 mi upstream from Anvil Creek, 14 mi south of Government Camp, and at mile 15.8.

DRAINAGE AREA.--53.8 mi².

PERIOD OF RECORD.--May 1956 to current year. Prior to October 1957, published as Timothy Meadows Reservoir.

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by Portland General Electric Co.).

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway built by Portland General Electric Co. Usable storage began May 28, 1956. Capacity, 65,710 acre-ft at elevation 3,190 ft, normal maximum operating level. Usable capacity increased in 1966 water year to 64,450 acre-ft between elevations 3,125.0 ft, invert of outlet pipe, and 3,192.0 ft, top of radial gates. Storage of 4,060 acre-ft below elevation 3,125.0 ft not normally available for release. Water is used for power generation. Figures given herein represent total contents.

COOPERATION.--Elevations and capacity table furnished by Portland General Electric Co.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 68,800 acre-ft Oct. 3, 1967, elevation, 3,192.2 ft; minimum contents observed, 16,010 acre-ft Feb. 24, 1957, elevation, 3,144.5 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 68,190 acre-ft June 26, July 2-5, 8-11, elevation, 3,191.77 ft; minimum contents observed, 52,670 acre-ft Jan. 14, elevation, 3,180.00 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	3,181.72	54,830	-
Oct. 31.....	3,180.66	53,500	-1,330
Nov. 30.....	3,180.90	53,800	+300
Dec. 31.....	3,180.26	53,000	-800
CAL YR 1997.....	-	-	-7,760
Jan. 31.....	3,183.40	56,960	+3,960
Feb. 28.....	3,185.73	59,990	+3,030
Mar. 31.....	3,187.60	62,460	+2,470
Apr. 30.....	3,189.32	64,780	+2,320
May 31.....	3,191.71	68,100	+3,320
June 30.....	3,191.71	68,100	0
July 31.....	3,191.61	67,960	-140
Aug. 31.....	3,189.12	64,500	-3,460
Sept. 30.....	3,186.45	60,930	-3,570
WTR YR 1998.....	-	-	+6,100

WILLAMETTE RIVER BASIN

14208700 OAK GROVE FORK NEAR GOVERNMENT CAMP, OR

LOCATION.--Lat 45°06'50", long 121°48'50", in NE 1/4 sec.27, T.5 S., R.8 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on right bank 0.1 mi upstream from Anvil Creek, 0.3 mi downstream from Timothy Lake, 14 mi south of Government Camp, and at mile 15.5.

DRAINAGE AREA.--54.4 mi².

PERIOD OF RECORD.--July 1956 to current year.

GAGE.--Water-stage recorder and artificial control. Datum of gage is 3,041.83 ft above sea level (Portland General Electric Co. bench mark).

REMARKS.--No estimated daily discharges. Records good. Flow regulated since 1956 by Timothy Lake (station 14208600). No diversion upstream from station.

AVERAGE DISCHARGE.--42 years (water years 1957-98), 134 ft³/s, 33.45 in/yr, 97,080 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,110 ft³/s Dec. 24, 1964, gage height, 3.93 ft, from rating curve extended above 290 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 3.7 ft³/s Sept. 23, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 346 ft³/s Oct. 1, gage height, 2.53 ft; minimum discharge, 40 ft³/s Nov. 17-19, gage height, 1.41 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	325	182	202	124	86	164	176	70	157	104	170	75
2	271	172	196	128	110	164	172	68	152	104	169	74
3	235	161	176	129	126	164	166	84	154	104	168	75
4	218	153	162	129	143	176	171	110	153	104	169	83
5	219	145	151	130	156	197	159	115	153	104	178	96
6	194	139	141	133	136	204	155	127	144	103	168	86
7	177	143	137	136	144	208	154	145	139	93	172	86
8	171	140	134	130	122	213	151	158	139	91	168	86
9	169	135	133	145	91	227	143	158	139	92	168	86
10	157	130	131	207	132	230	159	158	142	96	201	86
11	151	127	128	207	143	230	184	157	152	100	221	86
12	151	123	125	211	116	220	207	157	152	99	220	86
13	145	122	123	201	63	209	210	157	146	98	219	86
14	139	119	119	169	90	202	199	157	119	100	219	86
15	135	117	121	144	101	184	201	147	109	100	198	86
16	132	82	140	153	138	161	197	145	109	97	186	86
17	129	46	161	61	156	170	204	144	109	100	135	86
18	127	40	157	55	166	183	208	145	110	88	74	86
19	125	46	149	55	148	187	189	145	110	83	70	83
20	122	46	145	61	146	193	164	127	110	83	75	83
21	121	47	145	78	95	176	156	132	110	83	75	86
22	119	151	141	94	125	73	133	152	110	83	75	86
23	120	179	139	59	148	57	133	177	110	83	75	184
24	121	178	135	59	171	57	111	179	110	83	74	331
25	119	194	131	58	182	58	110	153	112	83	75	321
26	117	184	130	55	198	68	125	159	136	83	74	331
27	116	176	126	55	210	80	105	159	129	83	74	330
28	116	182	127	55	193	114	92	159	119	83	74	335
29	137	208	127	55	---	133	75	159	108	111	75	340
30	170	212	125	55	---	151	74	131	104	165	75	339
31	192	---	121	66	---	150	---	156	---	171	75	---
TOTAL	4940	4079	4378	3397	3835	5003	4683	4390	3846	3054	4169	4370
MEAN	159	136	141	110	137	161	156	142	128	98.5	134	146
MAX	325	212	202	211	210	230	210	179	157	171	221	340
MIN	116	40	119	55	63	57	74	68	104	83	70	74
AC-FT	9800	8090	8680	6740	7610	9920	9290	8710	7630	6060	8270	8670
MEAN†	138	141	128	174	192	202	195	196	128	96.3	78.2	85.7
CFSM†	2.53	2.59	2.36	3.20	3.52	3.70	3.59	3.60	2.36	1.77	1.44	1.58
IN.†	2.92	2.89	2.72	3.69	3.67	4.27	4.00	4.15	2.63	2.04	1.66	1.76
AC-FT†	8470	8390	7880	10700	10640	12390	11610	12030	7630	5920	4810	5100

CAL YR 1997 TOTAL 83193 MEAN 228 MAX 492 MIN 40 AC-FT 165000 MEAN† 217 CFSM† 3.99 IN.† 54.21 AC-FT† 157240
WTR YR 1998 TOTAL 50144 MEAN 137 MAX 340 MIN 40 AC-FT 99460 MEAN† 146 CFSM† 2.68 IN.† 36.39 AC-FT† 105560

† Adjusted for change in contents in Timothy Lake.

14209000 OAK GROVE FORK ABOVE POWERPLANT INTAKE, OR

LOCATION (revised).--Lat 45°04'17", long 121°56'22", SW 1/4 SE 1/4 sec 3, T.6 S., R.7 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on left bank 0.8 mi upstream from Spring Creek, 1.3 mi upstream from Kink Creek, 1.7 mi upstream from Portland General Electric Co. diversion dam, 24 mi southeast of Estacada, and at mile 6.7.

DRAINAGE AREA.--124 mi².

PERIOD OF RECORD.--May 1909 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as both Oak Grove Fork of Clackamas River at proposed intake, near Cazadero, and Oak Grove Fork of Clackamas River at intake, near Cazadero, May 1909 to September 1910, as Oak Grove Fork of Clackamas River at intake, near Cazadero, October 1910 to September 1921, and as Oak Grove Fork at Portland General Electric Power Co. intake, October 1921 to September 1929.

REVISED RECORDS.--WSP 1248:1909, 1910(M), 1916, 1918, 1923, 1932. WSP 1935: 1914, 1921.

GAGE.--Water-stage recorder. Elevation of gage is 2,100 ft above sea level, from topographic map. May 21, 1909, to Nov. 17, 1911, nonrecording gage and Mar. 26, 1912, to Sept. 30, 1923, water-stage recorder, at various sites 0.7 mi downstream, below Kink Creek, at different datum, Dec. 1923 to Sept. 1996, at site 0.6 mi downstream at different datum.

REMARKS.--Records poor. Flow regulated since 1956 by Timothy Lake (station 14208600). Low flows are affected at times by diversion to Stone Creek Hydroelectric Project.

AVERAGE DISCHARGE.--89 years (water years 1910-98), 498 ft³/s, 360,800 acre-ft/yr (unadjusted).
42 years (water years 1957-98), 483 ft³/s, 349,900 acre-ft/yr (regulated).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,000 ft³/s Jan. 7, 1923, gage height, 5.45 ft, site and datum then in use, from rating curve extended above 2,300 ft³/s on basis of peak discharge for other stations in Clackamas River basin; minimum discharge, 161 ft³/s Sept. 16, 1993.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 968 ft³/s Oct. 30, gage height, 6.35 ft; minimum discharge, 210 ft³/s Aug. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e600	569	513	427	597	610	609	594	587	402	459	343
2	e550	519	500	443	599	614	597	625	567	396	457	342
3	516	489	466	431	599	603	584	626	556	394	457	344
4	526	467	444	425	602	601	582	630	543	390	457	354
5	591	446	430	425	603	607	559	622	534	387	467	371
6	488	432	414	434	605	603	549	611	517	390	458	360
7	452	474	410	455	600	599	546	611	506	376	483	360
8	476	444	404	433	572	602	531	610	504	372	460	360
9	491	427	401	437	510	610	528	592	492	370	457	359
10	447	417	396	525	553	609	574	573	500	374	494	359
11	446	407	387	540	563	612	600	559	500	382	520	359
12	469	398	379	531	605	616	607	574	486	382	524	358
13	436	392	376	508	574	616	602	565	477	376	524	358
14	417	384	372	604	593	616	587	571	446	378	522	358
15	403	379	378	608	587	613	578	571	434	375	502	357
16	393	326	526	609	601	613	570	553	440	373	488	358
17	384	287	576	753	599	609	575	565	427	378	432	356
18	378	270	509	692	600	610	582	551	420	365	351	367
19	371	285	475	648	603	609	570	572	424	356	342	364
20	367	326	463	595	600	614	541	622	418	355	350	354
21	363	333	450	576	588	623	534	616	416	353	349	358
22	360	444	433	601	586	636	533	610	415	356	349	358
23	366	522	430	614	586	663	583	617	410	358	348	442
24	364	618	418	685	594	649	575	617	414	353	335	644
25	360	600	406	666	599	621	546	607	424	353	347	670
26	357	557	397	680	601	613	544	585	490	353	347	650
27	354	521	400	671	602	600	525	572	454	357	345	646
28	355	514	422	635	619	610	522	558	428	358	344	648
29	464	539	422	625	---	606	527	612	408	358	343	653
30	644	534	411	615	---	586	564	633	398	450	344	653
31	678	---	405	595	---	598	---	601	---	457	344	---
TOTAL	13866	13320	13413	17486	16540	18991	16924	18425	14035	11703	12999	12863
MEAN	447	444	433	564	591	613	564	594	468	378	419	429
MAX	678	618	576	753	619	663	609	633	587	457	524	670
MIN	354	270	372	425	510	586	522	551	398	353	335	342
AC-FT	27500	26420	26600	34680	32810	37670	33570	36550	27840	23210	25780	25510

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1998, BY WATER YEAR (WY)

	390	504	572	586	593	576	574	581	440	330	308	350
MEAN	390	504	572	586	593	576	574	581	440	330	308	350
MAX	527	798	1047	1095	1433	1377	1024	1104	1126	595	473	619
(WY)	1997	1996	1965	1997	1996	1972	1997	1971	1974	1996	1996	1996
MIN	236	288	265	255	250	327	311	279	248	228	218	215
(WY)	1982	1988	1994	1977	1977	1977	1978	1994	1994	1994	1994	1994

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1957 - 1998

ANNUAL TOTAL	241244	180565	
ANNUAL MEAN	661	495	483
HIGHEST ANNUAL MEAN			739
LOWEST ANNUAL MEAN			319
HIGHEST DAILY MEAN	2410	Jan 2	3940
LOWEST DAILY MEAN	256	Jul 29	208
ANNUAL SEVEN-DAY MINIMUM	292	Jul 28	210
ANNUAL RUNOFF (AC-FT)	478500		349900
10 PERCENT EXCEEDS	1080		686
50 PERCENT EXCEEDS	583		473
90 PERCENT EXCEEDS	331		270

e Estimated

WILLAMETTE RIVER BASIN

257

14209700 FISH CREEK NEAR THREE LYNX, OR

LOCATION.--Lat 45°08'52", long 122°09'07", in NE 1/4 SE 1/4 sec.11, T.5 S., R.5 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on right bank, 0.7 mi upstream from Clackamas River, and at mile 1.15.

DRAINAGE AREA.--45.2 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 940 ft above sea level, from topographic map.

REMARKS.--Records fair except for the period Mar. 23 to Aug. 20 and estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--9 years (water years 1990-98), 220 ft³/s, 66.06 in/yr, 159,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,540 ft³/s Feb. 7, 1996, gage height, 11.83 ft, from rating curve extended above 2,800 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 15.40 ft, backwater from debris flow; minimum discharge, 6.0 ft³/s Sept. 1, 2, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,450 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	unknown	*2,470	*a8.87	Jan. 17	0700	1,510	7.93
Jan. 14	1730	1,820	8.27				

Minimum discharge, 13 ft³/s Sept. 6-18.
a From floodmark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	458	137	181	268	698	166	241	186	78	23	14
2	99	294	122	263	231	581	152	266	162	72	22	14
3	136	217	109	222	206	475	149	223	141	64	22	14
4	339	174	99	192	184	375	141	183	125	60	21	14
5	e700	142	90	182	172	302	136	164	113	58	21	14
6	e400	122	83	208	194	252	135	e150	101	54	20	14
7	e300	138	85	395	202	214	139	e140	92	48	20	13
8	e350	122	87	297	203	208	133	e140	85	45	20	13
9	e450	109	82	224	194	198	132	e140	79	43	19	14
10	e350	98	91	214	209	191	179	e150	83	43	19	13
11	269	89	87	637	268	212	250	e150	78	40	19	13
12	248	80	81	467	444	249	244	e150	71	39	18	13
13	206	74	76	567	650	273	208	e190	65	37	18	13
14	164	68	75	1120	447	278	183	e250	60	36	18	13
15	132	63	96	1100	356	279	165	e300	59	35	18	13
16	109	59	606	811	293	293	152	e360	64	34	18	13
17	93	87	864	1370	247	260	139	e450	58	32	18	13
18	81	88	445	918	231	222	135	e600	55	31	17	15
19	72	117	296	717	303	193	157	e450	73	30	17	37
20	64	371	246	519	291	177	152	e400	62	29	17	27
21	57	370	213	388	512	201	156	502	56	28	16	20
22	53	285	177	392	447	554	176	382	53	27	16	17
23	54	341	159	639	350	686	258	297	52	27	16	16
24	52	670	144	753	277	585	291	251	56	26	16	15
25	47	486	127	671	238	427	254	247	71	26	16	35
26	44	340	116	655	202	349	212	220	216	25	15	45
27	41	250	122	582	178	305	191	198	173	25	15	28
28	41	199	130	465	395	266	194	173	133	25	15	22
29	238	173	153	390	---	229	223	185	105	24	15	20
30	e1050	158	148	366	---	201	239	241	87	24	15	18
31	e950	---	137	312	---	184	---	218	---	24	14	---
TOTAL	7232	6242	5483	16217	8192	9917	5441	8011	2814	1189	554	543
MEAN	233	208	177	523	293	320	181	258	93.8	38.4	17.9	18.1
MAX	1050	670	864	1370	650	698	291	600	216	78	23	45
MIN	41	59	75	181	172	177	132	140	52	24	14	13
AC-FT	14340	12380	10880	32170	16250	19670	10790	15890	5580	2360	1100	1080
CFSM	5.16	4.60	3.91	11.6	6.47	7.08	4.01	5.72	2.08	.85	.40	.40
IN.	5.95	5.14	4.51	13.35	6.74	8.16	4.48	6.59	2.32	.98	.46	.45

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1998, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	114	360	410	407	375	309	308	185	105
MAX	233	756	1006	654	817	564	447	274	195
(WY)	1998	1996	1997	1997	1996	1997	1993	1993	1993
MIN	15.3	26.7	177	187	110	87.0	181	68.0	20.9
(WY)	1994	1994	1998	1993	1993	1992	1998	1992	1992

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1990 - 1998
ANNUAL TOTAL	86400	71835	
ANNUAL MEAN	237	197	220
HIGHEST ANNUAL MEAN			335
LOWEST ANNUAL MEAN			133
HIGHEST DAILY MEAN	3020	Jan 31	5970
LOWEST DAILY MEAN	14	Sep 8	6.1
ANNUAL SEVEN-DAY MINIMUM	15	Sep 4	6.4
ANNUAL RUNOFF (AC-FT)	171400	142500	159200
ANNUAL RUNOFF (CFSM)	5.24	4.35	4.86
ANNUAL RUNOFF (INCHES)	71.11	59.12	66.06
10 PERCENT EXCEEDS	524	450	502
50 PERCENT EXCEEDS	132	148	128
90 PERCENT EXCEEDS	19	18	14

e Estimated

WILLAMETTE RIVER BASIN

14210000 CLACKAMAS RIVER AT ESTACADA, OR

LOCATION.--Lat 45°18'00", long 122°21'10", in NE 1/4 sec.19, T.3 S., R.4 E., Clackamas County, Hydrologic Unit 17090011, on left bank 0.2 mi downstream from River Mill Dam, 1.5 mi northwest of Estacada, and at mile 23.1.

DRAINAGE AREA.--671 mi².

PERIOD OF RECORD.--April 1908 to current year. Monthly discharge only April 1908, published in WSP 1318. Published as "near Cazadero" January 1909 to September 1957.

REVISED RECORDS.--WSP 1248: 1908-9, 1910(M), 1916, 1917(M), 1922(M), 1923. WSP 1288: Drainage area (former site). WSP 1638: 1919(M).

GAGE.--Water-stage recorder. Datum of gage is 286.93 ft above sea level (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Oct. 1, 1957. Oct. 1, 1957, to Feb. 16, 1965, water-stage recorder at same site at datum 12.00 ft higher. Feb. 17, 1965 to Sept. 30, 1991, water-stage recorder at same site at datum 10 ft higher.

REMARKS.--No estimated daily discharges. Records good. Large diurnal fluctuations and some regulation caused by powerplants at River Mill Dam and, since 1958, North Fork Dam. Minor regulation since 1956 by Timothy Lake (station 14208600). Two small diversions upstream from station for Oregon City and Estacada municipal water supply.

AVERAGE DISCHARGE.--90 years (water years 1909-98), 2,751 ft³/s, 55.71 in/yr, 1,993,000 acre-ft/yr, unadjusted. 40 years (water years 1959-98), 2,829 ft³/s, 57.29 in/yr, 2,050,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,900 ft³/s Dec. 22, 1964, gage height, 28.36 ft (present datum); minimum discharge, 50 ft³/s Mar. 10, 1961, from rating curve extended below 260 ft³/s; minimum daily, 285 ft³/s Oct. 4, 5, 1958, caused by filling of North Fork dam forebay.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 15,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	2300	*24,800	*20.38	No other peak greater than base discharge.			

Minimum discharge, 349 ft³/s Sept. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1390	6240	2400	2250	4180	5090	2730	3630	3240	1540	1160	948
2	1610	4260	2300	2810	3730	5270	2680	4030	3010	1630	1090	678
3	1710	3330	2150	2600	3460	4850	2570	3870	2830	1540	1060	712
4	2430	2830	2070	2480	3210	4210	2540	3360	2540	1560	1040	714
5	5060	2440	1950	2380	3050	3740	2470	3220	2490	1490	1050	777
6	3050	2280	1880	2460	3180	3450	2470	2950	2350	1480	1040	780
7	2260	2540	1860	3220	3200	2990	2520	2840	2350	1490	975	798
8	2150	2480	1850	3040	3090	3120	2420	2780	2150	1250	1070	825
9	3510	2300	1790	2640	3020	2860	2380	2640	2210	1330	1330	822
10	2820	2190	1810	2660	2990	2560	2660	2490	2160	1290	1180	839
11	2460	2040	1700	4690	3210	2640	3020	2460	2280	1280	1040	810
12	2720	1930	1640	4600	3620	3030	3000	2460	1960	1290	1090	760
13	2460	1880	1630	4370	6090	3030	2730	2550	2000	1310	976	826
14	2200	1770	1620	7280	4890	3340	2640	2540	1860	1160	853	831
15	1990	1700	1710	9430	4320	3490	2720	3180	1910	1190	974	783
16	1650	1620	4120	7180	3900	3760	2520	3120	1900	1240	1030	759
17	1870	1710	7990	12300	3500	3440	2150	3460	1800	1140	1020	798
18	1910	1790	5370	9990	3340	3260	2350	3660	1690	1140	876	833
19	1720	1860	3450	8200	3570	2910	2470	3440	1980	1130	842	1200
20	1690	2690	3140	6610	3630	2720	2470	4160	1790	1090	842	946
21	1500	3330	2750	5360	4900	2960	2390	4910	1720	1040	799	874
22	1380	2860	2500	5030	5140	5120	2470	4310	1790	1060	850	851
23	1340	2870	2370	6550	4290	6740	3140	3700	1650	1070	864	909
24	1330	6010	2310	7450	3650	6610	3630	3380	1550	1080	854	1070
25	1230	5230	2180	7360	3360	5380	3370	3630	1820	1010	865	1330
26	1200	4110	2080	7160	3070	4690	2950	3450	2340	1030	820	1420
27	1200	3200	2100	7070	2900	4110	2780	3020	2270	1040	768	1160
28	1170	2870	2110	6120	3370	3700	2790	2820	2050	1070	717	1070
29	2090	2650	2300	5370	---	3310	3060	3090	2040	1060	832	1150
30	8890	2560	2140	5320	---	3080	3350	4070	1660	1070	830	1060
31	12200	---	2060	4750	---	2990	---	3580	---	1050	1040	---
TOTAL	80190	85570	77330	168730	103860	118650	81440	102800	63390	38150	29777	27333
MEAN	2587	2852	2495	5443	3709	3827	2715	3316	2113	1231	961	911
MAX	12200	6240	7990	12300	6090	6740	3630	4910	3240	1630	1330	1420
MIN	1170	1620	1620	2250	2900	2560	2150	2460	1550	1010	717	678
AC-FT	159100	169700	153400	334700	206000	235300	161500	203900	125700	75670	59060	54220
CFSM	3.86	4.25	3.72	8.11	5.53	5.70	4.05	4.94	3.15	1.83	1.43	1.36
IN.	4.45	4.74	4.29	9.35	5.76	6.58	4.52	5.70	3.51	2.12	1.65	1.52

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1998, BY WATER YEAR (WY)

	MEAN	1376	3325	4513	4583	4326	3715	3648	3396	2171	1152	884	955
MAX	2712	6494	11170	8821	10650	8921	5296	6396	5143	2018	1208	1602	
(WY)	1969	1996	1965	1974	1996	1972	1993	1969	1974	1974	1974	1959	
MIN	725	806	1030	1036	977	1850	1867	1456	882	763	659	613	
(WY)	1989	1988	1977	1977	1977	1992	1967	1992	1992	1992	1992	1994	

SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1959 - 1998

ANNUAL TOTAL	1227523	977220	
ANNUAL MEAN	3363	2677	
HIGHEST ANNUAL MEAN			2829
LOWEST ANNUAL MEAN			4407
HIGHEST DAILY MEAN	28300	Jan 1	1454
LOWEST DAILY MEAN	774	Aug 6	1454
ANNUAL SEVEN-DAY MINIMUM	947	Aug 5	57900
ANNUAL RUNOFF (AC-FT)	2435000	1938000	2050000
ANNUAL RUNOFF (CFSM)	5.01	3.99	4.22
ANNUAL RUNOFF (INCHES)	68.05	54.18	57.29
10 PERCENT EXCEEDS	6200	4870	5360
50 PERCENT EXCEEDS	2440	2440	2190
90 PERCENT EXCEEDS	1130	964	792

WILLAMETTE RIVER BASIN

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14211400 JOHNSON CREEK AT REGNER ROAD, AT GRESHAM, OR

LOCATION.--Lat 45°29'12", long 122°25'14", in SW 1/4 NE 1/4 sec.15, T.1 S., R.3 E., Multnomah County, Hydrologic unit 17090012, on left bank at Regner Road, 1.5 mi southeast of Gresham City Hall, and at mile 16.3.

DRAINAGE AREA.--17.8 mi².

PERIOD OF RECORD.--February to September 1998.

GAGE.--Water-stage recorder. Elevation of gage is 305 ft above sea level, from topographic map.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge for period February to September, 371 ft³/s Feb. 28, gage height, 7.11 ft; minimum discharge for period February to September, 0.70 ft³/s Sept. 18, 24.

DISCHARGE, CUBIC FEET PER SECOND, FEBRUARY TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	205	27	7.7	24	5.4	1.9	.93
2	---	257	23	27	20	5.1	1.8	1.1
3	---	146	24	17	16	4.9	1.6	1.2
4	---	114	22	13	14	4.6	1.5	1.2
5	---	86	19	10	12	4.5	1.4	1.1
6	---	64	17	8.7	9.8	4.2	1.2	1.1
7	---	47	23	7.5	8.4	3.9	1.1	1.2
8	---	43	19	8.0	7.1	3.7	1.1	1.2
9	---	40	18	9.6	6.3	3.5	1.1	1.0
10	---	39	31	12	13	3.4	1.1	.94
11	---	40	41	18	14	3.3	1.1	1.0
12	---	33	36	17	9.1	3.1	1.1	1.0
13	---	27	31	34	7.1	3.0	1.0	.98
14	---	23	27	47	6.0	2.8	.90	1.2
15	---	22	23	49	5.5	2.8	.90	1.3
16	---	19	20	52	5.4	2.8	.86	1.1
17	---	17	17	132	5.3	2.7	.89	.85
18	---	15	15	89	4.9	2.6	.95	3.0
19	---	13	14	73	5.4	2.6	1.3	3.9
20	---	12	12	87	5.0	2.6	1.3	1.7
21	---	14	11	80	4.6	2.5	1.4	1.2
22	---	118	9.3	65	4.3	2.4	1.3	1.0
23	---	107	16	48	4.1	2.3	1.3	1.0
24	---	88	19	47	8.3	2.2	1.2	.95
25	---	65	25	72	9.6	2.1	1.1	2.2
26	60	61	16	48	18	2.1	1.1	1.8
27	44	59	13	35	10	2.0	1.1	1.3
28	162	48	11	28	7.8	1.9	1.0	1.0
29	---	37	10	33	6.4	1.9	.94	.97
30	---	30	8.9	43	5.6	1.9	.92	1.1
31	---	32	---	29	---	2.1	.92	---
TOTAL	---	1921	598.2	1246.5	277.0	94.9	36.38	39.52
MEAN	---	62.0	19.9	40.2	9.23	3.06	1.17	1.32
MAX	---	257	41	132	24	5.4	1.9	3.9
MIN	---	12	8.9	7.5	4.1	1.9	.86	.85
AC-FT	---	3810	1190	2470	549	188	72	.78
CFSM	---	3.48	1.12	2.26	.52	.17	.07	.07
IN.	---	4.01	1.25	2.61	.58	.20	.08	.08

WILLAMETTE RIVER BASIN

14211500 JOHNSON CREEK AT SYCAMORE, OR

LOCATION.--(revised)Lat 45°28'40", long 122°30'24", in lot 2, SW 1/4 sec.13, T.1 S., R.2 E., Multnomah County, Hydrologic Unit 17090012, on left bank. 2.8 mi east of I-205 in Portland, and at mile 10.2.

DRAINAGE AREA.--26.5 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--July 1940 to current year.

REVISED RECORDS.--WSP 1318: 1941(M). WDR OR-75-1: 1974. WDR OR-77-1: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 228.47 ft above sea level.

REMARKS.--Records fair except for the period Oct. 1 to Dec. 30 and estimated daily discharges, which are poor. Since January 1980, on occasional overflow from the Powell Butte Reservoir enters Johnson Creek at Circle Avenue, mile 11.6. Slight diurnal fluctuation at low flow caused by recreational ponds upstream. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--58 years (water years 1941-98), 54.4 ft³/s, 27.88 in/yr, 39,390 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,620 ft³/s Dec. 22, 1964, gage height, 14.68 ft; minimum discharge, 0.08 ft³/s Aug. 21, 1966.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1700	705	9.03	Jan. 17	0015	545	7.91
Dec. 16	2130	511	7.64	Jan. 18	2030	561	8.03
Jan. 14	1945	*854	*9.93	Mar. 2	0515	512	7.64

Minimum discharge, 1.6 ft³/s Sept. 2, 3, 11-14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	94	60	76	70	338	e40	13	34	10	4.0	2.0
2	43	60	51	148	64	414	e36	62	29	10	4.1	1.8
3	27	43	41	132	73	250	38	21	24	8.6	4.1	1.9
4	57	34	34	177	59	189	33	17	21	8.8	3.7	2.1
5	75	28	29	150	56	127	29	14	19	8.1	3.2	2.0
6	31	28	25	156	100	96	27	13	16	7.0	3.6	2.0
7	24	53	40	188	75	75	42	12	15	5.6	3.5	2.1
8	61	36	58	117	70	75	29	19	13	5.7	3.3	2.2
9	66	31	74	88	54	67	28	18	12	5.8	3.3	2.2
10	42	26	98	87	61	67	46	26	32	6.8	3.6	2.2
11	37	23	65	128	87	64	60	28	27	5.6	3.6	1.9
12	27	20	49	93	144	53	49	29	16	4.8	3.6	1.9
13	24	17	41	268	129	46	43	60	13	4.9	3.1	1.8
14	21	15	36	611	113	40	37	78	11	4.7	2.7	1.9
15	18	12	46	382	111	38	32	73	10	4.6	2.6	2.2
16	15	11	230	330	82	33	28	82	10	4.4	3.0	2.3
17	12	52	283	351	66	29	24	230	9.5	4.2	3.2	2.1
18	11	31	134	309	70	26	22	134	9.1	4.0	3.0	17
19	9.5	79	88	260	95	24	22	108	12	4.3	e3.1	12
20	8.3	165	112	153	110	22	18	142	8.7	4.0	e3.1	4.2
21	7.1	161	79	122	298	32	17	123	7.9	3.9	2.6	2.9
22	6.2	100	57	114	185	188	15	98	7.0	4.0	2.8	2.6
23	6.4	130	66	169	128	154	35	72	6.9	4.1	2.7	2.4
24	5.8	172	70	229	93	119	32	85	23	4.6	e2.6	2.4
25	4.8	197	54	197	97	88	30	114	28	4.4	e2.5	7.0
26	4.8	113	47	141	90	88	21	71	34	4.4	e2.3	4.4
27	4.9	75	54	113	67	83	18	53	19	4.4	2.2	2.9
28	7.5	60	41	90	243	66	16	42	13	4.3	2.2	2.5
29	114	107	37	e88	---	53	15	53	12	4.2	2.1	2.2
30	331	87	34	e100	---	45	13	63	11	7.7	2.0	2.2
31	221	---	31	73	---	e48	---	42	---	5.1	2.0	---
TOTAL	1370.3	2060	2164	5640	2890	3037	895	1995	503.1	173.0	93.4	99.3
MEAN	44.2	68.7	69.8	182	103	98.0	29.8	64.4	16.8	5.58	3.01	3.31
MAX	331	197	283	611	298	414	60	230	34	10	4.1	17
MIN	4.8	11	25	73	54	22	13	12	6.9	3.9	2.0	1.8
AC-FT	2720	4090	4290	11190	5730	6020	1780	3960	998	343	185	197
CFSM	1.67	2.59	2.63	6.87	3.89	3.70	1.13	2.43	.63	.21	.11	.12
IN.	1.92	2.89	3.04	7.92	4.06	4.26	1.26	2.80	.71	.24	.13	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1998, BY WATER YEAR (WY)

MEAN	11.6	73.4	127	142	120	86.2	49.6	26.7	11.3	3.23	1.98	3.08
MAX	65.4	239	317	308	320	196	130	90.1	63.5	30.0	8.04	11.9
(WY)	1969	1951	1997	1970	1949	1957	1955	1963	1984	1983	1968	1997
MIN	1.29	1.56	4.34	9.01	16.0	18.1	9.46	3.32	1.46	.64	.44	.55
(WY)	1966	1953	1977	1977	1977	1992	1942	1966	1966	1973	1970	1967

SUMMARY STATISTICS

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1941 - 1998	
ANNUAL TOTAL	22565.8		20920.1			
ANNUAL MEAN	61.8		57.3		54.4	
HIGHEST ANNUAL MEAN					91.7	
LOWEST ANNUAL MEAN					15.6	
HIGHEST DAILY MEAN	789	Jan 1	611	Jan 14	2150	Dec 22
LOWEST DAILY MEAN	1.6	Aug 18	1.8	Sep 2	.10	Aug 7
ANNUAL SEVEN-DAY MINIMUM	2.0	Aug 13	2.0	Aug 30	.11	Aug 5
ANNUAL RUNOFF (AC-FT)	44760		41500		39390	
ANNUAL RUNOFF (CFSM)	2.33		2.16		2.05	
ANNUAL RUNOFF (INCHES)	31.68		29.37		27.88	
10 PERCENT EXCEEDS	168		141		148	
50 PERCENT EXCEEDS	29		31		15	
90 PERCENT EXCEEDS	2.9		2.9		1.2	

e Estimated

WILLAMETTE RIVER BASIN

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14211500 JOHNSON CREEK AT SYCAMORE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

- WATER TEMPERATURE: April to September 1998.

INSTRUMENTATION.--Temperature recorder since April 1998.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE FOR PERIOD APRIL TO SEPTEMBER: Maximum, 25.0°C July 28; minimum, 10.5°C May 14, 15, 17.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	19.0	16.0	17.5
2	---	---	---	---	---	---	---	---	---	17.5	15.0	15.5
3	---	---	---	---	---	---	---	---	---	15.5	14.5	15.0
4	---	---	---	---	---	---	---	---	---	16.0	14.0	15.0
5	---	---	---	---	---	---	---	---	---	16.0	15.0	15.5
6	---	---	---	---	---	---	---	---	---	16.5	15.0	15.5
7	---	---	---	---	---	---	---	---	---	16.0	14.5	15.0
8	---	---	---	---	---	---	---	---	---	15.0	13.0	14.0
9	---	---	---	---	---	---	---	---	---	13.0	12.0	12.5
10	---	---	---	---	---	---	---	---	---	12.0	11.5	12.0
11	---	---	---	---	---	---	---	---	---	12.5	11.5	12.0
12	---	---	---	---	---	---	---	---	---	12.0	11.5	11.5
13	---	---	---	---	---	---	---	---	---	11.5	11.0	11.5
14	---	---	---	---	---	---	---	---	---	11.5	10.5	11.0
15	---	---	---	---	---	---	---	---	---	12.0	10.5	11.5
16	---	---	---	---	---	---	---	---	---	11.5	11.0	11.0
17	---	---	---	---	---	---	---	---	---	12.0	10.5	11.0
18	---	---	---	---	---	---	---	---	---	13.5	11.0	12.0
19	---	---	---	---	---	---	---	---	---	13.0	11.5	12.5
20	---	---	---	---	---	---	---	---	---	12.5	12.0	12.0
21	---	---	---	---	---	---	---	---	---	12.0	11.5	11.5
22	---	---	---	---	---	---	---	---	---	12.5	11.5	12.0
23	---	---	---	---	---	---	---	---	---	13.0	12.0	12.5
24	---	---	---	---	---	---	---	---	---	13.5	12.5	13.0
25	---	---	---	---	---	---	---	---	---	13.0	12.0	12.5
26	---	---	---	---	---	---	---	---	---	13.0	11.5	12.0
27	---	---	---	---	---	---	---	---	---	13.5	11.5	12.5
28	---	---	---	---	---	---	16.0	12.5	14.5	14.5	11.5	13.0
29	---	---	---	---	---	---	17.5	14.0	15.5	14.0	12.5	13.5
30	---	---	---	---	---	---	19.0	15.5	17.0	13.5	12.0	12.5
31	---	---	---	---	---	---	---	---	---	15.5	12.0	14.0
MONTH	---	---	---	---	---	---	---	---	---	19.0	10.5	13.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	16.5	14.0	15.0	17.5	16.0	16.5	20.0	18.0	18.5	20.5	17.5	19.0
2	16.5	14.5	15.5	17.0	15.5	16.5	21.0	16.5	18.5	20.0	17.0	18.5
3	17.0	15.0	16.0	16.5	16.0	16.5	22.0	17.5	20.0	20.5	17.5	19.0
4	16.0	15.0	15.0	16.5	15.5	16.0	22.5	18.5	20.5	20.0	17.5	19.0
5	16.0	14.0	15.0	17.5	15.5	16.5	22.0	19.0	20.5	19.5	16.5	18.0
6	17.5	14.5	16.0	20.0	16.0	17.5	21.0	19.0	20.0	18.5	15.5	17.5
7	19.0	16.0	17.5	19.5	18.0	18.5	20.0	17.0	18.5	18.5	16.0	17.5
8	18.5	16.5	17.5	20.0	17.0	18.5	20.0	16.5	18.5	18.5	16.5	17.5
9	18.5	16.5	17.0	21.5	17.5	19.5	20.5	17.0	19.0	16.5	14.0	15.5
10	17.5	15.5	16.5	20.0	18.0	19.0	21.0	17.0	19.0	16.0	13.5	15.0
11	16.0	15.0	15.5	19.5	17.5	18.5	21.5	19.0	20.0	17.0	14.0	15.5
12	17.0	15.0	15.5	19.0	17.5	18.5	22.0	18.5	20.5	17.5	15.0	16.5
13	17.0	15.5	16.0	20.5	17.5	19.0	22.5	19.0	21.0	17.5	15.0	16.0
14	17.5	15.0	16.0	20.5	18.0	19.5	22.5	19.5	21.0	17.5	15.5	16.5
15	17.0	15.5	16.5	22.0	18.0	20.0	21.5	19.0	20.0	17.5	14.5	16.0
16	16.0	14.5	15.0	23.5	18.5	21.0	19.0	17.5	18.5	17.0	15.0	16.0
17	18.0	14.0	15.5	23.5	19.0	21.5	18.5	15.5	17.0	17.0	14.5	16.0
18	16.0	14.5	15.5	22.5	19.5	21.0	18.0	15.5	17.0	16.5	15.5	16.0
19	16.0	14.0	15.0	21.5	19.5	20.0	---	---	---	16.5	16.0	16.0
20	18.5	14.0	16.0	21.5	18.0	19.5	---	---	---	16.5	15.0	15.5
21	20.5	16.0	18.0	22.5	17.5	20.0	19.0	17.5	18.5	16.5	13.5	15.0
22	19.0	17.5	18.0	23.5	19.0	21.5	19.0	16.5	18.0	16.0	13.5	15.0
23	18.0	16.0	17.0	22.5	19.5	21.0	18.5	17.5	18.0	16.0	13.5	14.5
24	17.0	15.5	16.0	21.5	19.0	20.0	18.5	15.5	17.0	15.5	14.5	14.5
25	16.0	15.0	15.0	22.0	18.5	20.0	18.0	16.0	17.0	15.5	14.5	15.0
26	15.5	14.0	15.0	24.0	19.5	21.5	18.0	16.5	17.0	15.5	13.5	14.5
27	17.5	14.5	16.0	24.0	20.5	22.5	18.5	15.0	16.5	15.5	12.5	14.0
28	19.0	15.5	17.5	25.0	20.5	23.0	19.0	16.0	17.5	15.5	13.0	14.0
29	20.0	17.0	18.5	24.5	20.5	22.0	19.5	16.5	18.0	14.5	14.0	14.0
30	19.0	17.5	18.0	22.0	19.5	20.5	19.5	17.0	18.5	15.0	12.5	13.5
31	---	---	---	20.0	19.0	19.5	20.0	16.5	18.5	---	---	---
MONTH	20.5	14.0	16.2	25.0	15.5	19.5	---	---	---	20.5	12.5	16.0

WILLAMETTE RIVER BASIN

14211550 JOHNSON CREEK AT MILWAUKIE, OR

LOCATION.--Lat 45°27'11", long 122°38'31", in NE 1/4 SE 1/4 sec.26, T.1 S., R.1 E., Clackamas County, Hydrologic Unit 17090012, on the right bank upstream side of the Milport Road bridge, in the city limits of Milwaukie, and at mile 0.7.

DRAINAGE AREA.--51.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is sea level, from State of Oregon.

REMARKS.--Records fair. Small diversions for irrigation upstream from station. Significant portion of summer flow is from Crystal Springs, through Crystal Springs Creek, which enters 0.5 mi upstream from gage.

AVERAGE DISCHARGE.--9 years (water years 1990-98), 84.0 ft³/s, 22.04 in/yr, 60,860 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,170 ft³/s Feb. 8, 1996, gage height 30.27 ft; maximum gage height, 34.43 ft, Feb. 9, 1996, backwater from Willamette River; minimum discharge, 10 ft³/s July 1, 3-5, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 750 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 14	1830	*1,030	*28.54	No other peak greater than base discharge.			
Minimum discharge, 20 ft ³ /s July 17.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	77	126	87	84	92	472	81	51	71	38	25	22
2	94	89	73	e190	88	559	74	111	65	36	25	22
3	57	72	64	e134	100	361	79	62	60	36	24	22
4	91	61	58	e194	84	281	75	56	55	35	24	22
5	109	53	53	183	80	193	70	52	54	35	23	23
6	62	55	50	183	134	149	68	50	51	33	23	23
7	51	82	62	239	102	122	81	48	48	31	24	23
8	79	65	89	e148	98	121	71	57	46	31	24	23
9	101	56	92	e120	79	112	66	61	45	30	24	24
10	69	53	116	95	85	109	86	61	75	30	23	23
11	69	48	90	46	118	110	101	73	73	30	23	24
12	53	45	76	36	176	96	93	70	52	29	23	24
13	48	42	68	e280	176	87	86	109	47	28	23	23
14	45	40	64	e700	150	80	78	131	44	27	23	23
15	41	37	71	531	151	77	73	122	42	27	23	23
16	39	38	238	383	113	72	68	125	41	26	23	24
17	37	78	357	468	95	67	64	315	40	25	23	23
18	35	62	165	343	103	65	61	199	40	25	23	40
19	34	113	119	374	130	62	62	158	44	25	23	41
20	34	197	143	199	147	60	58	207	39	26	23	30
21	32	175	114	156	395	72	56	184	37	25	23	26
22	31	121	88	144	253	265	54	146	36	25	23	24
23	31	138	91	213	177	223	76	115	36	25	23	23
24	30	197	99	262	132	185	70	123	54	24	23	25
25	e29	215	e81	267	127	137	77	179	56	24	23	26
26	29	135	e75	186	132	133	61	123	73	24	23	29
27	29	98	82	149	99	127	56	96	52	24	22	25
28	31	82	70	120	289	110	54	82	43	24	22	24
29	138	118	66	119	---	94	54	86	39	24	23	25
30	345	122	62	135	---	86	51	106	37	26	22	23
31	318	---	59	98	---	94	---	80	---	30	22	---
TOTAL	2268	2813	3022	6779	3905	4781	2104	3438	1495	878	718	752
MEAN	73.2	93.8	97.5	219	139	154	70.1	111	49.8	28.3	23.2	25.1
MAX	345	215	357	700	395	559	101	315	75	38	25	41
MIN	29	37	50	36	79	60	51	48	36	24	22	22
AC-FT	4500	5580	5990	13450	7750	9480	4170	6820	2970	1740	1420	1490
CFSM	1.41	1.81	1.88	4.22	2.69	2.98	1.35	2.14	.96	.55	.45	.48
IN.	1.63	2.02	2.17	4.87	2.80	3.43	1.51	2.47	1.07	.63	.52	.54

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1998, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
MEAN	40.5	109	155	177	171	110	85.8	63.3	35.3	23.3	20.9	22.6
MAX	73.2	244	411	277	386	225	137	111	49.8	36.6	31.5	39.3
(WY)	1998	1997	1997	1997	1996	1997	1993	1998	1998	1997	1997	1997
MIN	16.8	18.5	68.7	106	34.0	44.1	50.4	22.2	16.7	14.1	14.8	15.9
(WY)	1994	1994	1994	1994	1993	1992	1990	1994	1992	1994	1994	1993

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1990 - 1998

ANNUAL TOTAL	35994	32953	84.0
ANNUAL MEAN	98.6	90.3	137
HIGHEST ANNUAL MEAN			1997
LOWEST ANNUAL MEAN			1994
HIGHEST DAILY MEAN	980	700	1700
LOWEST DAILY MEAN	26	22	10
ANNUAL SEVEN-DAY MINIMUM	27	22	11
ANNUAL RUNOFF (AC-FT)	71390	65360	60860
ANNUAL RUNOFF (CFSM)	1.90	1.74	1.62
ANNUAL RUNOFF (INCHES)	25.85	23.67	22.04
10 PERCENT EXCEEDS	211	184	184
50 PERCENT EXCEEDS	60	65	42
90 PERCENT EXCEEDS	29	23	16

e Estimated

WILLAMETTE RIVER BASIN

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14211550 JOHNSON CREEK AT MILWAUKIE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: May to September 1998.

INSTRUMENTATION.--Temperature recorder since May 1998.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE FOR PERIOD MAY TO SEPTEMBER: Maximum, 24.0°C July 28; minimum, 10.5°C May 17.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	17.5	14.5	16.0
8	---	---	---	---	---	---	---	---	---	16.0	13.5	14.5
9	---	---	---	---	---	---	---	---	---	13.5	12.5	13.0
10	---	---	---	---	---	---	---	---	---	13.0	12.0	12.5
11	---	---	---	---	---	---	---	---	---	13.5	12.0	12.5
12	---	---	---	---	---	---	---	---	---	12.5	11.5	12.0
13	---	---	---	---	---	---	---	---	---	12.0	11.5	11.5
14	---	---	---	---	---	---	---	---	---	12.5	11.0	11.5
15	---	---	---	---	---	---	---	---	---	13.0	11.0	12.0
16	---	---	---	---	---	---	---	---	---	12.0	11.0	11.5
17	---	---	---	---	---	---	---	---	---	12.0	10.5	11.5
18	---	---	---	---	---	---	---	---	---	14.0	11.5	12.5
19	---	---	---	---	---	---	---	---	---	13.5	12.5	13.0
20	---	---	---	---	---	---	---	---	---	13.0	12.0	12.5
21	---	---	---	---	---	---	---	---	---	12.5	12.0	12.0
22	---	---	---	---	---	---	---	---	---	13.0	11.5	12.5
23	---	---	---	---	---	---	---	---	---	14.0	12.5	13.0
24	---	---	---	---	---	---	---	---	---	14.5	13.0	13.5
25	---	---	---	---	---	---	---	---	---	14.0	12.5	13.0
26	---	---	---	---	---	---	---	---	---	13.5	12.0	13.0
27	---	---	---	---	---	---	---	---	---	14.5	12.0	13.5
28	---	---	---	---	---	---	---	---	---	16.5	12.0	14.0
29	---	---	---	---	---	---	---	---	---	15.0	13.0	14.0
30	---	---	---	---	---	---	---	---	---	14.5	13.0	13.5
31	---	---	---	---	---	---	---	---	---	18.0	13.0	15.0
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	18.5	15.0	16.5	17.0	15.5	16.0	19.5	16.0	17.5	21.5	17.5	19.0
2	18.0	15.0	16.5	17.5	15.0	16.0	21.0	16.0	18.5	21.0	16.5	18.5
3	18.5	15.5	17.0	17.0	15.5	16.0	22.5	17.5	19.5	21.0	17.0	19.0
4	17.0	15.5	16.0	16.5	15.0	16.0	22.0	18.0	20.0	20.5	17.0	18.5
5	17.5	14.5	16.0	18.5	15.0	16.5	22.0	18.0	20.0	20.0	16.0	18.0
6	19.5	15.0	17.0	21.0	16.0	18.0	20.5	17.0	18.5	19.5	15.5	17.5
7	20.5	16.0	18.5	20.0	17.5	18.5	20.5	16.0	18.0	20.0	16.0	17.5
8	19.5	16.5	18.0	21.0	16.5	18.5	21.0	16.0	18.5	18.0	15.5	16.5
9	19.5	16.0	17.5	21.5	17.0	19.0	21.5	17.0	19.0	17.5	14.0	15.5
10	17.5	16.0	16.5	19.5	17.0	18.0	21.5	16.5	19.0	18.0	14.0	16.0
11	16.5	15.0	15.5	19.5	16.5	18.0	22.0	18.0	19.5	19.0	15.0	16.5
12	18.5	14.5	16.5	19.0	16.5	18.0	22.5	18.0	20.0	19.5	15.5	17.5
13	18.0	15.5	16.5	20.5	16.5	18.5	23.0	18.0	20.5	19.0	15.5	17.0
14	19.0	14.5	16.5	19.5	17.0	18.5	22.5	18.5	20.5	19.0	15.5	17.5
15	18.5	16.0	17.0	21.0	17.0	19.0	19.5	17.5	18.5	19.0	15.5	17.0
16	17.5	14.5	16.0	23.0	18.0	20.5	18.0	16.5	17.5	18.5	15.5	17.0
17	19.5	14.0	16.5	23.0	18.0	20.5	19.0	15.0	17.0	18.0	15.0	16.5
18	17.0	15.0	15.5	21.5	18.5	20.0	18.0	15.0	16.5	17.0	15.0	16.0
19	17.5	14.0	15.5	20.5	18.0	19.0	19.5	15.0	17.0	16.5	15.0	15.5
20	20.0	14.5	17.0	21.5	17.0	19.0	20.5	16.0	18.0	16.5	14.0	15.0
21	21.5	16.0	19.0	22.5	17.5	20.0	19.0	17.0	18.0	17.5	14.0	15.5
22	19.5	17.0	18.0	23.0	18.5	20.5	20.0	16.0	18.0	16.5	14.5	15.5
23	18.0	15.5	17.0	21.5	18.0	20.0	18.0	16.5	17.0	17.5	14.0	15.5
24	17.0	15.0	16.0	21.5	17.5	19.0	19.0	15.0	17.0	15.5	14.5	15.0
25	16.0	14.5	15.0	21.0	17.5	19.0	19.0	15.5	17.0	16.0	14.5	15.0
26	16.5	14.0	15.0	23.5	18.5	20.5	18.0	16.0	17.0	16.5	13.5	14.5
27	19.0	14.0	16.5	23.5	20.0	21.5	19.5	15.0	17.0	17.5	13.5	15.5
28	20.5	15.5	18.0	24.0	19.5	21.5	20.5	16.0	18.0	17.5	14.0	15.5
29	21.5	17.0	19.0	22.0	19.0	20.0	20.0	16.5	18.5	16.5	14.0	15.0
30	19.5	17.0	17.5	19.5	17.5	18.5	20.5	16.5	18.0	17.0	13.5	15.0
31	---	---	---	19.0	17.5	18.5	21.0	16.5	19.0	---	---	---
MONTH	21.5	14.0	16.8	24.0	15.0	18.8	23.0	15.0	18.3	21.5	13.5	16.5

WILLAMETTE RIVER BASIN

14211720 WILLAMETTE RIVER AT PORTLAND, OR
(National stream quality accounting network station)

WATER-QUALITY RECORDS

LOCATION.--Lat 45°31'07", long 122°40'00", in NW 1/4 NE 1/4 sec.3, T.1 S., R.1 E., Multnomah County, Hydrologic Unit 17090012, in pier at east end of drawspan, on upstream side of Morrison Bridge, in Portland, and at mile 12.8.

DRAINAGE AREA.--11,100 mi², approximately.

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

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1975 to September 1981.

WATER TEMPERATURE: November 1975 to September 1981.

REMARKS.--Water-discharge records used for computation of suspended-sediment loads were obtained by flow routing procedures using upstream records. Boron values less than 16 UG/L have been designated as estimated due to a change in the minimum reporting level effective December 22, 1997.

WATER-QUALITY DATA

DATE	TIME	DIS- CHARGE, IN CUBIC FEET PER SECOND (00060)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	OXYGEN, DIS- SOLVED (MG/L) (00300)	BARO- METRIC PRES- SURE (MM HG) (00025)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION) (00301)	HARD- NESS, TOTAL (MG/L AS CACO3) (00900)	CALCIUM, DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)
OCT 1997												
30...	1240	E34000	70	7.3	11.5	4.2	11.1	755	103	23	5.9	1.9
NOV												
17...	1100	E23600	70	7.4	10.1	3.5	11.7	767	103	24	6.1	2.0
25...	1110	E64700	72	7.2	10.0	20	11.7	766	103	24	6.1	2.0
DEC												
10...	1050	E31000	79	7.6	7.0	3.6	14.0	778	113	26	6.7	2.2
17...	1120	E43200	82	7.4	6.6	7.4	13.1	764	107	27	6.9	2.4
19...	0950	E88500	65	7.2	7.7	--	14.1	771	117	--	--	--
22...	1020	E55600	69	7.2	6.6	13	14.8	773	119	23	5.9	2.0
JAN 1998												
06...	1040	E45000	74	7.3	6.3	8.7	13.4	762	108	25	6.4	2.1
FEB												
10...	1140	E40800	85	7.3	8.5	13	12.6	756	108	30	7.6	2.6
MAR												
04...	1240	E64500	67	7.3	8.5	12	12.8	753	110	24	6.1	2.0
APR												
08...	1100	E25500	83	7.3	10.6	4.5	11.8	769	105	30	7.6	2.6
MAY												
05...	1050	E20800	78	7.2	16.5	1.8	9.6	759	99	26	6.7	2.2
19...	1040	E38900	64	7.2	11.8	4.1	12.7	763	117	21	5.6	1.8
JUN												
10...	1010	E21200	78	7.2	17.3	2.6	9.6	759	100	26	6.8	2.2
JUL												
13...	1110	E11000	91	7.3	21.2	3.1	8.5	763	95	28	7.1	2.4
AUG												
25...	1100	E9030	99	7.1	20.9	3.0	7.5	762	84	27	6.7	2.4

DATE	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	SODIUM PERCENT (00932)	SODIUM AD- SORP- TION RATIO (00931)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	ALKA- LINITY, DIS IT FIELD (MG/L AS CACO3) (39086)	BICAR- BONATE, DIS IT FIELD (MG/L AS HCO3) (00453)	CAR- BONATE, DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE, DIS- SOLVED (MG/L AS SO4) (00945)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L) (70300)
OCT 1997												
30...	5.6	34	0.5	0.9	27	33	0	1.4	3.9	<0.1	15	55
NOV												
17...	5.2	32	0.5	0.7	29	36	0	2.9	4.0	<0.1	16	72
25...	4.5	28	0.4	0.9	23	27	0	3.2	3.5	<0.1	15	56
DEC												
10...	5.1	29	0.4	0.8	26	32	0	3.4	4.2	<0.1	16	62
17...	5.5	30	0.5	0.8	27	33	0	4.0	4.5	<0.1	16	66
19...	--	--	--	--	20	24	0	3.2	3.4	<0.1	--	58
22...	4.1	28	0.4	0.8	23	28	0	3.4	3.6	<0.1	15	63
JAN 1998												
06...	4.8	29	0.4	0.7	25	30	0	3.7	3.8	<0.1	15	61
FEB												
10...	5.2	27	0.4	0.9	29	35	0	4.2	4.0	<0.1	16	62
MAR												
04...	4.0	26	0.4	0.7	23	28	0	2.8	2.9	<0.1	14	64
APR												
08...	5.5	24	0.4	0.7	29	35	0	3.9	4.3	<0.1	16	64
MAY												
05...	5.2	30	0.4	0.7	28	34	0	3.5	4.1	<0.1	14	61
19...	4.2	29	0.4	0.7	23	28	0	2.4	2.9	<0.1	14	54
JUN												
10...	4.9	28	0.4	0.7	29	33	0	2.9	3.6	<0.1	16	62
JUL												
13...	7.0	34	0.6	1.0	31	38	0	4.0	5.0	<0.1	15	69
AUG												
25...	8.3	39	0.7	1.2	30	36	0	4.7	6.2	<0.1	17	69

E Estimated.

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN,AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00665)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
OCT 1997												
30...	52	0.07	0.041	0.003	0.1	0.2	0.23	0.05	0.02	0.034	--	0.2
NOV												
17...	56	0.10	0.043	0.010	<0.1	0.1	0.35	0.05	0.02	0.037	1.7	0.4
25...	52	0.08	0.019	0.009	0.1	0.3	0.88	0.09	0.02	0.032	2.0	1.1
DEC												
10...	57	0.08	0.064	0.012	0.2	0.2	0.61	0.04	0.03	0.037	1.4	0.2
17...	59	0.09	0.081	0.016	0.2	0.2	0.71	0.06	0.02	0.035	1.8	0.3
19...	--	--	0.027	0.008	0.1	0.4	0.79	0.14	0.03	0.026	2.3	0.3
22...	52	0.09	0.038	0.008	0.2	0.2	0.82	0.06	0.03	0.026	2.0	0.6
JAN 1998												
06...	55	0.08	0.059	0.010	0.2	0.2	0.67	0.05	0.03	0.034	2.1	0.5
FEB												
10...	62	0.08	0.074	0.013	0.2	0.2	0.87	0.08	0.04	0.037	1.9	0.3
MAR												
04...	50	0.09	0.048	0.012	0.2	0.2	0.73	0.06	0.03	0.026	1.8	0.3
APR												
08...	61	0.09	0.055	0.012	0.1	0.2	0.64	0.06	0.03	0.032	1.3	0.2
MAY												
05...	54	0.08	0.021	0.006	0.1	<0.1	0.34	0.02	<0.01	0.020	1.8	<0.2
19...	47	0.07	0.028	0.006	0.2	0.2	0.32	0.04	0.02	0.021	1.6	0.3
JUN												
10...	55	0.08	0.028	0.007	<0.1	0.2	0.36	0.03	<0.01	0.031	1.3	0.5
JUL												
13...	62	0.09	0.068	0.014	0.2	0.3	0.27	0.10	0.03	0.036	1.5	0.5
AUG												
25...	66	0.09	0.086	0.013	0.2	0.3	0.35	0.06	0.05	0.057	1.6	0.4
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
OCT 1997												
30...	9	<1	<1	5	<1	E8	<1	<1	<1	<1	41	<1
NOV												
17...	6	<1	<1	5	<1	E10	<1	<1	<1	2	37	<1
25...	15	<1	<1	7	<1	E10	<1	<1	<1	1	48	<1
DEC												
10...	6	<1	<1	7	<1	<16	<1	<1	<1	1	37	<1
17...	9	<1	<1	7	<1	<16	<1	<1	<1	1	43	<1
19...	--	--	--	--	--	--	--	--	--	--	--	--
22...	14	<1	<1	6	<1	<16	<1	<1	<1	1	45	<1
JAN 1998												
06...	7	<1	<1	6	<1	<16	<1	<1	<1	2	32	<1
FEB												
10...	5	<1	<1	8	<1	<16	<1	<1	<1	1	36	<1
MAR												
04...	8	<1	<1	7	<1	<16	<1	<1	<1	<1	35	<1
APR												
08...	5	<1	<1	7	<1	<16	<1	<1	<1	<1	39	<1
MAY												
05...	4	<1	<1	6	<1	<16	<1	<1	<1	1	25	<1
19...	13	<1	<1	5	<1	<16	<1	<1	<1	2	43	<1
JUN												
10...	4	<1	<1	6	<1	<16	<1	<1	<1	<1	21	<1
JUL												
13...	4	<1	<1	6	<1	<16	<1	<1	<1	<1	33	<1
AUG												
25...	3	<1	<1	6	<1	<16	<1	<1	<1	1	28	<1
DATE	LITHIUM, DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	DIAZ- INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	TERBUTH YLAZINE SURROGT WAT FLT 0.7 U GF, REC PERCENT (91064)
OCT 1997												
30...	<4	10	<1	<1	<1	<1	37	<1	<6	2	97	115
NOV												
17...	<4	14	<1	<1	<1	<1	38	<1	<6	1	106	126
25...	<4	7	<1	<1	<1	<1	40	<1	<6	1	109	121
DEC												
10...	<4	14	<1	<1	<1	<1	41	<1	<6	3	109	125
17...	<4	15	<1	<1	<1	<1	43	<1	<10	3	123	134
19...	--	--	--	--	--	--	--	--	--	--	89	125
22...	<4	7	<1	<1	<1	<1	37	<1	<10	1	88	121
JAN 1998												
06...	<4	7	<1	<1	<1	<1	40	<1	<10	2	117	122
FEB												
10...	<4	13	<1	2	<1	<1	49	<1	<10	7	117	133
MAR												
04...	<4	8	<1	<1	<1	<1	40	<1	<10	2	101	102
APR												
08...	<4	18	<1	<1	<1	<1	47	<1	<10	1	89	97
MAY												
05...	<4	4	<1	<1	<1	<1	40	<1	<10	2	108	117
19...	<4	8	<1	<1	<1	<1	35	<1	<10	2	100	110
JUN												
10...	<4	18	<1	<1	<1	<1	42	<1	<10	1	111	120
JUL												
13...	<4	2	<1	<1	<1	<1	44	<1	<10	2	93	115
AUG												
25...	<4	4	<1	<1	<1	<1	43	<1	<10	2	111	102

E Estimated.

WILLAMETTE RIVER BASIN

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER, DISS, REC (UG/L) (04095)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	P, P' DDE DISSOLV (UG/L) (34653)	CHLOR- PYRIFOS DIS- SOLVED (UG/L) (38933)	LINDANE DIS- SOLVED (UG/L) (39341)
OCT 1997												
30...	92	<0.007	<0.002	0.016	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
NOV												
17...	104	<0.007	<0.002	0.014	<0.018	E0.005	<0.004	<0.003	<0.002	<0.006	E0.004	<0.004
25...	98	<0.007	<0.002	0.082	<0.018	E0.016	<0.004	<0.003	<0.002	<0.006	0.010	<0.004
DEC												
10...	112	<0.007	<0.002	0.020	<0.018	E0.010	<0.004	<0.003	<0.002	<0.006	0.005	<0.004
17...	122	<0.007	<0.002	0.031	<0.018	E0.013	<0.004	<0.003	<0.002	<0.006	0.014	<0.004
19...	104	<0.007	<0.002	0.056	<0.018	E0.020	<0.004	<0.003	<0.002	<0.006	0.006	<0.004
22...	101	<0.007	<0.002	0.052	<0.018	E0.015	<0.004	<0.003	<0.002	<0.006	0.004	<0.004
JAN 1998												
06...	116	<0.007	<0.002	0.024	<0.018	E0.013	<0.004	<0.003	<0.002	<0.006	0.004	<0.004
FEB												
10...	104	<0.007	<0.002	0.031	<0.018	E0.015	<0.004	<0.003	<0.002	<0.006	E0.003	<0.004
MAR												
04...	94	<0.007	<0.002	0.028	<0.018	E0.009	<0.004	<0.003	<0.002	<0.006	0.005	<0.004
APR												
08...	82	<0.007	<0.002	0.014	<0.018	E0.007	<0.004	<0.003	<0.002	<0.006	E0.003	<0.004
MAY												
05...	101	E0.004	<0.002	0.025	E0.008	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
19...	92	<0.007	<0.002	0.031	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUN												
10...	97	<0.007	<0.002	0.011	<0.018	E0.006	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUL												
13...	92	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
AUG												
25...	93	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
DATE	DI- ELDRIN DIS- SOLVED (UG/L) (39381)	METO- LACHLOR WATER, DISSOLV (UG/L) (39415)	MALA- THION, WATER, SOLVED (UG/L) (39532)	PARA- THION, WATER, SOLVED (UG/L) (39542)	DI- AZINON, DIS- SOLVED (UG/L) (39572)	ATRA- ZINE, WATER, DISS, REC (UG/L) (39632)	ALA- CHLOR, WATER, DISS, REC (UG/L) (46342)	ACETO- CHLOR, WATER, FLTRD REC (UG/L) (49260)	METRI- BUZIN WATER, DISSOLV (UG/L) (82630)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	
OCT 1997												
30...	<0.001	0.006	<0.005	<0.004	<0.002	0.009	<0.002	<0.002	<0.004	<0.003	<0.002	
NOV												
17...	<0.001	0.010	<0.005	<0.004	E0.003	0.025	<0.002	<0.002	0.008	<0.003	<0.002	
25...	<0.001	0.032	<0.005	<0.004	0.005	0.198	<0.002	<0.002	0.043	<0.003	<0.002	
DEC												
10...	<0.001	0.013	<0.005	<0.004	E0.004	0.079	<0.002	<0.002	0.011	<0.003	<0.002	
17...	<0.001	0.016	<0.005	<0.004	<0.002	0.155	<0.002	<0.002	0.017	<0.003	<0.002	
19...	<0.001	0.036	<0.005	<0.004	<0.002	0.269	<0.002	<0.002	0.043	<0.003	<0.002	
22...	<0.001	0.025	<0.005	<0.004	<0.002	0.173	<0.002	<0.002	0.022	<0.003	0.005	
JAN 1998												
06...	<0.001	0.017	<0.005	<0.004	<0.002	0.090	<0.002	<0.002	0.028	<0.003	<0.002	
FEB												
10...	<0.001	0.024	<0.005	<0.004	<0.002	0.143	<0.002	<0.002	0.038	<0.003	<0.002	
MAR												
04...	<0.001	0.018	<0.005	<0.004	E0.003	0.050	<0.002	<0.002	0.015	<0.003	<0.002	
APR												
08...	<0.001	0.007	<0.005	<0.004	E0.002	0.038	<0.002	<0.002	<0.004	<0.003	<0.002	
MAY												
05...	<0.001	0.009	<0.005	<0.004	0.007	0.039	<0.002	<0.002	<0.004	<0.003	<0.002	
19...	<0.001	0.022	<0.005	<0.004	E0.002	0.039	<0.002	<0.002	<0.004	<0.003	<0.002	
JUN												
10...	<0.001	0.010	<0.005	<0.004	<0.002	0.019	<0.002	<0.002	<0.004	<0.003	<0.002	
JUL												
13...	<0.001	<0.002	<0.005	<0.004	<0.002	0.010	<0.002	<0.002	<0.004	<0.003	<0.002	
AUG												
25...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	<0.002	<0.002	<0.004	<0.003	<0.002	
DATE	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER, FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER, FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER, FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER, FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER, FLTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER, FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE WATER, FLTRD 0.7 U GF, REC (UG/L) (82671)	ETHO- PROP WATER, FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82673)	
OCT 1997												
30...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
NOV												
17...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
25...	<0.004	<0.002	E0.012	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
DEC												
10...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
17...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
19...	<0.004	<0.002	E0.011	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
22...	<0.004	<0.002	E0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
JAN 1998												
06...	<0.004	<0.002	E0.006	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
FEB												
10...	<0.004	<0.002	E0.013	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
MAR												
04...	<0.004	<0.002	E0.019	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	E0.003	<0.002	
APR												
08...	<0.004	<0.002	E0.003	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
MAY												
05...	<0.004	<0.002	<0.007	<0.002	<0.006	0.026	<0.004	<0.010	<0.004	0.024	<0.002	
19...	<0.004	<0.002	<0.007	<0.002	<0.006	E0.004	<0.004	<0.010	<0.004	<0.003	<0.002	
JUN												
10...	<0.004	<0.002	<0.007	<0.002	<0.006	0.005	<0.004	<0.010	<0.004	<0.003	<0.002	
JUL												
13...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	
AUG												
25...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002	

E Estimated.

WILLAMETTE RIVER BASIN
14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

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WATER-QUALITY DATA											
DATE	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)
OCT 1997											
30...	E0.022	<0.013	0.007	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.013
NOV											
17...	E0.009	<0.013	<0.003	<0.017	<0.001	<0.004	<0.005	<0.002	<0.002	<0.004	<0.003
25...	E0.008	<0.013	0.021	<0.017	E0.003	<0.004	E0.007	<0.002	<0.002	<0.004	0.007
DEC											
10...	<0.003	<0.013	E0.005	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
17...	<0.003	<0.013	0.006	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.005
19...	<0.003	<0.013	0.064	<0.017	E0.003	<0.004	E0.006	<0.002	<0.002	<0.004	<0.003
22...	<0.003	<0.013	0.023	<0.017	<0.001	<0.004	E0.006	<0.002	<0.002	<0.004	<0.003
JAN 1998											
06...	<0.003	<0.013	0.033	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
FEB											
10...	<0.003	<0.013	0.051	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.004
MAR											
04...	<0.003	<0.013	0.033	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	0.010
APR											
08...	<0.003	<0.013	E0.002	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
MAY											
05...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	E0.023	<0.002	<0.002	<0.004	<0.003
19...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JUN											
10...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JUL											
13...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
AUG											
25...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
DATE	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	AN- TIMONY SED. SUSP. (UG/G) (29816)	ARSENIC SED. SUSP. (UG/G) (29818)	BARIIUM SED. SUSP. (UG/G) (29820)	BERYL- LIUM SED. SUSP. (UG/G) (29822)	CADMIUM SED. SUSP. (UG/G) (29826)	CHRO- MIUM SED. SUSP. (UG/G) (29829)	COPPER SED. SUSP. (UG/G) (29832)	LEAD SED. SUSP. (UG/G) (29836)
OCT 1997											
30...	<0.013	<0.001	<0.005	2.0	9.2	470	1.4	0.6	78	66	44
NOV											
17...	<0.013	<0.001	<0.005	1.5	7.8	400	1.2	0.5	86	85	20
25...	<0.013	<0.001	<0.005	1.2	7.8	500	1.6	0.4	92	71	15
DEC											
10...	0.014	<0.001	<0.005	1.3	8.0	500	1.3	0.3	100	69	24
17...	<0.013	<0.001	<0.005	1.2	8.1	500	1.6	0.3	83	75	29
19...	<0.013	<0.001	<0.005	0.8	7.8	450	1.5	0.2	79	62	17
22...	<0.013	<0.001	<0.005	1.1	9.0	460	1.7	<0.2	81	57	21
JAN 1998											
06...	<0.013	<0.001	<0.005	1.4	8.9	440	1.5	0.2	79	56	21
FEB											
10...	<0.013	<0.001	<0.005	1.1	9.2	460	1.6	0.1	93	54	18
MAR											
04...	<0.013	<0.001	<0.005	0.9	8.0	530	1.6	0.4	78	60	19
APR											
08...	<0.013	<0.001	<0.005	1.4	10	450	1.3	0.4	88	57	24
MAY											
05...	<0.013	<0.001	<0.005	1.4	7.2	460	1.1	0.3	76	42	22
19...	<0.013	<0.001	<0.005	1.2	8.2	390	1.2	0.6	73	58	23
JUN											
10...	<0.013	<0.001	<0.005	1.4	8.6	420	1.1	0.5	210	50	28
JUL											
13...	<0.013	<0.001	<0.005	0.8	8.2	420	1.2	0.3	63	60	26
AUG											
25...	<0.020	<0.001	<0.005	0.9	7.8	480	1.3	0.4	79	49	25
DATE	MAN- GANESE SED. SUSP. (UG/G) (29839)	MERCURY SED. SUSP. (UG/G) (29841)	MOLYB- DENUM SED. SUSP. (UG/G) (29843)	NICKEL SED. SUSP. (UG/G) (29845)	SELE- NIUM SED. SUSP. (UG/G) (29847)	SILVER SED. SUSP. (UG/G) (29850)	VANA- DIUM SED. SUSP. (UG/G) (29853)	ZINC SED. SUSP. (UG/G) (29855)	ALUM- INUM SED. SUS PERCENT (30221)	CARBON SED. SUSP. PERCENT (30244)	IRON SEDI- MENT SUSP. PERCENT (30269)
OCT 1997											
30...	2400	0.12	<10	43	0.5	<1.0	170	190	8.7	4.5	6.3
NOV											
17...	2700	--	<10	48	0.5	<1.0	150	140	7.6	5.3	5.6
25...	1500	0.12	<10	46	0.5	<1.0	190	140	8.9	3.2	6.3
DEC											
10...	2100	--	<10	55	0.5	<1.0	150	130	7.5	4.2	5.5
17...	1800	0.08	<10	47	0.5	<1.0	150	170	8.4	4.0	6.2
19...	1300	0.06	<5	43	0.5	<0.5	170	120	8.1	2.9	6.1
22...	1500	0.08	<10	46	0.5	<1.0	170	130	8.3	3.7	6.6
JAN 1998											
06...	1600	0.04	<10	49	0.5	<1.0	160	140	8.0	4.3	6.2
FEB											
10...	1700	0.08	<10	74	0.5	<1.0	160	150	8.1	4.4	6.2
MAR											
04...	1400	0.06	<5	42	0.4	<0.5	170	140	8.8	3.4	5.9
APR											
08...	2300	--	<10	50	0.5	<1.0	150	140	7.5	5.6	5.5
MAY											
05...	2900	<0.01	<10	44	0.5	<2.0	130	120	6.4	7.3	4.7
19...	1700	--	<10	40	0.5	<1.0	140	180	7.7	6.6	5.4
JUN											
10...	4100	0.10	22	140	0.4	<1.0	150	150	7.6	--	5.8
JUL											
13...	3600	0.14	<10	37	0.4	<1.0	150	140	7.3	5.0	5.4
AUG											
25...	3200	--	<5	43	0.4	<0.5	150	150	7.7	--	5.4

E Estimated.

WILLAMETTE RIVER BASIN
14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY DATA

DATE	PHOS- PHORUS SEDI- MENT SUSP. PERCENT (30292)	SULFUR SEDI- MENT SUSP. PERCENT (30308)	TITA- NIUM SEDI- MENT SUSP. PERCENT (30317)	COBALT SEDI- MENT SUSP. (UG/G) (35031)	STRON- TIUM SEDI- MENT SUSP. (UG/G) (35040)	URANIUM SEDI- MENT SUSP. (UG/G) (35046)	LITHIUM SEDI- MENT SUSP. (UG/G) (35050)	CARBON, ORGANIC SUS- PENDEDED, TOTAL PERCENT (50465)	SEDI- MENT, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN 0.062 MM (70331)
OCT 1997											
30...	0.20	0.1	0.70	28	230	<100	32	4.2	10	E905	97
NOV											
17...	0.18	0.3	0.61	24	270	<100	27	--	7	E446	96
25...	0.17	0.1	0.78	27	190	<100	36	3.0	44	E7690	96
DEC											
10...	0.18	0.2	0.62	23	230	<100	31	--	9	E753	96
17...	0.18	0.2	0.68	26	210	<100	30	3.7	20	E2330	95
19...	0.15	0.1	0.70	26	210	<50	30	2.7	77	E18400	96
22...	0.17	0.2	0.72	27	210	<100	32	3.6	37	E5550	95
JAN 1998											
06...	0.19	0.2	0.69	25	220	<100	29	4.3	26	E3160	96
FEB											
10...	0.22	0.2	0.66	26	210	<100	32	--	16	E1760	99
MAR											
04...	0.16	0.1	0.74	25	230	<50	33	3.3	26	E4530	95
APR											
08...	0.18	0.2	0.66	23	240	<100	27	--	9	E620	97
MAY											
05...	0.24	0.2	0.51	21	220	<100	19	--	5	E281	96
19...	0.16	0.2	0.58	28	190	<100	26	--	8	E840	98
JUN											
10...	0.20	--	0.60	32	230	<100	24	--	16	E916	99
JUL											
13...	0.24	0.2	0.61	29	220	<100	22	4.6	10	E297	98
AUG											
25...	0.23	--	0.66	26	240	<50	25	--	10	E244	99

E Estimated.

14211814 FAIRVIEW CREEK AT GLISAN STREET, NEAR GRESHAM, OR

LOCATION.--Lat 45°31'40", long 122°26'51", in Land Grant parcel number 58, T.1 N., R.3 E., Multnomah County, Hydrologic Unit 17090012, on right bank at upstream side of culvert on Glisan St., 0.4 mi east of the intersection of 202nd Ave. and Glisan St., 1.7 mi northwest of Gresham City Hall, and at mile 3.05.

DRAINAGE AREA.--4.94 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 205 ft above sea level, from topographic map.

REMARKS.--Records poor. No regulation or diversion. High flows affected to an unknown degree by two small ponds just upstream from station.

AVERAGE DISCHARGE.--6 years (water years 1993-98), 5.89 ft³/s, 16.20 in/yr, 4,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 85 ft³/s Nov. 19, 1996, gage height, 6.18 ft, but may have been greater during period of missing record Feb. 7, 1996; maximum gage height, 6.34 ft Nov. 1, 1994; minimum discharge, 0.24 ft³/s Sept. 15, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 30 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 20	0730	31	5.05	Jan. 18	2100	48	5.48
Jan. 14	1930	*56	*5.65	Jan. 24	1730	36	5.17
Jan. 16	0800	31	5.04	Feb. 21	0500	43	5.36
Jan. 17	0030	44	5.39	Mar. 2	0630	34	5.11

Minimum discharge, 0.76 ft³/s Aug. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e12	e10	4.1	2.4	8.8	19	9.0	3.4	4.2	2.1	1.8	1.2
2	e11	e7.0	4.0	6.1	8.8	28	8.7	11	3.6	2.4	1.6	1.2
3	6.2	e5.5	4.3	5.2	9.3	16	9.4	6.8	3.5	2.4	1.4	1.1
4	8.4	e4.5	4.4	9.6	5.8	12	9.2	4.8	3.5	2.1	1.4	1.2
5	12	e4.0	4.3	8.8	5.0	12	8.7	3.9	3.4	1.9	1.4	1.2
6	6.1	e4.0	3.7	8.3	6.4	11	8.3	3.6	3.3	1.9	1.3	1.2
7	4.6	e7.5	3.1	11	5.4	11	9.4	3.4	3.2	1.8	1.2	1.1
8	9.0	5.4	3.8	5.1	5.3	12	9.1	3.5	3.1	1.8	1.2	1.0
9	11	4.0	3.5	6.0	4.5	12	7.9	4.0	3.1	1.7	1.2	1.0
10	6.5	4.0	4.0	7.4	4.2	12	6.8	4.4	5.5	1.9	1.1	1.1
11	8.0	3.3	2.9	9.7	5.1	12	7.0	5.2	7.3	4.0	1.1	2.1
12	5.3	2.3	2.2	6.9	15	10	5.9	5.0	4.7	5.6	1.1	3.8
13	4.0	1.8	1.8	11	15	9.9	4.9	7.0	3.6	4.4	1.1	4.9
14	3.4	1.5	1.6	41	11	9.4	4.0	7.6	3.2	2.8	1.3	5.8
15	3.0	1.2	1.7	30	11	9.3	3.5	9.6	3.4	2.3	1.3	5.7
16	3.0	1.1	11	27	8.8	8.8	3.3	11	5.5	3.9	1.2	5.9
17	3.3	2.5	15	32	8.0	7.8	3.2	23	6.6	5.4	1.2	5.4
18	3.4	2.3	4.7	27	9.2	5.8	3.1	14	6.4	5.7	1.2	8.8
19	3.3	7.8	3.5	26	12	4.8	3.2	12	6.9	5.8	1.2	9.0
20	3.1	22	8.4	14	13	4.2	3.4	16	7.1	5.3	1.1	3.8
21	2.9	13	7.4	12	32	4.3	4.9	13	7.0	e3.5	1.1	2.1
22	e2.8	4.7	5.6	13	16	17	6.5	11	7.0	2.5	1.1	2.0
23	e3.0	5.3	6.6	19	8.7	13	11	9.5	6.6	1.9	1.1	1.9
24	e2.8	8.1	7.0	23	6.7	9.8	11	11	9.9	1.6	1.1	1.7
25	e2.2	8.8	5.5	18	6.3	7.2	11	19	11	1.4	1.0	1.9
26	e2.2	5.0	5.0	13	6.5	6.2	8.2	11	11	1.4	1.1	1.9
27	e2.2	4.3	6.0	11	5.3	6.2	7.8	7.0	5.7	1.3	1.0	1.7
28	e3.2	3.9	4.9	9.4	11	5.8	7.1	5.3	3.7	1.3	.88	1.5
29	e12	6.1	3.3	11	---	5.3	5.1	5.2	2.9	1.4	.89	1.3
30	e30	6.4	2.4	11	---	6.7	3.9	6.5	2.5	1.7	.81	1.2
31	e20	---	2.0	8.4	---	8.9	---	5.1	---	2.1	1.1	---
TOTAL	209.9	167.3	147.7	443.3	264.1	317.4	204.5	262.8	158.4	85.3	36.58	83.7
MEAN	6.77	5.58	4.76	14.3	9.43	10.2	6.82	8.48	5.28	2.75	1.18	2.79
MAX	30	22	15	41	32	28	11	23	11	5.8	1.8	9.0
MIN	2.2	1.1	1.6	2.4	4.2	4.2	3.1	3.4	2.5	1.3	.81	1.0
AC-FT	416	332	293	879	524	630	406	521	314	169	73	166
CFSM	1.37	1.13	.96	2.89	1.91	2.07	1.38	1.72	1.07	.56	.24	.56
IN.	1.58	1.26	1.11	3.34	1.99	2.39	1.54	1.98	1.19	.64	.28	.63

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1993 - 1998, BY WATER YEAR (WY)

	1993	1994	1995	1996	1997	1998
MEAN	3.54	6.53	9.08	10.7	9.86	8.55
MAX	6.77	11.8	20.2	16.8	17.5	13.5
(WY)	1993	1994	1995	1996	1997	1998
MIN	1.18	1.42	4.39	5.27	2.54	4.74
(WY)	1994	1995	1996	1997	1998	1999

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1993 - 1998

ANNUAL TOTAL	2714.2	2380.98	
ANNUAL MEAN	7.44	6.52	5.89
HIGHEST ANNUAL MEAN			9.11
LOWEST ANNUAL MEAN			3.01
HIGHEST DAILY MEAN	40	41	71
LOWEST DAILY MEAN	1.1	.81	.30
ANNUAL SEVEN-DAY MINIMUM	1.8	.97	.34
ANNUAL RUNOFF (AC-FT)	5380	4720	4270
ANNUAL RUNOFF (CFSM)	1.51	1.32	1.19
ANNUAL RUNOFF (INCHES)	20.44	17.93	16.20
10 PERCENT EXCEEDS	15	12	13
50 PERCENT EXCEEDS	5.5	5.1	4.0
90 PERCENT EXCEEDS	2.9	1.3	1.0

e Estimated

WILLAMETTE RIVER BASIN

14211820 COLUMBIA SLOUGH AT PORTLAND, OR

LOCATION.--Lat 45°38'21", long 122°45'43", in NE 1/4 SE 1/4 sec.23, T.2 N., R.1 W., Multnomah County, Hydrologic Unit 17090012, on right bank, 0.25 mi upstream from mouth, and 1.25 mi upstream from confluence of Willamette and Columbia Rivers.

DRAINAGE AREA.--Indeterminate.

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Acoustic velocity meter with water-stage and velocity-index recorder. Datum of gage is 1.53 ft above sea level.

REMARKS.--Records fair due to large positive and negative flows.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 2,400 ft³/s Dec. 5, 1995, but may have been greater Dec. 2-4, 1995, Feb. 10-14, 1996; maximum gage height, 27.26 ft Feb. 9, 1996; minimum daily discharge, -6,700 ft³/s Feb. 7, 1996, but may have been less Nov. 29 to Dec. 3, 1995, Feb. 8, 9, 1996.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 394 ft³/s June 2; maximum gage height, 15.10 ft June 1; minimum daily discharge, -1,340 ft³/s May 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	-4.0	145	64	126	275	205	224	---	173	152	242	106
2	89	242	163	135	236	266	178	---	394	182	139	73
3	-8.8	70	42	152	195	293	234	---	114	339	155	69
4	251	144	151	149	230	232	280	---	374	62	89	77
5	136	92	163	109	268	201	175	---	329	231	11	89
6	67	103	206	194	223	266	83	---	289	92	88	40
7	209	144	93	345	65	324	104	---	189	189	30	57
8	43	311	260	261	158	295	95	---	332	18	78	101
9	141	166	244	64	227	117	162	-23	125	71	116	66
10	292	105	80	123	70	155	70	-62	224	102	79	108
11	150	60	124	202	240	113	44	181	187	198	33	71
12	-51	75	66	121	126	135	105	177	205	138	90	116
13	139	53	-3.8	48	147	142	107	148	215	16	74	178
14	164	11	91	301	215	141	162	21	221	70	139	179
15	21	175	177	275	297	207	115	32	186	148	229	88
16	e-5.0	e70	159	298	224	130	214	223	389	124	225	54
17	53	48	186	316	169	74	134	271	324	245	161	17
18	154	174	180	297	218	140	118	191	109	198	105	147
19	237	196	172	359	184	146	224	222	222	167	68	136
20	161	255	296	174	226	191	107	163	80	39	19	89
21	209	183	239	180	277	265	---	22	152	126	57	155
22	211	261	155	255	130	284	---	170	158	35	95	117
23	153	191	346	106	159	-41	---	140	270	101	102	90
24	143	187	232	261	156	7.1	---	63	-42	110	49	101
25	202	183	167	257	143	24	---	107	51	102	153	73
26	148	63	159	128	229	14	---	150	205	150	108	73
27	54	264	81	174	204	-83	---	-198	126	79	148	143
28	18	144	142	63	290	272	---	-325	229	55	97	163
29	128	151	77	183	---	292	---	-1170	e200	169	78	123
30	96	185	47	195	---	279	---	-1340	254	228	125	115
31	45	---	82	184	---	196	---	-159	---	227	136	---
TOTAL	3645.2	4451	4640.2	6035	5581	5282.1	---	---	6284	4163	3318	3014
MEAN	118	148	150	195	199	170	---	---	209	134	107	100
MAX	292	311	346	359	297	324	---	---	394	339	242	179
MIN	-51	11	-3.8	48	65	-83	---	---	-42	16	11	17
AC-FT	7230	8830	9200	11970	11070	10480	---	---	12460	8260	6580	5980

e Estimated

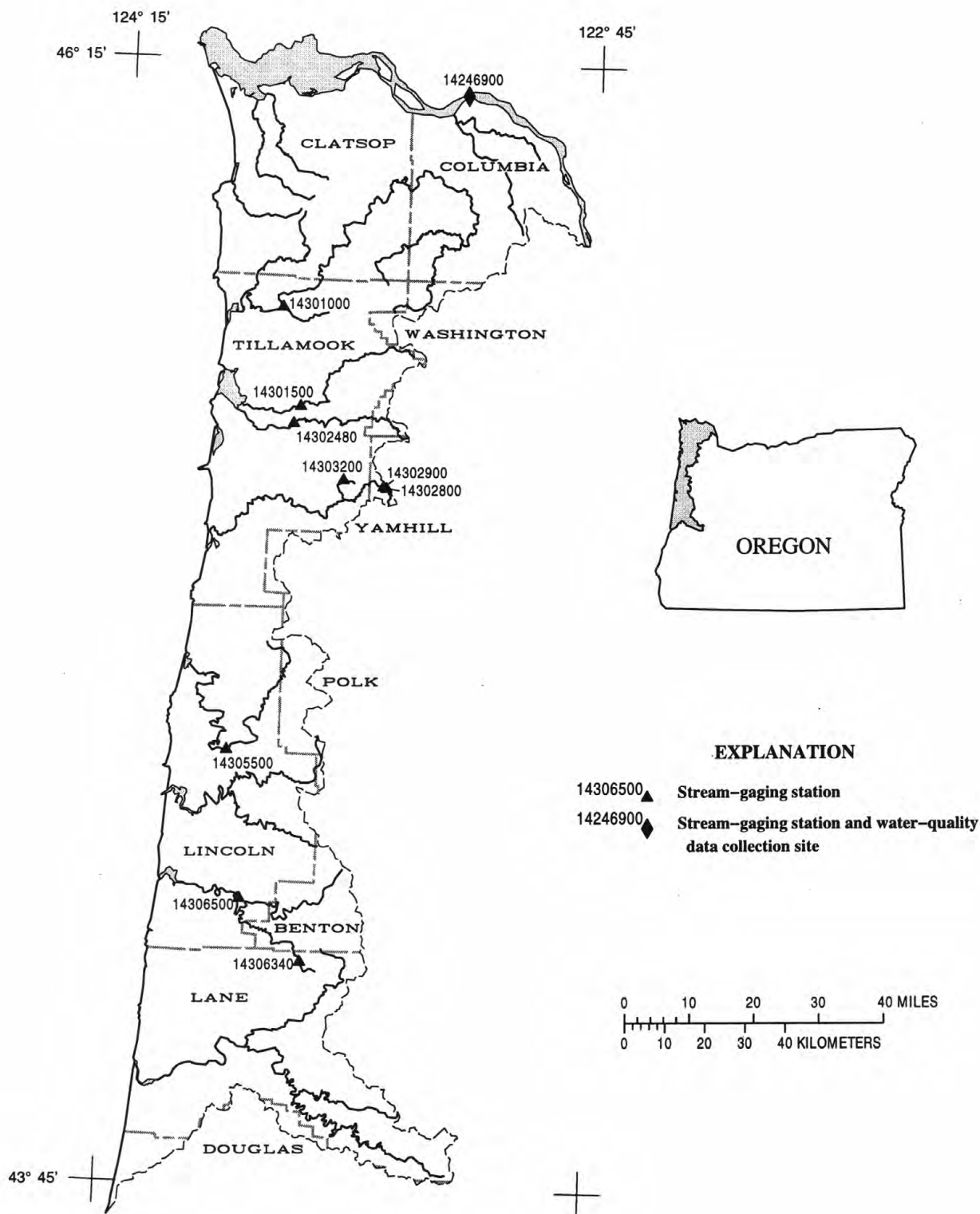


Figure 28. Location of surface-water and water-quality stations in the Oregon Coastal Drainages north of the Siuslaw River Basin and in the lower Columbia River.

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR

LOCATION.--Lat 46°10'55", long 123°10'50", in NE 1/4 sec.16, T.8 N., R.4 W., Columbia County, Hydrologic Unit 17080003, on left bank, 0.7 mi downstream from Crims Island, 3.0 mi northwest of Quincy, and at mile 53.8.

DRAINAGE AREA.--256,900 mi², approximately.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--May 1968 to June 1970, June 1991 to current year.

GAGE.--Acoustic velocity meter with water-stage and velocity index recorder. Datum of gage is 0.52 ft above sea level. May 1968 to June 1970 water-stage recorder with auxillary water-stage recorder 5.6 miles downstream, at datum 10.00 ft lower.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by many reservoirs on Columbia River and in tributary basins. Flows affected by tide which can cause reverse direction during tidal cycle when mean daily flows are less than 250,000 ft³/s. Mean discharge values are based on a 24 hour day, not a tidal cycle.

AVERAGE DISCHARGE.--8 years (water years 1969, 1992-98), 247,500 ft³/s, 179,300,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 864,000 ft³/s Feb. 10, 1996; minimum daily discharge, 73,700 ft³/s Sept. 7, 1994.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 500,000 ft³/s May 31, June 2; maximum gage height, 9.33 ft Jan. 14; minimum daily discharge, 109,000 ft³/s Sept. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	168000	275000	e220000	e230000	e290000	e260000	e250000	e270000	e490000	264000	178000	148000
2	184000	e230000	e230000	e190000	e270000	e260000	e230000	e280000	e500000	271000	169000	166000
3	195000	219000	e230000	e190000	e280000	e260000	e220000	e270000	e460000	245000	158000	164000
4	206000	230000	e260000	e200000	e280000	e260000	e210000	e310000	e480000	240000	158000	154000
5	211000	213000	e250000	e210000	e260000	e280000	e190000	328000	e480000	249000	180000	132000
6	227000	228000	e240000	e240000	e260000	e280000	e190000	341000	e410000	226000	181000	136000
7	234000	245000	e200000	e280000	e260000	e280000	e200000	356000	e430000	221000	192000	124000
8	213000	227000	e240000	e240000	e270000	e240000	e200000	373000	e400000	222000	184000	109000
9	262000	191000	e210000	e260000	e240000	e240000	e210000	380000	e370000	227000	179000	122000
10	255000	e220000	e230000	e260000	e260000	e220000	e180000	385000	e390000	222000	166000	117000
11	e240000	e210000	e230000	e280000	e280000	e240000	e170000	383000	e360000	212000	172000	118000
12	264000	214000	e260000	e270000	e290000	e200000	e200000	352000	e350000	192000	184000	140000
13	275000	198000	e260000	e280000	e280000	e220000	e170000	343000	e350000	204000	189000	148000
14	246000	194000	e270000	e310000	e290000	e250000	e200000	347000	e330000	211000	198000	145000
15	247000	209000	e220000	e330000	e280000	e220000	e190000	376000	e340000	224000	188000	160000
16	e260000	185000	e250000	e330000	e250000	e190000	e190000	371000	e310000	224000	176000	169000
17	e260000	193000	e240000	e330000	e270000	e220000	e190000	365000	e260000	218000	169000	181000
18	e260000	219000	e250000	e350000	e270000	e240000	e210000	363000	265000	210000	169000	175000
19	e230000	192000	e290000	e320000	e270000	e260000	e180000	373000	267000	217000	161000	167000
20	e200000	e220000	e300000	e300000	e280000	e240000	e180000	363000	275000	213000	167000	146000
21	175000	e200000	e250000	e330000	e290000	e240000	e190000	383000	289000	217000	176000	144000
22	174000	e240000	e260000	e340000	e280000	e210000	e200000	396000	269000	205000	164000	135000
23	164000	e250000	e280000	e340000	e280000	e200000	198000	382000	247000	213000	158000	123000
24	192000	e250000	e240000	e340000	e310000	e240000	238000	371000	240000	194000	156000	123000
25	176000	e240000	e220000	e310000	e320000	e280000	263000	381000	276000	199000	147000	119000
26	141000	e240000	e220000	e270000	e320000	e310000	250000	381000	284000	198000	145000	143000
27	165000	e290000	e210000	e300000	e290000	e350000	237000	391000	296000	190000	140000	158000
28	168000	e240000	e220000	e330000	e300000	e380000	240000	434000	300000	201000	126000	130000
29	180000	e220000	e190000	e340000	---	e310000	239000	454000	286000	209000	144000	128000
30	e190000	e220000	e200000	e320000	---	e260000	e240000	e470000	262000	199000	156000	143000
31	e220000	---	e220000	e300000	---	e260000	---	e500000	---	188000	144000	---
TOTAL	6582000	6702000	7390000	8920000	7820000	7940000	6255000	11472000	10266000	6725000	5174000	4267000
MEAN	212300	223400	238400	287700	279300	256100	208500	370100	342200	216900	166900	142200
MAX	275000	290000	300000	350000	320000	380000	263000	500000	500000	271000	198000	181000
MIN	141000	185000	190000	190000	240000	190000	170000	270000	240000	188000	126000	109000
AC-FT	13060000	13290000	14660000	17690000	15510000	15750000	12410000	22750000	20360000	13340000	10260000	8464000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	150500	200100	266800	293900	294200	261600	276000	358500	339800	219500	158000	130900																		
MAX	212300	256500	430800	444300	543400	388700	406500	507500	514500	279300	208200	177300																		
(WY)	1998	1996	1996	1997	1996	1997	1969	1997	1997	1997	1997	1997																		
MIN	114500	136100	175400	199100	191100	196700	196200	234800	203900	139500	107100	92400																		
(WY)	1995	1994	1994	1994	1993	1992	1992	1994	1992	1992	1994	1994																		

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1969 - 1998
ANNUAL TOTAL	120341000	89513000	
ANNUAL MEAN	329700	245200	247500
HIGHEST ANNUAL MEAN			338200
LOWEST ANNUAL MEAN			171100
HIGHEST DAILY MEAN	693000	Jan 3	500000
LOWEST DAILY MEAN	136000	Sep 9	109000
ANNUAL SEVEN-DAY MINIMUM	157000	Sep 9	123000
ANNUAL RUNOFF (AC-FT)	2387000000		1776000000
10 PERCENT EXCEEDS	534000		350000
50 PERCENT EXCEEDS	300000		240000
90 PERCENT EXCEEDS	190000		161000

e Estimated

COLUMBIA RIVER MAIN STEM

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14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued
(National stream quality accounting network station)

WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1967 to September 1970, October 1990 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1993 to current year.

WATER TEMPERATURE: August 1967 to September 1970. October 1993 to current year.

INSTRUMENTATION.--Temperature recorder August 1967 to September 1970. Temperature and specific conductance recorders from October 1992 to current year.

REMARKS.--Since February, 1994, specific conductance and temperature sensors located near right bank. Prior to that time sensors were located near left bank. It was determined that daily record collected prior to February 1994 is not representative of the cross section due to a seasonal influence from several upstream sloughs. Additional specific conductance and temperature data for the period October 1992 to September 1993 available in the files of the Portland field office. Boron values less than 16 UG/L have been designated as estimated due to a change in the minimum reporting level effective December 22, 1997.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 188 microsiemens Feb. 5, 1994, but may have been higher during periods of missing record; minimum recorded, 73 microsiemens Feb. 9, 1996, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum, 24.0°C July 28, 1998; minimum, 0.0°C Jan. 31, Feb. 1, 1969.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 180 microsiemens Apr. 22; minimum recorded, 101 microsiemens Jan. 26, 27. WATER TEMPERATURE: Maximum, 24.0°C July 28; minimum, 3.5°C Jan. 13, 14.

WATER-QUALITY DATA

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND (00060)	SPECIFIC CONDUCTANCE (US/CM) (00095)	PH WATER WHOLE FIELD (STANDARD UNITS) (00400)	TEMPERATURE WATER (DEG C) (00010)	TURBIDITY (NTU) (00076)	OXYGEN, DIS-SOLVED (MG/L) (00300)	BAROMETRIC PRESSURE (MM HG) (00025)	OXYGEN, DIS-SOLVED (PERCENT SATURATION) (00301)	HARDNESS, TOTAL (MG/L AS CaCO3) (00900)	CALCIUM, DIS-SOLVED (MG/L AS Ca) (00915)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg) (00925)
NOV 1997												
03...	1310	219000	120	7.6	12.3	13	10.3	763	96	43	12	3.3
DEC 09...	1200	E210000	149	7.9	7.1	1.8	12.1	772	99	60	16	4.6
JAN 1998												
20...	1220	E300000	103	7.4	6.2	12	12.7	761	102	41	11	3.2
MAR 09...	1250	E240000	144	7.8	6.6	4.3	13.1	E760	E107	57	15	4.5
APR 06...	1230	E190000	169	8.0	9.1	3.5	12.1	754	106	66	17	5.3
MAY 04...	1230	E310000	160	8.1	13.6	3.6	11.8	762	113	62	17	4.9
18...	1130	363000	123	7.7	12.9	4.3	11.9	768	111	48	13	3.6
JUN 08...	1100	E400000	130	7.7	15.6	8.6	10.7	760	108	53	14	4.0
29...	1140	286000	127	7.8	18.2	3.4	9.8	766	103	50	14	3.7
JUL 14...	1240	211000	128	7.8	20.0	3.4	9.8	760	108	54	15	4.0
AUG 24...	1230	156000	159	7.8	21.6	2.4	8.8	766	99	58	16	4.3

DATE	SODIUM, DIS-SOLVED (MG/L AS Na) (00930)	SODIUM PERCENT (00932)	SODIUM ADSORPTION RATIO (00931)	POTASSIUM, DIS-SOLVED (MG/L AS K) (00935)	ALKALINITY, DIS IT FIELD (MG/L AS CaCO3) (39086)	BICARBONATE, DIS IT FIELD (MG/L AS HCO3) (00453)	CARBONATE, DIS IT FIELD (MG/L AS CO3) (00452)	SULFATE, DIS-SOLVED (MG/L AS SO4) (00945)	CHLORIDE, DIS-SOLVED (MG/L AS CL) (00940)	FLUORIDE, DIS-SOLVED (MG/L AS F) (00950)	SILICA, DIS-SOLVED (MG/L AS SiO2) (00955)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)
NOV 1997												
03...	6.2	23	0.4	1.4	42	52	0	7.6	4.5	0.1	11	76
DEC 09...	6.5	19	0.4	1.2	60	73	0	10.8	3.9	0.1	10	97
JAN 1998												
20...	4.8	20	0.3	0.9	41	51	0	6.0	3.3	<0.1	12	68
MAR 09...	5.7	18	0.3	1.0	56	69	0	9.5	3.7	0.1	11	95
APR 06...	8.4	21	0.5	1.2	63	76	0	13.0	5.9	0.2	13	106
MAY 04...	7.2	20	0.4	1.3	62	76	0	11.5	4.6	0.1	11	109
18...	4.9	18	0.3	1.1	45	55	0	7.9	3.0	0.1	11	84
JUN 08...	5.9	19	0.4	1.2	51	62	0	8.4	2.7	0.2	13	88
29...	5.5	19	0.3	1.2	48	59	0	8.3	3.3	0.1	10	82
JUL 14...	5.5	18	0.3	1.0	48	58	0	7.6	3.0	0.1	10	84
AUG 24...	6.0	18	0.3	1.1	57	70	0	8.4	4.2	0.1	8.2	85

E Estimated.

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	SOLIDS, SUM OF CONSTITUENTS, DIS- SOLVED (MG/L) (70301)	SOLIDS, DIS- SOLVED (TONS PER AC-FT) (70303)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N) (00625)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00665)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS, ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CARBON, ORGANIC SUS- PENDED TOTAL (MG/L AS C) (00689)
NOV 1997												
03...	73	0.10	0.013	0.002	<0.1	0.1	0.31	0.05	<0.01	0.018	--	0.3
DEC 09...	91	0.13	0.014	0.003	<0.1	0.1	0.32	0.02	0.01	0.019	1.5	0.2
JAN 1998												
20...	68	0.09	0.008	0.002	<0.1	0.1	0.45	0.05	0.01	0.014	1.6	0.3
MAR 09...	87	0.13	0.019	0.004	<0.1	0.2	0.43	0.03	<0.01	0.014	1.5	0.3
APR 06...	104	0.14	0.008	0.003	<0.1	0.1	0.38	0.03	0.01	0.012	1.5	0.2
MAY 04...	96	0.15	<0.002	0.001	<0.1	<0.1	0.16	<0.01	<0.01	0.001	1.8	0.4
18...	73	0.11	0.004	0.002	0.1	0.2	0.19	0.03	<0.01	0.009	1.9	0.4
JUN 08...	82	0.12	0.002	0.004	0.2	0.2	0.23	0.05	0.03	0.025	2.4	0.4
29...	76	0.11	<0.002	0.003	0.2	<0.1	0.09	<0.01	0.04	0.010	1.9	0.6
JUL 14...	76	0.11	0.005	0.007	<0.1	0.2	0.07	0.01	<0.01	0.012	1.9	0.4
AUG 24...	83	0.12	0.008	0.004	0.1	<0.1	0.06	<0.01	0.01	0.008	1.8	0.5
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	ANTI- MONY, DIS- SOLVED (UG/L AS SE) (01095)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	BORON, DIS- SOLVED (UG/L AS B) (01020)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)	LEAD, DIS- SOLVED (UG/L AS PB) (01049)
NOV 1997												
03...	12	<1	<1	13	<1	E12	<1	<1	<1	1	18	<1
DEC 09...	4	<1	1	21	<1	<16	<1	1	<1	<1	<10	<1
JAN 1998												
20...	7	<1	<1	13	<1	<16	<1	<1	<1	<1	15	<1
MAR 09...	3	<1	<1	19	<1	<16	<1	1	<1	<1	<10	<1
APR 06...	3	<1	1	21	<1	16	<1	1	<1	1	<10	<1
MAY 04...	3	<1	1	20	<1	16	<1	<1	<1	1	<10	<1
18...	4	<1	1	16	<1	<16	<1	<1	<1	1	<10	<1
JUN 08...	5	<1	1	19	<1	<16	<1	<1	<1	1	11	<1
29...	4	<1	<1	18	<1	<16	<1	1	<1	1	<10	<1
JUL 14...	3	<1	1	19	<1	<16	<1	<1	<1	<1	<10	<1
AUG 24...	5	<1	<1	23	<1	<16	<1	<1	<1	1	<10	<1
DATE	LITHIUM, DIS- SOLVED (UG/L AS LI) (01130)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	STRON- TIUM, DIS- SOLVED (UG/L AS SR) (01080)	URANIUM NATURAL, DIS- SOLVED (UG/L AS U) (22703)	VANA- DIUM, DIS- SOLVED (UG/L AS V) (01085)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	DIAZ- INON D10 SRG WAT FLT 0.7 U GF, REC PERCENT (91063)	TERBUTH YLAZINE SURROGT WAT FLT 0.7 U GF, REC PERCENT (91064)
NOV 1997												
03...	<4	3	<1	<1	<1	<1	66	<1	<6	2	82	102
DEC 09...	<4	3	<1	<1	<1	<1	86	<1	<6	3	112	123
JAN 1998												
20...	<4	3	<1	<1	<1	<1	60	<1	<10	<1	126	137
MAR 09...	6	3	<1	<1	<1	<1	82	<1	<10	2	98	91
APR 06...	4	2	<1	<1	<1	<1	98	<1	<10	3	93	101
MAY 04...	5	<1	<1	<1	<1	<1	93	<1	<10	1	108	110
18...	<4	<1	<1	<1	<1	<1	74	<1	<10	1	106	119
JUN 08...	<4	1	<1	<1	<1	<1	82	<1	<10	1	108	114
29...	<4	<1	<1	<1	<1	<1	77	<1	<10	<1	108	106
JUL 14...	<4	<1	<1	<1	<1	<1	84	<1	<10	<1	100	113
AUG 24...	<4	<1	<1	<1	<1	<1	85	<1	<10	1	97	92

E Estimated.

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	HCH ALPHA D6 SRG WAT FLT 0.7 U GF, REC PERCENT (91065)	PROP- CHLOR, WATER, DISS, REC (04024)	BUTYL- ATE, WATER, DISS, REC (04028)	SI- MAZINE, WATER, DISS, REC (04035)	PRO- METON, WATER, DISS, REC (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (04040)	CYANA- ZINE, WATER, DISS, REC (04041)	FONOFOS WATER, DISS, REC (04095)	ALPHA BHC DIS- SOLVED (34253)	P, P' DDE DISSOLV (34653)	CHLOR- PYRIFOS DIS- SOLVED (38933)	LINDANE DIS- SOLVED (39341)
NOV 1997												
03...	89	<0.007	<0.002	0.011	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
DEC 09...	93	<0.007	<0.002	E0.004	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JAN 1998												
20...	118	<0.007	<0.002	0.012	<0.018	E0.006	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
MAR 09...	87	<0.007	<0.002	0.005	<0.018	E0.003	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
APR 06...	85	<0.007	<0.002	E0.005	<0.018	E0.004	<0.004	<0.003	<0.002	<0.006	E0.004	<0.004
MAY 04...	96	<0.007	<0.002	<0.005	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	E0.003	<0.004
18...	95	<0.007	<0.002	E0.004	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUN 08...	92	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
29...	91	<0.007	<0.002	E0.003	<0.018	E0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
JUL 14...	94	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004
AUG 24...	93	<0.007	<0.002	<0.005	<0.018	<0.002	<0.004	<0.003	<0.002	<0.006	<0.004	<0.004

DATE	DI- ELDRIN DIS- SOLVED (39381)	METO- LACHLOR WATER DISSOLV (39415)	MALA- THION, DIS- SOLVED (39532)	PARA- THION, DIS- SOLVED (39542)	DI- AZINON, DIS- SOLVED (39572)	ATRA- ZINE, WATER, DISS, REC (39632)	ALA- CHLOR, WATER, DISS, REC (46342)	ACETO- CHLOR, WATER FLTRD REC (49260)	METRI- BUZIN SENCOR WATER DISSOLV (82630)	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (82661)
NOV 1997											
03...	<0.001	0.007	<0.005	<0.004	E0.001	0.021	<0.002	<0.002	<0.004	<0.003	<0.002
DEC 09...	<0.001	0.005	<0.005	<0.004	<0.002	0.009	<0.002	<0.002	<0.004	<0.003	<0.002
JAN 1998											
20...	<0.001	0.010	<0.005	<0.004	<0.002	0.053	<0.002	<0.002	0.009	<0.003	<0.002
MAR 09...	<0.001	0.005	<0.005	<0.004	<0.002	0.012	<0.002	<0.002	<0.004	<0.003	<0.002
APR 06...	<0.001	E0.004	<0.005	<0.004	<0.002	0.010	<0.002	<0.002	<0.004	<0.003	<0.002
MAY 04...	<0.001	E0.002	<0.005	<0.004	<0.002	0.005	<0.002	<0.002	<0.004	<0.003	<0.002
18...	<0.001	0.004	<0.005	<0.004	<0.002	0.005	<0.002	<0.002	<0.004	<0.003	<0.002
JUN 08...	<0.001	0.007	<0.005	<0.004	<0.002	0.006	<0.002	<0.002	<0.004	<0.003	<0.002
29...	<0.001	E0.003	0.006	<0.004	<0.002	E0.002	<0.002	<0.002	<0.004	<0.003	<0.002
JUL 14...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	<0.002	<0.002	<0.004	<0.003	<0.002
AUG 24...	<0.001	<0.002	<0.005	<0.004	<0.002	<0.001	<0.002	<0.002	<0.004	<0.003	<0.002

DATE	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (82667)	EPTC WATER FLTRD 0.7 U GF, REC (82668)	PEB- ULATE WATER FLTRD 0.7 U GF, REC (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (82671)	ETHO- PROP WATER FLTRD 0.7 U GF, REC (82672)	BEN- FLUR- ALIN WAT FLT 0.7 U GF, REC (82673)
NOV 1997											
03...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
DEC 09...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
JAN 1998											
20...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
MAR 09...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
APR 06...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
MAY 04...	<0.004	<0.002	<0.007	<0.002	<0.006	0.004	<0.004	<0.010	<0.004	<0.003	<0.002
18...	<0.004	<0.002	<0.007	<0.002	<0.006	0.010	<0.004	<0.010	<0.004	<0.003	<0.002
JUN 08...	<0.004	<0.002	<0.007	<0.002	<0.006	0.007	<0.004	<0.010	<0.004	<0.003	<0.002
29...	<0.004	<0.002	<0.007	<0.002	<0.006	E0.003	<0.004	<0.010	<0.004	<0.003	<0.002
JUL 14...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002
AUG 24...	<0.004	<0.002	<0.007	<0.002	<0.006	<0.002	<0.004	<0.010	<0.004	<0.003	<0.002

E Estimated.

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)
NOV 1997											
03...	E0.016	<0.013	<0.003	<0.017	<0.001	<0.004	E0.005	<0.002	<0.002	<0.004	0.006
DEC											
09...	E0.002	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JAN 1998											
20...	<0.003	<0.013	0.013	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
MAR											
09...	<0.003	<0.013	0.006	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
APR											
06...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
MAY											
04...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
18...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
JUN											
08...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
29...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	E0.002	<0.004	<0.003
JUL											
14...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003
AUG											
24...	<0.003	<0.013	<0.003	<0.017	<0.001	<0.004	<0.003	<0.002	<0.002	<0.004	<0.003

DATE	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	AN- TIMONY SED. SUSP. (UG/G) (29816)	ARSENIC SED. SUSP. (UG/G) (29818)	BARIUM SED. SUSP. (UG/G) (29820)	BERYL- LIUM SED. SUSP. (UG/G) (29822)	CADMIUM SED. SUSP. (UG/G) (29826)	CHRO- MIUM SED. SUSP. (UG/G) (29829)	COPPER SED. SUSP. (UG/G) (29832)	LEAD SED. SUSP. (UG/G) (29836)
NOV 1997											
03...	<0.013	<0.001	<0.005	0.9	5.8	440	1.4	0.8	36	71	7
DEC											
09...	<0.013	<0.001	<0.005	1.8	8.6	540	1.5	1.3	60	75	16
JAN 1998											
20...	<0.013	<0.001	<0.005	0.8	6.7	510	1.4	0.3	71	55	12
MAR											
09...	<0.013	<0.001	<0.005	2.2	8.5	500	1.4	0.8	60	51	24
APR											
06...	<0.013	<0.001	<0.005	1.5	10.0	460	1.2	0.7	60	51	26
MAY											
04...	<0.013	<0.001	<0.005	0.9	6.7	510	1.3	1.1	56	37	22
18...	<0.013	<0.001	<0.005	1.2	7.7	590	1.4	1.0	60	55	24
JUN											
08...	<0.013	<0.001	<0.005	1.1	6.4	570	1.3	0.9	58	38	21
29...	<0.013	<0.001	<0.005	1.2	9.1	560	1.4	1.1	60	50	24
JUL											
14...	<0.013	<0.001	<0.005	1.1	8.3	550	1.4	0.9	66	40	25
AUG											
24...	<0.013	<0.001	<0.005	1.1	8.1	550	1.4	1.3	57	84	25

DATE	MAN- GANESE SED. SUSP. (UG/G) (29839)	MERCURY SED. SUSP. (UG/G) (29841)	MOLYB- DENUM SED. SUSP. (UG/G) (29843)	NICKEL SED. SUSP. (UG/G) (29845)	SELE- NIUM SED. SUSP. (UG/G) (29847)	SILVER SED. SUSP. (UG/G) (29850)	VANA- DIUM SED. SUSP. (UG/G) (29853)	ZINC SED. SUSP. (UG/G) (29855)	ALUM- INUM SED, SUS PERCENT (30221)	CARBON SED. SUSP. PERCENT (30244)	IRON SEDI- MENT SUSP. PERCENT (30269)
NOV 1997											
03...	950	0.06	<10	24	0.4	<1.0	100	110	8.9	2.1	4.2
DEC											
09...	1400	0.16	<10	35	0.6	<1.0	120	180	7.5	3.6	4.6
JAN 1998											
20...	1000	0.07	5	48	0.4	<0.5	120	120	8.6	2.0	4.7
MAR											
09...	1300	--	<10	38	0.6	<1.0	110	170	6.7	4.9	4.4
APR											
06...	1400	--	<10	38	0.7	<1.0	100	170	6.2	5.8	3.9
MAY											
04...	1100	0.06	<10	36	0.6	<1.0	100	190	6.4	4.4	3.8
18...	1100	0.08	<10	35	0.5	<1.0	120	200	7.5	2.9	4.4
JUN											
08...	1000	0.02	<10	37	0.3	<1.0	110	160	7.6	2.0	4.6
29...	1200	0.10	<5	38	0.4	<0.5	110	230	7.3	3.0	4.2
JUL											
14...	1200	0.14	<10	41	0.5	<1.0	110	190	6.9	3.2	4.3
AUG											
24...	1300	0.12	<10	57	0.5	<1.0	110	200	6.6	3.8	4.1

E Estimated.

COLUMBIA RIVER MAIN STEM

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14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY DATA

DATE	PHOS- PHORUS SEDI- MENT SUSP. PERCENT (30292)	SULFUR SEDI- MENT SUSP. PERCENT (30308)	TITA- NIUM SEDI- MENT SUSP. PERCENT (30317)	COBALT SEDI- MENT SUSP. (UG/G) (35031)	STRON- TIUM SEDI- MENT SUSP. (UG/G) (35040)	URANIUM SEDI- MENT SUSP. (UG/G) (35046)	LITHIUM SEDI- MENT SUSP. (UG/G) (35050)	CARBON, ORGANIC SUS- PENDEDED, TOTAL PERCENT (50465)	SEDI- MENT, SUS- PENDEDED (MG/L) (80154)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) (80155)	SED. SUSP. SIEVE DIAM. % FINER THAN 0.062 MM (70331)
NOV 1997											
03...	0.12	0.1	0.47	17	380	<100	28	1.7	41	24200	90
DEC											
09...	0.15	0.2	0.50	18	310	<100	32	--	8	E4540	96
JAN 1998											
20...	0.13	0.1	0.51	20	330	<50	29	2.0	35	E28400	79
MAR											
09...	0.20	0.3	0.49	18	250	<100	28	--	9	E5830	97
APR											
06...	0.17	0.5	0.43	15	290	<100	29	--	8	E4100	98
MAY											
04...	0.16	0.2	0.43	14	280	<100	21	4.5	19	E15900	92
18...	0.11	0.2	0.52	20	300	<100	29	2.8	28	27400	70
JUN											
08...	0.12	0.1	0.51	20	320	<100	25	2.1	35	E37800	65
29...	0.16	0.1	0.49	17	290	<50	27	3.0	19	14700	83
JUL											
14...	0.14	--	0.46	18	300	<100	26	3.0	14	7980	86
AUG											
24...	0.14	0.2	0.50	17	300	<100	24	--	14	5900	86

E Estimated.

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	136	123	128	143	137	140
2	---	---	---	---	---	---	137	123	130	141	133	138
3	---	---	---	---	---	---	140	133	136	---	---	---
4	---	---	---	---	---	---	142	133	138	---	---	---
5	---	---	---	---	---	---	145	139	142	132	126	130
6	---	---	---	---	---	---	147	141	143	129	125	127
7	---	---	---	---	---	---	150	143	146	132	125	128
8	---	---	---	---	---	---	152	145	148	129	122	126
9	---	---	---	---	---	---	154	148	151	128	119	124
10	---	---	---	---	---	---	162	151	156	135	123	127
11	---	---	---	---	---	---	157	145	150	137	129	133
12	---	---	---	---	---	---	156	146	150	143	131	135
13	---	---	---	148	140	144	152	145	148	137	126	131
14	---	---	---	152	141	148	151	145	149	129	115	124
15	---	---	---	153	145	149	152	146	149	119	112	115
16	---	---	---	152	146	149	147	133	140	118	112	115
17	---	---	---	154	147	150	133	120	125	114	109	111
18	---	---	---	165	150	156	123	111	117	114	107	109
19	---	---	---	163	154	159	118	111	115	112	104	106
20	---	---	---	154	132	141	118	114	115	107	103	104
21	---	---	---	141	126	134	118	115	116	112	105	109
22	---	---	---	130	123	126	126	117	122	114	110	112
23	---	---	---	127	121	125	127	122	125	119	113	117
24	---	---	---	128	118	123	125	121	123	121	111	116
25	---	---	---	128	120	123	128	122	125	115	104	110
26	---	---	---	130	121	125	132	127	130	108	101	105
27	---	---	---	131	123	126	136	128	132	108	101	105
28	---	---	---	130	123	127	135	132	133	112	106	108
29	---	---	---	131	123	128	140	133	137	122	108	116
30	---	---	---	132	124	128	139	133	137	123	114	118
31	---	---	---	---	---	---	142	133	137	134	123	130
MONTH	---	---	---	---	---	---	162	111	135	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	138	132	134	153	145	149	158	150	154	163	160	162
2	146	134	137	148	136	142	170	155	160	164	159	161
3	149	143	145	137	130	132	166	156	163	163	159	161
4	152	145	149	133	128	132	171	160	167	163	158	161
5	155	147	151	138	130	133	167	161	164	162	157	160
6	154	148	152	146	137	140	171	161	167	169	161	164
7	159	151	156	147	144	145	174	168	171	169	164	168
8	161	153	157	148	140	145	174	167	171	170	164	167
9	161	157	159	143	137	140	172	165	169	167	162	165
10	163	158	161	144	139	141	175	165	171	162	157	159
11	163	159	161	142	137	140	175	165	171	157	149	153
12	162	158	160	143	140	141	175	166	171	150	142	146
13	159	151	156	149	142	144	171	163	167	143	137	140
14	160	151	155	148	143	146	170	161	164	141	135	137
15	153	145	148	150	145	148	167	160	164	141	132	135
16	148	141	144	156	148	152	164	159	162	136	130	132
17	149	142	145	157	151	153	164	157	160	133	124	129
18	147	142	144	156	150	153	166	158	161	124	120	122
19	150	140	145	156	151	152	170	161	165	123	117	120
20	147	141	144	161	155	159	169	162	165	119	116	117
21	152	147	149	162	159	161	175	164	171	120	114	116
22	150	141	145	167	159	162	180	168	174	118	112	115
23	141	133	136	172	159	166	177	169	172	115	112	113
24	140	132	136	163	150	156	173	164	169	114	109	112
25	139	135	137	156	143	149	174	161	168	114	110	112
26	146	137	142	145	140	143	167	152	159	116	112	114
27	151	145	148	152	141	146	158	151	154	120	112	115
28	151	146	149	163	152	159	157	154	155	120	116	118
29	---	---	---	164	160	162	162	156	159	127	119	121
30	---	---	---	164	153	159	164	158	161	131	124	127
31	---	---	---	158	148	152	---	---	---	137	130	134
MONTH	163	132	148	172	128	148	180	150	165	170	109	137

COLUMBIA RIVER MAIN STEM

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14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, AT QUINCY, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	143	136	138	128	124	126	142	134	138	150	142	144
2	143	135	138	132	124	129	140	134	137	149	142	146
3	137	132	135	131	127	129	141	135	138	149	145	147
4	132	129	131	130	127	128	141	134	138	150	144	147
5	133	127	130	128	124	127	144	136	140	148	144	146
6	129	126	128	127	124	126	145	140	142	151	145	148
7	130	126	128	128	124	126	144	139	141	153	147	150
8	129	124	127	131	123	127	143	137	141	152	148	149
9	131	126	128	131	126	128	145	141	144	152	147	149
10	129	125	127	130	124	127	148	143	145	152	147	149
11	128	126	127	128	124	127	147	141	145	151	147	149
12	130	127	128	129	124	127	146	143	144	150	144	147
13	129	126	127	128	124	127	149	143	146	151	146	147
14	128	124	127	130	126	128	150	141	145	150	144	146
15	127	124	126	134	127	129	150	142	145	151	144	147
16	128	124	127	130	126	128	150	143	147	152	144	148
17	128	124	126	130	126	128	149	144	145	153	148	151
18	124	121	123	132	128	129	152	145	147	156	148	152
19	123	121	122	131	128	130	151	143	146	154	146	150
20	125	121	122	130	127	128	151	144	147	154	148	151
21	126	122	124	130	126	128	151	142	146	153	147	151
22	126	123	124	133	127	130	145	140	143	152	146	149
23	128	123	125	136	130	133	145	140	142	149	144	146
24	129	122	125	133	128	130	149	143	146	147	142	146
25	130	123	126	136	130	133	148	143	146	148	143	146
26	132	124	128	136	132	134	147	142	145	150	145	148
27	130	127	128	136	133	135	147	142	145	153	146	150
28	129	127	128	142	134	137	148	143	146	150	145	147
29	129	124	127	140	134	136	149	145	147	154	146	149
30	128	124	126	140	133	135	149	143	146	151	146	149
31	---	---	---	141	134	137	147	143	145	---	---	---
MONTH	143	121	128	142	123	130	152	134	144	156	142	148

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	9.5	9.0	9.0	6.5	6.5	6.5
2	---	---	---	---	---	---	9.0	8.5	9.0	6.5	6.5	6.5
3	---	---	---	---	---	---	9.0	8.5	8.5	---	---	---
4	---	---	---	---	---	---	8.5	8.0	8.5	---	---	---
5	---	---	---	---	---	---	8.0	7.5	8.0	6.0	6.0	6.0
6	---	---	---	---	---	---	8.0	7.5	7.5	6.0	5.5	6.0
7	---	---	---	---	---	---	7.5	7.0	7.5	6.0	6.0	6.0
8	---	---	---	---	---	---	7.5	7.0	7.5	6.0	6.0	6.0
9	---	---	---	---	---	---	7.5	7.0	7.0	6.0	5.5	5.5
10	---	---	---	---	---	---	7.5	7.0	7.5	5.5	5.5	5.5
11	---	---	---	---	---	---	8.0	7.5	7.5	5.5	4.5	5.0
12	---	---	---	---	---	---	7.5	7.0	7.5	4.5	4.0	4.5
13	---	---	---	11.5	11.0	11.0	7.5	7.0	7.0	4.0	3.5	4.0
14	---	---	---	11.5	11.0	11.0	7.0	6.5	7.0	4.0	3.5	4.0
15	---	---	---	11.0	10.5	10.5	7.0	6.5	6.5	4.5	4.0	4.5
16	---	---	---	10.5	10.0	10.5	7.0	6.5	7.0	5.0	4.5	5.0
17	---	---	---	10.5	10.0	10.0	7.5	7.0	7.0	5.5	5.0	5.5
18	---	---	---	10.0	9.5	10.0	7.5	7.0	7.0	6.0	5.5	6.0
19	---	---	---	10.5	9.5	10.0	7.0	7.0	7.0	6.0	5.5	6.0
20	---	---	---	10.5	10.0	10.0	7.0	6.5	7.0	6.0	6.0	6.0
21	---	---	---	10.5	9.5	10.0	7.0	6.5	7.0	6.0	5.5	6.0
22	---	---	---	10.0	9.5	10.0	7.0	6.5	6.5	5.5	5.5	5.5
23	---	---	---	10.0	9.5	10.0	6.5	6.5	6.5	5.5	5.5	5.5
24	---	---	---	10.0	9.5	10.0	6.5	6.5	6.5	6.0	5.5	5.5
25	---	---	---	10.0	9.5	9.5	6.5	6.5	6.5	6.0	5.5	5.5
26	---	---	---	10.0	9.0	9.5	6.5	6.5	6.5	6.0	5.5	6.0
27	---	---	---	9.5	9.0	9.5	6.5	6.0	6.0	6.0	6.0	6.0
28	---	---	---	9.5	9.0	9.0	6.5	6.0	6.0	6.0	6.0	6.0
29	---	---	---	9.5	9.0	9.5	7.0	6.5	6.5	6.0	5.5	6.0
30	---	---	---	9.5	9.0	9.5	6.5	6.5	6.5	6.0	6.0	6.0
31	---	---	---	---	---	---	6.5	6.5	6.5	6.0	5.5	6.0
MONTH	---	---	---	---	---	---	9.5	6.0	7.1	---	---	---

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.0	5.5	6.0	6.5	6.0	6.5	9.0	8.5	8.5	14.0	13.0	13.5
2	6.0	5.5	6.0	6.5	6.5	6.5	9.0	8.5	8.5	14.0	13.5	13.5
3	6.0	5.5	5.5	6.5	6.5	6.5	9.0	8.5	9.0	14.0	13.5	13.5
4	6.0	5.5	5.5	7.0	6.5	6.5	9.0	8.5	9.0	14.0	13.0	13.5
5	6.0	5.5	5.5	7.0	6.5	6.5	9.0	9.0	9.0	14.0	13.5	13.5
6	6.0	5.5	6.0	7.0	6.5	6.5	9.5	9.0	9.0	14.0	13.5	13.5
7	6.0	6.0	6.0	6.5	6.5	6.5	9.5	9.0	9.5	14.5	14.0	14.0
8	6.0	6.0	6.0	6.5	6.5	6.5	10.0	9.0	9.5	14.5	13.5	14.0
9	6.0	6.0	6.0	6.5	6.5	6.5	10.0	9.5	9.5	14.0	13.5	14.0
10	6.0	6.0	6.0	7.0	6.5	6.5	10.0	9.5	9.5	14.0	13.0	13.5
11	6.0	5.5	5.5	7.0	6.5	6.5	10.0	9.5	9.5	14.0	13.5	13.5
12	6.0	5.5	6.0	7.5	6.5	7.0	10.0	9.5	9.5	13.5	13.0	13.5
13	6.5	6.0	6.0	8.0	7.0	7.5	10.0	9.5	10.0	13.5	13.0	13.0
14	6.0	6.0	6.0	8.0	7.5	7.5	10.0	9.5	10.0	13.0	12.5	13.0
15	6.5	6.0	6.0	8.0	7.5	8.0	10.5	10.0	10.0	13.0	12.5	12.5
16	6.5	6.0	6.5	8.0	7.5	8.0	10.5	10.0	10.0	13.0	12.5	13.0
17	6.5	6.5	6.5	8.5	8.0	8.0	10.5	10.0	10.0	13.0	12.5	12.5
18	6.5	6.0	6.5	8.5	8.0	8.0	10.5	10.0	10.5	13.0	12.5	12.5
19	6.5	6.5	6.5	8.5	8.0	8.0	11.0	10.0	10.5	13.0	12.5	12.5
20	6.5	6.0	6.5	8.5	8.0	8.5	11.0	10.5	10.5	13.0	12.5	12.5
21	6.5	6.0	6.0	8.5	8.0	8.5	11.5	10.5	11.0	13.0	12.5	12.5
22	6.5	6.0	6.0	9.0	8.0	8.5	12.0	11.0	11.5	13.0	12.5	12.5
23	6.5	6.0	6.5	9.0	8.5	9.0	12.0	11.5	11.5	13.0	12.5	12.5
24	6.5	6.0	6.5	9.0	9.0	9.0	12.0	11.0	11.5	13.0	12.5	12.5
25	6.5	6.0	6.5	9.5	9.0	9.0	12.0	11.0	11.5	13.0	12.5	12.5
26	6.5	6.0	6.5	9.5	9.0	9.0	11.5	11.0	11.5	13.0	12.5	13.0
27	6.5	6.0	6.5	9.0	8.5	9.0	12.0	11.0	11.5	13.5	13.0	13.0
28	6.5	6.0	6.5	8.5	8.5	8.5	12.5	12.0	12.0	14.0	13.0	13.0
29	---	---	---	9.0	8.5	8.5	13.0	12.0	12.5	14.0	13.5	13.5
30	---	---	---	9.0	8.5	9.0	13.5	12.5	13.0	14.0	13.5	13.5
31	---	---	---	9.0	8.5	9.0	---	---	---	14.5	13.5	14.0
MONTH	6.5	5.5	6.1	9.5	6.0	7.7	13.5	8.5	10.3	14.5	12.5	13.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	14.5	14.0	14.0	19.0	18.5	18.5	23.0	22.5	22.5	22.5	21.5	22.0
2	15.0	14.0	14.5	19.0	18.0	18.5	22.5	22.0	22.5	22.5	21.5	22.0
3	15.0	14.5	14.5	18.5	18.0	18.0	23.0	22.0	22.5	22.5	22.0	22.0
4	15.0	14.0	14.5	18.5	18.0	18.0	23.0	22.5	22.5	23.0	22.0	22.0
5	15.0	14.0	14.5	18.0	17.5	18.0	23.0	22.5	22.5	22.5	21.5	22.0
6	15.5	14.5	15.0	18.5	18.0	18.0	23.5	22.5	23.0	22.5	21.5	22.0
7	16.0	15.0	15.5	19.0	18.5	18.5	23.0	22.5	22.5	22.5	21.5	22.0
8	16.5	15.5	16.0	19.5	18.5	19.0	23.5	22.5	22.5	22.5	21.0	21.5
9	16.5	16.0	16.0	19.5	19.0	19.0	23.5	22.5	22.5	21.5	21.0	21.5
10	16.5	16.0	16.0	20.0	19.0	19.5	22.5	22.0	22.5	21.5	21.0	21.0
11	16.5	15.5	16.0	20.0	19.5	19.5	22.5	22.5	22.5	21.5	20.5	21.0
12	16.5	16.0	16.0	20.0	19.5	19.5	23.0	22.5	22.5	21.5	20.5	21.0
13	17.5	16.5	16.5	20.0	19.5	20.0	23.0	22.5	22.5	21.0	20.0	20.5
14	17.5	16.5	17.0	20.0	19.5	20.0	23.5	22.5	23.0	21.0	20.0	20.5
15	17.5	17.0	17.0	20.5	20.0	20.0	23.5	22.5	23.0	21.5	20.0	20.5
16	17.5	17.0	17.0	21.0	20.0	20.5	23.5	22.5	23.0	21.5	20.5	21.0
17	17.5	16.5	17.0	21.5	21.0	21.0	23.5	22.5	22.5	21.5	20.5	21.0
18	17.5	16.5	17.0	21.5	21.0	21.5	22.5	22.0	22.5	21.5	21.0	21.0
19	17.0	16.5	17.0	22.0	21.5	21.5	22.5	21.5	22.0	21.5	20.5	21.0
20	17.0	16.5	17.0	22.0	21.0	21.5	22.5	21.5	22.0	21.0	20.5	21.0
21	18.0	17.0	17.0	22.0	21.0	21.5	22.5	21.5	22.0	21.0	20.5	20.5
22	18.0	17.5	17.5	22.5	21.0	22.0	22.5	21.5	22.0	20.5	20.0	20.0
23	18.0	17.5	17.5	22.5	21.5	22.0	22.5	21.5	22.0	20.5	20.0	20.0
24	18.0	17.5	17.5	22.5	21.5	22.0	22.0	21.0	21.5	20.5	19.5	20.0
25	18.0	17.0	17.5	22.5	21.5	22.0	22.0	21.0	21.5	20.0	19.5	19.5
26	18.0	17.0	17.5	23.0	22.0	22.5	22.0	21.0	21.5	20.0	19.5	19.5
27	18.0	17.0	17.5	23.5	22.5	22.5	21.5	21.0	21.5	20.0	19.5	19.5
28	18.0	17.5	17.5	24.0	22.5	23.0	21.5	21.0	21.5	20.0	19.5	19.5
29	18.5	18.0	18.5	23.5	22.5	23.0	21.5	21.0	21.5	19.5	19.0	19.5
30	19.0	18.5	18.5	23.0	22.5	23.0	22.0	21.0	21.5	20.0	19.0	19.5
31	---	---	---	23.0	22.5	23.0	22.5	21.5	21.5	---	---	---
MONTH	19.0	14.0	16.5	24.0	17.5	20.5	23.5	21.0	22.2	23.0	19.0	20.8

PACIFIC SLOPE BASINS IN OREGON

281

NEHALEM RIVER BASIN

14301000 NEHALEM RIVER NEAR FOSS, OR

LOCATION.--Lat 45°42'15", long 123°45'15", in NW 1/4 sec.35, T.3 N., R.9 W., Tillamook County, Hydrologic Unit 17100202, on right bank 0.2 mi upstream from Cook Creek, 2.2 mi northeast of Foss, and at mile 13.5.

DRAINAGE AREA.--667 mi².

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 32.60 ft above sea level (State Highway Department bench mark). Prior to Nov. 11, 1939, nonrecording gage.

REMARKS.--Records fair. No regulation. Several small diversions for irrigation and domestic use upstream from station. National Weather Service telemeter at station.

AVERAGE DISCHARGE.--59 years (water years 1940-98), 2,672 ft³/s, 54.44 in/yr, 1,936,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 70,300 ft³/s Feb. 8, 1996, gage height, 29.56 ft, based on slope-area measurement of peak flow; minimum discharge, 34 ft³/s Aug. 29-31, 1967.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 19,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1530	22,800	15.21	No other peak greater than base discharge.			
Minimum discharge, 83 ft ³ /s Sept. 17.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1110	8760	5160	3960	3490	5770	2650	889	1350	459	179	103
2	1900	5820	4480	5020	3140	6340	2400	884	1210	445	176	99
3	2770	4580	3880	4730	2840	6360	2240	862	1100	433	174	96
4	6740	3860	3360	4440	2630	5970	2160	829	1020	431	177	94
5	7610	3340	2950	5460	2500	5330	2050	785	954	423	169	92
6	5160	3120	2640	8190	2590	4590	1940	753	892	410	159	89
7	3670	2980	2430	9030	2720	3920	1950	726	835	390	156	88
8	3340	2820	2300	7750	2950	3580	1870	705	790	368	152	87
9	6290	2620	2260	6230	3570	4170	1770	691	747	349	148	87
10	8050	2450	3030	5100	3750	4750	1710	683	791	332	143	86
11	6610	2290	3040	5010	4130	4360	1780	667	819	317	141	86
12	4950	2140	2770	4880	5480	3970	1910	655	766	310	140	91
13	3890	2000	2550	7060	8680	3850	1930	684	688	304	136	88
14	3160	1870	2430	13800	8470	3580	1890	788	643	299	132	86
15	2650	1750	2410	17800	6770	3220	1840	1220	620	296	129	86
16	2270	1670	10400	14600	5360	2960	1750	1280	631	285	135	85
17	1980	2070	15900	14400	4450	2700	1640	1550	604	273	132	85
18	1720	2230	13600	13900	4140	2450	1560	1810	583	264	127	171
19	1520	5130	8860	e10000	4470	2240	1480	1750	572	254	123	222
20	1360	14800	6800	e8200	4280	2060	1390	1650	558	248	123	175
21	1210	14900	5940	e6800	6040	2010	1320	2050	539	240	123	166
22	1100	9930	5110	e6800	8550	2660	1240	2510	505	229	121	176
23	1060	7960	4600	7520	8820	3980	1250	2260	484	219	119	142
24	997	8320	4280	11300	6940	4830	1310	2050	503	211	120	125
25	913	7990	3870	12500	5510	4450	1260	1980	560	204	119	122
26	851	6830	3520	11700	4630	4020	1160	2000	692	199	116	126
27	810	5550	3310	9390	3900	3890	1090	1980	667	195	115	130
28	807	5150	3220	7140	3880	3660	1030	1780	595	187	113	123
29	2950	5500	3170	5660	---	3330	984	1600	534	179	111	117
30	14100	5610	2970	4800	---	3020	938	1460	487	175	108	114
31	13100	---	2800	4010	---	2850	---	1510	---	175	106	---
TOTAL	114648	154040	144040	257180	134680	120870	49492	41041	21739	9103	4222	3437
MEAN	3698	5135	4646	8296	4810	3899	1650	1324	725	294	136	115
MAX	14100	14900	15900	17800	8820	6360	2650	2510	1350	459	179	222
MIN	807	1670	2260	3960	2500	2010	938	655	484	175	106	85
AC-FT	227400	305500	285700	510100	267100	239700	98170	81400	43120	18060	8370	6820
CFSM	5.54	7.70	6.97	12.4	7.21	5.85	2.47	1.98	1.09	.44	.20	.17
IN.	6.39	8.59	8.03	14.34	7.51	6.74	2.76	2.29	1.21	.51	.24	.19

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1998, BY WATER YEAR (WY)

	MEAN	840	3723	6148	6211	5789	4272	2744	1259	612	273	147	217
MAX	3698	9256	11390	12450	12510	8696	6389	3028	1591	747	314	911	
(WY)	1998	1974	1956	1971	1996	1956	1996	1948	1968	1983	1968	1997	
MIN	69.9	154	599	596	1066	1171	1149	520	250	137	62.5	63.6	
(WY)	1953	1994	1977	1977	1977	1992	1941	1989	1992	1967	1967	1967	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1940 - 1998

ANNUAL TOTAL	1188430		1054492									
ANNUAL MEAN	3256		2889									
HIGHEST ANNUAL MEAN										2672		
LOWEST ANNUAL MEAN										4235		1974
HIGHEST DAILY MEAN	29500	Jan 1	17800	Jan 15						1063		1977
LOWEST DAILY MEAN	99	Sep 10	85	Sep 16						36	Aug 29	1967
ANNUAL SEVEN-DAY MINIMUM	104	Sep 6	87	Sep 11						38	Aug 26	1967
ANNUAL RUNOFF (AC-FT)	2357000		2092000							1936000		
ANNUAL RUNOFF (CFSM)	4.88		4.33							4.01		
ANNUAL RUNOFF (INCHES)	66.28		58.81							54.44		
10 PERCENT EXCEEDS	7790		6990							7200		
50 PERCENT EXCEEDS	2240		1900							1140		
90 PERCENT EXCEEDS	165		127							126		

e Estimated

WILSON RIVER BASIN

14301500 WILSON RIVER NEAR TILLAMOOK, OR

LOCATION.--Lat 45°29'13", long 123°41'11", in SW 1/4 SE 1/4 sec.8, T.1 S., R.8 W., Tillamook County, Hydrologic Unit 17100203, on right bank 0.2 mi upstream from Negro Jack Creek, 8.0 mi east of Tillamook, and at mile 11.7.

DRAINAGE AREA.--161 mi², at former site, 2.1 mi downstream.

PERIOD OF RECORD.--October 1914 to September 1915, August to November 1916, July 1931 to current year. Prior to January 1915 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1398: 1953. WSP 1738: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 71.89 ft above sea level. Dec. 18, 1914, to Nov. 4, 1916, nonrecording gage at site 2.8 mi downstream at different datum. July 30, 1931, to Sept. 30, 1938, nonrecording gage at site 2.82 mi downstream at datum 28.83 ft lower. Oct. 1, 1938, to Oct. 17, 1968, water-stage recorder at site 2.1 mi downstream at datum 29.76 ft lower. Oct. 18, 1968 to Sept. 6, 1973 at site 50 ft downstream at same datum.

REMARKS.--Records good. No regulation. Small diversions for domestic use upstream from station.

AVERAGE DISCHARGE.--68 years (water years 1915, 1932-98), 1,178 ft³/s, 99.42 in/yr, 853,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,000 ft³/s Jan. 20, 1972, gage height, 16.91 ft, site then in use; maximum gage height, 19.51 ft Feb. 8, 1996, from floodmark; minimum discharge, 32 ft³/s Sept. 5, 1973, but may have been less for short period following a landslide Jan. 31, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in February 1916 reached a stage of 20.8 ft, from floodmark, site and datum then in use.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 12,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1630	*21,900	*16.03	Dec. 16	2100	12,800	12.84

Minimum discharge, 51 ft³/s Sept. 16, 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	600	3780	1990	1660	1330	3400	937	334	385	184	103	61
2	944	2540	1660	2020	1230	3380	858	337	364	180	98	59
3	1780	2000	1400	1610	1110	2730	803	318	345	174	95	58
4	5430	1660	1210	1540	1030	2260	753	306	331	174	92	57
5	6290	1400	1070	2370	1010	1910	696	294	319	172	88	56
6	3020	1310	950	3830	1160	1620	657	287	304	164	87	56
7	1880	1250	895	4020	1160	1400	646	275	290	158	85	56
8	1810	1140	843	2980	1300	1430	598	268	278	152	84	55
9	3490	1050	877	2230	1550	2040	e571	265	269	148	82	54
10	4740	963	1240	1790	1520	2450	564	260	292	142	81	55
11	3230	883	1120	2270	2020	2150	620	253	276	139	80	55
12	2330	812	988	2740	3250	1940	662	257	254	140	79	55
13	1770	752	890	4790	4700	1800	671	273	241	138	77	55
14	1400	697	858	8740	3360	1550	716	349	233	135	75	54
15	1160	649	914	7550	2540	1360	701	578	228	135	74	53
16	1010	621	8110	e5200	2050	1210	659	514	233	131	74	52
17	886	1030	8040	7000	1740	1080	e620	626	220	125	77	53
18	787	1030	4220	5180	1760	975	e580	669	213	120	75	173
19	708	3570	2850	3920	2090	883	e550	626	213	120	74	182
20	638	9840	2400	3380	1880	806	e520	626	203	118	73	110
21	576	5240	2030	2970	3370	829	e487	814	195	114	73	88
22	527	3370	1720	2950	3310	1340	464	780	189	111	71	77
23	503	3590	1590	3770	2560	1870	469	689	186	108	70	71
24	460	4500	1440	5460	2020	2020	465	670	209	105	72	68
25	423	3590	1290	5140	1760	1600	437	656	238	105	70	72
26	403	2760	1190	4420	1470	1560	413	588	291	105	68	74
27	389	2150	1120	3230	1280	1500	395	542	240	103	67	70
28	396	2140	1110	2430	1680	1370	378	499	215	99	66	67
29	2200	2440	1050	1990	---	1240	363	465	200	97	65	64
30	12100	2380	981	1750	---	1120	348	442	190	99	63	62
31	7830	---	914	1480	---	1050	---	410	---	103	62	---
TOTAL	69710	69137	56960	110410	55240	51873	17601	14270	7644	4098	2400	2122
MEAN	2249	2305	1837	3562	1973	1673	587	460	255	132	77.4	70.7
MAX	12100	9840	8110	8740	4700	3400	937	814	385	184	103	182
MIN	389	621	843	1480	1010	806	348	253	186	97	62	52
AC-FT	138300	137100	113000	219000	109600	102900	34910	28300	15160	8130	4760	4210
CFSM	14.0	14.3	11.4	22.1	12.3	10.4	3.64	2.86	1.58	.82	.48	.44
IN.	16.11	15.97	13.16	25.51	12.76	11.99	4.07	3.30	1.77	.95	.55	.49

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 1998, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1915	584	2249	1998	43.5	1988
1916	1877	4266	1996	87.2	1937
1917	2651	7988	1934	378	1977
1918	2517	5776	1953	344	1977
1919	2215	5037	1996	634	1993
1920	1775	3637	1956	406	1992
1921	1188	2622	1991	426	1939
1922	611	1391	1933	202	1939
1923	335	876	1933	131	1992
1924	168	514	1983	76.5	1992
1925	105	240	1968	44.3	1967
1926	157	780	1959	40.1	1967

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1915 - 1998
ANNUAL TOTAL	524180	461465	
ANNUAL MEAN	1436	1264	1178
HIGHEST ANNUAL MEAN			1811
LOWEST ANNUAL MEAN			524
HIGHEST DAILY MEAN	12100	Oct 30	28000
LOWEST DAILY MEAN	86	Sep 10	34
ANNUAL SEVEN-DAY MINIMUM	89	Sep 7	35
ANNUAL RUNOFF (AC-FT)	1040000	915300	853500
ANNUAL RUNOFF (CFSM)	8.92	7.85	7.32
ANNUAL RUNOFF (INCHES)	121.11	106.62	99.42
10 PERCENT EXCEEDS	3520	3330	2900
50 PERCENT EXCEEDS	914	669	569
90 PERCENT EXCEEDS	107	74	88

e Estimated

TRASK RIVER BASIN

283

14302480 TRASK RIVER ABOVE CEDAR CREEK, NEAR TILLAMOOK, OR

LOCATION.--Lat 45°26'47", long 123°42'33", in NW 1/4 SE 1/4 sec.30, T.1 S., R.8 W., Tillamook County, Hydrologic Unit 17100203, on right bank 0.1 mi upstream from Cedar Creek, 6.8 mi east of Tillamook, and at mile 10.95.

DRAINAGE AREA.--156 mi², at Long Prairie Road bridge, 4.0 mi downstream, where all discharge measurements are made.

PERIOD OF RECORD.--April 1996 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 70 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation. Water diverted from the J.W. Barney Reservoir (capacity 20,000 acre-ft) on the Middle Fork of the North Fork of the Trask River to the Tualatin River for domestic use and pollution abatement by the city of Hillsboro amounted to 7,928 acre-ft for the 1998 water year.

AVERAGE DISCHARGE.--2 years (water years 1997-98), 1,227 ft³/s, 106.84 in/yr, 888,700 acre-ft/yr.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 8, 1996 reached a stage of 23.2 ft, from floodmark; discharge, 25,800 ft³/s, from slope-area measurement.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 9,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1630	*11,300	*16.12	No other peak greater than base discharge.			
Minimum discharge, 77 ft ³ /s Sept. 9, 16, 17.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	463	3500	1830	1390	1350	2790	928	355	401	222	132	85
2	841	2440	1600	1510	1250	2680	856	362	385	215	124	83
3	1160	1940	1310	1350	1160	2440	812	350	366	209	119	82
4	2830	1660	1170	1430	1040	2160	766	337	355	209	116	81
5	3990	1440	1050	2250	1050	1870	720	326	345	205	112	81
6	2210	1280	1010	3300	1170	1620	689	308	328	192	110	81
7	1470	1230	984	3320	1120	1450	682	296	311	183	109	79
8	1420	1120	940	2580	1310	1510	620	291	301	179	108	80
9	2640	1050	958	2000	1470	1790	597	288	293	171	106	79
10	3960	990	1110	1660	1500	1990	596	282	340	166	106	79
11	2970	930	992	2240	1940	1790	672	276	322	162	105	82
12	2240	875	889	2880	2660	1650	693	281	289	165	103	83
13	1780	826	835	3980	3820	1510	695	308	268	160	100	83
14	1470	784	858	5640	2930	1340	713	358	256	166	98	82
15	1260	744	892	5400	2420	1210	711	555	254	169	102	80
16	1070	722	4890	4110	2010	1110	670	491	262	161	105	79
17	853	1070	5330	5190	1740	1000	637	660	242	155	104	79
18	770	986	3340	4460	1690	900	597	672	238	150	103	158
19	708	3010	2470	3470	1830	831	570	600	237	150	102	177
20	657	7580	2190	2880	1730	776	539	602	223	148	101	118
21	615	4530	1910	2470	2820	815	515	762	215	144	100	102
22	583	3120	1660	2280	2810	1160	492	722	209	139	98	96
23	571	3390	1580	2760	2320	1430	489	662	209	137	98	90
24	540	4220	1450	3600	1900	1510	497	645	238	136	104	88
25	511	3550	1300	3760	1690	1310	466	607	299	134	99	96
26	509	2780	1120	3520	1450	1430	441	554	432	131	96	103
27	510	2200	1070	2850	1270	1450	423	528	330	127	94	93
28	500	2120	1070	2290	1710	1320	408	493	277	124	92	86
29	1140	2190	997	1950	---	1200	384	467	246	122	88	83
30	5980	2080	934	1690	---	1090	366	451	232	126	88	82
31	6110	---	875	1460	---	1030	---	422	---	134	86	---
TOTAL	52331	64357	48614	89670	51160	46162	18244	14311	8703	4991	3208	2750
MEAN	1688	2145	1568	2893	1827	1489	608	462	290	161	103	91.7
MAX	6110	7580	5330	5640	3820	2790	928	762	432	222	132	177
MIN	463	722	835	1350	1040	776	366	276	209	122	86	79
AC-FT	103800	127700	96430	177900	101500	91560	36190	28390	17260	9900	6360	5450
CFSM	10.8	13.8	10.1	18.5	11.7	9.55	3.90	2.96	1.86	1.03	.66	.59
IN.	12.48	15.35	11.59	21.38	12.20	11.01	4.35	3.41	2.08	1.19	.76	.66

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1997 - 1998, BY WATER YEAR (WY)

	1997	1998	1997	1998	1997	1998	1997	1998
MEAN	1149	1890	2863	2745	1795	2013	855	518
MAX	1688	2145	4157	2893	1827	2538	1102	574
(WY)	1998	1998	1997	1998	1998	1997	1997	1997
MIN	610	1635	1568	2598	1764	1489	608	462
(WY)	1997	1997	1998	1997	1998	1998	1998	1998

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1997 - 1998	
ANNUAL TOTAL	459439		404501		1227	
ANNUAL MEAN	1259		1108		1345	
HIGHEST ANNUAL MEAN					1108	
LOWEST ANNUAL MEAN					1108	
HIGHEST DAILY MEAN	8810	Jan 1	7580	Nov 20	8810	Jan 1 1997
LOWEST DAILY MEAN	88	Sep 9	79	Sep 7	80	Oct 3 1996
ANNUAL SEVEN-DAY MINIMUM	93	Sep 6	80	Sep 4	80	Sep 4 1998
ANNUAL RUNOFF (AC-FT)	911300		802300		888700	
ANNUAL RUNOFF (CFSM)	8.07		7.10		7.86	
ANNUAL RUNOFF (INCHES)	109.56		96.46		106.84	
10 PERCENT EXCEEDS	2860		2800		2970	
50 PERCENT EXCEEDS	893		693		709	
90 PERCENT EXCEEDS	137		100		107	

NESTUCCA RIVER BASIN

14302800 MCGUIRE LAKE NEAR FAIRDALE, OR

LOCATION.--Lat 45°18'30", long 123°24'30", in NW 1/4 SE 1/4 sec.15, T.3 S., R.6 W., Yamhill County, Hydrologic Unit 17100203, on control tower in reservoir on Nestucca River, 0.3 mi upstream from Walker Creek, and 5.0 mi southwest of Fairdale.

DRAINAGE AREA.--2.85 mi².

PERIOD OF RECORD.--October 1970 to current year.

GAGE.--Nonrecording gage. Datum of gage is sea level.

REMARKS.--Reservoir is formed by earthfill dam with ungated spillway. Capacity of reservoir is 3,840 acre-ft between elevations 1,810.0 ft and 1,865.5 ft. Dead storage negligible. Under normal operation, reservoir is filled in the spring (April or May) and drained when fall rains start. There is no planned storage during winter months; however, during periods of heavy runoff, inflow may be greater than capacity of outlet tunnel and there may be temporary storage. Water is used during summer months for municipal supply of city of McMinnville.

COOPERATION.--Elevation and capacity table furnished by city of McMinnville Water and Light Department. Elevations based on once-daily staff gage readings.

EXTREMES FOR PERIOD OF RECORD.--Maximum observed contents, 3,890 acre-ft Mar. 12 1972, Feb. 19, Mar. 28, 1974, elevation, 1,865.8 ft; no contents most of time during winter months.

EXTREMES FOR CURRENT YEAR.--Maximum observed contents, 3,770 acre-ft Jan. 26 to July 8, elevation, 1,865.0 ft; no contents observed several days in November and December, elevation, 1,810.0 ft.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,854.2	2,430	-
Oct. 31.....	1,815.0	100	-2,330
Nov. 30.....	1,810.0	0	-100
Dec. 31.....	1,836.5	970	+970
CAL YR 1997.....	-	-	+132
Jan. 31.....	1,865.0	3,770	+2,800
Feb. 28.....	1,865.0	3,770	0
Mar. 31.....	1,865.0	3,770	0
Apr. 30.....	1,865.0	3,770	0
May 31.....	1,865.0	3,770	0
June 30.....	1,865.0	3,770	0
July 31.....	1,861.8	3,320	-450
Aug. 31.....	1,855.6	2,580	-740
Sept. 30.....	1,850.3	2,040	-540
WTR YR 1998.....	-	-	-390

NESTUCCA RIVER BASIN

285

14302900 NESTUCCA RIVER NEAR FAIRDALE, OR

LOCATION.--Lat 45°18'40", long 123°25'05", in SW 1/4 NW 1/4 sec.15, T.3 S., R.6 W., Yamhill County, Hydrologic Unit 17100203, on right bank 100 ft upstream from former Meadow Lake, 0.4 mi downstream from Walker Creek, 5.3 mi southwest of Fairdale, and at mile 49.3.

DRAINAGE AREA.--6.18 mi².

PERIOD OF RECORD.--June 1960 to current year.

REVISED RECORDS.--WDR OR-97-1: 1994-95 (adjusted discharge).

GAGE.--Water-stage recorder. Datum of gage is 1,778.99 ft above sea level (levels by city of McMinnville).

REMARKS.--Records good. Flow regulated since March 1969 by McGuire Lake about 1 mi upstream from gage (station 14302800). During winter months lake is empty except when inflow exceeds capacity of outlet tunnel. Trans-basin diversion upstream from station to Haskins Creek Basin (see station 14196001). About 1,580 acre-ft diverted during the 1998 water year, primarily during summer and fall.

AVERAGE DISCHARGE.--38 years (water years 1961-98), 31.6 ft³/s, 69.44 in/yr, 22,890 acre-ft/yr, adjusted for storage and diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 876 ft³/s Dec. 22, 1964, gage height, 10.43 ft; minimum discharge, 0.41 ft³/s Sept. 11, 1986.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 295 ft³/s Nov. 20, gage height, 5.11 ft; minimum discharge, 0.70 ft³/s Sept. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998 DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	86	59	27	38	86	29	8.8	12	3.9	2.2	.92
2	35	69	49	21	36	88	26	11	11	3.9	1.4	.85
3	37	57	40	19	33	81	26	13	10	3.7	1.4	.91
4	59	41	34	22	30	66	24	11	9.7	3.8	1.3	.83
5	54	28	30	49	34	54	22	9.3	9.4	3.8	1.3	.83
6	70	31	27	82	51	45	20	8.4	8.9	3.6	1.3	.87
7	110	31	31	70	44	40	18	7.8	8.0	3.2	1.3	.87
8	119	25	27	47	60	51	17	7.8	7.5	2.2	1.3	.91
9	202	23	28	32	58	64	17	7.7	7.3	1.9	1.3	.90
10	187	21	33	25	62	70	25	7.6	8.0	2.0	1.3	.93
11	144	19	27	44	82	66	30	7.3	7.4	2.0	1.3	.94
12	123	18	25	50	127	58	31	7.9	6.8	2.0	1.3	.95
13	110	17	22	78	148	52	28	9.3	6.5	1.9	1.2	.88
14	102	15	24	156	118	43	27	14	6.1	1.9	e1.2	.92
15	97	14	22	108	94	37	25	23	6.0	1.9	e1.1	.88
16	93	17	95	83	76	33	23	20	6.1	1.8	e1.1	.83
17	89	39	89	160	66	29	20	22	5.8	1.7	e1.1	.86
18	86	25	52	95	75	25	19	19	5.7	1.6	1.2	3.3
19	82	159	36	69	79	23	17	18	5.8	1.7	1.1	1.9
20	79	242	34	49	85	20	16	23	5.4	1.9	1.1	1.2
21	76	163	26	41	178	30	15	30	5.0	1.7	1.1	1.1
22	73	125	21	41	153	54	14	25	4.7	1.5	1.1	1.0
23	70	154	20	60	105	76	14	23	4.6	1.5	1.1	.97
24	66	164	17	85	77	73	13	25	5.5	1.5	1.1	.93
25	61	140	15	83	65	58	13	23	6.3	1.4	1.1	.99
26	57	114	13	100	52	55	12	20	7.2	1.9	1.1	1.1
27	52	94	13	95	43	49	11	18	6.0	1.2	1.0	.96
28	46	88	11	75	64	41	10	16	5.0	1.3	.98	.90
29	63	86	10	63	---	35	10	15	4.4	1.3	.93	.84
30	142	74	9.4	53	---	32	9.4	15	4.1	1.5	.93	.76
31	121	---	8.4	42	---	32	---	13	---	1.6	.91	---
TOTAL	2726	2179	947.8	2024	2133	1566	581.4	478.9	206.2	66.8	37.15	31.03
MEAN	87.9	72.6	30.6	65.3	76.2	50.5	19.4	15.4	6.87	2.15	1.20	1.03
MAX	202	242	95	160	178	88	31	30	12	3.9	2.2	3.3
MIN	21	14	8.4	19	30	20	9.4	7.3	4.1	1.2	.91	.76
AC-FT	5410	4320	1880	4010	4230	3110	1150	950	409	132	74	62
MEAN†	50.1	70.9	46.4	110.8	76.2	50.6	19.3	15.5	12.9	4.6	-3.6	-5.1
CFSM†	8.11	11.48	7.50	17.92	12.32	8.18	3.13	2.50	2.09	0.74	-0.58	-0.83
IN.†	9.35	12.81	8.65	20.67	12.84	9.44	3.49	2.88	2.33	0.85	-0.67	-0.92
AC-FT†	3080	4220	2850	6810	4230	3110	1150	950	769	281	-220	-304

CAL YR 1997 TOTAL 12961.0 MEAN 35.5 MAX 285 MIN 1.0 AC-FT 25710 MEAN† 36.9 CFSM† 5.98 IN.† 81.13 AC-FT† 26735
WTR YR 1998 TOTAL 12977.28 MEAN 35.6 MAX 242 MIN .76 AC-FT 25740 MEAN† 37.2 CFSM† 6.02 IN.† 81.72 AC-FT† 26929

† Adjusted for storage and diversion from McGuire Lake.

Note - Negative values shown for adjusted values during summer period are a result of evaporation exceeding inflows to McGuire Lake.

e Estimated

NESTUCCA RIVER BASIN

14303200 TUCCA CREEK NEAR BLAINE, OR

LOCATION.--Lat 45°19'28", long 123°32'43", in SE 1/4 NW 1/4 sec.9, T.3 S., R.7 W., Tillamook County, Hydrologic Unit 17100203, on right bank at road bridge, 80 ft upstream from confluence with Elk Creek, and 8 mi northeast of Blaine.

DRAINAGE AREA.--3.09 mi².

PERIOD OF RECORD.--July 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,400 ft above sea level, from topographic map.

REMARKS.--Records fair.

AVERAGE DISCHARGE.--15 years (water years 1984-98), 17.0 ft³/s, 74.57 in/yr, 12,290 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 680 ft³/s Feb. 6, 1996, gage height, 4.30 ft, from rating curve extended above 190 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 5.09 ft, Dec. 25, 1996; minimum discharge, 0.46 ft³/s Sept. 30, Oct. 1, 2, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 180 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1715	*206	*4.22	Nov. 20	0445	182	4.08

Minimum discharge, 1.0 ft³/s Sept. 16, 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	49	30	17	e22	55	18	6.8	9.2	3.4	1.9	1.1
2	18	37	26	17	e20	56	16	6.7	8.6	3.3	1.8	1.1
3	25	30	23	18	e18	49	15	6.6	8.2	3.2	1.7	1.1
4	47	25	20	20	e16	42	14	6.2	7.9	3.2	1.7	1.1
5	57	21	17	31	e16	37	13	5.7	7.5	3.2	1.6	1.1
6	43	20	15	e55	e18	31	12	5.6	7.0	3.0	1.6	1.1
7	32	19	15	e55	e16	27	12	5.4	6.6	2.9	1.6	1.1
8	28	17	13	e42	e20	26	11	5.3	6.3	2.9	1.6	1.1
9	39	16	13	e34	e24	30	10	5.2	5.9	2.7	1.5	1.1
10	53	15	13	e28	e22	34	11	5.1	6.4	2.6	1.5	1.1
11	46	14	12	e38	e30	33	12	4.9	5.8	2.7	1.5	1.1
12	38	13	12	e50	e44	30	12	4.9	5.4	2.9	1.4	1.1
13	32	13	11	e70	e65	27	12	5.1	5.2	2.9	1.4	1.1
14	26	11	11	e95	e48	24	13	6.1	4.9	2.8	1.4	1.1
15	22	11	12	e90	e40	22	13	8.3	4.8	2.7	1.4	1.1
16	19	11	46	e75	e34	19	13	7.8	4.8	2.6	1.4	1.1
17	17	16	66	e90	e30	17	13	9.8	4.6	2.5	1.4	1.1
18	15	13	46	e75	e30	15	12	9.6	4.5	2.5	1.4	3.2
19	13	38	36	e60	31	14	12	9.4	4.4	2.4	1.3	2.0
20	12	139	31	e52	32	13	11	12	4.2	2.3	1.3	1.5
21	11	74	25	e46	54	14	11	21	4.0	2.3	1.3	1.3
22	10	50	22	e42	59	18	10	21	3.9	2.2	1.3	1.2
23	9.4	48	20	e46	49	23	9.8	20	3.8	2.2	1.3	1.2
24	8.5	57	19	e63	41	26	9.2	19	4.3	2.1	1.3	1.2
25	8.0	53	17	e68	35	26	8.6	17	4.6	2.1	1.3	1.4
26	7.4	44	16	e62	29	26	8.3	15	5.4	1.9	1.2	1.4
27	7.4	36	15	e48	25	24	7.9	13	4.4	1.8	1.2	1.2
28	7.2	32	14	e38	34	23	7.7	12	4.0	1.8	1.2	1.2
29	21	31	13	e32	---	22	7.4	12	3.7	1.8	1.2	1.2
30	120	32	12	e28	---	21	7.1	11	3.5	1.9	1.2	1.1
31	99	---	12	e24	---	20	---	9.9	---	1.9	1.1	---
TOTAL	903.9	985	653	1509	902	844	342.0	307.4	163.8	78.7	44.0	37.8
MEAN	29.2	32.8	21.1	48.7	32.2	27.2	11.4	9.92	5.46	2.54	1.42	1.26
MAX	120	139	66	95	65	56	18	21	9.2	3.4	1.9	3.2
MIN	7.2	11	11	17	16	13	7.1	4.9	3.5	1.8	1.1	1.1
AC-FT	1790	1950	1300	2990	1790	1670	678	610	325	156	87	75
CFSM	9.44	10.6	6.82	15.8	10.4	8.81	3.69	3.21	1.77	.82	.46	.41
IN.	10.88	11.86	7.86	18.17	10.86	10.16	4.12	3.70	1.97	.95	.53	.46

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	6.80	32.1	33.7	33.2	32.4	24.5	18.4	10.1	6.51	3.07	1.75	2.03			
MAX	29.2	66.1	98.5	48.7	79.3	42.4	41.4	18.7	12.0	4.49	2.44	7.64			
(WY)	1998	1996	1997	1998	1996	1997	1996	1984	1990	1997	1997	1997			
MIN	.95	1.76	15.9	12.2	10.3	6.59	9.28	4.02	2.40	1.65	1.11	.91			
(WY)	1988	1994	1987	1985	1993	1992	1990	1989	1992	1992	1986	1987			

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	7596.1	6770.6	
ANNUAL MEAN	20.8	18.5	17.0
HIGHEST ANNUAL MEAN			28.9
LOWEST ANNUAL MEAN			10.5
HIGHEST DAILY MEAN	231	139	460
LOWEST DAILY MEAN	1.7	1.1	.55
ANNUAL SEVEN-DAY MINIMUM	1.8	1.1	.63
ANNUAL RUNOFF (AC-FT)	15070	13430	12290
ANNUAL RUNOFF (CFSM)	6.74	6.00	5.49
ANNUAL RUNOFF (INCHES)	91.45	81.51	74.57
10 PERCENT EXCEEDS	46	46	39
50 PERCENT EXCEEDS	13	12	8.6
90 PERCENT EXCEEDS	2.6	1.3	1.4

e Estimated

14305500 SILETZ RIVER AT SILETZ, OR

LOCATION.--Lat 44°42'55", long 123°53'10", in NW 1/4 SW 1/4 sec.11, T.10 S., R.10 W., Lincoln County, Hydrologic Unit 17100204, on right bank, 1.8 mi downstream from Baker Creek, 1.5 mi east of Siletz, and at mile 42.6.

DRAINAGE AREA.--202 mi².

PERIOD OF RECORD.--October 1905 to December 1908, January 1910 to November 1911, January 1912 to April 1912, December 1924 to current year. Monthly discharges, January to December 1909, published in WSP 1318.

REVISED RECORDS.--WSP 1935: 1943, 1947-49(M), 1953-58(M).

GAGE.--Water-stage recorder. Datum of gage is 102.32 ft above sea level. Oct. 1, 1905, to Sept 30, 1938, nonrecording gage at various sites within 2.5 mi downstream at different datums.

REMARKS.--No estimated daily discharges. Records good. Slight regulation from logponds. Small diversions upstream from station for irrigation. Continuous water-quality records for the period February 1972 to September 1985 have been collected at this location.

AVERAGE DISCHARGE.--77 years (water years 1906-08, 1911, 1926-98), 1,516 ft³/s, 101.96 in/yr, 1,098,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (1906-12, 1924-98).--Maximum discharge, 34,700 ft³/s Feb. 7, 1996, gage height, 24.49 ft; maximum gage height, 27.32 ft Jan. 28, 1965; minimum discharge, 47 ft³/s Oct. 20, 21, 29, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Nov. 20, 1921, reached a stage of 31.6 ft, at site 2.5 mi downstream at different datum, from floodmark, discharge, 40,800 ft³/s, from rating curve extended above 17,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 14,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	1930	*16,800	*15.66	No other peak greater than base discharge.			
Minimum discharge, 61 ft ³ /s Sept. 15-18.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	682	3430	2410	1610	1620	4620	1300	417	546	290	140	75
2	1330	2410	2030	2090	1560	4520	1180	464	520	277	133	73
3	1800	1950	1720	1790	1420	3790	1070	445	492	267	129	70
4	3630	1730	1500	1760	1360	3310	990	406	472	264	126	68
5	4850	1450	1310	2670	1450	2770	916	386	452	255	120	67
6	2850	1410	1180	4090	1690	2300	854	368	425	242	117	66
7	1960	1340	1240	4090	1630	1950	828	349	404	237	114	65
8	1920	1210	1390	3170	1870	1900	766	339	394	226	112	65
9	4790	1110	1440	2470	1980	2080	742	336	373	219	112	65
10	6270	1020	1660	2040	2170	2140	798	327	394	208	111	64
11	4140	942	1560	3300	2980	2120	968	317	389	199	108	63
12	3070	872	1400	3500	3600	2080	935	315	348	198	107	64
13	2380	815	1260	5480	4920	2230	920	330	326	194	105	64
14	1900	760	1240	7480	4050	1970	884	387	311	187	103	63
15	1570	709	1240	6620	3450	1730	891	603	303	184	99	62
16	1320	683	7430	5310	2990	1520	831	535	302	177	97	61
17	1150	1200	8720	7360	2540	1340	784	584	290	171	96	61
18	1010	1120	4690	6040	2510	1200	744	597	279	167	94	104
19	903	3780	3170	4840	2900	1090	725	548	279	166	94	295
20	812	8040	2690	4650	2790	997	668	566	267	161	94	152
21	740	4350	2220	3980	5270	1090	626	949	256	157	94	110
22	683	2960	1880	3880	5100	2580	595	923	249	151	93	95
23	647	3680	1760	4830	3880	3550	571	827	247	149	91	88
24	598	5080	1680	6340	2960	3630	555	815	282	145	92	84
25	557	3990	1510	6510	2440	2810	536	845	348	142	91	85
26	533	3090	1380	5010	2020	2450	510	784	543	139	89	97
27	520	2470	1310	3610	1690	2250	487	724	442	134	87	95
28	490	2510	1230	2780	2660	2020	463	672	356	130	85	85
29	1310	2900	1150	2320	---	1790	443	653	318	129	79	80
30	7650	2860	1060	2110	---	1590	426	681	298	130	79	79
31	7060	---	991	1770	---	1490	---	592	---	138	78	---
TOTAL	69125	69871	65451	123500	75500	70907	23006	17084	10905	5833	3169	2565
MEAN	2230	2329	2111	3984	2696	2287	767	551	364	188	102	85.5
MAX	7650	8040	8720	7480	5270	4620	1300	949	546	290	140	295
MIN	490	683	991	1610	1360	997	426	315	247	129	78	61
AC-FT	137100	138600	129800	245000	149800	140600	45630	33890	21630	11570	6290	5090
CFSM	11.0	11.5	10.5	19.7	13.3	11.3	3.80	2.73	1.80	.93	.51	.42
IN.	12.73	12.87	12.05	22.74	13.90	13.06	4.24	3.15	2.01	1.07	.58	.47

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1998, BY WATER YEAR (WY)

	MEAN	736	2437	3317	3268	2948	2235	1505	831	494	225	131	201
MAX	3412	6207	7828	7664	6055	4560	3560	2579	1602	602	419	1138	
(WY)	1927	1907	1934	1953	1949	1932	1937	1933	1906	1910	1968	1959	
MIN	50.1	72.4	401	518	752	557	387	233	144	99.7	64.5	58.6	
(WY)	1988	1930	1977	1977	1973	1941	1926	1939	1928	1992	1992	1965	

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1906 - 1998
ANNUAL TOTAL	599451	536916	
ANNUAL MEAN	1642	1471	1516
HIGHEST ANNUAL MEAN			2337
LOWEST ANNUAL MEAN			660
HIGHEST DAILY MEAN	13700	8720	32000
LOWEST DAILY MEAN	91	61	47
ANNUAL SEVEN-DAY MINIMUM	94	63	48
ANNUAL RUNOFF (AC-FT)	1189000	1065000	1098000
ANNUAL RUNOFF (CFSM)	8.13	7.28	7.50
ANNUAL RUNOFF (INCHES)	110.39	98.88	101.96
10 PERCENT EXCEEDS	3920	3830	3830
50 PERCENT EXCEEDS	1150	831	759
90 PERCENT EXCEEDS	150	94	105

ALSEA RIVER BASIN

14306340 EAST FORK LOBSTER CREEK NEAR ALSEA, OR

LOCATION.--Lat 44°14'53", long 123°38'07", in NE 1/4 SE 1/4 sec.22, T.15 S., R.8 W., Benton County, Hydrologic Unit 17100205, on left bank 500 ft upstream from Lobster Creek, and 9 mi south of Alsea.

DRAINAGE AREA.--5.70 mi².

PERIOD OF RECORD.--July 1983 to current year.

REVISED RECORDS.--WDR OR-87-2: 1984(M,P), 1985(M,P), 1986(M,P).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 680 ft above sea level, from topographic map.

REMARKS.--Records poor. No regulation or diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--15 years (water years 1984-98), 24.6 ft³/s, 58.71 in/yr, 17,840 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,360 ft³/s Feb. 7, 1996, gage height, 5.37 ft, from rating curve extended above 900 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.17 ft³/s Sept. 27, 28, Oct. 2, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 16	2215	*334	*3.73	No other peak greater than base discharge.			
Minimum discharge, 0.67 ft ³ /s Sept. 7.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.4	49	32	e17	24	53	30	7.7	23	3.8	1.7	.79
2	26	34	26	e20	23	69	27	8.4	20	3.7	1.6	.77
3	29	27	23	e17	22	74	24	7.4	17	3.6	1.4	.76
4	67	22	20	e22	24	72	22	7.1	15	3.6	1.4	.74
5	75	18	17	e60	28	57	20	6.7	13	3.4	1.3	.73
6	36	e14	15	e130	36	46	19	6.3	11	3.1	1.3	.71
7	24	e13	18	e100	30	39	18	6.1	10	3.1	1.3	.71
8	e32	e11	20	e60	65	41	16	6.1	9.2	3.0	1.3	.73
9	e90	e9.5	22	e40	57	41	16	6.1	8.4	2.9	1.2	.73
10	67	e8.5	26	e34	55	37	19	6.2	8.7	2.8	1.2	.73
11	47	e8.0	23	e38	74	e34	27	5.9	7.9	2.7	1.2	.75
12	42	8.0	19	e48	81	e32	27	7.2	7.2	2.7	1.2	.77
13	34	7.4	16	e95	91	e36	23	8.9	6.8	2.6	1.1	.76
14	27	6.8	17	e190	69	e30	22	12	6.3	e2.4	1.1	.74
15	21	6.4	18	e170	71	e26	21	16	6.1	2.4	1.0	.73
16	17	6.9	157	e150	61	e24	20	21	6.0	2.4	1.1	.71
17	e13	43	193	e170	48	e22	18	21	5.6	2.2	1.1	.72
18	e12	37	100	e150	48	20	16	19	5.3	2.1	1.0	1.8
19	e10	116	68	e130	61	18	15	16	5.2	2.1	1.0	1.6
20	e9.0	181	e50	e100	63	17	13	19	4.9	2.1	.98	1.1
21	e8.5	85	e40	e90	170	29	12	62	4.7	2.0	.98	.96
22	8.2	53	e34	e80	139	135	12	47	4.6	2.0	.99	.89
23	8.0	128	e30	e110	86	111	13	33	4.6	1.8	1.0	.85
24	7.6	132	e28	e140	59	87	12	29	5.2	1.8	1.1	.85
25	7.1	78	e24	e150	47	64	11	28	5.5	1.8	.97	1.0
26	6.8	55	e22	e85	38	55	10	26	5.4	1.7	.93	1.4
27	6.8	40	e20	e60	33	51	9.5	23	4.6	1.7	.91	1.1
28	6.6	34	e18	e46	43	46	8.6	20	4.1	1.5	.87	.99
29	26	37	e17	37	---	38	8.2	27	4.0	1.5	.83	.95
30	133	39	e15	31	---	33	7.9	35	3.9	1.6	.83	.92
31	99	---	e13	26	---	32	---	28	---	1.7	.81	---
TOTAL	1005.0	1307.5	1141	2596	1646	1469	517.2	572.1	243.2	75.8	34.70	26.99
MEAN	32.4	43.6	36.8	83.7	58.8	47.4	17.2	18.5	8.11	2.45	1.12	.90
MAX	133	181	193	190	170	135	30	62	23	3.8	1.7	1.8
MIN	6.6	6.4	13	17	22	17	7.9	5.9	3.9	1.5	.81	.71
AC-FT	1990	2590	2260	5150	3260	2910	1030	1130	482	150	69	54
CFSM	5.69	7.65	6.46	14.7	10.3	8.31	3.02	3.24	1.42	.43	.20	.16
IN.	6.56	8.53	7.45	16.94	10.74	9.59	3.38	3.73	1.59	.49	.23	.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	5.99	41.1	49.6	54.1	53.9	38.4	25.9	14.4	8.83	2.48	1.28	1.49			
MAX	32.4	115	137	85.9	138	77.1	49.5	27.8	21.3	3.88	1.92	4.51			
(WY)	1998	1985	1997	1995	1996	1997	1993	1984	1985	1984	1996	1997			
MIN	.39	1.41	17.6	16.0	13.4	11.5	10.4	5.99	1.83	1.40	.52	.66			
(WY)	1988	1994	1990	1985	1993	1992	1987	1994	1992	1992	1992	1987			

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	11026.0	10634.49	24.6
ANNUAL MEAN	30.2	29.1	40.2
HIGHEST ANNUAL MEAN			16.2
LOWEST ANNUAL MEAN			817
HIGHEST DAILY MEAN	319	Jan 1	1996
LOWEST DAILY MEAN	1.1	Aug 11	1994
ANNUAL SEVEN-DAY MINIMUM	1.1	Aug 10	.25
ANNUAL RUNOFF (AC-FT)	21870	21090	.29
ANNUAL RUNOFF (CFSM)	5.30	5.11	4.32
ANNUAL RUNOFF (INCHES)	71.96	69.40	58.71
10 PERCENT EXCEEDS	78	76	60
50 PERCENT EXCEEDS	15	17	11
90 PERCENT EXCEEDS	1.5	1.0	1.0

e Estimated

14306500 ALSEA RIVER NEAR TIDEWATER, OR

LOCATION.--Lat 44°23'10", long 123°49'50", in NW 1/4 NW 1/4 sec.6, T.14 S., R.9 W., Lincoln County, Hydrologic Unit 17100205, on right bank 0.9 mi downstream from Grass Creek, 2.5 mi upstream from Scott Creek, 3.8 mi southeast of Tidewater, and at mile 21.0.

DRAINAGE AREA.--334 mi².

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 48.16 ft above sea level. Prior to Nov. 16, 1939, nonrecording gage at present site and datum.

REMARKS.--No estimated daily discharges. Records good. No regulation. Diversion for irrigation upstream from station. Continuous water-quality records for the period October 1979 to September 1981 have been collected at this location.

AVERAGE DISCHARGE.--59 years (water years 1940-98), 1,481 ft³/s, 60.23 in/yr, 1,073,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,800 ft³/s Dec. 22, 1964, gage height, 27.44 ft; minimum discharge, 45 ft³/s Sept. 26, 27, 1965.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood on or about Feb. 3, 1890, reached a stage of 29.5 ft, from floodmark (discharge not determined).

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 17	0200	*10,200	*12.79				
Minimum discharge, 75 ft ³ /s Sept. 16, 17.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	316	2490	1930	1310	2100	2860	1710	593	714	298	159	91
2	746	1750	1710	1520	2030	3020	1560	642	674	294	156	88
3	883	1400	1520	1470	1940	3350	1440	614	633	287	149	86
4	1600	1180	1360	1850	1930	3690	1340	570	609	283	143	85
5	2780	1030	1240	3280	2100	3220	1250	549	589	277	136	83
6	1550	946	1140	4800	2570	2710	1180	529	564	266	132	82
7	1000	895	1250	3910	2470	2330	1120	509	539	256	130	82
8	851	812	1600	3160	2940	2240	1050	501	507	251	128	81
9	2890	751	1620	2590	3400	2070	1020	500	487	246	127	81
10	3310	708	1960	2240	3280	1920	1110	487	500	236	125	81
11	2180	674	1710	3200	4140	1820	1420	473	500	229	124	81
12	1720	641	1490	3760	4750	1780	1480	477	463	226	121	81
13	1410	609	1330	5800	6270	2040	1340	541	440	222	118	80
14	1180	580	1370	7810	5120	1860	1250	566	423	215	116	80
15	996	551	1390	7640	4530	1700	1220	714	408	209	113	78
16	867	550	4540	5560	4160	1550	1120	716	403	202	114	77
17	770	953	8060	7660	3490	1420	1040	733	390	196	115	75
18	698	1050	4620	6080	3330	1320	985	689	374	191	112	154
19	640	2750	3290	5240	3840	1230	936	635	374	189	110	286
20	592	6600	2880	5280	3670	1160	882	700	360	183	109	170
21	551	3990	2510	4320	7260	1300	838	1570	346	179	108	127
22	518	2710	2150	4260	7250	4630	804	1600	338	176	108	109
23	496	3990	2010	5580	5350	5250	794	1170	336	172	107	99
24	473	6740	1950	6300	4060	4970	780	1010	347	168	111	95
25	448	4410	1780	6450	3320	3970	732	956	385	165	112	101
26	429	3310	1630	5090	2750	3330	697	877	389	163	106	121
27	425	2580	1540	4030	2340	2950	671	810	359	160	102	122
28	405	2200	1400	3320	2520	2620	648	750	324	154	99	106
29	746	2140	1300	2890	---	2280	624	769	306	150	96	97
30	3320	2220	1220	2570	---	2020	600	855	300	151	93	94
31	5230	---	1150	2240	---	1910	---	771	---	155	92	---
TOTAL	40020	61210	64650	131210	102910	78520	31641	22876	13381	6549	3671	3073
MEAN	1291	2040	2085	4233	3675	2533	1055	738	446	211	118	102
MAX	5230	6740	8060	7810	7260	5250	1710	1600	714	298	159	286
MIN	316	550	1140	1310	1930	1160	600	473	300	150	92	75
AC-FT	79380	121400	128200	260300	204100	155700	62760	45370	26540	12990	7280	6100
CFSM	3.87	6.11	6.24	12.7	11.0	7.58	3.16	2.21	1.34	.63	.35	.31
IN.	4.46	6.82	7.20	14.61	11.46	8.75	3.52	2.55	1.49	.73	.41	.34

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1998, BY WATER YEAR (WY)

MEAN	381	1760	3280	3544	3259	2472	1505	803	410	193	118	130
MAX	2521	6058	7419	7874	6909	5144	3203	1848	1053	363	234	452
(WY)	1948	1974	1965	1953	1996	1961	1963	1993	1983	1968	1941	
MIN	62.0	108	182	211	607	604	550	331	178	116	65.6	60.1
(WY)	1988	1994	1977	1977	1977	1941	1977	1966	1966	1992	1966	1965

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR				FOR 1998 WATER YEAR				WATER YEARS 1940 - 1998			
ANNUAL TOTAL	540995				559711				1481			
ANNUAL MEAN	1482				1533				2541			
HIGHEST ANNUAL MEAN									431			
LOWEST ANNUAL MEAN									36100			
HIGHEST DAILY MEAN	16600				8060				Dec 22 1964			
LOWEST DAILY MEAN	97				75				Sep 26 1965			
ANNUAL SEVEN-DAY MINIMUM	100				79				51			
ANNUAL RUNOFF (AC-FT)	1073000				1110000				1073000			
ANNUAL RUNOFF (CFSM)	4.44				4.59				4.43			
ANNUAL RUNOFF (INCHES)	60.25				62.34				60.23			
10 PERCENT EXCEEDS	3340				4010				3800			
50 PERCENT EXCEEDS	946				867				649			
90 PERCENT EXCEEDS	138				112				98			

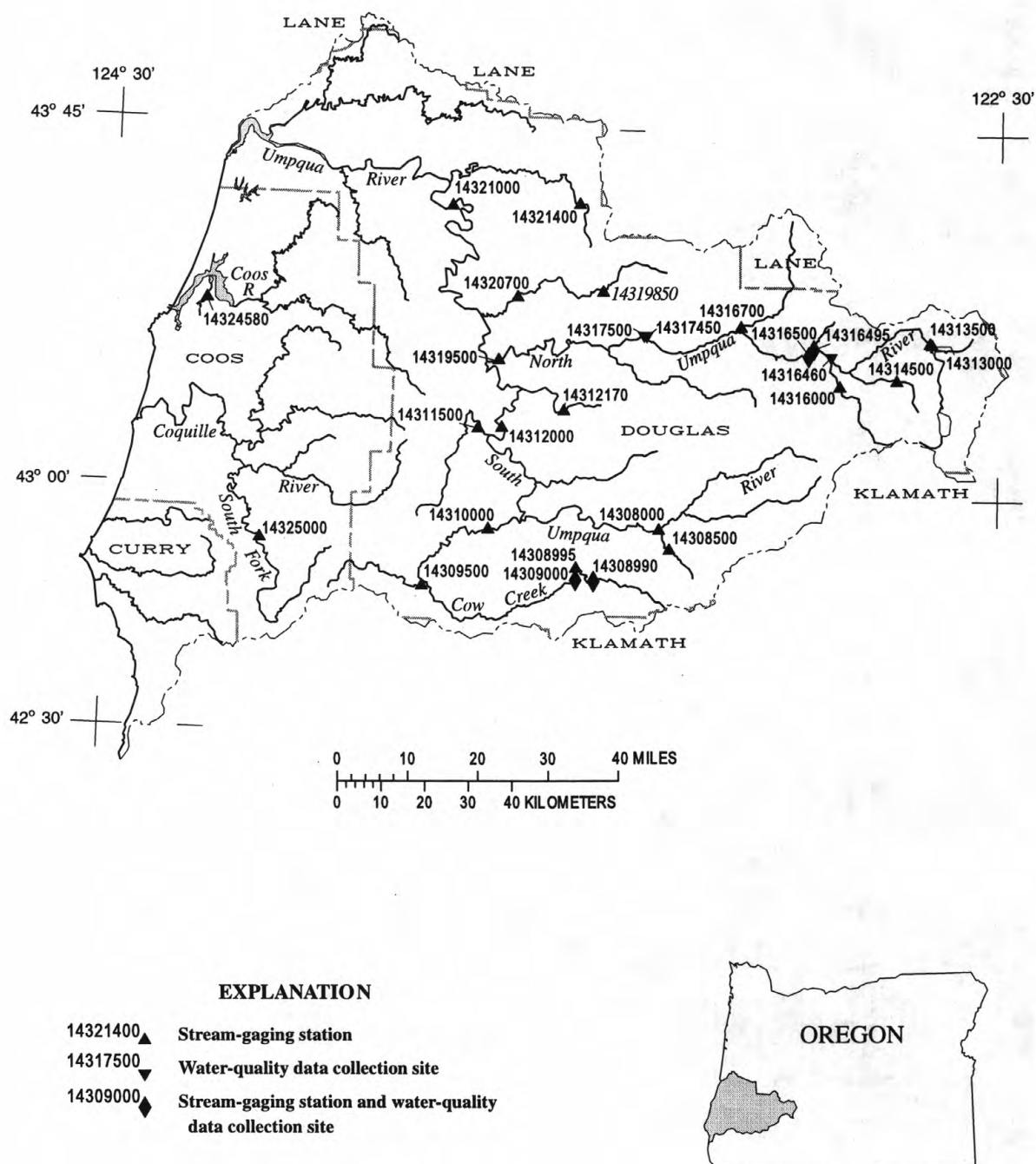


Figure 29. Location of surface-water and water-quality stations in the Umpqua, Coos and Coquille River Basins.

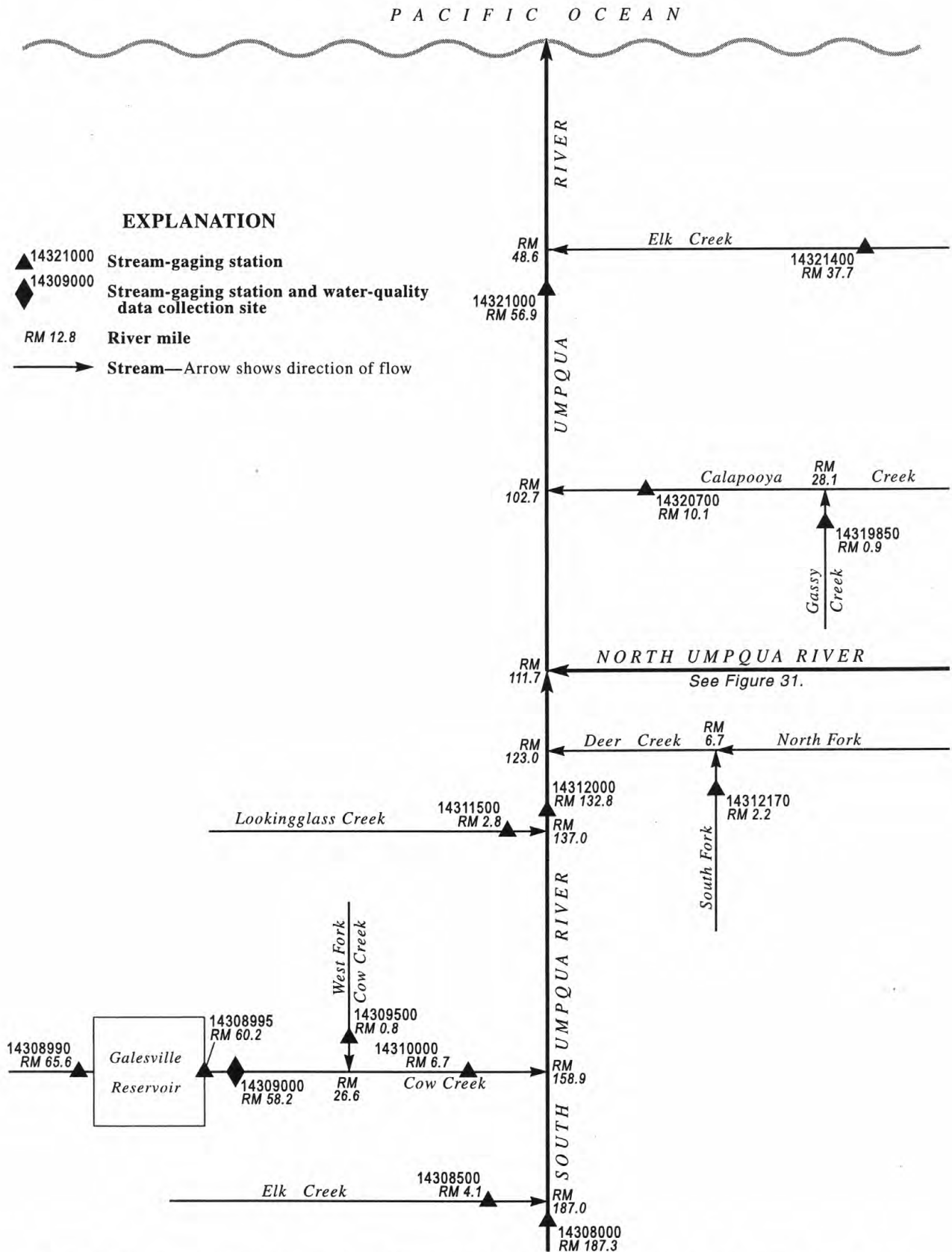


Figure 30. Schematic diagram showing gaging stations in the Umpqua and the South Fork Umpqua River Basins.

UMPQUA RIVER BASIN

14308000 SOUTH UMPQUA RIVER AT TILLER, OR

LOCATION.--Lat 42°55'50", long 122°56'50", in NE 1/4 sec.33, T.30 S., R.2 W., Douglas County, Hydrologic Unit 17100302, Umpqua National Forest, on left bank 0.3 mi upstream from bridge on State Highway 227 at Tiller, 0.3 mi upstream from Elk Creek, and at mile 187.31.

DRAINAGE AREA.--449 mi².

PERIOD OF RECORD.--October 1910 to December 1911, October 1939 to current year. Monthly discharge only for some periods, published in WSP 1318. Prior to December 1911, published as South Fork of Umpqua River at Tiller.

REVISED RECORDS.--WSP 1448: 1911(M), 1912, drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 991.8 ft above sea level (river-profile survey). Prior to Oct. 1, 1939, nonrecording gage at site 0.2 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. No regulation. Small diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--60 years, (water years 1911, 1940-98), 1,033 ft³/s, 31.27 in/yr, 748,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 60,200 ft³/s Dec. 22, 1964, gage height, 25.72 ft; minimum discharge observed, 20 ft³/s Sept. 3, 4, 1911.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 7,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 11	1530	10,100	10.33	Jan. 17	0430	*13,000	*11.80

Minimum discharge, 55 ft³/s Sept. 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	82	1070	766	581	1730	2640	1150	1120	2460	325	125	67
2	229	701	657	1190	1580	3820	1060	1100	1960	314	120	65
3	218	529	564	1430	1440	3840	1070	983	1610	306	116	64
4	192	423	494	1690	1310	2900	1070	932	1410	292	112	64
5	251	357	439	1300	1190	2330	1110	964	1210	277	108	63
6	254	341	396	1060	1230	1880	1310	898	1070	266	104	62
7	202	700	437	1300	1110	1540	1550	839	989	252	104	61
8	179	692	618	1590	991	1370	1500	817	982	244	102	61
9	541	548	555	1310	890	1260	1360	798	883	237	100	63
10	820	457	498	2280	825	1220	1730	741	920	227	98	64
11	574	410	456	7500	981	1260	1970	733	1040	220	95	63
12	674	399	423	5340	1060	1680	1710	906	907	212	93	62
13	537	365	392	4320	1260	1820	1480	1100	811	208	91	61
14	427	358	369	3620	1450	1730	1350	1120	727	201	89	60
15	358	323	407	5230	1770	1650	1270	1770	661	195	87	59
16	306	299	950	6220	1600	1700	1140	2070	610	187	86	57
17	262	326	3940	9960	1330	1510	1010	1770	560	180	85	56
18	231	339	2180	5280	1110	1280	928	1560	517	174	84	57
19	208	552	1390	4330	1050	1120	899	1500	481	169	83	66
20	192	663	1100	3340	1160	1070	899	2930	452	166	82	76
21	176	583	924	2600	3380	1100	908	4330	426	163	81	67
22	162	488	772	3220	3060	1970	969	2950	404	157	80	64
23	153	444	690	3880	2260	3900	1210	2180	384	152	80	61
24	147	583	664	3260	1860	3100	1900	1890	392	147	81	59
25	139	1200	627	2760	1690	2420	1570	3470	447	144	81	61
26	132	1050	570	2810	1530	2180	1300	2820	488	142	78	70
27	126	1010	518	3150	1340	2020	1150	2420	432	140	76	74
28	121	843	486	2580	1650	1760	1120	2020	384	133	74	67
29	143	733	503	2490	---	1480	1140	4120	357	134	71	63
30	258	881	576	2420	---	1280	1140	4890	336	143	69	61
31	2540	---	572	2020	---	1220	---	3370	---	131	68	---
TOTAL	10834	17667	23933	100061	41837	60050	37973	59111	24310	6238	2803	1898
MEAN	349	589	772	3228	1494	1937	1266	1907	810	201	90.4	63.3
MAX	2540	1200	3940	9960	3380	3900	1970	4890	2460	325	125	76
MIN	82	299	369	581	825	1070	899	733	336	131	68	56
AC-FT	21490	35040	47470	198500	82980	119100	75320	117200	48220	12370	5560	3760
CFSM	.78	1.31	1.72	7.19	3.33	4.31	2.82	4.25	1.80	.45	.20	.14
IN.	.90	1.46	1.98	8.29	3.47	4.98	3.15	4.90	2.01	.52	.23	.16

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1998, BY WATER YEAR (WY)

	200	1058	2040	2090	1996	1727	1412	1077	523	156	77.9	76.3
MEAN	200	1058	2040	2090	1996	1727	1412	1077	523	156	77.9	76.3
MAX	1791	3977	7480	4513	4911	4776	2756	2093	1643	301	206	364
(WY)	1951	1974	1965	1972	1986	1972	1993	1963	1953	1953	1976	1986
MIN	34.5	48.2	66.6	89.7	95.1	328	433	231	108	49.5	29.9	38.9
(WY)	1988	1940	1977	1977	1977	1992	1968	1992	1992	1940	1940	1992

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1911 - 1998

ANNUAL TOTAL	355493	386715	1033
ANNUAL MEAN	974	1059	1762
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			268
HIGHEST DAILY MEAN	23500	Jan 1	36500
LOWEST DAILY MEAN	62	Aug 19	20
ANNUAL SEVEN-DAY MINIMUM	64	Aug 13	26
ANNUAL RUNOFF (AC-FT)	705100	767000	748600
ANNUAL RUNOFF (CFSM)	2.17	2.36	2.30
ANNUAL RUNOFF (INCHES)	29.45	32.04	31.27
10 PERCENT EXCEEDS	2070	2510	2430
50 PERCENT EXCEEDS	546	700	515
90 PERCENT EXCEEDS	86	79	59

14308500 ELK CREEK NEAR DREW, OR

LOCATION.--Lat 42°53'25", long 122°55'00", in SW 1/4 sec.11, T.31 S., R.2 W., Douglas County, Hydrologic Unit 17100302, on right bank 100 ft downstream from Dixon Creek, 0.1 mi upstream from Drew Creek, 1.3 mi northwest of Drew, 3.3 mi southeast of Tiller, and at mile 4.1.

DRAINAGE AREA.--54.4 mi².

PERIOD OF RECORD.--September 1954 to September 1982, October 1986 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,279.25 ft above sea level.

REMARKS.--Records good except for estimated discharges, which are fair. No regulation. Several diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--40 years (water years 1955-82, 1987-98), 79.7 ft³/s, 19.91 in/yr, 57,760 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,120 ft³/s Jan. 9, 1995, gage height, 11.09 ft, from rating curve extended above 2,900 ft³/s on basis of slope-area measurement at gage height 10.34 ft; no flow at times several years.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 11.8 ft, from floodmarks, probably for flood in January or November 1953, discharge, about 11,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	0330	1,450	6.18	May 20	1900	1,090	5.75
Feb. 21	0530	*2,160	*6.91				

Minimum discharge, 0.91 ft³/s Sept. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.9	25	51	34	137	e200	118	50	150	16	3.4	1.2
2	5.0	14	40	75	146	e300	108	52	115	16	3.2	1.2
3	3.8	9.9	32	117	166	e360	115	46	93	16	3.1	1.1
4	3.1	7.8	26	191	131	263	120	43	77	16	2.9	1.1
5	2.9	6.5	21	116	124	198	214	58	66	15	2.7	1.0
6	2.7	8.6	18	85	145	157	286	48	57	13	2.6	1.0
7	2.6	36	25	73	115	125	314	43	51	12	2.8	1.1
8	2.7	30	35	72	96	109	236	40	46	11	2.7	1.2
9	28	21	31	69	81	94	193	45	42	10	2.6	1.2
10	36	14	27	194	78	85	249	46	44	9.8	2.5	1.3
11	21	12	23	475	136	83	229	47	43	9.3	2.3	1.3
12	25	11	21	388	163	110	191	113	39	8.7	2.1	1.3
13	17	10	18	294	193	131	156	133	35	8.1	2.0	1.3
14	11	12	15	294	254	124	129	125	32	7.6	1.8	1.3
15	7.7	9.8	18	379	237	117	114	184	30	7.0	1.6	1.3
16	6.0	9.1	47	391	179	117	97	320	28	6.5	1.8	1.3
17	5.0	35	443	854	136	103	83	256	26	6.1	1.7	1.2
18	4.6	27	170	361	109	85	74	214	24	5.7	1.7	1.2
19	4.3	77	96	304	115	74	69	204	22	5.5	1.7	1.4
20	4.0	80	81	214	159	66	67	668	21	5.2	1.6	1.7
21	3.7	49	73	161	e280	65	62	597	19	5.0	1.6	1.6
22	3.5	35	56	159	e220	322	58	315	18	4.7	1.5	1.6
23	3.4	29	49	184	e180	710	94	219	16	4.4	1.5	1.5
24	3.3	33	60	224	e150	380	173	212	21	4.3	1.7	1.4
25	3.2	62	57	233	e110	279	137	324	25	4.2	1.8	1.5
26	3.1	59	47	345	e90	232	105	244	27	3.8	1.7	1.8
27	3.0	62	39	355	e80	243	85	212	23	3.4	1.6	1.8
28	3.0	49	35	239	e100	198	72	181	19	3.5	1.5	1.8
29	3.2	43	34	214	---	156	62	395	16	3.4	1.3	1.7
30	5.0	65	34	181	---	128	55	305	16	5.4	1.3	1.7
31	42	---	33	144	---	130	---	207	---	4.0	1.2	---
TOTAL	270.7	941.7	1755	7419	4110	5744	4065	5946	1241	250.6	63.5	41.1
MEAN	8.73	31.4	56.6	239	147	185	136	192	41.4	8.08	2.05	1.37
MAX	42	80	443	854	280	710	314	668	150	16	3.4	1.8
MIN	1.9	6.5	15	34	78	65	55	40	16	3.4	1.2	1.0
AC-FT	537	1870	3480	14720	8150	11390	8060	11790	2460	497	126	82
CFSM	.16	.58	1.04	4.40	2.70	3.41	2.49	3.53	.76	.15	.04	.03
IN.	.19	.64	1.20	5.07	2.81	3.93	2.78	4.07	.85	.17	.04	.03

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1998, BY WATER YEAR (WY)

MEAN	7.19	67.9	180	213	158	152	99.7	55.4	18.7	4.07	1.54	1.79
MAX	62.8	449	865	644	382	356	193	192	106	10.8	10.2	18.7
(WY)	1963	1974	1997	1974	1958	1974	1956	1998	1993	1978	1976	1978
MIN	.62	1.89	3.11	4.94	5.05	15.0	20.1	6.94	1.96	.52	.008	.043
(WY)	1988	1994	1977	1977	1977	1992	1990	1987	1987	1994	1992	1992

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1955 - 1998

ANNUAL TOTAL	24458.31	31847.6	
ANNUAL MEAN	67.0	87.3	79.7
HIGHEST ANNUAL MEAN			180
LOWEST ANNUAL MEAN			16.0
HIGHEST DAILY MEAN	4190	854	6670
LOWEST DAILY MEAN	.67	1.0	.00
ANNUAL SEVEN-DAY MINIMUM	.82	1.1	.00
ANNUAL RUNOFF (AC-FT)	48510	63170	57760
ANNUAL RUNOFF (CFSM)	1.23	1.60	1.47
ANNUAL RUNOFF (INCHES)	16.73	21.78	19.91
10 PERCENT EXCEEDS	124	236	194
50 PERCENT EXCEEDS	21	40	19
90 PERCENT EXCEEDS	1.6	1.7	.92

e Estimated

UMPQUA RIVER BASIN

14308990 COW CREEK ABOVE GALESVILLE RESERVOIR, NEAR AZALEA, OR

LOCATION.--Lat 42°49'24", long 123°07'29", in SW 1/4 NW 1/4 sec.1, T.32 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on left bank, about 600 ft upstream from bridge on Houck Ranch Road (BLM), 1.1 mi downstream from Sugar Creek, 3.2 mi south of Galesville Dam, 6.9 mi northeast of Azalea, and at mile 65.6

DRAINAGE AREA.--64.7 mi².

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,900 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period November 1985 to September 1989 have been collected at this location.

AVERAGE DISCHARGE.--13 years (water years 1986-98), 83.6 ft³/s, 17.55 in/yr, 60,550 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 6,980 ft³/s Jan. 9, 1995, gage height 12.04 ft, from rating curve extended above 2,450 ft³/s; maximum gage height 12.30 ft Jan. 9, 1995 (from outside highwater mark); minimum discharge, 3.5 ft³/s Dec. 26, 1989, result of freezeup.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge since at least 1927 occurred Jan. 15, 1974. Stage and discharge not known at this site, but was 10,600 ft³/s at site 7.4 mi downstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	0400	1,370	5.05	Mar. 23	1330	1,100	4.48
Feb. 21	0530	*2,400	*6.83				

Minimum discharge, 9.5 ft³/s Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	43	56	57	189	238	194	91	192	44	21	12
2	27	31	49	130	209	382	175	101	171	44	20	12
3	19	27	43	152	237	386	169	86	152	43	19	12
4	18	25	39	209	193	295	166	85	139	41	19	11
5	18	23	36	129	216	240	180	132	126	39	18	11
6	17	26	35	105	249	200	243	96	115	38	18	11
7	16	49	40	97	189	175	247	87	108	36	19	11
8	18	40	45	100	166	162	215	82	100	35	18	12
9	90	33	39	96	144	148	205	87	93	34	17	13
10	70	29	36	152	154	136	282	83	97	33	17	12
11	38	28	35	376	240	132	271	82	94	33	17	12
12	40	27	33	370	299	151	231	151	86	32	16	12
13	32	27	32	333	371	182	202	155	79	31	15	11
14	27	26	33	309	418	175	181	145	74	30	15	11
15	24	25	38	410	356	173	169	157	70	30	15	11
16	22	24	78	394	272	179	152	204	67	29	15	10
17	20	35	442	874	211	160	137	188	64	28	15	11
18	20	31	179	467	178	140	127	179	61	27	15	11
19	19	103	112	405	266	126	120	173	58	27	15	14
20	19	111	95	286	278	118	114	505	56	27	15	14
21	18	67	84	212	1300	119	107	570	54	26	15	12
22	18	50	68	199	619	531	102	417	52	26	15	12
23	18	48	63	225	408	915	153	320	51	25	15	12
24	18	59	67	265	341	595	197	299	55	24	15	11
25	17	103	66	277	282	479	162	374	57	24	15	12
26	17	85	56	427	236	373	139	315	57	23	14	15
27	17	76	51	401	201	319	125	264	50	22	13	13
28	17	60	48	281	195	269	114	232	47	21	13	12
29	18	56	48	248	---	222	105	294	45	21	12	12
30	23	68	50	212	---	195	96	275	44	21	13	12
31	93	---	50	179	---	207	---	222	---	21	12	---
TOTAL	844	1435	2146	8377	8417	8122	5080	6451	2514	935	491	357
MEAN	27.2	47.8	69.2	270	301	262	169	208	83.8	30.2	15.8	11.9
MAX	93	111	442	874	1300	915	282	570	192	44	21	15
MIN	16	23	32	57	144	118	96	82	44	21	12	10
AC-FT	1670	2850	4260	16620	16700	16110	10080	12800	4990	1850	974	708
CFSM	.42	.74	1.07	4.18	4.65	4.05	2.62	3.22	1.30	.47	.24	.18
IN.	.49	.83	1.23	4.82	4.84	4.67	2.92	3.71	1.45	.54	.28	.21

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1998, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	13.1	47.1	149	201	183	162	100	76.0	37.8	17.2	10.4	10.0	
MAX	27.2	148	862	506	444	315	200	208	83.8	30.2	15.8	18.8	
(WY)	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MIN	6.41	12.2	18.2	45.2	51.1	34.2	32.5	20.8	12.7	7.03	5.16	5.66	
(WY)	1988	1988	1990	1992	1994	1992	1990	1992	1994	1994	1994	1994	

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1986 - 1998
ANNUAL TOTAL	37896	45169	
ANNUAL MEAN	104	124	83.6
HIGHEST ANNUAL MEAN			179
LOWEST ANNUAL MEAN			26.6
HIGHEST DAILY MEAN	3980	1300	3980
LOWEST DAILY MEAN	11	10	4.2
ANNUAL SEVEN-DAY MINIMUM	12	11	4.5
ANNUAL RUNOFF (AC-FT)	75170	89590	60550
ANNUAL RUNOFF (CFSM)	1.60	1.91	1.29
ANNUAL RUNOFF (INCHES)	21.79	25.97	17.55
10 PERCENT EXCEEDS	209	294	198
50 PERCENT EXCEEDS	41	67	32
90 PERCENT EXCEEDS	14	15	8.0

UMPQUA RIVER BASIN

295

14308995 GALESVILLE RESERVOIR NEAR AZALEA, OR

LOCATION.--Lat 42°50'56", long 123°10'40", in NE 1/4 sec.28, T.31 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on the upstream face of Galesville dam to the right side of the spillway section, 1.2 mi downstream from McGinnis Creek, 5.6 mi northeast of Azalea, and at mile 60.2.

DRAINAGE AREA.--74.3 mi².

PERIOD OF RECORD.--October 1985 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Douglas County).

REMARKS.--Reservoir is formed by a roller compacted concrete dam; storage began Oct. 7, 1985. Capacity, 42,220 acre-ft between elevations 1,780.0 ft (bottom of evacuation outlet) and 1,881.5 ft (crest of spillway). Dead storage, 1,800 acre-ft below elevation 1,780.0 ft. Reservoir is used for irrigation, power generation, flood control, and recreation. Figures given herein represent total contents.

COOPERATION.--Capacity table furnished by Douglas County Public Works Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 43,230 acre-ft Jan. 2, 3, 1997, elevation, 1,883.62 ft; minimum contents, 7,240 acre-ft Jan. 9, 10, 1991, elevation, 1,805.03 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 42,350 acre-ft May 21, elevation, 1,882.25 ft; minimum contents, 21,500 acre-ft Jan. 6, elevation, 1,843.77 ft.

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

1,780	1,800	1,820	11,960	1,860	29,480
1,790	3,590	1,830	15,660	1,870	34,970
1,800	5,890	1,840	19,820	1,880	40,930
1,810	8,700	1,850	24,420	1,885	44,130

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1852.28	1845.79	1844.49	1844.23	1844.77	1862.39	1876.27	1880.20	1881.54	1879.87	1871.97	1859.07
2	1852.05	1845.63	1844.42	1844.20	1844.99	1862.78	1876.27	1880.28	1881.42	1879.76	1871.61	1858.69
3	1851.74	1845.51	1844.35	1844.09	1845.40	1862.95	1876.24	1880.29	1881.26	1879.62	1871.24	1858.31
4	1851.44	1845.43	1844.29	1844.16	1845.80	1863.39	1876.27	1880.32	1881.05	1879.48	1870.88	1857.92
5	1851.13	1845.34	1844.27	1843.91	1846.35	1863.96	1876.37	1880.36	1880.82	1879.34	1870.49	1857.53
6	1850.81	1845.29	1844.24	1843.83	1847.13	1864.51	1876.59	1880.15	1880.56	1879.19	1870.11	1857.14
7	1850.49	1845.21	1844.17	1843.97	1847.69	1864.98	1876.78	1879.96	1880.28	1879.03	1869.74	1856.74
8	1850.20	1845.12	1844.11	1844.13	1848.16	1865.39	1876.89	1879.90	1880.12	1878.87	1869.36	1856.35
9	1850.08	1845.04	1844.08	1844.27	1848.56	1865.74	1877.00	1879.90	1880.18	1878.70	1868.97	1855.96
10	1849.63	1844.97	1844.04	1844.60	1848.99	1866.03	1877.34	1879.90	1880.24	1878.53	1868.59	1855.58
11	1849.04	1844.89	1844.02	1845.27	1849.74	1866.32	1877.64	1879.90	1880.27	1878.36	1868.21	1855.22
12	1848.44	1844.79	1843.99	1845.67	1850.74	1866.71	1877.81	1880.03	1880.27	1878.18	1867.82	1854.87
13	1847.80	1844.71	1843.95	1845.51	1851.91	1867.19	1877.92	1880.01	1880.27	1878.00	1867.44	1854.51
14	1847.41	1844.64	1843.94	1845.36	1853.18	1867.62	1877.95	1879.99	1880.26	1877.79	1867.05	1854.15
15	1847.34	1844.55	1843.93	1845.52	1854.24	1868.06	1877.97	1880.03	1880.24	1877.57	1866.65	1853.79
16	1847.25	1844.49	1844.00	1845.48	1854.96	1868.51	1877.99	1880.13	1880.21	1877.32	1866.26	1853.41
17	1847.14	1844.44	1845.09	1846.74	1855.55	1868.89	1878.10	1880.19	1880.18	1877.02	1865.87	1853.02
18	1847.04	1844.39	1845.10	1846.19	1856.06	1869.20	1878.25	1880.22	1880.13	1876.70	1865.44	1852.68
19	1846.93	1844.44	1844.85	1845.93	1856.60	1869.44	1878.38	1880.25	1880.09	1876.37	1864.99	1852.33
20	1846.82	1844.47	1844.69	1845.32	1857.13	1869.67	1878.49	1881.82	1880.07	1876.05	1864.54	1851.97
21	1846.71	1844.37	1844.46	1845.28	1859.42	1869.91	1878.58	1882.21	1880.03	1875.73	1864.08	1851.61
22	1846.60	1844.27	1844.31	1845.41	1858.91	1871.35	1878.68	1881.99	1880.02	1875.41	1863.63	1851.25
23	1846.50	1844.20	1844.34	1845.62	1858.92	1874.04	1878.97	1881.84	1880.00	1875.08	1863.17	1850.89
24	1846.39	1844.20	1844.40	1845.98	1859.55	1875.05	1879.36	1881.83	1880.02	1874.76	1862.72	1850.52
25	1846.27	1844.34	1844.44	1846.31	1860.06	1875.66	1879.62	1881.90	1880.04	1874.42	1862.26	1850.17
26	1846.16	1844.44	1844.45	1846.20	1860.57	1876.25	1879.80	1881.83	1880.05	1874.10	1861.80	1849.81
27	1846.04	1844.50	1844.42	1845.89	1861.17	1876.53	1879.93	1881.74	1880.03	1873.77	1861.33	1849.46
28	1845.93	1844.50	1844.37	1845.05	1861.74	1876.44	1880.03	1881.68	1880.01	1873.42	1860.86	1849.09
29	1845.79	1844.49	1844.32	1844.58	---	1876.21	1880.10	1881.76	1879.97	1873.06	1860.40	1848.71
30	1845.84	1844.51	1844.28	1844.59	---	1876.11	1880.13	1881.73	1879.93	1872.70	1859.93	1848.34
31	1845.96	---	1844.23	1844.61	---	1876.22	---	1881.64	---	1872.33	1859.47	---
MAX	1852.28	1845.79	1845.10	1846.74	1861.74	1876.53	1880.13	1882.21	1881.54	1879.87	1871.97	1859.07
MIN	1845.79	1844.20	1843.93	1843.83	1844.77	1862.39	1876.24	1879.90	1879.93	1872.33	1859.47	1848.34
(†)	22510	21840	21710	21890	30400	38620	41010	41960	40890	36310	29200	23630
(‡)	-3140	-670	-130	+180	+8510	+8220	+2390	+950	-1070	-4580	-7110	-5570

CAL YR 1997 MAX 1883.62 MIN 1843.93 AC-FT† -13250
WTR YR 1998 MAX 1882.21 MIN 1843.83 AC-FT† -2020

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

UMPQUA RIVER BASIN

14309000 COW CREEK NEAR AZALEA, OR

LOCATION.--Lat 42°49'30", long 123°10'40", in N-1/2 sec.4, T.32 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on right bank 0.8 mi upstream from Whitehorse Creek, 4.5 mi northeast of Azalea, and at mile 58.2.

DRAINAGE AREA.--78.0 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1926 to September 1928 (no winter records), April 1929 to December 1931, April 1932 to current year.

REVISED RECORDS.--WSP 984: 1933-36. WSP 1154: 1946(M), 1948(M). WSP 1448: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,694.32 ft above sea level (Douglas County Road Department bench mark). Prior to July 19, 1949, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since Oct. 7, 1985 by Galesville Reservoir (station 14308995). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--68 years (water years 1930-31, 1933-98), 108 ft³/s, 18.80 in/yr, 78,250 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,600 ft³/s Jan. 15, 1974, gage height, 16.40 ft, from high-water mark in well; minimum discharge, 1.1 ft³/s Aug. 12, 1981, but may have been less during period of no gage-height record Sept. 4-30, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 900 ft³/s Feb. 21, gage height, 5.79 ft; minimum discharge, 45 ft³/s several days in October.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	96	73	75	197	87	222	93	227	66	126	119
2	99	75	72	152	206	275	221	90	216	82	125	113
3	98	63	70	213	178	330	212	98	211	84	124	113
4	98	50	63	216	138	211	195	98	210	84	123	113
5	98	49	54	211	111	122	196	144	209	84	126	113
6	97	54	51	146	94	78	213	187	206	83	124	113
7	97	78	71	79	82	75	222	166	201	83	124	112
8	98	71	70	77	79	75	222	115	150	83	125	112
9	135	61	58	76	76	74	221	97	77	83	125	114
10	208	55	55	89	75	73	222	97	83	83	125	109
11	208	55	50	193	76	72	223	97	87	83	125	106
12	208	56	48	255	77	71	222	157	85	83	124	104
13	208	51	48	335	98	72	219	209	81	83	123	104
14	137	47	49	313	116	71	213	187	76	90	123	104
15	46	47	52	315	116	71	204	182	76	93	124	104
16	47	47	67	353	112	72	174	216	76	98	123	104
17	47	55	151	470	94	72	130	217	76	115	123	105
18	47	56	198	564	74	72	101	217	76	123	133	105
19	46	91	190	444	152	72	101	218	71	124	139	105
20	46	108	161	418	182	72	96	240	65	124	138	105
21	47	101	161	248	657	72	94	495	65	121	143	104
22	47	85	122	211	716	161	93	423	60	121	143	104
23	47	80	78	211	418	240	95	326	57	119	144	104
24	47	75	75	212	203	287	99	281	57	118	140	103
25	46	74	75	225	186	301	102	316	60	121	142	104
26	46	74	74	399	137	227	101	305	57	117	142	103
27	46	73	74	413	77	247	99	272	57	116	142	104
28	47	72	73	437	75	294	99	247	57	122	141	105
29	47	73	73	350	---	291	99	262	57	126	141	109
30	51	73	73	233	---	252	100	267	57	123	140	104
31	72	---	73	209	---	222	---	246	---	126	135	---
TOTAL	2711	2045	2602	8142	4802	4711	4810	6565	3143	3161	4075	3221
MEAN	87.5	68.2	83.9	263	172	152	160	212	105	102	131	107
MAX	208	108	198	564	716	330	223	495	227	126	144	119
MIN	46	47	48	75	74	71	93	90	57	66	123	103
AC-FT	5380	4060	5160	16150	9520	9340	9540	13020	6230	6270	8080	6390
MEAN†	36.4	57.0	81.8	266	325	286	200	227	86.7	27.5	15.8	14.6
CFSM†	0.47	0.73	1.05	3.41	4.17	3.67	2.56	2.91	1.11	0.35	0.20	0.19
IN.†	0.54	0.82	1.21	3.93	4.34	4.22	2.87	3.36	1.24	0.41	0.23	0.21
AC-FT†	2240	3390	5030	16330	18030	17560	11930	13970	5160	1690	970	870

CAL YR 1997 TOTAL 45870 MEAN 126 MAX 1960 MIN 46 AC-FT 90980 MEAN† 107 CFSM† 1.38 IN.† 18.69 AC-FT† 77740
WTR YR 1998 TOTAL 49988 MEAN 137 MAX 716 MIN 46 AC-FT 99150 MEAN† 134 CFSM† 1.72 IN.† 23.36 AC-FT† 97170

† Adjusted for change in contents in Galesville Reservoir.

DISSOLVED OXYGEN: November 1985 to current year

REMARKS.--Water-quality monitor located 1.9 mi upstream from water-discharge site, 1000 ft downstream from Galesville Dam, and at mile 60.1.

DISSOLVED OXYGEN: Maximum recorded, 15.1 mg/L Feb. 7, 1989, Nov. 17, 20, 1996, caused by operation of bypass valve at dam; minimum, 0.9 mg/L July 30, 1988.

DISSOLVED OXYGEN: Maximum recorded, 12.4 mg/L Feb. 8, 9; minimum recorded, 5.5 mg/L Aug. 27, 28.

[illegible]

UMPQUA RIVER BASIN

14309000 COW CREEK NEAR AZALEA, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

[illegible]

e Estimated

UMPQUA RIVER BASIN

14310000 COW CREEK NEAR RIDDLE, OR

LOCATION.--Lat 42°55'25", long 123°25'40", in NE 1/4 sec.32, T.30 S., R.6 W., Douglas County, Hydrologic Unit 17100302, on left bank 0.4 mi upstream from Council Creek, 3.8 mi southwest of Riddle, and at mile 6.7.

DRAINAGE AREA.--456 mi².

PERIOD OF RECORD.--September 1954 to current year.

REVISED RECORDS.--WSP 1935: 1956(M).

GAGE.--Water-stage recorder. Datum of gage is 682.60 ft above sea level.

REMARKS.--Records good. Regulated since Oct. 7, 1985 by Galesville Reservoir (station 14308995). Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--31 years (water years 1955-85), 903 ft³/s, 654,200 acre-ft/yr.
13 years (water years 1986-98), 678 ft³/s, 490,900 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 38,400 ft³/s Jan. 15, 1974, gage height, 28.17 ft; minimum discharge, 7.4 ft³/s Aug. 17-19, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 29, 1950, reached a stage of about 28.5 ft, present site and datum, from slope-area measurement, discharge, 41,100 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 14,500 ft³/s Mar. 23, gage height, 14.89 ft; minimum discharge, 110 ft³/s Oct. 28, 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	141	520	658	318	1640	1380	1470	515	1300	215	171	151
2	279	362	549	607	2440	1550	1400	542	1080	223	170	137
3	247	277	468	631	2530	1960	1290	564	944	236	167	129
4	209	230	400	631	2310	1960	1190	502	854	239	162	128
5	210	194	348	1360	2240	1860	1100	493	787	228	159	127
6	203	188	315	1620	2540	1580	1100	525	729	218	159	127
7	185	310	396	1800	2020	1320	1070	535	681	206	163	125
8	176	331	901	1860	2150	1190	1010	495	643	198	163	125
9	401	287	e1000	1510	2310	1060	991	444	567	191	162	130
10	750	250	e800	1420	1820	980	1090	423	481	184	160	130
11	540	222	e650	1600	2310	918	1680	422	476	182	158	128
12	489	205	e450	2550	2410	903	1750	558	453	182	157	125
13	438	188	e450	4310	3830	943	1510	838	418	178	155	122
14	382	179	e520	3560	3400	887	1300	808	386	173	151	121
15	299	163	e480	4020	3170	844	1170	752	361	170	149	120
16	198	162	e1300	3140	2590	825	1040	792	354	171	151	117
17	171	300	e3200	5200	2010	793	926	893	341	170	151	116
18	156	391	1970	4070	1500	748	842	905	327	177	149	117
19	145	786	1230	4070	2410	704	781	890	314	183	154	124
20	137	1470	973	3080	2860	658	741	1760	301	192	162	128
21	130	943	950	2190	10600	648	691	3540	283	191	163	128
22	126	632	818	1740	8600	2310	657	2500	272	184	166	127
23	123	584	640	1610	5090	9390	702	1790	261	181	167	125
24	120	932	603	1900	3200	6680	752	1400	253	176	167	122
25	116	1240	608	2520	2500	3630	703	1390	268	173	165	123
26	114	1040	612	3900	2050	2640	649	1360	265	176	164	127
27	113	865	553	4080	1690	2120	618	1280	247	170	163	129
28	110	670	454	3030	1450	1890	586	1160	229	171	160	129
29	111	564	393	2400	---	1660	559	1670	219	170	157	126
30	123	760	355	1980	---	1470	534	1930	213	171	154	129
31	777	---	328	1660	---	1430	---	1610	---	170	155	---
TOTAL	7719	15245	23372	74367	83670	56931	29902	33286	14307	5849	4954	3792
MEAN	249	508	754	2399	2988	1836	997	1074	477	189	160	126
MAX	777	1470	3200	5200	10600	9390	1750	3540	1300	239	171	151
MIN	110	162	315	318	1450	648	534	422	213	170	149	116
AC-FT	15310	30240	46360	147500	166000	112900	59310	66020	28380	11600	9830	7520

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1998, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	109	458	1289	1867	1555	1234	741	421	207	107	87.9	94.6	
MAX	249	1295	6225	4144	3278	2362	1833	1074	477	189	166	152	
(WY)	1998	1997	1997	1995	1996	1995	1993	1998	1998	1998	1993	1986	
MIN	55.4	88.5	210	577	439	282	194	147	81.0	49.3	23.1	46.5	
(WY)	1989	1988	1990	1994	1988	1992	1990	1987	1992	1994	1986	1994	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1986 - 1998

ANNUAL TOTAL	249140	353394	
ANNUAL MEAN	683	968	678
HIGHEST ANNUAL MEAN			1206
LOWEST ANNUAL MEAN			270
HIGHEST DAILY MEAN	19100	10600	23100
LOWEST DAILY MEAN	58	110	16
ANNUAL SEVEN-DAY MINIMUM	60	115	17
ANNUAL RUNOFF (AC-FT)	494200	701000	490900
10 PERCENT EXCEEDS	1450	2350	1720
50 PERCENT EXCEEDS	287	535	221
90 PERCENT EXCEEDS	92	130	62

e Estimated

UMPQUA RIVER BASIN

301

14311500 LOOKINGGLASS CREEK AT BROCKWAY, OR

LOCATION.--Lat 43°07'50", long 123°27'50", in SE 1/4 SE 1/4 sec.13, T.28 S., R.7 W., Douglas County, Hydrologic Unit 17100302, on left bank 1.7 mi northwest of Brockway and at mile 2.85.

DRAINAGE AREA.--158 mi².

PERIOD OF RECORD.--October 1955 to current year.

REVISED RECORDS.--WSP 2135: Drainage area (former site).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 540 ft above sea level, from topographic map. Prior to Oct. 5, 1967, water-stage recorder at site 2.3 mi downstream at different datum. Oct. 5, 1967, to Oct. 5, 1976, water-stage recorder, at datum 1.00 ft lower.

REMARKS.--Records good except those below 5 ft³/s and estimated daily discharges, which are fair. Some regulation since January 1980 by Ben Irving Reservoir 17 mi upstream on Berry Creek, capacity, 11,200 acre-ft. Many diversions by pumping for irrigation upstream from station. Discharge not adjusted for storage or release from Ben Irving Reservoir as losses from reservoir at times exceed natural flow.

AVERAGE DISCHARGE.--24 years (water years 1956-79), 282 ft³/s, 204,300 acre-ft/yr.
18 years (water years 1981-98), 222 ft³/s, 160,700 acre-ft/yr. Data for the 1980 water year not included due to construction and initial filling of Ben Irving Reservoir.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 35,000 ft³/s Dec. 26, 1955, gage height, 24.93 ft, site and datum then in use, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement of peak flow; maximum gage height, 25.28 ft Dec. 23, 1964 (backwater from South Umpqua River, site and datum then in use); no flow at times each year prior to January 1980, and Aug. 6, 7, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,410 ft³/s Jan. 16, gage height, 5.70 ft; minimum discharge, 1.8 ft³/s Apr. 26.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e25	63	82	109	469	343	386	79	247	24	6.3	3.1
2	e26	40	73	244	475	310	350	90	186	26	5.7	2.7
3	28	30	64	313	546	260	325	95	186	25	5.7	3.1
4	24	23	56	1030	742	346	291	80	185	24	6.3	4.8
5	26	20	50	650	636	201	318	73	165	22	5.7	6.6
6	31	20	45	463	617	165	325	67	132	19	6.1	6.3
7	20	29	61	421	446	242	273	62	118	22	5.8	6.5
8	14	34	98	416	432	385	209	60	107	18	6.5	6.1
9	19	28	92	359	415	233	258	58	98	17	6.5	6.9
10	40	24	80	455	437	149	289	55	94	19	5.4	7.1
11	33	23	71	895	506	240	319	55	87	19	5.6	7.2
12	25	21	65	981	666	218	263	90	80	19	5.9	7.5
13	21	20	59	1120	447	369	328	141	71	17	5.9	7.4
14	19	19	59	917	170	215	268	139	66	16	5.5	7.3
15	18	17	89	901	280	256	278	118	61	15	5.3	7.3
16	17	17	139	1070	177	245	181	131	57	15	5.6	8.2
17	15	29	471	1170	277	178	150	149	52	13	5.3	8.2
18	14	51	386	911	322	131	180	149	48	13	4.4	9.0
19	13	88	234	700	391	122	164	156	46	13	4.6	11
20	13	156	210	653	264	132	135	131	42	11	4.6	11
21	12	112	266	606	394	145	126	205	39	10	5.0	11
22	12	81	213	650	254	389	115	226	37	8.9	5.3	9.4
23	12	71	186	570	248	452	90	209	34	8.5	5.9	7.7
24	12	94	234	614	373	280	54	152	33	9.6	6.0	6.5
25	11	165	226	745	234	349	61	184	35	8.7	5.7	8.1
26	11	160	186	1100	279	224	63	162	34	7.7	5.2	8.9
27	11	136	153	856	190	297	59	171	32	5.6	5.8	11
28	11	103	127	690	339	334	69	165	28	5.7	6.3	11
29	11	86	109	615	---	255	93	166	25	4.2	5.6	9.3
30	10	92	97	491	---	216	85	238	22	4.6	4.8	8.9
31	108	---	87	486	---	402	---	225	---	5.2	4.7	---
TOTAL	662	1852	4368	21201	11026	8083	6105	4081	2447	445.7	173.0	229.1
MEAN	21.4	61.7	141	684	394	261	204	132	81.6	14.4	5.58	7.64
MAX	108	165	471	1170	742	452	386	238	247	26	6.5	11
MIN	10	17	45	109	170	122	54	55	22	4.2	4.4	2.7
AC-FT	1310	3670	8660	42050	21870	16030	12110	8090	4850	884	343	454

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 1998, BY WATER YEAR (WY)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	25.0	204	582	568	565	355	249	76.8	26.2	8.65	7.16	11.9						
MAX	86.3	809	2121	1346	1544	965	826	169	81.6	21.9	13.0	37.1						
(WY)	1987	1985	1997	1996	1983	1982	1996	1998	1983	1983	1983	1997						
MIN	7.74	7.80	33.0	122	133	54.6	38.4	15.1	4.99	3.06	4.10	5.37						
(WY)	1988	1994	1990	1981	1988	1992	1990	1987	1994	1985	1982	1987						

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1981 - 1998
ANNUAL TOTAL	64972.4	60672.8	
ANNUAL MEAN	178	166	222
HIGHEST ANNUAL MEAN			451
LOWEST ANNUAL MEAN			70.6
HIGHEST DAILY MEAN	4000	Jan 1	9670
LOWEST DAILY MEAN	3.7	Jul 16	.03
ANNUAL SEVEN-DAY MINIMUM	4.7	Jul 10	.17
ANNUAL RUNOFF (AC-FT)	128900		160700
10 PERCENT EXCEEDS	385		589
50 PERCENT EXCEEDS	45		44
90 PERCENT EXCEEDS	9.4		5.7

e Estimated

14312000 SOUTH UMPQUA RIVER NEAR BROCKWAY, OR

LOCATION.--Lat 43°08'00", long 123°23'50", in SW 1/4 sec.15, T.28 S., R.6 W., Douglas County, Hydrologic Unit 17100302, on right bank 10 ft upstream from Winston Bridge on State Highway 99, 2.5 mi northeast of Brockway, 4.2 mi downstream from Lookingglass Creek, and at mile 132.8.

DRAINAGE AREA.--1,670 mi².

PERIOD OF RECORD.--December 1905 to June 1912, October 1923 to September 1926, January 1942 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1248: 1946(M), 1948(M), 1951. WSP 1448: Drainage area. WDR OR 72-1: 1965(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 462.52 ft above sea level (State Highway Department bench mark). Prior to June 24, 1949, nonrecording gage at several sites within 400 ft of present site at various datums. June 24, 1949, to Oct. 1, 1970, at datum 461.84 ft above sea level (State Highway Department bench mark).

REMARKS.--No estimated daily discharges. Records good. Regulation from Ben Irving Reservoir, since January 1980, on Berry Creek during summer months. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--64 years (water years 1907-11, 1924-26, 1943-98), 2,794 ft³/s, 22.73 in/yr, 2,024,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 125,000 ft³/s Dec. 23, 1964, gage height, 34.28 ft; minimum discharge, 16 ft³/s Aug. 23, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 21, 1927, reached a stage of about 31.2 ft, present site and datum, discharge, 89,500 ft³/s. Discharge for flood of February 1890, which reached a stage 1.9 ft higher, according to local resident who lived nearby at time of both floods, has been found to be in error and should not be used.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	1300	23,400	14.61	Mar. 23	2200	26,100	15.31
Feb. 21	1530	*32,400	*16.97				

Minimum discharge, 187 ft³/s Sept. 4, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	303	2690	2080	1440	4920	5150	4660	2220	6520	730	327	223
2	437	1620	1780	1990	5700	6660	4310	2250	5150	719	319	213
3	654	1180	1530	3160	5840	8590	3960	2190	4220	715	308	199
4	570	937	1320	6930	5770	7940	3780	1980	3600	709	289	193
5	517	775	1160	5540	5350	6900	3630	1920	3130	676	274	199
6	564	703	1040	4210	5530	5850	3980	1930	2760	634	267	202
7	546	773	997	4050	4980	4830	4240	1850	2490	600	270	198
8	478	1370	1630	4630	4340	4260	4180	1760	2340	571	278	197
9	562	1180	1810	4170	4680	3730	3870	1700	2170	545	277	203
10	1770	988	1520	4010	3900	3370	4180	1630	1980	526	272	217
11	1590	859	1330	10700	4350	3180	5560	1570	2110	520	260	216
12	1330	790	1200	13200	4850	3320	5700	1900	2000	506	256	215
13	1340	748	1090	12900	7000	4140	5040	3010	1790	487	250	206
14	1090	700	1030	10200	7010	3870	4390	2950	1620	465	248	203
15	921	669	1220	12100	7300	3580	3980	3310	1470	445	246	202
16	722	626	1500	11500	6440	3510	3530	4340	1380	426	246	194
17	600	680	6940	19500	5370	3340	3110	4430	1280	408	249	195
18	533	957	6910	14000	4240	2980	2780	4090	1200	398	248	194
19	485	1310	4250	12000	4690	2660	2560	3820	1130	401	238	204
20	448	2790	3180	9620	6030	2440	2420	9010	1060	403	243	222
21	422	2350	3010	7390	21800	2370	2300	16600	995	397	253	237
22	397	1740	2570	6620	21100	4290	2240	10600	942	383	253	241
23	380	1430	2250	7390	12800	17600	2500	7290	895	365	260	227
24	363	1650	2400	7370	8910	17600	3730	5740	866	357	265	222
25	353	2640	2690	7670	6930	11000	3720	7090	940	352	263	222
26	342	3050	2410	9590	6000	8640	3120	6980	971	342	259	238
27	335	2680	2040	10200	5090	7400	2720	6050	982	337	253	253
28	326	2260	1760	8580	4510	6550	2480	5260	871	332	246	264
29	323	1890	1570	6980	---	5570	2370	8910	798	318	243	256
30	350	2020	1500	6530	---	4760	2300	11600	749	315	234	245
31	2370	---	1490	5600	---	4890	---	8840	---	325	227	---
TOTAL	21421	44055	67207	249770	195430	180970	107340	152820	58409	14707	8115	6500
MEAN	691	1469	2168	8057	6980	5838	3578	4930	1947	474	262	217
MAX	2370	3050	6940	19500	21800	17600	5700	16600	6520	730	327	264
MIN	303	626	997	1440	3900	2370	2240	1570	749	315	227	193
AC-FT	42490	87380	133300	495400	387600	359000	212900	303100	115900	29170	16100	12890
CFSM	.41	.88	1.30	4.82	4.18	3.50	2.14	2.95	1.17	.28	.16	.13
IN.	.48	.98	1.50	5.56	4.35	4.03	2.39	3.40	1.30	.33	.18	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 1998, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1907	472	6045	1951	103	1988
1908	2720	13590	1974	190	1953
1909	5733	19950	1997	184	1977
1910	6914	16010	1956	262	1977
1911	6293	15370	1958	341	1977
1912	4788	10950	1974	882	1992
1913	3253	7378	1963	589	1926
1914	1997	6909	1963	446	1926
1915	887	3312	1953	142	1926
1916	270	576	1953	52.6	1926
1917	138	392	1993	40.2	1973
1918	152	587	1986	69.3	1967

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1907 - 1998

ANNUAL TOTAL	907654	1106744	
ANNUAL MEAN	2487	3032	
HIGHEST ANNUAL MEAN			2794
LOWEST ANNUAL MEAN			5567
HIGHEST DAILY MEAN			562
LOWEST DAILY MEAN	54200	21800	90200
ANNUAL SEVEN-DAY MINIMUM	115	193	17
ANNUAL RUNOFF (AC-FT)	123	199	18
ANNUAL RUNOFF (CFSM)	1800000	2195000	2024000
ANNUAL RUNOFF (INCHES)	1.49	1.82	1.67
10 PERCENT EXCEEDS	20.22	24.65	22.73
50 PERCENT EXCEEDS	5040	7170	6810
90 PERCENT EXCEEDS	1200	1780	1090
	203	247	115

14312170 SOUTH FORK DEER CREEK NEAR DIXONVILLE, OR

LOCATION.--Lat 43°10'16", long 123°13'23", in NW 1/4 NW 1/4 sec.6, T.28 S., R.4 W., Douglas County, Hydrologic Unit 17100302, on left bank, 900 ft upstream from bridge on Douglas County Road Number 83, 2.6 mi southeast of Dixonville, and 2.2 mi upstream from confluence of north and south forks.

DRAINAGE AREA.--15.2 mi².

PERIOD OF RECORD.--October 1989 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 700 ft above sea level, from topographic map.

REMARKS.--No estimated daily discharges. Records good except those below 5 ft³/s, which are fair. No regulation. Minor diversion for irrigation upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--9 years (water years 1990-98), 21.8 ft³/s, 19.44 in/yr, 15,790 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,910 ft³/s Jan. 20, 1996, gage height, 5.33 ft; maximum gage height, 6.84 ft, from inside highwater mark, occurred Nov. 18, 1996; minimum discharge, 0.25 ft³/s Oct. 19-21, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 220 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 21	0530	*1,020	*5.42	May 20	1930	467	3.99

Minimum discharge, 0.81 ft³/s, Sept. 5-7, 15.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	9.3	17	11	27	38	53	15	56	6.3	3.1	1.3
2	9.9	6.9	14	15	28	54	43	16	42	6.2	2.8	1.3
3	4.5	5.8	11	57	28	68	36	15	31	6.1	2.6	1.3
4	4.7	5.1	9.3	86	32	80	30	14	24	5.9	2.6	1.2
5	6.3	4.7	8.1	47	29	64	26	13	20	5.6	2.5	1.1
6	4.8	5.9	7.3	34	26	48	24	12	18	5.3	2.9	1.1
7	3.9	12	12	29	22	39	32	12	17	5.2	3.0	1.0
8	5.5	11	12	26	19	38	28	12	15	5.3	2.7	1.4
9	24	8.7	11	23	17	30	28	12	14	5.0	2.5	1.4
10	14	7.3	9.7	54	15	26	45	13	19	5.0	2.4	1.3
11	10	6.6	8.8	91	14	22	56	13	17	5.0	2.2	1.3
12	9.9	6.7	8.0	82	18	21	52	42	15	4.8	2.2	1.2
13	7.7	6.8	7.4	95	23	32	46	42	13	4.5	2.1	1.2
14	6.3	6.5	8.0	72	29	25	35	45	12	4.3	2.0	1.2
15	5.4	5.8	15	73	33	24	28	59	12	4.1	2.0	1.1
16	4.8	6.7	22	77	29	23	23	79	11	4.0	2.2	1.1
17	4.6	9.9	94	85	24	20	20	58	10	3.8	1.9	1.1
18	4.4	8.2	47	75	20	19	19	51	9.0	3.6	2.0	1.4
19	4.1	49	29	81	44	18	19	71	8.5	3.6	2.0	2.1
20	4.0	29	33	66	45	17	17	292	8.1	3.5	2.0	1.7
21	4.0	19	33	66	411	17	16	222	7.6	3.4	2.0	1.5
22	4.0	14	26	68	142	63	15	103	7.5	3.3	2.0	1.4
23	4.2	12	23	55	87	133	26	69	7.2	3.3	2.1	1.2
24	4.6	11	31	49	60	98	54	83	8.3	3.4	2.0	1.4
25	4.6	21	28	46	49	147	45	106	7.8	3.3	1.8	1.9
26	4.6	23	23	53	40	105	30	81	7.4	3.1	1.7	2.1
27	4.6	19	19	46	32	85	22	60	6.8	3.1	1.6	1.7
28	4.7	15	16	38	27	76	19	51	6.3	3.1	1.5	1.5
29	5.8	18	14	36	---	59	18	182	6.1	3.0	1.4	1.4
30	9.7	22	12	30	---	49	16	143	6.1	3.2	1.4	1.4
31	23	---	10	26	---	65	---	81	---	3.0	1.4	---
TOTAL	227.6	385.9	618.6	1692	1370	1603	921	2067	442.7	132.3	66.6	41.3
MEAN	7.34	12.9	20.0	54.6	48.9	51.7	30.7	66.7	14.8	4.27	2.15	1.38
MAX	24	49	94	95	411	147	56	292	56	6.3	3.1	2.1
MIN	3.9	4.7	7.3	11	14	17	15	12	6.1	3.0	1.4	1.0
AC-FT	451	765	1230	3360	2720	3180	1830	4100	878	262	132	82
CFSM	.48	.84	1.31	3.58	3.21	3.40	2.02	4.38	.97	.28	.14	.09
IN.	.56	.94	1.51	4.13	3.35	3.92	2.25	5.05	1.08	.32	.16	.10

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1990 - 1998, BY WATER YEAR (WY)

	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	3.03	18.3	51.4	53.9	36.0	32.0	27.2	24.6	9.27
MAX	7.34	56.4	179	127	69.7	54.5	64.9	66.7	32.2
(WY)	1998	1997	1996	1995	1994	1993	1992	1991	1990
MIN	1.25	1.87	2.98	14.5	14.8	6.25	6.74	3.48	2.40
(WY)	1994	1994	1990	1992	1992	1992	1990	1992	1994

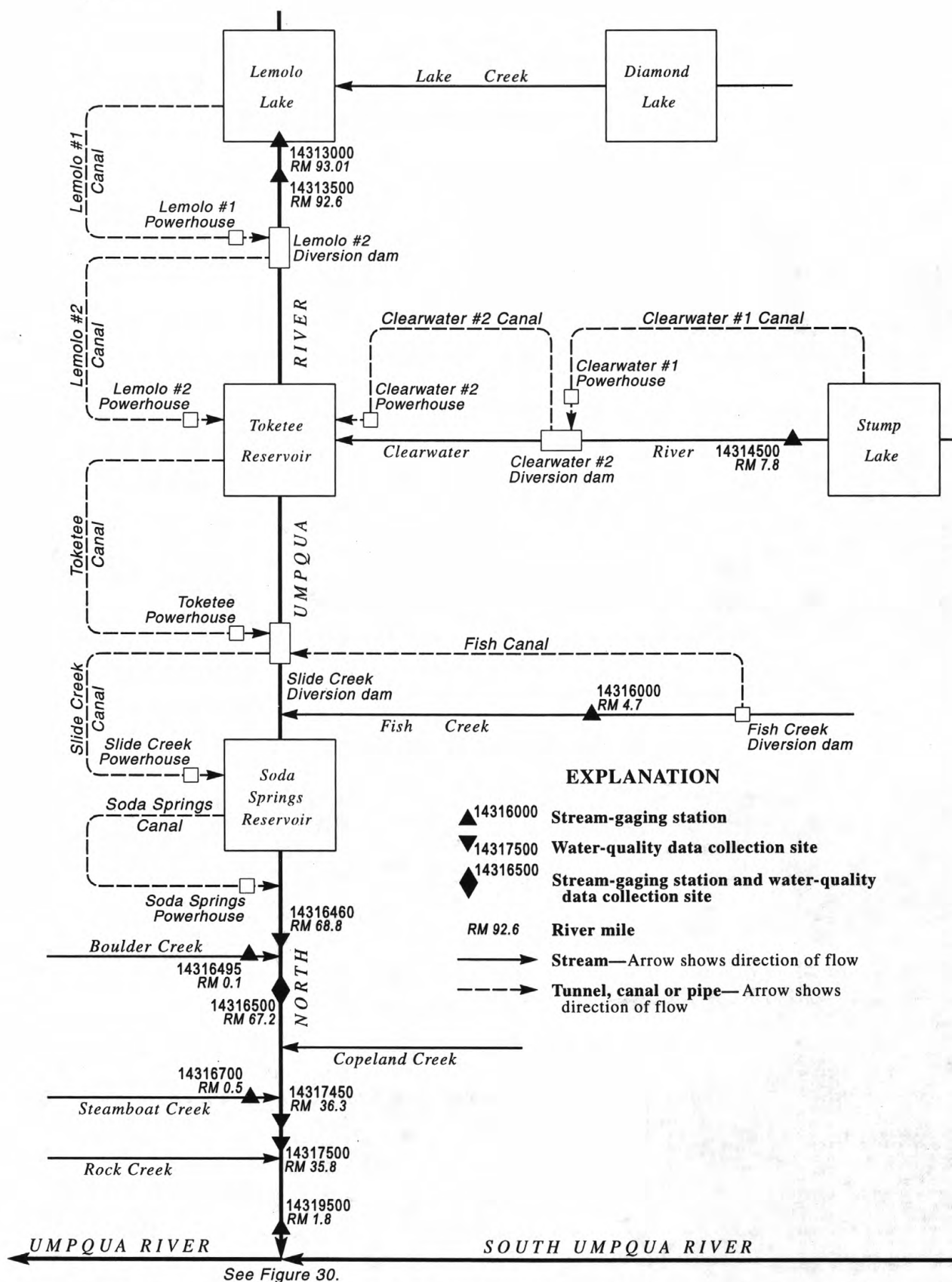
SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1990 - 1998

ANNUAL TOTAL	7086.3	9568.0	21.8
ANNUAL MEAN	19.4	26.2	36.3
HIGHEST ANNUAL MEAN			7.93
LOWEST ANNUAL MEAN			954
HIGHEST DAILY MEAN	343	411	Dec 8 1996
LOWEST DAILY MEAN	1.5	1.0	Sep 7
ANNUAL SEVEN-DAY MINIMUM	1.5	1.2	Sep 11
ANNUAL RUNOFF (AC-FT)	14060	18980	15790
ANNUAL RUNOFF (CFSM)	1.27	1.72	1.43
ANNUAL RUNOFF (INCHES)	17.31	23.37	19.44
10 PERCENT EXCEEDS	46	66	53
50 PERCENT EXCEEDS	8.5	14	7.3
90 PERCENT EXCEEDS	1.9	2.0	1.3



UMPQUA RIVER BASIN

305

14313000 LEMOLO LAKE NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°19'10", long 122°11'20", in SE 1/4 NW 1/4 sec.11, T.26 S., R.5 E., Douglas County, Hydrologic Unit 17100301, at Lemolo No. 1 diversion dam on North Umpqua River, 0.8 mi downstream from Lake Creek, 13.0 mi east of town of Toketee Falls, and at mile 93.01.

DRAINAGE AREA.--170 mi².

PERIOD OF RECORD.--July 1954 to current year. Prior to October 1960, published as Lemolo Reservoir near Toketee Falls.

GAGE.--Nonrecording gage. Datum of gage is sea level (levels by Pacific Power).

REMARKS.--Lake is formed by Lemolo No 1 diversion dam. Storage began July 15, 1954. Usable capacity for normal operation, 12,520 acre-ft between elevations 4,097.0 ft and 4,148.5 ft. Dead storage below 4,097.0 ft, 1,040 acre-ft. Water is used for power generation. Figures given herein represent total contents.

COOPERATION.--Gage readings furnished by Pacific Power.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 14,000 acre-ft Dec. 24, 1964, elevation, 4,149.5 ft; minimum observed, 11 acre-ft Mar. 5, 1955, elevation, 4,055.4 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 13,350 acre-ft May 28, elevation, 4,148.00 ft; minimum observed, 1,530 acre-ft Mar. 12, elevation, 4,102.70 ft.

MONTHEND ELEVATION AND CONTENTS AT 0900, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	4,141.60	10,820	--
Oct. 31.....	4,139.30	10,000	-820
Nov. 30.....	4,127.00	6,110	-3,890
Dec. 31.....	4,119.18	4,060	-2,050
CAL YR 1997.....	--	--	-6,690
Jan. 31.....	4,126.80	6,050	+1,990
Feb. 28.....	4,111.60	2,610	-3,440
Mar. 31.....	4,129.60	6,870	+4,260
Apr. 30.....	4,144.40	11,890	+5,020
May 31.....	4,147.10	12,970	+1,080
June 30.....	4,146.00	12,520	-450
July 31.....	4,147.20	13,010	+490
Aug. 31.....	4,147.20	13,010	0
Sept. 30.....	4,139.50	10,060	-2,950
WTR YR 1998.....	--	--	-760

UMPQUA RIVER BASIN

14313500 NORTH UMPQUA RIVER BELOW LEMOLO LAKE, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°19'20", long 122°11'40", in NW 1/4 NW 1/4 sec.11, T.26 S., R.5 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, on right bank 0.4 mi downstream from Lemolo Lake, 13 mi east of town of Toketee Falls, and at mile 92.6.

DRAINAGE AREA.--170 mi² (see REMARKS).

PERIOD OF RECORD.--October 1927 to December 1945, March 1946 to current year. Records since October 1983 are equivalent to earlier records if diversion to Lemolo No. 1 power canal is added to flow past station. Published as "below Lake Creek" prior to October 1952, as "below Lake Creek, near Toketee Falls" October 1952 to September 1953, and as "below Lemolo Reservoir near Toketee Falls" October 1953 to September 1960.

REVISED RECORDS.--WSP 1448: Drainage area. WDR OR-75-1: 1964(M).

GAGE.--Water-stage recorder. Elevation of gage is 4,025 ft above sea level, from river-profile map. Prior to July 15, 1954, at site 1 mi upstream at datum about 65 ft higher. July 15, 1954, to Sept. 25, 1955, at site 400 ft upstream at datum 14.11 ft higher.

REMARKS.--Records good. Flow regulated since 1954 by Lemolo Lake (station 14313000); also slightly regulated by Diamond Lake. Records given herein do not include flow in Lemolo No. 1 power canal which, beginning July 1955, diverts 0.4 mi upstream from station for power generation with return flow 4.3 mi downstream.

AVERAGE DISCHARGE.--55 years (water years 1928-83), 423 ft³/s, 33.79 in/yr, 306,500 acre-ft/yr, adjusted for storage. 31 years (water years 1968-98), 60.5 ft³/s, 43,860 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 4,600 ft³/s Dec. 25, 1964, from rating curve extended above 450 ft³/s on basis of slope-area measurement of peak flow, gage height, 9.20 ft, from floodmark; minimum discharge, 6.4 ft³/s July 17, 1954.

Combined flow, maximum discharge, 4,680 ft³/s Dec. 25, 1964, from river rating curve extended above 450 ft³/s on basis of slope-area measurement of peak flow; minimum daily, 9.7 ft³/s May 13, 1955.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 693 ft³/s Dec. 15, gage height, 6.80 ft; minimum discharge, 31 ft³/s Mar. 18, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	38	36	33	e37	35	35	46	106	39	41	40
2	39	38	36	33	e36	34	35	50	71	39	41	41
3	39	38	35	33	e36	34	35	50	71	39	42	41
4	39	38	35	33	e36	33	35	55	71	40	351	41
5	39	38	35	33	e36	32	35	57	71	39	71	42
6	39	38	35	33	e36	33	35	58	97	39	41	42
7	39	38	35	32	e35	34	35	98	113	39	41	41
8	39	37	35	32	e35	33	35	168	113	39	41	41
9	39	37	35	32	e35	33	35	180	113	39	42	41
10	39	37	35	32	35	33	35	175	113	39	42	41
11	39	38	35	33	35	32	35	171	113	40	42	41
12	39	39	35	33	35	33	36	167	113	41	42	40
13	39	39	35	34	35	33	36	165	70	252	42	40
14	39	38	35	35	35	33	36	130	40	444	42	40
15	39	38	71	36	35	34	36	80	40	487	42	41
16	39	38	36	38	34	34	36	62	40	505	42	355
17	39	38	35	39	34	35	36	61	40	505	42	454
18	39	38	35	39	34	33	36	50	40	503	42	487
19	39	37	35	39	34	32	37	40	53	502	43	487
20	39	37	35	38	34	32	37	40	60	501	43	485
21	38	37	35	38	33	33	38	40	60	501	42	483
22	38	37	35	38	33	34	38	40	60	500	41	481
23	38	36	35	38	33	35	39	41	48	310	41	481
24	38	36	35	38	33	36	39	42	40	40	41	480
25	38	36	34	38	32	36	40	42	40	40	41	480
26	38	36	34	e38	32	36	40	42	39	40	41	479
27	38	36	34	e38	35	36	40	42	39	40	41	477
28	38	36	34	e38	36	36	40	42	39	40	41	429
29	38	36	34	e37	---	36	41	99	39	41	40	40
30	38	36	34	e37	---	35	43	160	39	41	40	36
31	38	---	34	e37	---	35	---	158	---	41	40	---
TOTAL	1198	1119	1117	1105	969	1053	1109	2651	1991	5805	1624	6747
MEAN	38.6	37.3	36.0	35.6	34.6	34.0	37.0	85.5	66.4	187	52.4	225
MAX	39	39	71	39	37	36	43	180	113	505	351	487
MIN	38	36	34	32	32	32	35	40	39	39	40	36
AC-FT	2380	2220	2220	2190	1920	2090	2200	5260	3950	11510	3220	13380

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

	38.3	35.0	40.4	44.4	35.2	38.5	39.8	113	137	85.7	69.7	48.3
MEAN	38.3	35.0	40.4	44.4	35.2	38.5	39.8	113	137	85.7	69.7	48.3
MAX	126	150	185	307	144	200	119	301	687	301	321	225
(WY)	1979	1979	1997	1997	1996	1972	1987	1972	1974	1996	1979	1985
MIN	19.8	19.1	19.5	19.6	19.8	19.8	22.2	22.2	22.6	24.2	20.8	20.9
(WY)	1973	1973	1971	1985	1973	1973	1973	1973	1973	1968	1971	1972

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1968 - 1998

ANNUAL TOTAL	38665	26488	
ANNUAL MEAN	106	72.6	60.5
HIGHEST ANNUAL MEAN			125
LOWEST ANNUAL MEAN			24.1
HIGHEST DAILY MEAN	1000	Jan 3	1070
LOWEST DAILY MEAN	34	Dec 25	15
ANNUAL SEVEN-DAY MINIMUM	34	Dec 25	17
ANNUAL RUNOFF (AC-FT)	76690	52540	43860
10 PERCENT EXCEEDS	275	113	129
50 PERCENT EXCEEDS	39	39	30
90 PERCENT EXCEEDS	36	34	23

e Estimated

14314500 CLEARWATER RIVER ABOVE TRAP CREEK, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°14'40", long 122°17'10", in SW 1/4 sec.1, T.27 S., R.4 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, on right bank 900 ft downstream from Clearwater No. 1 diversion dam, 0.4 mi upstream from Trap Creek, 8.7 mi east of town of Toketee Falls, and at mile 7.8.

DRAINAGE AREA.--41.6 mi² (see REMARKS).

PERIOD OF RECORD.--October 1927 to December 1945, March 1946 to current year. Records since October 1983 are equivalent to earlier records if diversion to Clearwater No. 1 power canal is added to flow past station. Monthly discharge only December 1927 to March 1928, published in WSP 1318. Prior to October 1952, published as "above Trap Creek."

REVISED RECORDS.--WSP 1124: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,862.84 ft above sea level (levels by Pacific Power & Light Co.). Prior to Dec. 1, 1953, at two sites about 0.4 mi downstream at different datums.

REMARKS.--No estimated daily discharges. Records good. Records after September 1983 do not include flow in Clearwater No. 1 power canal, completed in June 1953, which diverts 900 ft upstream from station for generation of power and returns water to Clearwater River 2.5 mi downstream from station.

AVERAGE DISCHARGE.--55 years (water years 1928-83), 173 ft³/s, 125,300 acre-ft/yr.
15 years (water years 1984-98), 19.0 ft³/s, 13,780 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 848 ft³/s Dec. 23, 1964, gage height, 7.19 ft; maximum gage height, 7.87 ft Dec. 23, 1964, log jam; minimum discharge, 0.08 ft³/s Sept. 21, 1977, result of beavers plugging release gate at diversion dam 900 ft upstream.

Combined flow, maximum discharge, 1,020 ft³/s Dec. 23, 1964; minimum daily, 91 ft³/s Nov. 4-6, 1931.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 270 ft³/s Apr. 30, May 1, gage height, 4.85 ft; minimum discharge, 3.3 ft³/s many days in December and January.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.7	7.0	4.0	3.5	7.4	5.8	9.9	206	12	8.5	6.7	6.3
2	9.0	6.7	3.8	3.5	27	5.8	9.1	53	15	8.5	6.8	6.3
3	8.5	6.2	3.8	3.4	7.5	5.9	9.3	34	14	8.4	6.9	6.3
4	8.6	6.0	3.8	3.4	7.0	5.7	8.1	32	13	8.3	6.8	6.3
5	8.6	6.0	3.7	3.3	6.7	5.6	7.7	110	14	8.2	6.7	6.3
6	8.3	6.1	3.7	3.3	6.6	5.6	7.6	37	14	7.9	6.7	6.5
7	8.2	6.5	3.8	3.4	6.5	5.6	7.1	31	65	7.9	6.6	6.5
8	8.3	6.0	3.5	3.3	6.5	5.6	6.3	31	17	7.8	6.5	6.5
9	8.8	5.8	3.4	3.3	6.3	5.6	6.2	23	15	7.7	6.5	6.5
10	8.2	5.6	3.3	3.5	6.3	5.6	6.5	14	25	7.7	6.5	6.5
11	8.2	5.6	3.3	4.5	6.3	5.6	6.5	12	24	7.7	6.5	6.5
12	7.9	5.6	3.3	3.9	6.3	5.8	6.2	13	20	7.7	6.5	6.5
13	7.7	5.4	3.3	3.8	6.3	5.8	6.0	9.9	17	7.7	6.6	6.5
14	7.7	5.4	3.3	4.3	6.3	5.8	6.0	9.9	13	7.4	6.7	6.5
15	7.6	5.2	3.4	4.3	6.3	6.0	6.1	10	11	7.4	6.7	6.5
16	7.4	5.1	3.7	12	6.2	6.0	6.0	9.3	9.6	7.2	6.5	6.5
17	7.4	5.4	4.0	53	6.0	6.0	6.0	9.1	9.3	7.3	6.5	6.5
18	7.4	5.2	3.5	30	6.0	6.0	6.0	9.0	9.4	7.3	6.5	6.5
19	7.2	4.4	3.5	20	6.0	5.8	6.0	9.0	9.3	7.2	6.5	6.5
20	7.0	4.4	3.5	11	6.0	6.0	6.1	9.0	9.0	7.2	6.5	6.5
21	6.9	4.4	3.4	7.4	6.1	15	6.1	8.8	9.1	7.2	6.5	6.5
22	6.7	4.3	3.3	6.9	6.0	75	7.2	8.7	8.9	7.0	6.5	6.5
23	6.8	4.5	3.3	7.5	5.8	96	13	8.7	8.9	7.0	6.5	6.5
24	6.8	4.9	3.3	6.6	5.8	67	16	10	9.2	7.0	6.5	6.5
25	6.5	4.5	3.3	5.7	5.8	50	133	13	9.2	7.0	6.5	6.5
26	6.5	4.4	3.3	8.1	5.7	37	209	9.0	10	7.0	6.5	6.5
27	6.5	4.3	3.3	7.7	5.6	29	216	9.0	8.8	7.0	6.4	6.5
28	6.3	4.1	3.3	6.2	5.8	23	231	8.8	8.5	7.0	6.4	6.5
29	6.8	4.0	3.3	11	---	17	244	14	8.5	7.0	6.3	6.5
30	7.2	4.0	3.3	7.7	---	14	258	12	8.5	6.8	6.3	6.5
31	17	---	3.3	6.8	---	13	---	11	---	6.7	6.4	---
TOTAL	244.7	157.0	108.0	262.3	196.1	551.6	1472.0	784.2	425.2	231.7	203.0	194.0
MEAN	7.89	5.23	3.48	8.46	7.00	17.8	49.1	25.3	14.2	7.47	6.55	6.47
MAX	17	7.0	4.0	53	27	96	258	206	65	8.5	6.9	6.5
MIN	6.3	4.0	3.3	3.3	5.6	5.6	6.0	8.7	8.5	6.7	6.3	6.3
AC-FT	485	311	214	520	389	1090	2920	1560	843	460	403	385

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	13.0	8.22	13.7	19.1	24.2	15.1	21.9	46.7	14.5	23.7	17.2	10.5			
MAX	76.8	35.0	68.5	143	177	45.0	66.1	125	41.5	88.3	100	59.4			
(WY)	1988	1997	1997	1997	1996	1997	1997	1984	1984	1993	1996	1994			
MIN	4.91	5.04	3.48	5.43	5.32	5.56	5.98	5.10	5.56	5.43	5.04	5.02			
(WY)	1989	1988	1998	1987	1990	1988	1991	1992	1992	1990	1986	1987			

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	15999.0	4829.8	
ANNUAL MEAN	43.8	13.2	19.0
HIGHEST ANNUAL MEAN			52.0
LOWEST ANNUAL MEAN			5.85
HIGHEST DAILY MEAN	659	Jan 1	659
LOWEST DAILY MEAN	3.3	Dec 10	2.0
ANNUAL SEVEN-DAY MINIMUM	3.3	Dec 22	3.2
ANNUAL RUNOFF (AC-FT)	31730		13780
10 PERCENT EXCEEDS	99		43
50 PERCENT EXCEEDS	17	6.5	6.3
90 PERCENT EXCEEDS	4.4	3.8	5.2

UMPQUA RIVER BASIN

14316000 FISH CREEK AT BIG CAMAS RANGER STATION, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°13'50", long 122°26'45", in SE 1/4 sec.10, T.27 S., R.3 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, 0.2 mi upstream from Camas Creek, 0.7 mi east of Big Camas ranger station, 3.2 mi south of town of Toketee Falls, and at mile 4.7.

DRAINAGE AREA.--68.8 mi² (see REMARKS).

PERIOD OF RECORD.--October 1947 to current year. Records since October 1983 are equivalent to earlier records if diversion to Fish Creek power canal is added to flow past station. Prior to October 1952, published as "at Big Camas ranger station."

REVISED RECORDS.--WSP 1448: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 2,858.52 ft above sea level (levels by Pacific Power & Light Co.). Prior to July 10, 1951, water-stage recorder and July 10 to Aug. 10, 1951, nonrecording gage at site 1,000 ft upstream at datum 13.72 ft higher. Aug. 11 to Nov. 3, 1951, nonrecording gage at site 200 ft downstream at different datum. Nov. 4, 1951, to Sept. 30, 1956, water-stage recorder at present site at datum 1.92 ft higher.

REMARKS.--No estimated daily discharges. Records good. Several measurements of water temperature were made during the year. Records given herein do not include flow in Fish Creek power canal (diversion began June 18, 1952), which diverts water 2 mi upstream from station for power generation at Fish Creek powerplant; diversion discharged to North Umpqua River 600 ft downstream from Toketee powerplant.

AVERAGE DISCHARGE.--36 years (water years 1947-83), 237 ft³/s, 46.78 in/yr, 171,700 acre-ft/yr.
15 years (water years 1984-98), 129 ft³/s, 25.50 in/yr, 93,530 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 12,100 ft³/s Dec. 22, 1964, gage height, 13.9 ft, from floodmark; minimum discharge, 2.3 ft³/s Sept. 25, 1957.

Combined flow, maximum discharge, 12,100 ft³/s Dec. 22, 1964; minimum daily, 19 ft³/s July 30, 1979, result of diversion dam manipulation.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 2,150 ft³/s Jan. 17, gage height, 7.28 ft; minimum discharge, 20 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	181	41	54	198	41	122	456	392	38	24	28
2	78	114	39	88	158	65	106	468	374	36	25	28
3	44	79	38	68	126	70	93	377	339	34	24	28
4	56	57	39	55	103	57	83	358	310	33	25	28
5	59	44	35	42	87	46	78	465	277	32	26	28
6	37	52	32	40	84	40	76	402	257	31	27	28
7	32	122	54	57	73	36	72	386	262	31	26	28
8	42	81	45	62	118	34	66	392	258	32	26	46
9	148	58	37	53	227	31	63	328	241	32	26	64
10	91	48	34	100	217	30	79	253	322	31	28	63
11	61	45	33	718	209	32	80	233	291	31	28	61
12	53	38	32	587	216	47	70	265	249	30	25	61
13	51	35	32	483	183	65	64	245	218	31	24	58
14	69	37	34	571	60	82	55	258	183	30	24	58
15	47	37	35	727	56	116	48	280	160	30	23	57
16	38	35	149	1070	51	196	44	254	137	29	24	57
17	33	38	294	1710	47	166	43	223	116	29	24	57
18	32	37	144	1120	40	122	47	199	104	28	24	60
19	32	60	90	855	41	98	55	204	94	29	25	64
20	30	46	66	580	40	102	64	216	83	30	26	61
21	29	38	49	418	55	154	91	193	77	29	25	57
22	28	37	42	375	45	706	149	189	73	29	25	56
23	32	51	40	453	41	1190	239	181	67	30	27	55
24	29	138	37	394	38	965	278	255	77	30	26	44
25	26	110	34	344	34	876	195	348	83	29	27	28
26	23	99	32	410	31	691	162	281	109	29	27	27
27	24	93	33	404	29	398	172	249	68	28	27	25
28	27	71	32	337	33	296	242	212	54	27	28	25
29	84	59	32	367	---	229	337	438	46	29	28	24
30	212	48	31	309	---	183	406	475	41	27	28	22
31	487	---	32	234	---	152	---	407	---	23	28	---
TOTAL	2073	1988	1697	13085	2640	7316	3679	9490	5362	937	800	1326
MEAN	66.9	66.3	54.7	422	94.3	236	123	306	179	30.2	25.8	44.2
MAX	487	181	294	1710	227	1190	406	475	392	38	28	64
MIN	23	35	31	40	29	30	43	181	41	23	23	22
AC-FT	4110	3940	3370	25950	5240	14510	7300	18820	10640	1860	1590	2630
CFSM	.97	.96	.80	6.14	1.37	3.43	1.78	4.45	2.60	.44	.38	.64
IN.	1.12	1.07	.92	7.08	1.43	3.96	1.99	5.13	2.90	.51	.43	.72

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

	MEAN	30.2	101	174	190	173	202	220	232	129	36.3	35.2	31.1
	MAX	78.8	387	747	682	545	581	434	505	366	90.2	74.5	74.5
(WY)	1987	1997	1997	1997	1997	1986	1993	1989	1993	1984	1995	1985	1986
	MIN	11.7	17.2	42.2	32.0	29.2	31.0	83.7	36.4	28.9	23.5	23.3	13.6
(WY)	1984	1990	1993	1992	1990	1990	1992	1994	1992	1987	1996	1992	1990

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	59670	50393	
ANNUAL MEAN	163	138	129
HIGHEST ANNUAL MEAN			247
LOWEST ANNUAL MEAN			40.4
HIGHEST DAILY MEAN	4100	1710	4100
LOWEST DAILY MEAN	19	22	5.9
ANNUAL SEVEN-DAY MINIMUM	21	24	6.8
ANNUAL RUNOFF (AC-FT)	118400	99950	93530
ANNUAL RUNOFF (CFSM)	2.38	2.01	1.88
ANNUAL RUNOFF (INCHES)	32.26	27.25	25.50
10 PERCENT EXCEEDS	400	370	321
50 PERCENT EXCEEDS	54	57	48
90 PERCENT EXCEEDS	28	27	16

UMPQUA RIVER BASIN

309

14316460 NORTH UMPQUA RIVER AT SODA SPRINGS, NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°18'22", long 122°30'42", in NE 1/4 SW 1/4 sec.18, T.26 S., R.3 E., Douglas County, Hydrologic Unit 17100301, on right bank 0.9 mi upstream from Boulder Creek, 4.5 mi west of Toketee Falls, and at mile 68.8.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1997 to September 1998.

pH: October 1997 to September 1998.

WATER TEMPERATURE: October 1997 to September 1998.

DISSOLVED OXYGEN: October 1997 to September 1998.

INSTRUMENTATION.--Hydrolab Data Sonde 3.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 60 microsiemens Dec. 20, 23, July 22; minimum recorded, 34 microsiemens Jan. 17.

pH: Maximum recorded, 8.2 units Aug. 9; minimum recorded, 7.0 units Oct. 29.

WATER TEMPERATURE: Maximum recorded, 14.5°C July 27; minimum recorded, 2.0°C Dec. 25.

DISSOLVED OXYGEN: Maximum recorded, 13.5 mg/L Mar. 28; minimum recorded, 9.6 mg/L July 27, 28.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	48	46	47	54	52	53	59	54	55
2	---	---	---	49	48	49	55	54	54	55	51	53
3	---	---	---	50	48	49	55	54	54	58	52	53
4	---	---	---	51	50	50	55	54	54	56	52	53
5	---	---	---	51	51	51	55	54	55	55	52	53
6	---	---	---	51	51	51	55	55	55	54	52	53
7	---	---	---	51	49	50	56	54	55	53	52	52
8	---	---	---	50	50	50	55	54	54	53	51	52
9	---	---	---	50	50	50	56	54	55	53	52	52
10	---	---	---	50	50	50	56	55	55	52	49	51
11	---	---	---	51	50	50	55	55	55	49	42	45
12	---	---	---	51	50	51	55	55	55	46	43	45
13	---	---	---	51	51	51	56	55	55	47	43	45
14	---	---	---	51	51	51	---	---	---	47	41	45
15	---	---	---	51	51	51	---	---	---	45	40	42
16	---	---	---	51	51	51	---	---	---	44	37	42
17	---	---	---	51	51	51	52	48	49	37	34	35
18	---	---	---	51	50	51	53	50	52	40	37	39
19	---	---	---	51	50	51	55	53	53	41	39	40
20	---	---	---	51	50	50	60	54	55	43	40	41
21	---	---	---	51	50	51	55	54	54	45	43	43
22	---	---	---	51	50	51	56	54	55	45	43	44
23	---	---	---	51	51	51	60	54	55	44	43	44
24	---	---	---	51	49	50	56	54	55	45	44	45
25	---	---	---	52	51	51	57	54	55	44	44	44
26	---	---	---	53	52	52	56	55	55	44	43	44
27	---	---	---	52	52	52	58	55	56	44	43	44
28	---	---	---	53	52	52	58	55	56	45	44	45
29	52	46	49	53	52	53	58	55	56	46	44	45
30	51	48	50	53	52	52	58	55	57	46	44	45
31	48	45	46	---	---	---	59	55	55	46	46	46
MONTH	---	---	---	53	46	51	---	---	---	59	34	46

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	46	46	46	52	52	52	48	48	48	44	43	43
2	47	46	46	52	50	51	49	49	48	43	42	43
3	48	47	47	50	49	49	49	48	49	44	43	43
4	49	47	48	50	49	49	49	49	49	44	43	43
5	49	49	49	51	49	50	50	49	49	43	41	42
6	---	---	---	50	50	50	50	49	49	43	42	42
7	---	---	---	50	50	50	50	50	50	43	43	43
8	---	---	---	50	50	50	50	50	50	43	42	43
9	50	50	50	51	50	51	51	50	50	43	42	43
10	51	50	51	51	51	51	52	50	51	45	43	44
11	51	50	50	51	51	51	52	50	51	45	45	45
12	52	51	52	51	50	51	52	51	52	46	45	45
13	51	50	51	50	50	50	52	51	52	46	45	46
14	51	50	51	51	49	50	52	51	52	47	46	46
15	52	51	51	51	50	50	53	52	52	46	45	46
16	53	51	52	50	48	49	54	51	53	47	46	46
17	52	52	52	49	48	48	54	52	53	47	47	47
18	52	52	52	49	48	48	54	52	53	48	47	48
19	52	52	52	49	48	49	54	52	53	49	48	48
20	52	51	52	50	49	49	54	51	53	49	48	49
21	---	---	---	49	48	48	53	51	52	50	49	49
22	---	---	---	48	40	45	52	49	51	50	49	50
23	52	51	52	40	37	38	49	47	48	50	49	50
24	52	51	52	42	37	39	47	46	46	50	48	49
25	52	51	52	43	41	43	48	45	47	48	47	47
26	52	52	52	44	43	44	49	47	48	49	48	48
27	53	52	52	45	44	44	49	48	49	50	48	49
28	53	52	52	45	44	45	48	46	47	49	49	49
29	---	---	---	46	45	46	46	44	45	50	47	48
30	---	---	---	47	46	47	45	44	44	48	47	47
31	---	---	---	48	47	47	---	---	---	48	48	48
MONTH	---	---	---	52	37	48	54	44	50	50	41	46

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	48	48	48	52	51	52	---	---	---	57	56	56
2	48	46	47	53	52	52	---	---	---	57	56	56
3	47	46	46	54	52	53	---	---	---	57	56	57
4	47	46	46	55	53	54	---	---	---	57	56	56
5	47	47	47	55	54	54	---	---	---	56	56	56
6	47	47	47	56	54	55	---	---	---	56	56	56
7	49	46	47	56	54	55	---	---	---	56	55	55
8	48	46	46	57	55	55	56	55	56	56	55	55
9	47	47	47	56	54	55	57	55	56	56	54	55
10	48	45	46	57	54</							

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PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.3	7.2	7.4	7.3	7.7	7.6	7.5	7.3	---	---	7.8	7.1
2	7.4	7.2	7.4	7.3	7.8	7.6	7.5	7.3	---	---	7.7	7.3
3	7.3	7.2	7.4	7.3	7.8	7.6	7.5	7.3	---	---	7.6	7.1
4	7.3	7.2	7.4	7.3	7.8	7.6	7.5	7.4	---	---	7.7	7.1
5	7.3	7.2	7.4	7.3	---	---	7.5	7.4	---	---	7.6	7.2
6	7.4	7.2	7.4	7.3	---	---	7.5	7.4	---	---	7.6	7.1
7	7.3	7.2	7.5	7.3	---	---	7.5	7.4	---	---	7.6	7.1
8	7.3	7.2	7.5	7.3	---	---	7.6	7.5	8.0	7.7	7.5	7.3
9	7.4	7.2	7.3	7.2	---	---	7.6	7.5	8.2	7.6	8.0	7.4
10	7.4	7.2	7.3	7.2	---	---	7.7	7.4	8.0	7.6	7.7	7.4
11	7.4	7.2	7.3	7.2	---	---	---	---	7.9	7.6	7.7	7.4
12	7.3	7.2	7.2	7.1	---	---	7.6	7.5	8.1	7.6	7.7	7.4
13	7.4	7.2	7.2	7.1	---	---	7.6	7.4	7.8	7.5	7.7	7.4
14	7.4	7.3	7.4	7.1	---	---	7.6	7.4	7.8	7.4	7.7	7.4
15	7.4	7.2	7.4	7.3	---	---	7.5	7.4	7.8	7.5	7.8	7.4
16	7.4	7.3	7.5	7.3	---	---	7.6	7.4	7.8	7.5	7.8	7.4
17	7.5	7.3	7.5	7.3	---	---	7.6	7.4	7.8	7.5	7.6	7.4
18	7.6	7.4	7.6	7.4	---	---	7.6	7.4	7.9	7.5	7.6	7.4
19	7.5	7.3	7.6	7.4	---	---	7.6	7.4	7.9	7.5	7.6	7.4
20	7.5	7.4	7.4	7.3	---	---	7.6	7.4	7.9	7.5	7.7	7.4
21	7.5	7.4	7.4	7.2	---	---	7.6	7.4	8.0	7.5	7.6	7.4
22	7.5	7.4	7.5	7.3	---	---	7.7	7.4	8.0	7.6	7.6	7.4
23	7.4	7.3	7.5	7.4	---	---	7.8	7.5	7.9	7.4	7.6	7.3
24	7.3	7.3	7.4	7.3	---	---	7.8	7.6	7.8	7.3	7.6	7.3
25	7.4	7.2	7.4	7.3	---	---	7.9	7.6	7.7	7.4	7.6	7.4
26	7.5	7.3	7.4	7.3	---	---	7.8	7.6	7.7	7.4	7.6	7.4
27	7.5	7.4	7.4	7.3	7.3	7.1	7.9	7.6	7.7	7.3	7.5	7.3
28	7.5	7.4	7.5	7.3	7.3	7.2	7.8	7.5	7.6	7.2	7.6	7.4
29	7.5	7.3	7.5	7.4	7.4	7.3	---	---	7.6	7.2	7.6	7.4
30	7.4	7.3	7.5	7.4	7.4	7.3	---	---	7.7	7.2	7.6	7.4
31	---	---	7.7	7.4	---	---	---	---	7.7	7.1	---	---
MONTH	7.6	7.2	7.7	7.1	---	---	---	---	---	---	8.0	7.1

UMPQUA RIVER BASIN

14316460 NORTH UMPQUA RIVER AT SODA SPRINGS, NEAR TOKETEE FALLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	8.0	6.5	7.0	5.0	4.0	4.5	3.5	3.5	3.5
2	---	---	---	7.0	6.5	6.5	4.0	3.5	4.0	4.0	3.5	3.5
3	---	---	---	7.0	6.5	7.0	4.0	3.5	4.0	4.0	3.5	3.5
4	---	---	---	7.5	7.0	7.0	4.5	4.0	4.5	3.5	3.5	3.5
5	---	---	---	7.5	7.0	7.0	4.5	4.5	4.5	3.5	3.5	3.5
6	---	---	---	7.5	7.0	7.5	5.0	4.5	4.5	3.5	3.5	3.5
7	---	---	---	7.5	7.5	7.5	5.0	5.0	5.0	4.0	3.5	3.5
8	---	---	---	7.5	6.5	6.5	5.0	4.5	4.5	4.0	4.0	4.0
9	---	---	---	6.5	6.0	6.5	4.5	4.0	4.0	4.0	3.5	3.5
10	---	---	---	6.5	6.5	6.5	4.0	3.5	4.0	4.5	4.0	4.0
11	---	---	---	6.5	6.5	6.5	3.5	3.5	3.5	4.5	4.5	4.5
12	---	---	---	6.5	6.0	6.5	3.5	3.5	3.5	5.0	4.5	4.5
13	---	---	---	6.0	6.0	6.0	3.5	3.5	3.5	5.0	4.5	4.5
14	---	---	---	6.0	6.0	6.0	---	---	---	5.0	5.0	5.0
15	---	---	---	6.0	5.5	5.5	---	---	---	5.0	4.5	5.0
16	---	---	---	6.0	5.5	5.5	---	---	---	5.5	5.0	5.0
17	---	---	---	6.0	6.0	6.0	4.5	4.0	4.0	5.5	5.0	5.5
18	---	---	---	6.0	5.5	5.5	4.0	3.5	3.5	5.5	5.0	5.5
19	---	---	---	5.5	5.5	5.5	3.5	3.0	3.0	5.0	4.5	4.5
20	---	---	---	5.5	5.5	5.5	3.5	3.0	3.5	4.5	4.5	4.5
21	---	---	---	5.5	5.0	5.0	3.5	3.5	3.5	4.5	4.0	4.5
22	---	---	---	5.5	5.0	5.5	3.5	2.5	3.0	4.5	4.0	4.0
23	---	---	---	6.0	5.5	6.0	3.0	2.5	2.5	5.0	4.5	4.5
24	---	---	---	6.5	6.0	6.0	3.0	3.0	3.0	5.0	4.5	4.5
25	---	---	---	6.0	5.5	5.5	3.0	2.0	2.5	5.0	4.5	4.5
26	---	---	---	5.5	5.5	5.5	2.5	2.5	2.5	5.0	5.0	5.0
27	---	---	---	6.0	5.5	5.5	3.0	2.5	3.0	5.0	4.5	5.0
28	---	---	---	5.5	5.5	5.5	3.5	3.0	3.5	5.5	4.5	5.0
29	7.0	7.0	7.0	5.5	5.5	5.5	3.5	3.5	3.5	5.5	5.0	5.5
30	8.0	7.0	7.5	5.5	5.0	5.0	3.5	3.0	3.0	5.0	4.5	4.5
31	8.0	8.0	8.0	---	---	---	3.5	3.0	3.0	5.0	4.0	4.5
MONTH	---	---	---	8.0	5.0	6.1	---	---	---	5.5	3.5	4.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	4.5	4.5	5.0	4.5	5.0	6.0	5.0	5.5	9.5	8.0	8.5
2	4.5	4.5	4.5	5.0	4.5	5.0	6.0	5.5	5.5	9.5	8.0	8.5
3	5.5	4.5	5.0	4.5	4.0	4.0	6.0	5.0	5.5	9.0	7.0	8.0
4	5.5	4.5	5.0	4.5	3.5	4.0	6.0	5.5	5.5	9.0	8.0	8.0
5	5.0	4.5	4.5	4.5	3.5	4.0	6.0	5.5	5.5	8.5	7.5	8.0
6	---	---	---	4.0	3.5	3.5	6.0	5.0	5.5	8.5	8.0	8.0
7	---	---	---	4.0	3.0	3.5	6.0	5.0	5.5	9.5	7.5	8.5
8	---	---	---	4.5	3.5	4.0	5.5	5.0	5.5	9.5	7.5	8.5
9	4.5	4.0	4.5	5.0	4.0	4.5	6.0	5.5	5.5	7.5	6.5	7.0
10	4.5	4.0	4.5	5.0	4.0	4.5	6.0	5.5	6.0	7.0	6.5	6.5
11	4.5	4.0	4.5	5.5	4.5	5.0	6.0	5.5	5.5	7.0	6.5	7.0
12	5.0	4.5	5.0	6.0	5.0	5.5	5.5	5.0	5.0	7.0	6.5	7.0
13	5.0	4.5	4.5	6.0	5.5	5.5	5.5	5.0	5.0	7.0	6.5	6.5
14	4.5	4.5	4.5	6.5	6.0	6.0	5.5	5.0	5.0	7.0	6.5	6.5
15	4.5	4.0	4.5	6.5	6.5	6.5	5.5	5.5	5.5	6.5	6.0	6.5
16	4.5	4.0	4.0	6.5	6.5	6.5	6.0	5.0	5.5	7.0	6.0	6.5
17	4.5	3.5	4.0	6.5	5.5	6.0	6.5	6.0	6.5	7.0	6.0	6.5
18	4.5	4.0	4.5	6.0	5.0	5.5	7.5	6.5	7.0	8.5	6.5	7.0
19	5.0	4.5	4.5	6.5	5.5	6.0	8.0	7.5	7.5	8.5	7.5	8.0
20	4.5	4.0	4.0	7.0	6.0	6.5	8.0	7.0	7.5	7.5	7.0	7.0
21	---	---	---	7.0	6.0	6.5	8.5	7.5	8.0	7.5	6.5	7.0
22	---	---	---	6.5	6.0	6.5	8.5	8.0	8.5	9.0	7.0	8.0
23	4.0	3.5	3.5	6.0	5.5	6.0	8.5	7.0	8.0	9.0	7.5	8.0
24	4.5	4.0	4.0	6.0	5.0	5.5	7.0	6.0	6.5	7.5	7.0	7.0
25	4.5	3.5	4.0	6.5	5.5	6.0	7.0	6.0	6.5	7.0	6.5	6.5
26	4.5	3.5	4.0	6.5	5.5	5.5	8.0	6.5	7.0	7.0	6.0	6.5
27	4.5	4.0	4.0	5.5	4.5	5.0	8.5	7.0	7.5	7.5	6.5	7.0
28	5.0	4.5	4.5	4.5	4.0	4.5	9.0	8.0	8.5	7.5	7.0	7.0
29	---	---	---	5.0	4.0	4.5	9.0	8.0	8.5	7.5	7.0	7.5
30	---	---	---	5.0	4.0	4.5	9.0	8.0	8.5	9.0	7.0	7.5
31	---	---	---	5.5	4.5	4.5	---	---	---	10.0	7.5	8.5
MONTH	---	---	---	7.0	3.0	5.2	9.0	5.0	6.4	10.0	6.0	7.4

UMPQUA RIVER BASIN

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14316460 NORTH UMPQUA RIVER AT SODA SPRINGS, NEAR TOKETEE FALLS, OR---Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	10.5	8.5	9.5	12.5	11.5	12.0	---	---	---	13.0	11.5	12.0
2	10.5	9.0	9.5	12.5	11.5	12.0	---	---	---	13.0	12.0	12.0
3	10.0	8.5	9.0	12.0	11.5	11.5	---	---	---	13.0	12.0	12.0
4	10.0	8.5	9.0	12.5	11.5	12.0	---	---	---	13.0	12.0	12.0
5	10.5	9.0	9.5	12.5	12.0	12.5	---	---	---	13.0	12.0	12.5
6	10.5	9.0	9.5	13.0	12.0	12.5	---	---	---	13.0	12.0	12.0
7	11.0	9.5	10.0	13.0	12.5	12.5	---	---	---	12.0	11.5	11.5
8	10.0	8.5	9.0	13.5	13.0	13.0	13.0	12.5	12.5	11.5	10.5	11.0
9	10.5	9.0	9.5	13.0	12.5	13.0	13.5	12.5	13.0	11.0	10.5	10.5
10	10.5	9.5	9.5	13.0	12.5	13.0	13.5	12.5	13.0	10.5	10.0	10.5
11	10.5	8.5	9.5	---	---	---	13.5	12.5	13.0	10.5	10.0	10.0
12	11.5	10.0	10.5	13.0	12.0	12.5	13.5	12.5	13.0	11.0	10.0	10.5
13	11.5	10.0	10.5	13.0	12.0	12.5	14.0	13.0	13.5	11.5	10.5	11.0
14	11.0	10.0	10.5	12.5	12.0	12.5	14.0	13.0	13.5	11.5	10.5	11.0
15	11.0	10.0	10.5	12.0	11.5	12.0	14.0	13.0	13.5	11.5	11.0	11.0
16	10.5	9.5	10.0	12.5	12.0	12.0	13.5	12.5	13.0	11.5	10.5	11.0
17	11.0	9.5	10.0	13.0	12.0	12.5	13.0	11.5	12.5	10.5	9.5	10.5
18	11.5	10.5	11.0	13.0	12.0	12.5	12.5	11.5	12.0	10.0	9.5	9.5
19	11.5	10.5	11.0	13.0	12.0	12.5	12.5	11.5	11.5	9.5	9.0	9.5
20	11.5	10.5	11.0	13.0	12.5	13.0	12.5	11.5	12.0	9.5	9.0	9.0
21	12.0	11.0	11.5	13.5	13.0	13.0	12.5	11.5	12.0	9.5	8.5	9.0
22	12.0	11.5	11.5	14.0	13.0	13.5	12.5	11.5	12.0	9.5	9.0	9.0
23	12.0	11.0	11.5	14.0	13.0	13.5	13.0	11.5	12.0	9.5	9.0	9.0
24	11.0	10.0	10.5	13.5	13.0	13.5	12.5	11.5	12.0	9.5	9.0	9.5
25	10.0	9.5	9.5	14.0	13.0	13.5	12.5	11.5	12.0	10.0	9.0	9.5
26	10.0	9.0	9.5	14.0	13.5	13.5	12.0	11.0	11.5	9.5	9.0	9.0
27	10.5	9.0	10.0	14.5	14.0	14.0	12.0	11.0	11.5	9.5	8.5	9.0
28	11.5	10.5	11.0	14.0	13.0	13.5	12.5	11.5	12.0	9.5	9.0	9.0
29	12.0	11.0	11.5	---	---	---	12.5	11.5	12.0	10.0	9.0	9.5
30	12.5	11.5	12.0	---	---	---	13.0	12.0	12.0	10.0	9.5	10.0
31	---	---	---	---	---	---	12.5	12.0	12.0	---	---	---
MONTH	12.5	8.5	10.2	---	---	---	---	---	---	13.0	8.5	10.4

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	12.1	11.8	12.0	12.0	11.7	11.9	12.6	12.2	12.4
2	---	---	---	12.1	11.9	12.0	12.3	11.9	12.1	12.2	12.0	12.1
3	---	---	---	12.1	11.8	11.9	12.2	11.9	12.0	12.1	12.0	12.1
4	---	---	---	11.9	11.7	11.8	11.9	11.6	11.8	12.4	12.0	12.1
5	---	---	---	11.7	11.4	11.6	11.9	11.6	11.8	12.6	12.2	12.4
6	---	---	---	11.7	11.5	11.6	11.8	11.6	11.6	12.4	12.2	12.3
7	---	---	---	11.5	11.3	11.4	11.6	11.4	11.5	12.5	12.2	12.4
8	---	---	---	11.9	11.5	11.7	12.0	11.6	11.8	13.3	12.2	12.4
9	---	---	---	11.9	11.5	11.7	12.3	12.0	12.1	12.5	12.3	12.4
10	---	---	---	11.6	11.4	11.5	12.6	12.1	12.3	12.4	12.1	12.3
11	---	---	---	11.6	11.4	11.4	12.8	12.4	12.6	12.2	12.1	12.2
12	---	---	---	11.5	11.3	11.4	12.7	12.4	12.6	12.2	12.0	12.1
13	---	---	---	11.4	11.2	11.3	12.5	12.2	12.4	12.3	12.1	12.2
14	---	---	---	11.5	11.3	11.4	---	---	---	12.2	12.0	12.1
15	---	---	---	11.6	11.4	11.5	---	---	---	12.3	12.1	12.2
16	---	---	---	11.6	11.5	11.5	---	---	---	12.3	12.1	12.2
17	---	---	---	11.7	11.5	11.6	12.4	12.2	12.3	12.6	12.2	12.5
18	---	---	---	11.6	11.3	11.5	12.6	12.4	12.5	12.4	12.1	12.2
19	---	---	---	11.5	11.3	11.4	12.9	12.6	12.7	12.5	12.2	12.4
20	---	---	---	11.8	11.5	11.6	12.6	12.3	12.4	12.5	12.3	12.4
21	---	---	---	11.8	11.6	11.7	12.6	12.4	12.5	12.5	12.4	12.4
22	---	---	---	11.7	11.3	11.5	12.9	12.5	12.8	12.6	12.4	12.5
23	---	---	---	11.4	11.2	11.3	13.0	12.8	12.9	12.5	12.4	12.4
24	---	---	---	11.4	11.2	11.3	12.9	12.7	12.8	12.7	12.5	12.6
25	---	---	---	11.7	11.3	11.5	13.2	12.8	13.0	12.7	12.5	12.6
26	---	---	---	11.5	11.2	11.4	13.3	13.0	13.1	12.6	12.4	12.5
27	---	---	---	11.5	11.2	11.4	13.2	12.8	13.0	12.6	12.3	12.5
28	---	---	---	11.8	11.4	11.5	12.9	12.6	12.8	12.4	12.0	12.3
29	12.0	11.6	11.9	11.6	11.4	11.5	12.8	12.5	12.6	12.3	12.0	12.1
30	11.9	11.7	11.8	11.7	11.4	11.6	12.8	12.5	12.7	12.6	12.3	12.5
31	11.8	11.6	11.7	---	---	---	12.8	12.5	12.7	12.6	12.2	12.4
MONTH	---	---	---	12.1	11.2	11.6	---	---	---	13.3	12.0	12.3

UMPQUA RIVER BASIN

14316460 NORTH UMPQUA RIVER AT SODA SPRINGS, NEAR TOKETEE FALLS, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	12.4	12.2	12.3	12.8	12.5	12.7	12.2	11.8	12.1	11.6	11.2	11.4
2	12.5	12.0	12.3	12.6	12.4	12.5	12.2	11.8	12.0	11.6	11.2	11.4
3	12.2	11.8	12.0	12.8	12.5	12.6	12.5	12.2	12.3	11.9	11.3	11.6
4	12.3	11.9	12.1	13.0	12.7	12.9	12.5	12.2	12.3	11.6	11.2	11.4
5	12.4	12.1	12.2	13.0	12.7	12.9	12.4	12.2	12.3	11.7	11.2	11.5
6	---	---	---	13.0	12.7	12.9	12.4	12.2	12.3	11.6	11.2	11.4
7	---	---	---	13.0	12.7	12.9	12.6	12.2	12.5	11.6	11.0	11.4
8	---	---	---	12.9	12.6	12.8	12.8	12.4	12.6	11.5	11.0	11.3
9	---	---	---	12.8	12.5	12.7	12.5	12.2	12.4	11.8	11.5	11.7
10	---	---	---	12.8	12.5	12.7	12.4	12.1	12.2	11.8	11.6	11.7
11	12.5	12.1	12.3	12.6	12.2	12.4	12.4	12.1	12.3	11.7	11.4	11.6
12	12.3	12.2	12.2	12.3	12.0	12.2	12.5	12.3	12.4	11.5	11.3	11.4
13	12.5	12.3	12.4	12.3	12.0	12.2	12.5	12.2	12.4	11.6	11.4	11.5
14	12.3	12.2	12.2	12.3	11.9	12.1	12.6	12.2	12.4	11.7	11.5	11.6
15	12.6	12.2	12.4	12.3	12.0	12.1	12.4	12.0	12.3	12.0	11.7	11.9
16	12.5	12.3	12.4	12.2	12.0	12.1	12.5	12.1	12.3	12.1	11.8	11.9
17	12.6	12.4	12.5	12.4	12.1	12.3	12.4	12.0	12.2	12.2	11.8	12.0
18	12.6	12.3	12.5	12.5	12.1	12.3	12.2	11.9	12.1	12.0	11.5	11.8
19	12.4	12.3	12.3	12.3	12.0	12.2	11.9	11.6	11.8	11.8	11.4	11.6
20	12.6	12.3	12.4	12.2	11.9	12.1	11.9	11.5	11.7	11.9	11.6	11.8
21	---	---	---	12.2	11.9	12.0	11.8	11.4	11.6	12.1	11.8	12.0
22	---	---	---	12.2	12.0	12.1	11.6	11.2	11.4	11.9	11.4	11.8
23	12.8	12.6	12.7	12.3	12.1	12.2	11.6	11.0	11.3	11.7	11.4	11.6
24	12.7	12.5	12.6	12.5	12.1	12.4	12.0	11.5	11.8	12.0	11.7	11.9
25	12.9	12.6	12.7	12.4	12.1	12.2	12.4	11.8	12.1	12.1	11.8	11.9
26	13.0	12.7	12.8	12.5	12.1	12.4	12.3	11.7	12.1	12.1	11.8	11.9
27	12.9	12.6	12.8	12.8	12.4	12.6	11.9	11.4	11.7	12.0	11.7	11.8
28	12.9	12.6	12.7	13.5	12.3	12.9	11.9	11.3	11.5	11.9	11.6	11.8
29	---	---	---	12.6	12.3	12.5	11.9	11.4	11.6	11.8	11.6	11.7
30	---	---	---	12.7	12.3	12.5	11.8	11.3	11.6	12.1	11.5	11.8
31	---	---	---	12.4	12.0	12.2	---	---	---	11.9	11.0	11.6
MONTH	---	---	---	13.5	11.9	12.4	12.8	11.0	12.1	12.2	11.0	11.7
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.4	10.8	11.1	11.2	10.8	11.0	---	---	---	10.7	10.4	10.5
2	11.4	10.8	11.1	11.2	10.7	11.0	---	---	---	10.6	10.3	10.4
3	11.4	10.9	11.1	11.2	10.8	11.0	---	---	---	10.5	10.3	10.4
4	11.4	11.0	11.2	11.1	10.7	10.9	---	---	---	10.5	10.2	10.4
5	11.3	10.9	11.0	11.1	10.6	10.9	---	---	---	10.5	10.2	10.3
6	11.3	10.8	11.1	11.2	10.5	10.9	---	---	---	10.5	10.2	10.3
7	11.1	10.7	11.0	11.2	10.7	11.0	---	---	---	11.0	10.2	10.3
8	11.3	10.8	11.1	11.1	10.6	10.8	10.4	10.1	10.3	10.7	10.2	10.5
9	11.1	10.7	10.9	11.0	10.6	10.8	10.4	10.1	10.2	11.0	10.5	10.7
10	11.1	10.7	10.9	11.1	10.5	10.9	10.4	10.1	10.3	11.3	11.0	11.1
11	11.2	10.7	11.0	---	---	---	10.4	10.1	10.2	11.3	11.1	11.2
12	11.2	10.6	11.0	11.0	10.6	10.8	10.3	10.0	10.1	11.1	10.9	11.0
13	11.3	10.8	11.1	11.0	10.6	10.8	10.2	9.9	10.0	11.0	10.8	10.9
14	11.4	11.0	11.2	11.0	10.7	10.8	10.1	9.8	9.9	10.9	10.7	10.8
15	11.4	11.0	11.2	11.1	10.7	10.9	10.0	9.7	9.9	11.0	10.6	10.8
16	11.6	11.2	11.4	11.0	10.6	10.8	10.2	9.8	10.0	11.0	10.6	10.8
17	11.5	11.1	11.3	10.8	10.3	10.6	10.3	10.0	10.2	11.1	10.7	10.9
18	11.3	11.0	11.1	10.8	10.3	10.5	10.5	10.1	10.3	11.4	10.9	11.1
19	11.3	10.9	11.1	10.7	10.2	10.4	10.5	10.3	10.4	11.5	11.2	11.3
20	11.2	10.9	11.0	10.6	10.1	10.3	10.5	10.1	10.3	11.5	11.2	11.4
21	11.2	10.8	11.0	10.5	10.0	10.3	10.6	10.1	10.3	11.5	11.2	11.4
22	11.2	10.9	11.0	10.3	9.8	10.1	10.6	10.3	10.4	11.5	11.3	11.4
23	11.2	10.9	11.1	10.5	9.8	10.1	10.6	10.3	10.4	11.4	11.2	11.3
24	11.3	11.0	11.2	10.5	10.1	10.3	10.5	10.3	10.4	11.3	11.0	11.2
25	11.6	11.2	11.4	10.3	9.9	10.1	10.5	10.3	10.4	11.3	11.0	11.1
26	11.7	11.3	11.4	10.2	9.8	10.0	10.6	10.3	10.4	11.3	11.0	11.2
27	11.5	11.0	11.3	10.1	9.6	9.9	10.6	10.3	10.4	11.3	11.1	11.2
28	11.3	10.9	11.1	10.1	9.6	9.9	10.5	10.2	10.4	11.2	11.0	11.1
29	11.1	10.8	11.0	---	---	---	10.6	10.3	10.4	11.1	10.8	11.0
30	11.2	10.6	10.9	---	---	---	10.7	10.3	10.5	10.9	10.7	10.8
31	---	---	---	---	---	---	10.7	10.4	10.5	---	---	---
MONTH	11.7	10.6	11.1	---	---	---	---	---	---	11.5	10.2	10.9

UMPQUA RIVER BASIN

315

14316495 BOULDER CREEK NEAR TOKETEE FALLS, OR

LOCATION.--Lat 43°18'13", long 122°31'45", in NE 1/4 SW 1/4 sec.13, T.26 S., R.2 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, and at mile 0.1.

 DRAINAGE AREA.--30.4 mi².

PERIOD OF RECORD.--October 1997 to September 1998.

GAGE.--Water-stage recorder. Datum of gage is 1,640 ft above sea level, from topographic map.

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

 AVERAGE DISCHARGE.--1 year (water year 1998), 86.4 ft³/s, 38.57 in/yr, 62,530 acre-ft/yr.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 11	1330	*934	*5.67	No other peak greater than base discharge.			

Minimum discharge, 3.4 ft³/s Sept. 16, 17, 22, 23.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	149	67	95	135	199	e80	e70	214	27	10	e5.0
2	40	102	60	132	118	244	e70	e120	184	27	9.9	e4.9
3	34	77	52	132	107	220	e70	e95	160	26	9.6	e4.8
4	53	60	48	130	98	169	e75	e65	141	25	9.2	e4.6
5	97	49	44	107	91	138	e70	e85	125	24	8.9	e4.5
6	73	47	40	94	84	114	e70	e85	112	23	8.7	e4.4
7	48	71	49	160	79	99	e70	e85	105	22	8.6	e4.3
8	42	63	64	213	72	93	e70	e80	97	21	8.4	e4.2
9	99	54	58	170	67	90	e65	e90	91	21	8.3	e4.1
10	108	47	52	215	65	90	e65	e85	97	20	e8.0	e4.0
11	104	42	49	612	67	120	e80	e70	106	19	e7.9	e3.9
12	121	39	47	361	75	188	e80	e85	93	19	e7.8	e3.8
13	98	36	45	310	91	185	e85	e100	81	19	e7.7	e3.7
14	81	34	43	298	115	175	e95	e100	72	18	e7.6	e3.6
15	62	32	46	322	131	174	e75	e135	64	17	e7.5	e3.5
16	49	30	148	e500	119	169	e70	e120	56	17	e7.3	e3.4
17	40	31	284	e700	99	142	e65	e100	50	16	e7.2	e3.4
18	35	33	189	e580	86	119	e60	e90	46	16	e7.0	e3.6
19	32	38	134	e450	83	110	e60	e115	43	15	e6.8	e3.6
20	29	57	107	e330	85	120	e65	e135	40	15	e6.6	e3.5
21	27	61	88	e200	151	138	e70	e160	38	14	e6.4	e3.5
22	25	53	74	e250	148	218	e120	e125	36	14	e6.3	e3.4
23	25	50	66	286	124	280	e135	e95	35	13	e6.1	e3.4
24	23	79	58	258	105	233	e145	e120	37	13	e5.9	e3.5
25	22	134	53	226	99	e185	e125	e160	36	12	e5.7	e3.6
26	21	117	49	213	90	e155	e110	e160	39	12	e5.6	e3.9
27	20	104	46	204	77	e150	e90	e155	35	12	e5.5	e3.8
28	19	87	45	182	120	e125	e90	142	32	11	e5.4	e3.7
29	38	78	62	192	---	e110	e110	252	30	11	e5.3	e3.6
30	105	75	85	182	---	e90	e95	340	28	11	e5.2	e3.5
31	283	---	89	158	---	e85	---	260	---	11	e5.1	---
TOTAL	1868	1929	2341	8262	2781	4727	2530	3879	2323	541	225.5	116.7
MEAN	60.3	64.3	75.5	267	99.3	152	84.3	125	77.4	17.5	7.27	3.89
MAX	283	149	284	700	151	280	145	340	214	27	10	5.0
MIN	15	30	40	94	65	85	60	65	28	11	5.1	3.4
AC-FT	3710	3830	4640	16390	5520	9380	5020	7690	4610	1070	447	231
CFSM	1.98	2.12	2.48	8.77	3.27	5.02	2.77	4.12	2.55	.57	.24	.13
IN.	2.29	2.36	2.86	10.11	3.40	5.78	3.10	4.75	2.84	.66	.28	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1998 - 1998, BY WATER YEAR (WY)

	MEAN	60.3	64.3	75.5	267	99.3	152	84.3	125	77.4	17.5	7.27	3.89
MAX	60.3	64.3	75.5	267	99.3	152	84.3	125	77.4	17.5	7.27	3.89	
(WY)	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	
MIN	60.3	64.3	75.5	267	99.3	152	84.3	125	77.4	17.5	7.27	3.89	
(WY)	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	1998	

SUMMARY STATISTICS

FOR 1998 WATER YEAR

ANNUAL TOTAL	31523.2
ANNUAL MEAN	86.4
HIGHEST DAILY MEAN	700
LOWEST DAILY MEAN	3.4
ANNUAL SEVEN-DAY MINIMUM	3.5
ANNUAL RUNOFF (AC-FT)	62530
ANNUAL RUNOFF (CFSM)	2.84
ANNUAL RUNOFF (INCHES)	38.57
10 PERCENT EXCEEDS	184
50 PERCENT EXCEEDS	70
90 PERCENT EXCEEDS	5.7

e Estimated

LOCATION.--Lat 43°17'45", long 122°32'10", in NW 1/4 sec.24, T.26 S., R.2 E., Douglas County, Hydrologic Unit 17100301, Umpqua National Forest, on left bank 0.6 mi upstream from Copeland Creek, 4.7 mi west of town of Toketee Falls, and at mile 67.2.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 1448: 1953(M), 1954, drainage area.

REMARKS.--No estimated daily discharges. Records excellent. Considerable fluctuation caused by powerplants upstream; flow slightly regulated by Diamond Lake and by Lemolo Lake (station 14313000). No diversion upstream from station. Several measurements of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 40,700 ft³/s Dec. 22, 1964, gage height, 19.1 ft, from floodmark, from rating curve extended above 7,200 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 345 ft³/s July 24, 1992; minimum daily, 565 ft³/s Sept. 13, 1959.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1949 - 1998, BY WATER YEAR (WY)

MEAN	930	1284	1792	1816	1840	1772	1869	2021	1648	1070	886	852
MAX	1568	2324	5163	3592	3462	4221	2876	3191	2933	1652	1178	1107
(WY)	1951	1997	1965	1997	1996	1972	1952	1956	1974	1953	1972	1972
MIN	661	754	803	788	670	873	1065	855	700	664	598	612
(WY)	1995	1988	1977	1977	1977	1977	1968	1992	1992	1992	1992	1994

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1949 - 1998
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ANNUAL TOTAL	633525		550769						
ANNUAL MEAN	1736		1509				1480		
HIGHEST ANNUAL MEAN							2080		1956
LOWEST ANNUAL MEAN							897		1977
HIGHEST DAILY MEAN	13200	Jan 1	6420	Jan 17			24300	Dec 22	1964
LOWEST DAILY MEAN	887	Aug 19	860	Aug 29			565	Sep 13	1959
ANNUAL SEVEN-DAY MINIMUM	941	Aug 17	869	Aug 28			587	Sep 2	1992
ANNUAL BUNDOFF (AC-FT)	1257000		1092000				1072000		
10 PERCENT EXCEEDS	2630		2270				2410		
50 PERCENT EXCEEDS	1370		1360				1230		
90 PERCENT EXCEEDS	995		928				765		

14316500 NORTH UMPQUA RIVER ABOVE COPELAND CREEK, NEAR TOKETEE FALLS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June to September 1998.

pH: June to September 1998.

TEMPERATURE: June to September 1998.

DISSOLVED OXYGEN: June to September 1998.

INSTRUMENTATION.--Hydrolab Data Sonde 3.

REMARKS.--Seasonal records only (June to September).

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE FOR PERIOD JUNE TO SEPTEMBER: Maximum recorded, 61 microsiemens Aug. 3-6; minimum recorded, 49 microsiemens June 26, 27.

pH FOR PERIOD JUNE TO SEPTEMBER: Maximum recorded, 8.0 units Aug. 17, but may have been higher during period of missing record; minimum recorded, 7.1 units Aug. 22, but may have been lower during period of missing record.

TEMPERATURE FOR PERIOD JUNE TO SEPTEMBER: Maximum recorded, 14.5°C several days in July and August; minimum recorded, 9.0°C June 26.

DISSOLVED OXYGEN FOR PERIOD JUNE TO SEPTEMBER: Maximum recorded, 11.4 mg/L June 26, minimum recorded, 6.6 mg/L July 30.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), JUNE TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	53	52	52	60	59	60	56	55	55
2	---	---	---	53	52	53	60	59	60	55	55	55
3	---	---	---	54	52	53	61	60	60	55	55	55
4	---	---	---	54	53	53	61	60	61	55	55	55
5	---	---	---	55	53	54	61	60	60	55	55	55
6	---	---	---	55	54	54	61	60	61	55	54	54
7	---	---	---	54	54	54	60	55	58	54	54	54
8	---	---	---	55	55	55	56	55	55	54	54	54
9	---	---	---	55	54	54	56	55	55	55	54	54
10	---	---	---	54	54	54	56	55	56	54	53	53
11	---	---	---	55	54	54	55	54	55	55	53	54
12	---	---	---	55	54	54	56	54	55	55	54	54
13	---	---	---	55	54	55	55	53	54	55	54	54
14	---	---	---	56	55	55	55	54	54	55	54	54
15	---	---	---	56	55	56	55	54	54	55	54	54
16	---	---	---	56	55	56	55	54	54	56	54	55
17	---	---	---	57	56	57	55	53	54	55	55	55
18	---	---	---	58	57	57	53	53	53	56	55	56
19	---	---	---	59	57	57	54	53	53	55	54	54
20	---	---	---	59	57	58	53	53	53	---	---	---
21	---	---	---	58	58	59	56	53	55	---	---	---
22	---	---	---	---	---	---	55	54	55	---	---	---
23	---	---	---	59	58	59	55	54	55	---	---	---
24	---	---	---	59	57	58	55	54	55	---	---	---
25	---	---	---	58	57	58	56	55	55	---	---	---
26	50	49	49	59	57	58	55	55	55	---	---	---
27	50	49	50	59	59	59	55	54	54	---	---	---
28	51	50	51	59	59	59	56	54	55	---	---	---
29	52	51	52	59	59	59	56	55	55	---	---	---
30	53	52	52	60	59	59	56	55	55	---	---	---
31	---	---	---	60	59	59	56	55	56	---	---	---
MONTH	---	---	---	---	---	---	61	53	56	---	---	---

PH, WATER, WHOLE, FIELD, STANDARD UNITS, JUNE TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	---	---	---	---	---	---	---	---	7.8	7.4	7.8	7.2
2	---	---	---	---	---	---	---	---	7.7	7.4	7.8	7.3
3	---	---	---	---	---	---	---	---	7.7	7.4	7.8	7.3
4	---	---	---	---	---	---	---	---	7.7	7.4	7.8	7.3
5	---	---	---	---	---	---	---	---	7.7	7.4	7.8	7.3
6	---	---	---	---	---	---	---	---	7.8	7.4	7.8	7.3
7	---	---	---	---	---	---	---	---	7.8	7.5	7.8	7.3
8	---	---	---	---	---	---	---	---	7.9	7.5	7.7	7.3
9	---	---	---	---	---	---	---	---	7.9	7.5	7.7	7.4
10	---	---	---	---	---	---	7.7	7.5	7.9	7.5	7.7	7.4
11	---	---	---	---	---	---	7.7	7.5	7.8	7.4	7.7	7.4
12	---	---	---	---	---	---	7.7	7.5	7.8	7.4	7.7	7.4
13	---	---	---	---	---	---	7.7	7.5	7.8	7.4	7.7	7.3
14	---	---	---	---	---	---	7.7	7.5	7.8	7.4	7.7	7.4
15	---	---	---	---	---	---	7.7	7.5	7.9	7.5	7.8	7.4
16	---	---	---	---	---	---	7.8	7.4	7.9	7.5	7.7	7.4
17	---	---	---	---	---	---	7.8	7.4	8.0	7.5	7.7	7.4
18	---	---	---	---	---	---	7.8	7.5	7.9	7.5	7.6	7.4
19	---	---	---	---	---	---	7.8	7.5	7.9	7.5	7.7	7.4
20	---	---	---	---	---	---	7.8	7.5	7.9	7.5	---	---
21	---	---	---	---	---	---	7.8	7.5	7.7	7.2	---	---
22	---	---	---	---	---	---	---	---	7.6	7.1	---	---
23	---	---	---	---	---	---	7.9	7.5	7.6	7.2	---	---
24	---	---	---	---	---	---	7.8	7.3	7.6	7.2	---	---
25	---	---	---	---	---	---	7.7	7.3	7.6	7.2	---	---
26	---	---	---	---	---	---	7.7	7.4	7.6	7.2	---	---
27	---	---	---	---	---	---	7.7	7.4	7.6	7.2	---	---
28	---	---	---	---	---	---	7.6	7.4	7.6	7.2	---	---
29	---	---	---	---	---	---	7.6	7.4	7.6	7.2	---	---
30	---	---	---	---	---	---	7.7	7.4	7.7	7.2	---	---
31	---	---	---	---	---	---	7.7	7.4	7.7	7.2	---	---
MONTH	---	---	---	---	---	---	---	---	8.0	7.1	---	---

UMPQUA RIVER BASIN

14316500 NORTH UMPQUA RIVER ABOVE COPELAND CREEK NEAR TOKETEE FALLS, OR--Continued

TEMPERATURE, WATER (DEG. C), JUNE TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	12.5	12.0	12.0	14.0	12.5	13.0	13.0	11.5	12.0
2	---	---	---	12.5	11.5	12.0	14.0	12.5	13.0	13.5	12.0	12.5
3	---	---	---	12.5	11.5	12.0	14.5	13.0	13.5	13.0	12.0	12.5
4	---	---	---	12.5	12.0	12.0	14.5	13.0	14.0	13.5	12.0	12.5
5	---	---	---	13.0	12.0	12.5	14.0	13.0	13.5	13.5	12.0	12.5
6	---	---	---	13.0	12.5	13.0	14.0	13.0	13.5	13.0	12.0	12.5
7	---	---	---	13.5	12.5	13.0	14.0	12.5	13.5	12.0	11.5	12.0
8	---	---	---	14.0	13.0	13.5	13.5	12.5	13.0	11.5	10.5	11.0
9	---	---	---	14.0	13.0	13.5	14.0	12.5	13.0	11.0	10.5	11.0
10	---	---	---	13.5	13.0	13.0	14.0	13.0	13.0	11.0	10.0	10.5
11	---	---	---	13.5	12.5	13.0	14.0	13.0	13.0	11.0	10.0	10.0
12	---	---	---	13.0	12.5	13.0	14.0	13.0	13.0	11.5	10.0	10.5
13	---	---	---	13.0	12.5	12.5	14.5	13.0	13.5	11.5	10.5	11.0
14	---	---	---	12.5	12.0	12.5	14.5	13.5	14.0	12.0	10.5	11.0
15	---	---	---	12.5	12.0	12.0	14.5	13.0	13.5	12.0	11.0	11.5
16	---	---	---	13.0	12.0	12.5	14.0	12.5	13.0	12.0	11.0	11.0
17	---	---	---	13.5	12.5	13.0	13.5	12.0	12.5	11.0	9.5	10.5
18	---	---	---	13.5	12.5	13.0	12.5	11.5	12.0	10.0	9.5	10.0
19	---	---	---	13.5	12.5	13.0	12.5	11.0	12.0	10.0	9.5	9.5
20	---	---	---	13.5	12.5	13.0	12.5	11.5	12.0	---	---	---
21	---	---	---	14.5	13.0	13.5	12.5	11.5	12.0	---	---	---
22	---	---	---	---	---	---	13.0	11.5	12.0	---	---	---
23	---	---	---	14.5	13.5	14.0	13.0	12.0	12.5	---	---	---
24	---	---	---	14.0	13.5	13.5	13.0	11.5	12.0	---	---	---
25	---	---	---	14.5	13.5	14.0	13.0	11.5	12.0	---	---	---
26	10.0	9.0	9.5	14.5	13.5	14.0	12.5	11.0	12.0	---	---	---
27	10.5	9.5	10.0	14.5	14.0	14.0	12.5	11.0	11.5	---	---	---
28	11.5	10.5	11.0	14.0	13.0	14.0	13.0	11.5	12.0	---	---	---
29	12.0	11.0	11.5	13.5	13.0	13.5	13.0	11.5	12.0	---	---	---
30	12.5	11.5	12.0	14.0	12.5	13.0	13.5	12.0	12.5	---	---	---
31	---	---	---	14.0	13.0	13.0	13.0	12.0	12.5	---	---	---
MONTH	---	---	---	---	---	---	14.5	11.0	12.7	---	---	---

OXYGEN DISSOLVED (MG/L), JUNE TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	---	---	---	10.4	10.0	10.2	8.2	7.0	7.3	9.9	8.9	9.4
2	---	---	---	10.3	9.9	10.1	8.1	7.1	7.5	8.9	8.9	8.9
3	---	---	---	10.4	10.0	10.2	8.4	7.2	7.7	9.9	8.8	9.0
4	---	---	---	10.2	9.8	10.0	8.6	7.6	8.0	9.8	8.8	8.9
5	---	---	---	10.2	9.9	9.9	8.9	8.1	8.4	9.8	8.8	9.3
6	---	---	---	10.2	9.8	10.0	8.9	8.0	8.4	9.8	8.8	9.6
7	---	---	---	10.1	9.7	9.9	10.6	9.9	10.2	9.8	9.8	9.8
8	---	---	---	9.8	8.7	9.4	8.6	8.3	8.4	10.8	9.8	9.9
9	---	---	---	10.0	9.8	10.1	8.6	8.5	8.6	10.8	8.8	9.7
10	---	---	---	10.2	9.8	10.0	8.8	8.6	8.7	8.8	8.8	8.8
11	---	---	---	10.3	10.0	10.1	9.0	8.8	8.8	8.8	7.8	8.0
12	---	---	---	10.3	10.0	10.1	9.2	8.9	9.0	7.8	7.8	7.8
13	---	---	---	10.2	9.5	9.9	9.2	9.1	9.1	8.8	7.8	7.9
14	---	---	---	9.9	9.5	9.7	9.4	9.2	9.3	8.9	7.8	8.7
15	---	---	---	10.1	9.7	9.9	9.7	9.4	9.5	8.9	8.9	8.9
16	---	---	---	9.9	9.6	9.8	9.9	9.6	9.7	9.9	8.9	9.3
17	---	---	---	9.9	9.5	9.7	10.2	9.8	9.9	10.9	9.9	10.0
18	---	---	---	9.9	9.5	9.7	10.4	10.0	10.2	11.1	10.0	10.6
19	---	---	---	9.8	9.2	9.5	10.5	10.2	10.3	11.0	10.0	10.9
20	---	---	---	9.5	9.0	9.3	10.5	10.3	10.4	---	---	---
21	---	---	---	9.8	9.4	9.4	10.6	9.7	10.0	---	---	---
22	---	---	---	---	---	---	9.4	9.1	9.3	---	---	---
23	---	---	---	9.8	9.3	9.6	9.4	9.1	9.3	---	---	---
24	---	---	---	10.4	9.5	10.0	9.5	9.0	9.3	---	---	---
25	---	---	---	9.5	7.9	8.5	9.5	9.0	9.3	---	---	---
26	11.4	11.1	11.2	7.9	7.1	7.4	9.7	9.1	9.4	---	---	---
27	11.3	10.8	11.1	7.1	6.8	7.0	9.7	9.1	9.4	---	---	---
28	10.8	10.5	10.7	7.1	6.8	6.9	9.7	9.1	9.4	---	---	---
29	10.6	10.1	10.4	7.0	6.7	6.9	9.8	9.2	9.5	---	---	---
30	10.4	10.0	10.2	6.9	6.6	6.8	9.9	9.3	9.6	---	---	---
31	---	---	---	7.4	6.8	6.9	9.9	9.4	9.7	---	---	---
MONTH	---	---	---	---	---	---	10.6	7.0	9.1	---	---	---

LOCATION.--Lat 43°21'00", long 122°43'40", in N 1/2 sec.32, T.25-1/2 S., R.1 E., Douglas County, Hydrologic Unit 17100301, in Umpqua National Forest, on right bank in Canton Creek Forest Service Park, 200 ft downstream from Canton Creek, 19 mi northeast of Glide, and at mile 0.5.

PERIOD OF RECORD.--Annual maximum, water year 1956, June 1956 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,128.55 ft above sea level (levels by Federal Highway Administration). October 1955 to June 1956, nonrecording gage at site 100 ft upstream at same datum.

REMARKS.--Records good. No regulation or diversion upstream from station. Several measurements of water temperature were made during the year. National Weather Service satellite telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1957-98), 736 ft³/s, 44.06 in/yr, 533,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 51,000 ft³/s Dec. 22, 1964, gage height, 25.6 ft, from floodmark, from rating curve extended above 13,000 ft³/s on basis of slope-area measurement at 17.96 ft; minimum discharge, 27 ft³/s Sept. 24-28, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 8,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	2230	9,640	9.23	Jan. 17	0500	*10,100	*9.44
Jan. 11	1330	8,430	8.59				

Minimum discharge, 44 ft³/s Sept. 15-18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e80	1210	441	506	917	2160	684	529	1410	157	74	50
2	e310	702	391	1440	772	2680	635	536	1040	154	74	49
3	e290	486	345	1200	679	2450	611	448	811	148	72	49
4	e210	373	314	1160	615	1730	614	408	679	143	71	48
5	e390	312	286	898	545	1370	601	436	564	137	69	47
6	e410	283	263	764	534	1090	603	408	485	132	68	47
7	e320	361	304	1820	494	899	646	374	453	127	68	46
8	e270	346	493	2190	455	878	662	366	430	124	67	46
9	e600	306	421	1450	437	959	654	386	382	121	65	47
10	929	276	370	1430	432	958	977	369	417	118	64	47
11	649	251	346	5820	560	1120	1430	383	492	115	63	47
12	882	230	330	4060	616	1640	1310	527	416	112	63	47
13	623	214	311	4730	721	1450	1040	775	358	109	62	46
14	450	201	298	3650	892	1230	862	780	317	105	61	45
15	343	183	351	4680	1360	1110	790	1320	288	104	59	45
16	277	171	2680	5010	1240	1090	714	1210	267	99	59	44
17	235	200	4570	7130	918	890	634	1040	251	97	59	44
18	205	230	2040	3320	766	719	586	893	236	94	59	46
19	183	333	1170	2610	833	614	594	855	224	91	59	63
20	168	773	852	2150	925	591	581	1260	214	91	58	58
21	153	704	668	1720	2060	625	567	1490	203	89	57	52
22	142	493	538	1920	2210	1760	578	1270	194	87	57	49
23	139	402	478	2740	1580	2840	706	974	188	85	57	47
24	136	662	432	2290	1170	2210	1070	882	194	83	57	47
25	128	1220	407	2230	1010	1540	907	2110	202	81	56	48
26	121	912	379	1960	882	1350	724	1770	225	80	55	62
27	116	674	352	1620	781	1190	609	1410	208	80	54	58
28	112	526	341	1310	1170	1050	576	1120	185	79	54	52
29	379	458	404	1290	---	883	572	2560	169	78	52	49
30	2220	496	516	1310	---	758	551	3680	162	79	51	48
31	3780	---	482	1110	---	705	---	2180	---	77	50	---
TOTAL	15250	13988	21573	75518	25574	40539	22088	32749	11664	3276	1894	1473
MEAN	492	466	696	2436	913	1308	736	1056	389	106	61.1	49.1
MAX	3780	1220	4570	7130	2210	2840	1430	3680	1410	157	74	63
MIN	80	171	263	506	432	591	551	366	162	77	50	44
AC-FT	30250	27750	42790	149800	50730	80410	43810	64960	23140	6500	3760	29220
CFSM	2.17	2.05	3.07	10.7	4.02	5.76	3.24	4.65	1.71	.47	.27	.22
IN.	2.50	2.29	3.54	12.38	4.19	6.64	3.62	5.37	1.91	.54	.31	.22

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1998,, BY WATER YEAR (WY)

MEAN	174	895	1509	1513	1398	1250	986	635	279	98.6	61.0	70.3
MAX	536	2887	5391	3415	3195	2774	2017	1337	780	193	158	260
(WY)	1957	1974	1965	1970	1986	1993	1993	1963	1984	1983	1976	1986
MIN	31.5	56.5	62.6	108	142	211	287	165	87.5	56.6	35.9	34.8
(WY)	1988	1994	1977	1977	1977	1992	1968	1992	1992	1973	1994	1994

WATER YEARS 1957 - 1998

ANNUAL TOTAL	262995		265586			
ANNUAL MEAN	721		728		736	
HIGHEST ANNUAL MEAN					1253	1974
LOWEST ANNUAL MEAN					239	1977
HIGHEST DAILY MEAN	10100	Jan 1	7130	Jan 17	33000	Dec 22 1964
LOWEST DAILY MEAN	55	Aug 16	44	Sep 16	27	Sep 25 1994
ANNUAL SEVEN-DAY MINIMUM	56	Aug 13	45	Sep 12	28	Sep 21 1994
ANNUAL RUNOFF (AC-FT)	521700		526800		533200	
ANNUAL RUNOFF (CFSM)	3.17		3.21		3.24	
ANNUAL RUNOFF (INCHES)	43.10		43.52		44.06	
10 PERCENT EXCEEDS	1820		1720		1750	
50 PERCENT EXCEEDS	379		437		336	
90 PERCENT EXCEEDS	82		57		48	

e Estimated

UMPQUA RIVER BASIN

14317450 NORTH UMPQUA RIVER NEAR IDLEYLD PARK, OR.

LOCATION.--Lat 43°19'29", long 122°59'55", IN SW 1/4 NE 1/4 sec.12, T.26 S., R.3 W., Douglas County, Hydrologic Unit 17100301, on right bank 0.5 mi upstream from Rock Creek bridge, 2 mi east of Idleyld Park, and at mile 36.3.

DRAINAGE AREA.--886 mi², at former site 0.5 mi downstream.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: January to September 1998.

pH: January to September 1998.

TEMPERATURE: January to September 1998.

DISSOLVED OXYGEN: January to September 1998.

INSTRUMENTATION.--Water-quality monitor and data logger since January 1998.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE FOR PERIOD JANUARY TO SEPTEMBER: Maximum, 62 microsiemens Sept. 4-8; minimum, 35 microsiemens Mar. 23, 24.

pH FOR PERIOD JANUARY TO SEPTEMBER: Maximum, 8.4 units Aug. 23; minimum, 7.3 units several days in January, March, April, May.

WATER TEMPERATURE FOR PERIOD JANUARY TO SEPTEMBER: Maximum, 20.0°C July 28, Aug. 4; minimum, 4.0°C Mar. 7.

DISSOLVED OXYGEN FOR PERIOD JANUARY TO SEPTEMBER: Maximum recorded, 13.4 mg/L Apr. 17; minimum recorded, 8.4 mg/L Aug. 15.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	---	---	---	---	---	---	---	---	---
2	---	---	---	---	---	---	---	---	---	---	---	---
3	---	---	---	---	---	---	---	---	---	---	---	---
4	---	---	---	---	---	---	---	---	---	---	---	---
5	---	---	---	---	---	---	---	---	---	---	---	---
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	---	---	---	---	---	---	---	---	---	---	---	---
9	---	---	---	---	---	---	---	---	---	---	---	---
10	---	---	---	---	---	---	---	---	---	---	---	---
11	---	---	---	---	---	---	---	---	---	---	---	---
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	---	---	---	---	---	---	---	---	---	47	45	45
24	---	---	---	---	---	---	---	---	---	46	45	45
25	---	---	---	---	---	---	---	---	---	46	45	46
26	---	---	---	---	---	---	---	---	---	47	46	47
27	---	---	---	---	---	---	---	---	---	47	47	47
28	---	---	---	---	---	---	---	---	---	49	47	48
29	---	---	---	---	---	---	---	---	---	49	48	49
30	---	---	---	---	---	---	---	---	---	48	47	48
31	---	---	---	---	---	---	---	---	---	49	48	49
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	49	49	49	47	43	44	48	47	48	46	44	44
2	50	49	50	43	41	42	49	48	49	44	42	43
3	51	50	50	43	41	42	49	49	49	45	43	43
4	52	51	52	45	43	44	50	49	49	45	44	44
5	52	49	51	47	45	46	48	48	48	45	44	44
6	49	49	49	48	47	47	50	50	50	44	44	44
7	50	49	49	49	48	48	50	50	50	47	44	45
8	50	49	49	49	49	49	51	50	50	45	44	45
9	50	50	50	49	49	49	51	50	50	45	44	44
10	50	50	50	49	48	49	50	49	49	46	45	45
11	50	50	50	48	47	48	49	48	48	47	46	46
12	50	49	49	47	44	45	48	48	48	47	46	47
13	50	49	49	44	44	44	49	48	48	47	47	47
14	49	48	49	44	43	44	49	49	49	47	47	47
15	48	47	47	45	44	44	50	49	50	47	44	45
16	48	47	47	45	44	44	51	50	51	46	45	45
17	49	48	49	44	44	44	52	51	51	46	46	46
18	49	49	49	45	44	45	52	51	51	47	46	47
19	49	48	49	45	44	44	52	51	52	47	47	47
20	48	47	47	46	45	45	52	51	52	47	45	46
21	47	43	44	47	45	46	52	50	51	46	44	45
22	46	44	45	46	36	43	51	49	50	47	46	46
23	47	46	46	36	35	36	50	45	47	48	47	47
24	48	47	48	38	35	36	45	44	45	48	46	47
25	48	48	48	40	38	39	45	44	45	47	43	45
26	49	48	49	42	40	41	47	45	45	45	44	45
27	50	49	50	43	42	42	47	46	47	47	45	45
28	50	47	49	44	43	43	48	47	47	48	46	47
29	---	---	---	45	44	44	47	45	46	47	43	45
30	---	---	---	47	45	45	46	45	45	45	43	43
31	---	---	---	48	46	47	---	---	---	46	45	46
MONTH	52	43	49	49	35	44	52	44	49	48	42	45

UMPQUA RIVER BASIN

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14317450 NORTH UMPQUA RIVER NEAR IDLEYLD PARK, OR--Continued

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	47	46	46	56	55	56	60	58	59	61	60	61
2	47	46	47	56	55	56	60	59	60	61	60	61
3	47	47	47	56	55	55	60	59	60	61	61	61
4	48	47	47	56	55	55	61	60	60	62	61	62
5	49	48	48	56	55	56	61	60	60	62	61	61
6	50	49	49	57	56	56	60	56	59	62	61	61
7	50	48	49	58	56	56	58	57	58	62	60	61
8	50	49	49	57	56	57	58	57	58	62	59	60
9	51	49	49	58	55	57	58	57	58	60	58	59
10	50	49	49	58	56	57	59	58	58	60	58	59
11	49	48	48	57	56	56	59	58	58	59	58	59
12	49	48	48	57	57	57	59	58	59	59	58	59
13	51	49	49	57	56	57	60	59	59	59	58	59
14	49	49	49	57	56	57	60	59	59	60	59	59
15	50	49	49	58	56	57	60	59	59	60	59	59
16	50	49	50	58	57	57	60	59	60	60	59	59
17	50	49	50	58	57	58	60	59	60	60	59	59
18	51	50	50	59	56	57	60	59	60	---	---	---
19	53	51	52	58	57	57	60	59	60	---	---	---
20	53	51	52	58	58	58	60	59	60	---	---	---
21	53	51	52	59	57	58	59	59	59	60	59	59
22	53	52	53	58	57	57	59	59	59	60	59	59
23	53	53	53	58	56	57	59	59	59	60	59	60
24	53	52	53	58	56	57	59	59	59	61	60	60
25	53	52	53	57	56	56	60	59	59	61	60	60
26	53	53	53	57	56	57	60	59	59	61	60	61
27	54	52	53	58	56	57	60	59	60	61	60	61
28	54	52	53	59	58	58	61	59	60	61	60	61
29	55	54	54	59	58	59	61	60	60	61	60	61
30	55	54	55	60	59	59	61	60	60	61	60	61
31	---	---	---	60	59	59	61	60	60	---	---	---
MONTH	55	46	50	60	55	57	61	56	59	---	---	---

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	---	---	---	---	---	---	---	---	7.6	7.5	7.6	7.4
2	---	---	---	---	---	---	---	---	7.7	7.5	7.7	7.4
3	---	---	---	---	---	---	---	---	7.7	7.6	7.6	7.5
4	---	---	---	---	---	---	---	---	7.8	7.6	7.6	7.5
5	---	---	---	---	---	---	---	---	7.8	7.6	7.6	7.5
6	---	---	---	---	---	---	---	---	7.7	7.6	7.6	7.5
7	---	---	---	---	---	---	---	---	7.7	7.6	7.7	7.5
8	---	---	---	---	---	---	---	---	7.7	7.6	7.7	7.5
9	---	---	---	---	---	---	---	---	7.7	7.6	7.7	7.5
10	---	---	---	---	---	---	---	---	7.7	7.6	7.7	7.5
11	---	---	---	---	---	---	---	---	7.7	7.6	7.7	7.5
12	---	---	---	---	---	---	---	---	7.7	7.6	7.6	7.4
13	---	---	---	---	---	---	---	---	7.7	7.6	7.5	7.3
14	---	---	---	---	---	---	---	---	7.7	7.6	7.5	7.4
15	---	---	---	---	---	---	---	---	7.6	7.5	7.5	7.3
16	---	---	---	---	---	---	---	---	7.6	7.5	7.5	7.3
17	---	---	---	---	---	---	---	---	7.7	7.5	7.5	7.4
18	---	---	---	---	---	---	---	---	7.7	7.5	7.7	7.4
19	---	---	---	---	---	---	---	---	7.7	7.5	7.7	7.6
20	---	---	---	---	---	---	---	---	7.6	7.5	7.7	7.6
21	---	---	---	---	---	---	---	---	7.6	7.4	7.7	7.6
22	---	---	---	---	---	---	---	---	7.5	7.4	7.7	7.5
23	---	---	---	---	---	---	7.4	7.3	7.6	7.5	7.5	7.4
24	---	---	---	---	---	---	7.4	7.3	7.6	7.5	7.6	7.4
25	---	---	---	---	---	---	7.4	7.3	7.6	7.5	7.6	7.4
26	---	---	---	---	---	---	7.5	7.4	7.6	7.5	7.5	7.4
27	---	---	---	---	---	---	7.5	7.5	7.6	7.5	7.5	7.4
28	---	---	---	---	---	---	7.5	7.5	7.6	7.5	7.6	7.4
29	---	---	---	---	---	---	7.6	7.5	---	---	7.6	7.4
30	---	---	---	---	---	---	7.6	7.5	---	---	7.6	7.4
31	---	---	---	---	---	---	7.6	7.5	---	---	7.6	7.5
MONTH	---	---	---	---	---	---	---	---	7.8	7.4	7.7	7.3

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.6	7.4	7.5	7.4	7.7	7.4	8.1	7.5	8.3	7.4	8.1	7.4
2	7.6	7.4	7.5	7.4	7.7	7.5	8.1	7.4	8.2	7.4	8.1	7.4
3	7.6	7.5	7.6	7.4	7.7	7.5	8.1	7.5	8.2	7.4	8.1	7.4
4	7.6	7.5	7.6	7.3	7.7	7.5	8.1	7.4	8.2	7.4	8.1	7.4
5	7.6	7.5	7.5	7.4	7.7	7.5	8.1	7.4	8.2	7.4	8.1	7.4
6	7.6	7.5	7.5	7.3	7.7	7.5	8.0	7.4	8.1	7.4	8.1	7.4
7	7.6	7.5	7.6	7.4	7.8	7.5	8.1	7.4	8.3	7.5	8.1	7.4
8	7.6	7.5	7.5	7.4	7.8	7.5	8.1	7.4	8.2	7.5	7.9	7.4
9	7.6	7.4	7.5	7.4	7.8	7.5	8.1	7.4	8.3	7.5	8.2	7.5
10	7.6	7.4	7.5	7.4	7.7	7.5	8.1	7.4	8.2	7.4	8.1	7.5
11	7.5	7.4	7.6	7.4	7.8	7.5	8.2	7.5	8.2	7.4	8.0	7.4
12	7.5	7.4	7.6	7.4	7.8	7.5	8.1	7.4	8.2	7.4	8.0	7.4
13	7.7	7.4	7.6	7.4	7.8	7.5	8.1	7.4	8.2	7.4	8.0	7.4
14	7.7	7.5	7.7	7.5	7.8	7.5	8.1	7.4	8.2	7.4	8.0	7.4
15	7.7	7.5	7.7	7.5	7.8	7.5	8.1	7.4	8.1	7.4	8.1	7.4
16	7.7	7.5	7.7	7.5	7.8	7.5	8.1	7.4	8.2	7.5	8.0	7.4
17	7.7	7.3	7.7	7.5	7.8	7.5	8.1	7.4	8.2	7.4	8.0	7.4
18	7.7	7.5	7.7	7.5	7.9	7.5	8.1	7.4	8.1	7.4	8.1	7.4
19	7.7	7.5	7.7	7.5	7.9	7.5	8.2	7.4	8.1	7.4	8.1	7.4
20	7.7	7.5	7.6	7.5	7.9	7.5	8.2	7.4	8.3	7.4	8.0	7.4
21	7.7	7.5	7.6	7.4	7.9	7.5	8.1	7.4	8.3	7.5	7.9	7.4
22	7.7	7.5	7.7	7.5	8.0	7.5	8.1	7.4	8.3	7.5	7.9	7.4
23	7.6	7.5	7.7	7.4	8.0	7.5	8.3	7.4	8.4	7.5	7.9	7.4
24	7.6	7.4	7.6	7.4	7.9	7.5	8.3	7.4	8.3	7.5	8.0	7.4
25	7.6	7.4	7.7	7.5	7.8	7.5	8.2	7.4	8.3	7.5	8.0	7.4
26	7.6	7.4	7.7	7.6	7.9	7.4	8.2	7.4	8.3	7.5	7.9	7.4
27	7.5	7.4	7.7	7.6	7.9	7.4	8.2	7.4	8.2	7.5	7.8	7.4
28	7.5	7.3	7.8	7.5	7.9	7.4	8.2	7.4	8.2	7.5	7.8	7.4
29	7.6	7.3	7.6	7.5	8.0	7.4	8.2	7.4	8.2	7.5	8.0	7.4
30	7.6	7.3	7.6	7.4	7.9	7.5	8.3	7.4	8.1	7.4	7.8	7.4
31	---	---	7.6	7.5	---	---	8.3	7.4	8.1	7.4	---	---
MONTH	7.7	7.3	7.8	7.3	8.0	7.4	8.3	7.4	8.4	7.4	8.2	7.4

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	OCTOBER				NOVEMBER				DECEMBER				JANUARY		
1	---	---	---		---	---	---		---	---	---		---	---	---
2	---	---	---		---	---	---		---	---	---		---	---	---
3	---	---	---		---	---	---		---	---	---		---	---	---
4	---	---	---		---	---	---		---	---	---		---	---	---
5	---	---	---		---	---	---		---	---	---		---	---	---
6	---	---	---		---	---	---		---	---	---		---	---	---
7	---	---	---		---	---	---		---	---	---		---	---	---
8	---	---	---		---	---	---		---	---	---		---	---	---
9	---	---	---		---	---	---		---	---	---		---	---	---
10	---	---	---		---	---	---		---	---	---		---	---	---
11	---	---	---		---	---	---		---	---	---		---	---	---
12	---	---	---		---	---	---		---	---	---		---	---	---
13	---	---	---		---	---	---		---	---	---		---	---	---
14	---	---	---		---	---	---		---	---	---		---	---	---
15	---	---	---		---	---	---		---	---	---		---	---	---
16	---	---	---		---	---	---		---	---	---		---	---	---
17	---	---	---		---	---	---		---	---	---		---	---	---
18	---	---	---		---	---	---		---	---	---		---	---	---
19	---	---	---		---	---	---		---	---	---		---	---	---
20	---	---	---		---	---	---		---	---	---		---	---	---
21	---	---	---		---	---	---		---	---	---		---	---	---
22	---	---	---		---	---	---		---	---	---		---	---	---
23	---	---	---		---	---	---		---	---	---		6.5	6.0	6.5
24	---	---	---		---	---	---		---	---	---		6.5	6.5	6.5
25	---	---	---		---	---	---		---	---	---		6.5	6.5	6.5
26	---	---	---		---	---	---		---	---	---		7.0	6.5	7.0
27	---	---	---		---	---	---		---	---	---		7.0	6.5	7.0
28	---	---	---		---	---	---		---	---	---		7.0	6.5	6.5
29	---	---	---		---	---	---		---	---	---		7.0	6.5	7.0
30	---	---	---		---	---	---		---	---	---		7.0	6.0	6.0
31	---	---	---		---	---	---		---	---	---		6.0	5.5	5.5
MONTH	---	---	---		---	---	---		---	---	---		---	---	---

UMPQUA RIVER BASIN

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14317450 NORTH UMPQUA RIVER NEAR IDLEYLD PARK, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	6.0	6.0	6.0	7.0	6.5	6.5	6.5	6.0	6.0	12.0	10.0	11.0
2	6.0	6.0	6.0	7.0	6.5	6.5	7.5	6.5	7.0	11.5	10.5	11.0
3	6.5	6.0	6.0	6.5	5.5	5.5	7.5	6.5	7.0	11.5	9.5	10.5
4	6.5	6.5	6.5	5.5	5.0	5.5	7.5	6.5	7.0	11.5	10.0	10.5
5	6.5	6.0	6.0	5.5	4.5	5.0	7.5	6.5	7.0	11.0	9.5	10.5
6	6.5	6.0	6.0	5.5	4.5	5.0	7.5	6.5	7.0	10.5	10.0	10.5
7	6.5	6.0	6.0	5.0	4.0	4.5	7.5	6.5	7.0	11.5	9.5	10.5
8	6.0	5.5	6.0	5.5	4.5	5.0	7.0	6.0	6.5	11.5	9.5	10.5
9	6.0	5.5	6.0	6.0	5.0	5.5	7.5	6.5	7.0	9.5	8.5	9.0
10	5.5	5.0	5.5	6.0	5.0	5.5	7.5	6.5	7.0	8.5	8.0	8.0
11	6.0	5.5	5.5	7.0	5.5	6.5	7.0	6.5	7.0	8.5	8.0	8.0
12	6.5	5.5	6.0	7.0	6.5	7.0	7.0	6.0	6.5	9.0	8.0	8.5
13	6.5	6.0	6.0	8.0	7.0	7.5	7.0	6.0	6.5	8.5	8.0	8.0
14	6.0	5.5	6.0	8.0	7.0	7.5	7.0	6.0	6.5	8.5	8.0	8.0
15	6.0	6.0	6.0	8.5	7.5	8.0	7.0	6.0	6.5	8.0	7.5	8.0
16	6.0	5.5	5.5	8.5	7.5	8.0	8.0	6.0	7.0	8.5	7.0	8.0
17	5.5	5.0	5.5	8.0	6.5	7.0	8.5	6.5	7.5	8.5	7.5	8.0
18	6.0	5.5	5.5	7.0	6.0	6.5	9.5	8.0	8.5	10.5	7.5	9.0
19	6.5	6.0	6.0	7.5	6.0	7.0	10.5	9.0	9.5	10.0	9.0	9.5
20	6.5	5.5	6.0	8.5	6.5	7.5	10.5	9.0	9.5	9.5	8.5	8.5
21	5.5	5.0	5.5	8.5	7.5	8.0	11.0	9.0	10.0	9.0	8.0	8.5
22	6.0	5.5	5.5	8.0	8.0	8.0	10.5	9.5	10.0	11.0	8.5	9.5
23	6.0	5.5	5.5	8.0	7.5	7.5	10.5	9.0	10.0	10.5	9.5	10.0
24	6.0	5.5	6.0	7.5	7.0	7.0	9.0	8.0	8.5	9.5	8.5	9.0
25	5.5	5.0	5.5	8.0	7.5	7.5	9.0	7.0	8.0	8.5	8.0	8.5
26	5.5	4.5	5.0	7.5	6.5	7.0	9.5	7.5	8.5	8.5	7.5	8.0
27	5.5	5.0	5.5	6.5	5.5	6.0	11.0	8.0	9.5	9.0	7.5	8.5
28	6.5	5.5	6.0	5.5	5.0	5.5	11.5	9.5	10.5	9.0	8.0	8.5
29	---	---	---	6.5	5.0	5.5	12.0	10.0	11.0	9.0	8.5	9.0
30	---	---	---	5.5	5.0	5.5	12.0	10.0	11.0	10.5	8.5	9.0
31	---	---	---	6.5	5.5	6.0	---	---	---	11.5	9.0	10.0
MONTH	6.5	4.5	5.8	8.5	4.0	6.5	12.0	6.0	8.0	12.0	7.0	9.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	12.5	10.0	11.5	15.0	14.0	14.5	18.5	17.0	17.5	17.0	15.5	16.0
2	12.5	11.0	12.0	15.5	14.5	15.0	19.0	17.0	18.0	17.0	15.5	16.0
3	12.5	10.5	11.5	15.5	14.5	15.0	19.0	17.0	18.0	17.5	15.5	16.0
4	13.0	10.5	11.5	16.5	15.0	16.0	20.0	18.0	18.5	17.0	15.5	16.0
5	13.5	11.0	12.5	17.5	15.5	16.5	19.0	18.0	18.5	17.0	15.5	16.0
6	14.0	11.5	12.5	17.5	16.0	17.0	18.0	16.5	17.0	16.5	15.0	15.5
7	14.0	11.5	12.5	17.5	16.5	17.0	18.0	16.5	17.5	16.0	15.0	15.5
8	13.5	11.0	12.0	18.0	17.0	17.5	18.0	16.5	17.0	15.0	13.5	14.5
9	14.0	11.5	12.5	18.0	17.0	17.5	18.0	16.0	17.0	14.0	13.0	13.5
10	13.5	12.0	12.5	18.0	16.0	16.5	18.0	16.5	17.0	13.5	12.0	13.0
11	13.0	11.0	12.0	17.0	15.5	16.0	18.0	16.5	17.0	13.5	12.0	12.5
12	14.5	12.0	13.0	17.5	16.0	17.0	18.5	16.5	17.5	14.0	12.5	13.0
13	15.0	12.5	13.5	17.0	16.0	17.0	19.0	17.0	18.0	14.5	13.0	13.5
14	15.0	12.5	13.5	17.5	16.0	17.0	19.5	17.5	18.5	15.0	13.5	14.0
15	14.5	12.5	13.5	17.5	16.0	17.0	18.0	16.0	17.0	15.0	13.5	14.0
16	13.5	12.0	12.5	17.5	16.0	17.0	18.0	16.0	17.0	15.0	13.5	14.0
17	14.5	11.0	13.0	17.5	16.5	17.0	17.0	15.5	16.5	14.0	13.0	13.5
18	15.0	12.0	13.5	17.5	16.5	17.0	16.5	15.0	15.5	13.0	12.0	12.5
19	15.0	12.5	14.0	17.5	16.5	17.0	16.0	14.5	15.0	12.5	12.0	12.0
20	15.5	12.5	14.0	18.5	17.0	17.5	16.0	15.0	15.5	12.5	11.5	12.0
21	16.0	13.0	14.5	18.5	17.0	18.0	16.5	15.0	15.5	12.5	11.0	11.5
22	16.0	13.5	15.0	18.5	17.5	18.0	17.0	15.0	16.0	12.5	11.0	11.5
23	16.0	14.0	15.0	18.5	18.0	18.5	16.0	15.5	15.5	12.5	11.0	11.5
24	15.5	13.5	14.0	19.0	17.5	18.5	16.5	15.0	15.5	12.5	11.0	11.5
25	13.5	12.0	12.5	18.5	17.5	18.0	16.5	14.5	15.5	12.5	11.5	12.0
26	13.0	11.5	12.0	19.5	18.0	18.5	16.0	14.5	15.0	12.0	11.0	11.5
27	14.0	11.0	12.5	19.5	18.0	18.5	16.5	14.5	15.5	12.0	11.0	11.5
28	15.5	12.5	14.0	20.0	18.5	19.0	16.5	15.0	15.5	12.0	11.0	11.5
29	16.0	13.5	15.0	19.0	17.5	18.5	17.0	15.0	16.0	12.5	11.0	11.5
30	16.0	14.0	14.5	18.0	17.0	17.5	17.0	15.5	16.0	12.5	11.0	11.5
31	---	---	---	17.5	17.0	17.5	17.0	15.0	16.0	---	---	---
MONTH	16.0	10.0	13.1	20.0	14.0	17.2	20.0	14.5	16.6	17.5	11.0	13.3

UMPQUA RIVER BASIN

14317450 NORTH UMPQUA RIVER NEAR IDLEYLD PARK, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	12.5	12.2	12.3	11.0	10.6	10.8
2	---	---	---	---	---	---	12.4	11.8	12.1	11.2	10.7	11.0
3	---	---	---	---	---	---	12.1	11.8	12.0	11.5	10.9	11.2
4	---	---	---	12.1	11.4	11.8	12.2	11.8	12.0	11.4	11.0	11.2
5	---	---	---	12.2	11.3	11.6	12.2	11.8	12.1	11.4	11.1	11.3
6	12.3	12.0	12.2	11.5	11.1	11.3	12.3	11.9	12.1	11.5	11.2	11.4
7	12.3	12.0	12.2	12.0	11.3	11.7	12.4	12.0	12.2	11.8	11.1	11.5
8	12.5	12.1	12.3	12.5	12.0	12.3	12.6	12.1	12.3	11.5	11.1	11.4
9	12.7	12.4	12.6	---	---	---	12.4	11.9	12.2	12.2	11.5	12.0
10	12.7	12.5	12.6	---	---	---	12.3	12.0	12.1	12.3	12.0	12.2
11	12.8	12.4	12.6	---	---	---	12.3	12.0	12.2	12.3	11.9	12.2
12	12.4	12.2	12.3	---	---	---	12.6	12.1	12.3	12.2	11.9	12.1
13	12.5	12.2	12.3	---	---	---	12.6	12.2	12.4	---	---	---
14	12.3	12.1	12.2	---	---	---	12.7	12.2	12.4	---	---	---
15	12.5	12.2	12.4	---	---	---	12.7	12.4	12.5	---	---	---
16	12.4	12.3	12.4	---	---	---	12.7	12.0	12.4	---	---	---
17	12.7	12.3	12.5	---	---	---	13.4	12.1	12.7	---	---	---
18	12.7	12.3	12.5	---	---	---	12.9	12.3	12.7	---	---	---
19	12.4	12.2	12.3	12.7	12.1	12.4	12.6	11.9	12.3	---	---	---
20	12.6	12.2	12.3	12.4	11.7	12.1	12.5	11.8	12.2	---	---	---
21	12.6	12.2	12.4	11.9	11.5	11.8	12.4	11.6	12.0	---	---	---
22	12.6	12.3	12.5	11.8	11.6	11.6	12.1	11.4	11.8	---	---	---
23	12.6	12.3	12.4	11.7	11.6	11.6	11.9	11.4	11.7	---	---	---
24	12.7	12.3	12.4	11.9	11.6	11.7	12.4	11.9	12.2	---	---	---
25	12.9	12.4	12.7	11.8	11.6	11.6	12.7	12.1	12.4	---	---	---
26	13.1	12.6	12.8	12.0	11.6	11.9	12.6	11.7	12.2	---	---	---
27	12.9	12.5	12.7	12.4	12.0	12.3	12.2	11.2	11.7	---	---	---
28	---	---	---	12.6	12.3	12.5	11.7	10.8	11.3	---	---	---
29	---	---	---	12.8	12.3	12.6	11.3	10.4	10.8	11.6	11.4	11.5
30	---	---	---	12.9	12.5	12.7	11.1	10.5	10.8	11.7	11.1	11.5
31	---	---	---	12.7	12.2	12.5	---	---	---	11.5	10.7	11.2
MONTH	---	---	---	---	---	---	13.4	10.4	12.1	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.1	10.4	10.8	10.4	9.7	10.0	9.8	9.1	9.4	9.5	8.8	9.1
2	10.9	10.4	10.6	10.3	9.7	9.9	9.6	9.0	9.3	9.5	8.9	9.1
3	11.0	10.4	10.7	10.4	9.6	10.0	9.8	9.0	9.3	9.5	8.8	9.1
4	11.1	10.4	10.7	10.2	9.4	9.8	9.5	8.9	9.1	9.5	8.9	9.1
5	10.9	10.1	10.6	10.2	9.3	9.7	9.6	8.8	9.1	9.5	8.9	9.2
6	10.8	10.1	10.4	10.1	9.2	9.6	10.0	8.9	9.4	9.7	9.1	9.3
7	10.7	10.1	10.4	10.1	9.2	9.6	9.8	9.1	9.4	9.8	9.1	9.4
8	10.9	10.1	10.6	9.9	9.2	9.5	9.7	9.1	9.3	10.1	9.4	9.7
9	10.8	10.1	10.4	9.8	8.8	9.2	9.8	9.1	9.4	10.6	9.9	10.2
10	10.6	10.1	10.4	9.8	8.7	9.3	9.7	9.0	9.3	10.7	10.0	10.4
11	10.9	9.8	10.3	10.0	9.1	9.5	9.7	9.0	9.3	10.8	10.2	10.4
12	10.3	9.5	9.9	9.9	9.1	9.4	9.6	8.9	9.2	10.6	10.1	10.3
13	10.3	9.5	9.9	9.9	9.1	9.5	9.4	8.7	9.0	10.5	10.0	10.2
14	10.4	9.6	10.0	9.9	9.1	9.5	9.2	8.5	8.8	10.4	9.9	10.1
15	10.3	9.6	10.0	9.9	9.3	9.6	9.2	8.4	8.8	10.4	9.8	10.1
16	10.4	9.8	10.2	10.0	9.2	9.6	9.3	8.7	8.9	10.4	9.8	10.0
17	10.6	9.7	10.2	10.0	9.2	9.6	9.4	8.7	9.0	10.5	9.8	10.1
18	10.4	9.6	10.0	10.1	9.3	9.7	9.5	8.8	9.1	10.9	10.2	10.5
19	10.3	9.5	9.9	10.3	9.2	9.7	9.4	8.8	9.1	11.1	10.6	10.8
20	10.3	9.5	9.9	10.1	9.3	9.6	9.3	8.7	9.1	11.1	10.6	10.9
21	10.3	9.3	9.8	10.1	9.3	9.6	9.5	8.9	9.1	11.3	10.7	11.0
22	10.2	9.3	9.7	10.0	9.2	9.6	9.5	8.9	9.2	11.3	10.8	11.1
23	10.1	9.3	9.7	9.9	9.1	9.5	9.6	8.9	9.2	11.4	10.9	11.1
24	10.3	9.5	9.9	9.9	9.1	9.4	9.6	9.1	9.3	11.5	10.9	11.2
25	10.5	9.9	10.3	10.0	9.1	9.5	9.6	9.0	9.3	11.3	10.9	11.1
26	10.9	10.3	10.6	9.8	9.0	9.3	9.8	9.2	9.4	11.5	11.1	11.2
27	10.8	9.8	10.4	9.9	9.1	9.4	9.7	9.2	9.4	11.7	11.1	11.4
28	10.6	9.6	10.2	9.8	9.0	9.3	9.7	9.1	9.3	11.6	11.3	11.4
29	10.4	9.5	9.9	9.8	9.0	9.3	9.6	9.0	9.2	11.7	11.2	11.4
30	10.4	9.5	9.9	9.9	9.2	9.5	9.6	8.9	9.2	11.6	11.1	11.4
31	---	---	---	9.9	9.1	9.4	9.5	8.9	9.1	---	---	---
MONTH	11.1	9.3	10.2	10.4	8.7	9.6	10.0	8.4	9.2	11.7	8.8	10.3

UMPQUA RIVER BASIN

325

14317500 NORTH UMPQUA RIVER ABOVE ROCK CREEK, NEAR GLIDE, OR.

LOCATION.--Lat 43°19'51", long 123°00'07", near line between SE 1/4 SW 1/4 sec.1, T.26 S., R.3 W., Douglas County, Hydrologic Unit 17100301, on right bank, 0.1 mi upstream from Rock Creek, 5.1 mi northeast of Glide, and at mile 35.8.

DRAINAGE AREA.--886 mi².

PERIOD OF RECORD.--November 1992 January 1998 (discontinued).

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1992 to January 1998.

pH: November 1992 to January 1998.

WATER TEMPERATURE: November 1992 to January 1998.

DISSOLVED OXYGEN: November 1992 to January 1998.

INSTRUMENTATION.--Water-quality monitor and data logger since November 1992.

EXTREMES FOR PERIOD OF RECORD.--

SPECIFIC CONDUCTANCE: Maximum recorded, 77 microsiemens Nov. 25, 1993; minimum recorded, 33 microsiemens Mar. 17, Apr. 20, 1997.

pH: Maximum, 8.5 units Sept. 15, 1993, July 31, Aug. 1, 1994, July 29, 1995; minimum recorded, 6.9 units May 24, 1993.

WATER TEMPERATURE: Maximum, 23.0°C July 21, 1994; minimum, 0.5°C Nov. 26, 1993.

DISSOLVED OXYGEN: Maximum, 14.7 mg/L Dec. 24, 1993; minimum, 6.5 mg/L May 28, 1995.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE FOR PERIOD OCTOBER 1997 TO JANUARY 1998: Maximum recorded (more than 20 percent missing record), 63 microsiemens Oct. 1; minimum recorded (more than 20 percent missing record), 40 microsiemens Dec. 17.

pH FOR PERIOD OCTOBER 1997 TO JANUARY 1998: Maximum recorded (more than 20 percent missing record), 8.0 units Dec. 29; minimum recorded (more than 20 percent missing record), 7.4 units Nov. 25-30.

WATER TEMPERATURE FOR PERIOD OCTOBER 1997 TO JANUARY 1998: Maximum recorded (more than 20 percent missing record), 11.5°C Oct. 1; minimum recorded (more than 20 percent missing record), 1.5°C Dec. 26, 27.

DISSOLVED OXYGEN FOR PERIOD OCTOBER 1997 TO JANUARY 1998: Maximum recorded (more than 20 percent missing record), 14.4 mg/L Dec. 29; minimum recorded (more than 20 percent missing record), 10.5 mg/L Oct. 1.

SPECIFIC CONDUCTANCE (MICROSIEMENS/CM AT 25 DEG.C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	63	60	62	---	---	---	52	50	51	53	49	51
2	---	---	---	---	---	---	52	50	51	50	45	47
3	---	---	---	---	---	---	53	50	51	49	46	47
4	---	---	---	---	---	---	53	52	52	50	45	46
5	---	---	---	---	---	---	54	51	53	54	47	50
6	---	---	---	---	---	---	54	53	53	54	49	51
7	---	---	---	---	---	---	55	53	54	52	46	49
8	---	---	---	---	---	---	53	51	52	46	43	44
9	---	---	---	---	---	---	52	51	51	46	45	45
10	---	---	---	---	---	---	54	52	53	51	46	47
11	---	---	---	---	---	---	58	53	55	---	---	---
12	---	---	---	---	---	---	54	52	53	---	---	---
13	---	---	---	---	---	---	54	52	53	---	---	---
14	---	---	---	---	---	---	58	54	55	---	---	---
15	---	---	---	---	---	---	55	54	54	---	---	---
16	---	---	---	---	---	---	54	43	51	---	---	---
17	---	---	---	---	---	---	43	40	41	---	---	---
18	---	---	---	---	---	---	45	42	43	---	---	---
19	---	---	---	---	---	---	46	44	45	---	---	---
20	---	---	---	---	---	---	47	45	46	---	---	---
21	---	---	---	---	---	---	49	47	48	---	---	---
22	---	---	---	---	---	---	51	48	48	---	---	---
23	---	---	---	---	---	---	49	47	48	---	---	---
24	---	---	---	---	---	---	48	47	47	---	---	---
25	---	---	---	51	47	48	48	47	47	---	---	---
26	---	---	---	49	47	48	48	47	47	---	---	---
27	---	---	---	49	49	49	59	48	52	---	---	---
28	---	---	---	51	49	50	59	54	57	---	---	---
29	---	---	---	53	50	51	59	55	57	---	---	---
30	---	---	---	52	51	51	55	51	53	---	---	---
31	---	---	---	---	---	---	51	50	50	---	---	---
MONTH	---	---	---	---	---	---	59	40	51	---	---	---

PH, WATER, WHOLE, FIELD, STANDARD UNITS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

[illegible]

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN		MAX	MIN	MEAN
	OCTOBER				NOVEMBER				DECEMBER				JANUARY		
1	11.5	11.0	11.0		---	---	---		6.0	4.5	5.0		4.0	2.5	3.0
2	---	---	---		---	---	---		4.5	3.0	3.5		5.0	4.0	4.5
3	---	---	---		---	---	---		3.5	2.5	3.0		5.0	4.5	4.5
4	---	---	---		---	---	---		4.5	3.5	4.5		5.0	4.5	4.5
5	---	---	---		---	---	---		5.0	4.5	4.5		4.5	4.0	4.5
6	---	---	---		---	---	---		5.5	4.5	5.0		4.5	4.0	4.5
7	---	---	---		---	---	---		6.0	5.5	5.5		6.0	4.5	5.0
8	---	---	---		---	---	---		6.0	5.5	5.5		6.0	6.0	6.0
9	---	---	---		---	---	---		5.5	4.5	5.0		6.0	5.0	5.5
10	---	---	---		---	---	---		4.5	3.5	4.0		6.0	5.5	5.5
11	---	---	---		---	---	---		3.5	3.0	3.5		---	---	---
12	---	---	---		---	---	---		3.0	2.5	3.0		---	---	---
13	---	---	---		---	---	---		---	---	---		---	---	---
14	---	---	---		---	---	---		---	---	---		---	---	---
15	---	---	---		---	---	---		---	---	---		---	---	---
16	---	---	---		---	---	---		---	---	---		---	---	---
17	---	---	---		---	---	---		---	---	---		---	---	---
18	---	---	---		---	---	---		---	---	---		---	---	---
19	---	---	---		---	---	---		4.5	3.5	4.0		---	---	---
20	---	---	---		---	---	---		4.0	3.5	3.5		---	---	---
21	---	---	---		---	---	---		4.0	3.5	4.0		---	---	---
22	---	---	---		---	---	---		3.5	2.5	3.0		---	---	---
23	---	---	---		---	---	---		2.5	2.0	2.0		---	---	---
24	---	---	---		---	---	---		3.0	2.5	3.0		---	---	---
25	---	---	---		8.0	7.0	7.0		3.0	2.0	2.5		---	---	---
26	---	---	---		7.0	6.5	6.5		2.0	1.5	1.5		---	---	---
27	---	---	---		7.5	7.0	7.0		3.0	1.5	2.0		---	---	---
28	---	---	---		7.0	7.0	7.0		3.5	3.0	3.5		---	---	---
29	---	---	---		7.0	6.5	7.0		3.5	3.0	3.5		---	---	---
30	---	---	---		6.5	6.0	6.5		3.0	2.5	3.0		---	---	---
31	---	---	---		---	---	---		2.5	2.5	2.5		---	---	---
MONTH	---	---	---		---	---	---		---	---	---		---	---	---

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

[illegible]

UMPQUA RIVER BASIN

14319500 NORTH UMPQUA RIVER AT WINCHESTER, OR

LOCATION.--Lat 43°16'20", long 123°24'40", in NW 1/4 NE 1/4 sec.33, T.26 S., R.6 W., Douglas County, Hydrologic Unit 17100301, on left bank 300 ft downstream from county bridge, 3.0 mi west of Winchester, and at mile 1.8.

DRAINAGE AREA.--1,344 mi².

PERIOD OF RECORD.--October 1908 to December 1913, October 1923 to September 1929, August 1954 to current year.
Prior to December 1908, monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1448: 1909-12, drainage area. WDR OR-65-1: 1954(M). WDR OR-72-1: 1965(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 372.97 ft above sea level (Douglas County Road Department bench mark). Oct. 1, 1908, to Dec. 31, 1913, and Oct. 1, 1923, to Sept. 30, 1929, nonrecording gage at site 4.8 mi upstream at different datums. Aug. 27, 1954, to Aug. 12, 1965, water-stage recorder on right bank at same datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Occasional regulation caused by upstream powerplants; slight regulation by Lemolo Lake and Diamond Lake. Several small diversions for irrigation upstream from station. Continuous water-quality records for water years 1967-69, 1971-91, have been collected at this site.

AVERAGE DISCHARGE.--55 years (water years 1909-13, 1924-29, 1955-98), 3,740 ft³/s, 37.81 in/yr, 2,709,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 150,000 ft³/s Dec. 22, 1964, gage height, 34.2 ft, from floodmark; minimum discharge, 235 ft³/s Aug. 27, 1987, result of regulation at Winchester Dam 5.2 mi upstream.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Oct. 29, 1950, reached a stage of 23.2 ft, from floodmark, at site 4.8 mi upstream at different datum, discharge, 88,000 ft³/s. Flood of Nov. 23, 1953, reached a stage of 28.4 ft, from floodmarks, present site and datum, discharge, 93,300 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 11	1930	22,700	10.81	Jan. 17	1100	*29,100	*12.58

Minimum daily discharge, 780 ft³/s Sept. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1310	5390	3030	2620	5390	6930	4790	4060	7840	2070	1200	e850
2	1970	3660	2760	3960	4980	8900	4490	4070	6350	2020	1110	e840
3	2120	2890	2470	4780	4520	10100	4280	4070	5470	1940	1180	e820
4	1960	2450	2410	5650	4490	8870	4170	3720	4970	1930	1080	e810
5	2590	2180	2310	4790	4090	7120	4060	3780	4510	1900	1100	e790
6	2890	2220	2160	4070	3930	6080	4110	3770	4140	1810	1270	e790
7	2150	2450	2200	4660	3550	5250	4340	3620	3850	1680	1130	e800
8	1850	2690	2760	6850	3580	4980	4290	3540	3800	1660	1040	e800
9	3400	2500	2740	5670	3390	4730	4170	3690	3690	1640	1080	e790
10	4300	2310	2520	5570	3240	4520	4900	3570	3600	1750	1070	e780
11	3230	2200	2330	14600	3410	4540	6280	3420	3800	1710	1070	e790
12	3410	2070	2200	15500	3720	5410	6120	3650	3670	1650	1060	e800
13	3240	1970	2100	15800	4190	6230	5570	4560	3400	1550	1030	e830
14	2630	1910	2080	12000	4580	5470	4890	4450	3160	1550	1040	e830
15	2300	1860	2230	15200	6210	5110	4520	5960	2910	1410	1020	e820
16	2090	1870	3620	15700	5790	5130	4100	6580	2790	1410	1030	e810
17	1930	1900	12200	24300	4900	4860	3740	6020	2730	1490	1010	e800
18	1790	1960	8320	15500	4290	4350	3440	5630	2620	1510	985	e800
19	1680	2460	5430	12300	4510	3860	3350	5350	2470	1460	982	e790
20	1610	3460	4420	10000	4790	3660	3300	8640	2360	1350	1030	e800
21	1530	3740	3970	8130	12000	3610	3280	12400	2480	1370	1010	e850
22	1460	3080	3430	8160	11500	5470	3210	8550	2370	1400	1020	e880
23	1430	2740	3150	9530	8210	12000	3600	6580	2350	1360	1020	918
24	1400	2740	3240	9350	6440	11100	5350	5810	2370	1300	1020	922
25	1410	4500	3110	8840	5620	8670	5450	8820	2450	1330	e1030	917
26	1370	4420	2890	8730	5060	7680	4660	8600	2550	1360	e1010	939
27	1350	3830	2690	7950	4510	7240	4300	7390	2520	1350	e1000	978
28	1340	3320	2510	6800	4620	6600	4020	6300	2320	1220	e980	959
29	1390	2990	2460	6480	---	5840	4030	10300	2180	1160	e940	984
30	2640	3200	2610	6640	---	5170	4100	14200	2130	1120	e910	989
31	9890	---	2620	6060	---	5080	---	10500	---	1190	e870	---
TOTAL	73660	84960	102970	286190	145510	194560	130910	191600	101850	47650	32327	25476
MEAN	2376	2832	3322	9232	5197	6276	4364	6181	3395	1537	1043	849
MAX	9890	5390	12200	24300	12000	12000	6280	14200	7840	2070	1270	989

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1909 - 1998, BY WATER YEAR (WY)

MEAN	1378	4151	6348	6750	6255	5622	4839	3874	2465	1343	1002	991
MAX	2752	12550	23640	15220	13250	12880	8881	7147	4992	2824	1578	1689
(WY)	1963	1974	1965	1965	1986	1972	1993	1963	1984	1913	1976	1986
MIN	683	931	1005	1125	1019	1681	1605	1401	913	717	635	708
(WY)	1988	1994	1977	1977	1979	1992	1926	1926	1926	1926	1992	1929

SUMMARY STATISTICS	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1909 - 1998
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ANNUAL TOTAL	1423760		1417663			
ANNUAL MEAN	3901		3884		3740	
HIGHEST ANNUAL MEAN					6116	1974
LOWEST ANNUAL MEAN					1639	1977
HIGHEST DAILY MEAN	40300	Jan 1	24300	Jan 17	117000	Dec 23 1964
LOWEST DAILY MEAN	1060	Aug 20	780	Sep 10	549	Aug 22 1994
ANNUAL SEVEN-DAY MINIMUM	1130	Aug 14	791	Sep 5	600	Oct 1 1908
ANNUAL RUNOFF (AC-FT)	2824000		2812000		2709000	
ANNUAL RUNOFF (CFSM)	2.90		2.89		2.78	
ANNUAL RUNOFF (INCHES)	39.41		39.24		37.81	
10 PERCENT EXCEEDS	7480		8020		7580	
50 PERCENT EXCEEDS	2760		3240		2430	
90 PERCENT EXCEEDS	1250		996		891	

e Estimated

UMPQUA RIVER BASIN

329

14319850 GASSY CREEK NEAR NONPAREIL, OR

LOCATION.--Lat 43°25'02", long 123°07'14", in NW 1/4 NE 1/4 sec.12, T.25 S., R.4 W., Douglas County, Hydrologic Unit 17100303, on right bank 0.9 mi upstream from confluence with Calapooya Creek, and 4.2 mi northeast of community of Nonpareil.

DRAINAGE AREA.--9.19 mi².

PERIOD OF RECORD.--October 1988 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 790 ft above sea level, from topographic map.

REMARKS.--Records fair. No diversion upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--10 years (water years 1989-98), 15.6 ft³/s, 22.99 in/yr, 11,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,940 ft³/s Nov. 18, 1996, gage height, 6.59 ft, from slope-area measurement of peak flow; no flow on many days most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 240 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 13	0500	276	3.20	May 20	2300	384	3.60
Feb. 21	0730	*609	*4.28				

No flow several days in July, August, September.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	e15	e8.0	8.6	24	25	31	6.3	35	.65	.01	.02
2	10	e10	e6.0	25	19	50	21	7.6	25	.59	.00	.01
3	3.8	e6.6	e5.0	40	20	70	14	6.9	17	.53	.13	.01
4	2.4	e4.0	e4.0	68	29	67	11	5.9	12	.51	.17	.01
5	5.4	e2.5	e3.4	36	25	49	8.2	5.3	8.7	.46	.16	.00
6	e4.0	e2.0	e3.0	23	20	35	7.6	4.6	6.9	.37	.16	.00
7	e3.0	e5.4	e4.5	20	15	26	13	4.2	5.7	.34	.22	.00
8	e2.5	e7.0	e6.4	20	12	25	12	4.5	4.7	.33	.20	.00
9	e5.0	e5.4	e5.6	19	10	21	11	3.8	3.9	.25	.18	.00
10	e9.0	e4.1	e5.2	24	9.1	18	27	3.8	5.9	.23	.18	.01
11	e7.0	e3.5	e4.5	69	9.3	15	50	3.2	5.6	.24	.16	.02
12	e10	e2.8	e4.0	82	9.2	13	54	18	4.0	.21	.13	.01
13	e7.0	e2.3	e3.5	170	11	14	61	27	3.0	.18	.11	.01
14	e6.2	e1.8	e3.5	72	26	12	48	30	2.4	.14	.09	.01
15	e5.4	e1.5	e5.0	67	68	11	36	44	2.1	.11	.08	.00
16	e3.5	e1.3	e10	84	47	9.6	26	65	1.9	.08	.14	.00
17	e2.5	e2.0	e100	95	31	8.5	20	46	1.6	.06	.12	.00
18	e1.5	e4.0	e45	67	22	7.5	16	38	1.4	.06	.10	.00
19	e1.3	e7.0	e25	79	31	6.7	14	35	1.3	.05	.09	.05
20	e1.2	e17	e20	59	37	5.9	12	168	1.1	.05	.08	.16
21	e1.1	e12	e15	49	357	6.3	9.3	209	.99	.04	.08	.10
22	e1.0	e9.0	e12	51	144	41	8.0	71	.91	.03	.08	.08
23	e1	e6.0	e10	41	71	84	13	42	.85	.03	.09	.07
24	e1	e8.0	e19	39	44	66	34	49	1.6	.02	.11	.06
25	e.9	e15	19	48	33	63	33	91	1.5	.02	.10	.09
26	e.9	e10	14	58	24	59	24	65	1.5	.02	.08	.23
27	e.9	e7.0	10	53	20	50	18	68	1.1	.01	.06	.20
28	e.9	e5.6	7.7	42	18	44	14	51	.82	.01	.06	.16
29	e1.0	e5.0	6.2	41	---	37	11	176	.67	.00	.05	.13
30	e2.4	e10	5.4	35	---	30	8.3	137	.64	.01	.03	.15
31	e30	---	4.6	29	---	33	---	60	---	.01	.02	---
TOTAL	143.8	192.8	394.5	1613.6	1185.6	1002.5	665.4	1546.1	159.78	5.64	3.27	1.59
MEAN	4.64	6.43	12.7	52.1	42.3	32.3	22.2	49.9	5.33	.18	.11	.053
MAX	30	17	100	170	357	84	61	209	35	.65	.22	.23
MIN	.90	1.3	3.0	8.6	9.1	5.9	7.6	3.2	.64	.00	.00	.00
AC-FT	285	382	782	3200	2350	1990	1320	3070	317	11	6.5	3.2
CFSM	.50	.70	1.38	5.66	4.61	3.52	2.41	5.43	.58	.02	.01	.01
IN.	.58	.78	1.60	6.53	4.80	4.06	2.69	6.26	.65	.02	.01	.01

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1989 - 1998, BY WATER YEAR (WY)

	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998		
MEAN	1.48	17.0	32.1	40.6	26.7	26.0	21.2	15.6	5.21	.67	.22	.18
MAX	5.13	61.2	102	86.9	48.0	43.4	50.3	49.9	26.6	2.42	1.38	1.03
(WY)	1997	1997	1997	1996	1996	1989	1993	1998	1993	1993	1993	1997
MIN	.14	.62	2.93	10.8	11.6	4.18	5.44	2.01	.73	.14	.000	.000
(WY)	1989	1994	1990	1992	1992	1992	1990	1992	1992	1994	1992	1992

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1989 - 1998
ANNUAL TOTAL	4508.84	6914.58	
ANNUAL MEAN	12.4	18.9	15.6
HIGHEST ANNUAL MEAN			24.4
LOWEST ANNUAL MEAN			6.47
HIGHEST DAILY MEAN	187	Jan 1	736
LOWEST DAILY MEAN	.00	Aug 12	.00
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 12	.00
ANNUAL RUNOFF (AC-FT)	8940		11270
ANNUAL RUNOFF (CFSM)	1.34	2.06	1.69
ANNUAL RUNOFF (INCHES)	18.25	27.99	22.99
10 PERCENT EXCEEDS	34	52	43
50 PERCENT EXCEEDS	4.5	6.3	4.1
90 PERCENT EXCEEDS	.20	.05	.02

e Estimated

UMPQUA RIVER BASIN

14320700 CALAPOOYA CREEK NEAR OAKLAND, OR

LOCATION.--Lat 43°24'10", long 123°21'45", in NW 1/4 sec.13, T.25 S., R.6 W., Douglas County, Hydrologic Unit 17100303, near center of span on downstream side of highway bridge, 0.9 mi downstream from Williams Creek, 2.5 mi northwest of Sutherlin, 3.5 mi southwest of Oakland, and at mile 10.1

DRAINAGE AREA.--210 mi².

PERIOD OF RECORD.--October 1955 to September 1973, October 1986 to current year. Records for the years 1974-86 are available at the Douglas County Water Resources Dept. in Roseburg.

GAGE.--Water-stage recorder. Datum of gage is 371.26 ft above sea level. Prior to June 22, 1968, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records fair. Diversion upstream from station for municipal supply of cities of Sutherlin and Oakland. Small diversions by pumping for irrigation upstream from station.

AVERAGE DISCHARGE.--30 years (water years 1956-73, 1987-98), 456 ft³/s, 29.47 in/yr, 330,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,100 ft³/s Nov. 18, 1996, gage height, 21.62 ft; no flow Sept. 9-11, 1966, Sept. 8, 1988, all or part of several days in August 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 21	1100	*6,820	*13.77	No other peak greater than base discharge.			

Minimum discharge, 2.3 ft³/s Sept. 7, 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	310	309	221	592	786	631	216	1170	83	20	5.1
2	272	199	262	497	507	1050	554	214	839	82	20	6.1
3	134	145	218	533	487	1380	503	218	633	77	18	6.7
4	99	114	185	1160	529	1660	454	184	506	73	17	4.4
5	115	95	160	839	469	1300	412	171	424	68	15	4.8
6	117	87	141	611	450	997	419	156	356	60	16	4.1
7	86	150	203	641	376	804	498	144	307	55	15	3.4
8	70	172	288	666	336	807	473	140	273	53	15	3.3
9	122	129	249	584	324	655	458	153	245	50	14	4.8
10	178	109	220	627	296	582	731	150	251	48	13	6.4
11	170	95	194	1440	341	552	912	147	277	49	11	7.6
12	186	86	175	1690	586	535	912	225	226	48	12	7.1
13	154	79	157	2440	995	916	980	402	191	46	11	6.9
14	118	75	156	1740	995	679	848	397	169	42	11	5.8
15	97	65	255	1710	1910	605	715	634	153	39	12	6.6
16	80	60	418	1840	1340	544	577	935	143	36	12	6.1
17	68	76	1710	2140	874	478	486	865	132	34	12	6.8
18	60	127	1010	1640	650	420	422	807	121	32	12	8.0
19	54	294	639	1730	874	375	388	681	115	30	12	11
20	49	518	568	1400	960	339	348	2030	106	29	12	18
21	45	452	504	1090	4820	336	306	2930	100	28	11	15
22	43	328	404	1170	3040	980	281	1580	93	27	12	14
23	41	270	387	1010	1830	2170	314	1040	90	26	11	12
24	40	317	535	1060	1260	1700	494	940	95	24	12	11
25	39	497	503	1110	1010	1300	484	1590	121	23	12	12
26	36	445	419	1620	837	1140	400	1330	137	22	12	13
27	35	337	351	1430	681	1080	341	1180	128	21	11	16
28	33	267	302	1050	651	1010	297	931	105	21	10	15
29	36	262	264	1000	---	830	266	4220	91	20	9.1	14
30	103	379	237	857	---	680	237	3340	84	20	6.6	13
31	646	---	213	710	---	766	---	1810	---	19	6.2	---
TOTAL	3356	6539	11636	36256	28020	27456	15141	29760	7681	1285	392.9	268.0
MEAN	108	218	375	1170	1001	886	505	960	256	41.5	12.7	8.93
MAX	646	518	1710	2440	4820	2170	980	4220	1170	83	20	18
MIN	30	60	141	221	296	336	237	140	84	19	6.2	3.3
AC-FT	6660	12970	23080	71910	55580	54460	30030	59030	15240	2550	779	532
CFSM	.52	1.04	1.79	5.57	4.77	4.22	2.40	4.57	1.22	.20	.06	.04
IN.	.59	1.16	2.06	6.42	4.96	4.86	2.68	5.27	1.36	.23	.07	.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1998, BY WATER YEAR (WY)

	MEAN	62.5	471	1075	1173	903	827	490	311	117	28.6	11.2	13.7
MAX	329	1517	3856	2296	2229	1912	1342	960	595	73.1	41.9	35.0	
(WY)	1957	1997	1956	1956	1961	1961	1963	1998	1993	1993	1993	1971	
MIN	6.48	22.6	104	120	290	142	164	58.0	19.9	9.05	1.59	3.06	
(WY)	1988	1994	1990	1963	1973	1992	1987	1966	1992	1973	1994	1991	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1956 - 1998

ANNUAL TOTAL	129988.8	167790.9	456
ANNUAL MEAN	356	460	905
HIGHEST ANNUAL MEAN			186
LOWEST ANNUAL MEAN			15200
HIGHEST DAILY MEAN	4640	4820	Dec 26 1955
LOWEST DAILY MEAN	3.6	3.3	Sep 9 1966
ANNUAL SEVEN-DAY MINIMUM	4.7	4.5	Aug 30 1992
ANNUAL RUNOFF (AC-FT)	257800	332800	330000
ANNUAL RUNOFF (CFSM)	1.70	2.19	2.17
ANNUAL RUNOFF (INCHES)	23.03	29.72	29.47
10 PERCENT EXCEEDS	957	1160	1180
50 PERCENT EXCEEDS	149	237	146
90 PERCENT EXCEEDS	13	12	8.6

14321000 UMPQUA RIVER NEAR ELKTON, OR

LOCATION.--Lat 43°35'10", long 123°33'15", in NW 1/4 sec.8, T.23 S., R.7 W., Douglas County, Hydrologic Unit 17100303, on left bank 3.5 mi south of Elkton, 8.3 mi upstream from Elk Creek, and at mile 56.9.

DRAINAGE AREA.--3,683 mi².

PERIOD OF RECORD.--October 1905 to current year.

REVISED RECORDS.--WSP 1184: 1927(M), 1938(M), 1943(M), 1946(M). WSP 1448: 1911-13, drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 90.42 ft above sea level. Prior to June 29, 1972, at site 2,400 ft downstream at same datum. See WSP 1931 or 2135 for history of changes prior to June 29, 1972.

REMARKS.--Records good. Regulation by powerplants on North Umpqua River ordinarily does not affect discharge at this station. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--93 years (water years 1906-98), 7,428 ft³/s, 27.40 in/yr, 5,381,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 265,000 ft³/s Dec. 23, 1964, gage height, 51.95 ft, from floodmarks; minimum discharge observed, 640 ft³/s July 18, 1926.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least December 1861, 51.95 ft on Dec. 23, 1964.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 52,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	1930	55,700	20.15	Feb. 22	0030	*61,900	*21.41

Minimum discharge, 1,280 ft³/s Sept. 6.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1640	11200	5530	4270	12300	11600	11300	6700	18700	2900	1660	1340
2	1760	6870	5150	5050	11600	15500	10500	6630	14400	2810	1680	1330
3	2680	4830	4480	7950	11800	19800	9690	6780	11800	2750	1630	1320
4	2770	3800	3990	12700	11800	21700	9250	6340	10100	2690	1640	1310
5	2720	3170	3670	14400	11100	18300	8810	5890	8980	2660	1580	1300
6	3410	2820	3350	10900	10700	15300	8790	5920	8010	2590	1550	1300
7	3300	2800	3180	9520	10300	12700	9330	5810	7230	2460	1650	1310
8	2670	3180	3490	11900	9330	11400	9650	5550	6690	2340	1590	1310
9	2510	3880	4630	12100	9250	10500	9330	5490	6430	2290	1510	1300
10	4930	3490	4500	10500	8870	9560	9390	5520	6140	2240	1520	1300
11	5870	3090	4020	17300	8420	9060	12000	5250	6020	2300	1540	1310
12	4990	2850	3610	35700	9540	9080	13900	5290	6230	2260	1530	1320
13	5070	2640	3320	33800	13400	12200	13000	6730	5780	2210	1500	1350
14	4550	2520	3210	29600	14800	11900	11500	8110	5270	2130	1490	1350
15	3760	2400	3420	28700	17400	10600	10300	8470	4870	2090	1480	1350
16	3250	2340	4120	30100	17200	9980	9340	11200	4480	1960	1460	1340
17	2850	2400	14000	45200	14000	9670	8350	11900	4290	1940	1470	1340
18	2540	2500	21800	40000	11400	8840	7520	11100	4120	1970	1450	1330
19	2320	3020	13300	29200	10500	7870	6910	10200	3900	1970	1430	1330
20	2180	4700	9680	24700	12500	7100	6590	13200	3660	1940	1410	1350
21	2080	7340	8670	19700	31600	6770	6340	35600	3530	1860	1430	1400
22	1980	6050	7550	17600	50200	8000	6110	26700	3500	1870	1430	1410
23	1900	4880	6540	18300	30400	24700	6160	18300	3340	1890	1430	1420
24	1860	4490	6260	19900	21000	38800	7740	14100	3310	1850	1440	1410
25	1820	5380	6710	19300	16100	25600	10400	15500	3370	1800	1450	1400
26	e1800	8440	6470	21100	13900	20600	9200	18800	3460	1800	1440	1390
27	e1770	7490	5750	21900	12000	17800	8090	16000	3650	1820	1440	1400
28	1750	6500	5050	19600	10600	16300	7330	13800	3510	1780	1430	1430
29	1770	5550	4540	16400	---	14100	6900	19700	3190	1700	1410	1440
30	1860	5200	4300	15600	---	12100	6800	33200	2990	1660	1380	1450
31	7070	---	4360	14100	---	11600	---	26300	---	1620	1350	---
TOTAL	91430	135820	188650	617090	422010	439030	270520	390080	180950	66150	46400	40640
MEAN	2949	4527	6085	19910	15070	14160	9017	12580	6032	2134	1497	1355
MAX	7070	11200	21800	45200	50200	38800	13900	35600	18700	2900	1680	1450
MIN	1640	2340	3180	4270	8420	6770	6110	5250	2990	1620	1350	1300
AC-FT	181400	269400	374200	1224000	837100	870800	536600	773700	358900	131200	92030	80610
CFSM	.80	1.23	1.65	5.40	4.09	3.85	2.45	3.42	1.64	.58	.41	.37
IN.	.92	1.37	1.91	6.23	4.26	4.43	2.73	3.94	1.83	.67	.47	.41

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1998, BY WATER YEAR (WY)

	1887	7064	13440	15880	15040	12250	9577	6538	3768	1730	1177	1199
MEAN	14200	29500	51220	34900	32800	27100	20480	15800	9526	5063	1867	3475
(WY)	1951	1974	1965	1956	1907	1972	1937	1921	1953	1913	1976	1920
MIN	857	832	1238	1440	1365	2909	2432	1934	1053	742	703	740
(WY)	1930	1930	1977	1977	1977	1992	1926	1934	1926	1926	1931	1931

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1906 - 1998

ANNUAL TOTAL	2640810	2888770	
ANNUAL MEAN	7235	7914	
HIGHEST ANNUAL MEAN			7428
LOWEST ANNUAL MEAN			13360
HIGHEST DAILY MEAN	103000	Jan 1	50200
LOWEST DAILY MEAN	1120	Aug 8	1300
ANNUAL SEVEN-DAY MINIMUM	1150	Aug 14	1300
ANNUAL RUNOFF (AC-FT)	5238000		5730000
ANNUAL RUNOFF (CFSM)	1.96		2.15
ANNUAL RUNOFF (INCHES)	26.67		29.18
10 PERCENT EXCEEDS	14900		18000
50 PERCENT EXCEEDS	4300		5380
90 PERCENT EXCEEDS	1360		1430
			7428
			13360
			2321
			260000
			663
			663
			5381000
			2.02
			27.40
			17200
			3960
			1060

e Estimated

UMPQUA RIVER BASIN

14321400 ELK CREEK NEAR ELKHEAD, OR

LOCATION.--Lat 43°35'45", long 123°11'35", in NW 1/4 SE 1/4 sec.5, T.23 S., R.4 W., Douglas County, Hydrologic Unit 17100303, on right bank downstream side of Milltown Hill Bridge, 1.5 mi upstream from Adams Creek, 4.0 mi north of Elkhead, and at mile 37.7.

DRAINAGE AREA.--28.7 mi².

PERIOD OF RECORD.--January to August 1968 (gage heights and discharge measurements only), September 1968 to June 1972, October 1986 to current year.

REVISED RECORDS.--WDR OR-93-1: 1991-92, 1991-92 (M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 463.99 ft above sea level (Douglas County Highway Department bench mark). Prior to Sept. 1, 1968, nonrecording gage at site 20 ft upstream at datum 1.70 ft lower.

REMARKS.--Records for flows greater than 10 ft³/s good, those below and estimated daily discharges fair.

AVERAGE DISCHARGE.--15 years (water years 1969-71, 1987-98), 52.3 ft³/s, 24.75 in/yr, 37,880 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,670 ft³/s Nov. 18, 1996, gage height, 10.82 ft, from rating curve extended above 763 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.15 ft³/s Aug. 28, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 820 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 21	1300	*978	*5.92	No other peak greater than base discharge.			
Minimum discharge, 1.4 ft ³ /s Sept. 3.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e3.0	52	49	37	80	77	66	28	e120	11	2.7	1.7
2	e40	34	41	72	66	99	59	31	94	10	2.5	1.6
3	e22	26	34	81	63	142	55	31	73	9.7	2.3	1.5
4	e16	21	29	153	68	187	50	27	60	9.6	2.2	1.5
5	e18	18	25	107	59	139	48	25	50	9.0	2.1	1.6
6	e19	17	22	80	58	106	57	24	43	8.1	2.2	1.5
7	15	35	36	84	50	84	59	23	37	7.5	2.3	1.5
8	13	30	41	80	45	87	58	23	33	7.5	2.3	1.6
9	30	25	36	71	40	73	57	23	29	7.0	2.3	1.6
10	36	22	32	72	38	67	92	22	34	6.8	2.2	1.7
11	35	20	29	159	44	61	121	22	30	6.9	2.2	1.7
12	30	20	26	181	79	55	115	42	25	6.6	2.1	1.6
13	23	17	24	284	164	70	108	54	23	6.4	2.0	1.6
14	18	16	24	209	167	61	91	53	21	5.9	1.9	1.6
15	15	14	39	193	229	59	79	76	19	5.5	1.9	1.7
16	13	14	72	187	164	54	67	121	19	4.9	2.2	1.7
17	12	25	216	196	110	49	57	107	18	4.6	2.1	1.7
18	11	55	122	175	82	44	50	99	16	4.4	2.0	2.1
19	9.7	84	81	216	107	41	45	104	15	4.4	1.9	2.9
20	9.0	94	75	184	103	37	41	255	14	4.3	1.9	3.4
21	8.6	75	66	148	704	40	36	254	14	4.0	2.1	3.1
22	8.2	55	55	145	368	142	34	157	13	3.8	2.0	2.8
23	8.3	51	53	125	200	284	38	116	13	3.7	2.0	2.6
24	8.3	61	67	123	139	211	49	133	15	3.5	2.0	2.6
25	7.8	70	63	131	113	155	42	219	15	3.4	2.0	2.9
26	7.6	65	54	196	93	130	38	204	16	3.3	2.0	3.1
27	7.5	49	45	196	77	116	35	145	14	3.1	1.9	3.1
28	7.3	40	38	149	72	107	32	117	12	2.9	1.8	3.0
29	12	48	33	146	---	89	30	566	11	2.6	1.7	3.0
30	59	61	30	118	---	75	28	e340	10	2.7	1.7	3.0
31	123	---	27	97	---	78	---	e185	---	2.7	1.8	---
TOTAL	645.3	1214	1584	4395	3582	3019	1737	3626	906	175.8	64.3	65.0
MEAN	20.8	40.5	51.1	142	128	97.4	57.9	117	30.2	5.67	2.07	2.17
MAX	123	94	216	284	704	284	121	566	120	11	2.7	3.4
MIN	3.0	14	22	37	38	37	28	22	10	2.6	1.7	1.5
AC-FT	1280	2410	3140	8720	7100	5990	3450	7190	1800	349	128	129
CFSM	.73	1.41	1.78	4.94	4.46	3.39	2.02	4.08	1.05	.20	.07	.08
IN.	.84	1.57	2.05	5.70	4.64	3.91	2.25	4.70	1.17	.23	.08	.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1998, BY WATER YEAR (WY)

	MEAN	6.70	65.3	123	151	97.8	86.0	59.0	37.1	15.6	4.16	1.81	1.98
MAX	20.8	278	397	280	191	184	133	117	71.7	7.72	5.21	4.01	
(WY)	1998	1997	1997	1996	1969	1972	1993	1998	1993	1993	1993	1971	
MIN	1.51	3.66	15.6	35.4	31.1	19.2	21.0	8.16	3.27	1.61	.46	.43	
(WY)	1988	1994	1990	1992	1988	1992	1987	1987	1992	1994	1994	1994	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1968 - 1998

ANNUAL TOTAL	17194.95	21013.4	
ANNUAL MEAN	47.1	57.6	
HIGHEST ANNUAL MEAN			52.3
LOWEST ANNUAL MEAN			22.3
HIGHEST DAILY MEAN	606	704	2920
LOWEST DAILY MEAN	.85	1.5	.22
ANNUAL SEVEN-DAY MINIMUM	.98	1.5	.25
ANNUAL RUNOFF (AC-FT)	34110	41680	37880
ANNUAL RUNOFF (CFSM)	1.64	2.01	1.82
ANNUAL RUNOFF (INCHES)	22.29	27.24	24.75
10 PERCENT EXCEEDS	114	145	138
50 PERCENT EXCEEDS	22	34	19
90 PERCENT EXCEEDS	1.8	2.1	1.5

e Estimated

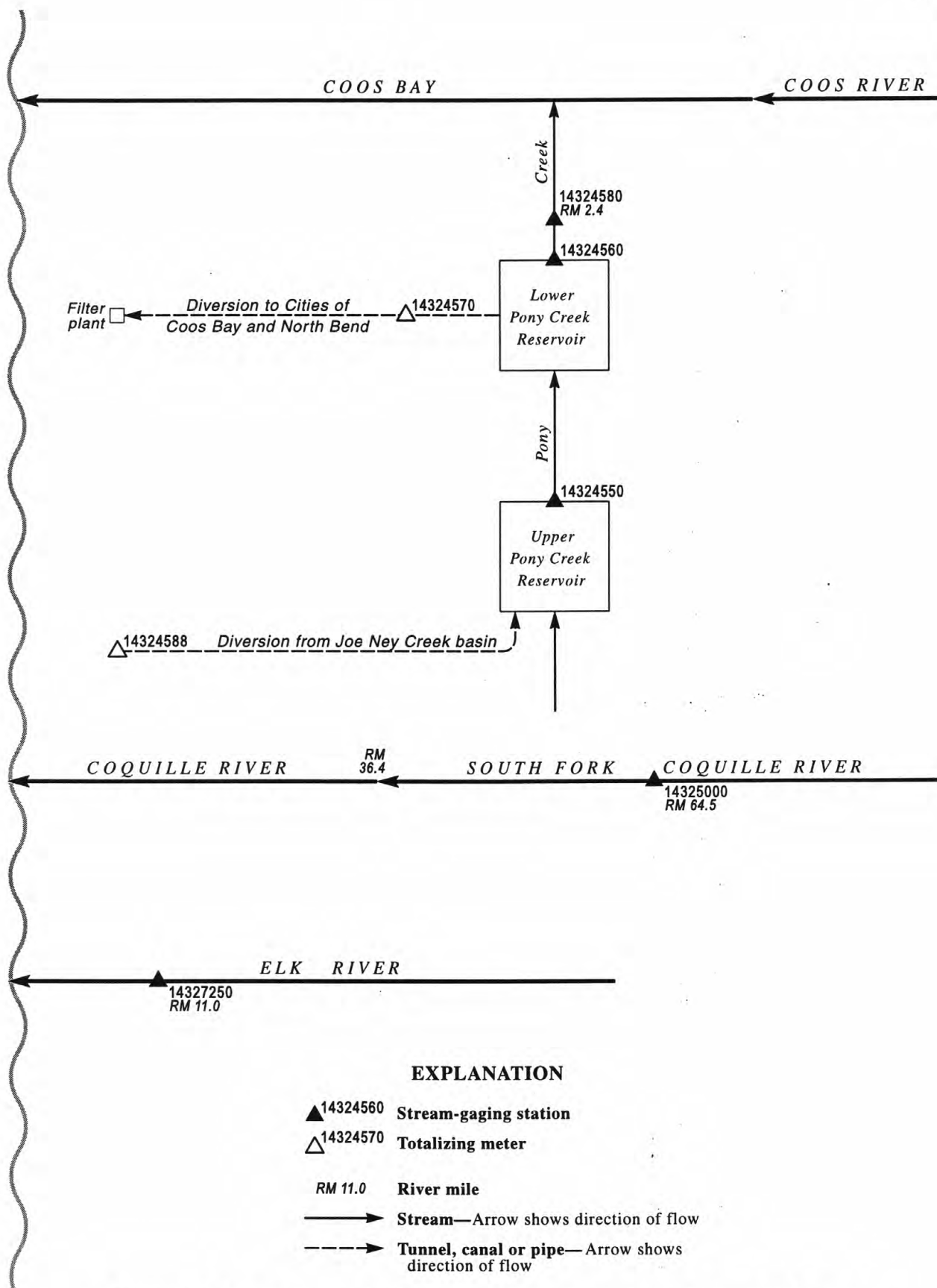


Figure 32. Schematic diagram showing gaging stations and diversions in the Pony Creek Basin.

14324580 PONY CREEK AT COOS BAY, OR

LOCATION.--Lat 43°22'44", long 124°14'29", in NE 1/4 NE 1/4 sec.28, T.25 S., R.13 W., Coos County, Hydrologic Unit 17100304, at spillway for Lower Pony Creek Reservoir, in Coos Bay, and at mile 2.3.

DRAINAGE AREA.--3.88 mi².

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

REVISED RECORDS.--WDR OR-93-1: Drainage Area.

GAGE.--Water-stage recorder. Datum of gage is sea level (Coos Bay-North Bend Water Board bench mark). Oct. 1, 1982 to September 30, 1987, gage at site 500 ft downstream at same datum. July 1975 to Sept. 30, 1982 and Oct. 1, 1987 to Sept. 30, 1992, at site 0.1 mi downstream, at datum 12.23 ft above sea level.

REMARKS.--No estimated daily discharges. Records good. Records prior to 1993 were computed for site at the lower end of culvert under Ocean Boulevard. Flow regulated by Upper and Lower Pony Creek Reservoirs (stations 14324550 and 14324560), diversion upstream from station from Lower Pony Creek Reservoir to municipal water supply of Coos Bay-North Bend (station 14323570) and diversion into the basin from Joe Ney Creek (station 14324590). Approximately 5.5 ft³/s is diverted to the Coos Bay-North Bend water treatment plant, maximum capacity, 10.8 ft³/s.

COOPERATION.--Data for diversion from Joe Ney Creek into Pony Creek (14324590), and diversion from Lower Pony Creek Reservoir to City of Coos Bay (14324570) provided by Coos Bay-North Bend Water Board.

AVERAGE DISCHARGE.--23 years (water years 1976-98), 10.17 ft³/s, 35.41 in/yr, 7,370 acre-ft/yr, adjusted for Joe Ney diversion into Pony Creek, Coos Bay-North Bend diversion, and change in contents in Upper and Lower Pony Creek Reservoirs.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 181 ft³/s Dec. 6, 1981, gage height, 6.19 ft; no flow many days each year.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 61 ft³/s May 21, gage height, 39.50 ft; minimum discharge, no flow many days during year.

MONTHLY DISCHARGE OF PONY CREEK, JOE NEY CREEK DIVERSION, PONY CREEK DIVERSION AND MONTHLY CHANGE IN CONTENTS OF RESERVOIRS NEAR COOS BAY, OR, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

	14324588 Diversion from Joe Ney Creek into Pony Creek (acre-feet)	14324580 Pony Creek at Coos Bay (acre-feet)	14324570 Diversion from Lower Pony Creek Reservoir to City of Coos Bay (acre-feet)	14324560 Lower Pony Creek Reservoir Change in Contents (acre-feet)	14324550 Upper Pony Creek Reservoir Change in Contents (acre-feet)	Pony Creek adjusted for diversion and change in contents (acre-feet)	(inches)
October.....	0	0	340.7	-19.1	+5.0	326.6	1.57
November.....	0	0	308.6	+34.3	+208.0	550.9	2.65
December.....	0	0	324.5	-38.1	+371.0	657.4	3.16
CAL YR 1997...	0	5,688.1	4,347.3	-156.2	-551.0	9,328.2	44.86
January.....	0	743.8	311.8	+101.4	+646.0	1,803.0	8.67
February.....	0	1,767.1	263.3	-15.6	-102.0	1,912.8	9.20
March.....	0	789.2	313.7	+14.8	+316.0	1,433.7	6.89
April.....	0	491.7	308.1	-18.9	-29.0	751.9	3.62
May.....	0	602.6	308.4	+16.0	+23.0	950.0	4.57
June.....	0	148.4	310.4	-21.7	-28.0	409.1	1.97
July.....	0	0.8	396.6	-58.5	-151.0	187.9	0.90
August.....	0	0	427.8	+29.4	-350.0	107.2	0.52
September.....	0	1.2	358.7	+23.8	-314.0	69.7	0.34
WTR YR 1998...	0	4,544.8	3,972.6	+47.8	+595.0	9,160.2	44.03

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	21	3.2	16	1.5	12	.26	.00	.00
2	.00	.00	.00	.00	26	3.4	13	2.8	9.1	.12	.00	.00
3	.00	.00	.00	.00	23	1.2	11	4.0	6.6	.01	.00	.00
4	.00	.00	.00	.00	25	.79	10	3.9	5.7	.00	.00	.00
5	.00	.00	.00	.00	32	.58	8.7	3.3	4.9	.00	.00	.00
6	.00	.00	.00	.00	28	1.0	9.3	2.6	3.9	.00	.00	.00
7	.00	.00	.00	.00	24	.83	9.0	1.6	3.5	.00	.00	.00
8	.00	.00	.00	.00	32	1.5	6.7	1.1	3.8	.00	.00	.00
9	.00	.00	.00	.00	37	1.3	7.3	1.3	2.5	.00	.00	.00
10	.00	.00	.00	.00	36	1.1	11	1.4	3.4	.00	.00	.00
11	.00	.00	.00	.00	36	1.1	16	1.8	3.8	.00	.00	.00
12	.00	.00	.00	.00	31	2.9	16	1.8	3.2	.00	.00	.00
13	.00	.00	.00	.00	36	5.5	16	2.5	1.8	.00	.00	.00
14	.00	.00	.00	.00	44	5.4	13	4.5	1.3	.00	.00	.00
15	.00	.00	.00	.00	42	6.5	11	5.2	1.2	.00	.00	.00
16	.00	.00	.00	.00	34	6.6	9.2	4.1	1.1	.00	.00	.00
17	.00	.00	.00	.00	28	5.9	8.3	3.5	.77	.00	.00	.00
18	.00	.00	.00	.00	31	5.3	7.1	4.5	.30	.00	.00	.00
19	.00	.00	.00	18	44	4.8	8.0	2.7	.32	.00	.00	.00
20	.00	.00	.00	41	34	3.3	7.1	13	.12	.00	.00	.00
21	.00	.00	.00	36	49	7.7	4.8	56	.01	.00	.00	.00
22	.00	.00	.00	36	54	44	4.0	40	.40	.00	.00	.00
23	.00	.00	.00	35	43	54	3.7	25	.40	.00	.00	.00
24	.00	.00	.00	35	31	46	3.8	19	.24	.00	.00	.19
25	.00	.00	.00	35	27	37	3.5	16	.82	.00	.00	.30
26	.00	.00	.00	30	23	30	3.7	13	1.2	.00	.00	.13
27	.00	.00	.00	24	15	28	2.6	9.9	1.3	.00	.00	.00
28	.00	.00	.00	19	4.9	28	2.2	8.8	.68	.00	.00	.00
29	.00	.00	.00	21	---	23	3.3	15	.34	.00	.00	.00
30	.00	.00	.00	25	---	19	2.6	19	.13	.00	.00	.00
31	.00	---	.00	20	---	19	---	15	---	.00	.00	---
TOTAL	0.00	0.00	0.00	375.00	890.9	397.90	247.9	303.8	74.83	0.39	0.00	0.62
MEAN	.000	.000	.000	12.1	31.8	12.8	8.26	9.80	2.49	.013	.000	.021
MAX	.00	.00	.00	41	54	54	16	56	12	.26	.00	.30
MIN	.00	.00	.00	.00	4.9	.58	2.2	1.1	.01	.00	.00	.00
AC-FT	.00	.00	.00	744	1770	789	492	603	148	.8	.00	1.2
CAL YR 1997	TOTAL 1652.93	MEAN 4.53	MAX 74	MIN .00	AC-FT 3280							
WTR YR 1998	TOTAL 2291.34	MEAN 6.28	MAX 56	MIN .00	AC-FT 4540							

14325000 SOUTH FORK COQUILLE RIVER AT POWERS, OR

LOCATION.--Lat 42°53'30", long 124°04'10", in SE 1/4 sec.12, T.31 S., R.12 W., Coos County, Hydrologic Unit 17100305, on left bank 0.6 mi downstream from highway bridge at Powers, 0.9 mi upstream from Woodward Creek, and at mile 64.5.

DRAINAGE AREA.--169 mi².

PERIOD OF RECORD.--September 1916 to September 1926, October 1928 to current year.

REVISED RECORDS.--WSP 1184: 1946(M). WSP 1448: 1917-18(M), 1919, 1920(M), 1925.

GAGE.--Water-stage recorder. Datum of gage is 197.42 ft above sea level. Prior to Nov. 17, 1938, nonrecording gage at various sites within 1 mi of present site at different datums.

REMARKS.--Records good. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--79 years (water years 1917-26, 1930-98), 784 ft³/s, 63.04 in/yr, 568,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 48,900 ft³/s Dec. 22, 1964, gage height, 26.51 ft, from floodmarks, from rating curve extended above 19,000 ft³/s on basis of contracted-opening measurement at gage height 18.14 ft and slope-area measurement of peak flow; minimum discharge, 6.4 ft³/s Oct. 10-12, 1995.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 21	0830	*9,250	*9.44				
Minimum discharge, 24 ft ³ /s Sept. 15-18.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	209	1190	1220	694	1360	1040	1160	382	759	122	48	32
2	681	749	950	1140	1940	1310	1060	387	638	122	47	31
3	555	560	772	1580	1800	1420	954	375	538	120	46	30
4	566	447	653	2440	1730	1380	869	339	467	117	45	29
5	622	376	565	1680	1930	1250	807	320	422	113	44	29
6	469	431	499	1770	2040	1080	773	304	380	108	43	28
7	342	699	1040	2620	1710	941	770	291	345	97	44	28
8	345	565	1320	2260	3160	965	731	289	316	96	43	27
9	1400	476	1030	1680	3060	917	769	295	289	92	42	27
10	1380	412	869	1700	2350	837	1340	288	303	90	42	27
11	957	373	749	3110	2530	798	2910	290	306	89	41	27
12	800	338	655	3860	2920	899	2390	393	273	87	41	26
13	644	308	578	4870	3910	966	2060	531	249	83	40	26
14	504	283	855	3940	3460	845	1650	578	227	79	39	25
15	402	263	1220	4050	3150	786	1350	634	211	72	37	24
16	330	450	2450	3350	2310	770	1150	685	200	71	38	24
17	278	1400	4850	5510	1740	711	1030	707	187	68	38	24
18	242	1150	2380	4520	1500	633	963	692	176	65	37	25
19	213	1440	1500	4950	2630	582	919	654	169	64	36	37
20	191	2060	1300	3280	2380	546	855	1720	159	62	35	36
21	173	1400	1180	2250	7320	536	772	2350	152	61	32	31
22	159	996	990	2430	4820	2190	702	1540	146	58	32	28
23	148	1480	947	2500	3130	e3800	649	1120	141	57	33	27
24	138	2370	1380	2780	2170	e2500	672	962	136	57	34	27
25	129	1870	1240	3290	1690	e1600	623	937	139	55	34	26
26	120	1460	1000	4050	1400	e1400	564	859	144	55	34	28
27	114	1130	824	2890	1180	e1250	517	833	136	53	33	28
28	109	921	705	2030	1060	e1200	477	766	126	51	32	26
29	146	1340	618	1800	---	e1100	440	1150	122	51	32	26
30	1600	1690	551	1820	---	e1000	408	1140	122	49	31	25
31	3270	---	495	1430	---	1040	---	932	---	48	32	---
TOTAL	17236	28627	35385	86274	70380	36292	30334	22743	7978	2412	1185	834
MEAN	556	954	1141	2783	2514	1171	1011	734	266	77.8	38.2	27.8
MAX	3270	2370	4850	5510	7320	3800	2910	2350	759	122	48	37
MIN	109	263	495	694	1060	536	408	288	122	48	31	24
AC-FT	34190	56780	70190	171100	139600	71990	60170	45110	15820	4780	2350	1650
CFSM	3.29	5.65	6.75	16.5	14.9	6.93	5.98	4.34	1.57	.46	.23	.16
IN.	3.79	6.30	7.79	18.99	15.49	7.99	6.68	5.01	1.76	.53	.26	.18

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 1998, BY WATER YEAR (WY)

	MEAN	205	1018	1714	1814	1640	1335	927	458	175	61.8	34.8	46.0
MAX	1945	4232	5361	4244	4151	3818	2451	1568	699	186	101	385	
(WY)	1951	1974	1965	1970	1958	1938	1963	1953	1937	1947	1947	1978	
MIN	11.1	15.8	44.1	97.3	209	330	203	78.3	50.8	27.7	17.4	12.1	
(WY)	1988	1937	1977	1977	1977	1934	1990	1939	1924	1926	1939	1987	

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1917 - 1998
ANNUAL TOTAL	238419.1	339680	
ANNUAL MEAN	653	931	784
HIGHEST ANNUAL MEAN			1374
LOWEST ANNUAL MEAN			237
HIGHEST DAILY MEAN	11800	Jan 1	7320
LOWEST DAILY MEAN	9.1	Sep 9	24
ANNUAL SEVEN-DAY MINIMUM	11	Sep 3	25
ANNUAL RUNOFF (AC-FT)	472900		673800
ANNUAL RUNOFF (CFSM)	3.87		5.51
ANNUAL RUNOFF (INCHES)	52.48		74.77
10 PERCENT EXCEEDS	1420		2380
50 PERCENT EXCEEDS	351		618
90 PERCENT EXCEEDS	30		34

e Estimated

14327250 ELK RIVER ABOVE ANVIL CREEK, NEAR PORT ORFORD, OR

LOCATION (Revised).--Lat 42°44'07", long 124°24'01", in SW 1/4 NE 1/4 sec.7, T.33 S., R.14 W., Curry County, Hydrologic Unit 17100306, on left bank, 0.6 mi upstream from Anvil Creek, 5.0 mi east of Port Orford, and at mile 13.6.

DRAINAGE AREA.--70.7 mi², at cableway 0.6 mi downstream where all discharge measurements are made.

PERIOD OF RECORD.--October 1993 to current year. Operated by Oregon Water Resources Department January 1977 to September 1993.

GAGE.--Water-stage recorder. Elevation of gage is 160 ft above sea level, from topographic map. Oct. 1, 1993 to Sept. 12, 1995 at site 0.7 mi downstream at different datum. Prior to Oct. 1, 1993 gage operated by Oregon Water Resources Department at several different sites both above and below Anvil Creek.

REMARKS.--Records good except those for the period April to September and estimated daily discharges, which are poor.

AVERAGE DISCHARGE.--5 years (water years 1994-98), 612 ft³/s, 117.56 in/yr, 443,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 28,900 ft³/s Nov. 18, 1996, gage height 22.58 ft; minimum discharge, 18 ft³/s Sept. 26, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 4,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Oct. 30	2200	*5,940	*11.96	No other peak greater than base discharge.			
Minimum discharge, 30 ft ³ /s Sept. 15, 29, 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	382	1110	841	484	977	749	551	230	327	97	59	40
2	769	765	679	686	1140	993	513	231	296	95	57	38
3	597	585	574	1030	1060	991	470	216	263	97	56	38
4	523	477	491	1680	1040	937	437	203	252	93	55	37
5	637	408	433	1210	1160	841	407	193	234	90	54	37
6	474	423	391	1180	1130	727	401	186	219	87	53	37
7	345	439	848	1560	1010	643	392	179	207	86	53	36
8	411	385	943	1390	2000	637	372	178	197	e84	52	36
9	1070	348	730	1080	1780	587	494	179	186	e82	52	36
10	1120	320	609	1000	1400	552	885	176	182	e79	51	36
11	835	310	522	1780	1480	516	1250	179	175	e77	51	35
12	607	283	457	2180	1470	e600	1110	194	166	e75	49	35
13	476	e270	410	2410	1590	e700	1040	184	156	e73	48	34
14	389	e260	582	2030	1630	e650	1000	196	150	71	47	34
15	326	e250	733	2100	1710	e550	839	212	145	70	47	34
16	283	e350	1580	2380	1360	e490	722	209	140	68	47	34
17	249	e1100	2430	2970	1130	437	635	223	135	67	46	34
18	223	860	1380	2520	1070	397	570	213	131	65	46	45
19	203	904	1000	2830	1680	365	516	203	128	66	45	45
20	187	964	882	2300	1690	340	469	460	123	63	45	38
21	173	745	751	1760	2820	364	417	678	117	62	45	37
22	163	598	655	1680	2100	1440	383	450	114	62	44	36
23	154	1000	599	1780	1640	2200	364	354	111	60	44	35
24	146	1500	588	1760	1250	1690	340	376	111	59	44	34
25	139	1150	542	1600	1060	1190	314	395	116	59	43	34
26	133	935	488	1880	903	988	293	386	113	58	43	35
27	128	740	439	1540	783	897	280	370	106	55	43	34
28	125	635	400	1240	765	819	265	348	101	55	42	33
29	205	987	368	1310	---	722	251	403	97	60	41	32
30	1740	1130	341	1380	---	638	236	393	97	60	40	32
31	2560	---	317	1120	---	599	---	363	---	60	40	---
TOTAL	15772	20231	22003	51850	38828	24249	16216	8760	4895	2235	1482	1081
MEAN	509	674	710	1673	1387	782	541	283	163	72.1	47.8	36.0
MAX	2560	1500	2430	2970	2820	2200	1250	678	327	97	59	45
MIN	125	250	317	484	765	340	236	176	97	55	40	32
AC-FT	31280	40130	43640	102800	77020	48100	32160	17380	9710	4430	2940	2140
CFSM	7.20	9.54	10.0	23.7	19.6	11.1	7.65	4.00	2.31	1.02	.68	.51
IN.	8.30	10.64	11.58	27.28	20.43	12.76	8.53	4.61	2.58	1.18	.78	.57

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1994 - 1998, BY WATER YEAR (WY)

	1994	1995	1996	1997	1998
MEAN	187	745	1437	1560	1174
MAX	509	1580	2782	2151	1931
(WY)	1998	1997	1996	1995	1994
MIN	44.6	47.5	71.0	74.3	60.0
(WY)	1994	1994	1998	1994	1994

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1994 - 1998

	1997	1998	1994	1995	1996	1997	1998
ANNUAL TOTAL	185543	207602	612	759	309	14200	23
ANNUAL MEAN	508	569	759	309	14200	23	23
HIGHEST ANNUAL MEAN			759	309	14200	23	23
LOWEST ANNUAL MEAN			309	14200	23	23	23
HIGHEST DAILY MEAN	5160	Jan 1	2970	Jan 17	14200	Nov 18	1996
LOWEST DAILY MEAN	35	Sep 9	32	Sep 29	23	Oct 9	1994
ANNUAL SEVEN-DAY MINIMUM	37	Sep 3	33	Sep 24	23	Oct 7	1994
ANNUAL RUNOFF (AC-FT)	368000	411800	443200				
ANNUAL RUNOFF (CFSM)	7.19	8.04	8.65				
ANNUAL RUNOFF (INCHES)	97.63	109.23	117.56				
10 PERCENT EXCEEDS	1100	1490	1500				
50 PERCENT EXCEEDS	338	370	291				
90 PERCENT EXCEEDS	65	44	44				

e Estimated

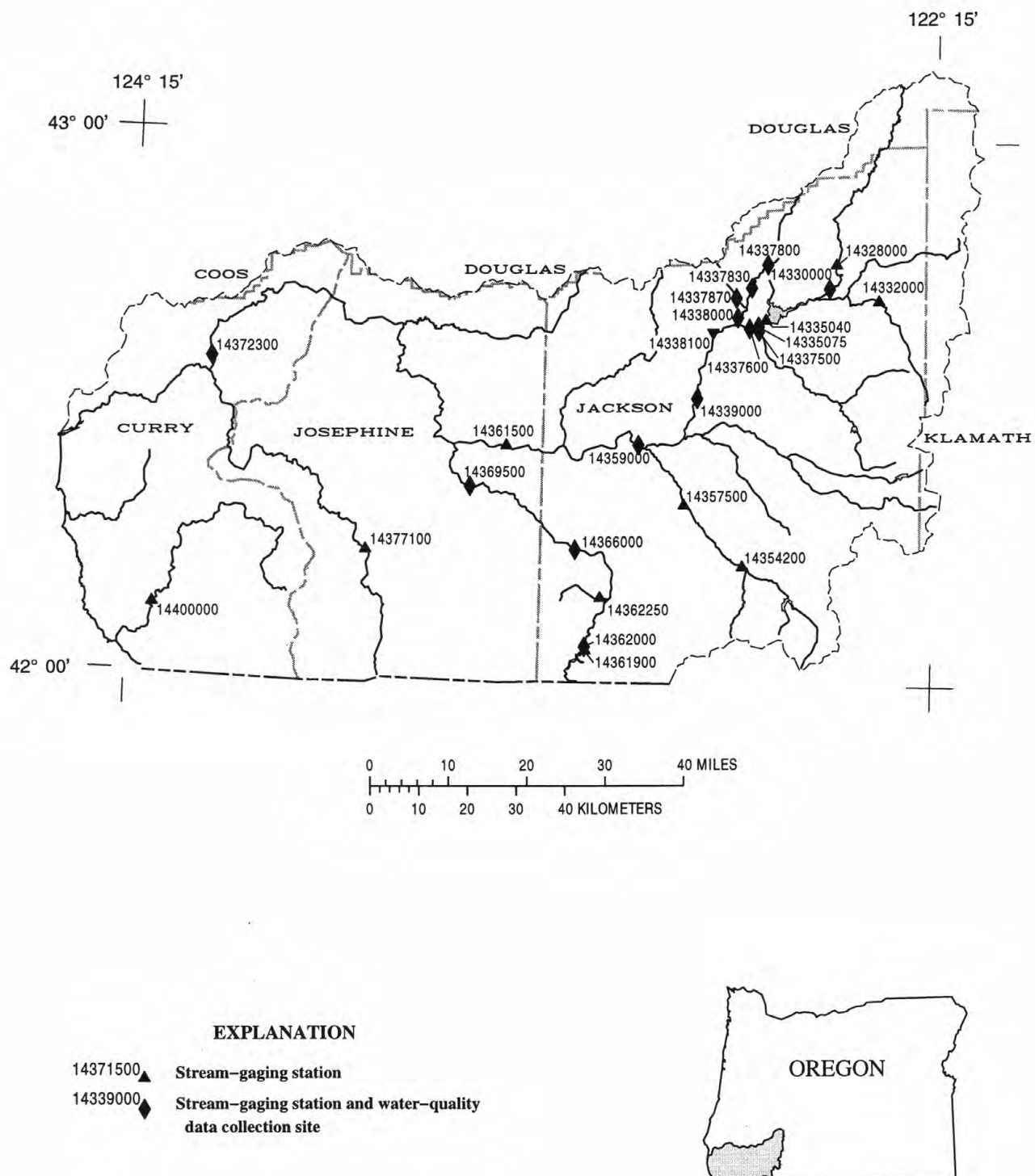


Figure 33. Location of surface-water and water-quality stations in the Rogue and Chetco River Basins.

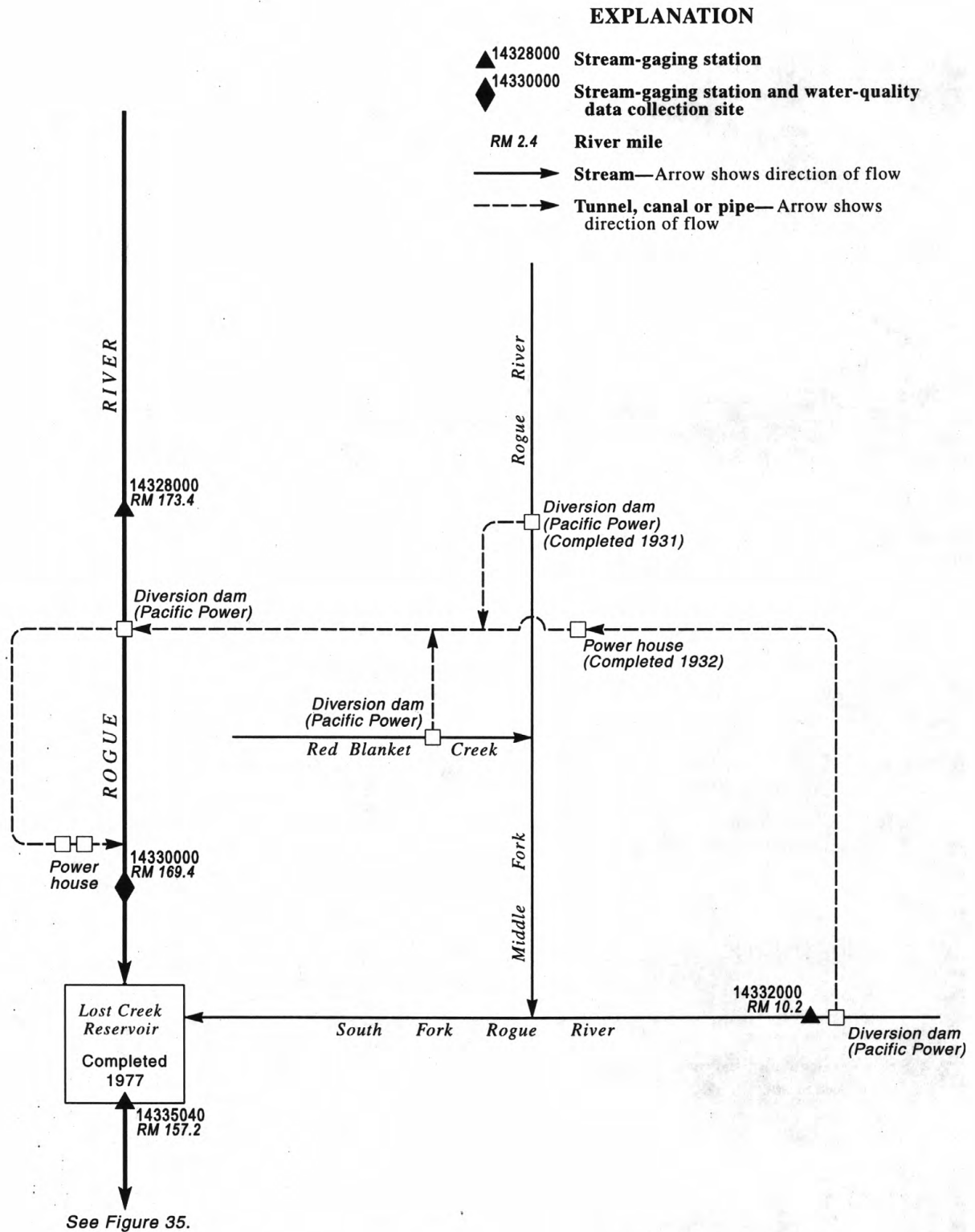


Figure 34. Schematic diagram showing gaging stations in the Rogue River Basin, upstream from Lost Creek Reservoir.

14328000 ROGUE RIVER ABOVE PROSPECT, OR

LOCATION.--Lat 42°46'30", long 122°29'55", in SE 1/4 NE 1/4 sec.19, T.32 S., R.3 E., Jackson County, Hydrologic Unit 17100307, Rogue River National Forest, on left bank 1.4 mi upstream from Pacific Power and Light Co. diversion dam, 1.8 mi northwest of Prospect, and at mile 173.4.

DRAINAGE AREA.--312 mi².

PERIOD OF RECORD.--January 1908 to February 1912, October 1923 to September 1998 (discontinued). Monthly discharge only for some periods, published in WSP 1318. Prior to October 1925, published as "near Prospect."

REVISED RECORDS.--WSP 1248: 1925, 1927(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 2,620 ft above sea level, from river-profile map. Prior to Feb. 17, 1912, nonrecording gage at several sites within a few hundred feet upstream at various datums.

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

AVERAGE DISCHARGE.--78 years (water years 1909-11, 1924-98), 827 ft³/s, 36.02 in/yr, 599,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,400 ft³/s Dec. 22, 1964, gage height, 11.55 ft, from floodmark, from rating curve extended above 9,000 ft³/s on basis of slope-area measurement at 16,600 ft³/s; minimum observed discharge, 200 ft³/s Nov. 20, 1931.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 11	1500	2,790	4.03	Jan. 17	0430	*6,360	*6.04
Jan. 14	1730	2,700	3.97	Mar. 23	2230	3,630	4.55

Minimum discharge, 492 ft³/s several days in September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	560	954	782	706	1480	1070	1250	1840	1570	896	607	518
2	690	803	752	951	1390	1300	1210	1880	1560	885	604	516
3	639	729	725	953	1310	1330	1200	1700	1500	876	599	504
4	639	682	717	903	1280	1200	1160	1660	1440	857	594	498
5	658	653	696	827	1220	1100	1120	1850	1400	838	583	498
6	620	675	677	796	1230	1040	1090	1710	1370	829	580	498
7	593	891	773	790	1190	982	1080	1640	1390	814	580	496
8	591	766	797	797	1140	965	1030	1690	1430	800	578	497
9	823	705	728	778	1090	929	1020	1560	1360	792	578	498
10	757	678	697	981	1040	909	1110	1410	1430	785	576	498
11	723	668	679	2170	1030	905	1150	1350	1420	770	573	498
12	706	665	666	1860	1050	1010	1100	1370	1350	753	569	500
13	678	652	655	1760	1120	1110	1070	1310	1310	741	564	498
14	667	655	656	1750	1140	1240	1030	1280	1250	729	558	498
15	652	634	674	2210	1160	1330	1000	1330	1200	720	556	495
16	636	638	761	2830	1100	1450	979	1280	1160	705	556	492
17	616	704	1420	5200	1050	1400	967	1240	1120	688	554	492
18	598	690	1040	3140	1020	1300	982	1190	1080	679	553	496
19	586	800	906	2490	1060	1250	1040	1190	1060	671	551	527
20	576	850	867	2010	1090	1290	1120	1270	1030	666	553	506
21	569	775	818	1720	1140	1410	1190	1290	1010	657	553	501
22	562	726	753	1640	1080	2220	1350	1250	1000	650	543	498
23	562	747	751	1790	1010	3430	1490	1240	1000	648	546	493
24	557	934	734	1860	988	2980	1620	1250	1010	693	541	492
25	550	1000	685	1700	959	2440	1430	1540	1090	644	537	497
26	547	952	667	1960	920	2170	1340	1380	1050	659	534	510
27	546	976	668	2130	900	1870	1370	1310	974	637	530	500
28	544	884	660	1840	958	1650	1500	1260	943	628	528	494
29	647	849	657	1890	---	1490	1650	1650	923	621	525	492
30	757	845	657	1810	---	1380	1770	1730	907	618	523	493
31	1590	---	662	1600	---	1320	---	1610	---	617	522	---
TOTAL	20439	23180	23380	53842	31145	45470	36418	45260	36337	22566	17348	14993
MEAN	659	773	754	1737	1112	1467	1214	1460	1211	728	560	500
MAX	1590	1000	1420	5200	1480	3430	1770	1880	1570	896	607	527
MIN	544	634	655	706	900	905	967	1190	907	617	522	492
AC-FT	40540	45980	46370	106800	61780	90190	72240	89770	72070	44760	34410	29740
CFSM	2.11	2.48	2.42	5.57	3.57	4.70	3.89	4.68	3.88	2.33	1.79	1.60
IN.	2.44	2.76	2.79	6.42	3.71	5.42	4.34	5.40	4.33	2.69	2.07	1.79

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1998, BY WATER YEAR (WY)

	MEAN	454	700	929	935	972	1000	1195	1344	974	550	442	422
MAX	957	2062	3368	2298	2093	2820	1888	2263	2564	1010	728	662	602
(WY)	1951	1910	1965	1997	1958	1972	1966	1952	1933	1953	1997	1997	1997
MIN	256	292	313	292	325	480	649	456	335	253	222	230	230
(WY)	1993	1932	1931	1937	1937	1977	1926	1992	1931	1931	1931	1931	1931

SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1908 - 1998

ANNUAL TOTAL	403590	370378											
ANNUAL MEAN	1106	1015											
HIGHEST ANNUAL MEAN										827			
LOWEST ANNUAL MEAN										1302			1997
HIGHEST DAILY MEAN	9600	Jan 1	5200	Jan 17	16000	Dec 23	1964			411			1931
LOWEST DAILY MEAN	534	Sep 30	492	Sep 16	210	Jan 7	1937			210			
ANNUAL SEVEN-DAY MINIMUM	548	Sep 24	496	Sep 12	216	Aug 30	1931			216			
ANNUAL RUNOFF (AC-FT)	800500		734600							599200			
ANNUAL RUNOFF (CFSM)	3.54		3.25							2.65			
ANNUAL RUNOFF (INCHES)	48.12		44.16							36.02			
10 PERCENT EXCEEDS	1740		1650							1500			
50 PERCENT EXCEEDS	906		903							637			
90 PERCENT EXCEEDS	606		536							360			

ROGUE RIVER BASIN

14330000 ROGUE RIVER BELOW PROSPECT, OR

LOCATION.--Lat 42°43'50", long 122°30'55", in SE 1/4 NW 1/4 sec.6, T.33 S., R.3 E., Jackson County, Hydrologic Unit 17100307, on right bank 600 ft downstream from Prospect No. 1 powerplant, 1.4 mi downstream from Mill Creek, 2.0 mi southwest of Prospect, 2.1 mi upstream from South Fork Rogue River, and at mile 169.4.

DRAINAGE AREA.--379 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1913 to September 1930, October 1968 to current year.

REVISED RECORDS.--WSP 1518: 1914-23, 1924(M), 1925, 1928.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,964.56 ft above sea level (Pacific Power and Light Co. bench mark). Prior to September 1927 nonrecording gage at site 1,000 ft upstream, above powerplants, at different datum, also concurrent nonrecording gage on headrace to obtain equivalent combined flow.

REMARKS.--No estimated daily discharges. Records good. Fluctuations caused by powerplant 600 ft upstream from station. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--30 years, (water years 1969-98), 1,477 ft³/s, 1,070,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,200 ft³/s Jan. 1, 1997, gage height, 8.15 ft; minimum discharge, 166 ft³/s Sept. 29, 1992, result of regulation by upstream diversion gates.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 12.4 ft Dec. 22, 1964, from floodmarks, discharge, 25,000 ft³/s, from records for station upstream from Prospect (station 14328000) and for station downstream from South Fork Rogue River near Prospect (station 14335000) after adjusting for estimated intervening tributary inflow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,160 ft³/s Jan. 17, gage height 6.08 ft; minimum discharge, 526 ft³/s Nov. 25, result of regulation by upstream diversion gates.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	948	1350	1240	1160	2040	1650	1900	2390	2160	1510	1100	1010
2	1100	1200	1200	1400	1930	1890	1840	2460	2220	1490	1120	1010
3	1050	1160	1180	1400	1840	1930	1830	2310	2180	1490	1120	1010
4	1050	1110	1180	1360	1810	1790	1800	2160	2110	1460	1120	1000
5	1070	1090	1150	1280	1760	1680	1770	2290	2070	1430	1130	1000
6	1030	1120	1130	1250	1760	1620	1740	2210	2030	1420	1120	998
7	998	1330	1220	1240	1710	1550	1730	2190	2040	1410	1130	998
8	1010	1200	1250	1260	1660	1530	1670	2350	2090	1330	1120	1000
9	1260	1140	1180	1240	1600	1480	1670	2250	2010	1170	1110	1010
10	1200	1120	1160	1420	1560	1460	1740	2050	2080	1230	1100	933
11	1160	1100	1140	2570	1560	1510	1770	1840	2080	1260	1100	852
12	1140	1110	1120	2340	1560	1620	1710	1800	1970	1300	1090	993
13	1110	1100	1110	2280	1640	1670	1700	1730	1940	1320	1080	990
14	1110	1100	1120	2200	1660	1780	1650	1740	1860	1310	1080	990
15	1080	1070	1130	2620	1690	1860	1620	1930	1820	1290	1080	987
16	1070	1080	1220	3270	1610	2030	1590	1880	1770	1210	1080	986
17	1040	1150	1870	5960	1570	2010	1570	1850	1730	1260	1070	980
18	1020	1130	1510	3700	1540	1880	1590	1740	1710	1250	1070	988
19	1000	1230	1360	2920	1590	1830	1640	1720	1680	1240	1070	1030
20	990	1270	1340	2460	1620	1880	1720	1760	1640	1240	1060	995
21	978	1190	1280	2240	1680	2010	1790	1780	1630	1250	1060	991
22	968	1140	1220	2190	1640	2740	1950	1840	1610	1010	1060	981
23	968	1180	1210	2300	1580	4170	2120	1840	1610	999	1060	977
24	951	1320	1200	2340	1550	3700	2260	1840	1620	1040	1050	977
25	945	1320	1150	2210	1520	3010	2070	2160	1710	993	1050	984
26	949	1400	1130	2420	1480	2730	1970	1910	1680	1010	1050	1000
27	951	1430	1120	2590	1450	2490	1850	1790	1590	981	1040	984
28	910	1350	1120	2340	1520	2310	1930	1750	1550	976	1040	975
29	1060	1310	1110	2400	---	2170	2130	2170	1540	970	1030	970
30	1190	1310	1110	2320	---	2060	2240	2370	1510	968	1030	964
31	1970	---	1120	2170	---	1980	---	2270	---	970	1020	---
TOTAL	33276	36110	37580	68850	46130	64020	54560	62370	55240	37787	33440	29563
MEAN	1073	1204	1212	2221	1648	2065	1819	2012	1841	1219	1079	985
MAX	1970	1430	1870	5960	2040	4170	2260	2460	2220	1510	1130	1030
MIN	910	1070	1110	1160	1450	1460	1570	1720	1510	968	1020	852
AC-FT	66000	71620	74540	136600	91500	127000	108200	123700	109600	74950	66330	58640

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1998, BY WATER YEAR (WY)

	MEAN	953	1244	1588	1710	1691	1838	1881	2036	1635	1195	1019	950
MAX	1342	2100	3312	3012	2728	3627	2668	3282	2923	1660	1356	1268	
(WY)	1985	1974	1997	1997	1996	1972	1989	1971	1974	1971	1984	1984	
MIN	606	728	926	946	946	1045	1272	933	765	717	632	623	
(WY)	1993	1995	1991	1977	1977	1977	1977	1992	1992	1992	1992	1992	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1969 - 1998

ANNUAL TOTAL	584249	558926	
ANNUAL MEAN	1601	1531	
HIGHEST ANNUAL MEAN			1477
LOWEST ANNUAL MEAN			2053
HIGHEST DAILY MEAN	10500	5960	10500
LOWEST DAILY MEAN	910	852	555
ANNUAL SEVEN-DAY MINIMUM	942	949	560
ANNUAL RUNOFF (AC-FT)	1159000	1109000	1070000
10 PERCENT EXCEEDS	2340	2210	2280
50 PERCENT EXCEEDS	1340	1410	1310
90 PERCENT EXCEEDS	997	998	837

ROGUE RIVER BASIN

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14330000 ROGUE RIVER BELOW PROSPECT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1976 to September 1981.

pH: November 1976 to September 1981.

WATER TEMPERATURE: October 1968 to current year.

DISSOLVED OXYGEN: October 1979 to September 1981.

SUSPENDED SEDIMENT DISCHARGE: November 1976 to September 1981 (October to April only, 1980 water year, November to April only, 1981 water year).

INSTRUMENTATION.--Water-quality monitor since November 1976. Automatic pumping sediment sampler November 1976 to April 1981.

REMARKS.--During low flows and warm weather, water temperatures may be influenced by return flows from hydroelectric plant 600 ft upstream.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 73 microsiemens Sept. 22, 1980; minimum recorded, 28 microsiemens Jan. 13, 1980, may have been lower during period of missing record Jan. 14-17, 1980.

pH: Maximum recorded, 8.3 units Aug. 10, 1981, may have been higher during period of no record in July and August 1981; minimum, 7.0 units Nov. 30, 1976.

WATER TEMPERATURE: Maximum, 20.5°C July 20, 1979 (result of regulation); minimum, 0.0°C at times most years.

DISSOLVED OXYGEN: Maximum, 13.6 mg/L Dec. 8, 1980, Feb. 21, 1981; minimum, 7.2 mg/L June 21, 1980, result of regulation.

SEDIMENT CONCENTRATION: Maximum daily mean (water years 1977-79), 1,270 mg/L (estimated) Jan. 11, 1979; minimum, 0 mg/L on many days each year. Maximum daily mean (period October 1979 to April 1981), 716 mg/L Oct. 25, 1979; minimum daily mean, 0 mg/L on several days in October and December 1979, Nov. 15-21, 28, Dec. 1, 1980, Jan. 19, 1981.

SEDIMENT DISCHARGE: Maximum daily (water years 1977-79), 17,790 tons Dec. 15, 1977; minimum daily, 0 tons on many days each year. Maximum daily (period October 1979 to April 1981), 5,570 tons Jan. 13, 1980; minimum daily, 0 tons on several days in October and December 1979, Nov. 15-21, 28, Dec. 1, 1980, Jan. 19, 1981.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 15.5°C July 22, 23; minimum, 1.0°C Dec. 26.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.0	8.0	8.5	7.5	6.0	6.5	4.5	3.5	3.5	3.5	3.0	3.0
2	8.5	8.0	8.0	6.5	5.5	6.0	3.5	3.0	3.0	4.0	3.5	4.0
3	8.5	7.5	8.0	6.5	5.5	6.0	4.0	3.0	3.5	4.0	3.5	4.0
4	9.0	8.0	8.5	7.0	6.0	6.5	4.5	4.0	4.0	3.5	3.0	3.5
5	9.0	8.0	8.0	7.0	6.0	6.5	4.5	4.0	4.5	3.5	3.0	3.5
6	8.0	7.0	7.5	7.0	6.5	6.5	5.0	4.5	4.5	3.5	3.0	3.5
7	7.5	6.5	7.0	7.5	7.0	7.0	5.0	4.5	5.0	3.5	2.5	3.0
8	7.0	6.5	7.0	7.0	5.5	6.0	5.0	4.0	4.5	4.0	3.0	3.5
9	7.0	6.0	6.5	5.5	5.0	5.0	4.0	3.5	4.0	4.0	3.5	3.5
10	6.0	5.0	5.5	6.0	5.5	5.5	4.0	3.0	3.5	4.5	4.0	4.0
11	6.5	5.5	6.0	6.5	6.0	6.0	3.0	2.5	3.0	4.5	4.0	4.5
12	7.0	6.0	6.0	6.5	5.5	6.0	3.0	2.5	3.0	4.5	4.0	4.0
13	7.0	5.5	6.0	5.5	5.0	5.5	3.5	3.0	3.0	4.5	4.5	4.5
14	7.0	5.5	6.5	6.0	5.0	5.5	4.0	3.0	3.5	5.0	4.5	4.5
15	7.5	6.0	6.5	5.5	4.5	5.0	4.0	3.0	4.0	5.0	4.5	4.5
16	7.5	6.0	7.0	5.5	4.5	5.0	3.0	2.5	3.0	5.0	5.0	5.0
17	7.5	6.0	7.0	5.5	5.0	5.5	3.5	3.0	3.5	5.0	4.5	4.5
18	7.5	6.0	6.5	5.5	5.0	5.0	3.5	3.0	3.5	5.0	4.5	5.0
19	7.5	6.5	7.0	5.5	5.0	5.0	3.0	2.0	2.5	4.5	4.0	4.0
20	7.0	6.0	6.5	5.5	5.0	5.5	3.0	2.5	2.5	4.5	4.0	4.0
21	6.5	5.0	6.0	5.0	4.5	5.0	3.0	2.5	3.0	4.5	4.0	4.0
22	6.5	5.0	6.0	5.5	5.0	5.0	2.5	1.5	2.0	4.0	3.0	3.5
23	7.0	6.0	6.5	6.0	5.5	6.0	2.0	1.5	1.5	4.5	4.0	4.0
24	6.5	5.0	6.0	6.5	6.0	6.0	3.0	2.0	2.5	4.5	4.0	4.5
25	5.5	4.5	5.0	6.0	5.0	5.5	2.5	1.5	2.0	4.5	4.0	4.5
26	5.5	4.0	5.0	5.5	5.0	5.0	1.5	1.0	1.5	5.0	4.0	4.5
27	6.5	5.0	5.5	6.0	5.5	5.5	2.5	1.5	2.0	5.0	4.0	4.5
28	6.5	5.5	6.0	6.0	5.5	5.5	3.5	2.5	3.0	5.0	4.5	5.0
29	7.0	6.0	6.5	5.5	5.0	5.0	3.5	3.0	3.0	5.5	5.0	5.0
30	7.5	6.5	7.0	5.5	4.5	5.0	3.0	2.5	3.0	5.0	4.0	4.5
31	8.5	7.5	8.0	---	---	---	3.0	2.5	3.0	4.5	4.0	4.5
MONTH	9.0	4.0	6.7	7.5	4.5	5.6	5.0	1.0	3.2	5.5	2.5	4.1

ROGUE RIVER BASIN

14330000 ROGUE RIVER BELOW PROSPECT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.5	4.5	4.5	5.0	4.5	5.0	5.5	4.5	5.0	8.5	7.5	8.0
2	4.5	4.0	4.5	5.0	4.5	5.0	6.0	5.5	5.5	8.5	7.0	7.5
3	5.5	4.5	5.0	4.5	3.5	4.0	5.5	5.0	5.5	7.5	6.5	7.0
4	5.5	4.5	5.0	4.0	3.0	3.5	6.0	5.0	5.5	7.5	7.0	7.5
5	4.5	4.5	4.5	4.0	3.0	3.5	6.0	5.0	5.5	7.5	7.0	7.5
6	5.0	4.5	5.0	3.5	3.0	3.0	6.0	5.0	5.5	7.5	7.5	7.5
7	5.0	4.5	4.5	3.5	2.5	3.0	5.5	5.0	5.0	9.0	7.0	8.0
8	5.0	4.5	4.5	4.5	3.5	4.0	5.5	4.5	5.0	9.0	7.0	8.0
9	4.5	4.0	4.0	5.0	3.5	4.5	6.0	5.0	5.5	7.0	6.0	6.5
10	4.0	4.0	4.0	4.5	3.5	4.0	5.5	5.0	5.5	6.5	6.0	6.5
11	4.5	3.5	4.0	6.0	4.5	5.0	5.5	5.0	5.0	6.5	6.5	6.5
12	5.0	4.5	4.5	5.5	5.0	5.0	5.0	4.5	5.0	6.5	6.0	6.5
13	4.5	4.5	4.5	6.0	5.0	5.5	5.0	4.0	4.5	6.0	6.0	6.0
14	4.5	4.0	4.5	6.0	5.0	5.5	5.0	4.0	4.5	6.0	6.0	6.0
15	4.0	3.5	4.0	6.0	5.5	6.0	5.5	4.5	5.0	6.5	5.5	6.0
16	4.0	3.5	4.0	6.5	5.5	6.0	6.5	4.5	5.5	6.5	5.5	6.0
17	4.0	3.5	4.0	5.5	4.5	5.0	7.0	5.0	6.0	6.5	6.0	6.0
18	4.5	4.0	4.0	5.5	4.5	5.0	7.5	6.0	6.5	7.5	5.5	6.5
19	4.5	4.5	4.5	6.0	4.5	5.5	8.5	6.5	7.5	8.0	7.0	7.5
20	4.5	4.0	4.0	6.5	5.0	5.5	8.0	6.5	7.5	7.0	6.0	6.5
21	4.0	2.0	2.5	6.0	5.5	5.5	8.5	7.0	7.5	7.0	6.0	6.5
22	3.0	2.0	2.5	6.0	5.5	5.5	8.0	7.5	7.5	8.5	6.5	7.5
23	3.5	3.0	3.5	5.5	5.0	5.0	7.5	6.0	7.0	8.5	7.5	8.0
24	4.5	3.5	4.0	5.5	4.5	5.0	6.5	5.5	6.0	7.5	6.5	7.0
25	4.0	3.5	3.5	6.0	5.0	5.5	6.5	5.0	6.0	6.5	6.0	6.5
26	4.5	3.5	3.5	6.0	5.0	5.0	7.5	5.5	6.5	6.5	6.0	6.0
27	5.0	3.5	4.0	5.0	4.0	4.5	8.0	7.0	7.5	7.0	6.0	6.5
28	5.0	4.5	4.5	4.5	4.0	4.0	8.5	7.5	8.0	7.0	6.5	6.5
29	---	---	---	5.0	3.5	4.0	8.5	7.5	8.0	7.0	7.0	7.0
30	---	---	---	4.5	3.5	4.0	8.5	7.5	8.0	8.5	6.5	7.5
31	---	---	---	5.0	4.0	4.5	---	---	---	9.5	7.5	8.5
MONTH	5.5	2.0	4.1	6.5	2.5	4.7	8.5	4.0	6.1	9.5	5.5	6.9
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.5	9.0	9.5	13.0	11.0	12.0	13.5	11.0	12.0	13.0	10.5	11.5
2	10.0	9.0	9.5	12.0	11.0	11.5	14.0	11.0	12.0	13.0	10.5	11.5
3	9.5	8.5	9.0	13.0	11.0	12.0	14.5	11.5	12.5	13.0	10.5	11.5
4	9.5	8.0	8.5	13.0	11.0	11.5	14.5	12.0	13.0	13.0	11.0	12.0
5	10.0	8.5	9.0	13.5	10.5	12.0	14.5	12.0	13.0	13.0	10.5	11.5
6	10.5	9.0	9.5	14.0	11.0	12.0	14.0	11.5	12.5	12.5	10.0	11.5
7	10.0	8.5	9.5	14.0	11.5	12.5	13.5	11.5	12.5	11.5	10.5	11.0
8	9.5	7.5	8.5	14.5	11.5	13.0	13.5	10.5	12.0	11.0	9.5	10.0
9	10.0	8.5	9.5	15.0	12.5	13.5	14.0	11.0	12.0	10.5	9.5	10.0
10	10.0	9.0	9.5	14.5	12.0	13.0	14.0	11.0	12.5	10.0	8.0	9.0
11	10.0	8.0	9.0	13.5	11.5	12.5	14.0	11.0	12.5	10.5	8.0	9.0
12	11.5	10.0	10.5	13.5	11.0	12.0	14.0	11.0	12.5	11.0	8.5	9.5
13	11.5	10.0	10.5	13.5	11.0	12.0	14.5	11.5	13.0	11.0	9.0	10.0
14	11.0	9.5	10.0	14.0	11.0	12.0	14.5	12.0	13.0	11.5	9.0	10.0
15	11.0	9.5	10.0	14.0	11.0	12.0	14.0	11.5	13.0	11.5	9.5	10.5
16	10.5	9.0	9.5	14.5	11.0	12.5	13.0	10.5	12.0	11.5	9.5	10.5
17	11.0	9.0	10.0	14.5	11.5	13.0	12.5	10.0	11.0	10.5	9.0	10.0
18	12.0	10.0	10.5	14.5	11.5	13.0	12.0	9.5	10.5	9.5	8.5	9.0
19	11.5	10.0	10.5	14.5	11.5	13.0	12.0	9.5	10.5	9.5	8.0	9.0
20	12.0	10.0	10.5	14.5	11.5	13.0	12.0	10.0	11.0	9.5	7.5	8.5
21	12.5	10.5	11.0	15.0	12.0	13.5	12.5	9.5	11.0	9.5	7.5	8.0
22	12.5	10.5	11.0	15.5	13.0	14.0	12.5	9.5	11.0	9.0	7.5	8.5
23	11.5	10.0	11.0	15.5	13.0	14.5	13.0	10.5	11.5	9.5	7.5	8.5
24	10.0	9.5	10.0	14.5	12.5	13.5	12.5	10.0	11.0	9.5	7.5	8.5
25	9.5	9.0	9.0	14.5	12.5	13.5	12.5	9.5	11.0	9.0	8.5	8.5
26	9.5	8.5	9.0	15.0	12.5	13.5	12.0	9.5	11.0	9.0	7.5	8.5
27	11.0	8.5	9.5	14.5	12.5	13.5	12.0	9.5	10.5	9.0	7.5	8.0
28	12.0	9.5	10.5	14.5	12.5	13.5	12.5	10.0	11.0	9.5	7.5	8.5
29	13.0	10.5	11.5	13.5	12.0	12.5	12.5	10.0	11.0	10.0	8.0	9.0
30	13.5	11.0	12.0	14.5	11.5	12.5	13.0	10.5	11.5	9.5	8.0	8.5
31	---	---	---	14.0	12.0	13.0	13.0	10.5	11.5	---	---	---
MONTH	13.5	7.5	9.9	15.5	10.5	12.8	14.5	9.5	11.8	13.0	7.5	9.7
YEAR	15.5	1.0	7.1									

14332000 SOUTH FORK ROGUE RIVER NEAR PROSPECT, OR

LOCATION.--Lat 42°42'30", long 122°23'30", in SE 1/4 SW 1/4 sec. 7, T.33 S., R.4 E., Jackson County, Hydrologic Unit 17100307, in Rogue River National Forest, on left bank 0.3 mi downstream from South Fork dam and intake of South Fork power canal, 0.31 mi downstream from Imnaha Creek, 5.6 mi southeast of Prospect, and at mile 10.2.

DRAINAGE AREA.--83.8 mi². Drainage area at site upstream from Imnaha Creek was used October 1931 to September 1949, 61.3 mi²; and Imnaha Creek near Prospect, 22.2 mi².

PERIOD OF RECORD.--April 1924 to September 1931, October 1949 to current year. Equivalent records for period October 1931 to September 1949 may be obtained by combining flow of South Fork Rogue River above Imnaha Creek, near Prospect and Imnaha Creek near Prospect. Records for period October 1949 to September 1983 included flow of South Fork power canal.

REVISED RECORDS.--WSP 1318: 1925(M), 1927(M), 1930(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,300 ft above sea level, from topographic map. Prior to Sept. 10, 1965, at site 1,000 ft upstream at different datum.

REMARKS.--No estimated daily discharges. Records fair. All records given herein do not include flow in South Fork power canal (completed in March 1932) which diverts 1,500 ft upstream from station and returns water to main stem Rogue River upstream from South Fork Rogue River; practically no storage upstream from diversion dam.

AVERAGE DISCHARGE.--59 years (water years 1925-83), 178 ft³/s, 129,000 acre-ft/yr (includes flow of South Fork power canal). 15 years (water years 1984-98), 82.6 ft³/s, 59,850 acre-ft/yr (river only).

EXTREMES FOR PERIOD OF RECORD.--River only, maximum discharge, 7,010 ft³/s Dec. 22, 1964, gage height, 11.1 ft, from floodmark, from rating curve extended above 410 ft³/s on basis of measurement of flow over dam of 3,180 ft³/s; no flow Jan. 31, 1950, Sept. 29, 30, 1967 (entire flow diverted to canal).

Combined flow, maximum discharge, 7,010 ft³/s Dec. 22, 1964 (no flow in canal); minimum daily, about 38 ft³/s Aug. 1-31, 1931.

EXTREMES FOR CURRENT YEAR.--River only, maximum discharge, 1,870 ft³/s Jan. 17, gage height, 5.60 ft; minimum discharge, 6.1 ft³/s Sept. 30.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	210	146	128	348	227	128	223	302	76	15	11
2	119	161	142	144	331	252	119	226	310	74	14	10
3	109	144	138	149	324	256	116	193	299	71	15	11
4	108	134	136	143	306	231	112	193	279	65	14	10
5	107	129	133	138	291	235	107	209	256	58	15	10
6	107	129	133	137	282	206	104	185	247	51	15	9.9
7	108	155	142	139	271	221	100	177	252	45	15	10
8	107	155	141	142	261	216	92	187	243	38	14	9.7
9	128	141	134	140	249	208	90	172	212	36	14	9.6
10	122	133	130	166	241	204	91	151	275	37	15	8.1
11	118	132	127	378	233	122	90	152	288	38	14	8.9
12	120	128	125	380	231	114	84	159	251	27	13	8.9
13	116	128	123	370	230	207	82	146	226	21	14	8.3
14	113	126	126	358	233	212	72	165	202	19	15	9.1
15	111	123	127	409	225	226	67	192	184	19	14	8.4
16	108	123	140	699	221	164	59	164	180	18	13	8.6
17	105	122	178	1410	216	118	56	150	164	17	13	8.4
18	103	121	157	875	206	120	55	150	143	17	13	8.8
19	102	124	148	679	213	118	57	157	137	18	12	10
20	101	126	146	549	207	113	64	196	128	17	12	8.3
21	100	123	142	463	220	116	79	207	120	16	12	7.4
22	99	123	136	455	209	214	94	212	115	17	12	7.5
23	98	125	135	471	205	362	125	201	110	18	13	7.0
24	98	177	133	430	193	360	178	220	123	16	11	7.4
25	95	185	131	399	201	307	129	336	136	16	11	9.2
26	95	170	129	423	194	279	110	271	125	16	11	8.3
27	94	170	127	456	193	231	116	239	109	16	11	6.8
28	94	158	125	411	211	198	137	235	97	15	12	7.2
29	111	155	124	429	---	168	166	307	90	15	11	7.0
30	115	152	123	396	---	150	197	353	82	16	11	7.1
31	371	---	123	368	---	141	---	309	---	15	10	---
TOTAL	3590	4282	4200	12234	6745	6296	3076	6437	5685	938	404	261.9
MEAN	116	143	135	395	241	203	103	208	190	30.3	13.0	8.73
MAX	371	210	178	1410	348	362	197	353	310	76	15	11
MIN	94	121	123	128	193	113	55	146	82	15	10	6.8
AC-FT	7120	8490	8330	24270	13380	12490	6100	12770	11280	1860	801	519

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1998, BY WATER YEAR (WY)

	MEAN	25.8	43.5	105	102	103	109	139	170	117	29.5	19.8	29.1
MAX	116	161	526	435	323	238	345	347	301	155	121	115	115
(WY)	1998	1997	1997	1997	1996	1993	1989	1997	1984	1997	1997	1997	1997
MIN	1.85	5.38	3.80	2.87	3.42	9.91	19.9	12.8	5.23	5.30	4.11	1.16	1.16
(WY)	1984	1986	1987	1985	1985	1985	1988	1992	1987	1988	1986	1984	1984

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1984 - 1998

ANNUAL TOTAL	71165	54148.9	
ANNUAL MEAN	195	148	82.6
HIGHEST ANNUAL MEAN			224
LOWEST ANNUAL MEAN			17.6
HIGHEST DAILY MEAN	2670	Jan 1	2670
LOWEST DAILY MEAN	44	Feb 27	.22
ANNUAL SEVEN-DAY MINIMUM	46	Feb 22	.23
ANNUAL RUNOFF (AC-FT)	141200	107400	59850
10 PERCENT EXCEEDS	331	294	219
50 PERCENT EXCEEDS	137	128	17
90 PERCENT EXCEEDS	98	11	4.2

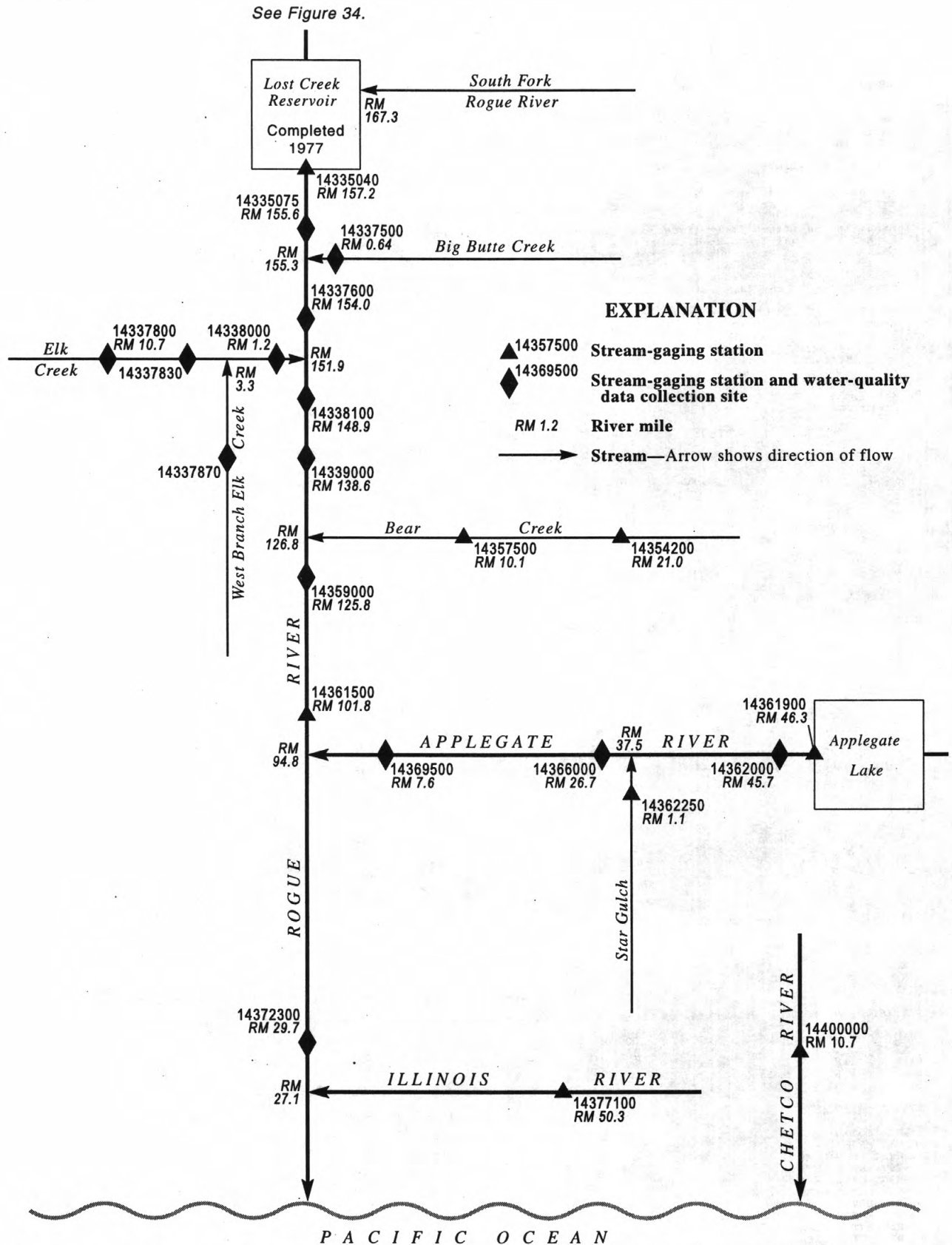


Figure 35. Location of surface-water and water-quality stations in the Rogue River Basin, downstream from Lost Creek Reservoir.

ROGUE RIVER BASIN

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14335040 LOST CREEK LAKE NEAR MCLEOD, OR

LOCATION.--Lat 42°40'16", long 122°40'25", in SW 1/4 sec.26, T.33 S., R. 1 E., Jackson County, Hydrologic Unit 17100307, in outlet structure of Lost Creek Dam on Rogue River, 1.0 mi northeast of McLeod and at mile 157.2.

DRAINAGE AREA.--686 mi².

PERIOD OF RECORD.--February 1977 to current year.

REVISED RECORDS.--WDR OR-85-2: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers). Prior to Nov. 28, 1977, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam completed in October 1976. Storage began in February 1977. Total capacity, 465,000 acre-ft between elevations 1,551.0 ft and 1,872.0 ft, maximum pool elevation. Elevation of gated spillway crest, 1,823.0 ft. Usable storage, 315,000 acre-ft between elevation 1,751.0 ft and 1,872.0 ft. Water is used for flood control, recreation, power generation, pollution abatement, domestic use and other purposes.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 465,800 acre-ft June 1, 2, 1988, elevation, 1,872.24 ft; minimum contents since first filling, 100,800 acre-ft Oct. 29, 1977, elevation, 1,720.50 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 465,100 acre-ft May 6, 7, elevation, 1,872.04 ft; minimum contents, 289,700 acre-ft Nov. 19, elevation, 1,809.95 ft.

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

1,720	100,100	1,850	393,100
1,750	148,200	1,872	465,000
1,800	254,600	1,899	562,900

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1814.53	1816.75	1811.99	1812.41	1823.59	1849.33	1861.51	1870.57	1871.94	1863.20	1842.02	1820.75
2	1814.72	1816.38	1812.00	1812.87	1824.39	1850.57	1861.82	1870.89	1871.95	1862.49	1841.43	1820.01
3	1814.83	1815.86	1811.99	1813.38	1825.54	1851.81	1862.29	1871.22	1871.93	1861.82	---	1819.28
4	1814.93	1815.39	1812.00	1813.83	1826.75	1852.32	1862.81	1871.60	1871.89	1861.15	---	1818.54
5	1815.05	1814.98	1811.99	1814.15	1827.88	1852.49	1863.30	1871.98	1871.93	1860.56	---	1817.76
6	1815.11	1814.71	1811.97	1814.44	1828.94	1852.67	1863.82	1872.04	1871.92	1859.86	---	1816.98
7	1815.18	1814.40	1812.04	1814.74	1829.94	1852.88	1864.29	1871.75	1871.92	1859.19	1838.28	1816.21
8	1815.29	1813.93	1812.01	1815.04	1830.90	1853.24	1864.70	1871.75	1871.95	1858.58	1837.65	1815.43
9	1815.68	1813.51	1811.98	1815.26	1831.78	1853.70	1865.04	1871.75	1871.89	1857.97	1837.02	1814.68
10	1815.90	1813.16	1811.94	1815.73	1832.65	1854.16	1865.26	1869.82	1871.88	1857.41	1836.38	1813.97
11	1816.10	1812.81	1811.96	1816.37	1833.47	1854.62	1865.35	1869.72	1871.73	1856.84	1835.74	1813.49
12	1816.27	1812.41	1811.96	1816.49	1834.29	1855.19	1865.41	1869.87	1871.56	1856.20	1835.09	1813.19
13	1816.42	1811.99	1811.98	1816.98	1835.23	1855.81	1865.48	1870.07	1871.44	1855.51	1834.44	1812.88
14	1816.55	1811.61	1812.06	1817.31	1836.22	1856.52	1865.93	1870.28	1871.30	1854.81	1833.78	1812.56
15	1816.65	1811.19	1812.08	1817.87	1837.20	1857.13	1866.54	1870.57	1871.16	1854.16	1833.10	1812.22
16	1816.74	1810.77	1812.04	1818.38	1838.08	1857.48	1867.16	1870.76	1871.11	1853.49	1832.42	1811.88
17	1816.81	1810.37	1812.23	1821.86	1838.94	1857.74	1867.76	1870.96	1870.99	1852.84	1831.74	1811.54
18	1816.87	1810.00	1812.00	1822.01	1839.72	1857.89	1868.30	1871.15	1870.70	1852.17	1831.03	1811.29
19	1816.91	1809.99	1812.01	1822.42	1840.56	1858.00	1868.87	1871.40	1870.24	1851.47	1830.32	1811.18
20	1816.93	1810.23	1812.04	1822.18	1841.38	1858.13	1869.30	1871.67	1869.77	1850.74	1829.60	1811.09
21	1816.95	1810.43	1811.99	1821.71	1842.62	1858.38	1869.51	1871.96	1869.25	1849.99	1828.88	1811.08
22	1816.96	1810.57	1811.95	1821.37	1843.63	1859.42	1869.74	1872.00	1868.72	1849.24	1828.16	1811.08
23	1816.98	1810.77	1811.97	1821.33	1844.51	1860.93	1869.86	1871.98	1868.17	1848.47	1827.43	1811.09
24	1816.99	1811.24	1811.97	1821.44	1845.37	1861.50	1870.02	1872.00	1867.71	1847.69	1826.69	1811.08
25	1816.99	1811.78	1811.95	1821.39	1846.17	1861.22	1869.99	1871.91	1867.31	1846.89	1825.95	1811.09
26	1816.98	1811.99	1811.97	1821.60	1846.88	1860.76	1869.99	1871.92	1866.79	1846.09	1825.22	1811.09
27	1816.99	1812.00	1811.98	1822.04	1847.59	1860.40	1869.98	1871.88	1866.16	1845.26	1824.49	1811.09
28	1817.00	1811.98	1812.00	1822.10	1848.38	1860.24	1870.02	1871.93	1865.46	1844.47	1823.75	1811.09
29	1817.00	1811.99	1812.00	1822.48	---	1860.41	1870.05	1871.89	1864.70	1843.81	1822.99	1811.09
30	1817.02	1811.98	1812.07	1822.84	---	1860.83	1870.18	1871.90	1863.95	1843.21	1822.25	1811.08
31	1817.03	---	1812.21	1823.27	---	1861.22	---	1871.89	---	1842.61	1821.50	---
MAX	1817.03	1816.75	1812.23	1823.27	1848.38	1861.50	1870.18	1872.04	1871.95	1863.20	---	1820.75
MIN	1814.53	1809.99	1811.94	1812.41	1823.59	1849.33	1861.51	1869.72	1871.95	1862.61	---	1811.08
(†)	298240	284940	285540	315090	388080	428880	458780	464610	437860	370540	310260	282610
(‡)	+6880	-13300	+600	+29550	+72990	+40800	+29900	+5830	-26750	-67320	-60280	-27650
CAL YR 1997	MAX	1871.87	MIN	1809.99	AC-FT†	-73000						
WTR YR 1998	MAX	---	MIN	---	AC-FT†	-8750						

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

ROGUE RIVER BASIN

14335075 ROGUE RIVER AT MCLEOD, OR

LOCATION.--Lat 42°39'35", long 122°41'30", in SW 1/4 NW 1/4 sec.34, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 0.3 mi upstream from Big Butte Creek, 0.1 southwest of McLeod, and at mile 155.6.

DRAINAGE AREA.--689 mi².

PERIOD OF RECORD.--May 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: November 1976 to September 1981.

pH: November 1976 to September 1981.

WATER TEMPERATURE: November 1976 to current year.

DISSOLVED OXYGEN: November 1976 to September 1981.

SUSPENDED SEDIMENT DISCHARGE: October 1976 to September 1981 (October to April only, 1980 water year, November to April only, 1981 water year).

INSTRUMENTATION.--Water-quality monitor since November 1976. Automatic pumping sediment sampler November 1976 to April 1981. February 1998 water-quality monitor replaced with a temperature probe and data logger.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 76 microsiemens Nov. 11, 1977; minimum, 45 microsiemens Dec. 24, 25, 1977.

pH: Maximum, 9.2 units May 8, 9, 11, 12, 1981; minimum, 6.7 units Nov. 8-13, 1978.

WATER TEMPERATURE: Maximum, 15.5°C June 23, 1985, several days in July and August 1994; minimum, 0.5°C Jan. 9, 1977; minimum since full operation of Lost Creek Lake, 3.5°C several days in February 1979, February 1985, February and March 1989. The minimum may have been lower during period of missing record Feb. 1-20, 1985.

DISSOLVED OXYGEN: Maximum, 15.7 mg/L Jan. 8, 1977; minimum, 6.8 mg/L Aug. 20, 1977.

SEDIMENT CONCENTRATION: Maximum recorded daily mean, 75 mg/L Dec. 14, 1977; minimum daily, 0 mg/L many days.

SEDIMENT DISCHARGE: Maximum recorded daily, 1,570 tons Dec. 14, 1977; minimum daily, 0 tons many days.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 14.0°C Aug. 6; minimum recorded, 5.0°C many days February and March, but may have been higher or lower during periods of missing record.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.5	7.0	7.0	11.0	10.5	10.5	9.0	8.5	8.5	6.5	6.0	6.5
2	7.5	7.0	7.0	10.5	9.5	10.0	9.0	8.5	8.5	6.5	6.5	6.5
3	7.5	7.0	7.0	10.0	9.0	9.5	8.5	8.5	8.5	6.5	6.5	6.5
4	7.5	7.0	7.0	9.0	9.0	9.0	8.5	8.0	8.5	6.5	6.0	6.5
5	8.0	7.0	7.0	9.5	9.0	9.0	8.5	8.0	8.5	6.5	6.0	6.5
6	7.5	7.0	7.0	9.5	9.0	9.0	8.5	8.0	8.5	6.5	6.0	6.5
7	7.5	7.0	7.5	9.5	9.0	9.0	8.5	8.0	8.5	7.0	6.5	6.5
8	7.5	7.0	7.5	9.5	9.0	9.5	8.5	8.0	8.0	---	---	---
9	8.0	7.0	7.5	9.0	9.0	9.0	8.0	8.0	8.0	---	---	---
10	8.0	7.0	7.5	9.0	9.0	9.0	8.5	8.0	8.0	---	---	---
11	8.0	7.0	7.5	9.0	9.0	9.0	8.0	7.5	8.0	---	---	---
12	8.5	7.5	8.0	9.5	9.0	9.0	8.0	7.5	8.0	---	---	---
13	8.5	7.5	8.0	9.5	9.0	9.0	7.5	7.5	7.5	---	---	---
14	8.5	8.0	8.0	9.5	9.0	9.0	8.0	7.5	7.5	---	---	---
15	9.0	8.0	8.5	9.0	9.0	9.0	7.5	7.5	7.5	---	---	---
16	9.0	8.0	8.5	9.5	9.0	9.0	8.0	7.5	7.5	---	---	---
17	9.0	8.0	8.5	9.5	9.5	9.5	8.5	7.5	8.0	---	---	---
18	9.0	8.0	8.5	9.5	9.5	9.5	8.0	7.5	8.0	---	---	---
19	9.0	8.5	8.5	9.5	9.5	9.5	8.0	7.5	7.5	---	---	---
20	9.0	8.5	8.5	10.0	9.5	9.5	7.5	7.5	7.5	---	---	---
21	9.0	8.5	8.5	9.5	9.0	9.5	8.0	7.5	7.5	---	---	---
22	9.0	8.0	8.5	9.5	9.0	9.5	7.5	7.0	7.0	---	---	---
23	9.0	8.5	8.5	10.0	9.5	9.5	7.0	7.0	7.0	---	---	---
24	9.0	8.5	8.5	9.5	9.5	9.5	7.0	7.0	7.0	---	---	---
25	9.0	8.5	8.5	9.5	8.5	9.0	7.0	6.5	7.0	---	---	---
26	9.0	8.5	8.5	8.5	8.5	8.5	7.0	6.5	6.5	---	---	---
27	9.0	8.5	9.0	9.0	8.5	8.5	7.0	6.5	6.5	---	---	---
28	9.0	8.5	8.5	9.0	8.5	8.5	7.0	6.5	6.5	---	---	---
29	9.0	8.5	8.5	9.0	8.5	8.5	7.0	6.5	6.5	---	---	---
30	9.0	8.5	9.0	9.0	8.5	9.0	7.0	6.5	6.5	---	---	---
31	11.0	9.0	10.0	---	---	---	7.0	6.5	6.5	---	---	---
MONTH	11.0	7.0	8.1	11.0	8.5	9.2	9.0	6.5	7.6	---	---	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	---	---	---	---	---	---	6.0	5.5	5.5	10.0	8.0	9.0
2	---	---	---	---	---	---	6.5	5.5	6.0	9.5	8.5	9.0
3	---	---	---	---	---	---	6.5	5.5	6.0	9.5	8.0	9.0
4	6.0	5.5	5.5	---	---	---	6.5	5.5	6.0	9.5	8.0	8.5
5	5.5	5.5	5.5	---	---	---	6.5	6.0	6.0	9.5	8.5	9.0
6	6.5	5.5	6.0	---	---	---	6.5	6.0	6.0	9.5	8.5	9.0
7	6.0	5.5	5.5	6.0	5.0	5.5	6.5	5.5	6.0	11.0	8.0	9.5
8	6.0	5.5	5.5	6.0	5.5	5.5	6.5	6.0	6.0	11.0	10.0	10.5
9	6.0	5.5	5.5	6.0	5.0	5.5	6.5	6.0	6.0	11.0	9.0	10.0
10	5.5	5.5	5.5	5.5	5.0	5.5	6.5	6.0	6.0	10.0	8.0	8.5
11	6.0	5.5	5.5	6.5	5.5	5.5	6.5	6.0	6.0	9.0	8.0	8.5
12	6.0	5.5	5.5	5.5	5.5	5.5	6.5	6.0	6.0	9.5	8.0	9.0
13	6.0	5.0	5.5	6.5	5.5	6.0	6.5	6.0	6.0	9.5	8.5	9.0
14	5.5	5.5	5.5	6.5	5.5	5.5	7.0	6.0	6.5	9.5	8.5	9.0
15	6.0	5.5	5.5	6.0	5.5	5.5	7.0	6.0	6.5	9.5	8.0	8.5
16	5.5	5.5	5.5	6.0	5.5	5.5	7.5	6.0	6.5	9.0	8.0	8.5
17	5.5	5.0	5.5	6.0	5.0	5.5	7.5	6.0	6.5	8.5	8.5	8.5
18	5.5	5.5	5.5	6.5	5.5	5.5	7.0	6.0	6.5	10.0	8.5	9.5
19	5.5	5.5	5.5	6.5	5.5	5.5	7.5	6.5	7.0	10.0	8.5	9.0
20	5.5	5.5	5.5	6.0	5.5	5.5	8.0	6.5	7.0	9.5	8.0	9.0
21	---	---	---	6.0	5.5	5.5	7.5	6.5	7.0	9.0	8.5	8.5
22	---	---	---	6.5	5.5	6.0	9.0	6.5	8.0	9.5	8.5	9.0
23	---	---	---	---	---	---	9.0	8.0	8.5	9.5	8.0	9.0
24	---	---	---	---	---	---	9.5	8.0	8.5	9.5	8.5	9.0
25	---	---	---	---	---	---	10.0	8.5	9.0	9.5	7.5	8.5
26	---	---	---	---	---	---	9.5	9.0	9.5	9.0	7.5	8.5
27	---	---	---	---	---	---	10.0	9.0	9.5	9.0	8.5	9.0
28	---	---	---	6.0	5.5	6.0	11.0	9.0	10.0	9.5	8.5	9.0
29	---	---	---	6.0	5.5	6.0	10.5	9.5	10.0	10.5	9.0	9.5
30	---	---	---	6.0	5.5	6.0	10.0	9.0	9.5	11.5	10.5	11.0
31	---	---	---	6.0	5.5	6.0	---	---	---	11.5	10.0	10.5
MONTH	---	---	---	---	---	---	11.0	5.5	7.1	11.5	7.5	9.1

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	10.5	9.5	10.0	11.5	10.0	11.0	12.5	11.0	12.0	---	---	---
2	11.0	9.5	10.5	12.5	10.5	11.5	12.5	11.0	12.0	12.0	11.0	11.5
3	11.5	9.0	10.0	12.5	11.0	12.0	12.5	11.0	12.0	12.5	11.0	12.0
4	10.5	8.5	9.5	12.0	10.5	11.5	13.0	11.0	12.5	12.5	11.5	12.0
5	10.5	8.5	9.5	12.0	10.5	11.5	13.0	11.5	12.5	12.5	11.5	12.0
6	10.5	9.0	9.5	12.0	10.5	11.5	14.0	11.5	13.0	12.5	11.5	12.0
7	12.0	8.5	9.5	12.0	10.5	11.5	---	---	---	12.5	11.5	12.0
8	11.5	9.0	10.0	12.5	10.5	11.5	---	---	---	12.5	10.0	11.5
9	10.5	9.0	10.0	12.0	10.0	11.5	---	---	---	10.5	10.0	10.5
10	11.5	9.0	10.0	12.0	10.0	11.0	---	---	---	12.0	10.0	11.0
11	11.0	9.5	10.0	11.5	10.5	11.0	---	---	---	12.0	11.0	11.5
12	11.0	9.5	10.5	11.5	9.5	10.5	---	---	---	12.0	11.0	11.5
13	11.5	9.5	10.5	11.0	9.5	10.5	---	---	---	12.0	11.0	11.5
14	11.5	9.5	11.0	11.0	9.5	10.5	---	---	---	12.5	11.0	11.5
15	12.5	11.0	11.5	11.0	10.5	10.5	---	---	---	12.5	11.0	12.0
16	13.0	11.0	12.0	11.0	9.5	10.5	---	---	---	12.0	9.0	10.5
17	11.5	10.0	11.0	11.0	9.5	10.5	---	---	---	9.5	8.5	9.0
18	11.5	9.0	10.0	11.5	10.0	11.0	---	---	---	10.0	9.0	9.5
19	10.5	9.5	10.0	11.5	10.0	11.0	---	---	---	10.5	9.0	10.0
20	11.0	9.5	10.5	11.5	10.0	11.0	---	---	---	12.0	9.0	11.0
21	11.5	9.5	10.5	12.0	10.0	11.0	---	---	---	10.5	9.0	10.0
22	11.5	10.0	10.5	---	---	---	---	---	---	---	---	---
23	11.0	10.0	10.5	---	---	---	---	---	---	---	---	---
24	11.0	10.0	10.5	---	---	---	---	---	---	---	---	---
25	11.0	10.0	10.5	---	---	---	---	---	---	---	---	---
26	11.0	10.5	10.5	---	---	---	---	---	---	---	---	---
27	11.0	10.0	11.0	---	---	---	---	---	---	---	---	---
28	11.5	10.5	11.0	---	---	---	---	---	---	---	---	---
29	12.0	10.0	11.0	---	---	---	---	---	---	---	---	---
30	12.0	10.0	11.0	---	---	---	---	---	---	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	13.0	8.5	10.4	---	---	---	---	---	---	---	---	---

LOCATION.--Lat 42°39'05", long 122°41'25", in NE 1/4 NW 1/4 sec.3, T.34 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 225 ft upstream from county road bridge, 0.9 mi south of McLeod, and at mile 0.64.

WATER-DISCHARGE RECORDS

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,800 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	0130	*3,130	*8.33	Feb. 21	0730	2,230	7.10
Minimum discharge, 67 ft ³ /s Aug. 5, 10, Sept. 1.							

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74	138	159	109	578	624	443	254	455	129	75	69
2	97	107	140	214	551	792	425	250	417	129	74	69
3	80	99	128	272	503	901	514	238	381	129	74	70
4	123	97	119	330	442	817	468	244	365	124	75	70
5	178	94	114	217	399	724	566	265	332	123	79	69
6	174	107	114	191	371	649	507	238	306	118	70	70
7	178	143	133	186	342	587	532	222	290	114	70	70
8	177	131	149	168	332	561	490	215	286	113	70	71
9	225	117	138	165	317	508	512	211	271	109	70	74
10	204	112	123	273	300	472	697	210	287	107	69	74
11	187	111	114	732	311	416	615	212	285	107	72	74
12	185	107	109	749	294	419	552	257	257	104	73	72
13	181	114	106	634	304	453	571	242	238	100	72	72
14	182	111	109	683	325	448	538	246	221	97	72	74
15	177	97	127	837	380	451	490	270	211	95	71	74
16	175	99	151	1180	332	452	442	315	202	93	73	73
17	173	113	431	2140	303	410	405	339	194	90	74	73
18	173	100	226	1310	286	353	378	318	187	89	73	73
19	173	124	171	1180	294	316	356	321	179	90	72	74
20	173	118	158	867	340	295	334	779	172	87	73	75
21	170	110	150	717	1230	289	319	691	167	83	73	74
22	170	102	129	729	832	566	307	591	162	83	73	73
23	169	100	122	677	664	662	342	543	154	81	75	72
24	143	139	128	683	664	546	441	572	165	79	74	73
25	105	215	123	668	622	597	361	881	186	78	71	76
26	103	217	107	720	565	536	326	738	170	80	71	77
27	83	201	104	886	517	550	306	670	158	78	70	77
28	81	154	102	707	546	508	288	610	149	77	70	78
29	90	159	100	900	---	456	269	614	141	76	69	76
30	91	228	98	725	---	419	259	587	131	77	70	75
31	270	---	98	639	---	476	---	512	---	76	70	---
TOTAL	4764	3864	4280	20488	12944	16253	13053	12655	7119	3015	2237	2191
MEAN	154	129	138	661	462	524	435	408	237	97.3	72.2	73.0
MAX	270	228	431	2140	1230	901	697	881	455	129	79	78
MIN	74	94	98	109	286	289	259	210	131	76	69	69
AC-FT	9450	7660	8490	40640	25670	32240	25890	25100	14120	5980	4440	4350

MEAN	124	189	404	486	480	492	369	244	142	80.8	67.6	70.3
MAX	330	535	1542	1325	1234	1362	723	492	450	148	121	106
(WY)	1951	1974	1997	1956	1996	1972	1974	1953	1953	1948	1956	1948
MIN	64.5	60.2	58.0	64.2	91.7	92.2	73.4	57.0	43.7	36.7	43.0	43.8
(WY)	1982	1988	1977	1977	1977	1992	1977	1968	1968	1968	1992	1988

WATER YEARS 1946 - 1998

ANNUAL TOTAL	111910		102863				
ANNUAL MEAN	307		282			261	
HIGHEST ANNUAL MEAN						501	1956
LOWEST ANNUAL MEAN						76.6	1992
HIGHEST DAILY MEAN	5900	Jan 1	2140	Jan 17	7190		Jan 22 1972
LOWEST DAILY MEAN	65	Jul 26	69	Aug 10	15		Jun 24 1977
ANNUAL SEVEN-DAY MINIMUM	66	Jul 24	70	Aug 27	30		Jun 23 1977
ANNUAL RUNOFF (AC-FT)	222000		204000		189300		
10 PERCENT EXCEEDS	586		636		590		
50 PERCENT EXCEEDS	161		178		142		
90 PERCENT EXCEEDS	69		73		57		

ROGUE RIVER BASIN

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14337500 BIG BUTTE CREEK NEAR MCLEOD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1970 to current year.

INSTRUMENTATION.--Temperature recorder since August 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 24.0°C at times in 1973, 1977, 1979-81, 1990; minimum, 0.0°C at times most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 22.0°C July 23; minimum, 2.0°C Dec. 26.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998.

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	12.0	10.5	11.5	---	---	---	---	---	---	5.0	3.5	4.0
2	12.0	10.5	11.5	---	---	---	---	---	---	6.0	4.5	5.5
3	13.5	10.5	11.5	---	---	---	---	---	---	5.5	4.5	5.5
4	12.5	11.0	12.0	---	---	---	---	---	---	5.5	4.5	4.5
5	11.5	10.0	10.5	---	---	---	---	---	---	5.5	4.0	4.5
6	10.0	9.0	9.5	---	---	---	7.0	6.5	7.0	5.0	4.5	5.0
7	10.0	8.5	9.0	---	---	---	7.5	6.5	7.0	6.5	5.0	5.5
8	10.0	9.0	9.5	---	---	---	6.5	5.5	6.0	6.5	5.0	6.0
9	10.0	9.0	9.5	---	---	---	6.0	5.0	5.5	6.0	4.5	5.5
10	9.5	8.0	9.0	---	---	---	6.0	4.5	5.5	6.5	6.0	6.0
11	9.5	8.5	9.0	---	---	---	5.0	3.5	4.0	6.5	6.0	6.5
12	10.0	8.5	9.0	---	---	---	4.5	3.5	4.0	6.5	5.0	6.0
13	10.0	8.0	8.5	---	---	---	5.0	4.0	4.5	6.5	5.5	6.0
14	10.0	8.0	9.0	---	---	---	6.5	5.0	5.5	7.0	6.0	6.5
15	10.5	8.5	9.5	---	---	---	6.5	5.5	6.0	7.0	6.0	6.5
16	11.0	8.5	9.5	---	---	---	7.0	5.5	6.0	7.5	6.5	7.0
17	10.5	8.5	9.5	---	---	---	7.0	6.0	6.5	7.5	7.0	7.5
18	10.5	9.0	9.5	---	---	---	6.0	4.5	5.0	7.5	6.0	7.0
19	10.0	9.5	9.5	---	---	---	5.0	3.5	4.5	6.5	5.5	6.0
20	10.5	8.5	9.5	---	---	---	4.5	3.5	4.0	6.5	5.5	6.0
21	---	---	---	---	---	---	5.5	4.0	4.5	6.0	5.0	5.5
22	---	---	---	---	---	---	4.0	2.5	3.0	7.0	5.5	6.0
23	---	---	---	---	---	---	4.5	3.0	3.5	7.0	6.0	6.5
24	---	---	---	---	---	---	5.5	4.0	4.5	6.5	5.5	6.0
25	---	---	---	---	---	---	5.0	3.0	4.0	7.0	5.5	6.0
26	---	---	---	---	---	---	3.5	2.0	2.5	7.5	6.5	7.0
27	---	---	---	---	---	---	4.5	2.5	3.5	7.0	6.0	6.5
28	---	---	---	---	---	---	4.5	3.0	4.0	7.5	6.0	7.0
29	---	---	---	---	---	---	4.5	3.0	4.0	7.5	7.0	7.5
30	---	---	---	---	---	---	4.5	3.0	3.5	7.0	5.0	6.0
31	---	---	---	---	---	---	5.0	3.0	4.0	7.0	5.0	6.0
MONTH	---	---	---	---	---	---	---	---	---	7.5	3.5	6.0

ROGUE RIVER BASIN

14337500 BIG BUTTE CREEK NEAR MCLEOD, OR-Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.0	6.0	6.5	8.0	7.0	7.5	8.0	7.0	7.5	14.0	11.0	12.5
2	7.0	5.5	6.0	7.5	6.5	7.0	8.0	7.0	7.5	13.0	11.0	12.0
3	8.0	6.5	7.0	6.5	5.0	6.0	9.5	7.0	8.0	13.5	9.5	11.5
4	7.5	6.0	7.0	6.5	5.0	6.0	9.5	7.0	8.0	12.0	11.0	11.5
5	7.0	6.0	6.5	6.0	4.0	5.5	9.5	7.0	8.5	13.0	10.0	11.5
6	8.0	6.5	7.5	6.0	4.0	5.0	9.5	7.0	8.0	12.5	10.5	11.5
7	7.0	6.0	6.5	6.0	4.0	5.0	9.0	7.0	8.0	14.0	10.5	12.0
8	7.0	6.5	7.0	7.0	5.5	6.5	8.5	6.0	7.5	12.5	10.5	11.5
9	7.0	5.5	6.0	7.5	5.5	6.5	9.0	7.0	8.0	10.5	9.0	10.0
10	7.0	5.5	6.5	7.0	5.0	6.0	9.5	7.0	8.5	10.5	9.0	10.0
11	7.0	5.5	6.5	9.5	6.5	8.0	8.5	6.5	7.5	10.0	9.5	9.5
12	8.5	7.0	7.5	9.0	8.0	8.0	8.0	6.0	7.0	10.5	9.0	9.5
13	7.5	6.5	7.0	10.5	7.5	9.0	8.5	6.0	7.5	9.5	8.5	9.0
14	7.5	6.5	7.0	9.5	7.5	8.5	9.0	6.5	7.5	10.0	9.0	9.5
15	7.5	6.0	6.5	10.0	9.0	9.5	8.5	6.5	7.5	10.5	8.5	9.5
16	6.5	5.5	6.0	10.0	8.5	9.5	10.0	6.0	8.0	10.5	8.0	9.0
17	7.0	5.5	6.0	9.0	7.0	8.0	11.0	6.5	9.0	10.0	8.5	9.0
18	7.0	6.0	6.5	9.0	6.0	7.5	11.5	8.5	10.0	12.5	8.0	10.0
19	7.5	6.5	7.0	10.0	6.5	8.5	13.0	9.5	11.0	11.5	10.0	10.5
20	6.5	5.5	6.0	10.5	7.5	9.0	12.5	8.5	11.0	10.0	9.0	9.5
21	6.5	3.0	5.0	11.0	8.5	9.5	13.5	9.5	11.5	11.0	8.5	9.5
22	6.5	4.5	5.5	11.0	9.5	10.0	12.0	10.0	11.5	12.5	8.5	10.5
23	6.0	5.0	5.5	10.0	9.0	9.5	11.5	9.5	10.0	12.0	10.5	11.0
24	7.0	5.5	6.0	9.5	7.5	8.5	11.0	9.0	10.0	11.0	9.5	10.0
25	6.0	4.5	5.5	10.0	8.5	9.0	11.0	7.5	9.0	11.0	9.0	10.0
26	6.5	5.0	5.5	9.0	7.5	8.0	12.5	8.0	10.0	10.5	8.5	9.5
27	7.5	5.5	6.5	8.0	6.5	7.0	13.5	9.5	11.5	11.5	8.5	10.0
28	8.0	7.0	7.5	7.0	5.5	6.5	14.5	10.5	12.5	11.0	9.5	10.0
29	---	---	---	8.5	4.5	6.5	15.0	11.0	13.0	10.5	9.5	10.0
30	---	---	---	7.0	5.0	6.5	14.0	11.5	13.0	13.0	9.5	11.5
31	---	---	---	8.0	6.0	7.0	---	---	---	14.0	9.5	12.0
MONTH	8.5	3.0	6.4	11.0	4.0	7.6	15.0	6.0	9.3	14.0	8.0	10.4

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	15.0	11.5	13.5	17.5	14.0	15.5	19.5	14.0	16.5	19.0	14.0	16.0
2	15.0	12.0	13.5	15.5	14.0	14.5	20.0	14.5	17.0	19.0	14.0	16.5
3	14.5	10.5	13.0	18.0	13.0	15.0	21.0	15.0	17.5	19.0	14.0	16.5
4	15.0	11.5	13.0	18.0	13.5	15.5	21.5	16.0	18.5	19.0	14.5	16.5
5	15.0	11.5	13.5	19.0	13.5	16.0	20.5	16.0	18.0	18.5	14.0	16.5
6	16.0	12.0	14.0	20.0	14.0	17.0	20.5	15.5	17.5	18.0	13.5	15.5
7	15.0	12.5	13.5	20.5	14.5	17.5	19.5	15.0	17.0	15.5	14.0	14.5
8	15.0	11.5	13.5	20.5	15.0	17.5	19.5	14.5	16.5	16.0	12.0	13.5
9	16.0	12.0	14.0	20.5	15.5	17.5	19.5	14.5	17.0	14.5	13.0	13.5
10	15.0	13.0	14.0	20.0	15.5	17.5	20.0	14.5	17.0	15.0	10.0	12.5
11	15.0	11.5	13.0	19.5	14.0	16.5	19.5	14.5	17.0	15.5	10.5	13.0
12	16.0	13.0	14.0	19.5	14.0	16.5	20.0	15.0	17.5	16.5	11.5	13.5
13	16.5	12.0	14.0	19.5	14.0	16.5	21.0	15.5	18.0	17.0	12.5	14.5
14	16.5	12.0	14.0	19.5	14.0	16.5	21.0	16.0	18.0	17.0	12.5	14.5
15	15.5	12.5	14.0	20.0	14.0	16.5	20.0	15.5	17.5	17.0	13.0	14.5
16	15.0	11.5	13.5	20.5	14.0	17.0	19.0	14.5	16.5	16.5	12.5	14.5
17	16.5	11.5	13.5	20.5	15.0	17.5	18.0	13.0	15.0	16.0	12.0	14.0
18	17.0	12.5	14.5	20.5	14.5	17.0	17.5	12.5	15.0	13.5	11.5	12.5
19	17.0	12.5	14.5	20.5	15.0	17.5	18.0	12.5	15.0	14.5	11.0	12.5
20	17.5	12.5	15.0	21.0	15.0	17.5	17.5	13.5	15.5	14.0	10.0	12.0
21	18.0	13.0	15.5	21.5	16.0	18.5	18.0	13.0	15.5	14.5	10.0	12.0
22	18.0	13.5	15.5	21.5	16.5	19.0	18.5	13.5	15.5	14.0	10.0	12.0
23	16.5	13.0	15.0	22.0	17.0	19.0	18.5	14.5	16.5	14.5	10.0	12.0
24	15.0	13.5	14.0	21.5	16.5	18.5	18.0	13.0	15.0	14.5	10.5	12.5
25	14.0	12.0	13.0	21.0	16.0	18.0	18.0	13.0	15.5	13.0	12.0	12.5
26	15.5	11.5	13.0	21.5	16.5	18.5	17.5	13.0	15.0	13.5	10.0	12.0
27	16.5	11.0	13.5	21.0	16.0	18.5	18.0	13.0	15.5	14.0	9.5	11.5
28	18.0	12.5	15.0	21.5	16.0	18.5	18.5	13.5	15.5	14.5	10.5	12.5
29	19.0	13.5	16.0	21.0	16.0	18.0	18.5	13.5	16.0	14.5	11.0	12.5
30	19.0	14.0	16.5	20.5	15.5	17.5	18.5	14.0	16.0	14.0	10.5	12.0
31	---	---	---	19.5	15.5	17.5	18.5	14.0	16.0	---	---	---
MONTH	19.0	10.5	14.1	22.0	13.0	17.2	21.5	12.5	16.4	19.0	9.5	13.6

ROGUE RIVER BASIN

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14337600 ROGUE RIVER NEAR MCLEOD, OR

LOCATION.--Lat 42°39'20", long 122°42'50", in SW 1/4 sec.33, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on left bank at Obstinat J Ranch, 1.3 mi downstream from Big Butte Creek, 1.6 mi southwest of McLeod, and at mile 154.0.

DRAINAGE AREA.--938 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,489.08 ft above sea level.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since February 1977 by Lost Creek Lake (station 14335040). Diversions for irrigation upstream from station; most of low flow of Big Butte Creek is diverted near Butte Falls.

AVERAGE DISCHARGE.--12 years (water years 1966-77), 2,176 ft³/s, 1,577,000 acre-ft/yr.
21 years (water years 1978-98), 2,076 ft³/s, 1,504,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 30,000 ft³/s Mar. 3, 1972, gage height, 12.24 ft; minimum discharge, 468 ft³/s Feb. 18, 1977, result of closure of Lost Creek Dam, minimum prior to that time, 604 ft³/s Sept. 5, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1928, 20.35 ft Dec. 22, 1964, from floodmarks, discharge, 74,300 ft³/s, from slope-area measurement of peak flow.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 9,950 ft³/s Jan. 16, gage height, 6.73 ft; minimum daily discharge, 1,000 ft³/s Feb. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1200	2420	1710	1340	e2950	1710	2700	3090	3920	3430	2450	2390
2	e1250	2200	1620	1470	e2380	1910	2590	3180	3940	3360	2410	2340
3	e1220	2270	1590	1530	e1710	2060	2410	2960	3830	3260	2410	2330
4	e1250	2140	1580	1590	e1440	2880	2180	2890	3650	3160	2500	2360
5	e1300	1980	1570	1470	e1400	3120	2270	3130	3430	3040	2540	2360
6	e1290	1980	1560	1440	e1300	2890	2160	3450	3400	3160	2560	2370
7	e1280	2250	1650	1420	e1220	2660	2170	3880	3400	3100	2510	2360
8	e1300	2280	1800	1410	e1140	2300	2160	3300	3390	2950	2400	2370
9	e1430	2120	1670	1500	e1050	1980	2410	4430	3360	2900	2410	2360
10	e1450	1980	1590	1710	e1000	1850	2930	4210	3530	2780	2400	2260
11	e1350	1960	1460	4170	e1300	1760	3040	3130	3800	2790	2400	1970
12	e1340	1980	1460	4580	e1300	1730	2980	2870	3550	2870	2420	1680
13	e1320	2060	1420	3660	e1300	1770	2930	2570	3380	2930	2400	1680
14	e1310	1950	1400	3920	e1500	1790	2130	2570	3300	2910	2400	1710
15	e1300	1950	1570	4550	e1800	2070	1720	2580	3150	2860	2400	1710
16	e1310	2030	1870	6460	e1540	2670	1560	2660	2950	2830	2420	1700
17	e1300	2070	2970	8210	e1350	2750	1480	2620	2870	2730	2420	1710
18	e1290	1970	2630	8070	e1240	2700	1600	2430	3190	2800	2450	1580
19	e1280	1710	1980	6210	1280	2660	1590	2040	3400	2830	2460	1440
20	e1280	1360	1910	5760	1360	2640	1850	3400	3400	2820	2450	1360
21	e1300	1310	1900	5290	2490	2640	2370	3210	3420	2830	2440	1240
22	e1290	1320	1710	5080	2020	3030	2550	3440	3390	2850	2440	1220
23	e1280	1310	1640	4790	1790	4210	3000	3480	3370	2830	2460	1220
24	e1260	1350	1660	4540	1800	5110	3360	3570	3370	2880	2440	1220
25	e1250	1430	1610	4510	1760	5820	3230	4760	3400	2860	2420	1220
26	e1240	1860	1400	4590	1680	5620	2990	4140	3410	2890	2430	1240
27	e1200	2060	1450	4770	1570	5120	2960	3980	3490	2870	2430	1240
28	e1190	1900	1470	e4360	1620	4230	3040	3710	3520	2820	2420	1220
29	e1350	1840	1470	e4280	---	3340	3330	4470	3510	2620	2420	1220
30	e1600	1940	1380	e3890	---	2700	3340	4490	3470	2490	2390	1210
31	3300	---	1280	e3220	---	2720	---	4140	---	2480	2400	---
TOTAL	42310	56980	51980	119790	44290	90440	75030	104780	103190	89930	75500	52290
MEAN	1365	1899	1677	3864	1582	2917	2501	3380	3440	2901	2435	1743
MAX	3300	2420	2970	8210	2950	5820	3360	4760	3940	3430	2560	2390
MIN	1190	1310	1280	1340	1000	1710	1480	2040	2870	2480	2390	1210
AC-FT	83920	113000	103100	237600	87850	179400	148800	207800	204700	178400	149800	103700

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1998, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	1264	1633	2369	2193	1767	2047	2374	2738	2450	2171	2169	1705									
MAX	1905	3544	6464	7584	4131	3557	3821	4024	3755	3025	2921	2195									
(WY)	1984	1985	1997	1997	1996	1986	1989	1996	1984	1984	1984	1983									
MIN	894	898	964	1049	844	843	864	1578	1658	1123	1761	1290									
(WY)	1993	1993	1993	1992	1988	1988	1994	1992	1992	1992	1994	1980									

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1978 - 1998
ANNUAL TOTAL	995120	906510	
ANNUAL MEAN	2726	2484	2076
HIGHEST ANNUAL MEAN			3224
LOWEST ANNUAL MEAN			1314
HIGHEST DAILY MEAN	16500	Jan 9	16500
LOWEST DAILY MEAN	1180	Sep 23	730
ANNUAL SEVEN-DAY MINIMUM	1180	Sep 23	734
ANNUAL RUNOFF (AC-FT)	1974000	1798000	1504000
10 PERCENT EXCEEDS	3660	3850	3310
50 PERCENT EXCEEDS	2180	2400	1880
90 PERCENT EXCEEDS	1320	1300	1030

e Estimated

ROGUE RIVER BASIN

14337600 ROGUE RIVER NEAR MCLEOD, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1970 to current year.

INSTRUMENTATION.--Temperature recorder since August 1970.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 18.0°C July 17, 18, Aug. 7, 1973; minimum, 0.5°C Jan. 3-5, 14, 15, 1971. Maximum since full operation of Lost Creek Lake, 16.0°C July 30, 31, Aug. 1, 2, 1994; minimum, 3.0°C Feb. 2, 1979, Feb. 6, 7, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.0°C several days in August, September; minimum, 5.5°C Feb. 21, 22, Mar. 5-8.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	8.5	8.5	8.5	9.5	9.0	9.0	8.5	8.0	8.0	6.5	6.0	6.0
2	8.5	8.5	8.5	9.0	8.5	9.0	8.0	8.0	8.0	6.5	6.0	6.0
3	8.5	8.0	8.5	9.0	9.0	9.0	8.0	8.0	8.0	6.5	6.0	6.0
4	8.5	8.5	8.5	9.0	9.0	9.0	8.0	8.0	8.0	6.5	6.0	6.0
5	8.5	8.0	8.5	9.0	8.5	9.0	8.0	8.0	8.0	6.0	6.0	6.0
6	8.5	8.0	8.5	9.0	9.0	9.0	8.0	8.0	8.0	6.0	6.0	6.0
7	8.5	8.0	8.0	9.0	8.5	9.0	8.0	8.0	8.0	6.0	6.0	6.0
8	8.5	8.0	8.5	9.0	8.5	9.0	8.0	8.0	8.0	6.5	6.0	6.0
9	8.5	8.5	8.5	9.0	8.5	9.0	8.0	7.5	7.5	6.0	6.0	6.0
10	8.5	8.0	8.5	9.0	8.5	9.0	7.5	7.5	7.5	6.0	6.0	6.0
11	8.5	8.5	8.5	9.0	8.5	9.0	7.5	7.0	7.5	6.5	6.0	6.0
12	9.0	8.5	8.5	9.0	9.0	9.0	7.5	7.0	7.5	6.5	6.0	6.5
13	9.0	8.5	8.5	9.0	8.5	9.0	7.5	7.0	7.5	6.5	6.0	6.5
14	9.0	8.5	9.0	9.0	8.5	9.0	7.5	7.0	7.5	6.5	6.5	6.5
15	9.0	8.5	9.0	9.0	8.5	9.0	7.5	7.5	7.5	6.5	6.5	6.5
16	9.5	9.0	9.0	9.0	8.5	9.0	7.5	7.0	7.5	6.5	6.5	6.5
17	9.5	9.0	9.0	9.0	8.5	9.0	7.5	7.5	7.5	6.5	6.5	6.5
18	9.5	9.0	9.0	9.0	8.5	9.0	7.5	7.5	7.5	6.5	6.5	6.5
19	9.5	9.0	9.5	9.0	8.5	8.5	7.5	7.0	7.0	6.5	6.5	6.5
20	9.5	9.0	9.5	9.0	8.5	8.5	7.0	7.0	7.0	6.5	6.0	6.5
21	9.5	9.0	9.0	8.5	8.5	8.5	7.0	7.0	7.0	6.5	6.0	6.5
22	9.5	9.0	9.0	8.5	8.5	8.5	7.0	6.5	7.0	6.5	6.5	6.5
23	9.5	9.5	9.5	9.0	8.5	8.5	7.0	6.5	6.5	6.5	6.5	6.5
24	9.5	9.0	9.0	8.5	8.5	8.5	7.0	6.5	7.0	6.5	6.0	6.0
25	9.5	9.0	9.0	8.5	8.5	8.5	7.0	6.5	6.5	6.5	6.0	6.5
26	9.0	9.0	9.0	8.5	8.5	8.5	6.5	6.0	6.5	6.5	6.5	6.5
27	9.5	9.0	9.0	8.5	8.5	8.5	6.5	6.0	6.5	6.5	6.5	6.5
28	9.5	9.0	9.0	8.5	8.5	8.5	6.5	6.5	6.5	6.5	6.5	6.5
29	9.0	9.0	9.0	8.5	8.5	8.5	6.5	6.0	6.5	6.5	6.5	6.5
30	9.0	8.5	9.0	8.5	8.5	8.5	6.5	6.0	6.5	6.5	6.5	6.5
31	9.5	8.5	9.0	---	---	---	6.5	6.0	6.0	6.5	6.0	6.0
MONTH	9.5	8.0	8.8	9.5	8.5	8.8	8.5	6.0	7.3	6.5	6.0	6.3

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	6.5	6.0	6.5	6.5	6.5	6.5	6.5	6.0	6.5	10.0	9.5	9.5
2	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.0	6.5	9.5	9.5	9.5
3	6.5	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5	9.5	9.0	9.5
4	6.5	6.5	6.5	6.0	6.0	6.0	7.0	6.5	6.5	9.5	9.0	9.5
5	6.5	6.5	6.5	6.0	5.5	6.0	7.0	6.5	7.0	9.5	9.0	9.0
6	6.5	6.5	6.5	6.0	5.5	6.0	7.0	7.0	7.0	9.5	9.0	9.5
7	6.5	6.5	6.5	6.0	5.5	5.5	7.0	7.0	7.0	9.5	9.0	9.0
8	6.5	6.5	6.5	6.0	5.5	6.0	7.0	6.5	7.0	9.5	9.0	9.0
9	6.5	6.5	6.5	6.0	6.0	6.0	7.0	7.0	7.0	9.0	8.5	9.0
10	6.5	6.0	6.0	6.0	6.0	6.0	7.0	6.5	7.0	9.0	9.0	9.0
11	6.5	6.0	6.0	6.5	6.0	6.0	7.0	6.5	7.0	9.0	9.0	9.0
12	6.5	6.5	6.5	6.5	6.5	6.5	7.0	6.5	6.5	9.0	9.0	9.0
13	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	6.5	9.0	9.0	9.0
14	6.5	6.5	6.5	6.5	6.5	6.5	7.0	6.5	6.5	9.0	9.0	9.0
15	6.5	6.5	6.5	6.5	6.5	6.5	7.0	6.5	7.0	9.0	9.0	9.0
16	6.5	6.0	6.0	6.5	6.5	6.5	7.0	6.5	7.0	9.0	9.0	9.0
17	6.0	6.0	6.0	6.5	6.0	6.5	7.5	7.0	7.0	9.0	9.0	9.0
18	6.5	6.0	6.0	6.5	6.0	6.5	7.5	7.0	7.5	9.5	9.0	9.0
19	6.5	6.0	6.5	6.5	6.0	6.5	8.0	7.0	7.5	9.5	9.5	9.5
20	6.5	6.0	6.0	6.5	6.0	6.5	8.0	7.5	8.0	9.5	9.0	9.5
21	6.0	5.5	6.0	6.5	6.5	6.5	8.0	7.5	7.5	9.5	9.0	9.5
22	6.0	5.5	6.0	7.0	6.5	6.5	8.5	7.5	8.0	9.5	9.5	9.5
23	6.0	6.0	6.0	7.0	6.5	6.5	8.5	8.5	8.5	10.0	9.5	9.5
24	6.5	6.0	6.0	6.5	6.5	6.5	9.0	8.5	8.5	10.0	9.5	10.0
25	6.0	6.0	6.0	6.5	6.5	6.5	9.0	8.5	8.5	10.0	9.0	9.5
26	6.0	6.0	6.0	6.5	6.0	6.5	9.0	8.5	9.0	9.5	9.0	9.0
27	6.0	6.0	6.0	6.5	6.0	6.0	9.0	9.0	9.0	9.5	9.5	9.5
28	6.5	6.0	6.5	6.0	6.0	6.0	9.5	9.0	9.0	9.5	9.5	9.5
29	---	---	---	6.5	6.0	6.0	9.5	9.5	9.5	9.5	9.0	9.5
30	---	---	---	6.5	6.0	6.0	9.5	9.5	9.5	9.5	9.0	9.0
31	---	---	---	6.5	6.0	6.5	---	---	---	10.0	9.5	9.5
MONTH	6.5	5.5	6.3	7.0	5.5	6.3	9.5	6.0	7.5	10.0	8.5	9.3
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.0	10.0	10.0	12.0	11.5	12.0	12.5	12.5	12.5	14.0	13.5	14.0
2	10.0	10.0	10.0	12.0	11.5	11.5	13.0	12.5	12.5	13.5	13.0	13.0
3	10.5	10.0	10.0	12.0	11.5	11.5	13.0	12.5	12.5	13.0	12.5	12.5
4	10.5	10.0	10.0	12.0	11.5	12.0	13.0	12.5	13.0	13.0	12.5	12.5
5	10.5	10.0	10.0	12.5	11.5	12.0	13.0	13.0	13.0	13.0	12.5	12.5
6	10.5	10.0	10.5	12.5	12.0	12.0	13.5	13.0	13.0	13.0	12.5	12.5
7	11.0	10.0	10.5	12.5	12.0	12.5	13.5	13.0	13.0	13.0	12.5	12.5
8	11.0	10.5	10.5	13.0	12.5	12.5	13.5	13.5	13.5	12.5	12.0	12.5
9	11.0	10.5	11.0	13.0	12.5	12.5	14.0	13.5	13.5	12.0	11.5	11.5
10	11.0	10.5	11.0	12.5	12.5	12.5	14.0	13.5	13.5	11.5	11.0	11.0
11	11.0	11.0	11.0	12.5	12.0	12.5	14.0	13.5	14.0	12.0	11.5	11.5
12	11.0	11.0	11.0	12.5	12.0	12.0	14.0	13.5	14.0	12.0	11.5	12.0
13	11.5	11.0	11.0	12.0	11.5	12.0	14.0	13.5	14.0	12.0	11.5	12.0
14	11.5	11.0	11.0	11.5	11.5	11.5	14.0	13.0	13.5	12.0	11.5	12.0
15	11.0	11.0	11.0	11.5	11.5	11.5	13.0	13.0	13.0	12.0	11.5	12.0
16	11.5	10.5	11.0	11.5	11.5	11.5	13.0	12.5	13.0	12.0	11.0	11.5
17	11.5	11.0	11.5	11.5	11.5	11.5	13.0	12.5	13.0	11.0	10.5	10.5
18	11.5	11.0	11.0	11.5	11.5	11.5	13.5	13.0	13.0	10.5	10.5	10.5
19	11.5	10.5	11.0	12.0	11.5	11.5	13.5	13.0	13.0	10.5	10.0	10.5
20	11.0	11.0	11.0	12.0	11.5	11.5	13.5	13.0	13.0	10.5	10.0	10.5
21	11.5	11.0	11.0	12.0	11.5	11.5	13.5	13.0	13.0	10.5	10.0	10.5
22	11.5	11.0	11.5	12.5	12.0	12.0	13.5	13.0	13.5	10.5	10.0	10.5
23	11.5	11.0	11.5	12.5	12.0	12.5	13.5	13.0	13.5	10.5	10.0	10.0
24	11.5	11.0	11.5	12.5	12.5	12.5	13.5	13.5	13.5	10.0	10.0	10.0
25	11.5	11.0	11.5	12.5	12.5	12.5	13.5	13.5	13.5	10.0	10.0	10.0
26	11.5	11.0	11.5	12.5	12.0	12.0	14.0	13.5	13.5	10.0	9.5	10.0
27	11.5	11.0	11.5	12.0	12.0	12.0	14.0	13.5	13.5	10.0	9.5	10.0
28	12.0	11.5	11.5	12.5	12.0	12.0	14.0	13.5	13.5	10.0	9.5	10.0
29	12.0	11.5	12.0	12.5	12.0	12.0	14.0	13.5	14.0	10.0	9.5	9.5
30	12.0	12.0	12.0	12.5	12.0	12.5	14.0	14.0	14.0	9.5	9.5	9.5
31	---	---	---	12.5	12.0	12.5	14.0	13.5	14.0	---	---	---
MONTH	12.0	10.0	11.0	13.0	11.5	12.0	14.0	12.5	13.3	14.0	9.5	11.3
YEAR	14.0	5.5	9.0									

ROGUE RIVER BASIN

14337800 ELK CREEK NEAR CASCADE GORGE, OR

LOCATION.--Lat 42°46'25", long 122°40'15", in NW 1/4 sec.23, T.32 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 0.1 mi downstream from Sugarpine Creek, 6.5 mi northwest of town of Cascade Gorge, and at mile 10.7.

DRAINAGE AREA.--78.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1973 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,813.83 ft above sea level (levels by Corps of Engineers).

REMARKS.--Records fair. No regulation. Some diversions upstream from station for irrigation. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--25 years (water years 1974-98), 141 ft³/s, 24.30 in/yr, 102,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,780 ft³/s Jan. 15, 1974, gage height, 8.9 ft, from floodmark; minimum discharge, 0.45 ft³/s Aug. 31, Sept. 1, 1992.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	0230	*3,030	*6.85	No other peak greater than base discharge.			
Minimum discharge, 2.8 ft ³ /s Sept. 6.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	48	82	83	298	535	176	123	e300	e35	10	3.6
2	14	33	68	224	257	778	162	119	e240	e34	9.8	3.4
3	10	27	56	255	227	715	163	105	e200	e35	9.1	3.3
4	10	23	49	267	201	505	161	102	e180	e33	8.7	3.5
5	10	21	42	193	164	387	160	107	e160	e32	7.9	3.3
6	10	25	38	158	152	305	164	98	e140	e30	7.8	3.3
7	9.5	94	59	153	160	248	177	92	e130	e28	8.3	3.4
8	9.6	55	85	159	149	222	178	87	e120	e27	8.0	3.5
9	49	40	65	159	136	196	175	83	e110	e26	7.8	4.2
10	56	33	56	351	131	180	245	77	e100	e25	7.4	4.4
11	38	30	51	976	154	185	268	70	e97	24	7.4	4.2
12	47	32	47	710	181	262	250	83	e89	23	6.9	3.8
13	37	32	44	579	217	294	234	91	e82	e22	6.6	3.5
14	27	34	42	615	282	293	213	91	e76	17	6.2	3.5
15	23	31	47	822	337	284	186	116	e70	17	6.0	3.1
16	19	32	149	1020	306	282	172	144	e65	15	6.4	3.4
17	16	69	697	1940	247	251	156	151	e59	14	6.7	3.5
18	14	56	289	825	201	211	143	155	e55	14	6.1	3.5
19	13	101	179	636	184	183	136	158	e51	14	6.6	4.3
20	13	114	139	480	210	174	131	342	e47	14	6.1	4.5
21	12	96	109	370	499	178	129	488	e44	13	6.0	4.6
22	11	70	87	439	503	402	129	355	e42	13	5.9	4.0
23	11	58	77	548	435	783	140	273	e39	12	5.9	3.8
24	11	77	70	572	393	617	167	253	e53	12	6.2	3.4
25	10	162	60	493	365	464	151	373	e67	12	5.8	4.1
26	9.9	147	53	608	314	372	136	e380	e61	11	5.2	4.7
27	9.9	148	50	798	274	327	130	e390	e53	11	5.3	4.4
28	9.2	112	48	550	346	285	129	e360	e47	11	4.6	4.0
29	12	90	48	521	---	240	127	e480	e43	11	4.2	3.8
30	18	99	57	450	---	206	125	e520	e39	12	3.8	3.9
31	91	---	62	370	---	193	---	e410	---	11	3.3	---
TOTAL	637.0	1989	3005	16324	7323	10557	5013	6676	2859	608	206.0	113.9
MEAN	20.5	66.3	96.9	527	262	341	167	215	95.3	19.6	6.65	3.80
MAX	91	162	697	1940	503	783	268	520	300	35	10	4.7
MIN	6.9	21	38	83	131	174	125	70	39	11	3.3	3.1
AC-FT	1260	3950	5960	32380	14530	20940	9940	13240	5670	1210	409	226
CFSM	.26	.84	1.23	6.68	3.32	4.32	2.12	2.73	1.21	.25	.08	.05
IN.	.30	.94	1.42	7.71	3.46	4.98	2.37	3.15	1.35	.29	.10	.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1998, BY WATER YEAR (WY)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	13.4	130	300	297	306	258	197	125	49.5	13.0	5.44	6.21														
MAX	39.8	656	1143	802	717	556	352	300	156	27.1	16.4	33.7														
(WY)	1980	1974	1997	1974	1996	1974	1993	1975	1993	1995	1976	1986														
MIN	2.47	7.76	8.00	11.3	11.2	34.1	54.5	18.3	7.10	3.57	.94	.91														
(WY)	1989	1994	1977	1977	1977	1992	1992	1992	1992	1994	1992	1992														

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1973 - 1998

ANNUAL TOTAL	45257.2	55310.9	141
ANNUAL MEAN	124	152	292
HIGHEST ANNUAL MEAN			27.4
LOWEST ANNUAL MEAN			5200
HIGHEST DAILY MEAN	3880	Jan 1	Jan 15 1974
LOWEST DAILY MEAN	4.2	Aug 15	Sep 1 1992
ANNUAL SEVEN-DAY MINIMUM	4.5	Aug 13	Aug 26 1992
ANNUAL RUNOFF (AC-FT)	89770	109700	102100
ANNUAL RUNOFF (CFSM)	1.57	1.92	1.79
ANNUAL RUNOFF (INCHES)	21.37	26.11	24.30
10 PERCENT EXCEEDS	261	391	354
50 PERCENT EXCEEDS	49	77	49
90 PERCENT EXCEEDS	7.1	5.6	3.9

e Estimated

ROGUE RIVER BASIN
14337800 ELK CREEK NEAR CASCADE GORGE, OR--Continued
WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to October 1976, August 1977 to current year.

INSTRUMENTATION.--Temperature recorder August 1973 to October 1976 and since August 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 28.5°C July 29, 30, 1973, Aug. 9-11, 1981; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 24.5°C July 26; minimum, 1.0°C Dec. 22, 25-27, 29, 30.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.5	11.5	12.5	10.0	7.5	8.0	5.5	4.0	4.5	3.5	2.0	3.0
2	13.5	11.5	12.0	9.5	6.0	7.5	5.0	3.0	4.0	5.5	3.5	4.5
3	13.0	11.0	12.0	10.0	7.0	8.0	5.5	3.5	4.5	5.5	4.5	5.0
4	14.5	12.0	12.5	9.5	7.0	8.0	7.0	5.5	6.0	5.5	4.5	4.5
5	13.5	10.5	12.0	9.5	7.0	8.5	6.5	4.5	5.5	5.5	4.5	5.0
6	11.5	9.5	10.5	10.0	9.0	9.5	6.5	5.5	6.0	5.0	4.5	5.0
7	11.0	9.0	10.0	10.5	8.0	9.5	7.0	6.0	6.5	6.0	5.0	5.0
8	11.0	9.5	10.0	8.0	6.0	7.0	6.0	5.0	5.5	5.5	4.5	5.0
9	10.0	8.0	9.0	7.5	5.0	6.5	5.5	5.0	5.0	6.0	4.5	5.0
10	9.5	7.5	8.5	7.5	7.0	7.5	5.0	3.5	4.5	7.0	5.5	6.0
11	9.0	8.0	8.5	8.5	7.5	8.0	4.5	2.5	3.5	7.5	5.5	6.5
12	10.0	8.0	8.5	9.5	7.0	8.0	4.0	2.5	3.0	7.0	5.5	6.5
13	10.5	6.5	8.5	8.0	6.5	7.5	4.0	3.0	3.5	7.5	6.0	6.5
14	11.0	7.0	9.0	8.0	6.5	7.5	5.5	4.0	5.0	7.5	5.5	7.0
15	11.0	7.5	9.5	6.5	5.0	6.0	5.5	4.5	5.0	8.5	6.0	7.0
16	11.5	8.0	9.5	7.5	5.5	6.5	6.5	4.5	5.5	8.5	6.0	7.0
17	11.5	8.0	9.5	8.0	7.0	7.5	7.0	5.0	6.0	9.0	5.5	7.5
18	12.0	9.0	10.0	7.5	6.0	7.0	5.0	4.0	4.0	9.5	7.5	8.5
19	11.0	9.5	10.0	7.5	7.0	7.0	4.0	3.5	3.5	8.0	5.5	7.5
20	11.5	8.5	10.0	8.0	7.0	7.5	3.5	3.0	3.0	8.0	6.0	6.5
21	10.0	7.0	8.5	7.5	6.0	6.5	4.5	2.0	3.5	7.0	5.0	6.0
22	9.5	6.5	8.0	8.0	6.5	7.0	2.5	1.0	1.5	7.5	5.0	6.5
23	10.0	8.5	9.0	9.0	7.5	8.5	2.5	1.5	1.5	7.5	6.0	7.0
24	9.0	6.5	7.5	9.0	8.0	8.5	3.0	1.5	2.5	8.0	5.5	7.0
25	8.0	5.0	6.5	8.0	5.5	7.0	2.5	1.0	1.5	8.5	6.0	7.0
26	7.5	5.0	6.5	8.5	6.5	7.5	1.0	1.0	1.0	9.5	6.5	8.0
27	9.5	6.5	8.0	8.5	7.5	8.0	3.0	1.0	1.5	10.0	7.5	9.0
28	9.0	7.0	8.0	9.0	7.0	8.0	3.0	1.5	2.0	10.5	8.5	9.5
29	9.5	8.5	9.0	7.5	6.5	7.0	2.5	1.0	1.5	10.5	8.5	9.5
30	10.5	8.5	9.5	7.5	5.0	6.5	3.0	1.0	2.0	10.0	6.5	9.0
31	11.0	8.5	10.0	---	---	---	3.5	1.5	2.0	10.5	6.5	9.0
MONTH	14.5	5.0	9.4	10.5	5.0	7.6	7.0	1.0	3.7	10.5	2.0	6.6

ROGUE RIVER BASIN

14337800 ELK CREEK NEAR CASCADE GORGE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	10.5	7.5	9.0	9.5	6.5	8.5	---	---	---	---	---	---
2	9.5	6.0	7.5	8.5	5.0	7.5	---	---	---	---	---	---
3	7.5	5.5	7.0	8.5	5.5	7.0	---	---	---	---	---	---
4	6.5	4.5	5.5	7.0	4.5	5.5	---	---	---	---	---	---
5	6.5	5.0	6.0	---	---	---	---	---	---	---	---	---
6	8.0	5.0	6.5	---	---	---	---	---	---	---	---	---
7	6.5	4.5	6.0	---	---	---	---	---	---	---	---	---
8	6.0	4.5	5.5	---	---	---	---	---	---	---	---	---
9	6.0	4.0	4.5	---	---	---	---	---	---	---	---	---
10	5.0	4.0	4.5	---	---	---	---	---	---	---	---	---
11	7.5	4.5	5.5	---	---	---	---	---	---	---	---	---
12	8.0	5.0	6.5	---	---	---	---	---	---	---	---	---
13	7.5	5.5	7.0	---	---	---	---	---	---	---	---	---
14	9.0	5.0	7.0	---	---	---	---	---	---	---	---	---
15	9.0	5.5	7.0	---	---	---	---	---	---	---	---	---
16	7.5	5.0	6.0	---	---	---	---	---	---	---	---	---
17	7.5	4.5	5.5	---	---	---	---	---	---	---	---	---
18	7.0	4.5	6.0	---	---	---	---	---	---	---	---	---
19	6.5	4.5	5.5	---	---	---	---	---	---	---	---	---
20	6.5	4.5	5.5	---	---	---	---	---	---	8.0	7.5	7.5
21	9.5	5.0	7.5	---	---	---	---	---	---	8.5	7.0	8.0
22	11.0	8.0	9.5	---	---	---	---	---	---	9.5	7.0	8.5
23	11.0	8.0	9.5	---	---	---	---	---	---	9.5	8.5	9.0
24	9.0	7.0	8.0	---	---	---	---	---	---	9.0	8.0	8.5
25	10.5	7.0	8.0	---	---	---	---	---	---	8.5	7.5	8.0
26	9.0	7.0	8.0	---	---	---	---	---	---	8.0	7.0	7.5
27	9.5	7.5	8.5	---	---	---	---	---	---	9.0	6.5	8.0
28	9.5	8.0	8.5	---	---	---	---	---	---	9.0	7.5	8.5
29	---	---	---	---	---	---	---	---	---	9.0	8.0	8.5
30	---	---	---	---	---	---	---	---	---	10.5	8.0	9.0
31	---	---	---	---	---	---	---	---	---	11.5	7.5	9.5
MONTH	11.0	4.0	6.8	---	---	---	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	13.0	9.0	10.5	18.0	13.5	15.5	22.0	16.0	18.5	19.0	15.5	17.5
2	13.0	9.0	11.0	16.0	13.5	15.0	22.5	16.0	19.0	19.5	16.0	18.0
3	13.0	8.0	10.5	18.5	12.5	15.0	23.5	17.0	20.0	19.5	16.5	18.0
4	13.5	9.5	11.0	19.0	13.0	15.5	24.0	18.0	20.5	19.5	16.5	18.0
5	14.5	9.0	11.5	19.5	13.0	16.0	23.5	18.5	20.5	19.5	16.5	18.0
6	15.5	10.0	12.0	20.5	14.0	17.0	23.0	17.0	19.5	18.5	15.5	17.0
7	14.5	10.0	12.0	21.0	14.5	17.5	21.5	16.0	18.5	18.0	16.0	17.0
8	15.0	10.0	12.0	21.5	15.5	18.0	21.5	15.5	18.0	17.5	14.5	16.0
9	15.5	10.5	13.0	21.5	15.5	18.5	22.0	15.5	18.5	16.5	14.0	15.5
10	14.0	11.5	12.5	20.5	16.5	18.5	22.0	16.0	18.5	15.0	11.5	13.5
11	15.5	10.0	12.5	20.0	15.0	17.5	21.5	16.0	18.5	15.0	12.0	13.5
12	16.5	11.5	13.5	20.0	14.5	17.5	22.0	16.5	19.0	16.0	12.5	14.0
13	---	---	---	20.5	14.5	17.5	22.5	17.5	20.0	16.0	13.5	15.0
14	16.5	10.5	13.5	20.5	14.5	17.5	23.5	18.5	20.5	16.5	13.5	15.0
15	15.5	11.5	13.0	21.0	15.0	18.0	22.5	17.5	19.5	16.5	14.0	15.5
16	15.5	10.5	12.5	22.0	15.0	18.5	21.5	15.5	18.0	16.5	14.0	15.5
17	16.5	9.5	13.0	22.0	16.0	19.0	20.0	14.0	16.5	15.5	13.5	14.5
18	17.0	10.5	13.5	21.5	15.5	18.5	19.5	13.5	16.0	14.0	12.5	13.0
19	16.5	10.5	13.5	22.5	16.0	19.0	19.0	13.5	16.0	14.5	12.0	13.0
20	17.5	10.5	14.0	22.5	16.0	19.0	19.0	14.5	16.5	13.5	10.5	12.5
21	18.0	12.0	14.5	23.5	17.0	20.0	20.0	14.5	16.5	14.0	10.5	12.0
22	18.0	12.5	15.0	24.0	17.5	20.5	20.0	15.0	17.0	13.5	10.5	12.0
23	16.5	12.5	14.5	24.0	18.5	21.0	20.0	16.5	17.5	14.0	11.0	12.5
24	14.5	13.0	13.5	23.5	17.5	20.5	19.0	14.5	16.5	14.0	11.0	12.5
25	13.5	12.0	12.5	23.5	17.0	20.0	19.0	14.5	16.5	14.0	12.5	13.0
26	14.5	11.0	12.5	24.5	18.5	21.0	18.0	14.0	16.5	13.0	10.5	12.0
27	16.5	9.5	13.0	23.0	18.0	20.5	18.5	14.5	16.5	13.5	10.5	12.0
28	18.0	11.5	14.5	24.0	18.0	21.0	19.0	15.5	17.0	13.5	11.0	12.5
29	19.0	13.0	16.0	23.0	18.0	20.0	19.0	15.5	17.5	14.0	11.5	12.5
30	19.0	13.5	16.0	22.5	17.0	19.5	19.5	16.0	18.0	13.5	11.0	12.5
31	---	---	---	22.5	17.0	19.5	19.0	15.5	17.5	---	---	---
MONTH	---	---	---	24.5	12.5	18.5	24.0	13.5	18.0	19.5	10.5	14.4

ROGUE RIVER BASIN

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14337830 ELK CREEK BELOW ALCO CREEK, NEAR TRAIL, OR

LOCATION.--Lat 42°40'46", long 122°42'37", in NW 1/4 sec.4, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on Corps of Engineers' Land, on right bank 500 ft downstream from Alco Creek, and 7.5 mi northeast of Trail.

DRAINAGE AREA.--111 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--April 1986 to current year (operated as a low-flow station only).

GAGE.--Water-stage recorder. Elevation of gage is 1,680 ft above sea level, from topographic map.

REMARKS.--Records good. No regulation. Some diversions upstream from station for irrigation. Operated as a low-flow station only. Discharges above 440 ft³/s not published. U.S. Geological Survey satellite telemeter at station.

EXTREMES FOR PERIOD OF RECORD.--Minimum discharge recorded, 0.54 ft³/s Sept. 23, 1992, but may have been less during period of estimated discharge during that year.

EXTREMES FOR CURRENT YEAR.--Minimum discharge, 2.6 ft³/s Sept. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.6	59	102	79	359	---	218	133	335	33	7.9	3.8
2	16	41	84	265	308	---	203	128	267	32	7.9	3.9
3	14	31	69	298	275	---	212	115	218	32	7.1	4.0
4	13	25	59	327	241	---	203	113	189	29	6.6	4.2
5	12	22	52	227	211	---	207	119	163	28	5.7	4.1
6	12	25	47	175	207	362	222	107	141	25	5.4	3.8
7	11	106	68	161	189	297	244	100	127	23	5.8	4.0
8	11	69	107	176	173	264	237	94	121	21	5.7	4.3
9	53	49	86	166	157	233	226	89	107	20	5.5	4.7
10	74	39	72	---	152	217	302	86	104	19	5.2	4.9
11	52	35	64	---	195	224	341	83	98	19	5.1	4.8
12	66	36	58	---	241	322	321	98	89	18	4.9	4.4
13	50	37	53	---	288	359	296	106	86	18	4.6	4.1
14	37	41	50	---	---	343	268	106	78	16	4.6	3.9
15	28	36	55	---	---	324	236	139	69	15	4.4	3.9
16	23	35	---	---	383	316	207	184	66	14	4.3	3.8
17	19	92	---	---	311	277	185	195	62	12	5.0	3.8
18	17	71	---	---	250	237	168	193	57	12	4.6	4.1
19	16	117	200	---	227	207	157	192	54	12	4.7	4.8
20	15	151	144	---	262	194	152	---	52	12	4.8	5.1
21	14	115	111	---	---	198	147	---	49	11	4.7	5.1
22	13	83	87	---	---	---	150	---	45	e9.7	4.7	4.9
23	13	68	75	---	---	---	161	321	43	e9.3	5.0	4.5
24	13	89	68	---	---	---	204	---	50	e8.9	5.2	4.2
25	13	203	62	---	---	---	184	---	61	e8.5	5.1	4.4
26	12	179	54	---	---	---	162	411	57	e8.1	4.6	5.3
27	12	179	50	---	364	385	150	411	49	e7.8	4.8	4.9
28	12	132	47	---	---	336	143	362	44	7.9	4.8	4.9
29	14	105	48	---	---	287	139	---	39	8.0	4.5	4.6
30	19	122	62	---	---	249	136	---	35	9.6	4.0	4.6
31	95	---	66	---	---	236	---	---	---	8.9	4.1	---
TOTAL	777.6	2392	---	---	---	---	6181	---	2955	507.7	161.3	131.8
MEAN	25.1	79.7	---	---	---	---	206	---	98.5	16.4	5.20	4.39
MAX	95	203	---	---	---	---	341	---	335	33	7.9	5.3
MIN	8.6	22	---	---	---	---	136	---	35	7.8	4.0	3.8
AC-FT	1540	4740	---	---	---	---	12260	---	5860	1010	320	261
CFSM	.23	.72	---	---	---	---	1.86	---	.89	.15	.05	.04
IN.	.26	.80	---	---	---	---	2.07	---	.99	.17	.05	.04

e Estimated

ROGUE RIVER BASIN

14337830 ELK CREEK BELOW ALCO CREEK, NEAR TRAIL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1986 to current year.

INSTRUMENTATION.--Temperature recorder since April 1986.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum recorded, 31.5°C June 22, 1992, but may have been higher during period of missing record in August 1992; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 29.0°C Aug. 13, 14; minimum, 0.0°C Dec. 26.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.5	13.0	14.5	10.5	8.5	9.5	5.5	4.0	5.0	4.0	2.0	3.0
2	14.5	12.5	13.0	9.5	7.0	8.5	4.0	3.0	3.5	6.0	4.0	5.0
3	14.5	12.0	13.0	10.5	7.5	9.0	5.5	3.0	4.0	6.0	5.0	5.5
4	17.0	13.0	14.0	10.5	7.5	9.0	7.0	5.5	6.0	5.5	4.5	5.0
5	16.5	11.5	13.5	11.0	7.5	9.0	6.0	5.0	5.5	5.5	4.5	5.0
6	12.5	10.5	11.5	10.5	9.5	10.0	7.0	5.5	6.0	5.5	4.5	5.0
7	13.0	10.0	11.0	11.0	8.5	10.0	7.5	6.5	7.0	6.0	5.0	5.5
8	12.0	10.5	11.0	8.5	7.0	7.5	6.5	5.5	6.0	6.0	5.0	5.5
9	11.0	8.5	9.5	7.5	5.5	7.0	6.0	5.0	5.5	6.0	4.5	5.0
10	10.5	8.0	9.0	8.0	7.0	7.5	.5	3.5	5.0	6.5	6.0	6.0
11	10.0	8.5	9.0	9.0	7.5	8.5	4.0	2.5	3.0	7.0	6.5	7.0
12	10.5	8.5	9.5	10.0	8.0	8.5	3.5	2.0	3.0	7.5	6.5	7.0
13	11.0	7.0	9.0	8.5	7.5	8.0	3.5	2.5	3.0	7.5	6.5	7.0
14	12.0	8.5	10.0	9.0	7.0	8.0	5.5	3.5	4.5	7.5	7.0	7.0
15	13.0	8.5	10.5	7.0	5.5	6.0	5.5	4.5	5.0	8.0	7.0	7.5
16	13.5	9.0	11.0	7.5	5.5	6.5	7.0	4.5	5.5	8.0	7.0	7.5
17	13.5	9.0	11.0	8.5	7.0	8.0	7.5	6.0	7.0	8.5	8.0	8.0
18	14.0	10.5	11.5	7.5	6.5	7.0	6.0	5.0	5.5	8.5	7.0	7.5
19	12.0	10.5	11.5	8.0	7.0	7.5	5.0	4.5	4.5	7.0	6.0	6.5
20	14.0	10.0	11.5	8.5	7.5	8.0	4.5	3.5	4.0	7.0	6.0	6.5
21	13.0	8.5	10.5	7.5	6.0	7.0	4.5	3.5	4.0	6.5	5.5	6.0
22	12.5	8.0	10.0	8.0	6.5	7.5	3.5	1.5	2.5	7.0	5.5	6.0
23	13.0	9.0	11.0	9.5	8.0	9.0	3.0	2.0	2.5	7.5	6.5	7.0
24	12.0	7.5	9.5	9.5	8.0	9.0	4.0	2.5	3.0	7.0	6.0	6.5
25	10.5	6.0	8.0	8.0	7.0	7.5	3.5	1.5	3.0	7.5	6.0	7.0
26	9.5	5.5	7.5	8.5	7.0	7.5	1.5	.0	1.0	7.5	7.0	7.5
27	11.5	7.5	9.0	9.0	8.0	8.0	3.0	1.5	2.0	8.0	7.0	7.5
28	10.5	8.0	9.5	9.0	7.5	8.0	3.5	2.0	2.5	8.5	7.0	7.5
29	10.5	9.5	10.0	7.5	6.5	7.0	3.0	1.5	2.0	8.0	7.0	7.5
30	11.5	9.5	10.5	7.5	5.5	7.0	2.5	1.0	2.0	7.5	6.0	6.5
31	11.5	10.0	11.0	---	---	---	3.0	2.0	2.5	7.5	5.5	6.5
MONTH	17.0	5.5	10.7	11.0	5.5	8.0	7.5	.0	4.0	8.5	2.0	6.4

ROGUE RIVER BASIN

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14337830 ELK CREEK BELOW ALCO CREEK, NEAR TRAIL, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.5	6.0	6.5	7.5	6.5	7.0	8.0	5.5	6.5	---	---	---
2	7.0	6.0	6.5	7.5	6.0	7.0	8.0	6.0	7.0	---	---	---
3	8.0	6.5	7.5	6.5	5.5	6.0	9.0	6.0	7.0	---	---	---
4	7.5	6.0	7.0	7.0	5.0	6.0	9.0	5.5	7.0	---	---	---
5	7.0	6.0	6.5	6.5	4.0	5.0	9.0	5.5	7.0	---	---	---
6	8.0	6.5	7.0	7.0	4.0	5.0	8.5	5.5	7.0	---	---	---
7	7.0	5.5	6.0	6.0	3.5	5.0	9.0	5.0	6.5	---	---	---
8	7.5	6.0	6.5	7.0	5.0	6.0	7.5	4.0	6.0	---	---	---
9	6.5	5.0	6.0	8.0	4.5	6.0	8.5	5.5	7.0	---	---	---
10	6.0	4.5	5.0	6.5	4.0	5.5	7.5	5.5	6.5	---	---	---
11	6.5	4.5	5.5	10.0	6.0	8.0	8.0	5.0	6.0	---	---	---
12	7.5	6.0	6.5	8.0	6.5	7.5	6.5	4.0	5.0	---	---	---
13	7.5	6.0	6.5	10.0	7.0	8.0	7.0	4.0	5.5	---	---	---
14	7.5	6.0	6.5	9.5	6.0	7.5	6.5	3.5	5.0	---	---	---
15	7.0	6.0	6.5	9.5	7.5	8.5	7.0	3.5	5.0	---	---	---
16	6.5	5.0	6.0	10.0	6.5	8.5	9.0	3.0	5.5	---	---	---
17	7.0	5.5	6.0	9.0	5.0	6.5	10.0	3.5	6.5	---	---	---
18	7.5	5.5	6.5	9.5	4.5	6.5	10.0	5.5	8.0	---	---	---
19	7.0	6.5	7.0	10.5	5.0	7.5	12.0	6.5	9.0	---	---	---
20	6.5	5.5	6.0	11.0	6.0	8.5	12.0	5.5	9.0	---	---	---
21	6.0	2.5	4.5	10.0	7.0	8.5	13.0	6.5	9.5	---	---	---
22	6.5	5.0	5.5	9.5	8.0	8.5	---	---	---	---	---	---
23	6.5	5.5	6.0	9.0	7.5	8.5	---	---	---	---	---	---
24	7.5	5.5	6.0	9.0	7.0	8.0	---	---	---	---	---	---
25	7.0	5.0	5.5	10.0	7.5	8.5	---	---	---	---	---	---
26	7.5	5.0	6.0	7.5	6.5	7.0	---	---	---	---	---	---
27	7.5	5.5	6.5	7.5	5.0	6.0	---	---	---	---	---	---
28	7.5	6.0	7.0	7.5	4.5	5.5	---	---	---	---	---	---
29	---	---	---	8.0	4.0	5.5	---	---	---	---	---	---
30	---	---	---	7.0	3.5	5.5	---	---	---	11.5	8.5	10.0
31	---	---	---	7.5	5.0	6.0	---	---	---	13.0	8.5	10.5
MONTH	8.0	2.5	6.2	11.0	3.5	6.9	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	14.0	9.5	11.5	---	3.0	---	25.5	18.0	21.5	27.0	18.0	22.0
2	13.0	9.5	11.0	17.5	15.5	16.5	26.5	18.5	22.0	27.5	19.0	22.5
3	13.0	8.0	10.5	21.0	14.5	17.0	27.5	19.5	23.0	27.0	19.0	22.5
4	14.0	9.0	11.0	21.0	15.0	17.5	28.5	20.5	24.0	27.0	19.0	22.5
5	14.5	9.0	12.0	22.0	15.0	18.5	27.5	21.0	24.0	26.5	18.5	22.0
6	16.0	10.5	13.0	23.5	16.5	19.5	26.5	19.5	22.5	25.0	17.5	21.0
7	14.5	11.0	12.5	24.0	17.0	20.0	26.0	18.0	21.5	22.0	18.0	20.0
8	16.5	11.0	13.5	24.5	17.5	21.0	26.0	18.0	21.5	21.0	17.0	19.0
9	17.0	12.0	14.5	24.5	18.0	21.0	26.0	18.0	21.5	19.0	15.5	17.0
10	16.0	13.0	14.5	24.0	18.5	21.0	27.0	18.5	22.0	20.5	12.5	16.0
11	17.5	12.0	14.5	23.0	17.0	19.5	27.0	18.5	22.0	21.5	13.5	17.0
12	19.0	13.5	16.0	23.5	17.0	20.0	28.0	19.0	23.0	23.0	14.5	18.0
13	19.0	13.5	16.5	23.5	17.0	20.0	29.0	20.0	24.0	23.5	15.5	19.0
14	19.5	13.5	16.5	23.5	17.5	20.5	29.0	21.0	24.5	24.5	16.0	19.5
15	19.5	14.5	16.5	24.5	17.5	21.0	27.5	20.0	23.0	23.0	16.5	19.5
16	19.5	14.0	16.5	25.5	17.5	21.5	26.0	18.5	21.5	23.5	16.5	19.5
17	20.5	13.5	17.0	25.5	18.5	22.0	24.5	16.5	20.0	22.0	15.5	18.5
18	---	---	---	25.5	18.0	22.0	24.0	16.0	19.5	18.0	15.5	16.5
19	---	---	---	26.0	19.0	22.0	24.5	16.0	19.5	20.5	14.0	17.0
20	---	---	---	26.5	18.5	22.0	24.0	17.0	20.0	20.0	12.5	16.0
21	---	---	---	27.5	19.5	23.5	24.5	17.0	20.0	20.0	12.5	16.0
22	---	---	---	---	---	---	25.0	17.0	20.5	20.5	12.5	16.0
23	---	---	---	---	---	---	25.0	17.5	20.5	20.5	13.0	16.0
24	---	---	---	---	---	---	24.0	16.0	20.0	20.0	13.0	16.5
25	---	---	---	---	---	---	24.5	16.5	20.0	18.0	15.0	16.0
26	---	---	---	---	---	---	24.5	16.0	19.5	18.5	12.0	15.0
27	---	---	---	---	---	---	25.5	16.5	20.5	20.0	12.0	15.5
28	---	---	---	28.5	20.5	24.0	26.0	17.5	21.5	20.0	13.0	16.0
29	---	---	---	27.5	21.0	23.5	26.0	17.5	21.5	20.5	13.5	16.5
30	---	---	---	26.0	19.0	22.5	26.0	18.5	22.0	20.5	13.0	16.5
31	---	---	---	25.5	19.5	22.0	27.0	18.0	22.0	---	---	---
MONTH	---	---	---	---	---	---	29.0	16.0	21.6	27.5	12.0	18.2

ROGUE RIVER BASIN

14337870 WEST BRANCH ELK CREEK NEAR TRAIL, OR

LOCATION.--Lat 42°42'40", long 122°44'55", in SW 1/4 sec.7, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on Bureau of Land Management land, on left bank 300 ft upstream from Spot Creek and 5.3 mi northeast of Trail.

DRAINAGE AREA.--14.2 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1973 to September 1976, October 1977 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,772.29 ft above sea level (Corps of Engineers bench mark). Prior to Dec. 8, 1996, at datum 0.95 ft higher.

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

AVERAGE DISCHARGE.--24 years (water years 1974-76, 1978-98), 19.2 ft³/s, 18.38 in/yr, 13,920 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,410 ft³/s Jan. 15, 1974, gage height, 6.25 ft, present datum, from rating curve extended above 600 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.18 ft³/s Aug. 17-19, 21, 1992 and Sept. 23, 1994.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	0230	*442	*4.13	No other peak greater than base discharge.			
Minimum discharge, 1.3 ft ³ /s Aug. 11, 12.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	6.9	10	9.2	32	88	19	6.5	28	3.7	1.8	1.8
2	3.3	4.5	7.9	27	27	124	18	6.3	22	3.7	1.6	1.7
3	2.7	3.7	6.1	32	25	112	18	5.4	18	3.8	1.5	1.8
4	2.6	3.3	5.0	35	21	67	18	5.3	14	3.6	1.6	1.8
5	2.2	3.1	4.4	22	18	48	21	6.2	12	3.5	1.6	1.8
6	2.2	3.8	4.1	16	18	37	26	5.2	11	3.4	1.5	1.8
7	2.2	11	7.0	14	16	30	27	4.7	9.6	3.3	1.6	1.8
8	2.7	7.6	10	17	14	26	26	4.4	8.6	3.2	1.7	1.8
9	10	5.2	8.8	20	12	24	23	4.4	7.9	3.1	1.7	2.0
10	7.0	4.3	7.0	28	12	24	27	4.4	8.0	3.1	1.7	1.9
11	6.3	4.0	5.9	104	19	27	34	4.5	7.3	3.0	1.5	1.9
12	7.3	3.8	5.6	89	26	42	33	7.3	6.6	2.9	1.7	2.0
13	5.2	4.0	5.1	81	32	41	30	9.4	6.0	2.8	1.8	1.9
14	3.8	4.1	4.7	80	42	34	25	9.5	5.6	2.6	1.9	1.9
15	3.2	3.7	5.0	117	52	29	22	10	5.5	2.5	2.0	1.7
16	3.0	6.5	20	116	44	26	19	14	5.5	2.5	2.1	1.7
17	2.8	12	118	251	33	22	16	21	5.3	2.5	2.1	1.7
18	2.5	8.1	40	96	25	19	14	22	5.0	2.5	2.3	1.7
19	2.5	13	20	71	23	16	13	20	4.7	2.4	2.3	2.0
20	2.5	17	14	52	27	14	12	65	4.5	2.4	2.2	1.9
21	2.5	12	11	39	89	13	10	92	4.4	2.3	2.2	1.9
22	2.5	7.8	8.5	41	93	63	9.5	54	4.1	2.2	2.1	1.8
23	2.4	6.0	7.2	62	73	146	11	36	4.0	2.2	2.2	1.7
24	2.4	7.4	6.5	63	66	98	15	30	4.9	2.2	2.4	1.7
25	2.4	18	5.9	58	60	56	14	44	5.5	2.2	2.2	1.8
26	2.4	14	5.6	75	48	38	12	46	4.9	2.0	2.1	2.1
27	2.4	14	5.4	110	42	31	10	48	4.3	1.9	2.1	2.0
28	2.5	11	5.4	69	48	26	9.2	44	3.9	2.0	2.1	1.9
29	2.8	9.1	5.4	57	---	23	8.1	54	3.7	2.0	2.0	1.8
30	4.0	13	6.4	53	---	20	7.3	50	3.6	2.2	2.0	1.8
31	12	---	7.3	43	---	19	---	38	---	2.0	1.9	---
TOTAL	114.5	241.9	383.2	1947.2	1037	1383	547.1	771.5	238.4	83.7	59.5	55.1
MEAN	3.69	8.06	12.4	62.8	37.0	44.6	18.2	24.9	7.95	2.70	1.92	1.84
MAX	12	18	118	251	93	146	34	92	28	3.8	2.4	2.1
MIN	2.2	3.1	4.1	9.2	12	13	7.3	4.4	3.6	1.9	1.5	1.7
AC-FT	227	480	760	3860	2060	2740	1090	1530	473	166	118	109
CFSM	.26	.57	.87	4.42	2.61	3.14	1.28	1.75	.56	.19	.14	.13
IN.	.30	.63	1.00	5.10	2.72	3.62	1.43	2.02	.62	.22	.16	.14

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1974 - 1998, BY WATER YEAR (WY)

	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	2.93	18.5	39.4	42.1	45.4	37.1	24.4	11.6	5.17	2.18	1.59	1.73													
MAX	7.27	102	148	140	100	124	52.4	28.2	17.2	4.94	4.30	4.44													
(WY)	1980	1974	1997	1974	1983	1974	1974	1979	1993	1983	1976	1978													
MIN	.75	1.70	3.45	6.53	9.47	3.18	4.54	1.67	.74	.31	.26	.36													
(WY)	1989	1994	1990	1992	1988	1992	1990	1992	1994	1994	1992	1994													

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR		FOR 1998 WATER YEAR		WATER YEARS 1974 - 1998	
ANNUAL TOTAL	5355.0		6862.1			
ANNUAL MEAN	14.7		18.8		19.2	
HIGHEST ANNUAL MEAN					49.8	
LOWEST ANNUAL MEAN					4.05	
HIGHEST DAILY MEAN	391	Jan 1	251	Jan 17	904	Jan 15 1974
LOWEST DAILY MEAN	1.4	Aug 13	1.5	Aug 3	.20	Aug 18 1992
ANNUAL SEVEN-DAY MINIMUM	1.5	Aug 11	1.6	Aug 2	.21	Aug 15 1992
ANNUAL RUNOFF (AC-FT)	10620		13610		13920	
ANNUAL RUNOFF (CFSM)	1.03		1.32		1.35	
ANNUAL RUNOFF (INCHES)	14.03		17.98		18.38	
10 PERCENT EXCEEDS	33		52		49	
50 PERCENT EXCEEDS	5.6		7.0		5.2	
90 PERCENT EXCEEDS	1.8		1.9		1.0	

ROGUE RIVER BASIN

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14337870 WEST BRANCH ELK CREEK NEAR TRAIL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1977 to current year.

INSTRUMENTATION.--Temperature recorder since August 1977.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 27.0°C Aug. 14, 1992; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 22.0°C July 26; minimum, 0.5°C Dec. 26.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	14.0	11.5	12.5	9.0	8.0	8.5	5.5	4.0	4.5	4.5	3.0	3.5
2	12.5	11.0	11.5	9.0	7.0	7.5	4.5	3.5	4.0	6.0	4.5	5.5
3	12.5	10.5	11.5	9.0	7.5	8.0	5.5	3.5	4.5	6.0	5.0	5.5
4	13.0	11.0	12.0	9.0	7.5	8.5	6.5	5.5	6.0	5.5	4.5	5.0
5	12.0	10.0	11.0	9.5	7.5	8.5	6.5	5.0	5.5	5.5	4.5	5.0
6	10.5	9.5	10.0	10.0	9.0	9.5	6.0	5.0	5.5	5.0	4.5	4.5
7	10.5	9.0	9.5	10.0	8.0	9.5	7.0	6.0	6.5	6.0	5.0	5.5
8	10.0	9.0	9.5	8.0	6.0	7.0	6.0	5.0	5.5	5.5	4.5	5.0
9	10.0	8.0	9.0	8.0	6.0	7.0	5.5	4.5	5.0	6.0	4.5	5.0
10	8.5	7.0	8.0	8.0	7.5	7.5	5.0	3.5	4.0	6.5	6.0	6.0
11	8.5	8.0	8.0	9.0	7.5	8.0	3.5	3.0	3.0	7.5	6.5	7.0
12	9.5	8.0	8.5	8.5	7.0	7.5	4.0	2.5	3.0	7.5	6.5	7.0
13	9.0	6.5	8.0	8.5	7.0	7.5	4.0	3.0	3.5	7.5	6.5	7.0
14	10.0	7.5	8.5	7.5	6.5	7.0	5.5	4.0	5.0	7.5	7.0	7.0
15	10.5	8.0	9.0	6.5	5.5	6.0	5.5	4.0	4.5	8.0	7.5	7.5
16	10.5	8.5	9.5	7.0	5.5	6.5	6.5	4.0	5.0	8.0	7.5	7.5
17	10.5	8.5	9.5	8.0	7.0	7.5	7.5	6.0	7.0	8.5	8.0	8.0
18	10.5	9.0	10.0	7.5	6.0	7.0	6.0	5.0	5.0	8.5	7.0	7.5
19	10.5	9.5	10.0	7.5	7.0	7.0	5.0	3.5	4.0	7.0	6.5	7.0
20	10.0	8.5	9.5	8.0	7.0	7.5	4.0	3.5	4.0	7.0	6.0	6.5
21	9.0	7.0	8.5	7.0	6.0	6.5	4.0	3.0	4.0	6.5	5.5	6.0
22	9.0	7.0	8.0	8.0	6.5	7.0	3.0	2.0	2.5	7.0	6.0	6.5
23	9.5	8.5	9.0	9.0	7.5	8.0	3.0	2.0	2.5	7.5	7.0	7.0
24	8.5	6.5	7.5	8.5	7.5	8.0	3.5	2.5	3.0	7.0	6.0	6.5
25	7.0	5.5	6.5	7.5	6.5	7.0	3.0	1.5	2.5	7.5	6.5	7.0
26	7.5	5.5	6.5	8.0	7.0	7.5	2.0	.5	1.0	8.0	7.0	7.5
27	8.0	7.0	7.5	8.0	7.0	7.5	3.0	1.5	2.0	8.0	7.0	7.5
28	9.0	7.0	8.0	8.5	7.0	7.5	3.0	2.0	2.5	8.5	7.0	8.0
29	9.5	8.5	9.0	7.0	6.5	7.0	2.5	2.0	2.5	8.0	7.0	7.5
30	10.5	9.0	9.5	7.0	5.5	6.0	3.0	2.0	2.5	7.5	6.0	6.5
31	10.5	9.0	10.0	---	---	---	3.0	2.5	3.0	7.5	6.0	6.5
MONTH	14.0	5.5	9.2	10.0	5.5	7.5	7.5	.5	4.0	8.5	3.0	6.4

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	7.5	6.5	6.5	7.5	6.5	7.0	7.5	6.0	6.5	15.0	11.0	13.0
2	7.0	6.0	6.5	7.5	6.0	7.0	7.5	6.0	7.0	12.5	10.5	11.5
3	8.0	6.5	7.5	6.5	6.0	6.0	8.0	6.0	7.0	13.0	9.0	11.0
4	7.5	6.0	6.5	6.5	5.0	6.0	8.0	6.0	7.0	12.0	10.5	11.0
5	6.5	6.0	6.5	6.5	4.5	5.5	8.0	6.0	6.5	13.0	10.5	11.5
6	8.0	6.5	7.0	6.0	4.5	5.0	8.0	6.0	7.0	12.5	10.0	11.0
7	6.5	5.5	6.0	6.0	4.0	5.0	8.0	6.0	7.0	14.5	11.0	12.0
8	6.5	6.0	6.5	6.5	5.0	5.5	8.0	5.0	6.5	12.0	9.5	11.0
9	6.0	5.0	5.5	7.0	4.5	5.5	9.0	6.5	7.5	10.0	8.5	9.5
10	6.0	5.0	5.5	6.5	4.5	5.5	8.0	6.0	7.0	10.0	8.0	9.0
11	6.5	5.0	5.5	9.0	6.0	7.5	8.0	6.0	7.0	9.5	9.0	9.0
12	7.5	6.0	6.5	8.0	6.5	7.5	7.5	5.5	6.0	9.5	8.0	8.5
13	7.0	6.0	6.5	9.0	7.0	8.0	7.5	5.5	6.0	8.5	7.0	8.0
14	7.0	6.0	6.5	9.5	6.5	8.0	7.5	5.5	6.0	8.5	8.0	8.0
15	7.0	6.0	6.5	9.5	8.0	8.5	8.0	5.0	6.5	9.0	7.0	8.0
16	6.5	5.5	6.0	10.0	7.0	8.5	9.5	4.5	7.0	8.5	7.0	7.5
17	7.0	5.5	6.0	8.5	5.5	7.0	10.5	5.0	7.5	8.5	7.0	7.5
18	7.0	5.5	6.5	8.5	5.0	7.0	11.0	7.0	9.0	10.5	6.5	8.5
19	7.0	6.0	7.0	10.0	5.5	7.5	12.0	8.0	9.5	9.5	8.5	9.0
20	6.5	5.5	6.0	10.5	6.5	8.5	12.5	7.0	9.5	8.5	7.5	8.0
21	6.0	3.5	5.0	10.5	8.0	9.0	13.5	8.0	10.5	9.0	8.0	8.5
22	6.5	6.0	6.0	9.5	8.5	9.0	12.5	9.0	10.5	10.0	7.5	8.5
23	6.5	6.0	6.0	9.0	8.0	8.5	11.0	9.0	9.5	10.0	9.0	9.5
24	7.0	6.0	6.0	9.0	7.5	8.0	10.0	7.5	8.5	9.5	8.5	9.0
25	6.5	5.0	5.5	9.5	7.5	8.5	10.5	6.5	8.5	9.0	7.5	8.0
26	6.5	5.5	6.0	8.0	6.5	7.5	12.0	6.5	9.0	8.5	7.0	7.5
27	7.0	5.5	6.0	7.5	5.5	6.5	13.5	8.0	10.5	9.0	7.5	8.0
28	7.5	6.0	6.5	6.5	5.0	5.5	15.0	9.5	12.0	9.5	8.0	8.5
29	---	---	---	7.5	4.5	6.0	15.5	10.0	12.5	9.0	8.5	9.0
30	---	---	---	7.0	4.5	5.5	15.0	11.0	13.0	10.5	8.5	9.5
31	---	---	---	7.0	5.0	6.0	---	---	---	12.0	8.5	10.0
MONTH	8.0	3.5	6.2	10.5	4.0	7.0	15.5	4.5	8.3	15.0	6.5	9.3
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	13.0	9.5	11.0	16.5	13.0	14.0	19.0	14.5	17.0	20.0	15.0	17.5
2	13.0	10.0	11.0	14.5	13.0	14.0	19.5	14.5	17.5	20.0	15.5	18.0
3	12.5	9.0	10.5	17.0	12.5	14.0	20.5	15.5	18.0	20.0	16.0	18.0
4	13.0	10.0	11.5	16.5	12.0	14.0	21.5	16.5	19.0	20.5	16.0	18.0
5	13.5	9.5	11.5	17.5	12.5	14.5	21.0	17.5	19.5	20.0	15.5	17.5
6	14.5	10.0	12.0	18.5	13.5	15.5	20.0	16.0	18.0	19.0	14.5	17.0
7	14.0	10.5	12.0	18.5	13.5	16.0	19.0	15.0	17.0	17.0	15.0	16.0
8	14.5	10.5	12.0	19.0	14.5	16.5	18.5	14.5	17.0	17.0	14.5	15.5
9	15.0	11.0	12.5	19.0	14.5	16.5	19.0	14.5	17.0	15.5	13.0	14.5
10	13.0	11.5	12.5	19.0	15.5	17.0	19.5	15.0	17.5	15.0	11.0	13.0
11	14.0	10.5	12.0	18.0	14.0	15.5	19.0	15.0	17.5	15.5	11.0	13.5
12	15.0	11.5	13.0	18.5	13.5	16.0	20.0	15.5	18.0	16.5	12.0	14.5
13	15.5	11.0	13.0	18.5	13.5	16.0	21.0	16.5	19.0	17.0	13.0	15.0
14	15.5	10.5	13.0	18.5	14.0	16.0	21.5	17.5	19.5	17.5	13.5	15.5
15	15.0	11.5	13.0	19.0	14.0	16.5	20.5	16.5	18.5	17.5	14.0	15.5
16	14.0	10.0	12.0	19.5	14.0	17.0	18.5	15.0	16.5	17.5	14.0	15.5
17	15.0	9.5	12.0	19.5	15.0	17.5	17.5	13.5	15.5	17.0	13.0	15.0
18	15.5	11.0	13.0	19.5	14.5	17.0	17.0	13.0	15.0	14.5	13.0	13.5
19	15.0	10.5	12.5	20.0	15.5	17.5	17.0	12.5	15.0	14.5	12.0	13.0
20	16.0	10.5	13.0	20.0	15.0	17.5	17.5	14.0	16.0	13.5	10.5	12.5
21	16.5	11.5	14.0	21.0	16.0	18.5	17.5	14.0	16.0	14.0	10.5	12.5
22	16.0	12.0	14.0	21.0	16.5	19.0	18.0	14.0	16.0	14.0	10.5	12.5
23	15.0	12.0	13.5	21.0	17.5	19.0	18.5	15.5	16.5	14.5	10.5	12.5
24	13.5	12.5	13.0	20.5	16.5	18.5	17.5	13.0	15.5	14.5	11.0	13.0
25	12.5	11.0	12.0	20.5	16.0	18.5	17.5	13.5	15.5	14.0	12.5	13.5
26	13.5	10.5	11.5	22.0	17.5	19.5	17.5	13.0	15.5	13.5	10.5	12.0
27	15.0	9.5	12.0	21.0	17.0	19.0	18.0	13.5	16.0	13.5	10.5	12.0
28	16.0	11.0	13.5	21.5	17.0	19.5	19.0	14.5	16.5	14.5	11.0	12.5
29	17.5	12.5	14.5	21.5	17.5	19.5	19.0	14.5	16.5	14.5	11.5	13.0
30	17.0	13.0	15.0	20.0	16.0	18.0	19.5	15.0	17.0	14.5	11.5	13.0
31	---	---	---	19.5	16.0	17.5	19.5	15.0	17.0	---	---	---
MONTH	17.5	9.0	12.5	22.0	12.0	16.9	21.5	12.5	17.0	20.5	10.5	14.5
YEAR	22.0	.5	9.9									

14338000 ELK CREEK NEAR TRAIL, OR

LOCATION.--Lat 42°40'30", long 122°44'38", in NE 1/4 sec.30, T.33 S., R.1 E., Jackson County, Hydrologic Unit 17100307, on right bank 3.7 mi northeast of Trail and at mile 1.2.

DRAINAGE AREA.--129 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to current year. Prior to March 1946 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WDR OR-89-2: Drainage area. WDR OR-92-1: 1989(M), 1990(M), 1991(M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,493.91 ft above sea level. Prior to July 5, 1946, nonrecording gage at various sites within 1.0 mi of present site at different datums. July 5, 1946, to June 22, 1950, nonrecording gage, and June 23, 1950, to May 23, 1954, water-stage recorder, at site 0.5 mi downstream at datum 25.21 ft lower, May 24, 1954, to Sept. 30, 1988 at site 0.8 mi downstream at datum 37.35 ft lower.

REMARKS.--No estimated daily discharges. Records good. Diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--53 years (water years 1947-98), 220 ft³/s, 159,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,200 ft³/s Dec. 22, 1964, gage height, 18.84 ft, from rating curve extended above 4,700 ft³/s on basis of slope-area measurement of peak flow, site and datum then in use; minimum discharge, 0.01 ft³/s Oct. 8, 1987, result of dam construction 1.3 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 2,700 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	0400	*4,460	*9.07	No other peak greater than base discharge.			
Minimum discharge, 3.1 ft ³ /s Sept. 4.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.9	75	113	109	420	735	251	146	389	41	12	4.7
2	16	49	93	320	358	1100	238	142	302	40	11	4.5
3	16	39	78	371	322	1050	244	130	250	41	10	4.6
4	14	33	66	423	277	783	235	127	214	38	9.9	4.5
5	13	28	57	301	245	564	244	135	180	36	8.8	4.9
6	13	29	51	235	239	432	267	121	158	34	8.0	4.2
7	12	114	70	217	217	347	290	113	143	30	8.3	4.0
8	12	87	117	234	196	305	280	106	138	29	8.7	4.8
9	56	61	96	232	179	276	265	103	122	27	8.3	5.6
10	88	47	82	375	170	253	335	99	119	26	8.2	6.3
11	62	41	73	1190	230	256	395	96	112	25	7.7	6.2
12	79	43	66	1150	277	356	383	114	103	25	7.3	5.9
13	60	42	60	881	333	404	350	124	95	24	7.1	5.5
14	43	48	55	790	412	385	315	123	88	22	6.7	5.1
15	36	42	59	1290	513	357	277	153	83	21	6.2	4.9
16	29	42	124	1190	451	348	243	201	79	20	6.3	4.6
17	24	108	1110	2880	365	305	215	226	73	17	7.1	4.6
18	21	90	472	1260	290	261	193	224	67	17	7.4	4.8
19	20	128	267	953	260	231	178	222	62	17	6.8	6.2
20	18	166	194	727	302	215	171	449	60	17	7.4	7.0
21	17	134	154	551	766	218	164	808	56	16	7.1	6.9
22	16	100	131	593	930	447	164	588	52	15	7.0	6.9
23	14	85	110	776	807	1240	174	391	49	13	7.2	6.5
24	14	99	103	828	692	976	230	315	54	13	7.6	6.1
25	14	211	96	727	643	724	206	486	72	13	7.8	5.9
26	14	188	89	859	523	532	182	496	65	13	7.1	7.4
27	14	190	83	1220	450	451	165	503	56	12	6.5	7.9
28	13	144	80	859	501	389	158	451	49	11	6.7	7.2
29	16	113	80	748	---	331	154	651	45	11	6.1	7.0
30	24	136	92	670	---	285	150	707	42	13	5.5	6.6
31	100	---	100	536	---	271	---	546	---	13	5.0	---
TOTAL	895.9	2712	4421	23495	11368	14827	7116	9096	3377	690	236.8	171.3
MEAN	28.9	90.4	143	758	406	478	237	293	113	22.3	7.64	5.71
MAX	100	211	1110	2880	930	1240	395	808	389	41	12	7.9
MIN	7.9	28	51	109	170	215	150	96	42	11	5.0	4.0
AC-FT	1780	5380	8770	46600	22550	29410	14110	18040	6700	1370	470	340

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1947 - 1998, BY WATER YEAR (WY)

	MEAN	31.4	186	444	521	504	286	166	60.5	15.0	6.54	7.30
MAX	404	1008	1851	1283	1131	1074	565	358	254	36.1	25.1	43.7
(WY)	1951	1974	1965	1965	1958	1972	1956	1975	1953	1953	1976	1986
MIN	3.17	8.92	13.1	19.8	23.1	45.4	65.8	21.6	7.42	1.39	2.1	6.0
(WY)	1953	1994	1977	1977	1977	1992	1968	1992	1992	1994	1994	1992

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1947 - 1998

ANNUAL TOTAL	68070.4	78406.0	220
ANNUAL MEAN	186	215	438
HIGHEST ANNUAL MEAN			41.7
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	7270	Jan 1	2880
LOWEST DAILY MEAN	2.1	Aug 15	4.0
ANNUAL SEVEN-DAY MINIMUM	2.5	Aug 13	4.5
ANNUAL RUNOFF (AC-FT)	135000	155500	159100
10 PERCENT EXCEEDS	402	574	555
50 PERCENT EXCEEDS	78	103	68
90 PERCENT EXCEEDS	7.4	7.0	4.7

ROGUE RIVER BASIN

14338000 ELK CREEK NEAR TRAIL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1973 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: June 1973 to current year.

INSTRUMENTATION.--Temperature recorder since June 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 31.5°C July 17, 1979, Aug. 16, 18, 1992; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 28.0°C July 26; minimum, 1.0°C Dec. 26.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.5	14.5	15.0	11.0	9.0	10.0	6.5	5.0	5.5	3.5	2.5	3.0
2	15.0	14.0	14.5	10.0	8.5	9.5	5.0	3.5	4.0	6.0	3.5	5.0
3	15.0	13.5	14.0	10.0	8.5	9.5	5.5	3.5	4.0	5.5	4.5	5.5
4	16.0	14.0	14.5	10.0	8.5	9.5	6.5	5.5	6.0	5.5	4.5	5.0
5	16.0	13.5	14.5	10.5	9.0	9.5	6.5	5.5	6.0	5.5	4.5	5.0
6	13.5	12.5	13.0	10.5	10.0	10.5	7.0	5.5	6.0	5.5	4.5	5.0
7	13.0	12.0	12.5	11.0	9.5	10.5	7.0	6.5	7.0	6.0	5.0	5.5
8	12.5	11.5	12.0	9.5	8.0	8.5	7.0	5.5	6.0	6.0	5.0	5.5
9	11.5	9.5	11.0	8.0	6.5	7.5	6.0	5.0	5.5	6.0	4.5	5.0
10	10.5	8.5	9.5	8.0	7.5	7.5	5.5	4.5	5.5	6.5	5.5	6.0
11	10.0	9.5	10.0	9.0	8.0	8.5	4.5	3.0	4.0	7.0	6.5	6.5
12	10.5	9.0	10.0	9.5	8.0	9.0	3.5	2.5	3.0	7.0	6.0	6.5
13	10.5	8.5	9.5	9.0	8.0	8.5	3.5	3.0	3.5	7.5	6.5	7.0
14	11.5	9.5	10.5	9.0	8.0	8.5	5.5	3.5	4.5	7.0	6.5	7.0
15	11.5	10.0	11.0	8.0	6.5	7.0	5.5	5.0	5.0	7.5	7.0	7.0
16	12.0	10.5	11.5	7.0	6.0	6.5	6.5	4.5	5.5	8.0	7.0	7.5
17	12.0	11.0	11.5	8.5	7.0	7.5	7.5	6.5	7.0	8.0	7.5	8.0
18	12.5	11.0	12.0	8.0	7.0	7.5	6.5	5.0	5.5	8.0	7.0	7.5
19	12.0	11.5	12.0	7.5	7.0	7.5	5.5	4.5	5.0	7.0	6.5	6.5
20	12.0	11.0	11.5	8.5	7.5	8.0	5.0	4.0	4.5	7.0	6.0	6.5
21	11.5	10.5	11.0	7.5	6.5	7.0	5.0	4.0	4.5	6.0	5.5	6.0
22	11.0	10.0	10.5	7.5	6.5	7.0	4.0	2.5	3.0	7.0	5.5	6.0
23	11.5	10.5	11.0	9.5	7.5	8.5	3.5	2.5	3.0	7.0	6.5	7.0
24	11.0	9.5	10.5	9.0	8.5	9.0	4.0	2.5	3.5	7.0	6.0	6.5
25	10.0	8.5	9.5	8.5	7.0	7.5	4.0	2.5	3.5	7.5	6.0	6.5
26	9.0	8.0	8.5	8.0	7.0	7.5	2.5	1.0	2.0	7.5	7.0	7.0
27	10.0	8.5	9.5	9.0	7.5	8.0	3.0	1.5	2.5	8.0	7.0	7.5
28	10.5	9.5	10.0	8.5	7.5	8.0	3.5	2.5	3.0	8.5	7.0	7.5
29	10.5	10.0	10.5	8.0	7.0	7.0	3.5	2.0	2.5	8.0	7.0	7.5
30	11.0	10.5	10.5	7.5	6.5	7.0	3.0	1.5	2.5	7.0	6.0	6.5
31	12.0	10.5	11.0	---	---	---	3.5	2.0	2.5	7.0	5.5	6.5
MONTH	16.5	8.0	11.4	11.0	6.0	8.3	7.5	1.0	4.4	8.5	2.5	6.3

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	7.5	6.0	6.5	7.5	6.5	7.0	7.5	6.0	7.0	15.0	11.5	13.5
2	6.5	6.0	6.5	7.0	6.0	7.0	8.0	6.0	7.0	14.0	11.5	12.5
3	8.0	6.5	7.0	6.5	5.5	6.0	9.0	6.5	7.5	13.5	10.0	12.0
4	7.5	6.5	7.0	7.0	5.0	6.0	8.5	6.0	7.5	12.5	11.0	11.5
5	7.0	6.0	6.5	6.5	4.0	5.5	8.5	6.5	8.0	14.0	10.5	12.0
6	8.0	6.5	7.0	6.5	4.0	5.0	9.0	6.5	7.5	13.0	11.0	12.0
7	7.0	5.5	6.5	5.5	3.5	4.5	8.0	6.0	7.5	15.0	11.0	13.0
8	7.5	6.0	6.5	6.5	5.0	6.0	8.0	5.0	6.5	14.0	11.5	12.5
9	7.0	5.5	6.5	7.5	4.5	6.0	9.0	6.5	7.5	11.5	9.5	10.5
10	6.0	5.0	5.5	6.5	4.0	5.0	8.5	6.5	7.5	11.0	9.5	10.5
11	6.5	5.0	6.0	9.0	6.0	7.5	9.0	6.0	7.5	10.5	9.5	10.5
12	8.0	6.0	7.0	8.5	6.5	7.0	7.5	5.0	6.5	10.5	9.0	9.5
13	7.5	6.0	6.5	10.0	6.5	8.0	8.0	5.0	6.5	10.0	8.0	9.0
14	7.5	6.0	6.5	9.5	6.0	8.0	8.0	5.0	6.5	9.5	8.5	9.0
15	7.5	6.0	6.5	9.5	7.5	8.5	7.5	5.0	6.5	10.0	7.5	9.0
16	6.5	5.0	6.0	10.0	7.5	8.5	9.0	5.0	7.0	9.5	7.5	8.5
17	7.0	5.5	6.0	8.5	5.0	7.0	10.5	6.0	8.5	9.5	7.0	8.0
18	7.0	5.5	6.5	9.0	5.0	7.0	11.0	7.5	9.5	12.0	7.0	9.5
19	7.0	6.5	7.0	9.5	5.5	7.5	13.0	9.0	11.0	10.5	9.0	10.0
20	7.0	5.5	6.0	10.0	6.5	8.5	12.5	8.5	11.0	9.5	8.0	8.5
21	6.0	3.0	4.5	9.5	7.5	9.0	14.0	9.5	11.5	9.5	7.5	8.5
22	6.5	5.0	6.0	9.5	8.0	9.0	13.0	10.0	11.5	11.0	8.0	9.5
23	6.5	5.5	6.0	9.0	8.0	8.5	11.5	9.5	10.5	11.0	9.5	10.0
24	7.0	5.5	6.5	9.0	7.0	8.0	10.5	8.0	9.5	10.0	8.5	9.5
25	7.0	5.0	6.0	9.5	7.5	8.5	10.5	6.5	8.5	10.5	8.0	9.0
26	7.0	5.0	6.0	8.5	6.5	7.5	12.0	7.0	9.5	9.5	7.5	8.5
27	7.5	5.5	6.5	7.5	5.5	6.5	13.5	9.0	11.5	10.5	8.0	9.0
28	7.5	6.0	7.0	7.0	5.0	6.0	15.0	10.5	13.0	10.0	8.5	9.0
29	---	---	---	8.0	4.0	6.0	15.0	11.0	13.5	10.0	9.0	9.5
30	---	---	---	6.5	4.0	5.5	14.5	11.5	13.5	12.0	9.0	10.0
31	---	---	---	7.0	5.5	6.5	---	---	---	13.5	9.0	11.0
MONTH	8.0	3.0	6.4	10.0	3.5	7.0	15.0	5.0	8.9	15.0	7.0	10.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	15.0	10.0	12.5	20.5	18.0	19.0	25.5	21.5	23.5	25.5	20.5	23.0
2	14.5	10.5	12.5	19.5	18.0	18.5	25.5	21.5	23.5	26.0	21.0	23.0
3	14.5	10.0	12.5	20.0	16.5	18.0	26.5	22.0	24.0	25.5	20.5	23.0
4	15.0	11.5	13.0	20.5	17.5	19.0	27.5	22.5	25.0	25.5	20.5	23.0
5	16.0	11.5	13.5	21.5	18.5	20.0	27.5	23.5	25.0	25.5	20.5	23.0
6	16.5	12.5	14.5	23.0	19.5	21.0	26.5	22.5	24.5	24.5	20.0	22.5
7	15.5	13.0	14.5	23.5	20.5	21.5	25.5	22.0	23.5	22.5	20.0	21.5
8	16.5	12.5	14.0	24.0	21.0	22.0	25.5	21.5	23.0	22.0	19.0	20.5
9	17.0	13.5	15.0	24.0	21.5	22.5	25.5	21.5	23.0	20.5	18.0	19.0
10	16.5	14.5	15.5	24.5	22.0	22.5	26.0	21.5	23.5	21.0	16.5	18.5
11	17.0	13.0	14.5	23.0	21.0	21.5	26.0	21.0	23.5	20.5	16.5	18.5
12	18.0	14.5	16.0	23.0	20.0	21.5	26.5	21.5	24.0	21.5	17.0	19.0
13	18.0	14.5	16.5	23.5	20.5	21.5	27.0	22.5	24.5	21.5	17.5	19.5
14	18.0	14.0	16.0	23.5	20.5	22.0	27.5	23.0	25.0	22.0	17.5	20.0
15	17.5	15.0	16.0	24.0	20.5	22.0	26.5	22.5	24.5	22.0	18.0	20.5
16	17.0	14.0	15.5	24.5	21.0	22.5	25.5	22.0	23.5	22.0	18.0	20.0
17	18.0	13.5	15.5	25.0	21.5	23.0	24.5	20.5	22.5	21.5	17.5	19.5
18	18.5	15.0	17.0	25.0	21.5	23.0	24.0	20.0	21.5	19.0	17.0	18.0
19	18.5	14.5	16.5	25.5	21.5	23.5	23.0	19.0	21.0	20.0	16.5	18.0
20	19.0	15.5	17.0	25.5	22.0	23.5	23.0	19.5	21.0	19.0	15.5	17.0
21	20.0	16.0	18.0	26.5	22.5	24.5	24.0	19.5	21.5	19.0	15.0	17.0
22	20.0	17.0	18.5	27.0	23.0	25.0	23.5	19.5	21.5	18.5	15.0	17.0
23	19.0	17.0	18.0	27.0	23.5	25.5	24.0	20.0	21.5	18.5	15.0	17.0
24	18.5	16.0	17.0	27.0	23.5	25.0	23.5	19.5	21.5	18.5	15.0	17.0
25	16.0	14.5	15.0	26.5	23.0	24.5	24.0	19.5	21.5	17.5	16.0	17.0
26	16.5	13.5	14.5	28.0	24.0	25.5	23.5	19.0	21.0	18.5	14.5	16.5
27	18.0	14.0	15.5	27.0	24.0	25.5	23.5	19.0	21.5	18.0	14.5	16.5
28	20.0	15.5	17.5	27.5	23.5	25.5	24.0	20.0	22.0	19.0	15.0	17.0
29	21.0	17.5	19.0	27.0	24.0	25.5	24.0	20.0	22.0	18.5	15.5	17.5
30	21.5	18.5	20.0	26.0	23.0	24.5	24.5	20.0	22.5	18.5	15.5	17.5
31	---	---	---	25.5	22.5	23.5	25.0	20.0	22.5	---	---	---
MONTH	21.5	10.0	15.7	28.0	16.5	22.7	27.5	19.0	22.9	26.0	14.5	19.2
YEAR	28.0	1.0	12.0									

ROGUE RIVER BASIN

14338100 ROGUE RIVER AT TRAIL, OR

LOCATION.--Lat 42°38'51", long 122°48'18", in NW 1/4 NE 1/4 sec.3, T.34 S., R.1 W., Jackson County, Hydrologic Unit 17100307, on right bank 0.2 mi upstream from Trail Creek, and at mile 148.9.

DRAINAGE AREA.--Not determined.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1988 to current year.

INSTRUMENTATION.--Water-quality monitor since March 1988.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 19.0°C July 27, 29, 1992; minimum, 2.0°C Feb. 5, 6, 1989, Feb. 14, 15, 1990.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 16.0°C Aug. 11-13; minimum, 3.5°C Feb. 21.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	9.0	7.0	8.0	10.0	8.5	9.0	8.0	7.5	8.0	5.5	5.0	5.5
2	9.0	7.5	8.0	9.5	8.5	9.0	8.0	7.0	7.5	6.0	5.5	5.5
3	9.0	7.5	8.0	10.0	8.5	9.0	8.0	7.0	7.5	6.0	5.5	5.5
4	9.5	7.5	8.0	9.5	8.5	9.0	8.5	7.5	8.0	5.5	5.0	5.5
5	9.5	7.5	8.0	10.0	8.5	9.0	8.0	7.5	7.5	6.0	5.0	5.5
6	8.0	7.5	7.5	9.5	9.0	9.0	8.0	7.5	7.5	5.5	5.5	5.5
7	8.5	7.5	8.0	9.5	8.5	9.0	8.0	7.5	7.5	6.0	5.5	5.5
8	8.5	7.5	8.0	9.5	8.5	9.0	7.5	7.0	7.5	6.0	5.5	5.5
9	8.5	7.5	8.0	9.0	8.5	8.5	7.5	7.0	7.5	6.0	5.5	5.5
10	9.0	7.0	8.0	9.0	8.5	8.5	7.5	7.0	7.0	6.0	5.5	6.0
11	8.5	7.5	8.0	9.0	8.5	9.0	7.5	6.5	7.0	6.5	6.0	6.0
12	9.0	7.5	8.0	9.5	8.5	9.0	7.0	6.5	6.5	6.0	6.0	6.0
13	9.5	7.5	8.0	9.0	8.5	9.0	7.0	6.5	6.5	6.5	6.0	6.0
14	10.0	7.5	8.5	9.5	8.5	9.0	7.5	6.5	7.0	6.5	6.0	6.0
15	10.0	8.0	8.5	8.5	8.5	8.5	7.0	7.0	7.0	6.5	6.0	6.5
16	10.0	7.5	8.5	9.0	8.5	8.5	7.0	7.0	7.0	7.0	6.0	6.5
17	10.0	8.0	9.0	9.5	8.5	9.0	7.0	6.5	7.0	7.0	6.5	7.0
18	10.0	8.0	9.0	9.0	8.5	8.5	7.0	6.5	6.5	6.5	6.0	6.5
19	9.5	8.5	9.0	9.0	8.5	8.5	7.0	6.0	6.5	6.0	6.0	6.0
20	10.0	8.0	9.0	9.0	8.5	8.5	6.5	6.0	6.5	6.0	6.0	6.0
21	10.0	8.0	8.5	8.5	8.0	8.5	7.0	6.0	6.5	6.0	5.5	6.0
22	10.0	8.0	8.5	8.5	8.0	8.5	6.5	5.5	6.0	6.0	6.0	6.0
23	10.0	8.5	9.0	9.5	8.5	9.0	6.5	5.5	6.0	6.5	6.0	6.0
24	10.0	8.0	8.5	9.0	8.5	9.0	6.5	6.0	6.0	6.0	6.0	6.0
25	10.0	7.5	8.5	8.5	8.0	8.5	6.5	5.5	6.0	6.0	6.0	6.0
26	9.5	8.0	8.5	8.5	8.0	8.5	6.0	5.0	5.5	6.5	6.0	6.0
27	10.0	8.5	9.0	9.0	8.5	8.5	6.0	5.5	5.5	6.5	6.0	6.5
28	9.5	8.5	9.0	9.0	8.0	8.5	6.5	5.5	6.0	6.5	6.0	6.5
29	9.0	8.5	9.0	8.5	8.0	8.0	6.0	5.5	5.5	6.5	6.0	6.5
30	9.5	9.0	9.0	8.5	8.0	8.0	6.0	5.0	5.5	6.0	5.5	6.0
31	10.0	9.0	9.5	---	---	---	6.0	5.0	5.5	6.0	5.5	6.0
MONTH	10.0	7.0	8.5	10.0	8.0	8.7	8.5	5.0	6.7	7.0	5.0	6.0

ROGUE RIVER BASIN

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14338100 ROGUE RIVER AT TRAIL, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.0	6.0	6.0	7.0	6.0	6.5	6.5	5.5	6.0	11.0	9.0	10.0
2	6.5	6.0	6.0	7.0	6.0	6.5	6.5	6.0	6.0	10.0	9.0	9.5
3	7.0	6.0	6.5	6.0	5.5	5.5	7.5	6.0	6.5	11.0	8.5	9.5
4	6.5	6.0	6.5	6.0	5.0	5.5	7.5	6.0	6.5	10.0	8.5	9.5
5	6.0	6.0	6.0	6.0	4.5	5.5	7.5	6.5	7.0	10.5	8.5	9.5
6	7.5	6.0	6.5	6.0	4.5	5.5	8.0	6.0	7.0	10.0	9.0	9.5
7	6.5	5.5	6.0	5.5	4.5	5.0	7.5	6.0	6.5	10.0	8.5	9.0
8	6.5	6.0	6.0	6.5	5.0	5.5	7.5	5.5	6.5	9.5	8.5	9.0
9	6.5	5.5	6.0	7.0	5.0	6.0	7.5	6.0	6.5	9.0	8.0	8.5
10	6.0	5.5	5.5	5.5	5.0	5.5	7.0	6.0	6.5	9.0	8.0	8.5
11	6.5	5.5	6.0	7.5	5.5	6.5	7.0	6.0	6.5	9.0	8.5	9.0
12	7.0	6.0	6.5	6.5	6.0	6.5	6.5	5.5	6.0	10.0	8.0	9.0
13	7.0	6.0	6.0	8.5	6.0	7.0	7.0	6.0	6.5	9.0	8.0	8.5
14	6.5	6.0	6.5	8.0	5.5	6.5	7.5	6.0	6.5	9.5	8.5	9.0
15	6.5	6.0	6.0	7.5	6.5	7.0	7.5	6.0	6.5	9.5	8.5	9.0
16	6.0	5.5	5.5	7.5	6.0	6.5	9.0	5.5	7.0	9.5	8.0	8.5
17	6.5	5.5	6.0	7.0	5.5	6.0	9.5	6.0	7.5	9.5	8.0	8.5
18	6.5	5.5	6.0	7.0	5.5	6.0	9.0	7.0	8.0	11.0	8.5	9.5
19	6.5	6.0	6.0	7.5	5.5	6.0	10.5	7.5	8.5	---	---	---
20	6.0	5.5	5.5	7.5	5.5	6.0	10.5	7.5	8.5	---	---	---
21	5.5	3.5	4.5	7.0	6.0	6.5	9.5	7.0	8.0	10.0	8.5	9.0
22	6.0	5.0	5.5	7.5	6.0	7.0	9.5	7.5	8.5	11.0	9.0	9.5
23	6.0	5.0	5.5	7.5	6.5	7.0	9.0	8.5	8.5	10.5	9.0	10.0
24	7.0	5.5	6.0	6.5	6.0	6.5	9.0	8.5	9.0	10.0	9.0	9.5
25	6.5	5.0	5.5	7.0	6.0	6.5	10.0	7.5	8.5	9.5	8.5	9.0
26	6.5	5.0	5.5	6.0	6.0	6.0	10.0	8.0	9.0	9.5	8.0	9.0
27	6.5	5.5	6.0	6.0	5.5	6.0	10.5	8.5	9.5	10.0	8.5	9.5
28	7.0	6.0	6.5	6.0	5.5	5.5	11.0	9.0	10.0	10.0	9.0	9.5
29	---	---	---	7.0	5.0	6.0	11.0	9.0	10.0	9.5	9.0	9.0
30	---	---	---	6.0	5.0	5.5	10.5	9.0	10.0	10.5	8.5	9.5
31	---	---	---	6.5	5.5	6.0	---	---	---	11.0	9.0	10.0
MONTH	7.5	3.5	5.9	8.5	4.5	6.1	11.0	5.5	7.6	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	11.5	9.5	10.5	13.0	10.5	12.0	14.5	---	---	15.0	12.5	13.5
2	11.5	---	---	12.5	11.0	12.0	14.5	---	---	14.0	11.0	12.5
3	11.5	---	---	13.5	11.0	12.0	15.0	---	---	14.0	11.5	12.5
4	11.5	9.5	10.5	13.5	11.0	12.5	15.0	11.5	13.5	14.0	11.5	12.5
5	12.0	---	---	14.0	10.5	12.5	14.5	12.0	13.5	14.0	11.5	12.5
6	12.0	---	---	14.5	11.5	13.0	15.0	11.5	13.5	14.0	11.5	12.5
7	12.0	---	---	14.5	---	---	15.0	12.0	13.5	13.0	12.0	12.5
8	12.0	---	---	14.5	---	---	15.5	12.0	13.5	13.5	10.0	12.0
9	12.0	---	---	14.5	12.0	13.0	15.5	12.0	14.0	11.0	10.0	10.5
10	12.0	10.0	11.0	14.0	11.5	13.0	15.5	12.0	14.0	13.0	9.5	11.0
11	12.0	---	---	14.0	---	---	16.0	12.5	14.0	13.5	10.5	11.5
12	12.5	10.5	11.5	13.5	11.5	12.5	16.0	12.5	14.5	14.0	10.5	12.0
13	13.0	---	---	13.0	---	---	16.0	13.0	14.5	14.0	11.0	12.0
14	12.5	---	---	13.0	---	---	14.5	11.5	13.0	14.0	11.0	12.0
15	12.5	---	---	13.0	---	---	14.5	11.5	13.0	14.0	11.0	12.5
16	---	---	---	13.5	---	---	14.0	11.5	13.0	13.0	9.0	11.5
17	---	---	---	13.5	---	---	14.5	11.5	13.0	11.5	8.5	10.0
18	---	---	---	13.5	---	---	14.5	12.0	13.0	10.5	9.0	9.5
19	---	---	---	13.5	---	---	14.5	11.5	13.0	12.0	9.0	10.0
20	---	---	---	13.5	---	---	14.5	12.0	13.0	12.0	8.5	10.0
21	---	---	---	14.0	---	---	14.5	12.0	13.0	13.0	8.5	10.5
22	---	---	---	14.0	---	---	15.0	12.0	13.5	12.0	9.0	10.5
23	---	---	---	14.0	---	---	15.0	12.5	13.5	12.0	9.0	10.0
24	---	---	---	14.0	---	---	15.0	12.5	13.5	12.0	8.5	10.0
25	---	---	---	14.5	---	---	15.0	12.5	13.5	10.5	9.0	10.0
26	---	---	---	13.5	---	---	15.0	12.5	13.5	12.0	8.5	10.0
27	---	---	---	13.5	---	---	15.0	12.5	13.5	12.0	8.5	10.0
28	---	---	---	14.0	---	---	15.5	13.0	14.0	12.0	9.0	10.0
29	---	---	---	14.0	---	---	15.5	13.0	14.0	12.0	8.5	10.0
30	13.5	---	---	14.0	---	---	15.5	13.0	14.0	11.5	8.5	9.5
31	---	---	---	14.0	---	---	15.5	13.0	14.0	---	---	---
MONTH	---	---	---	14.5	---	---	16.0	---	---	15.0	8.5	11.1

14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR

LOCATION.--Lat 42°31'30", long 122°50'30", in SE 1/4 sec.17, T.35 S., R.1 W., Jackson County, Hydrologic Unit 17100307, on right bank 50 ft upstream from Dodge Bridge, 0.7 mi downstream from Reese Creek, 4.3 mi northwest of Eagle Point, and at mile 138.6.

DRAINAGE AREA.--1,215 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year.

REVISED RECORDS.--WSP 1094: 1942(M), 1943, 1945(M), 1946. WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,271.99 ft above sea level. Prior to Dec. 21, 1938, nonrecording gage, Dec. 21, 1938, to Aug. 15, 1968, water-stage recorder, at datum 2.27 ft higher, Aug. 16, 1968, to Sept. 30, 1976, water-stage recorder, at datum 1.00 ft higher.

REMARKS.--Records good. Discharges for periods June 18 to July 19 and July 22 to Aug. 10 provided by U.S. Army Corps of Engineers. Flow regulated since February 1977 by Lost Creek Lake (station 14335040). Diversions for irrigation upstream from station; most of low flow of Big Butte Creek (station 14337500) is diverted near Butte Falls. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--39 years (water years 1939-77), 2,636 ft³/s, 1,910,000 acre-ft/yr.
21 years (water years 1978-98), 2,427 ft³/s, 1,758,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 87,600 ft³/s Dec. 22, 1964, gage height, 12.78 ft, datum then in use, from rating curve extended above 23,000 ft³/s; minimum discharge, 567 ft³/s Feb. 18, 1977, result of closure of Lost Creek dam, minimum prior to that time, 611 ft³/s Aug. 6, 14, 29, Sept. 9, 1940.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 20,600 ft³/s Jan. 17, gage height, 9.23 ft; minimum discharge, 1,270 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1330	2630	1990	1550	4020	2880	3020	3130	4370	3330	2400	2390
2	1370	2250	1850	1990	3210	3670	2900	3190	4210	3250	2380	2360
3	1350	2320	1800	2140	2380	3800	2760	3030	4040	3170	2370	2360
4	1380	2230	1730	2410	1950	3930	2520	2880	3830	3070	2450	2370
5	1430	2050	1710	2050	1830	4020	2940	3030	3540	2960	2500	2390
6	1430	2070	1710	1890	1800	3530	2680	3390	3480	3080	2510	2390
7	1410	2350	1790	1850	1720	3160	2640	3800	3420	3010	2480	2390
8	1440	2440	2030	1810	1670	2820	2560	4380	3400	2870	2380	2390
9	1550	2250	1920	1880	1620	2420	2720	4360	3390	2840	2380	2390
10	1580	2080	1810	2180	1560	2270	3420	4260	3480	2730	2370	2310
11	1500	2060	1670	5820	1850	2150	3640	3210	3780	2730	e2360	2090
12	1500	2060	1660	6850	1850	2220	3490	2920	3600	2810	e2380	1750
13	1500	2150	1630	5050	1830	2340	3430	2660	3370	2860	e2400	1740
14	1480	2080	1540	5300	2050	2330	2730	2620	3250	2830	e2420	1770
15	1460	2030	1650	8040	2250	2470	2180	2660	3100	2790	e2420	1770
16	1460	2070	2030	10300	2060	2990	1980	2800	2940	2760	e2410	1770
17	1440	2290	4690	15100	1860	3070	1810	2870	2790	2670	e2400	1780
18	1440	2150	3570	11100	1740	2970	1870	2730	3120	2740	2430	1670
19	1440	2000	2510	8270	1760	2870	1820	2700	3300	2770	2430	1540
20	1430	1740	2250	7080	1970	2820	1910	4790	3300	e2770	2430	1480
21	1440	1610	2220	6240	5560	2800	2470	4630	3300	e2770	2430	1370
22	1430	1550	2020	6030	4430	4430	2560	4190	3280	2800	2440	1330
23	1430	1520	1890	6040	3490	6830	3070	3980	3260	2790	2460	1330
24	1400	1550	1880	5940	3380	6870	3510	3830	3290	2820	2450	1330
25	1390	1820	1850	5780	3110	7200	3430	5490	3320	2820	2440	1330
26	1380	2050	1720	6260	2780	6640	3090	4910	3330	2830	2430	1340
27	1340	2470	1680	7270	2480	5860	3040	4720	3390	2820	2420	1350
28	1320	2160	1660	6040	2500	4900	3070	4320	3410	2770	2400	1340
29	1490	2080	1660	5940	---	3890	3330	5150	3400	2590	2410	1320
30	1690	2270	1610	5340	---	3090	3410	5420	3370	2450	2410	1320
31	3210	---	1510	4300	---	3100	---	4820	---	2440	2400	---
TOTAL	46440	62380	61240	167840	68710	114340	84000	116870	103060	87940	74990	54460
MEAN	1498	2079	1975	5414	2454	3688	2800	3770	3425	2837	2419	1815
MAX	3210	2630	4690	15100	5560	7200	3640	5490	4370	3330	2510	2390
MIN	1320	1520	1510	1550	1560	2150	1810	2620	2790	2440	2360	1320
AC-FT	92110	123700	121500	332900	136300	226800	166600	231800	204400	174400	148700	108000

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1998, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	1302	1928	3222	2999	2637	2628	2767	2956	2525	2198	2205	1749									
MAX	1931	4925	9909	9857	6045	4645	4520	4658	3939	3152	3092	2200									
(WY)	1983	1985	1997	1997	1982	1989	1989	1996	1984	1984	1984	1983									
MIN	874	928	1274	1232	1080	920	969	1577	1656	1116	1795	1288									
(WY)	1993	1988	1990	1992	1988	1992	1992	1992	1992	1992	1994	1980									

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1978 - 1998

	1997	1998	1978-1998
ANNUAL TOTAL	1166300	1042270	
ANNUAL MEAN	3195	2856	2427
HIGHEST ANNUAL MEAN			4012
LOWEST ANNUAL MEAN			1381
HIGHEST DAILY MEAN	22200	15100	23000
LOWEST DAILY MEAN	1310	1320	823
ANNUAL SEVEN-DAY MINIMUM	1310	1330	842
ANNUAL RUNOFF (AC-FT)	2313000	2067000	1758000
10 PERCENT EXCEEDS	4600	4510	4020
50 PERCENT EXCEEDS	2360	2450	2030
90 PERCENT EXCEEDS	1500	1500	1150

e Estimated

ROGUE RIVER BASIN

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14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to current year.

INSTRUMENTATION.--Temperature recorder since August 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE:

Prior to construction of Lost Creek Dam and Lake: Maximum, 20.0°C July 27, 28, 1975; minimum, 0.0°C Jan. 6-8, 10, 11, 1974, Jan. 6-9, 1977.

After full operation of Lost Creek Dam and Lake: Maximum, 21.0°C July 26-29, 1992; minimum, 0.5°C Feb. 5, 6, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 18.0°C Aug. 13, but may have been higher during periods of missing record; minimum recorded, 4.5°C Dec. 26, but may have been lower during periods of missing record.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	9.5	7.5	8.5	10.5	9.0	9.5	8.0	7.0	7.5	6.0	5.0	5.5
2	9.5	8.0	8.5	10.0	8.5	9.0	8.0	6.5	7.0	6.5	5.5	6.0
3	10.0	7.5	8.5	10.5	8.5	9.5	8.0	6.5	7.0	6.0	5.5	6.0
4	10.5	8.0	9.0	10.0	8.5	9.0	8.5	7.5	8.0	6.0	5.0	5.5
5	10.5	7.5	9.0	10.5	8.5	9.5	8.0	7.0	7.5	6.0	5.0	5.5
6	9.0	7.5	8.0	10.0	9.0	9.5	8.0	7.5	7.5	6.0	5.5	5.5
7	9.5	7.0	8.0	10.0	9.0	9.5	8.0	7.0	7.5	7.0	5.5	6.0
8	9.0	8.0	8.0	10.0	8.5	9.0	7.5	7.0	7.0	6.5	5.5	6.0
9	8.5	7.5	8.0	9.5	8.5	9.0	7.5	6.5	7.0	6.0	5.5	6.0
10	9.5	7.5	8.5	9.0	8.5	9.0	7.5	6.5	7.0	6.5	6.0	6.0
11	9.5	7.5	8.5	9.5	9.0	9.0	7.5	6.0	6.5	6.5	6.5	6.5
12	10.0	7.5	8.5	10.0	9.0	9.5	7.0	6.0	6.5	6.5	6.0	6.5
13	10.5	7.0	8.5	9.5	8.5	9.0	6.5	6.0	6.5	7.0	6.5	6.5
14	10.5	7.5	9.0	10.0	8.5	9.0	7.5	6.5	7.0	7.0	6.5	6.5
15	11.0	7.5	9.0	9.0	8.0	8.5	7.0	6.5	7.0	7.0	6.5	7.0
16	11.0	8.0	9.0	9.5	8.0	8.5	7.5	6.5	7.0	7.5	6.5	7.0
17	11.0	8.0	9.5	9.5	8.5	9.0	7.5	7.0	7.0	7.5	7.0	7.5
18	10.5	8.5	9.5	9.0	8.5	8.5	7.0	6.5	6.5	---	---	---
19	10.0	8.5	9.0	9.0	8.5	8.5	7.0	6.0	6.5	6.5	6.0	6.0
20	10.5	8.5	9.5	9.5	8.5	9.0	6.5	5.5	6.0	6.5	6.0	6.0
21	10.5	8.0	9.0	8.5	8.0	8.5	7.0	5.5	6.5	6.0	5.5	5.5
22	10.5	7.5	9.0	9.0	8.0	8.5	6.5	5.0	5.5	---	---	---
23	10.5	8.5	9.5	10.0	8.5	9.0	6.5	5.5	5.5	---	---	---
24	10.0	7.5	8.5	9.5	8.5	9.0	6.5	6.0	6.0	---	---	---
25	10.0	7.0	8.5	8.5	8.0	8.5	6.5	5.5	6.0	---	---	---
26	9.5	7.5	8.5	8.5	8.0	8.5	5.5	4.5	5.0	---	---	---
27	10.5	8.5	9.5	9.0	8.5	8.5	6.0	5.0	5.5	---	---	---
28	10.0	8.5	9.5	9.0	8.0	8.5	6.5	5.5	5.5	---	---	---
29	9.5	9.0	9.0	8.5	8.0	8.0	6.0	5.0	5.5	---	---	---
30	10.0	9.0	9.5	8.5	7.5	8.0	6.0	5.0	5.5	---	---	---
31	11.0	9.5	10.0	---	---	---	5.5	5.0	5.5	---	---	---
MONTH	11.0	7.0	8.9	10.5	7.5	8.9	8.5	4.5	6.5	---	---	---

ROGUE RIVER BASIN

14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	---	---	---	---	---	---	12.5	9.5	11.0
2	---	---	---	---	---	---	---	---	---	11.5	9.5	10.0
3	---	---	---	---	---	---	8.5	6.5	7.0	13.0	9.0	10.5
4	---	---	---	---	---	---	8.5	6.5	7.5	11.0	9.0	10.0
5	---	---	---	---	---	---	9.0	7.0	7.5	12.0	9.0	10.5
6	---	---	---	---	---	---	8.5	6.5	7.5	11.0	9.5	10.0
7	---	---	---	---	---	---	8.5	6.5	7.5	11.5	9.0	10.0
8	---	---	---	---	---	---	8.0	6.0	7.0	10.0	8.5	9.5
9	---	---	---	---	---	---	8.5	6.5	7.5	10.0	8.5	9.0
10	---	---	---	---	---	---	8.0	6.5	7.0	9.5	9.0	9.0
11	---	---	---	---	---	---	8.0	6.0	6.5	9.5	9.0	9.0
12	---	---	---	---	---	---	7.0	5.5	6.0	10.0	8.5	9.0
13	---	---	---	---	---	---	7.5	5.5	6.5	9.5	8.5	9.0
14	---	---	---	---	---	---	8.0	5.5	6.5	10.0	8.5	9.0
15	---	---	---	---	---	---	8.0	5.5	7.0	10.0	8.5	9.0
16	---	---	---	---	---	---	9.5	5.5	7.5	10.5	8.5	9.0
17	---	---	---	---	---	---	10.0	6.0	8.0	10.0	8.5	9.0
18	---	---	---	---	---	---	10.0	7.0	8.5	13.0	8.5	10.5
19	---	---	---	8.5	5.5	7.0	11.5	7.5	9.0	10.5	9.5	10.0
20	---	---	---	9.0	6.0	7.0	11.5	7.5	9.0	9.5	9.0	9.5
21	---	---	---	8.5	6.5	7.0	11.5	7.0	9.0	10.5	8.5	9.5
22	---	---	---	9.0	7.0	8.0	10.5	8.0	9.0	11.5	9.0	10.0
23	---	---	---	8.5	7.5	8.0	9.5	8.5	9.0	11.0	10.0	10.5
24	---	---	---	7.5	6.5	7.0	10.0	8.5	9.5	10.5	9.5	10.0
25	---	---	---	7.5	6.5	7.0	11.0	8.0	9.5	---	---	---
26	---	---	---	7.0	6.5	6.5	12.0	8.5	10.0	---	---	---
27	---	---	---	---	---	---	12.5	9.0	10.5	---	---	---
28	---	---	---	---	---	---	13.0	9.5	10.5	---	---	---
29	---	---	---	---	---	---	13.0	9.5	11.0	---	---	---
30	---	---	---	---	---	---	12.0	9.5	10.5	---	---	---
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	---	---	---	---	---	---	17.5	13.5	15.0
2	---	---	---	---	---	---	---	---	---	16.0	11.5	13.5
3	12.5	9.5	11.0	---	---	---	---	---	---	16.0	11.5	13.5
4	13.0	9.5	11.5	---	---	---	---	---	---	16.0	11.5	13.5
5	13.5	10.0	11.5	---	---	---	---	---	---	16.5	11.5	13.5
6	14.0	10.0	11.5	---	---	---	---	---	---	16.0	11.5	13.5
7	13.0	10.0	11.5	---	---	---	---	---	---	14.5	12.0	13.0
8	13.5	10.0	12.0	---	---	---	---	---	---	14.5	11.5	13.0
9	14.0	10.0	12.0	---	---	---	---	---	---	12.5	10.0	11.0
10	13.0	10.5	11.5	---	---	---	---	---	---	13.5	9.5	11.5
11	13.5	10.5	12.0	---	---	---	---	---	---	15.0	10.5	12.5
12	14.0	11.0	12.0	---	---	---	17.5	13.0	15.0	15.5	10.5	13.0
13	14.5	11.0	12.5	---	---	---	18.0	13.5	15.5	15.5	11.0	13.0
14	14.5	10.5	12.0	---	---	---	16.5	12.0	14.5	15.5	11.0	13.0
15	14.0	10.5	12.0	---	---	---	16.5	12.0	14.0	15.5	11.5	13.0
16	14.0	10.0	12.0	---	---	---	16.0	12.0	14.0	15.5	11.0	12.5
17	15.5	11.0	12.5	---	---	---	16.0	12.0	13.5	13.0	9.0	10.5
18	---	---	---	---	---	---	16.0	11.5	13.5	11.5	9.0	10.0
19	---	---	---	---	---	---	16.0	12.0	14.0	13.0	9.5	11.0
20	---	---	---	---	---	---	16.0	12.0	14.0	13.5	8.5	11.0
21	---	---	---	---	---	---	16.0	12.0	14.0	14.0	9.0	11.0
22	---	---	---	---	---	---	16.5	12.5	14.0	13.5	9.5	11.5
23	---	---	---	---	---	---	16.5	13.0	14.5	13.0	9.0	11.0
24	---	---	---	---	---	---	16.5	12.5	14.0	13.5	9.0	11.0
25	---	---	---	---	---	---	16.5	12.5	14.5	12.0	9.5	10.5
26	---	---	---	---	---	---	17.0	12.5	14.5	13.0	9.0	10.5
27	---	---	---	---	---	---	17.0	12.5	14.5	13.0	8.5	11.0
28	---	---	---	---	---	---	17.5	13.0	14.5	13.0	9.0	11.0
29	---	---	---	---	---	---	17.0	13.0	15.0	13.0	9.0	11.0
30	---	---	---	---	---	---	17.0	13.0	15.0	12.5	9.0	10.5
31	---	---	---	---	---	---	17.5	13.0	15.0	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	17.5	8.5	12.0

ROGUE RIVER BASIN

371

14354200 BEAR CREEK BELOW ASHLAND CREEK, AT ASHLAND, OR

LOCATION.--Lat 42°12'58", long 122°43'16", in SE 1/4 SE 1/4 sec.32, T.38 S., R.1 E, Jackson County, Hydrologic Unit 17100308, on left bank, 0.1 mi downstream from Ashland Creek, and at mile 21.0.

DRAINAGE AREA.--168 mi².

PERIOD OF RECORD.--July 1990 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,686.64 ft above sea level.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated since 1924 by Emigrant Lake. Water is diverted into basin from the Klamath River basin. Many diversions for irrigation and municipal use upstream from station.

AVERAGE DISCHARGE.--8 years (water years 1991-98) 97.9 ft³/s, 70,920 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s Jan. 1, 1997, gage height 11.00 ft; minimum discharge, 0.33 ft³/s Oct. 18, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,610 ft³/s May 20, gage height, 4.74 ft; minimum discharge, 17 ft³/s Oct. 22, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	52	50	85	e60	240	234	301	202	338	113	59	51
2	32	41	83	e85	237	300	340	215	311	102	57	49
3	24	40	e80	e90	266	314	496	195	335	92	52	46
4	23	29	e78	e95	240	344	526	247	332	91	52	45
5	23	21	e79	e60	231	323	477	284	279	90	51	43
6	29	23	e78	e54	229	309	459	317	245	82	64	47
7	38	28	e82	e50	223	297	423	272	227	72	76	47
8	38	26	e88	e47	218	289	211	217	217	65	62	49
9	43	23	e82	e49	174	207	342	231	209	67	57	56
10	30	21	e79	e75	98	129	515	220	254	72	55	53
11	28	22	e78	e100	93	183	481	240	254	74	59	53
12	29	22	e92	e90	97	222	488	347	233	67	62	51
13	26	22	e95	e88	97	236	453	334	211	59	66	46
14	24	23	e98	e78	107	227	458	336	194	62	68	39
15	25	21	e98	e95	105	232	439	364	184	65	65	35
16	25	21	e97	e320	99	252	171	406	172	70	67	40
17	24	21	e160	e560	93	235	170	398	159	72	64	40
18	23	22	e120	e390	89	272	267	363	150	74	60	44
19	23	31	e110	e380	97	316	272	366	144	74	53	47
20	23	28	e120	e320	99	312	257	1170	134	67	50	47
21	26	30	e115	e330	373	314	218	1250	136	49	50	43
22	20	60	e100	e320	168	389	210	851	147	47	50	37
23	19	63	e110	e330	134	882	216	788	133	53	51	42
24	21	65	e130	e370	147	662	245	769	147	62	50	41
25	25	66	e125	e360	128	685	214	880	156	58	52	46
26	27	73	e105	e340	117	639	218	701	134	66	54	39
27	27	90	e105	e290	119	523	235	621	122	66	59	38
28	20	81	e100	e180	152	357	241	581	117	56	58	36
29	25	86	e105	227	---	315	230	440	110	62	59	28
30	31	95	e105	225	---	293	216	346	116	62	53	27
31	81	---	e105	239	---	326	---	458	---	63	51	---
TOTAL	904	1244	3087	6297	4470	10618	9789	14409	5900	2174	1786	1305
MEAN	29.2	41.5	99.6	203	160	343	326	465	197	70.1	57.6	43.5
MAX	81	95	160	560	373	882	526	1250	338	113	76	56
MIN	19	21	78	47	89	129	170	195	110	47	50	27
AC-FT	1790	2470	6120	12490	8870	21060	19420	28580	11700	4310	3540	2590

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1991 - 1998, BY WATER YEAR (WY)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
MEAN	15.7	26.2	163	236	140	126	122	147	76.2	47.8	47.0	27.5
MAX	29.2	76.2	791	1091	607	343	326	465	197	70.1	57.6	43.5
(WY)	1998	1997	1997	1997	1996	1998	1998	1998	1998	1998	1998	1998
MIN	4.93	9.70	14.4	18.5	16.9	13.6	12.7	22.3	34.8	23.6	35.2	8.33
(WY)	1991	1993	1991	1992	1992	1992	1992	1992	1994	1992	1994	1992

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1991 - 1998

ANNUAL TOTAL	60406	61983	
ANNUAL MEAN	165	170	
HIGHEST ANNUAL MEAN			97.9
LOWEST ANNUAL MEAN			22.0
HIGHEST DAILY MEAN	6910	Jan 1	6910
LOWEST DAILY MEAN	14	Sep 9	19
ANNUAL SEVEN-DAY MINIMUM	16	Sep 7	22
ANNUAL RUNOFF (AC-FT)	119800	122900	70920
10 PERCENT EXCEEDS	273	365	231
50 PERCENT EXCEEDS	68	97	40
90 PERCENT EXCEEDS	22	28	11

e Estimated

ROGUE RIVER BASIN

14357500 BEAR CREEK AT MEDFORD, OR

LOCATION.--Lat 42°19'28", long 122°51'55", in NW 1/4 sec.30, T.37 S., R.1 W., Jackson County, Hydrologic Unit 17100308, on left bank 300 ft upstream from 10th street Bridge, in Medford, and at mile 10.1.

DRAINAGE AREA.--289 mi².

PERIOD OF RECORD.--March 1915 to June 1920 (no low-flow records), October 1920 to September 1981, December 1983 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 1044: 1944. WSP 1448: 1916, 1917(M), 1918-20, 1922, 1924, 1927(M), 1928, 1930. WSP 1568: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,343.27 ft above sea level. Prior to Sept. 19, 1991, at site 0.2 mi downstream, at datum 1.29 ft lower, Dec. 31, 1947, to Sept. 23, 1985, at datum 2.00 ft higher. See WSP 1738 for history of changes prior to Dec. 31, 1947.

REMARKS.--No estimated daily discharges. Records good. Flow partly regulated since 1924 by Emigrant Lake. Water is diverted into basin from the Klamath River basin. Many diversions for irrigation and municipal use upstream from station. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--76 years (water years 1921-81, 1984-98), 114 ft³/s, 82,460 acre-ft/yr, unadjusted.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,600 ft³/s Jan. 1, 1997, gage height, 14.69 ft, present datum; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 2,530 ft³/s May 20, gage height, 5.81 ft; minimum discharge, 33 ft³/s Oct. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	54	108	72	310	392	483	339	463	122	57	67
2	65	46	101	104	312	515	474	354	400	120	69	65
3	47	45	97	109	344	482	731	332	439	108	75	68
4	43	43	95	115	311	477	707	390	431	103	58	79
5	40	41	96	74	293	424	662	476	378	112	49	73
6	41	55	95	64	288	388	630	462	330	111	55	83
7	61	54	101	60	280	361	639	427	315	105	73	94
8	60	48	107	57	270	358	391	361	302	104	75	108
9	106	43	102	60	242	297	485	399	286	54	73	118
10	66	41	98	94	137	172	761	382	376	55	70	118
11	56	41	96	122	127	223	674	397	370	58	65	113
12	54	41	112	108	136	276	698	583	338	56	51	102
13	49	45	117	102	141	298	649	535	306	55	53	102
14	47	45	117	93	143	283	614	541	285	46	61	107
15	45	43	118	120	143	283	627	579	267	55	57	84
16	45	44	115	412	133	302	322	680	250	60	68	84
17	43	39	193	682	123	281	292	649	233	68	89	91
18	42	41	144	538	116	298	405	579	209	63	74	84
19	42	49	128	523	136	349	415	604	191	56	56	98
20	41	43	134	441	145	337	402	1790	180	68	86	95
21	39	42	128	450	1170	334	351	1430	182	43	100	100
22	38	67	120	443	409	417	348	1020	199	40	85	92
23	37	99	126	447	289	853	380	904	150	44	110	86
24	36	80	146	509	367	743	457	857	155	57	96	91
25	36	79	129	490	264	782	381	1080	181	54	93	96
26	35	102	122	470	223	736	371	883	157	66	96	86
27	35	111	120	413	210	682	380	811	148	71	89	79
28	35	101	118	292	257	514	387	712	139	59	92	88
29	39	129	119	344	---	440	388	596	125	48	85	68
30	47	131	122	311	---	417	372	475	120	48	77	67
31	105	---	126	318	---	513	---	575	---	53	75	---
TOTAL	1583	1842	3650	8437	7319	13227	14876	20202	7905	2162	2312	2686
MEAN	51.1	61.4	118	272	261	427	496	652	264	69.7	74.6	89.5
MAX	108	131	193	682	1170	853	761	1790	463	122	110	118
MIN	35	39	95	57	116	172	292	332	120	40	49	65
AC-FT	3140	3650	7240	16730	14520	26240	29510	40070	15680	4290	4590	5330

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1998, BY WATER YEAR (WY)

	MEAN	32.0	59.9	159	222	212	195	192	139	75.3	32.9	33.5	35.8
MAX	216	290	1137	1365	873	787	686	652	264	95.4	115	91.6	
(WY)	1963	1985	1965	1997	1958	1957	1974	1998	1998	1971	1976	1971	
MIN	4.74	8.23	17.3	13.2	11.5	13.7	4.88	1.46	2.12	.53	.39	.70	
(WY)	1932	1937	1937	1937	1931	1931	1931	1931	1931	1924	1924	1931	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1921 - 1998

ANNUAL TOTAL	81600	86201	
ANNUAL MEAN	224	236	114
HIGHEST ANNUAL MEAN			304
LOWEST ANNUAL MEAN			8.42
HIGHEST DAILY MEAN	10900	Jan 1	10900
LOWEST DAILY MEAN	35	Oct 26	.20
ANNUAL SEVEN-DAY MINIMUM	36	Oct 22	.20
ANNUAL RUNOFF (AC-FT)	161900	171000	82460
10 PERCENT EXCEEDS	381	539	264
50 PERCENT EXCEEDS	101	120	52
90 PERCENT EXCEEDS	43	46	12

ROGUE RIVER BASIN

373

14359000 ROGUE RIVER AT RAYGOLD, NEAR CENTRAL POINT, OR

LOCATION.--Lat 42°26'15", long 122°59'10", in SW 1/4 sec.18, T.36 S., R.2 W., Jackson County, Hydrologic Unit 17100308, on right bank at Raygold, 0.1 mi downstream from Gold Ray Dam, 1.0 mi downstream from Bear Creek, 5.6 mi northwest of Central Point, and at mile 125.8.

DRAINAGE AREA.--2,053 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--August 1905 to current year. Prior to October 1921, published as "near Tolo."

REVISED RECORDS.--WSP 1248: 1906, 1914(M), 1915. WSP 1398: 1910(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,121.78 ft above sea level. Prior to Sept. 19, 1914, nonrecording gage and Sept. 19, 1914, to Sept. 30, 1956, water-stage recorder, at site 300 ft upstream at same datum.

REMARKS.--Water-discharge records fair. Flow regulated since February 1977 by Lost Creek Lake (station 14335040). Slight regulation by Fish Lake and Emigrant Lake. Many diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--72 years (water years 1906-77), 2,976 ft³/s, 2,156,000 acre-ft/yr.
21 years (water years 1978-98), 2,926 ft³/s, 2,119,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 131,000 ft³/s Dec. 23, 1964, gage height, 23.43 ft, from rating curve extended above 63,000 ft³/s on basis of slope-area measurement of 113,000 ft³/s; minimum discharge recorded, 418 ft³/s Sept. 19, 1968, as result of regulation, but may have been lower during periods of no record during water years 1931-34.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28,800 ft³/s Jan. 17, gage height, 10.60 ft; minimum discharge, 1,400 ft³/s Oct. 25-27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1480	3430	2350	1790	4870	3980	4710	4180	5760	3610	2230	2150
2	1670	2540	e2150	2500	4220	5430	4400	4210	5370	3520	2200	2150
3	1560	2610	e2100	3010	3340	5840	4990	4050	5170	3450	2210	2140
4	1570	2710	e2100	3300	2700	5370	4510	3910	4940	3330	2230	2170
5	1640	2520	2100	2500	2510	5310	5090	4280	4540	3210	2310	2160
6	1620	2510	2110	2180	2450	4680	4730	4550	4320	3270	2320	2170
7	1670	3110	2250	2100	2360	4190	4740	4810	4040	3250	2350	2430
8	1770	3230	2320	2030	2240	3840	4200	5400	3980	3070	2260	2490
9	1960	2960	2550	2100	2170	3270	4300	5280	3970	3000	2270	2490
10	1980	2790	e2450	2520	1990	2910	5820	5200	4160	2850	2300	2410
11	1870	e2500	e2250	6320	2320	2790	5850	4250	4560	2860	2280	2200
12	e1800	e2450	e2150	7950	2270	2940	5700	4290	4320	2880	2280	1810
13	e1700	e2500	e2050	5730	2310	3130	5540	4010	e4050	2910	2240	1910
14	e1650	e2400	e2000	5640	2460	3110	4630	3960	e3750	2870	2290	2000
15	e1600	e2250	e2100	7660	2860	3220	3820	4490	3590	2850	2290	2010
16	e1500	e2300	e2300	9230	2560	3830	3130	4810	3370	2840	2290	2050
17	e1500	e2500	e5300	20900	2300	3990	2800	4890	3140	2780	2330	2090
18	e1500	e2450	e5100	13200	2400	3870	2920	4440	3390	2780	2290	2070
19	e1450	e2350	2960	10500	2260	3850	2880	4260	3600	2820	2160	1980
20	e1450	e2050	2590	8170	2640	3760	2880	9560	3600	2850	2190	1880
21	e1450	1880	2570	7160	11800	3670	3510	9070	3610	2800	2280	1840
22	e1450	1790	2350	6890	7600	5430	3590	6960	3610	2800	2350	1740
23	e1450	1760	2190	6910	5150	8750	4280	6300	3540	2780	2400	1740
24	e1450	1790	2250	6840	5190	8860	5340	5940	3600	2850	2420	1790
25	e1400	2140	2210	6680	4530	9070	4960	8940	3710	2880	2370	1530
26	e1450	2290	2060	7060	4010	8410	4410	7720	3640	2900	2380	1510
27	e1400	2950	1950	9200	3410	7890	4280	7260	3700	2910	2280	1520
28	e1500	2450	1910	7030	3380	6720	4230	6450	3710	2810	2150	1530
29	e1650	2380	1910	7180	---	5430	4440	6840	3680	2420	2160	1480
30	e2000	2770	1910	6460	---	4390	4550	7050	3610	2320	2170	1480
31	4170	---	1850	5260	---	4850	---	6410	---	2230	2150	---
TOTAL	52310	74360	74440	196000	98300	152780	131230	173770	120030	90700	70430	58920
MEAN	1687	2479	2401	6323	3511	4928	4374	5605	4001	2926	2272	1964
MAX	4170	3430	5300	20900	11800	9070	5850	9560	5760	3610	2420	2490
MIN	1400	1760	1850	1790	1990	2790	2800	3910	3140	2230	2150	1480
AC-FT	103800	147500	147700	388800	195000	303000	260300	344700	238100	179900	139700	116900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1998, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	1443	2346	4313	3915	3572	3439	3527	3477	2728	2251	2231	1882									
MAX	2110	6184	14680	13750	8461	6151	5596	5605	4426	3161	3115	2508									
(WY)	1984	1985	1997	1997	1996	1989	1983	1998	1993	1984	1984	1983									
MIN	932	1089	1512	1446	1407	1111	1125	1605	1649	1117	1744	1434									
(WY)	1995	1988	1990	1992	1992	1992	1992	1992	1992	1992	1994	1980									

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1978 - 1998
ANNUAL TOTAL	1417310	1293270	
ANNUAL MEAN	3883	3543	2926
HIGHEST ANNUAL MEAN			5098
LOWEST ANNUAL MEAN			1491
HIGHEST DAILY MEAN	53900	20900	53900
LOWEST DAILY MEAN	1350	1400	880
ANNUAL SEVEN-DAY MINIMUM	1350	1440	897
ANNUAL RUNOFF (AC-FT)	2811000	2565000	2119000
10 PERCENT EXCEEDS	5360	6310	5160
50 PERCENT EXCEEDS	2760	2850	2220
90 PERCENT EXCEEDS	1740	1790	1300

e Estimated

ROGUE RIVER BASIN

14359000 ROGUE RIVER AT RAYGOLD, NEAR CENTRAL POINT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to current year.

INSTRUMENTATION.--Temperature recorder since August 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, prior to operation of Lost Creek Dam, 22.0°C July 25, 26, 1976; minimum, 0.0°C Jan. 7, 1974. Maximum since full operation of Lost Creek Dam, 26.0°C July 26, 1996; minimum, 1.0°C Dec. 30, 1978, Jan. 30, 1980, Feb. 5, 6, 1989, Dec. 21, 1990.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 18.0°C July 6-9; minimum, 4.5°C Dec. 26, 27, Jan. 5, Feb. 21, Mar. 6, 7.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	11.0	10.0	10.5	9.0	8.5	8.5	5.5	5.0	5.5
2	---	---	---	10.5	9.5	10.0	8.5	8.0	8.5	6.0	5.0	5.5
3	12.0	10.5	11.0	10.5	9.5	10.0	8.5	7.5	8.0	6.0	5.5	5.5
4	12.0	11.0	11.5	10.5	9.5	10.0	9.0	8.5	9.0	6.0	5.0	5.5
5	12.0	10.5	11.0	10.5	10.0	10.0	9.5	8.5	9.0	5.5	4.5	5.0
6	11.5	10.0	10.5	10.5	10.0	10.5	9.0	8.5	8.5	5.5	5.0	5.0
7	10.5	9.0	9.5	10.5	10.0	10.5	9.0	8.5	9.0	6.0	5.0	5.5
8	10.5	9.5	10.0	10.5	9.5	10.0	9.0	8.0	8.5	6.0	5.5	6.0
9	10.5	9.0	9.5	10.5	9.0	9.5	8.5	7.5	8.0	6.0	5.0	5.5
10	10.0	8.5	9.0	10.0	9.5	9.5	8.0	8.0	8.0	6.0	5.5	6.0
11	10.0	9.0	9.5	10.5	9.5	10.0	8.0	7.5	7.5	6.0	6.0	6.0
12	10.5	9.0	10.0	11.0	10.0	10.5	7.5	7.0	7.0	6.0	5.5	5.5
13	10.5	9.0	10.0	11.0	10.0	10.5	7.0	7.0	7.0	6.0	5.5	6.0
14	11.0	9.5	10.5	11.0	10.0	10.5	7.5	7.0	7.0	6.0	5.5	6.0
15	11.5	10.0	10.5	11.0	9.5	10.0	7.5	7.5	7.5	6.5	6.0	6.0
16	11.5	10.5	11.0	10.0	9.5	10.0	8.0	7.5	7.5	6.5	6.0	6.0
17	11.5	10.5	11.0	10.5	10.0	10.0	8.0	7.5	7.5	7.0	6.5	7.0
18	11.5	10.5	11.0	10.5	9.5	10.0	7.5	6.5	7.0	6.5	6.0	6.0
19	11.5	10.5	11.0	10.0	9.0	9.5	6.5	6.0	6.5	6.0	5.5	6.0
20	11.5	10.5	11.0	10.5	10.0	10.0	6.5	5.5	6.0	6.0	5.0	5.5
21	11.5	10.0	10.5	10.0	9.0	9.5	6.5	6.0	6.0	5.5	5.0	5.5
22	11.0	10.0	10.0	9.5	9.0	9.0	6.5	5.0	5.5	6.0	5.5	5.5
23	11.0	10.5	11.0	10.5	9.0	9.5	5.5	5.0	5.0	6.0	5.5	6.0
24	11.0	9.5	10.0	10.5	10.0	10.5	6.0	5.5	5.5	6.0	5.0	5.5
25	10.0	9.0	9.5	10.5	9.5	9.5	6.0	6.0	6.0	6.5	5.5	6.0
26	9.5	8.5	9.0	9.5	9.0	9.5	6.0	4.5	5.0	6.5	6.0	6.5
27	11.0	9.5	10.0	10.0	9.5	9.5	5.0	4.5	5.0	6.5	6.0	6.5
28	11.0	10.0	10.5	10.0	9.5	9.5	5.5	5.0	5.0	7.0	6.0	6.5
29	10.5	10.0	10.5	10.0	9.0	9.5	5.5	5.0	5.0	7.0	6.5	7.0
30	11.5	9.5	10.5	9.0	9.0	9.0	5.5	5.0	5.5	6.5	5.5	6.0
31	11.0	10.0	10.5	---	---	---	5.5	5.0	5.5	6.5	5.5	6.0
MONTH	---	---	---	11.0	9.0	9.9	9.5	4.5	6.9	7.0	4.5	5.9

ROGUE RIVER BASIN

375

14359000 ROGUE RIVER AT RAYGOLD, NEAR CENTRAL POINT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.5	6.0	6.5	8.0	7.5	7.5	8.0	7.0	7.5	14.5	12.0	13.0
2	6.5	6.0	6.5	8.0	7.0	7.5	8.5	7.0	7.5	13.5	11.5	12.5
3	7.5	6.5	7.0	7.0	5.5	6.5	9.5	7.0	8.0	14.5	11.0	12.5
4	8.0	6.5	7.0	7.0	5.5	6.0	10.0	7.5	9.0	14.0	12.0	12.5
5	7.5	6.5	7.0	7.0	5.0	6.0	10.0	8.0	9.0	14.0	11.0	12.5
6	8.5	6.5	7.5	7.0	4.5	6.0	10.0	7.5	9.0	13.5	11.5	12.5
7	8.0	6.0	7.0	6.5	4.5	5.5	9.5	7.5	9.0	14.0	11.5	12.5
8	7.5	6.0	6.5	7.5	5.5	6.0	9.0	7.0	8.0	13.0	11.0	11.5
9	7.5	6.5	7.0	8.5	5.5	7.0	10.0	7.5	9.0	11.5	10.0	10.5
10	7.5	6.5	6.5	8.0	6.0	6.5	9.5	7.5	8.5	11.5	10.5	11.0
11	7.5	6.0	6.5	9.0	6.0	7.5	9.0	7.5	8.0	11.0	10.5	11.0
12	8.5	7.0	7.5	9.0	7.5	8.0	8.5	6.5	7.5	11.5	10.0	11.0
13	8.0	7.0	7.5	10.5	8.0	9.0	9.0	6.5	8.0	11.5	10.0	11.0
14	7.5	7.0	7.5	10.0	8.0	9.5	9.5	7.0	8.0	11.5	10.0	11.0
15	8.0	6.5	7.0	10.0	9.0	9.5	9.5	7.5	8.5	12.0	10.0	11.0
16	7.5	6.0	6.5	10.0	8.5	9.5	11.0	7.5	9.0	11.5	9.5	11.0
17	7.5	6.0	6.5	9.5	7.0	8.5	11.5	8.5	10.0	11.5	10.0	10.5
18	7.5	6.5	7.0	9.5	6.5	8.0	12.0	9.5	11.0	14.0	10.0	12.0
19	7.5	7.0	7.0	10.0	7.0	8.5	13.5	10.5	12.0	13.5	11.5	12.5
20	7.0	6.0	6.5	10.0	7.5	9.0	13.5	10.5	12.0	11.5	10.5	11.0
21	6.5	4.5	5.5	10.0	8.0	9.0	13.5	10.0	12.0	12.0	9.5	10.5
22	6.0	5.0	5.5	9.5	8.5	9.0	13.0	10.5	11.5	13.0	9.5	11.0
23	6.0	5.0	5.5	9.5	8.5	9.0	12.0	10.0	10.5	12.5	11.0	11.5
24	7.0	5.5	6.5	8.5	7.0	8.0	11.5	10.0	10.5	11.0	10.0	10.5
25	7.0	5.5	6.0	9.0	7.0	8.0	12.0	9.5	10.5	10.5	9.5	10.0
26	7.5	5.0	6.0	8.0	7.0	7.0	13.0	9.5	11.0	10.5	9.0	9.5
27	7.5	6.0	6.5	7.5	6.0	7.0	14.0	10.5	12.0	12.0	9.0	10.5
28	8.0	7.0	7.5	7.0	5.5	6.5	15.0	11.0	13.0	11.0	9.5	10.0
29	---	---	---	8.5	5.0	6.5	15.0	11.5	13.5	10.5	9.5	10.0
30	---	---	---	7.5	5.5	6.5	14.0	11.5	12.5	13.0	9.5	11.0
31	---	---	---	8.0	6.5	7.0	---	---	---	14.0	10.0	12.0
MONTH	8.5	4.5	6.7	10.5	4.5	7.6	15.0	6.5	9.9	14.5	9.0	11.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	15.0	11.0	12.5	15.5	13.0	14.0	16.0	14.5	15.0	17.0	16.5	17.0
2	15.0	11.5	13.0	15.0	12.5	14.0	16.0	14.5	15.0	17.5	16.0	16.5
3	14.5	11.5	13.0	16.5	13.0	14.5	16.0	15.0	15.5	16.5	15.5	16.0
4	15.5	12.0	13.0	16.5	12.5	14.5	16.0	15.0	15.5	16.5	15.5	16.0
5	15.5	11.5	13.5	17.5	13.0	15.0	16.5	15.5	16.0	16.5	15.5	16.0
6	16.0	11.5	14.0	18.0	13.5	15.5	16.0	15.0	15.5	16.5	15.5	16.0
7	15.0	12.0	13.5	18.0	13.5	16.0	16.0	15.0	15.5	16.0	15.0	15.5
8	16.0	12.0	13.5	18.0	14.0	16.0	16.0	15.0	15.5	15.5	14.5	15.0
9	16.0	12.5	14.0	18.0	14.0	16.0	16.0	15.0	15.5	15.5	14.0	14.5
10	14.5	13.0	13.5	17.5	14.0	16.0	16.0	15.0	15.5	14.0	13.0	13.5
11	15.0	12.0	13.5	17.0	14.0	15.5	16.0	15.5	15.5	14.5	13.5	14.0
12	16.0	12.0	14.0	17.5	13.5	15.5	16.0	15.5	15.5	15.0	14.0	14.5
13	---	---	---	16.5	13.0	15.0	17.0	16.0	16.5	15.5	14.5	15.0
14	---	---	---	16.5	12.5	14.5	17.5	16.5	17.0	15.5	15.0	15.0
15	---	---	---	16.5	12.5	14.5	17.0	16.0	16.5	15.5	15.0	15.5
16	15.5	11.5	14.0	17.0	12.5	15.0	16.5	15.5	16.0	15.5	15.0	15.0
17	17.0	12.5	14.5	17.0	13.0	15.0	16.0	15.0	15.5	15.5	14.0	14.5
18	16.5	12.5	14.5	17.0	13.0	15.0	16.0	15.0	15.5	14.0	13.0	13.5
19	16.0	12.5	14.0	17.0	13.0	15.0	15.5	15.0	15.5	13.5	13.0	13.0
20	16.5	12.0	14.0	17.0	13.0	15.0	16.0	15.0	15.5	13.5	13.0	13.0
21	17.0	12.0	14.5	17.0	13.5	15.0	16.0	15.0	15.5	13.5	13.0	13.5
22	16.5	13.0	14.5	17.5	14.0	15.5	16.5	15.5	16.0	13.5	13.5	13.5
23	16.0	12.5	14.5	17.0	14.0	16.0	16.5	16.0	16.0	14.0	13.5	13.5
24	14.5	12.5	13.0	17.0	14.0	15.5	16.5	15.5	16.0	13.5	13.0	13.5
25	14.5	12.0	13.0	17.0	14.5	15.5	17.0	16.0	16.5	13.5	13.0	13.5
26	15.0	11.5	13.0	16.5	14.0	15.5	17.0	16.0	16.5	13.0	13.0	13.0
27	16.5	11.5	13.5	16.5	14.0	15.0	17.0	16.0	16.5	13.5	13.0	13.0
28	16.5	12.0	14.5	16.0	14.0	15.0	17.0	15.0	16.5	13.5	13.5	13.5
29	17.0	12.5	15.0	16.0	14.0	15.0	17.0	16.0	16.5	13.5	13.5	13.5
30	17.0	13.0	15.0	16.0	14.5	15.0	17.0	16.5	16.5	13.5	13.0	13.5
31	---	---	---	16.0	14.5	15.0	17.0	16.5	16.5	---	---	---
MONTH	---	---	---	18.0	12.5	15.1	17.5	14.5	15.9	17.5	13.0	14.4

ROGUE RIVER BASIN

14361500 ROGUE RIVER AT GRANTS PASS, OR

LOCATION.--Lat 42°45'50", long 123°19'00", in NW 1/4 sec.20, T.36 S., R.5 W., Josephine County, Hydrologic Unit 17100308, on right bank at city of Grants Pass filter plant, 0.6 mi upstream from bridge on State Highway 99 at Grants Pass, and at mile 101.8. Prior to Sept. 3, 1983, at site 300 ft upstream.

DRAINAGE AREA.--2,459 mi².

PERIOD OF RECORD.--October 1938 to current year. Prior to January 1939 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 884.28 ft above sea level. Prior to Aug. 8, 1957, at site 300 ft upstream at datum 4.00 ft higher and Aug. 8, 1957, to Sept. 2, 1983, at site 300 ft upstream at datum 1.00 ft higher.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since February 1977 by Lost Creek Lake (station 14355040), slight regulation by Fish Lake and Emigrant Lake. Large fluctuations at times caused by Savage Rapids Dam 5.5 mi upstream from station. Many diversions from Rogue River and tributaries upstream from station, the largest of which is at Savage Rapids Dam of Grants Pass Irrigation District, 5.5 mi upstream from station. Continuous water-quality records for the period August 1973 to September 1987 have been collected at this location. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--39 years (water years 1939-77), 3,543 ft³/s, 2,566,000 acre-ft/yr.
21 years (water years 1978-98), 3,304 ft³/s, 2,394,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 152,000 ft³/s Dec. 23, 1964, gage height, 35.15 ft, present datum, from rating curve extended above 93,000 ft³/s; minimum discharge, 195 ft³/s Jan. 30, 1961; minimum daily, 606 ft³/s Sept. 10, 1968.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood in December 1861 reached a stage of about 43 ft, present datum (information furnished by Corps of Engineers). Flood in February 1890 reached a stage of about 36 ft, present datum, and that of Feb. 21, 1927, about 32 ft, present datum, according to local resident.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 39,000 ft³/s Jan. 17, gage height, 15.26 ft; minimum discharge, 1,050 ft³/s Oct. 3, result of regulation at Savage Rapids Dam.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1520	3990	2920	2160	6450	5240	5940	4440	7020	3750	2310	2250
2	1790	2860	2580	2920	5900	7170	5430	4470	6320	3660	2270	2200
3	1490	2870	2470	3820	4900	8250	5920	4420	6160	3600	2270	2190
4	1590	2810	2370	4360	3890	7050	5530	4170	5810	3460	2240	2190
5	1620	2570	2320	3570	3700	6960	6340	4520	5360	3300	2360	2250
6	1610	2620	2310	3030	3620	6050	5880	4840	5040	3300	2370	2250
7	1620	2930	2330	2840	3320	5230	5710	4790	4880	3330	2370	2260
8	1740	3240	2680	2720	3100	4820	5150	5400	4760	3140	2250	2300
9	2060	2920	2720	2750	2910	4090	4980	5790	4630	3010	2260	2340
10	2190	2670	2450	3050	2790	3590	6720	5790	4680	2840	2250	2320
11	1920	2590	2320	7050	3760	3370	7150	4910	5320	2830	2220	2210
12	1850	2560	2230	10800	3650	3440	6980	4520	5020	2830	2200	1890
13	1830	2650	2220	7810	3910	3690	6640	4530	4600	2940	2210	1770
14	1780	2620	2110	7340	4210	3660	5780	4240	4280	2900	2230	1770
15	1750	2490	2210	10400	4780	3680	4590	4780	4090	2840	2220	1710
16	1740	2580	2600	11100	4160	4240	3850	5190	3820	2800	2240	1690
17	1710	2840	5910	29500	3570	4530	3260	5470	3440	2730	2280	1710
18	1710	2730	5600	18200	3100	4320	3220	4970	3620	2700	2290	1660
19	1710	2730	3800	14900	3350	4260	3200	4620	3880	2760	2300	1590
20	1710	2510	3180	11200	3840	4130	3110	9680	3900	2800	2300	1500
21	1700	2190	3130	9600	17300	4060	3670	12700	3880	2750	2340	1430
22	1690	2080	2870	9040	14200	7120	3770	8890	3880	2730	2340	1310
23	1680	2050	2610	9320	8960	14000	4590	7740	3810	2710	2380	1280
24	1650	2100	2660	9370	8400	13200	5860	7220	3820	2720	2410	1290
25	1640	2540	2660	9400	7110	12300	5690	10300	4030	2790	2360	1310
26	1670	2630	2450	10100	6190	11300	4880	9640	3920	2770	2350	1350
27	1670	3610	2330	13500	5040	10400	4650	8860	3920	2800	2320	1350
28	1630	2970	2280	10100	4700	8780	4510	7900	3890	2730	2310	1360
29	1780	2860	2250	9700	---	7080	4690	8030	3860	2600	2270	1330
30	2000	3310	2250	8980	---	5590	4930	8650	3770	2330	2280	1300
31	3480	---	2120	7180	---	6050	---	7790	---	2300	2270	---
TOTAL	55530	82120	84940	265810	150810	197650	152620	199260	135410	90750	71070	53360
MEAN	1791	2737	2740	8575	5386	6376	5087	6428	4514	2927	2293	1779
MAX	3480	3990	5910	29500	17300	14000	7150	12700	7020	3750	2410	2340
MIN	1490	2050	2110	2160	2790	3370	3110	4170	3440	2300	2200	1280
AC-FT	110100	162900	168500	527200	299100	392000	302700	395200	268600	180000	141000	105800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1998, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	1513	2673	5132	4869	4595	4146	4054	3741	2795	2183	2170	1837									
MAX	2282	7669	17620	16600	10960	8119	6843	6428	4572	3127	3080	2642									
(WY)	1984	1985	1997	1997	1983	1983	1998	1993	1984	1984	1984	1983									
MIN	1008	1160	1557	1575	1641	1099	1211	1857	1549	1059	1620	1333									
(WY)	1995	1988	1990	1992	1992	1992	1994	1992	1992	1992	1994	1980									

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1978 - 1998
ANNUAL TOTAL	1602750	1539330	
ANNUAL MEAN	4391	4217	3304
HIGHEST ANNUAL MEAN			5840
LOWEST ANNUAL MEAN			1538
HIGHEST DAILY MEAN	69000	Jan 1	69000
LOWEST DAILY MEAN	1340	Sep 26	744
ANNUAL SEVEN-DAY MINIMUM	1360	Sep 23	799
ANNUAL RUNOFF (AC-FT)	3179000	3053000	2394000
10 PERCENT EXCEEDS	6500	7950	6180
50 PERCENT EXCEEDS	2970	3220	2290
90 PERCENT EXCEEDS	1870	1750	1320

ROGUE RIVER BASIN

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14361900 APPLGATE LAKE NEAR COPPER, OR

LOCATION.--Lat 42°03'25", long 123°06'30", in SE 1/4 sec.25, T.40 S., R.4 W., Jackson County, Hydrologic Unit 17100309, in outlet structure of Applegate Dam on Applegate River, 2.5 mi northeast of former town of Copper, 13 mi south of Ruch, and at mile 46.3.

DRAINAGE AREA.--223 mi².

PERIOD OF RECORD.--December 1980 to current year.

GAGE.--Water-stage recorder. Datum of gage is sea level (levels by Corps of Engineers).

REMARKS.--Reservoir is formed by earthfill dam completed in October 1980. Storage began Dec. 2, 1980. Total capacity, 82,200 acre-ft between elevations 1,763.0 ft and 1,987.0 ft, maximum pool elevation. Elevation of gated spillway crest, 1,943.7 ft. Usable contents, 75,200 acre-ft between elevations 1,854.0 ft and 1,987.0 ft. Water is used for flood control, recreation, pollution abatement, irrigation, and other purposes. U.S. Army Corps of Engineers satellite telemeter at station.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 82,610 acre-ft May 11, 1997, elevation, 1,987.41 ft; minimum contents since first filling, 7,230 acre-ft Jan. 11, 1991, elevation, 1,855.1 ft, from graph of gage readings furnished by Corps of Engineers.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 82,340 acre-ft May 1, elevation, 1,987.14 ft; minimum contents, 15,430 acre-ft Nov. 18, elevation, 1,884.59 ft.

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

1,840.0	4,400	1,900.0	21,380	1,960.0	58,060
1,860.0	8,330	1,920.0	30,960	1,980.0	75,470
1,880.0	13,890	1,940.0	43,090	1,990.0	85,190

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY OBSERVATION AT 2400 HOURS

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1924.12	1890.74	1888.85	1889.24	1891.23	1932.86	1963.22	1987.05	1987.07	1985.18	1975.03	1955.94
2	1922.56	1890.18	1888.85	1889.17	1893.14	1934.14	1964.46	1987.04	1987.02	1984.87	1974.55	1955.09
3	1920.79	1889.61	1888.89	1889.35	1895.31	1934.88	1965.18	1987.06	1987.02	1984.63	1974.06	1954.22
4	1918.99	1889.08	1888.87	1889.48	1896.63	1935.86	1966.11	1987.03	1986.95	1984.41	1973.55	1953.36
5	1917.10	1888.50	1888.66	1889.03	1897.81	1936.98	1966.96	1986.55	1987.03	1984.19	1973.03	1952.48
6	1915.44	1888.17	1888.81	1889.04	1899.08	1938.03	1967.73	1985.88	1987.06	1983.91	1972.51	1951.60
7	1913.92	1888.59	1889.29	1889.24	1900.74	1938.94	1968.40	1985.45	1986.97	1983.66	1971.97	1950.72
8	1912.05	1888.51	1889.33	1889.11	1902.48	1939.97	1969.24	1985.23	1986.93	1983.41	1971.43	1949.82
9	1911.41	1888.23	1889.10	1889.17	1904.19	1940.98	1970.28	1985.12	1986.99	1983.16	1970.89	1948.95
10	1910.02	1887.84	1889.07	1889.18	1906.56	1942.04	1971.30	1985.16	1987.01	1982.88	1970.35	1948.08
11	1908.31	1887.45	1889.06	1889.33	1908.79	1943.10	1972.07	1985.13	1986.84	1982.60	1969.78	1947.22
12	1906.51	1886.99	1889.02	1889.24	1911.75	1944.54	1972.84	1985.18	1986.72	1982.33	1969.21	1946.36
13	1904.95	1886.54	1889.01	1888.89	1912.99	1946.69	1973.61	1985.27	1986.55	1982.04	1968.63	1945.49
14	1903.91	1886.06	1889.04	1889.53	1913.73	1948.74	1974.36	1985.30	1986.52	1981.78	1968.06	1944.56
15	1903.27	1885.54	1889.05	1888.66	1914.09	1950.53	1975.07	1985.36	1986.52	1981.54	1967.47	1943.63
16	1902.69	1885.12	1889.28	1894.29	1914.97	1951.84	1975.86	1985.47	1986.47	1981.27	1966.87	1942.68
17	1901.97	1884.91	1889.00	1894.70	1916.20	1952.45	1976.56	1985.50	1986.44	1980.97	1966.28	1941.68
18	1901.17	1884.62	1888.97	1889.12	1917.64	1952.64	1977.27	1985.82	1986.52	1980.68	1965.68	1940.69
19	1900.28	1885.51	1889.04	1888.88	1919.76	1952.67	1978.06	1986.29	1986.53	1980.37	1965.07	1939.70
20	1899.34	1886.05	1888.96	1888.67	1921.72	1952.86	1978.95	1986.67	1986.48	1980.07	1964.46	1938.72
21	1898.39	1886.24	1888.87	1888.86	1924.83	1953.83	1980.06	1987.02	1986.50	1979.65	1963.84	1937.72
22	1897.43	1886.34	1888.98	1888.75	1925.73	1959.08	1981.27	1987.04	1986.54	1979.28	1963.22	1936.72
23	1896.54	1887.53	1889.14	1888.78	1926.02	1968.92	1981.75	1987.05	1986.53	1978.91	1962.58	1935.70
24	1895.74	1889.57	1889.15	1888.74	1926.44	1969.70	1982.49	1987.01	1986.48	1978.52	1961.96	1934.66
25	1894.90	1888.93	1889.08	1889.73	1927.55	1966.16	1983.20	1987.00	1986.36	1978.15	1961.27	1933.64
26	1894.02	1888.85	1889.11	1890.65	1928.85	1961.48	1984.16	1987.00	1986.22	1977.77	1960.54	1932.63
27	1893.16	1888.83	1889.08	1889.97	1930.15	1958.54	1985.19	1986.94	1986.18	1977.34	1959.80	1931.60
28	1892.26	1888.84	1889.05	1889.13	1931.44	1957.11	1986.14	1987.01	1986.13	1976.91	1959.05	1930.56
29	1891.45	1888.90	1889.09	1889.02	---	1957.90	1986.53	1987.03	1986.02	1976.45	1958.30	1929.52
30	1890.70	1888.87	1889.08	1889.25	---	1959.44	1987.08	1987.04	1985.56	1975.98	1957.54	1928.49
31	1891.00	---	1889.14	1889.96	---	1961.49	---	1987.07	---	1975.51	1956.76	---
MAX	1924.12	1890.74	1889.33	1894.70	1931.44	1969.70	1987.08	1987.07	1987.07	1985.18	1975.03	1955.94
MIN	1890.70	1884.62	1888.66	1888.66	1891.23	1932.86	1963.22	1985.12	1985.56	1975.51	1956.76	1928.49
(†)	17750	16950	17050	17360	17530	59240	82280	82270	80790	71330	55430	35750
(‡)	-16430	-800	+100	+310	+20170	+21710	+23040	-10	-1480	-9460	-15900	-19680

CAL YR 1997 MAX 1987.38 MIN 1884.62 AC-FT# -42110
WTR YR 1998 MAX 1987.08 MIN 1884.62 AC-FT# +1570

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

14362000 APPLEGATE RIVER NEAR COPPER, OR

LOCATION.--Lat 42°03'50", long 123°06'37", in SW 1/4 NW 1/4 sec.30, T.40 S., R.3 W., Jackson County, Hydrologic Unit 17100309, U.S. Corps of Engineers land, on left bank 0.1 mi downstream from Brushy Gulch, 0.6 mi downstream from Applegate Dam, 3.1 mi northeast of former town of Copper, and at mile 45.7.

DRAINAGE AREA.--225 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year. Prior to January 1939 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WDR OR-78-1: Drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,747.51 ft above sea level. Prior to Oct. 1, 1977, at site 0.6 mi upstream at datum 12.15 ft higher.

REMARKS.--Records good. Flow regulated since December 1980 by Applegate Lake (station 14361900). Some storage during winter in Squaw Lakes Reservoir, capacity, 1,100 acre-ft on Squaw Creek upstream from station. Diversions upstream from station from Carberry Creek for irrigation in Thompson Creek basin. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--43 years (water years 1939-81), 438 ft³/s, 317,300 acre-ft/yr.
17 years (water years 1982-98), 443 ft³/s, 321,000 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,800 ft³/s Jan. 15, 1974, gage height, 25.38 ft, site and datum then in use, from high-water mark in well, from rating curve extended above 12,000 ft³/s on basis of four slope-area measurements of peak flows made in 1950, 1955, 1964, and 1974; minimum discharge, 1.5 ft³/s Dec. 20, 1980, result of regulation at Applegate dam, 0.6 mi upstream.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,140 ft³/s Mar. 23, gage height, 8.56 ft; minimum discharge, 138 ft³/s Nov. 19, Mar 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	641	261	270	294	890	284	490	1800	1080	584	334	379
2	637	260	243	561	701	476	632	1770	1250	530	330	389
3	634	235	209	549	691	668	801	1490	1140	467	327	388
4	631	209	215	535	770	501	664	1630	1160	437	330	388
5	640	208	211	534	754	368	632	1910	1050	418	333	387
6	595	207	165	404	696	314	632	1820	1100	437	332	386
7	540	207	195	322	593	315	634	1760	1170	403	332	386
8	631	207	267	399	499	227	511	1650	1120	388	331	388
9	633	206	280	349	405	178	424	1390	1040	382	331	386
10	639	206	215	392	196	149	482	1100	1140	378	332	385
11	638	205	195	574	174	154	607	1080	1170	367	332	383
12	634	205	192	607	213	155	556	1020	1090	363	332	383
13	586	204	175	594	817	156	514	926	e1050	364	331	381
14	473	204	203	e900	972	215	470	899	945	339	328	381
15	361	204	205	e1100	956	435	443	868	896	320	334	379
16	332	204	263	e2200	717	879	354	810	871	320	332	378
17	337	209	590	e3000	516	1060	375	790	778	318	331	390
18	334	216	549	e2500	366	1060	364	609	696	317	330	389
19	333	196	403	e1800	371	1060	343	592	695	315	329	387
20	332	177	394	e1500	374	1060	340	679	693	304	329	386
21	330	177	343	e1400	780	1070	336	680	636	328	328	385
22	314	182	254	e1300	1080	4350	506	820	621	328	329	384
23	283	183	221	1260	1050	5660	1090	878	622	327	328	382
24	256	371	249	1240	857	5490	896	1050	621	327	327	382
25	257	627	234	1170	554	5460	728	1150	621	326	345	380
26	256	519	201	1980	366	5110	507	967	579	329	362	380
27	256	425	201	2100	302	3740	549	937	484	333	362	377
28	255	345	190	1770	282	2680	846	903	466	331	361	376
29	254	323	186	1560	---	1330	1330	885	482	331	360	375
30	252	338	203	1260	---	816	1380	895	634	332	360	360
31	258	---	208	1030	---	489	---	934	---	334	358	---
TOTAL	13552	7720	7929	35184	16942	45909	18436	34692	25900	11377	10440	11480
MEAN	437	257	256	1135	605	1481	615	1119	863	367	337	383
MAX	641	627	590	3000	1080	5660	1380	1910	1250	584	362	390
MIN	252	177	165	294	174	149	336	592	466	304	327	360
AC-FT	26880	15310	15730	69790	33600	91060	36570	68810	51370	22570	20710	22770

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1998, BY WATER YEAR (WY)

	MEAN	348	392	576	673	583	548	430	630	409	234	220	279
MAX	506	1033	2374	3542	1685	1481	909	1416	1026	367	337	435	
(WY)	1984	1985	1982	1997	1983	1998	1982	1983	1983	1998	1998	1983	
MIN	204	187	121	115	123	117	118	165	140	109	108	110	
(WY)	1982	1988	1995	1991	1991	1994	1994	1994	1990	1992	1992	1992	

SUMMARY STATISTICS FOR 1997 CALENDAR YEAR FOR 1998 WATER YEAR WATER YEARS 1982 - 1998

	ANNUAL TOTAL	216845	239561	443	
ANNUAL MEAN	594	656			
HIGHEST ANNUAL MEAN				829	1983
LOWEST ANNUAL MEAN				157	1992
HIGHEST DAILY MEAN	15500	Jan 2	5660	Mar 23	15500 Jan 2 1997
LOWEST DAILY MEAN	122	Mar 14	149	Mar 10	85 Feb 21 1985
ANNUAL SEVEN-DAY MINIMUM	124	Mar 14	176	Mar 8	91 Feb 20 1985
ANNUAL RUNOFF (AC-FT)	430100		475200		321000
10 PERCENT EXCEEDS	764		1170		905
50 PERCENT EXCEEDS	269		389		263
90 PERCENT EXCEEDS	145		208		125

e Estimated

ROGUE RIVER BASIN

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14362000 APPLEGATE RIVER NEAR COPPER, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1973 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: September 1980 to September 1987.

pH: September 1980 to September 1987.

WATER TEMPERATURE: January 1977 to current year.

DISSOLVED OXYGEN: September 1980 to September 1987.

INSTRUMENTATION.--Water-quality monitor since September 1980.

REMARKS.--Temperatures are controlled by releases from Applegate Lake.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 188 microsiemens Sept. 13, 1980; minimum, 61 microsiemens Dec. 3, 1980, Dec. 20, 1981, June 19, 20, 1983.

pH: Maximum, 9.0 units Sept. 4, 1980; minimum recorded, 7.1 units Oct. 8-10, 13, 16, 17, 1986.

WATER TEMPERATURE: Maximum, 26.5°C Aug. 7, 1978; minimum, 0.0°C on many days during winter periods prior to filling of Applegate Lake.

DISSOLVED OXYGEN: Maximum, 15.2 mg/L Feb. 17, 18, 1986; minimum, 4.9 mg/L Sept. 28-30, 1981.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 16.5°C several days in July, August, and September; minimum recorded, 4.0°C Jan. 22.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.0	12.0	12.5	12.0	11.5	11.5	7.5	7.5	7.5	5.0	4.5	4.5
2	13.0	12.5	12.5	12.0	11.5	11.5	7.5	7.0	7.0	5.0	4.5	4.5
3	13.0	12.5	12.5	11.5	11.0	11.5	8.0	6.5	7.5	5.0	4.5	4.5
4	13.0	12.5	12.5	11.5	11.0	11.0	7.5	7.5	7.5	5.0	4.5	4.5
5	13.0	12.5	12.5	11.5	11.0	11.0	7.5	7.0	7.5	4.5	4.5	4.5
6	13.0	12.0	12.5	11.5	11.0	11.0	7.5	7.0	7.5	5.0	4.5	4.5
7	13.0	12.0	12.5	11.5	11.0	11.0	7.5	7.0	7.0	5.0	4.5	4.5
8	12.5	12.0	12.0	11.5	11.0	11.0	7.0	7.0	7.0	4.5	4.5	4.5
9	12.0	12.0	12.0	11.0	10.5	11.0	7.5	7.0	7.0	4.5	4.5	4.5
10	12.0	12.0	12.0	11.0	10.5	10.5	7.0	6.5	7.0	4.5	4.5	4.5
11	12.0	12.0	12.0	10.5	10.5	10.5	7.0	6.5	6.5	4.5	4.5	4.5
12	12.0	11.5	12.0	11.0	10.5	10.5	7.0	6.5	6.5	4.5	4.5	4.5
13	12.0	11.5	12.0	10.5	10.5	10.5	6.5	6.0	6.5	4.5	4.5	4.5
14	12.5	12.0	12.0	11.0	10.5	10.5	6.5	6.5	6.5	---	---	---
15	12.5	11.5	12.0	10.5	10.0	10.5	6.5	6.0	6.5	---	---	---
16	11.5	10.5	11.0	10.5	10.0	10.0	6.5	6.0	6.5	---	---	---
17	11.0	10.5	11.0	10.5	9.5	10.0	6.5	5.5	5.5	---	---	---
18	11.0	8.5	9.5	9.5	9.0	9.5	6.0	5.5	5.5	---	---	---
19	9.5	9.0	9.0	10.5	9.0	9.5	6.0	5.5	6.0	---	---	---
20	9.5	9.0	9.0	10.5	9.5	10.0	6.0	5.5	6.0	---	---	---
21	9.5	9.0	9.5	9.5	9.0	9.5	5.5	5.0	5.5	---	---	---
22	10.0	9.5	9.5	9.5	9.0	9.0	5.0	5.0	5.0	6.0	4.0	5.5
23	10.0	9.0	9.5	10.0	9.0	9.5	5.0	4.5	5.0	6.0	5.5	5.5
24	10.0	9.5	9.5	9.5	8.5	9.0	5.0	4.5	5.0	5.5	5.5	5.5
25	10.0	9.5	10.0	8.5	8.0	8.5	5.0	4.5	5.0	5.5	5.5	5.5
26	10.5	10.0	10.0	8.0	7.5	8.0	5.0	4.5	4.5	5.5	5.5	5.5
27	11.0	10.5	10.5	8.0	7.5	7.5	5.0	4.5	4.5	5.5	5.5	5.5
28	11.0	10.5	11.0	8.0	7.5	8.0	5.0	4.5	4.5	6.0	5.5	6.0
29	11.5	11.0	11.0	8.0	7.5	7.5	5.0	4.5	4.5	6.0	6.0	6.0
30	12.0	11.0	11.5	8.0	7.5	7.5	5.0	4.5	4.5	6.0	6.0	6.0
31	11.5	11.5	11.5	---	---	---	4.5	4.5	4.5	6.0	6.0	6.0
MONTH	13.0	8.5	11.2	12.0	7.5	9.9	8.0	4.5	6.0	---	---	---

ROGUE RIVER BASIN

14362000 APPLEGATE RIVER NEAR COPPER, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.0	6.0	6.0	6.0	5.5	6.0	7.0	6.5	7.0	9.0	8.0	8.0
2	6.0	6.0	6.0	6.0	5.5	6.0	7.0	6.5	7.0	8.0	8.0	8.0
3	6.0	5.5	6.0	6.0	5.5	6.0	7.0	7.0	7.0	8.5	8.0	8.0
4	6.0	5.5	5.5	6.0	5.5	6.0	7.0	7.0	7.0	8.5	8.0	8.0
5	6.0	6.0	6.0	6.0	5.5	6.0	7.0	7.0	7.0	8.5	8.0	8.0
6	6.0	6.0	6.0	6.5	5.5	6.0	7.5	7.0	7.0	8.5	8.5	8.5
7	6.0	6.0	6.0	6.0	5.5	6.0	7.5	7.0	7.0	8.5	8.0	8.5
8	6.0	6.0	6.0	6.5	5.5	6.0	7.5	7.0	7.0	9.0	8.5	8.5
9	6.0	6.0	6.0	6.5	5.5	6.0	7.5	7.0	7.5	9.5	8.5	9.0
10	6.5	6.0	6.0	6.5	5.5	6.0	7.5	7.0	7.5	10.0	9.0	9.5
11	6.5	6.0	6.0	7.0	5.5	6.0	7.5	7.0	7.5	9.5	8.5	9.0
12	6.5	6.0	6.0	6.0	5.5	6.0	7.5	7.0	7.0	10.0	9.0	9.5
13	6.0	6.0	6.0	7.0	5.5	6.0	7.5	7.0	7.0	9.5	9.0	9.5
14	6.0	6.0	6.0	7.0	5.5	6.0	7.5	7.0	7.0	11.0	9.0	10.0
15	6.0	6.0	6.0	6.0	6.0	6.0	7.0	7.0	7.0	10.0	9.5	10.0
16	6.0	6.0	6.0	6.0	5.5	6.0	7.5	7.0	7.0	9.5	9.0	9.5
17	6.0	6.0	6.0	6.0	5.5	6.0	7.5	7.0	7.0	10.0	9.5	9.5
18	6.0	6.0	6.0	6.0	6.0	6.0	7.5	7.0	7.0	10.0	9.5	9.5
19	6.0	6.0	6.0	6.0	6.0	6.0	8.0	7.0	7.5	10.0	9.5	9.5
20	6.0	6.0	6.0	6.0	6.0	6.0	8.5	7.5	8.0	10.5	9.5	10.0
21	6.0	6.0	6.0	6.0	6.0	6.0	8.5	7.5	8.0	10.0	9.5	10.0
22	6.0	6.0	6.0	6.0	5.5	6.0	9.0	7.5	8.0	10.0	9.5	10.0
23	6.0	5.5	5.5	6.5	6.0	6.5	9.0	7.5	8.5	10.0	9.5	10.0
24	5.5	5.5	5.5	6.5	6.5	6.5	8.5	8.0	8.5	10.5	9.0	9.5
25	6.0	5.5	5.5	6.5	6.5	6.5	9.5	8.5	9.0	10.0	9.0	9.0
26	6.0	5.5	6.0	6.5	6.5	6.5	10.5	9.0	9.5	10.0	9.0	9.5
27	6.0	5.5	6.0	7.0	6.5	6.5	10.0	9.0	9.5	10.0	9.0	9.5
28	6.0	5.5	6.0	7.0	6.5	6.5	9.5	8.5	9.0	10.0	9.5	10.0
29	---	---	---	7.0	7.0	7.0	9.0	7.5	8.5	10.5	10.0	10.0
30	---	---	---	7.0	6.5	7.0	9.0	8.0	8.5	10.0	9.0	9.5
31	---	---	---	7.0	6.5	7.0	---	---	---	10.0	9.5	10.0
MONTH	6.5	5.5	5.9	7.0	5.5	6.2	10.5	6.5	7.7	11.0	8.0	9.3

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	10.5	9.0	10.0	14.5	14.0	14.0	16.0	15.0	15.5	16.5	14.5	15.0
2	10.0	9.0	9.5	15.0	14.0	14.5	16.0	14.5	15.5	15.5	14.5	15.0
3	10.5	9.0	9.5	15.5	14.0	15.0	15.5	14.5	15.0	15.5	15.0	15.0
4	10.0	9.5	10.0	15.5	14.0	15.0	15.5	15.0	15.5	16.0	15.0	15.5
5	10.5	9.5	10.0	15.5	14.5	15.0	16.0	15.0	15.5	16.0	15.0	15.5
6	10.5	9.5	10.0	16.0	15.0	15.5	16.0	14.5	15.5	16.0	15.5	15.5
7	10.5	9.5	10.0	16.0	15.0	15.5	16.5	15.0	15.5	16.0	15.0	15.5
8	11.0	9.5	10.5	16.0	15.5	16.0	16.5	15.0	16.0	15.0	14.5	14.5
9	11.0	10.0	10.5	16.5	15.5	16.0	16.5	15.5	16.0	15.0	14.5	14.5
10	10.5	10.0	10.5	16.0	15.5	15.5	16.5	14.5	15.5	15.0	14.5	14.5
11	11.0	10.5	10.5	16.0	15.0	15.5	15.5	14.5	15.0	15.0	14.5	14.5
12	11.0	10.5	10.5	16.5	11.0	13.0	16.0	14.5	15.0	15.0	14.5	14.5
13	---	---	---	15.0	12.5	14.0	16.0	14.5	15.0	15.0	14.5	15.0
14	12.0	11.0	11.5	15.5	14.5	15.0	15.5	14.0	15.0	15.0	14.5	15.0
15	12.5	11.0	12.0	15.5	14.0	14.5	14.5	12.5	13.0	15.5	15.0	15.0
16	12.0	11.0	12.0	15.5	14.5	15.0	13.5	12.0	12.5	15.5	9.5	15.0
17	13.0	12.0	12.5	15.5	14.5	15.0	14.0	12.0	13.0	10.5	9.0	10.0
18	13.0	11.5	12.5	16.0	15.0	15.5	14.0	12.5	13.0	10.0	9.0	9.5
19	13.0	12.0	12.5	16.0	15.5	15.5	15.0	12.5	13.5	10.5	9.0	10.0
20	13.5	12.5	13.0	16.5	14.0	15.0	14.5	13.0	14.0	11.0	10.0	10.5
21	14.0	12.5	13.5	15.0	14.0	14.5	14.5	13.5	14.0	11.0	10.5	11.0
22	14.0	12.5	13.5	15.5	14.5	15.0	15.0	14.0	14.5	12.0	10.5	11.0
23	14.0	13.0	13.5	16.0	14.5	15.0	15.0	14.0	14.5	12.0	11.0	11.5
24	14.0	13.0	13.5	16.0	15.0	15.5	15.5	14.5	15.0	12.0	11.5	11.5
25	14.5	13.5	14.0	16.0	15.0	15.5	16.0	13.5	15.0	12.5	11.5	12.0
26	14.0	13.0	13.5	16.5	15.5	16.0	15.5	14.0	14.5	12.5	12.0	12.5
27	14.0	13.0	13.5	16.0	15.0	15.5	15.5	14.5	15.0	13.0	12.5	12.5
28	14.5	13.0	14.0	15.5	14.5	15.5	16.0	15.0	15.5	13.5	12.5	13.0
29	14.5	13.5	14.0	16.0	15.0	15.5	16.0	15.0	15.5	13.5	13.0	13.0
30	14.5	13.0	13.5	16.0	15.0	15.5	16.5	15.5	15.5	14.0	13.0	13.5
31	---	---	---	15.5	14.5	15.0	16.5	15.5	16.0	---	---	---
MONTH	---	---	---	16.5	11.0	15.1	16.5	12.0	14.8	16.5	9.0	13.4

ROGUE RIVER BASIN

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14362250 STAR GULCH NEAR RUCH, OR

LOCATION.--Lat 42°09'15", long 123°04'27", in NE 1/4 NE 1/4 sec.29, T.39 S., R.3 W., Jackson County, Hydrologic Unit 17100309, Bureau of Land Management land, on left bank 1.0 mi downstream from Benson Gulch, 6.0 mi southwest of Ruch, and at mile 1.1.

DRAINAGE AREA.--16.0 mi².

PERIOD OF RECORD.--July 1983 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,667.04 ft above sea level.

REMARKS.--No estimated daily discharges. Records good.

AVERAGE DISCHARGE.--15 years (water years 1984-98), 4.98 ft³/s, 3,610 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,050 ft³/s Jan. 1, 1997, gage height, 5.43 ft; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 40 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	0230	61	2.19	Mar. 23	1430	*165	*2.92
Feb. 21	2000	99	2.51				

Minimum discharge, 0.67 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.91	1.9	3.2	3.1	10	25	16	7.5	7.6	4.2	2.1	1.1
2	1.6	1.6	2.8	7.2	12	33	15	7.5	7.3	4.2	2.1	1.0
3	1.2	1.5	2.5	8.3	13	30	16	7.2	7.1	4.1	2.0	1.0
4	1.0	1.4	2.3	9.0	12	25	18	7.8	6.8	4.0	1.9	.99
5	1.0	1.4	2.2	6.6	11	20	25	8.2	6.5	3.9	1.8	.98
6	1.3	2.2	2.2	5.4	9.4	17	28	7.3	6.3	3.8	1.8	.94
7	1.5	3.7	2.5	5.2	8.7	14	27	6.9	8.0	3.7	1.9	.98
8	1.3	2.2	2.8	5.0	7.8	13	24	6.8	9.2	3.6	1.9	1.1
9	4.6	1.9	2.9	4.8	6.8	11	22	7.0	8.0	3.5	1.9	1.3
10	2.8	1.7	2.7	5.6	6.8	10	22	6.7	7.8	3.4	1.8	1.3
11	2.0	1.6	2.5	7.7	7.3	9.6	23	6.9	7.4	3.4	1.7	1.2
12	1.8	1.6	2.4	10	8.6	9.9	22	7.6	6.9	3.4	1.6	1.1
13	1.6	1.6	2.3	14	14	11	20	7.5	6.5	3.3	1.6	1.1
14	1.5	1.5	2.6	11	17	11	18	7.2	6.0	3.3	1.5	1.0
15	1.4	1.5	3.0	12	17	10	17	7.2	5.8	3.2	1.5	.98
16	1.3	1.5	3.1	17	15	9.9	15	7.4	5.7	3.1	1.6	.90
17	1.3	1.6	3.9	48	12	9.2	14	7.6	5.6	3.0	1.6	.92
18	1.3	1.6	4.1	27	9.8	8.8	13	7.4	5.5	2.9	1.6	1.0
19	1.3	4.4	3.6	27	12	8.1	12	7.8	5.4	2.9	1.6	1.2
20	1.3	3.0	3.5	18	16	7.7	11	15	5.3	2.9	1.6	1.2
21	1.3	2.3	3.4	12	77	7.6	10	20	5.1	2.8	1.5	1.2
22	1.3	2.1	3.0	9.2	63	28	10	16	5.0	2.7	1.5	1.1
23	1.3	2.1	3.0	8.7	43	104	10	14	4.9	2.6	1.5	1.1
24	1.3	2.1	3.4	9.9	33	82	9.4	12	5.1	2.6	1.5	1.0
25	1.3	2.3	3.5	10	28	49	9.0	11	5.1	2.5	1.5	1.1
26	1.3	2.7	3.1	15	23	36	8.6	10	4.8	2.4	1.4	1.3
27	1.2	3.1	2.8	20	20	30	8.3	9.4	4.6	2.4	1.3	1.3
28	1.2	2.7	2.6	17	19	26	8.0	9.1	4.4	2.2	1.3	1.2
29	1.4	2.8	2.4	14	---	21	7.8	8.9	4.3	2.1	1.2	1.1
30	1.4	3.6	2.4	11	---	18	7.7	8.5	4.2	2.2	1.1	1.1
31	2.3	---	2.4	10	---	17	---	8.0	---	2.1	1.1	---
TOTAL	47.31	65.2	89.1	388.7	532.2	711.8	466.8	281.4	182.2	96.4	50.0	32.79
MEAN	1.53	2.17	2.87	12.5	19.0	23.0	15.6	9.08	6.07	3.11	1.61	1.09
MAX	4.6	4.4	4.1	48	77	104	28	20	9.2	4.2	2.1	1.3
MIN	.91	1.4	2.2	3.1	6.8	7.6	7.7	6.7	4.2	2.1	1.1	.90
AC-FT	94	129	177	771	1060	1410	926	558	361	191	99	65

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1998, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	.73	2.89	8.48	12.7	10.9	10.6	6.78	3.39	1.86	.99	.54	.49				
MAX	1.98	18.0	50.7	75.3	40.2	26.6	19.6	9.08	6.07	3.14	2.16	2.00				
(WY)	1984	1985	1997	1997	1997	1995	1998	1998	1983	1983	1983	1983				
MIN	.021	.23	.87	1.13	1.58	.95	1.00	.22	.012	.000	.000	.000				
(WY)	1993	1993	1990	1992	1992	1992	1994	1992	1992	1994	1988	1991				

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1983 - 1998

ANNUAL TOTAL	4063.04	2943.90	
ANNUAL MEAN	11.1	8.07	4.98
HIGHEST ANNUAL MEAN			15.1
LOWEST ANNUAL MEAN			.60
HIGHEST DAILY MEAN	621	Jan 1	621
LOWEST DAILY MEAN	.71	Sep 26	.00
ANNUAL SEVEN-DAY MINIMUM	.76	Sep 24	.00
ANNUAL RUNOFF (AC-FT)	8060		3610
10 PERCENT EXCEEDS	20		11
50 PERCENT EXCEEDS	3.0		1.4
90 PERCENT EXCEEDS	.95		.06

ROGUE RIVER BASIN

14366000 APPLEGATE RIVER NEAR APPLEGATE, OR

LOCATION.--Lat 42°14'30", long 123°08'20", in NE 1/4 sec.26, T.38 S., R.4 W., Jackson County, Hydrologic Unit 17100309, on left bank 0.9 mi downstream from Keeler Creek, 1.8 mi southeast of Applegate, and at mile 26.7.

DRAINAGE AREA.--483 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to current year.

RECORDS.--WSP 1738: Drainage area. WSP 1935: 1953(M). WDR OR-76-1: 1956(M), 1965(M).

GAGE.--Water-stage recorder. Datum of gage is 1,285.33 ft above sea level. Prior to Dec. 23, 1938, nonrecording gage at same site and datum.

REMARKS.--Records good. Flow regulated since December 1980 by Applegate Lake (station 14361900). Many diversions for irrigation upstream from station. McDonald Creek Canal diverts from McDonald Creek upstream from station for irrigation in Bear Creek basin. Thompson Creek Irrigation Association ditch diverts upstream from station for irrigation in Thompson Creek basin. Fowler-Keeler and Berryman ditches divert upstream from station for irrigation downstream. U.S. Army Corps of Engineers satellite telemeter at station.

AVERAGE DISCHARGE.--42 years (water years 1939-80), 548 ft³/s, 397,000 acre-ft/yr.
17 years (water years 1982-98), 551 ft³/s, 399,100 acre-ft/yr, regulated.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 37,200 ft³/s Jan. 15, 1974, gage height, 20.41 ft, from rating curve extended above 18,000 ft³/s on basis of slope-area measurements of flow at gage heights 18.00 ft and 19.57 ft; minimum discharge, 4.6 ft³/s Sept. 22-25, 1979. Minimum since first filling of Applegate Lake, 65 ft³/s Aug. 2, 1992.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Feb. 20, 1927, reached a stage of 18.7 ft, from floodmarks.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 7,580 ft³/s Mar. 23, gage height, 8.24 ft; minimum discharge, 221 ft³/s Nov. 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	571	304	350	307	1020	586	851	2090	1410	753	353	361
2	579	295	305	552	849	788	897	2270	1690	682	352	378
3	572	286	293	560	849	1000	1150	1890	1570	630	343	376
4	565	252	262	572	901	848	1030	1950	1560	588	338	374
5	563	249	270	545	870	659	1020	2340	1440	557	341	372
6	557	259	229	458	e820	571	1030	2200	1440	558	343	371
7	466	276	248	371	e770	538	1020	2080	e1500	524	337	372
8	568	264	306	419	e680	478	943	2020	e1450	490	334	376
9	645	261	319	384	e600	392	840	1770	e1350	477	335	377
10	625	258	276	421	e350	354	872	1390	e1500	467	332	376
11	598	260	242	829	e300	345	981	1340	1720	456	332	374
12	595	259	249	1390	387	354	936	1310	1550	444	330	374
13	575	258	232	1410	994	381	866	1200	1510	444	331	375
14	471	260	244	1630	1240	394	814	1140	1340	418	327	376
15	382	257	262	2240	1220	570	774	1120	1230	389	333	372
16	339	258	281	3330	923	1070	676	1090	1190	380	332	367
17	342	259	813	5730	699	1340	653	1090	1090	377	334	375
18	339	269	560	e3500	529	1290	655	948	977	373	333	379
19	333	282	424	e2500	553	1270	624	940	963	372	334	380
20	330	250	403	e2000	568	1260	627	1430	948	355	333	380
21	327	245	373	1520	2100	1280	635	1460	902	372	330	380
22	320	247	306	1380	1980	4350	691	1400	905	359	332	380
23	303	256	269	1360	e1660	7110	1420	1410	874	357	333	381
24	277	303	293	1360	1360	6340	1190	1460	870	358	329	380
25	276	786	283	1260	946	5920	1040	1740	863	353	335	380
26	275	523	254	2100	713	5530	808	1460	819	352	358	380
27	273	493	252	2300	595	4230	796	1360	702	360	360	379
28	273	415	245	1980	555	3240	1030	1290	662	361	356	392
29	276	363	235	1790	---	1940	1540	1300	652	358	354	412
30	277	395	255	1460	---	1220	1710	1270	771	357	355	409
31	304	---	258	1180	---	890	---	1260	---	357	354	---
TOTAL	13196	9342	9591	46838	25031	56538	28119	47018	35448	13678	10523	11358
MEAN	426	311	309	1511	894	1824	937	1517	1182	441	339	379
MAX	645	786	813	5730	2100	7110	1710	2340	1720	753	360	412
MIN	273	245	229	307	300	345	624	940	652	352	327	361
AC-FT	26170	18530	19020	92900	49650	112100	55770	93260	70310	27130	20870	22530

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1998, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998
MEAN	347	447	786	913	835	766	598	774	475	226	195	260					
MAX	507	1261	3077	4904	2553	1892	1304	1705	1237	441	339	425					
(WY)	1983	1985	1982	1997	1983	1995	1983	1998	1983	1998	1998	1983					
MIN	218	195	149	142	148	142	139	160	120	86.5	74.5	83.8					
(WY)	1982	1988	1995	1991	1992	1992	1992	1992	1992	1992	1992	1992					

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1982 - 1998

	1997	1998	1982-1998
ANNUAL TOTAL	277283	306680	551
ANNUAL MEAN	760	840	1072
HIGHEST ANNUAL MEAN			153
LOWEST ANNUAL MEAN			153
HIGHEST DAILY MEAN	24400	Jan 1	24400
LOWEST DAILY MEAN	158	Mar 23	67
ANNUAL SEVEN-DAY MINIMUM	220	Dec 6	71
ANNUAL RUNOFF (AC-FT)	550000	Dec 25	399100
10 PERCENT EXCEEDS	1050		1200
50 PERCENT EXCEEDS	296		286
90 PERCENT EXCEEDS	244		141

e Estimated

ROGUE RIVER BASIN

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14366000 APPLEGATE RIVER NEAR APPLEGATE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1973 to current year.

INSTRUMENTATION.--Temperature recorder since August 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 28.0°C July 29, 30, Aug. 3, 4, 1974; minimum, 0.0°C on several days during winter periods most years. Maximum since full operation of Applegate Lake, 25.5°C July 5, 1984, July 16, 19, 27, 1992; minimum, 0.0°C on several days during winter periods most years.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 23.5°C July 26; minimum recorded, 2.0°C Dec. 26.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.5	12.0	13.5	13.5	11.0	12.0	8.5	6.0	7.0	5.0	3.5	4.5
2	14.5	12.0	13.5	13.0	10.0	11.5	7.5	5.0	6.0	6.0	4.5	5.5
3	16.0	12.5	14.0	13.0	10.0	11.5	7.0	5.0	6.0	5.5	4.0	5.0
4	15.5	13.0	14.0	12.5	9.5	11.0	8.5	6.5	7.0	5.0	4.0	4.5
5	15.0	12.0	13.5	12.5	9.5	11.0	8.5	6.5	7.0	5.0	3.5	4.5
6	13.5	12.0	12.5	12.0	10.5	11.5	7.5	6.5	7.0	5.0	4.0	4.5
7	14.5	11.5	13.0	12.0	11.0	11.5	7.5	6.5	7.0	5.5	4.0	5.0
8	14.5	12.0	13.0	12.0	10.0	11.0	7.0	6.0	6.5	5.0	3.5	4.5
9	13.0	11.0	12.0	10.5	9.0	10.0	7.0	6.0	6.5	5.5	4.0	5.0
10	12.5	10.5	11.5	10.5	9.5	10.0	7.0	5.0	6.5	6.0	5.0	5.5
11	13.0	11.0	12.0	11.0	10.0	10.5	6.5	4.5	5.5	5.5	5.0	5.5
12	14.0	11.5	12.5	12.0	10.0	10.5	5.5	4.0	5.0	5.5	4.5	5.0
13	14.0	10.5	12.0	11.0	9.5	10.0	6.0	4.5	5.0	5.5	4.5	5.0
14	14.0	10.5	12.5	10.5	8.0	9.5	6.5	5.0	6.0	5.5	5.0	5.0
15	14.5	10.5	12.5	9.5	8.0	9.0	6.0	5.5	6.0	6.0	5.0	5.5
16	14.5	10.5	12.5	10.0	8.0	9.0	8.0	6.0	7.0	6.0	5.0	5.5
17	14.0	10.0	12.0	10.5	8.5	9.0	7.0	5.5	6.5	6.5	6.0	6.0
18	13.5	11.5	12.5	9.0	8.0	8.5	6.5	5.0	5.5	---	---	---
19	12.5	10.0	11.0	10.0	8.0	9.0	6.0	4.5	5.5	---	---	---
20	13.0	9.5	11.0	10.0	8.0	9.0	5.5	4.0	5.0	---	---	---
21	12.0	8.5	10.5	9.0	8.0	8.5	6.0	4.0	5.5	6.0	5.0	5.5
22	12.0	8.5	10.5	9.0	8.0	8.5	5.0	3.0	4.0	6.5	6.0	6.0
23	12.5	10.0	11.0	10.5	8.5	9.5	5.0	3.0	4.5	6.5	5.5	6.0
24	11.5	8.0	10.0	10.5	9.5	9.5	6.0	4.5	5.0	6.5	5.5	5.5
25	11.0	8.0	9.5	9.5	8.0	8.5	5.5	3.5	4.5	6.5	5.0	6.0
26	11.0	8.0	9.5	9.0	8.0	8.5	4.5	2.0	3.5	6.0	5.5	6.0
27	12.5	9.5	11.0	9.0	8.0	8.5	4.5	3.0	3.5	6.0	5.5	6.0
28	12.5	10.0	11.5	9.0	7.0	8.0	5.0	2.5	4.0	7.0	5.5	6.5
29	13.0	10.5	11.5	8.5	6.5	7.5	5.0	3.0	4.0	7.0	6.0	6.5
30	14.0	10.0	12.0	8.5	7.0	7.5	5.0	3.0	4.0	6.5	5.5	6.0
31	13.0	12.0	12.5	---	---	---	4.5	3.5	4.0	7.0	5.5	6.0
MONTH	16.0	8.0	12.0	13.5	6.5	9.6	8.5	2.0	5.5	---	---	---

ROGUE RIVER BASIN

14366000 APPLEGATE RIVER NEAR APPLEGATE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	7.0	5.5	6.0	8.0	7.0	7.5	8.5	6.5	7.5	11.5	8.0	10.0
2	6.5	5.5	6.0	8.0	6.0	7.0	8.5	6.5	7.5	11.0	9.0	9.5
3	7.0	5.5	6.5	7.0	5.0	6.0	9.5	6.5	7.5	12.0	9.0	10.0
4	7.0	5.0	6.0	8.0	4.5	6.0	10.0	6.5	8.0	10.0	9.5	9.5
5	6.5	5.5	6.0	7.5	4.0	5.5	9.5	6.5	8.0	11.5	9.0	10.0
6	---	---	---	8.5	4.5	6.0	9.5	6.5	8.0	11.0	9.0	10.0
7	---	---	---	6.5	4.0	5.5	10.0	7.0	8.0	12.5	9.5	10.5
8	---	---	---	8.0	5.0	6.5	9.0	6.0	7.5	10.0	9.0	9.5
9	---	---	---	9.0	5.0	7.0	10.0	7.0	8.5	11.0	9.0	9.5
10	---	---	---	7.0	5.0	6.0	10.0	7.0	8.5	11.0	9.0	10.0
11	---	---	---	10.0	5.5	7.5	9.5	6.5	8.0	10.0	9.5	9.5
12	8.5	6.0	7.0	9.0	7.0	8.0	8.5	6.5	7.5	11.0	9.0	10.0
13	7.5	5.5	6.5	11.0	7.5	9.0	9.0	6.0	7.5	10.5	9.5	10.0
14	7.5	6.0	6.5	11.5	7.0	9.0	10.5	6.5	8.0	11.5	9.0	10.0
15	7.0	5.5	6.0	10.0	7.5	9.0	9.5	6.5	8.0	11.5	9.5	10.5
16	7.0	5.0	6.0	10.0	7.0	8.0	11.0	5.5	8.0	11.5	9.0	10.0
17	7.5	5.0	6.5	9.0	5.5	7.0	12.0	6.0	9.0	12.0	8.5	10.0
18	7.5	5.5	6.5	9.0	5.5	7.0	12.0	7.5	9.5	13.5	9.0	11.0
19	7.5	5.5	6.5	9.5	5.5	7.5	13.5	8.5	10.5	11.5	10.0	10.5
20	6.5	5.0	6.0	10.0	6.0	7.5	13.5	7.5	10.5	10.5	8.5	9.5
21	6.5	5.0	6.0	9.5	6.5	7.5	14.0	8.5	11.0	12.0	9.5	10.5
22	7.0	5.5	6.5	7.5	6.5	7.0	12.0	8.5	10.5	13.5	9.0	11.0
23	6.0	5.5	6.0	7.5	6.5	7.0	11.0	8.0	9.5	12.5	10.5	11.0
24	7.5	5.5	6.0	7.5	6.5	7.0	11.0	8.5	9.5	11.5	10.0	10.5
25	7.0	5.5	6.0	8.0	6.5	7.0	12.0	8.0	9.5	11.5	9.0	10.0
26	8.0	5.5	6.5	7.5	7.0	7.0	13.0	7.5	10.0	11.5	8.5	9.5
27	8.0	5.5	7.0	7.5	6.5	7.0	14.0	8.5	11.0	12.0	9.0	10.5
28	8.5	6.5	7.5	7.5	6.0	6.5	14.0	9.0	11.5	11.0	9.5	10.5
29	---	---	---	9.0	5.5	7.0	12.5	9.0	10.5	11.5	9.5	10.5
30	---	---	---	8.0	5.5	6.5	11.5	8.5	10.0	14.0	10.0	11.5
31	---	---	---	8.0	6.0	7.0	---	---	---	15.0	9.5	12.0
MONTH	---	---	---	11.5	4.0	7.1	14.0	5.5	8.9	15.0	8.0	10.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	15.5	10.0	12.5	18.5	14.5	16.0	22.0	16.0	19.0	19.0	13.0	16.0
2	14.0	10.5	12.0	19.0	15.0	16.5	22.5	16.0	19.0	18.0	12.5	15.5
3	14.0	9.5	11.5	20.5	14.5	17.0	23.0	16.5	19.5	18.0	12.5	15.5
4	14.5	10.5	12.0	20.5	14.5	17.0	23.0	16.5	20.0	18.5	13.0	15.5
5	15.0	10.0	12.0	21.0	14.5	17.5	22.0	16.5	19.5	19.0	12.5	15.5
6	15.0	10.0	12.0	21.5	15.0	18.0	21.5	16.5	19.0	17.5	12.5	15.0
7	14.5	10.0	12.0	22.0	15.5	18.5	21.5	15.5	18.5	16.0	13.0	14.5
8	14.5	10.5	12.0	22.5	16.0	19.0	21.5	15.5	18.5	15.5	12.5	14.0
9	14.5	10.5	12.0	21.5	16.0	19.0	22.0	16.5	19.5	15.0	12.0	13.5
10	12.5	10.5	11.5	21.5	16.5	18.5	22.5	16.5	19.5	15.5	10.5	12.5
11	12.5	10.5	11.0	21.5	15.0	18.0	21.5	15.5	19.0	15.5	10.5	13.0
12	14.5	11.0	12.0	21.5	15.5	18.5	22.0	16.0	19.0	16.5	11.0	13.5
13	15.0	10.5	12.5	20.5	14.0	17.5	22.5	16.5	19.5	16.5	11.5	14.0
14	15.0	10.5	12.5	21.0	14.5	17.5	22.5	16.5	19.5	17.0	11.5	14.5
15	16.0	11.0	13.0	21.5	15.5	18.5	21.0	16.5	19.0	17.0	12.0	14.5
16	15.0	11.0	12.5	22.5	15.5	19.0	20.0	15.5	17.5	16.5	12.0	14.0
17	16.5	11.0	13.5	22.0	16.0	19.0	19.5	13.5	16.5	15.0	11.5	12.5
18	17.0	12.0	14.0	22.5	15.5	19.0	19.0	13.5	16.5	11.5	9.0	10.0
19	17.0	12.0	14.0	22.5	16.0	19.5	18.5	13.5	15.5	12.0	8.5	10.0
20	17.5	12.0	14.5	23.0	16.0	19.5	16.5	11.0	13.5	12.5	8.0	10.0
21	18.5	12.5	15.0	23.0	16.5	19.5	16.5	11.0	14.0	13.0	7.5	10.5
22	18.0	13.0	15.0	23.0	16.5	20.0	17.5	11.5	14.5	13.0	8.0	10.5
23	17.5	13.0	15.0	23.0	17.5	20.0	17.0	12.5	14.5	13.0	8.5	11.0
24	15.0	13.5	14.0	22.5	16.5	19.5	17.5	11.5	14.5	13.5	8.5	11.0
25	16.0	12.5	14.0	22.5	16.5	19.5	18.0	11.5	14.5	12.0	10.0	11.0
26	16.5	13.0	14.0	23.5	17.5	20.5	17.5	11.5	14.5	13.5	9.5	11.0
27	18.5	11.5	14.5	22.5	17.5	20.0	18.0	11.5	15.0	13.5	9.0	11.0
28	19.0	13.0	16.0	22.5	17.0	20.0	18.5	12.0	15.0	14.0	9.5	12.0
29	20.0	13.5	16.5	21.5	16.5	19.5	18.0	12.5	15.0	14.5	9.5	12.0
30	19.5	14.5	16.5	22.0	16.5	19.0	18.5	12.5	15.5	14.5	9.5	12.0
31	---	---	---	22.0	16.5	19.0	19.0	12.5	15.5	---	---	---
MONTH	20.0	9.5	13.3	23.5	14.0	18.7	23.0	11.0	17.1	19.0	7.5	12.9

14369500 APPLEGATE RIVER NEAR WILDERVILLE, OR

LOCATION.--Lat 42°21'15", long 123°24'20", in SE 1/4 NE 1/4 sec.16, T.37 S., R.6 W., Josephine County, Hydrologic Unit 17100309, on left bank 0.3 mi downstream from Jackson Creek, 3.6 mi southeast of Wilderville, and at mile 7.6.

DRAINAGE AREA.--698 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1938 to September 1955, September 1978 to current year.

REVISED RECORDS.--WSP 1318: 1943. WSP 1738: 1951, 1953, drainage area.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 947.18 ft above sea level (Corps of Engineers bench mark). Prior to Sept. 1, 1978, nonrecording gage at site 1,100 ft upstream at datum 2.36 ft higher.

REMARKS.--Records good. Flow regulated since December 1980 by Applegate Lake (station 14361900). Many diversions for irrigation upstream from station. Wilderville ditch diverts up to 16 ft³/s 0.3 mi upstream and at the mouth of Jackson Creek. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--19 years (water years 1939-55, 1979, 1980), 717 ft³/s, 519,500 acre-ft/yr.
17 years (water years 1982-98), 764 ft³/s, 553,300 acre-ft/yr, regulated period.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,500 ft³/s Jan. 18, 1953, gage height, 18.3 ft, from floodmark, site and datum then in use, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 0.78 ft³/s Aug. 22-24, 1979. Minimum since first filling of Applegate Lake, 34 ft³/s Aug. 4, 1992.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1955, reached a stage of 20.3 ft, from floodmark, former site and datum, discharge, 66,500 ft³/s, from rating curve extended above 12,000 ft³/s on basis of slope-area measurement of peak flow.

Flood of February 1927 reached a stage of 22 ft at former site, from local resident. Floods of Dec. 22, 1964, and Jan. 15, 1974, are known to have exceeded the December 1955 flood.

No flow was observed at present site during the late summer of 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 10,700 ft³/s Jan. 17, gage height, 9.92 ft; minimum discharge, 250 ft³/s Aug. 11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	611	441	507	414	1740	1290	1420	2060	1550	776	330	327
2	661	398	440	802	1730	1510	1340	2300	1800	705	332	356
3	641	384	409	982	1710	1770	1640	2030	1750	659	323	353
4	637	348	364	1300	1630	1600	1520	1970	1690	607	314	349
5	629	331	364	1020	1710	1320	1520	2330	1620	574	309	355
6	640	350	343	889	1640	1170	1500	2240	1580	556	301	353
7	575	424	345	753	1430	1070	1460	2130	1680	525	305	352
8	610	395	463	775	1410	1010	1370	2150	1810	478	302	356
9	785	372	497	744	1310	857	e1250	2010	1590	475	310	361
10	825	360	452	754	1170	783	e1280	1650	1630	460	314	371
11	733	354	382	1100	1410	735	e1400	1550	1830	445	300	364
12	703	351	366	1920	1260	759	e1350	1580	1670	436	291	362
13	688	343	344	2690	1720	830	e1250	1470	1550	436	293	366
14	602	339	338	2040	2010	829	e1200	1390	1440	424	291	369
15	522	334	382	3500	2110	959	e1150	1370	1340	396	295	361
16	451	342	392	3610	1740	1390	e1000	1340	1310	370	299	355
17	440	362	1000	8820	1410	1720	948	1370	1230	361	299	357
18	435	360	1030	6600	1140	1650	947	1250	1080	359	297	368
19	428	480	735	4650	1400	1590	889	1180	1040	362	298	375
20	420	525	621	3240	1390	1560	879	1560	1020	356	312	385
21	413	445	609	2470	5010	1570	871	1790	970	350	309	387
22	410	402	516	2270	4370	4460	892	1650	947	e360	304	371
23	391	403	439	2190	3160	8850	1520	1650	919	e355	311	376
24	368	482	439	2410	2840	7640	1450	1630	900	e350	310	373
25	356	916	432	2310	2150	6670	1360	1950	908	e345	302	376
26	354	790	395	2850	1700	6090	1080	1750	873	e345	330	380
27	350	670	372	3210	1410	4970	993	1610	763	e350	342	382
28	347	569	362	2860	1280	3900	1160	1550	694	e350	341	381
29	353	518	344	2500	---	2730	1590	1570	682	e345	341	380
30	352	558	349	2350	---	1920	1850	1510	739	341	345	385
31	410	---	353	1960	---	1580	---	1490	---	345	351	---
TOTAL	16140	13346	14384	73983	52990	74782	38079	53080	38605	13596	9701	10986
MEAN	521	445	464	2387	1893	2412	1269	1712	1287	439	313	366
MAX	825	916	1030	8820	5010	8850	1850	2330	1830	776	351	387
MIN	347	331	338	414	1140	735	871	1180	682	341	291	327
AC-FT	32010	26470	28530	146700	105100	148300	75530	105300	76570	26970	19240	21790

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1998, BY WATER YEAR (WY)

	MEAN	377	621	1253	1442	1396	1183	897	865	514	216	175	257
MAX	569	2099	4769	6633	4241	2715	2177	1916	1333	439	313	482	
(WY)	1984	1985	1997	1997	1983	1983	1982	1983	1983	1998	1998	1983	
MIN	253	239	196	209	263	230	173	166	98.4	53.5	39.3	66.0	
(WY)	1995	1988	1991	1991	1994	1994	1994	1992	1992	1994	1992	1992	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1982 - 1998

ANNUAL TOTAL	378158	409672	
ANNUAL MEAN	1036	1122	764
HIGHEST ANNUAL MEAN			1546
LOWEST ANNUAL MEAN			192
HIGHEST DAILY MEAN	36500	8850	36500
LOWEST DAILY MEAN	192	291	35
ANNUAL SEVEN-DAY MINIMUM	212	295	37
ANNUAL RUNOFF (AC-FT)	750100	812600	553300
10 PERCENT EXCEEDS	1520	2080	1690
50 PERCENT EXCEEDS	451	744	352
90 PERCENT EXCEEDS	249	343	151

e Estimated

ROGUE RIVER BASIN

14369500 APPLEGATE RIVER NEAR WILDERVILLE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: September 1978 to current year.

INSTRUMENTATION.--Temperature recorder since September 1978.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 29.0°C June 22, 1992; minimum, 0.0°C Feb. 6, 7, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 25.0°C July 21, Aug. 4, but may have been higher during period of missing record July 22-29; minimum, 4.0°C Dec. 23, 26-29.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.5	13.5	14.5	13.0	12.0	12.5	8.5	7.0	7.5	6.0	5.0	5.0
2	15.0	13.5	14.0	12.5	11.5	12.0	7.0	6.5	7.0	7.0	6.0	6.5
3	15.0	13.5	14.0	12.5	11.0	12.0	7.0	6.5	6.5	6.5	5.5	6.0
4	15.5	14.0	15.0	12.0	11.0	11.5	8.0	7.0	7.5	6.0	5.0	5.5
5	15.0	13.5	14.5	12.0	11.0	11.5	8.0	7.5	8.0	5.5	4.5	5.0
6	14.5	13.0	13.5	12.0	11.5	12.0	8.0	7.5	7.5	5.5	5.0	5.5
7	14.0	12.0	13.0	12.0	11.5	12.0	8.5	8.0	8.0	7.0	5.5	6.0
8	14.0	13.0	13.5	11.5	10.5	11.0	8.0	7.0	7.5	7.0	6.0	6.0
9	13.5	12.0	12.5	11.0	10.0	10.5	7.5	6.5	7.0	6.5	5.5	6.0
10	12.5	11.0	12.0	10.0	9.5	10.0	7.5	6.5	7.0	7.0	6.5	6.5
11	13.5	11.5	12.5	11.0	10.0	10.5	7.0	6.0	6.0	7.5	7.0	7.0
12	13.5	12.0	13.0	11.5	10.5	11.0	6.0	5.0	5.5	7.0	6.0	6.5
13	13.5	11.5	12.5	11.0	10.0	10.5	6.0	5.5	5.5	7.0	6.0	6.5
14	13.5	12.0	12.5	10.5	9.5	10.0	6.5	5.5	6.0	7.5	6.5	7.0
15	14.0	12.0	13.0	9.5	8.5	9.0	7.0	6.0	6.5	7.0	6.0	6.5
16	14.0	12.5	13.5	9.5	8.5	9.0	8.0	6.5	7.0	7.5	6.5	7.0
17	14.0	12.5	13.5	9.5	8.5	9.0	8.0	7.0	8.0	8.0	7.0	7.5
18	14.0	13.0	13.5	9.5	9.0	9.0	7.0	6.0	6.5	7.0	6.5	7.0
19	13.5	12.0	12.5	9.0	8.5	9.0	6.0	5.0	5.5	7.5	6.5	7.0
20	13.0	11.0	12.0	9.5	9.0	9.0	5.5	5.0	5.5	7.0	6.5	6.5
21	13.0	11.0	12.0	9.5	9.0	9.0	6.5	5.5	6.0	6.5	5.5	6.5
22	12.5	10.5	11.5	9.5	9.0	9.0	5.5	4.5	5.0	7.5	6.5	7.0
23	13.0	11.5	12.0	10.5	9.0	10.0	5.5	4.0	5.0	7.0	6.5	7.0
24	12.0	10.0	11.0	10.5	10.0	10.0	6.5	5.5	6.0	7.0	6.0	6.5
25	11.0	9.0	10.5	10.0	8.5	9.0	6.0	4.5	5.0	7.5	6.0	6.5
26	10.5	9.0	10.0	9.0	8.5	8.5	5.0	4.0	4.5	7.5	7.0	7.0
27	12.0	10.0	11.0	9.5	9.0	9.0	5.0	4.0	4.5	7.5	6.5	7.0
28	12.0	11.0	11.5	9.5	8.5	9.0	5.0	4.0	4.5	7.5	6.5	7.0
29	13.0	11.5	12.5	9.0	8.0	8.0	5.0	4.0	4.5	8.0	7.0	7.5
30	14.0	12.0	13.0	8.5	8.0	8.0	5.0	4.5	5.0	7.5	6.5	7.0
31	14.0	13.0	13.5	---	---	---	5.5	5.0	5.0	8.0	6.0	7.0
MONTH	15.5	9.0	12.7	13.0	8.0	10.0	8.5	4.0	6.1	8.0	4.5	6.5

ROGUE RIVER BASIN

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14369500 APPLEGATE RIVER NEAR WILDERVILLE, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.5	6.5	7.0	9.0	8.5	8.5	9.0	7.5	8.0	12.5	10.0	11.5
2	7.5	6.5	7.0	9.0	7.5	8.5	9.5	8.0	8.5	12.0	10.0	11.0
3	8.0	7.0	7.5	8.0	6.5	7.0	10.5	7.5	9.0	13.5	9.5	11.5
4	8.0	6.5	7.5	8.5	6.0	7.5	10.5	7.5	9.0	13.0	10.0	11.0
5	7.5	6.5	7.0	7.5	5.5	6.5	10.0	8.0	9.0	13.0	9.5	11.0
6	8.5	7.0	7.5	8.5	5.5	7.0	10.0	7.5	9.0	12.5	9.5	11.0
7	8.0	6.5	7.0	7.5	5.5	6.5	11.0	8.0	9.5	14.0	10.0	12.0
8	8.0	7.0	7.5	8.0	6.5	7.0	10.0	7.5	9.0	12.5	10.0	11.0
9	7.5	6.5	7.0	9.5	6.5	8.0	---	---	---	11.5	9.0	10.0
10	7.5	6.5	7.0	8.5	7.0	7.5	---	---	---	11.5	9.5	10.5
11	8.0	6.5	7.5	10.5	7.0	9.0	---	---	---	11.0	10.0	10.5
12	9.0	7.5	8.0	10.0	9.0	9.5	---	---	---	12.5	9.5	10.5
13	8.0	7.0	7.5	12.0	9.0	10.5	---	---	---	11.5	9.5	10.5
14	8.0	7.0	7.5	11.5	9.0	10.5	---	---	---	12.0	9.5	10.5
15	8.0	6.5	7.0	11.5	10.0	11.0	---	---	---	12.0	10.0	11.0
16	7.5	6.0	6.5	11.5	9.5	10.5	---	---	---	11.5	9.5	10.5
17	8.0	6.5	7.0	10.0	7.0	9.0	---	---	---	12.5	9.0	10.5
18	8.0	7.0	7.5	10.0	6.5	8.5	---	---	---	14.5	10.0	12.0
19	8.0	7.5	7.5	11.0	7.0	9.0	---	---	---	13.5	11.5	12.0
20	7.5	6.5	7.0	11.0	7.5	9.5	---	---	---	11.5	10.0	10.5
21	7.5	6.5	7.0	10.0	8.0	9.0	---	---	---	12.5	9.5	10.5
22	7.5	6.5	7.0	10.0	8.0	9.0	---	---	---	14.0	9.5	11.5
23	7.5	6.5	6.5	9.0	8.0	8.5	---	---	---	13.0	11.0	12.5
24	8.5	6.5	7.5	8.5	7.5	8.0	---	---	---	12.5	10.5	11.5
25	8.0	6.5	7.0	9.5	7.5	8.5	---	---	---	13.0	10.0	11.0
26	8.5	6.0	7.5	8.5	7.5	7.5	---	---	---	12.0	9.0	10.5
27	8.5	7.0	7.5	8.5	7.0	7.5	---	---	---	13.5	9.5	11.5
28	9.5	8.0	8.5	8.0	6.5	7.0	15.5	12.0	13.5	12.0	10.0	11.0
29	---	---	---	9.5	6.0	7.5	15.0	11.0	13.0	12.0	10.5	11.0
30	---	---	---	8.0	6.0	7.0	13.5	10.0	12.0	15.0	10.5	12.5
31	---	---	---	8.5	7.0	8.0	---	---	---	16.0	11.0	13.5
MONTH	9.5	6.0	7.3	12.0	5.5	8.3	---	---	---	16.0	9.0	11.2

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	16.5	12.0	14.5	19.5	16.5	18.0	23.5	19.5	22.0	22.5	19.5	21.5
2	15.5	12.0	14.0	20.0	16.5	18.0	24.0	20.0	22.0	23.0	20.0	21.5
3	15.5	11.0	13.5	21.0	17.0	19.0	24.5	20.5	23.0	22.5	19.5	21.5
4	16.0	12.0	14.0	21.5	17.5	19.5	25.0	21.5	23.5	22.5	19.5	21.5
5	16.5	12.0	14.5	22.0	17.5	20.0	24.5	21.5	23.0	22.5	19.5	21.0
6	17.0	12.0	14.5	22.5	18.5	20.5	23.5	20.5	22.0	22.0	19.0	20.5
7	16.0	12.0	14.0	22.5	19.0	21.0	22.5	19.5	21.5	21.0	18.5	20.0
8	16.0	12.0	14.0	23.0	19.5	21.5	22.5	19.0	21.0	20.5	18.0	18.5
9	16.5	12.0	14.5	23.0	19.5	21.5	23.5	19.5	21.5	19.5	17.0	18.0
10	15.5	13.0	14.0	22.5	19.5	21.0	23.5	20.0	22.0	18.5	15.5	17.5
11	15.0	11.5	13.0	22.0	18.5	20.5	23.5	20.0	22.0	19.0	16.0	17.5
12	16.5	11.5	14.0	22.5	18.5	20.5	24.0	20.0	22.0	20.0	16.5	18.5
13	---	---	---	22.5	19.0	21.0	24.5	21.0	23.0	20.5	17.5	19.0
14	17.0	12.5	14.5	22.0	18.0	20.5	24.5	21.5	23.0	20.5	17.5	19.5
15	17.5	13.0	15.0	23.0	18.5	20.5	23.5	21.0	22.5	21.0	18.0	19.5
16	16.5	12.5	14.5	23.5	19.5	21.5	22.5	19.5	21.0	20.0	17.5	19.0
17	18.0	12.5	15.0	24.0	20.0	22.0	21.5	18.5	20.0	19.5	16.5	18.5
18	18.5	14.5	16.5	24.0	20.0	22.0	21.0	18.0	19.5	18.5	16.0	17.0
19	18.5	14.5	16.5	23.5	20.0	22.0	21.0	17.5	19.5	16.5	15.0	16.0
20	19.0	14.5	16.5	24.0	19.5	22.0	21.5	18.5	20.0	17.0	14.0	16.0
21	19.5	15.5	17.5	25.0	20.5	23.0	21.5	18.5	20.0	17.0	14.5	16.0
22	19.5	15.5	17.5	---	---	---	22.0	19.0	20.5	17.0	14.5	16.0
23	19.0	15.5	17.5	---	---	---	21.5	18.5	20.5	17.5	14.5	16.0
24	18.0	15.0	16.0	---	---	---	21.5	18.0	20.0	17.5	15.0	16.5
25	16.0	14.0	15.0	---	---	---	21.5	18.0	20.0	17.5	15.5	16.5
26	17.0	14.0	15.5	---	---	---	21.0	18.0	20.0	17.0	14.5	16.0
27	19.0	14.5	16.5	---	---	---	21.5	18.5	20.0	17.0	14.5	16.0
28	20.0	15.5	18.0	---	---	---	22.0	19.0	20.5	17.5	15.0	16.5
29	21.0	17.0	19.0	---	---	---	22.0	18.5	20.5	17.5	15.5	17.0
30	20.5	17.0	18.5	23.5	20.0	22.0	22.0	19.0	20.5	17.5	15.0	16.5
31	---	---	---	24.0	20.0	22.0	22.0	19.0	20.5	---	---	---
MONTH	---	---	---	---	---	---	25.0	17.5	21.2	23.0	14.0	18.2

ROGUE RIVER BASIN

14372300 ROGUE RIVER NEAR AGNESS, OR

LOCATION.--Lat 42°34'50", long 124°03'30", in NE 1/4 NW 1/4 sec.6, T.35 S., R.11 W., Curry County, Hydrologic Unit 17100310, on left bank 0.8 mi upstream from Shasta Costa Creek, 1.5 mi north of Agness, 2.6 mi upstream from Illinois River, and at mile 29.7.

DRAINAGE AREA.--3,939 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1960 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 113.81 ft above sea level (levels by U.S. Bureau of Public Roads).

REMARKS.--Records good. Flow regulated since February 1977 by Lost Creek Lake (station 14335040), since December 1980 by Applegate Lake (station 14361900), slight regulation by Fish Lake and Emigrant Lake. Many diversions for irrigation and mining. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--37 years (water years 1961-97), 5,945 ft³/s, 4,307,000 acre-ft/yr.
21 years (water years 1978-98), 5,581 ft³/s, 4,043,000 acre-ft/yr (since operation began at Lost Creek Lake).

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 290,000 ft³/s Dec. 23, 1964, from slope-area measurement; maximum gage height, 68.03 ft Dec. 23, 1964, from floodmark (backwater from Illinois River); minimum discharge, 608 ft³/s July 9, 10, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 58,100 ft³/s Jan. 17, gage height, 17.88 ft; minimum discharge, 1,720 ft³/s Sept. 27, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2830	5900	5670	3560	12600	10000	e11000	7550	9410	4730	2800	2690
2	2930	4490	4760	4650	14300	11700	e10100	7720	8690	4670	2790	2660
3	2900	3760	4210	6800	13800	14000	e9880	7700	8470	4530	2760	2620
4	2630	3650	3900	12300	12100	13100	e10100	7120	8040	4400	2720	2600
5	2690	3440	3630	10200	11600	12100	e9910	7440	7690	4230	2690	2640
6	2620	3370	3520	8250	13200	11000	e10000	7770	7140	4080	2760	2680
7	2540	3820	4450	8530	11500	9750	e9420	7770	6960	4110	2790	2690
8	2610	4210	5370	8210	12000	8950	e9260	7910	7010	3990	2790	2710
9	3850	4030	5260	7490	11900	8100	e8590	8230	6740	3790	2650	2770
10	4810	3660	4700	7480	10300	7240	e9610	8220	6580	3690	2700	2790
11	3960	3410	4200	10900	13900	6880	e12100	7740	7090	3490	2680	2770
12	3410	3310	3810	20200	13500	7100	e12000	7010	7270	3530	2640	2610
13	3200	3260	3630	22500	15600	7560	e11300	7260	6720	3550	2620	2240
14	3030	3310	3760	18500	16000	7550	e10600	6680	6340	3590	2600	2170
15	2800	3210	3930	22100	17300	7360	e9100	6720	6000	3540	2600	2190
16	2620	3290	4580	21400	14700	7720	e7620	7270	5670	3430	2610	2130
17	2500	3890	9830	45900	12000	8680	6570	7700	5370	3340	2640	2120
18	2440	4120	12600	37500	9930	8510	6130	7580	5050	3270	2680	2180
19	2410	4980	8340	31700	12800	8170	6070	6950	5160	3260	2700	2120
20	2380	6500	6480	23800	14200	7950	5840	7820	5250	3300	2700	2050
21	2360	5150	5790	19000	31400	7940	5820	16700	5200	3320	2740	1980
22	2330	4100	5310	17400	40800	13700	6190	12700	5110	3250	2760	1900
23	2310	4130	4800	17200	24600	40400	6670	10700	5050	3210	2760	1790
24	2270	4870	4670	17600	19700	37900	8050	9890	4960	3160	2800	1760
25	2220	5940	4660	18200	16800	26700	8500	10800	5090	3240	2810	1770
26	2200	6410	4410	21300	14000	23500	7590	12500	5130	3250	2770	1820
27	2220	5950	4010	23200	11700	20800	6860	11100	5000	3260	2780	1860
28	2210	5660	3810	20300	10200	18100	6700	10500	4900	3250	2780	1870
29	2240	5320	3660	16900	---	15000	6900	9980	4830	3170	2740	1870
30	3240	5700	3560	16700	---	e12000	7550	10600	4720	3020	2710	1810
31	5300	---	3480	14000	---	e11100	---	10200	---	2800	2730	---
TOTAL	88060	132840	154790	533770	432430	410560	256030	275830	186640	111450	84300	67860
MEAN	2841	4428	4993	17220	15440	13240	8534	8898	6221	3595	2719	2262
MAX	5300	6500	12600	45900	40800	40400	12100	16700	9410	4730	2810	2790
MIN	2200	3210	3480	3560	9930	6880	5820	6680	4720	2800	2600	1760
AC-FT	174700	263500	307000	1059000	857700	814300	507800	547100	370200	221100	167200	134600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1998, BY WATER YEAR (WY)

	MEAN	2019	4680	9786	10080	10100	8118	6738	5254	3549	2451	2299	2129
MAX	3497	16650	37410	33800	30280	17750	15090	8905	6292	3595	3371	3187	
(WY)	1983	1985	1997	1997	1983	1983	1982	1996	1993	1998	1984	1983	
MIN	1421	1386	2124	2839	3071	2048	2083	2124	1821	1212	1671	1346	
(WY)	1989	1988	1990	1992	1988	1992	1994	1992	1992	1994	1994	1980	

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1978 - 1998

ANNUAL TOTAL	2618660	2734560											
ANNUAL MEAN	7174	7492											
HIGHEST ANNUAL MEAN										5581			
LOWEST ANNUAL MEAN										10180			1997
HIGHEST DAILY MEAN	194000	Jan 2	45900	Jan 17	194000	Jan 2	1997			2286			1992
LOWEST DAILY MEAN	2110	Sep 23	1760	Sep 24	979	Oct 8	1979			1020			
ANNUAL SEVEN-DAY MINIMUM	2150	Sep 22	1820	Sep 23	4043000	Oct 4	1980						
ANNUAL RUNOFF (AC-FT)	5194000		5424000										
10 PERCENT EXCEEDS	10900		14500							11500			
50 PERCENT EXCEEDS	4130		5300							3110			
90 PERCENT EXCEEDS	2350		2610							1700			

e Estimated

ROGUE RIVER BASIN
14372300 ROGUE RIVER NEAR AGNESS, OR--Continued
WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1960 to September 1987, January 1995 to current year.

INSTRUMENTATION.--Temperature recorder from October 1960 to September 1987, January 1995 to September 1995.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 26.5°C on several days in 1962, Aug. 3, 6, 9-11, 1977; minimum, 1.0°C Jan. 22-25, 1962, Dec. 9-16, 1972, Jan. 9, 10, 1977, Jan. 1-3, 1979.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 24.0°C July 27, Aug. 4, 5, 13, 14; minimum, 5.0°C Dec. 27-31.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.0	14.5	15.5	13.0	12.0	12.5	8.5	8.0	8.0	6.0	5.5	6.0
2	15.0	14.0	14.5	12.5	11.5	12.0	8.0	7.5	8.0	6.5	6.0	6.5
3	14.5	14.0	14.5	12.0	11.0	11.5	7.5	7.0	7.5	6.5	6.0	6.5
4	14.5	14.0	14.0	11.5	11.0	11.5	8.0	7.5	7.5	6.0	6.0	6.0
5	15.0	14.0	14.0	11.5	11.0	11.0	8.0	7.5	7.5	6.5	6.0	6.5
6	14.5	13.5	14.0	11.5	11.0	11.5	8.5	7.5	8.0	6.5	6.5	6.5
7	14.0	13.0	13.5	11.5	11.0	11.0	8.5	8.0	8.5	7.0	6.5	7.0
8	13.0	12.0	12.5	11.5	11.0	11.0	8.0	8.0	8.0	7.5	7.0	7.5
9	12.5	11.5	12.0	11.0	10.5	10.5	8.0	7.5	8.0	8.0	7.5	7.5
10	12.0	11.0	11.5	10.5	10.0	10.0	8.0	7.5	7.5	8.0	7.5	7.5
11	11.5	11.0	11.5	10.0	9.5	10.0	7.5	7.0	7.0	8.0	8.0	8.0
12	12.5	11.5	12.0	10.5	9.5	10.0	7.0	6.5	7.0	8.0	8.0	8.0
13	12.5	11.5	12.0	10.5	10.0	10.5	6.5	6.0	6.5	8.0	8.0	8.0
14	13.0	12.0	12.5	10.5	10.5	10.5	6.5	6.0	6.5	8.5	8.0	8.5
15	13.0	12.0	12.5	10.5	10.0	10.0	6.5	6.5	6.5	8.5	8.0	8.5
16	13.0	12.0	12.5	10.0	9.0	9.5	8.0	6.5	7.0	9.0	8.0	8.5
17	13.5	12.5	13.0	9.5	9.0	9.5	8.5	8.0	8.0	9.0	8.5	9.0
18	13.5	12.5	13.0	9.5	9.0	9.0	8.0	7.5	8.0	9.0	8.0	8.5
19	13.5	12.5	13.0	9.5	9.5	9.5	7.5	6.5	7.0	8.0	8.0	8.0
20	13.0	12.0	12.5	9.5	9.5	9.5	6.5	6.5	6.5	8.0	7.5	7.5
21	13.0	12.0	12.5	9.5	9.5	9.5	6.5	6.0	6.5	7.5	7.5	7.5
22	13.0	12.0	12.5	10.0	9.5	9.5	6.5	6.0	6.0	8.0	7.5	7.5
23	12.5	11.5	12.0	10.0	9.5	10.0	6.0	5.5	6.0	8.0	8.0	8.0
24	12.0	11.0	11.5	10.0	9.5	10.0	6.0	5.5	6.0	8.0	8.0	8.0
25	11.5	10.5	11.0	10.0	9.5	9.5	6.0	5.5	5.5	8.0	7.5	8.0
26	11.0	10.5	10.5	9.5	9.5	9.5	6.0	5.5	5.5	8.5	8.0	8.5
27	11.0	10.0	10.5	9.5	9.5	9.5	6.0	5.0	5.5	8.5	8.5	8.5
28	10.5	10.0	10.0	10.0	9.5	9.5	6.0	5.0	5.5	8.5	8.5	8.5
29	11.0	10.0	10.5	10.0	9.5	9.5	5.5	5.0	5.0	8.5	8.5	8.5
30	12.5	11.0	11.5	9.5	8.5	9.0	5.5	5.0	5.5	8.5	8.0	8.5
31	12.5	12.0	12.5	---	---	---	6.0	5.0	5.5	8.0	7.5	7.5
MONTH	16.0	10.0	12.4	13.0	8.5	10.2	8.5	5.0	6.8	9.0	5.5	7.7

14372300 ROGUE RIVER NEAR AGNESS, OR--Continued

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	FEBRUARY			MARCH			APRIL			MAY		
1	8.0	7.5	7.5	9.5	8.5	9.0	8.5	8.0	8.5	15.5	14.0	14.5
2	8.0	7.5	8.0	9.5	9.0	9.5	9.0	8.5	8.5	14.5	13.5	14.0
3	8.5	8.0	8.0	9.0	7.5	8.5	9.5	8.5	9.0	14.5	13.5	13.5
4	8.5	8.5	8.5	8.0	7.5	7.5	10.0	9.0	9.5	14.5	13.5	14.0
5	8.5	8.5	8.5	8.0	7.0	7.5	10.5	9.5	10.0	14.5	13.0	14.0
6	8.5	8.0	8.5	7.5	7.0	7.0	10.0	9.5	10.0	14.5	13.0	13.5
7	9.0	8.5	8.5	7.5	7.0	7.0	10.5	9.5	10.0	15.0	13.5	14.0
8	9.0	8.5	8.5	8.0	7.0	7.0	10.5	9.5	10.0	15.0	13.5	14.0
9	8.5	8.0	8.0	8.5	7.0	8.0	10.0	9.5	9.5	13.5	11.5	12.5
10	8.5	8.0	8.0	8.5	7.5	8.0	10.0	9.5	9.5	12.0	11.5	11.5
11	8.5	8.0	8.0	9.5	8.0	8.5	10.0	9.5	9.5	11.5	11.0	11.5
12	9.0	8.0	8.5	10.0	9.0	9.5	9.5	8.0	9.0	11.5	11.0	11.0
13	9.0	8.5	8.5	10.5	9.5	10.0	8.5	8.0	8.5	11.5	11.0	11.0
14	9.0	8.5	8.5	11.0	10.0	10.5	9.0	8.5	8.5	11.5	11.0	11.5
15	8.5	8.0	8.5	12.0	10.5	11.0	9.5	8.5	9.0	12.0	11.0	11.5
16	8.5	8.0	8.5	12.0	11.0	11.5	10.5	9.0	10.0	12.0	11.0	11.5
17	8.5	8.0	8.0	11.5	10.0	11.0	11.5	9.5	10.5	12.0	11.0	11.5
18	8.5	8.0	8.0	10.5	9.5	10.0	12.0	10.5	11.0	13.0	11.0	12.0
19	8.5	8.0	8.5	11.0	9.5	10.0	13.5	11.5	12.0	13.5	12.0	12.5
20	8.5	8.0	8.5	11.5	9.5	10.5	14.0	12.0	13.0	13.0	12.0	12.5
21	8.5	8.0	8.0	11.0	10.0	10.5	14.5	12.5	13.5	12.0	11.0	11.0
22	8.0	7.0	7.5	11.0	10.5	10.5	15.0	13.5	14.0	12.5	11.0	11.5
23	8.0	7.5	7.5	11.0	10.0	10.5	14.0	13.0	13.5	13.0	12.5	12.5
24	8.0	7.5	8.0	10.5	9.5	10.0	13.0	11.5	12.5	13.5	12.5	13.0
25	8.5	8.0	8.0	9.5	9.5	9.5	12.0	11.0	11.5	12.5	11.5	12.0
26	8.5	7.5	8.0	9.5	9.0	9.5	13.0	11.5	12.0	12.0	11.5	11.5
27	8.0	7.5	8.0	9.0	8.0	8.5	14.0	11.5	13.0	12.0	11.0	11.5
28	9.0	8.0	8.5	8.5	8.0	8.0	15.5	12.5	14.0	12.0	11.5	12.0
29	---	---	---	8.0	7.5	8.0	16.5	14.0	15.0	12.0	11.5	11.5
30	---	---	---	8.0	7.5	8.0	16.0	14.5	15.0	13.0	11.5	12.0
31	---	---	---	8.0	8.0	8.0	---	---	---	14.0	12.5	13.5
MONTH	9.0	7.0	8.2	12.0	7.0	9.1	16.5	8.0	11.0	15.5	11.0	12.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	15.0	14.0	15.0	19.5	18.0	18.5	23.0	20.5	21.5	22.0	20.5	21.0
2	16.0	15.0	15.5	20.5	18.0	19.0	23.5	21.0	22.0	22.5	20.5	21.5
3	16.5	15.5	16.0	20.0	18.0	19.0	23.5	21.0	22.0	22.5	21.0	21.5
4	16.5	15.5	16.0	20.5	18.0	19.5	24.0	22.0	23.0	23.0	21.0	21.5
5	17.0	15.5	16.5	21.0	18.0	19.5	24.0	22.0	23.0	22.5	20.5	21.0
6	18.0	16.0	16.5	21.0	19.0	20.0	23.5	22.0	22.5	21.5	19.5	20.5
7	18.5	16.0	17.0	21.5	19.5	20.5	23.0	21.0	22.0	21.0	19.5	20.0
8	18.0	16.5	17.0	22.5	20.0	21.5	22.0	20.5	21.0	20.0	18.5	19.5
9	17.5	16.0	16.5	22.0	20.0	21.5	22.0	20.0	21.0	19.0	17.5	18.5
10	17.5	16.0	16.5	21.5	20.0	21.0	22.5	20.5	21.0	18.0	16.5	17.5
11	17.0	15.5	16.0	22.0	20.5	21.0	23.0	21.0	22.0	18.5	16.5	17.5
12	17.0	15.0	16.0	22.0	20.0	21.0	23.5	21.5	22.0	18.0	16.5	17.0
13	18.0	16.0	16.5	22.0	20.0	21.0	24.0	21.5	22.5	19.0	17.0	17.5
14	19.0	16.5	17.5	22.0	20.0	21.0	24.0	22.0	23.0	20.0	17.5	18.5
15	19.0	16.5	17.5	21.5	20.0	21.0	23.5	22.0	22.5	21.0	18.5	19.5
16	18.5	16.5	17.0	21.5	20.0	21.0	23.0	21.0	22.0	21.0	18.5	19.5
17	18.5	15.5	17.0	22.0	20.0	21.0	22.0	20.0	21.0	19.5	18.5	19.0
18	18.5	16.0	17.5	22.5	20.5	21.0	21.5	19.5	20.5	19.0	18.0	18.5
19	19.5	17.0	18.0	22.5	20.5	21.5	21.0	19.0	20.0	18.5	17.0	18.0
20	19.5	17.0	18.0	22.5	20.5	21.5	20.5	19.0	19.5	18.0	16.5	17.0
21	20.0	17.0	18.5	23.0	21.0	21.5	21.0	19.0	20.0	18.0	16.0	16.5
22	20.5	17.5	18.5	23.0	21.0	22.0	21.0	19.0	20.0	17.5	15.5	16.5
23	19.5	17.5	18.5	23.0	21.5	22.0	21.0	19.5	20.0	18.0	16.0	17.0
24	18.5	17.0	18.0	23.5	21.5	22.0	21.0	19.5	20.0	18.0	16.0	17.0
25	17.5	16.0	16.5	23.5	21.5	22.5	21.0	19.0	20.0	17.5	16.5	17.0
26	17.0	15.0	16.0	23.5	21.5	22.5	21.0	19.5	20.0	18.0	16.0	17.0
27	18.5	15.0	16.5	24.0	22.0	23.0	21.5	19.5	20.0	17.5	16.0	17.0
28	19.5	16.0	17.5	23.5	22.0	22.5	21.5	19.5	20.5	18.0	15.5	17.0
29	20.0	17.0	18.5	22.5	21.0	22.0	21.5	19.5	20.5	18.0	16.0	17.0
30	19.5	18.0	19.0	22.5	20.5	21.5	21.5	20.0	20.5	18.0	15.5	16.5
31	---	---	---	22.5	20.5	21.5	22.0	20.0	21.0	---	---	---
MONTH	20.5	14.0	17.0	24.0	18.0	21.1	24.0	19.0	21.2	23.0	15.5	18.4
YEAR	24.0	5.0	13.0									

14377100 ILLINOIS RIVER NEAR KERBY, OR

LOCATION.--Lat 42°13'55", long 123°39'45", in SE 1/4 SE 1/4 sec.29, T.38 S., R.8 W., Josephine County, Hydrologic Unit 17100311, Siskiyou National Forest, on right bank 1.6 mi upstream from Josephine Creek, 2.5 mi northwest of Kerby, and at mile 50.3.

DRAINAGE AREA.--380 mi².

PERIOD OF RECORD.--October 1961 to current year.

GAGE.--Water-stage recorder. Datum of gage is 1,198.8 ft above sea level. Prior to Jan. 28, 1965, water-stage recorder, and Jan. 28 to Sept. 30, 1965, nonrecording gage 700 ft downstream at datum 2.99 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station. Several observations of water temperature were obtained during the year. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--37 years (water years 1962-98), 1,274 ft³/s, 45.54 in/yr, 922,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 92,200 ft³/s Dec. 22, 1964, gage height, 45.28 ft, from floodmark, site and datum then in use, from rating curve extended above 30,000 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 12 ft³/s Aug. 24, 1992.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 11,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 17	0430	*25,100	*25.08	Mar. 23	1600	17,600	20.98
Feb. 21	1130	16,700	20.43				

Minimum discharge, not determined, occurred during period of missing record September 10-28; minimum daily discharge, 35 ft³/s Sept. 16.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	1320	e1750	867	3030	2680	1970	1580	1060	324	97	39
2	458	808	1330	2260	3790	3140	1800	1670	1110	312	96	38
3	417	599	1100	2850	4080	3260	1710	1590	1050	288	84	38
4	381	490	978	4600	3580	2820	1620	1490	997	259	63	40
5	407	417	835	3060	4130	2440	1550	1680	947	250	58	40
6	e370	483	742	2590	4790	2140	1470	1500	913	236	57	39
7	e320	1010	1810	3460	4150	1910	1400	1410	931	218	56	41
8	e430	797	2550	3130	5860	1920	1320	1480	885	210	57	39
9	e1780	645	1970	2560	4960	1800	1380	1500	823	201	57	43
10	e1540	559	1570	2420	4490	1690	1620	1260	847	192	57	e39
11	e1060	503	1280	4560	6700	1700	1960	1150	876	186	56	e38
12	e730	454	1090	6580	5490	2160	1870	1160	766	181	55	e37
13	e520	423	963	7270	5620	3020	1880	1060	729	173	54	e37
14	e420	400	1060	6310	5400	2730	1810	988	680	163	52	e37
15	e350	366	1310	7130	5420	2560	1720	995	641	157	55	e36
16	e280	440	2490	9680	4180	2840	1610	990	611	149	55	e35
17	e250	1010	5270	17200	3370	2620	1530	994	568	141	55	e37
18	e220	880	3190	8590	2940	2260	1450	962	541	136	55	e40
19	e200	1730	2200	7990	6330	2020	1370	933	516	130	53	e40
20	e180	3230	1980	5680	5340	1970	1330	1030	485	128	50	e41
21	e170	2000	1820	4200	11600	2080	1300	1180	461	121	49	e41
22	e160	1390	1550	5550	8170	9130	1380	1100	448	114	52	e41
23	e150	e1850	1350	5690	5600	14800	1560	1040	439	112	54	e41
24	e140	e3250	1240	5470	4320	9080	1610	1040	431	110	48	e41
25	e130	e2850	1140	5180	3530	5920	1440	1270	438	108	47	e42
26	e120	e2200	1020	6440	3060	4370	1280	1180	414	108	48	e42
27	e110	e1800	892	4960	2660	3520	1230	1120	383	107	48	e43
28	e110	e1500	810	3840	2530	2970	1360	1140	362	103	46	e43
29	e310	e1800	772	3750	---	2510	1510	1160	344	97	43	42
30	e800	e2300	763	3870	---	2190	1570	1090	331	87	48	42
31	2180	---	749	3200	---	2190	---	1040	---	90	43	---
TOTAL	14793	37504	47574	160937	135120	106440	46610	37782	20027	5191	1748	1192
MEAN	477	1250	1535	5192	4826	3434	1554	1219	668	167	56.4	39.7
MAX	2180	3250	5270	17200	11600	14800	1970	1680	1110	324	97	43
MIN	100	366	742	867	2530	1690	1230	933	331	87	43	35
AC-FT	29340	74390	94360	319200	268000	211100	92450	74940	39720	10300	3470	2360
CFSM	1.26	3.29	4.04	13.7	12.7	9.04	4.09	3.21	1.76	.44	.15	.10
IN.	1.45	3.67	4.66	15.75	13.23	10.42	4.56	3.70	1.96	.51	.17	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1998, BY WATER YEAR (WY)

	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	
MEAN	231	1453	2657	2963	2552	2368	1618	919	374	99.2	47.4	65.4																										
MAX	1771	6344	9242	7184	6686	4867	4518	2439	1214	280	116	358																										
(WY)	1963	1974	1965	1970	1986	1983	1982	1963	1993	1983	1976	1978																										
MIN	25.0	82.4	115	236	358	508	433	315	82.7	36.5	19.0	15.5																										
(WY)	1988	1988	1977	1977	1977	1988	1977	1992	1992	1987	1992	1992																										

SUMMARY STATISTICS

	FOR 1997 CALENDAR YEAR	FOR 1998 WATER YEAR	WATER YEARS 1962 - 1998
ANNUAL TOTAL	432214	614918	
ANNUAL MEAN	1184	1685	1274
HIGHEST ANNUAL MEAN			2372
LOWEST ANNUAL MEAN			275
HIGHEST DAILY MEAN	33000	Jan 1	64000
LOWEST DAILY MEAN	43	Aug 16	13
ANNUAL SEVEN-DAY MINIMUM	46	Aug 12	14
ANNUAL RUNOFF (AC-FT)	857300	1220000	922700
ANNUAL RUNOFF (CFSM)	3.12	4.43	3.35
ANNUAL RUNOFF (INCHES)	42.31	60.20	45.54
10 PERCENT EXCEEDS	2440	4420	3140
50 PERCENT EXCEEDS	564	1040	513
90 PERCENT EXCEEDS	66	48	39

e Estimated

14400000 CHETCO RIVER NEAR BROOKINGS, OR

LOCATION.--Lat 42°07'25", long 124°11'10", in SE 1/4 sec.12, T.40 S., R.13 W., Curry County, Hydrologic Unit 17100312, on right bank 16 ft upstream from bridge, 0.5 mi upstream from Elk Creek, 6.8 mi northeast of Brookings, and at mile 10.7.

DRAINAGE AREA.--271 mi².

PERIOD OF RECORD.--October 1969 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 50 ft above sea level, from topographic map.

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

AVERAGE DISCHARGE.--29 years (water years 1970-98), 2,290 ft³/s, 114.82 in/yr, 1,659,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 76,100 ft³/s Nov. 19, 1996, gage height, 28.56 ft; minimum discharge, 42 ft³/s Oct. 14, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964, reached a stage of 32.25 ft, from high-water mark on bridge pier, discharge, 85,400 ft³/s, from rating curve extended above 45,000 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 20,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Dec. 17	0230	20,700	12.51	Feb. 21	1130	20,800	12.52
Jan. 14	2200	20,200	12.33	Mar. 23	1530	24,300	13.66
Jan. 17	0030	*25,900	*14.16				

Minimum discharge, 58 ft³/s Sept. 15-17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1997 TO SEPTEMBER 1998
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e1000	4550	4020	1620	4660	3350	2150	842	729	269	119	70
2	e1800	2970	e3200	3120	6560	4250	1910	848	690	262	116	68
3	e1300	2240	e2700	4050	6590	4340	1730	808	657	250	112	66
4	e1200	1790	2290	7040	6050	3720	1570	747	624	243	110	65
5	e1700	1500	1970	5300	7240	3250	1450	714	598	235	106	64
6	e1600	1660	1700	5380	8230	2760	1370	678	571	225	103	63
7	1150	2200	3980	9150	7410	2400	1300	658	546	217	102	63
8	1520	1920	4370	7780	10100	2450	1220	641	531	211	99	63
9	7990	1620	3220	5610	9110	2270	1450	618	508	207	97	63
10	7030	1410	2690	4760	7480	2070	2320	591	499	205	97	62
11	4650	1430	2300	10100	9240	2040	3720	577	477	207	96	62
12	3210	1380	2010	11500	9410	3180	3350	583	452	199	94	62
13	2380	1300	1760	12900	12300	4280	3120	558	427	192	91	61
14	1880	1290	1910	14200	12200	3300	3020	564	407	186	90	60
15	1520	1230	2220	14900	11900	2850	2720	617	390	180	86	59
16	1280	1810	8370	17000	9250	2690	2390	607	372	174	85	59
17	1100	3870	15900	22600	7440	2320	2150	633	361	168	84	59
18	965	3430	8610	16800	7800	1970	1970	624	350	162	83	59
19	851	5580	5480	16200	15000	1740	1780	601	338	158	83	117
20	754	8250	4380	12500	11900	1610	1650	715	324	154	82	99
21	684	5270	3690	9370	17100	1840	1510	1070	316	150	83	80
22	626	3790	3100	11500	13400	12500	1400	917	310	147	83	72
23	577	4770	2680	12200	9740	20200	1380	793	302	144	84	70
24	537	7970	2390	11100	7380	14200	1340	856	302	140	81	69
25	501	7180	2110	10700	5740	9650	1180	1110	319	136	79	69
26	472	5630	1880	14200	4360	6710	1070	1040	320	133	78	69
27	447	4370	1690	10300	3570	5110	997	968	296	e120	76	67
28	429	3620	1540	7180	3310	4000	953	914	279	e150	74	66
29	742	4330	1410	6570	---	3230	917	884	272	e140	72	66
30	2430	5450	1310	6590	---	2730	872	836	269	e130	72	65
31	10400	---	1220	5110	---	2470	---	777	---	120	71	---
TOTAL	62725	103810	106100	307330	244470	139490	53959	23389	12836	5614	2788	2065
MEAN	2023	3460	3423	9914	8731	4500	1799	754	428	181	89.9	68.8
MAX	10400	8250	15900	22600	17100	20200	3720	1110	729	269	119	117
MIN	429	1230	1220	1620	3310	1610	872	558	269	120	71	59
AC-FT	124400	205900	210400	609600	484900	276700	107000	46390	25460	11140	5530	4100
CFSM	7.47	12.8	12.6	36.6	32.2	16.6	6.64	2.78	1.58	.67	.33	.25
IN.	8.61	14.25	14.56	42.19	33.56	19.15	7.41	3.21	1.76	.77	.38	.28

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1998, BY WATER YEAR (WY)

	604	3263	5154	5249	4615	3950	2445	1200	606	198	118	201
MEAN	604	3263	5154	5249	4615	3950	2445	1200	606	198	118	201
MAX	2540	10230	13350	13150	11500	7041	6956	3495	2121	442	310	1531
(WY)	1982	1974	1997	1970	1986	1989	1982	1996	1993	1983	1983	1978
MIN	48.3	107	121	479	619	859	674	430	221	121	69.2	54.9
(WY)	1988	1994	1977	1977	1977	1988	1977	1973	1992	1973	1987	1987

SUMMARY STATISTICS

FOR 1997 CALENDAR YEAR

FOR 1998 WATER YEAR

WATER YEARS 1970 - 1998

ANNUAL TOTAL	767873	1064576	
ANNUAL MEAN	2104	2917	
HIGHEST ANNUAL MEAN			2290
LOWEST ANNUAL MEAN			3911
HIGHEST DAILY MEAN	33000	22600	57000
LOWEST DAILY MEAN	72	59	44
ANNUAL SEVEN-DAY MINIMUM	77	60	46
ANNUAL RUNOFF (AC-FT)	1523000	2112000	1659000
ANNUAL RUNOFF (CFSM)	7.76	10.8	8.45
ANNUAL RUNOFF (INCHES)	105.41	146.13	114.82
10 PERCENT EXCEEDS	4670	9130	6050
50 PERCENT EXCEEDS	1180	1300	782
90 PERCENT EXCEEDS	110	83	83

e Estimated

CHEMICAL QUALITY OF PRECIPITATION

393

SILVER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR

LOCATION.--Lat 43°07'01", Long 121°04'00", in NE 1/4 SW 1/4 sec.21, T.28 S., R.14 E., Lake County, Hydrologic Unit 17120005, at Silver Lake Ranger Station, 0.5 mi south of State Highway 31, and 1 mi southwest of town of Silver Lake.

PERIOD OF RECORD.--August 1983 to current year (weekly composite).

INSTRUMENTATION.--The wet-deposition sample collector is an Aerochem Metrics Model 301 wet/dry deposition collector. Refer to WDR OR-92-1 for further description of instrumentation.

REMARKS.--Previously unpublished 1997 water year data are included in the following table. Data collected after April 7, 1998 not available at time of publication and will be published in a later report. Inches of precipitation obtained from an on-site recording weighing-bucket gage. Samples are collected by Silver Lake Ranger Station personnel and analyzed by the Illinois State Water Survey Central Analytical Laboratory.

WATER-QUALITY DATA

DATE	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN) (00193)	SPEC. CONDUCT- TANCE FIELD ATM DEP WET TOT (US/CM) (83154)	SPEC. CONDUCT- TANCE LAB ATM DEP WET TOT (US/CM) (83156)	PH FIELD ATM DEP WET T (UNITS) (83106)	PH LAB ATM DEP WET T (UNITS) (83107)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG- NESIUM ATM DEP WET DIS (MG/L) (83002)
SEP 1997							
02-09	.03	--	40.4	--	4.2	.42	.094
SEP							
09-16	.35	6.7	6.5	5.0	5.1	.10	.016
SEP							
16-23	.21	4.0	4.0	5.2	5.1	.02	.011
SEP							
23-30	.00	--	--	--	--	--	--
SEP 30-							
OCT 07	.12	3.7	2.6	5.1	5.4	.02	.006
OCT							
07-14	.19	3.8	3.8	4.9	5.2	.02	.009
OCT							
14-21	.00	--	--	--	--	--	--
OCT							
21-28	.00	--	--	--	--	--	--
OCT 28-							
NOV 04	.50	3.2	2.1	5.2	5.4	<.01	.003
NOV							
04-11	.45	4.8	4.4	5.0	5.1	.01	.003
NOV							
11-18	.02	--	--	--	--	--	--
NOV							
18-25	.46	4.4	3.4	4.8	5.2	<.01	.003
NOV 25-							
DEC 02	.17	3.8	2.7	5.1	5.1	<.01	.003
DEC							
02-09	.08	3.8	2.8	5.2	5.5	<.01	<.003
DEC							
09-16	.03	--	2.4	--	5.5	--	--
DEC							
16-23	.05	2.5	2.1	5.4	5.6	.03	.004
DEC							
23-30	.00	--	--	--	--	--	--
DEC 30 1997-							
JAN 06 1998	.23	3.2	2.2	5.1	5.4	.01	<.003
JAN							
06-13	.41	--	--	--	--	--	--
JAN							
13-20	.52	--	--	--	--	--	--
JAN							
20-27	.49	3.0	1.9	5.3	5.4	.01	<.003
JAN 27-							
FEB 03	.20	3.1	2.4	5.3	5.4	.01	<.003
FEB							
03-10	.05	--	4.3	--	5.9	.26	.019
FEB							
10-17	.29	5.4	4.4	4.9	5.1	.01	.003
FEB							
17-24	.60	3.3	2.6	5.2	5.4	.02	<.003
FEB 24-							
MAR 03	.21	3.3	2.3	5.2	5.4	.01	<.003
MAR							
03-10	.03	--	2.6	--	5.5	.04	.007
MAR							
10-17	.14	4.1	2.4	5.2	5.4	.03	.004
MAR							
17-24	.23	3.6	2.3	5.3	5.4	.05	.008
MAR							
24-31	.72	3.6	3.1	5.1	5.4	.04	.007
MAR 31-							
APR 07	.34	5.4	4.7	5.0	5.3	.12	.016

CHEMICAL QUALITY OF PRECIPITATION

SILVER LAKE BASIN

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER-QUALITY DATA

DATE	SODIUM ATM DEP WET DIS (MG/L) (83138)	POTAS- SIUM ATM DEP WET DIS (MG/L) (83120)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	CHLO- RIDE ATM DEP WET DIS (MG/L) (82944)	NI- TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L) (83047)	NI- TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L) (83071)
SEP 1997						
02-09	.395	.083	1.93	.51	.66	6.06
SEP						
09-16	.044	.030	.37	.07	.09	.67
SEP						
16-23	.098	.010	.18	.15	<.02	.21
SEP						
23-30	--	--	--	--	--	--
SEP 30-						
OCT 07	.041	.008	.09	.07	<.02	.04
OCT						
07-14	.082	.020	.10	.14	.03	.36
OCT						
14-21	--	--	--	--	--	--
OCT						
21-28	--	--	--	--	--	--
OCT 28-						
NOV 04	.021	.007	.04	<.03	<.02	.07
NOV						
04-11	.016	.003	.12	<.03	.11	.62
NOV						
11-18	--	--	--	--	--	--
NOV						
18-25	.047	<.003	.10	.07	<.02	.27
NOV 25-						
DEC 02	.043	<.003	.08	.04	.07	.28
DEC						
02-09	.030	<.003	<.03	.05	.05	.18
DEC						
09-16	--	--	--	--	--	--
DEC						
16-23	.012	.014	.05	.03	.04	.15
DEC						
23-30	--	--	--	--	--	--
DEC 30 1997-						
JAN 06 1998	.006	.004	.03	<.03	<.02	.21
JAN						
06-13	--	--	--	--	--	--
JAN						
13-20	--	--	--	--	--	--
JAN						
20-27	.008	<.003	.03	.03	<.02	.11
JAN 27-						
FEB 03	.003	.004	.05	<.03	.05	.14
FEB						
03-10	.096	.031	.26	.10	.11	.61
FEB						
10-17	.017	.003	.07	.05	<.02	.50
FEB						
17-24	.014	<.003	.05	<.03	.03	.23
FEB 24-						
MAR 03	.010	.004	.03	<.03	<.02	.13
MAR						
03-10	.053	.008	.11	.09	.11	.24
MAR						
10-17	.014	.003	.10	.03	.02	.18
MAR						
17-24	.010	.004	.07	.03	.02	.19
MAR						
24-31	.027	.003	.11	.05	<.02	.19
MAR 31-						
APR 07	.023	.005	.31	.05	.07	.53

CHEMICAL QUALITY OF PRECIPITATION

395

SANDY RIVER BASIN

452650122091801 BULL RUN RESERVOIR NUMBER TWO, OR

LOCATION.--Lat 45°26'55", long 122°08'45", in SE 1/4 SE 1/2 sec.26, T.1 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on headworks dam on Bull Run River, 4.4 mi northeast of town of Bull Run, and approximately 20 mi east of Portland.

PERIOD OF RECORD.--June 1980 to September 1981 (event sampling), September 1981 to November 1981 (weekly composite), July 1982 to current year (weekly composite).

INSTRUMENTATION.--A bulk-type plastic double cylinder with receiving funnel directing deposition to inner cylinder was used for the period of record June 1980 to September 1981. The wet-deposition sample collector is an Aerochem Model 301 wet/dry deposition collector. Refer to WDR OR-92-1 for further description of instrumentation.

REMARKS.--Previously unpublished 1997 water year data are included in the following table. Data collected after April 7, 1998 not available at time of publication and will be published in a later report. Inches of precipitation obtained from an on-site recording weighing-bucket gage. The sample collector is located in the restricted access area of the city of Portland's Bull Run River Watershed. Samples are collected by Bull Run Headworks Water Quality Laboratory personnel and analyzed by the Illinois Supply Central Analytical Laboratory.

WATER-QUALITY DATA

DATE	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN) (00193)	SPEC. CONDUCT- TANCE FIELD WET TOT (US/CM) '83154)	SPEC. CONDUCT- TANCE LAB WET TOT (US/CM) (83156)	PH FIELD WET T (UNITS) (83106)	PH LAB ATM DEP (UNITS) (83107)	CALCIUM ATM DEP WET DIS (MG/L) (82932)	MAG- NESIUM ATM DEP WET DIS (MG/L) (83002)
SEP 1997							
09-16	2.82	7.4	8.3	4.9	5.0	.04	.040
SEP 16-23	2.51	5.7	6.1	5.3	5.4	.03	.057
SEP 23-30	.75	--	--	--	--	--	--
SEP 30-OCT 07	2.73	6.2	9.1	5.1	5.3	.04	.079
OCT 07-14	2.60	8.9	8.6	5.1	5.3	.03	.065
OCT 14-21	<.01	--	--	--	--	--	--
OCT 21-28	.25	16.4	16.3	5.0	5.1	.15	.115
OCT 28-NOV 04	4.58	5.6	5.2	5.3	5.3	.03	.045
NOV 04-10	.59	16.2	12.6	4.6	4.7	.02	.011
NOV 10-18	1.01	4.7	4.4	5.3	5.4	.01	.033
NOV 18-25	2.56	6.3	6.8	5.3	5.3	.03	.069
NOV 25-DEC 02	.66	5.0	4.6	5.3	5.4	.02	.031
DEC 02-09	1.10	7.0	8.4	5.2	5.3	.03	.083
DEC 10-16	1.64	4.1	4.1	5.3	5.4	.01	.029
DEC 16-23	E2.22	5.3	6.7	5.3	5.4	.03	.056
DEC 23-30	1.10	5.0	5.0	5.3	5.3	.02	.031
DEC 30 1997-JAN 06 1998	1.62	4.6	4.8	5.3	5.3	.02	.040
JAN 06-13	E2.62	7.0	5.4	5.1	5.3	.02	.039
JAN 13-20	3.76	7.0	8.2	5.3	5.4	.04	.101
JAN 20-27	2.50	--	--	--	--	--	--
JAN 27-FEB 03	1.00	--	--	--	--	--	--
FEB 03-10	.95	3.7	3.2	5.3	5.3	.07	.010
FEB 10-17	1.59	5.6	5.5	5.2	5.3	.02	.045
FEB 17-24	2.53	4.2	4.1	5.2	5.3	.02	.027
FEB 24-MAR 03	E3.70	5.8	4.3	5.1	5.4	.03	.027
MAR 03-10	1.96	7.8	7.6	5.0	5.0	.03	.044
MAR 10-17	.45	13.5	13.1	5.2	4.7	.05	.025
MAR 17-24	1.99	3.1	2.0	5.6	5.5	.05	.007
MAR 24-31	E1.35	8.9	9.5	5.1	5.1	.07	.070
MAR 31-APR 07	.93	7.1	7.5	5.2	5.1	.06	.021
APR 07-14	1.74	5.9	6.4	5.2	5.2	.05	.037

E Estimated.

CHEMICAL QUALITY OF PRECIPITATION

SANDY RIVER BASIN

452650122091801 BULL RUN RESERVOIR NUMBER TWO, OR--Continued

WATER-QUALITY DATA

DATE	SODIUM ATM DEP WET DIS (MG/L) (83138)	POTAS- SIUM ATM DEP WET DIS (MG/L) (83120)	SULFATE ATM DEP WET DIS AS SO4 (MG/L) (83160)	CHLO- RIDE ATM DEP WET DIS (MG/L) (82944)	NI- TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L) (83047)	NI- TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L) (83071)
SEP 1997						
09-16	.349	.028	.51	.59	.14	.58
SEP						
16-23	.466	.022	.27	.87	.04	.16
SEP						
23-30	--	--	--	--	--	--
SEP 30-						
OCT 07	.723	.032	.43	1.24	.10	.36
OCT						
07-14	.603	.028	.28	1.07	.03	.18
OCT						
14-21	--	--	--	--	--	--
OCT						
21-28	.904	.066	1.04	1.56	.52	1.72
OCT 28-						
NOV 04	.390	.017	.25	.68	<.02	.17
NOV						
04-10	.097	.018	.50	.13	.17	1.42
NOV						
10-18	.289	.014	.20	.51	.02	.11
NOV						
18-25	.594	.024	.27	1.10	<.02	.18
NOV 25-						
DEC 02	.299	.013	.16	.51	.03	.19
DEC						
02-09	.718	.029	.31	1.34	.05	.29
DEC						
10-16	.282	.010	.15	.46	.02	.17
DEC						
16-23	.500	.027	.19	.88	<.02	.18
DEC						
23-30	.267	.015	.25	.51	.08	.22
DEC 30 1997-						
JAN 06 1998	.347	.010	.18	.63	<.02	<.03
JAN						
06-13	.348	.016	.21	.60	<.02	.25
JAN						
13-20	.856	.032	.28	1.53	<.02	.10
JAN						
20-27	--	--	--	--	--	--
JAN 27-						
FEB 03	--	--	--	--	--	--
FEB						
03-10	.036	.005	.10	.05	.03	.28
FEB						
10-17	.401	.017	.19	.73	.04	.23
FEB						
17-24	.235	.012	.12	.42	<.02	.15
FEB 24-						
MAR 03	.237	.010	.18	.43	<.02	.17
MAR						
03-10	.398	.019	.32	.70	.08	.54
MAR						
10-17	.189	.033	.71	.27	.30	1.62
MAR						
17-24	.021	<.003	.10	.03	<.02	.13
MAR						
24-31	.576	.029	.54	1.00	.15	.61
MAR 31-						
APR 07	.161	.010	.42	.27	.21	.88
APR						
07-14	.285	.020	.41	.51	.13	.44

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

As the number of streams on which streamflow information is likely to be desired far exceeds the number of stream-gaging stations feasible to operate at one time, the Geological Survey collects limited streamflow data at sites other than stream-gaging stations. When limited streamflow data are collected on a systematic basis over a period of years for use in hydrologic analyses, the site at which the data are collected is called a partial-record station. Data collected at these partial-record stations are usable in low-flow or floodflow analyses, depending on the type of data collected. In addition, discharge measurements are made at other sites not included in the partial-record program. These measurements are generally made in times of drought or flood to give better areal coverage to these events. Those measurements and others collected for some special reason are called measurements at miscellaneous sites.

Records collected at crest-stage partial-record stations are presented in the following table. Discharge measurements made at low-flow partial-record sites and at miscellaneous sites and for special studies are given in separate tables.

Crest-stage partial-record stations

The following table contains annual maximum discharge for crest-stage stations. A crest-stage gage is a device which will register the peak stage occurring between inspections of the gage. A stage-discharge relation for each gage is developed from discharge measurements made by indirect measurements of peak flow or by current meter. The date of the maximum discharge is not always certain but is usually determined by comparison with nearby continuous-record stations, weather records, or local inquiry. Only the maximum discharge for each water year is given. Information on some lower floods may have been obtained but is not published herein. The years given in the period of record represent water years for which the annual maximum has been determined.

Annual maximum discharge at crest-stage partial-record stations during water year 1998

Station name and number	Location and drainage area	Period of record	Date	Water year 1998 maximum		Period of record maximum		
				Gage height (ft)	Dis- charge (ft ³ /s)	Date	Gage height (ft)	Dis- charge (ft ³ /s)
NESTUCCA RIVER BASIN								
Walker Creek near Fairdale (14302850)	Lat 45°18'12", long 123°24'51", in SW 1/4 SW 1/4 sec.15, T.3 S., R.6 W., Yamhill County, Hydrologic Unit 17100203, at culvert, 5.3 mi southwest of Fairdale, and at mile 0.5. Drainage area is 2.72 mi ² .	1992-98	10-30-97	4.20	209	2-08-96	unknown	450

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table. Discharge measurements made at miscellaneous sites during water year 1998.

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
KLAMATH RIVER BASIN						
11493500 Williamson River near Klamath Agency	Klamath Lake	Lat 42°44'25", long 121°50'00", in NW 1/4 SW 1/4 sec.1, T.33 S., R.7 E., Klamath County, Hydrologic Unit 18010201, on right bank 250 ft downstream from highway bridge, 0.6 mi southwest of railroad station, at Kirk, 10 mi upstream from Spring Creek, and 10 mi northeast of Klamath Agency.	1,290 (approx)	---	9-24-98	0.52
Keno Power Canal	Link River	Lat 42°13'16", long 121°47'35", in SW 1/4 NW 1/4 sec.32 T.38 S., R.9 E., Klamath County, Hydrologic Unit 18010204, 600 ft downstream from Link River gage, and 1,200 ft upstream from Main Street Bridge	3,810	1961-97	12-16-97 3-10-98 9-15-98	254 252 260
COLUMBIA RIVER MAIN STEM						
14128910 Columbia River at Warrendale	Pacific Ocean	Lat 45°36'45", long 122°01'35", in NE 1/4 SE 1/4 sec.35, T.2 N., R.6 E., Multnomah County, Hydrologic Unit 17080001, 10.1 mi downstream from Tumult Creek, 1.0 mi west of Warrendale, 5.1 mi downstream from Bonneville Dam, and at mile 141.0.	240,000 (approx)	---	11-13-97 9-25-98	147,000 85,000
SANDY RIVER BASIN						
14131400 Zig Zag River near Rhododendron	Sandy River	Lat 45°18'32", long 121°51'31", in NE 1/4 SE 1/4 sec.18, T.3 S. R.8 E., Clackamas County, Hydrologic Unit 17080001, in Mt. Hood National Forest, at bridge, 0.5 mi upstream from Devil Canyon Creek, 1.2 mi downstream from Lady Creek, and 2.8 mi southeast of Rhododendron.	14.8	---	12-12-97 5-11-98 8- 3-98	66 98 62
14138700 Bull Run River at Upper Flume, near Brightwood	Sandy River	Lat 45°27'54", long 121°51'16", in NE 1/4 SW 1/4 sec.20, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, at flume, 0.6 mi downstream from outlet structure, at Bull Run Lake, and 9.7 mi northeast of Brightwood.	---	1992-97	10-21-97 4-22-98 6-15-98 8-12-98	8.2 9.5 11 5.4
Bull Run River 1,000 ft downstream from Lower Flume, near Brightwood	do.....	Lat 45°28'20", long 121°52'07", in NW 1/4 NE 1/4 sec. 19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 1,000 ft downstream from Lower Flume, 1.4 mi downstream from outlet structure, at Bull Run Lake, and 9.5 mi northeast of Brightwood.	---	1994, 1996-97	8-13-98	19
Bull Run River 1,200 ft downstream from Lower Flume, near Brightwood	do.....	Lat 45°28'21", long 121°52'09", in NW 1/4 NE 1/4 sec. 19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 1,200 ft downstream from Lower Flume, 1.4 mi downstream from outlet structure, at Bull Run Lake, and 9.5 mi northeast of Brightwood.	---	1994, 1996-97	8-13-98	18
Bull Run River 1,400 ft downstream from Lower Flume, near Brightwood	do.....	Lat 45°28'23", long 121°52'11", in NW 1/4 NE 1/4 sec. 19, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 1,400 ft downstream from Lower Flume, 1.4 mi downstream from outlet structure, at Bull Run Lake, amd 9.5 mi northeast of Brightwood.	---	1994, 1996-97	8-13-98	18
Bull Run River 2,600 ft downstream from Lower Flume,	do.....	Lat 45°28'28", long 121°52'25", in NE 1/4 NW 1/4 sec. 19, T.1S., R.8 E., Multnomah County, Hydroroic Unit 17080001, 2,600 ft downstream from Lower flume, 1.7 mi downstream from outlet structure, at Bull Run Lake, and 9.4 mi northeast of Brightwood.	---	1994, 1997	8-13-98	18
Bull Run River 4,100 ft downstream from Lower Flume, near Brightwood	do.....	Lat 45°28'34", long 121°52'43", in SW 1/4 SW 1/4 sec. 18, T.1 S., R.8 E., Multnomah County, Hydrologic Unit 17080001, 4,100 ft downstream from outlet structure, at Bull Run Lake, and 9.4 mi northeast of Brightwood.	---	1994, 1997	8-13-98	31
WILLAMETTE RIVER BASIN						
14159000 McKenzie River at McKenzie Bridge	Willamette River	Lat 44°10'27", long 122°09'27", Lane County, Hydrologic Unit 17090004, at McKenzie Bridge.	348	1910-94, 1997	10-29-97	1,680
14159100 Horse Creek nr McKenzie Bridge	McKenzie River	Lat 44°09'45", long 122°09'13", Lane County Hydrologic Unit 17090004, 1.0 mi southeast of McKenzie Bridge, and at mile 3.4.	149	1962-69, 1977, 1987,1997	10-29-97	696

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
WILLAMETTE RIVER BASIN--Continued						
14207740 Willamette River abv Falls at Oregon City	Columbia River	Lat 45°20'55", long 122°37'08", in SW 1/4 SW 1/4 sec.31, T.2 S., R.2 E., Clackamas County, Hydrologic Unit 17090007, 1.6 mi downstream from Tualatin River, and at mile 26.8.	10,000 (approx)	1996-97	11- 5-97 4-23-98 9-21-98	36,900 17,800 10,300
14208000 Clackamas River at Big Bottom	Willamette River	Lat 45°01'00", long 121°55'10", in NW 1/4 SE 1/4 sec.26, T.6 S., R.7 E., Clackamas County, Mount Hood National Forest, on right bank at lower end of Big Bottom, 0.5 mi downstream from Pot Creek, 28 mi southeast of Estacada, and at mile 65.1.	136	1997	1-15-98	967
Clackamas River at Two Rivers Campground	Willamette River	Lat 45°01'56", long 122°03'31", Clackamas County, Hydrologic Unit 17090011, 1/4 mi upstream from Highway 63 Bridge, at Two Rivers Campground.	---	---	5- 5-98 7- 7-98 9- 3-98	826 342 318
Collawash River near Two Rivers Campground	Clackamas River	Lat 45°01'19", long 122°03'48", Clackamas County, Hydrologic Unit 17090011, at Highway 63 Bridge, 300 ft upstream from confluence with Clackamas River, near Two Rivers Campground.	---	---	5- 5-98 7- 7-98 9- 1-98	943 176 70
Oak Grove Fork near Rainbow Campground	do.....	Lat 45°04'36", long 122°02'42", Clackamas County, Hydrologic Unit 17090011, 500 ft downstream from Highway 224 Bridge, in Rainbow Campground.	---	---	7- 7-98	22
Roaring River near Estacada	do.....	Lat 45°09'35", long 122°06'50", in SW 1/4 SE 1/4, sec.6, T.5 S., R.6 E., Clackamas County, Hydrologic Unit 17090011, on right bank 400 ft upstream from the mouth, 100 ft upstream from Roaring River Campground, and 13.8 mi southeast of Estacada, at former USGS gage 14209000.	42.4	---	5- 6-98 7- 7-98 9- 1-98	193 128 56
Clackamas River at powerlines upstream from NF Reservoir	Willamette River	Lat 45°11'51", long 122°13'02", Clackamas County, Hydrologic Unit 17090011, at powerlines upstream from North Fork Reservoir, at Memaloose Bridge.	---	---	7- 7-98 9- 1-98	1,230 863
SF Clackamas River near mouth	Clackamas River	Lat 45°11'56", long 122°13'25", Clackamas County, Hydrologic Unit 17090011, 100 ft upstream from confluence with Clackamas River.	---	---	7- 8-98	48
Winslow Creek at USFS road 2610	North Fork Clackamas River	Lat 45°12'56", long 122°08'55", Clackamas County, Hydrologic Unit 17090011, 10 ft upstream from U.S. Forest Service road 2610.	---	---	7-15-98	9.3
Fall Creek nr confluence NF Clackamas River	do.....	Lat 45°14'32", long 122°13'05", Clackamas County, Hydrologic Unit 17090011, 1/4 mi upstream from confluence with North Fork Clackamas River.	---	---	7- 9-98	6.7
NF Clackamas River at mouth	Clackamas River	Lat 45°14'14", long 122°14'49", Clackamas County, Hydrologic Unit 17090011, at mouth.	---	---	5- 7-98 7- 7-98 8-31-98	54 48 11
Eagle Creek at Wilderness boundry	Clackamas River	Lat 45°17'55", long 122°06'43", Clackamas County, Hydrologic Unit 17090011, at Wilderness boundary.	---	---	7-12-98	41
Eagle Creek at Bonnie Lure State Park	do.....	Lat 45°21'05", long 122°22'32", Clackamas County, Hydrologic Unit 17090011, 200 ft downstream from Dowty Road Bridge, at Bonnie Lure State Park.	---	---	7- 7-98	125
Clackamas River near Barton	Willamette River	Lat 45°22'55", long 122°24'45", Clackamas County, Hydrologic Unit 17090011, near Barton, at Barton Bridge, 0.6 mi southwest of Barton.	---	---	5- 9-98 7- 7-98 9- 1-98	2,830 1,620 1,080
Deep Creek at Hwy 224	Clackamas River	Lat 45°23'40", long 122°25'10", Clackamas County, Hydrologic Unit 17090011, 50 ft upstream from Highway 224 bridge.	---	---	7-10-98	26

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
WILLAMETTE RIVER BASIN--Continued						
Richardson Creek at Hwy 224	Clackamas River	Lat 45°23'52", long 122°28'15", Clackamas County, Hydrologic Unit 17090011, 50 ft downstream from Highway 224.	---	---	7-14-98	0.69
Clear Creek at Carver	do.....	Lat 45°23'25", long 122°29'35", Clackamas County, Hydrologic Unit 17090011, 150 ft upstream from mouth.	---	---	7- 7-98	54
Clackamas River at Carver	Willamette River	Lat 45°23'35", long 122°29'45", Clackamas County, Hydrologic Unit 17090011, at Carver Bridge, at Carver.	---	---	7- 7-98 9- 1-98	1,760 1,300
Rock Creek near mouth	Clackamas River	Lat 45°24'31", long 122°30'32", Clackamas County, Hydrologic Unit 17090011, 500 ft upstream from confluence with Clackamas River.	---	---	7-15-98	2.0
Sieben Creek at Hwy 224	do.....	Lat 45°24'27", long 122°33'33", Clackamas County, Hydrologic Unit 17090011, 50 ft downstream from Highway 224.	---	---	7-14-98	0.8
Clackamas River at Hwy 99 bridge	Willamette River	Lat 45°22'23", long 122°36'01", Clackamas County, Hydrologic Unit 17090011, at Highway 99 bridge.	---	---	5- 9-98 7- 7-98 9- 1-98	2,940 1,870 2,090
Johnson Creek	do.....	Lat 45°28'23", long 122°24'06", Multnomah County, Hydrologic Unit 17090012, at Palmblad Road, 2.1 mi southeast of Gresham, and at mile 17.2.	---	1987-88	8-25-98	0.81
Johnson Creek	do.....	Lat 45°29'44", long 122°26'00", Multnomah County, Hydrologic Unit 17090012, at Walters Road, in Gresham, and at mile 14.5.	---	1987-88	8-25-98	1.4
Johnson Creek	do.....	Lat 45°29'19", long 122°28'01", Multnomah County, Hydrologic Unit 17090012, at 190th Ave., 2.0 mi west of Gresham, and at mile 12.6.	---	1987-88	8-25-98	1.8
Kelley Creek	Johnson Creek	Lat 45°28'38", long 122°29'49", Multnomah County, Hydrologic Unit 17090012, at southeast 159th Place in Portland, and at mile 0.1.	---	---	8-25-98	0.48
Johnson Creek	Willamette River	Lat 45°28'35", long 122°32'42", Multnomah County, Hydrologic Unit 17090012, at Foster Road and Brookside Park, in Portland, and at mile 7.8.	---	1987-88	8-25-98	2.4
Johnson Creek	do.....	Lat 45°27'48", long 122°34'41", Multnomah County, Hydrologic Unit 17090012, at 82nd Avenue, and at mile 5.5.	---	1987-90 1997	8-26-98	2.4
Johnson Creek	do.....	Lat 45°27'43", long 122°36'54", Multnomah County, Hydrologic Unit 17090012, at 45th Avenue, and at mile 3.2.	---	1988,1997	2-26-98	3.6
Johnson Creek	do.....	Lat 45°27'54", long 122°37'48", Multnomah County, Hydrologic Unit 17090012, at Berkeley Place, in Portland, and at mile 2.2.	---	1988,1993	8-27-98	5.5
Johnson Creek	do.....	Lat 45°27'40", long 122°38'27", Multnomah County, Hydrologic Unit 17090012, at Johnson Creek Park, upstream from mouth of Crystal Springs Creek, in Portland, at at mile 1.2.	---	---	8-27-98	5.7
Crystal Springs Creek	Johnson Creek	Lat 45°28'56", long 122°38'00", Multnomah County, Hydrologic Unit 17090012, on Reed College Campus, 0.1 mi downstream from Reed Lake, and at mile 1.8.	---	1997	11- 6-97 12- 3-97 1- 9-98 2- 9-98 3-10-98 4-15-98 5- 7-98 6-18-98 7- 8-98 8-12-98 9-17-98	5.7 6.1 5.6 5.0 5.3 5.0 5.0 4.8 4.8 5.2 4.9
Crystal Springs Creek	do.....	Lat 45°28'27", long 122°38'27", Multnomah County, Hydrologic Unit 17090012, at Bybee Street, and at mile 1.0.	---	1977,1987 1997	11- 6-97 12- 3-97 1- 9-98 2-09-98 3-12-98 4-15-98 5- 7-98 6-18-98 7- 8-98 8-12-98 9-17-98	20 19 19 18 18 18 18 18 17 16 17

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
WILLAMETTE RIVER BASIN--Continued						
Crystal Springs Creek	Johnson Creek	Lat 45°27'39", long 122°38'30", Multnomah County, Hydrologic Unit 17090012, at mouth.	---	1987-90 1997	11- 6-97	19
					12- 3-97	18
					1- 9-98	18
					2- 9-98	18
					3-12-98	19
					4-15-98	18
					5- 7-98	17
					6-18-98	18
					7- 8-98	17
					8-12-98	16
	9-17-98	17				
NESTUCCA RIVER BASIN						
14302850 Walker Creek	Nestucca River	Lat 45°18'12", long 123°24'51", in SW 1/4 SW 1/4 sec.15, T.3S., R.6 W., Yamhill County, Hydrologic Unit 17100203 5.3 mi southwest of Fairdale, and at mile 0.5.	2.72	1991-97	10-27-97 12-11-97 2-18-98 4- 7-98 6-16-98 8-18-98	4.4 12 36 9.1 2.4 0.90
UMPUQA RIVER BASIN						
Middle Fork Deadman Creek nr Myrtle Creek	Deadman Creek	Lat 43°04'06", long 122°56'51", in NW 1/4 SE 1/4 sec.9, T.29 S., R.2 W., Douglas County, Hydrologic Unit 17100302, near Myrtle Creek.	---	---	8-26-98	e0.3
Deadman Creek near Milo	South Umpqua River	Lat 43°01'16", long 122°55'47", in SW 1/4 SE 1/4 sec.27, T.29 S., R.2 W., Douglas County, Hydrologic Unit 17100302, near Milo.	---	---	9-16-98	e0.4
Days Creek near Days Creek	do.....	Lat 43°03'13", long 123°00'09", in NE 1/4 NE 1/4 sec.13, T.29 S., R.3 W., Douglas County, Hydrologic Unit 17100302, near Days Creek.	---	---	9-17-98	e0.2
Middle Creek at Silver Butte	Cow Creek	Lat 42°51'22", long 123°23'31", in SW 1/4 SE 1/4 sec.22, T.31 S., R.6 W., Douglas County, Hydrologic Unit 17100302, at Silver Butte.	---	---	9-14-98	e0.07
Middle Creek near Riddle	do.....	Lat 42°50'49", long 123°26'01", in NW 1/4 SE 1/4 sec.29, T.31 S., R.6 W., Douglas County, Hydrologic Unit 17100302 near Riddle.	---	---	9-15-98	0.30
South Fork Middle Creek near Riddle	Middle Creek	Lat 42°50'47", long 123°26'02", in NW 1/4 SE 1/4 sec.29, T.31 S., R.6 W., Douglas County, Hydrologic Unit 17100302, near Riddle.	---	---	9-15-98	2.8
Russell Creek near Riddle	Cow Creek	Lat 42°53'18", long 123°22'07", in NE 1/4 SE 1/4 sec.11, T.31 S., R.6 W., Douglas County, Hydrologic Unit 17100302, near Riddle.	---	---	8-27-98	e0.5
Mitchell Creek near Canyonville	Cow Creek	Lat 42°53'45", long 123°19'32", in NE 1/4 NE 1/4 sec.8, T.31 S., R.5 W., Douglas County, Hydrologic Unit 17100302, near Canyonville.	---	---	8-25-98	0.03
South Myrtle Creek near Myrtle Creek	Myrtle Creek	Lat 43°05'07", long 122°59'05", in SE 1/4 SW 1/4 sec.31, T.28 S., R.2 W., Douglas County, Hydrologic Unit 17100302, near Myrtle Creek.	---	---	8-26-98	0.42
North Myrtle Creek near Myrtle Creek	do.....	Lat 43°08'06", long 123°07'20", in SE 1/4 NW 1/4 sec.13, T.28 S., R.4 W., Douglas County, Hydrologic Unit 17100302 near Myrtle Creek.	---	---	8-24-98	2.3
Little River at White Creek Campground	North Umpqua River	Lat 43°13'40", long 122°51'37", in SW 1/4 SE 1/4 sec.7 T.27 S., R.3 W., Douglas County, Hydrologic Unit 17100301, at White Creek Campground.	---	---	8-26-98	8.8

e Estimated.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements made at miscellaneous sites during water year 1998--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements	
					Date	Discharge (ft ³ /s)
UMPQUA RIVER BASIN--Continued						
Emile Creek	Little River	Lat 43°15'25", long 122°52'15", in SW 1/4 SW 1/4 sec.31, T.26 S., R.1 W., Douglas County, Hydrologic Unit 17100301, at U.S. Forest Service/Bureau of Land Management boundary.	---	---	8-26-98	0.99
Emile Creek at mouth	Little River	Lat 43°14'55", long 122°54'03", in NW 1/4 NE 1/4 sec.2, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, at mouth.	---	---	8-25-98	1.1
Little River at USFS road 2701	North Umpqua River	Lat 43°14'53", long 122°55'33", in NW 1/4 SW 1/4 sec.3, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, upstream from Job Corps work camp, and at US Forest Service road 2701.	---	---	8-26-98	14
Little River upstream from Wolf Creek	North Umpqua River	Lat 43°14'02", long 122°56'59", in NW 1/4 SW 1/4 sec.9, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, upstream from Wolf Creek.	---	---	8-24-98	17
Unnamed Tributary to West Fork Wolf Creek	Wolf Creek	Lat 43°12'10", long 122°57'24", in NW 1/4 SE 1/4 sec.20., T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301.	---	---	8-27-98	0.09
West Fork Wolf Creek	Little River	Lat 43°12'09", long 122°57'19", in NW 1/4 SE 1/4 sec.20, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301.	---	---	8-27-98	0.64
Unnamed Tributary to Wolf Creek (east bank)	Wolf Creek	Lat 43°12'53", long 122°56'19", in SW 1/4 SE 1/4 sec.16, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, on east bank upstream from Egglestrom Creek.	---	---	8-25-98	0.01
Unnamed Tributary to Wolf Creek (west bank)	do.....	Lat 43°13'14", long 122°56'50", in NW 1/4 SW 1/4 sec.16, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301 on west bank upstream from Egglestrom Creek.	---	---	8-25-98	0.01
Wolf Creek upstream from Egglestrom Creek	Little River	Lat 43°13'27", long 122°56'46", in SW 1/4 NW 1/4 sec.16, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, upstream from Egglestrom Creek.	---	---	8-25-98	2.0
Egglestrom Creek at mouth	Wolf Creek	Lat 43°13'41", long 122°56'48", in NW 1/4 NW 1/4 sec.16, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, at mouth.	---	---	8-24-98	0.42
Wolf Creek at mouth	Little River	Lat 43°13'58", long 122°57'00", in NW 1/4 SW 1/4 sec.9, T.27 S., R.2 W., Douglas County, Hydrologic Unit 17100301, at mouth.	---	---	8-24-98	2.9
Little River upstream from Cavitt Creek	North Umpqua River	Lat 43°14'19", long 122°00'39", in SE 1/4 NE 1/4 sec.11, T.27 S., R.3 W., Douglas County, Hydrologic Unit 17100301, upstream from Cavitt Creek, at upstream bridge, on Cavitt Creek road.	---	---	8-26-98	16
Cavitt Creek upstream from Withrow Creek	Little River	Lat 43°09'14", long 122°56'14", in NW 1/4 NE 1/4 sec.9, T.28 S., R.2 W., Douglas County, Hydrologic Unit 17100301, upstream from Withrow Creek, on U.S. Forest Service road 25.	---	---	8-26-98	2.3
Unnamed Tributary downstream from Evarts Creek	Cavitt Creek	Lat 43°13'12", long 122°00'21", in SE 1/4 NE 1/4 sec.14, T.27 S., R.3 W., Douglas County, Hydrologic Unit 17100301, downstream from Evarts Creek	---	---	8-27-98	no flow
Little River at Wiggo Bridge, near Peel	North Umpqua River	Lat 43°15'16", long 123°01'42", in SW 1/4 NW 1/4 sec.2, T.27 S., R.3 W., Douglas County, Hydrologic Unit 17100301, at Wiggo Bridge, near Peel, downstream from discontinued gage at Peel (14318000).	---	---	8-26-98	26

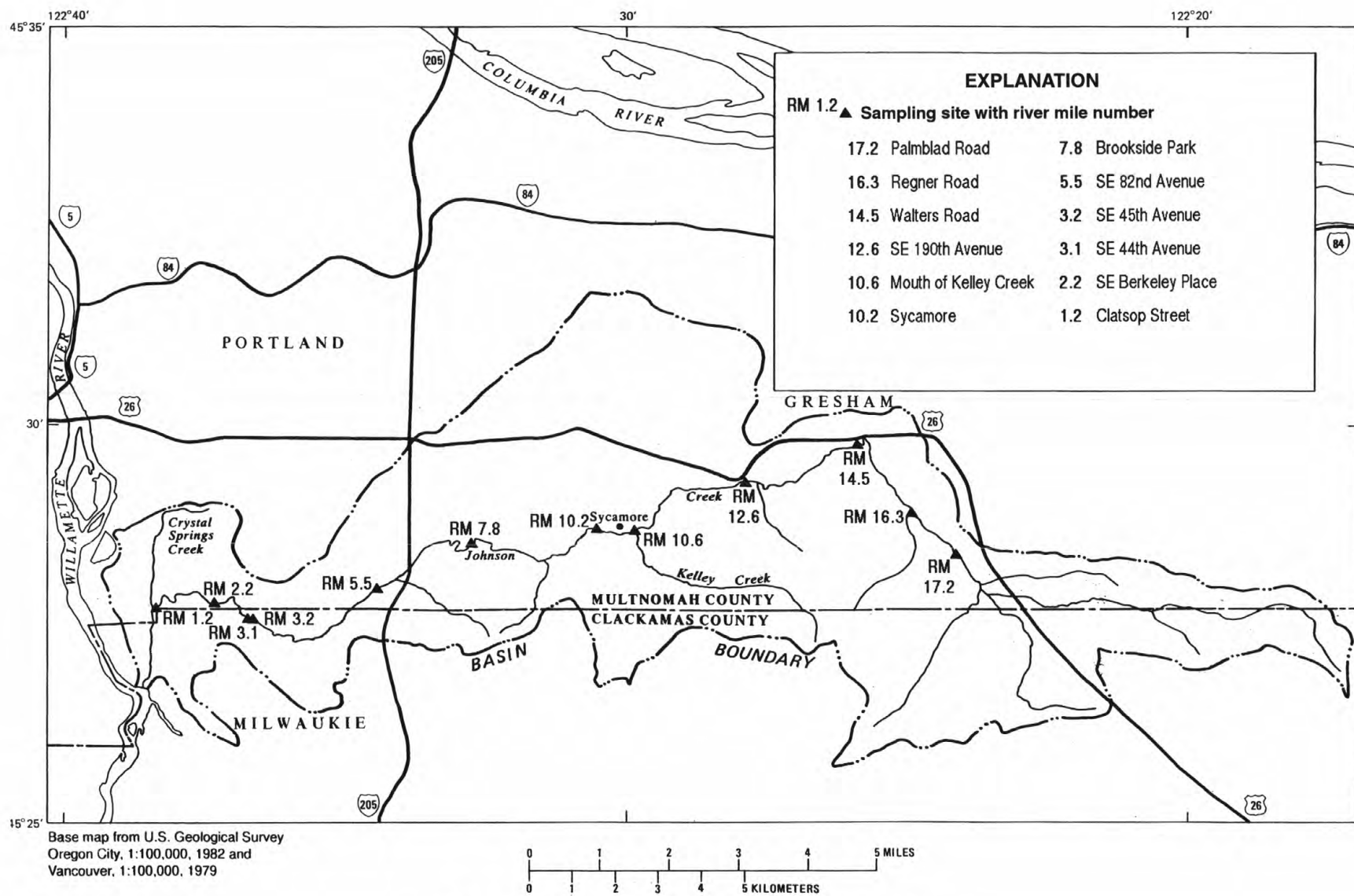


Figure 36. Johnson Creek Seepage Investigation.

MISCELLANEOUS INVESTIGATIONS

Johnson Creek Seepage Investigation,
Portland, OR

Discharge measurements were made on Aug. 25-27, 1998 on Johnson Creek and tributaries to study channel gains and losses due to ground-water discharge and recharge. The reach studied is 16.0 miles in length and extends from river mile (RM) 17.2 at Palmblad Rd. in Gresham to RM 1.2 upstream of the confluence with Crystal Springs Creek. The measurements were made during a period of base flow, with no precipitation for approximately one month prior to the study. Tributary flow was considered a contribution and not a gain.

Johnson Creek river mile	Stream	Location	Measured discharge, in cubic feet per second (ft ³ /s)	Gain or loss, (ft ³ /s)
17.2	Johnson Creek	Palmblad Road	0.81	--
16.3	do	Gaging station at Regner Road (14211400)	1.02	+0.21
14.5	do	Walters Road	1.36	+0.34
12.6	do	SE 190th Avenue	1.83	+0.47
10.6	Kelley Creek	mouth	0.48	--
10.2	Johnson Creek	Gaging station at Sycamore (14211500)	2.52	+0.21
7.8	do	Brookside Park	2.38	-0.14
5.5	do	SE 82nd Avenue	2.43	+0.05
3.2	do	SE 45th. Avenue	3.56	+1.13
3.1	Errol Spring (a)	SE 44th Avenue	0.97	--
2.2	Johnson Creek	SE Berkeley Place	5.53	+1.00
1.2	do	Clatsop Street	5.69	+0.16

(a) measurement made Dec. 4, 1998

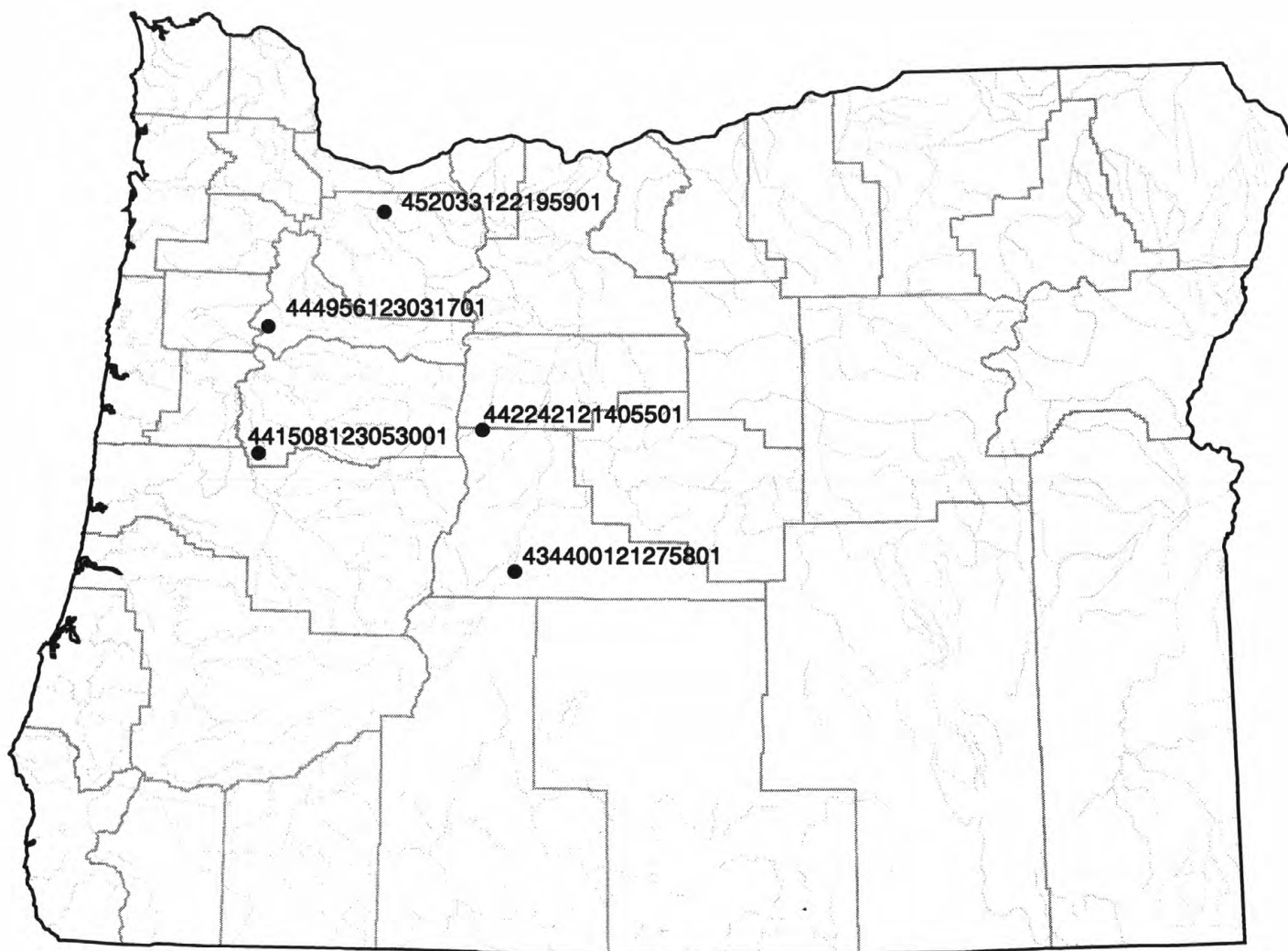


Figure 37. Location of observation wells in Oregon.

GROUND WATER LEVELS

CLACKAMAS COUNTY

452033122195901. Local number, 02S/04E-29DAD

LOCATION.--Lat 45°21'56", long 122°20'00", Hydrologic Unit 17090011, 5 mi north of Estacada.

Owner: Polly and Michael Lohrey.

AQUIFER.--Sandy River Mudstone/Troutdale Gravel Aquifer. Tertiary.

WELL CHARACTERISTICS.--Deepened drilled irrigation well, 6 inch casing to 176.3 ft, completed depth of 190 ft, perforated 95 to 110 ft, 129 to 149 ft.

INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS and Oregon Water Resources Department personnel since Feb. 1998; periodic measurements using electric sounder tape and chalked steel tape by Oregon Water Resources Department personnel from Mar. 1962 to Jan. 1998.

DATUM.--Elevation of land surface is 710 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: westside bottom of pump base, 0.4 ft above land-surface datum.

REMARKS.--Unused. State observation well number 37. State well identification CLAC 6389.

PERIOD OF RECORD.--May 1958, March 1962 to current year.

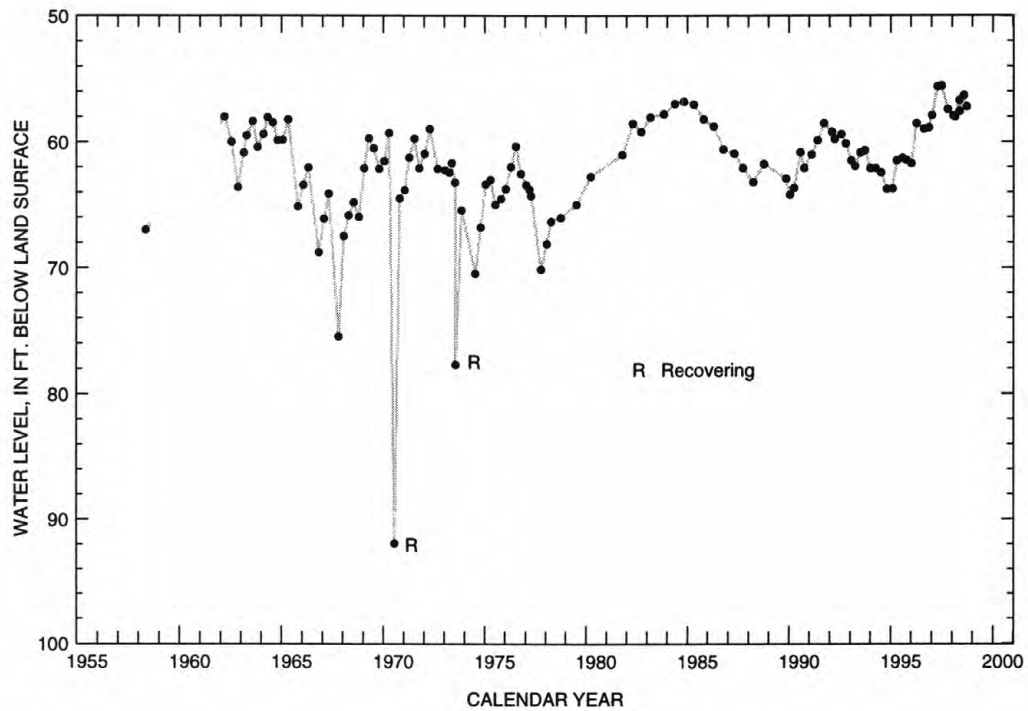
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 55.55 ft below land-surface datum, July 2, 1997; lowest measurement, 91.96 ft below land-surface datum, July 20, 1970 (recovering).

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM

DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL	DATE	WATER LEVEL
MAY 07, 1958	67.00	APR 13, 1970	59.30	JAN 17, 1978	68.13	JUL 29, 1992	59.38
MAR 14, 1962	58.00	JUL 20	91.96	APR 10	66.34	OCT 20	60.11
JUL 16	60.00	OCT 19	64.49	OCT 06	66.05	JAN 25, 1993	61.47
NOV 08	63.61	JAN 18, 1971	63.83	JUL 12, 1979	65.00	APR 05	61.91
FEB 18, 1963	60.86	APR 15	61.25	MAR 28, 1980	62.76	JUL 09	60.85
APR 16	59.48	JUL 13	59.74	OCT 19, 1981	61.01	SEP 30	60.65
JUL 31	58.34	OCT 13	62.09	APR 23, 1982	58.53	JAN 06, 1994	62.09
OCT 29	60.40	JAN 17, 1972	60.94	SEP 21	59.19	APR 07	62.10
FEB 11, 1964	59.39	APR 20	58.95	MAR 07, 1983	58.03	JUL 13	62.41
APR 27	58.05	SEP 06	62.14	NOV 03	57.78	OCT 24	63.74
JUL 28	58.44	JAN 17, 1973	62.25	MAY 23, 1984	56.97	FEB 03, 1995	63.70
OCT 26	59.86	APR 02	62.43	OCT 31	56.78	APR 20	61.48
JAN 21, 1965	59.85	MAY 17	61.69	APR 24, 1985	57.02	AUG 03	61.27
APR 27	58.23	JUL 19	63.23	OCT 22	58.20	OCT 18	61.45
OCT 21	65.14	JUL 23	77.71	APR 24, 1986	58.77	JAN 10, 1996	61.71
JAN 24, 1966	63.41	NOV 07	65.44	OCT 13	60.58	APR 12	58.52
APR 25	62.03	JUL 15, 1974	70.48	APR 29, 1987	60.90	AUG 22	58.95
OCT 24	68.79	OCT 16	66.80	SEP 25	62.06	NOV 13	58.86
JAN 30, 1967	66.11	JAN 20, 1975	63.37	MAR 29, 1988	63.20	JAN 15, 1997	57.87
APR 24	64.11	APR 11	63.02	OCT 13	61.75	APR 22	55.61
OCT 17	75.47	JUL 11	64.99	NOV 09, 1989	62.90	JUL 02	55.55
JAN 15, 1968	67.51	OCT 20	64.52	JAN 19, 1990	64.18	OCT 21	57.40
APR 15	65.86	JAN 16, 1976	63.73	APR 02	63.65	JAN 28, 1998	57.93
JUL 16	64.82	APR 16	61.98	JUL 31	60.80	FEB 27	57.99
OCT 14	66.00	JUL 16	60.36	OCT 05	62.08	MAY 15	56.68
JAN 20, 1969	62.10	OCT 08	62.54	FEB 12, 1991	60.99	MAY 22	57.55
APR 14	59.71	JAN 17, 1977	63.43	JUN 04	59.86	AUG 06	56.30
JUL 14	60.49	MAR 14	63.79	SEP 26	58.50	SEP 25	57.20
OCT 14	62.14	APR 12	64.30	FEB 19, 1992	59.20		
JAN 16, 1970	61.53	OCT 07	70.16	MAR 30	59.75		

GROUND WATER LEVELS
CLACKAMAS COUNTY--Continued

Well identifier continued: 452033122195901. Local number, 02S/04E-29DAD



GROUND WATER LEVELS

DESCHUTES COUNTY

434400121275801. Local number, 21S/11E-19CCC. Formerly 21S/10E-25A1.

LOCATION.--Lat 43°44'01", long 121°27'57", Hydrologic Unit 17070302, 4.7 mi north of La Pine.

Owner: Luis Arena; formerly J.R. Kellems.

AQUIFER.--Valley-fill deposits. Quaternary.

WELL CHARACTERISTICS.--Drilled domestic well deepened from 37 to 100 ft in 1964, 6 inch casing 0 to 69.5 ft, completed depth of 100 ft, sounded depth of 92.5 ft on Feb. 26, 1998.

INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS and Oregon Water Resources Department personnel since May 1998; periodic measurements using electric sounder tape and chalked steel tape by Oregon Water Resources Department personnel from October 1964 to March 1998.

DATUM.--Elevation of land surface is 4220 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: access porthole in steel cap atop casing, 0.2 ft above land-surface datum.

REMARKS.--Unused. State observation well number 118. State well identification DESC 7620. Historical record prior to deepening available in USGS WSP 1845, pg. 77 and depicted on a hydrograph in USGS OFR 97-197, pg. 24, Figure 8.

PERIOD OF RECORD.--October 1964 to current year. Records between October 1964 and October 1965 are published in USGS WSP 1845, pg. 77; records between February 1966 and October 1970 are published in USGS WSP 1980, pg. 81; and records between January 1971 and October 1974 are published in USGS WSP 2161. Records between October 1964 and October 1997 are depicted on a hydrograph in USGS OFR 97-197, pg. 24, Fig. 8. Record for October 1985 is published in same OFR, pg. 65, Table 1.

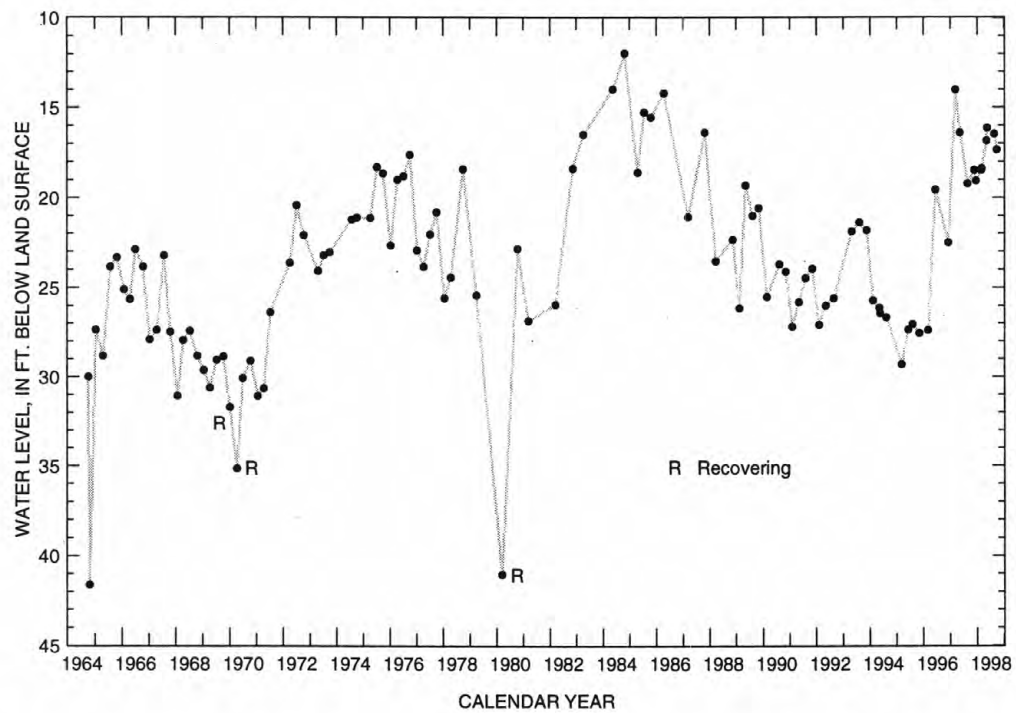
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 11.98 ft below land-surface datum, Oct. 24, 1984; lowest measurement, 41.63 ft below land-surface datum, Oct. 23, 1964.

WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
OCT 06, 1964	30.00	APR 13, 1971	30.67	MAR 15, 1981	26.87	AUG 26, 1992	25.59
OCT 23	41.63	JUL 15	26.38	MAR 19, 1982	25.96	APR 27, 1993	21.89
JAN 14, 1965	27.36	APR 10, 1972	23.64	NOV 17	18.38	AUG 13	21.38
APR 23	28.82	JUL 11	20.44	APR 12, 1983	16.50	NOV 19	21.84
JUL 30	23.86	OCT 12	22.10	MAY 17, 1984	13.99	FEB 17, 1994	25.72
OCT 29	23.34	APR 26, 1973	24.10	OCT 24	11.98	MAY 12	26.14
FEB 04, 1966	25.12	JUL 10	23.24	APR 20, 1985	18.60	MAY 23	26.44
APR 22	25.65	OCT 02	23.05	JUL 19	15.27	AUG 16	26.67
JUL 08	22.88	JUL 26, 1974	21.21	OCT 18	15.55	MAR 14, 1995	29.31
OCT 17	23.86	OCT 08	21.11	APR 16, 1986	14.20	JUN 12	27.35
JAN 13, 1967	27.91	APR 09, 1975	21.12	MAR 13, 1987	21.08	AUG 08	27.05
APR 21	27.37	JUL 10	18.30	OCT 29	16.40	NOV 10	27.55
JUL 28	23.22	OCT 01	18.65	MAR 30, 1988	23.55	MAR 05, 1996	27.39
OCT 23	27.49	JAN 14, 1976	22.68	NOV 14	22.34	JUN 13	19.57
JAN 26, 1968	31.07	APR 14	19.00	FEB 15, 1989	26.15	DEC 05	22.51
APR 11	27.95	JUL 07	18.82	MAY 08	19.31	MAR 12, 1997	14.02
JUL 12	27.44	OCT 05	17.63	AUG 14	21.01	MAY 14	16.41
OCT 21	28.82	JAN 12, 1977	22.95	NOV 06	20.57	AUG 25	19.22
JAN 16, 1969	29.64	APR 14	23.86	FEB 27, 1990	25.53	NOV 24	18.48
APR 10	30.62	JUL 06	22.05	AUG 15	23.72	DEC 16	19.07
JUL 11	29.06	OCT 05	20.80	NOV 10	24.13	FEB 26, 1998	18.48
OCT 10	28.86	JAN 19, 1978	25.59	FEB 07, 1991	27.19	MAR 05	18.39
JAN 07, 1970	31.72	APR 21	24.44	MAY 08	25.82	MAY 08	16.86
APR 10	35.16	OCT 03	18.42	AUG 09	24.48	MAY 15	16.14
JUL 02	30.09	APR 03, 1979	25.44	NOV 07	23.96	AUG 19	16.47
OCT 15	29.12	MAR 17, 1980	41.05	FEB 06, 1992	27.09	SEP 25	17.36
JAN 22, 1971	31.10	OCT 20	22.86	MAY 08	26.00		

GROUND WATER LEVELS
DESCHUTES COUNTY--Continued

Well identifier continued: 434400121275801. Local number, 21S/11E-19CCC. Formerly 21S/10E-25A1.



GROUND WATER LEVELS

DESCHUTES COUNTY

442242121405501. Local number, 14S/09E-08ABA

LOCATION.--Lat 44°22'42", long 121°40'59", Hydrologic Unit 17070301, .3 mi southwest of Black Butte peak.

Owner: Kiewit Pacific Company.

AQUIFER.--Volcanic rock. Quarternary.

WELL CHARACTERISTICS.--Drilled industrial well, 6 inch casing to 335 ft, completed depth of 403 ft.

INSTRUMENTATION.-- Periodic measurements using electric sounder tape by Oregon Water Resources Department personnel from August 1993 to current; electronic data logger 120 minute interval record Nov. 23, 1993 to Dec. 16, 1993, fifteen-minute interval Dec. 16, 1993 to Feb. 2, 1994, 120-minute interval Feb. 2, 1994 to current year..

DATUM.--Elevation of land surface is 3380 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: top of casing 1.65 ft above land-surface datum .

REMARKS.--Unused. State well identification DESC 1804.

PERIOD OF RECORD.--May 1985, August 1993 to current year. Hydrograph in USGS OFR 97-197, pg. 10, Figure 6 depicts record between November 1993 and December 1996. Measurement August 1993 published in same OFR, pg. 35, Table 1.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 284.20 ft below land-surface datum, Oct. 8, 1997, lowest measurement, 304.17 ft below land-surface datum, Feb. 1, 1995.

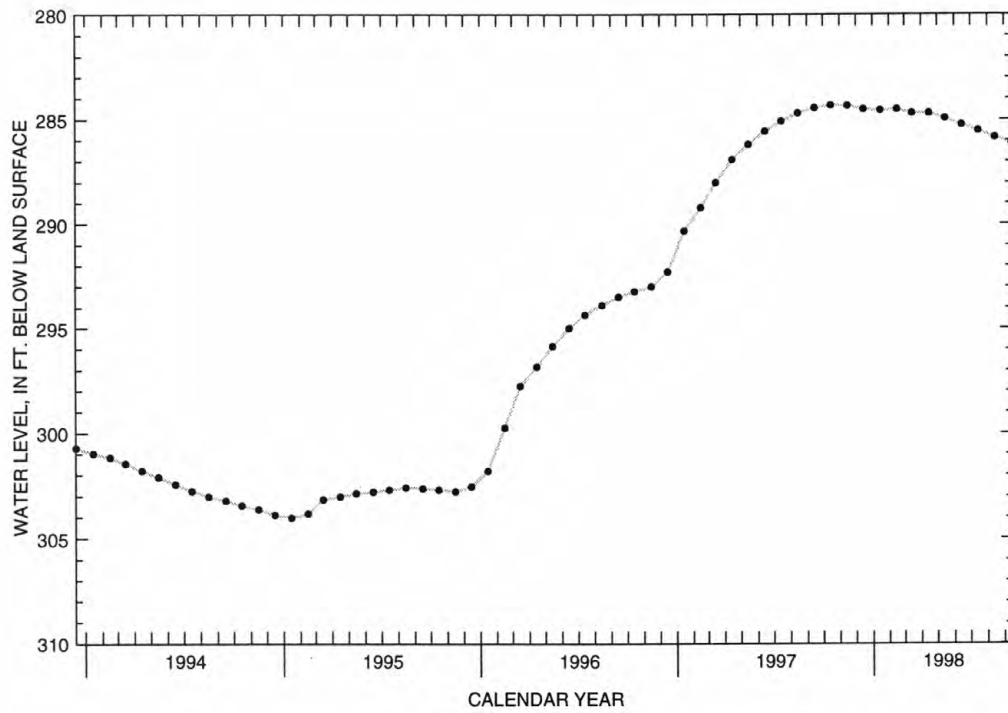
WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM,
MEAN MONTHLY

YEAR	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1994	*	*	300.71	300.98	301.16	301.46	301.79	302.11	302.44	302.76	303.02	303.21
1995	303.44	303.63	303.88	304.02	303.82	303.16	303.03	302.87	302.79	302.71	302.60	302.63
1996	302.70	302.77	302.54	301.81	299.74	297.76	296.85	295.85	294.99	294.34	293.89	293.49
1997	293.23	293.00	292.29	290.33	289.21	288.01	286.92	286.19	285.56	285.09	284.70	284.45
1998	284.34	284.35	284.51	284.56	284.52	284.70	284.71	284.95	285.26	285.54	285.86	286.14

* Indicates a no-value month.

GROUND WATER LEVELS
DESCHUTES COUNTY--Continued

Well identifier continued: 442242121405501. Local number, 14S/09E-08ABA



GROUND WATER LEVELS

LINN COUNTY

441508123053001. Local number, 15S/03W-19ACD

LOCATION.--Lat 44°15'08", long 123°05'34", Hydrologic Unit 17090003, 4 mi east of Harrisburg.

Owner: Roy Grimes.

AQUIFER.--Valley-fill deposits. Quarternary.

WELL CHARACTERISTICS.--Drilled irrigation well, 10 inch casing to 69 ft, completed depth of 98 ft, sounded depth of 82 ft on Sept. 23, 1998, perforated 21 to 29 ft, 34 to 65 ft.

INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS and Oregon Water Resources Department personnel since Feb. 1998; periodic measurements using electric sounder tape and steel tape by Oregon Water Resources Department personnel from June 1962 to January 1998.

DATUM.--Elevation of land surface is 327 ft above mean sea level (from topographic map). Measuring point: southside edge of pump 1.40 ft above land-surface datum.

REMARKS.--Unused. State observation well number 510. State well identification LINN 14047.

PERIOD OF RECORD.--July 1959, June 1962 to October 1985, August 1987 to current year.

EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 2.53 ft below land-surface datum, Jan. 21, 1964; lowest measurement, 10.35 ft below land-surface datum, Oct. 11, 1966.

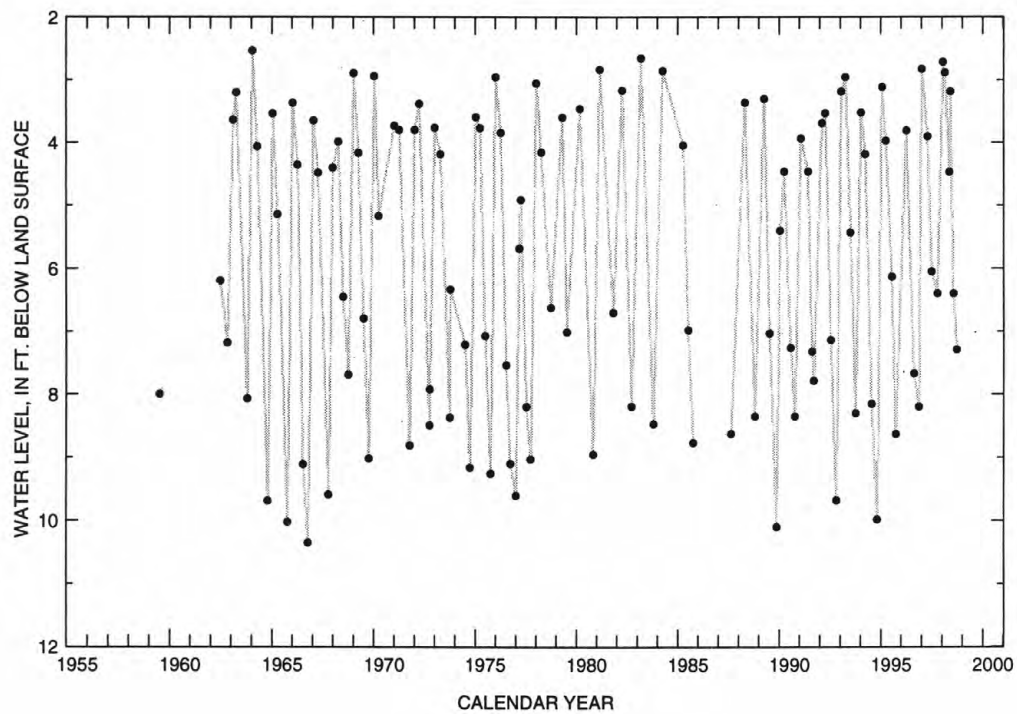
WATER LEVEL, IN FEET BELOW LAND SURFACE DATUM

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
JUL 10, 1959	8.00	JAN 06, 1971	3.73	APR 25, 1979	3.60	APR 10, 1992	3.53
JUN 26, 1962	6.19	APR 06	3.80	JUL 10	7.01	JUL 20	7.14
NOV 01	7.18	OCT 07	8.81	MAR 07, 1980	3.46	OCT 22	9.68
FEB 13, 1963	3.64	JAN 10, 1972	3.80	OCT 30	8.95	JAN 20, 1993	3.18
APR 04	3.20	MAR 31	3.38	MAR 01, 1981	2.83	APR 07	2.95
OCT 18	8.07	SEP 29	8.49	OCT 29	6.70	JUL 07	5.43
JAN 21, 1964	2.53	OCT 04	7.92	APR 05, 1982	3.16	OCT 08	8.30
APR 15	4.06	JAN 04, 1973	3.76	SEP 23	8.19	JAN 10, 1994	3.52
OCT 16	9.69	APR 23	4.18	MAR 11, 1983	2.65	MAR 29	4.18
JAN 19, 1965	3.54	OCT 03	8.37	OCT 21	8.47	JUL 21	8.15
APR 14	5.14	OCT 15	6.33	APR 04, 1984	2.85	OCT 27	9.98
OCT 08	10.02	JUL 09, 1974	7.21	APR 09, 1985	4.04	JAN 23, 1995	3.11
JAN 12, 1966	3.37	OCT 03	9.16	JUL 09	6.98	APR 05	3.97
APR 12	4.35	JAN 15, 1975	3.59	OCT 02	8.77	JUL 20	6.13
JUL 13	9.11	APR 02	3.77	AUG 19, 1987	8.62	SEP 28	8.63
OCT 11	10.35	JUL 02	7.07	APR 26, 1988	3.36	APR 05, 1996	3.81
JAN 19, 1967	3.65	OCT 08	9.26	OCT 19	8.35	AUG 19	7.67
APR 12	4.48	JAN 07, 1976	2.95	APR 07, 1989	3.30	NOV 14	8.20
OCT 12	9.59	APR 08	3.84	JUL 17	7.03	JAN 09, 1997	2.82
JAN 04, 1968	4.40	JUL 13	7.54	NOV 16	10.10	APR 19	3.90
APR 03	3.98	SEP 29	9.10	JAN 17, 1990	5.40	JUL 07	6.05
JUL 03	6.45	JAN 06, 1977	9.61	APR 02	4.46	OCT 17	6.40
OCT 03	7.69	MAR 08	5.68	JUL 27	7.26	JAN 22, 1998	2.71
JAN 08, 1969	2.89	APR 06	4.91	OCT 10	8.35	FEB 26	2.88
APR 03	4.16	JUL 12	8.20	JAN 29, 1991	3.93	MAY 14	4.47
JUL 03	6.79	SEP 28	9.03	JUN 05	4.46	MAY 28	3.18
OCT 06	9.02	JAN 11, 1978	3.05	AUG 15	7.32	JUL 28	6.40
JAN 12, 1970	2.94	APR 05	4.15	SEP 17	7.78	SEP 23	7.29
APR 03	5.17	SEP 28	6.62	FEB 11, 1992	3.69		

GROUND WATER LEVELS

LINN COUNTY--Continued

Well identifier continued: 441508123053001. Local number, 15S/03W-19ACD



GROUND WATER LEVELS

MARION COUNTY

444956123031701. Local number, 08S/03W-33DAB

LOCATION.--Lat 44°49'55", long 123°03'16", Hydrologic Unit 17090007, 1 mile east of Bunker Hill peak.

Owner: Carma Elmore.

AQUIFER.--Columbia River Basalt. Tertiary.

WELL CHARACTERISTICS.--Drilled domestic well, 8 inch casing to 83 ft, completed depth of 125 ft, sounded depth of 125 ft on Feb. 26, 1998.

INSTRUMENTATION.--Periodic measurements with chalked steel tape by USGS and Oregon Water Resources Department personnel since Feb. 26, 1998; periodic measurements using electric sounder tape and steel tape by Oregon Water Resources Department personnel from Sept. 1962 to Jan. 1998.

DATUM.--Elevation of land surface is 615 ft above National Geodetic Vertical Datum of 1929 (from topographic map). Measuring point: eastside access porthole in steel cap atop casing, 0.6 ft above land-surface datum.

REMARKS.--Used for domestic supply year round. State observation well number 622. State well identification MARI 12958.

PERIOD OF RECORD.--September 1962 to July 1979, October 1981 to current year.

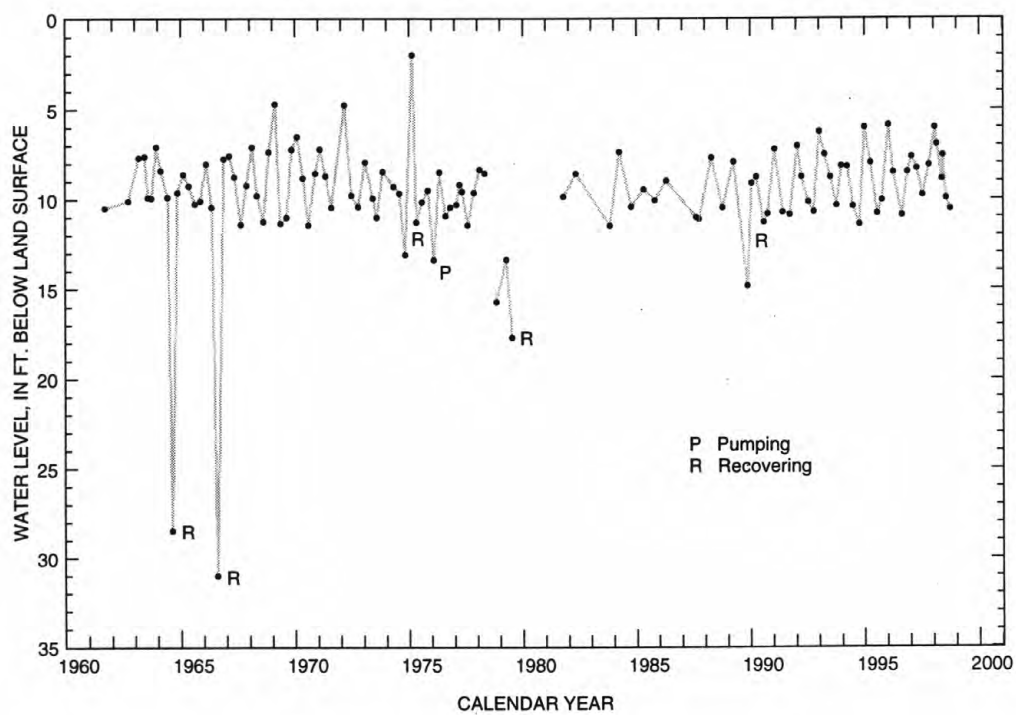
EXTREMES FOR PERIOD OF RECORD.--Highest water level measured, 1.98 ft below land-surface datum, Feb. 20, 1975; lowest measurement, 31.02 ft below land-surface datum, Aug. 5, 1966 (recovering).

WATER LEVEL, IN FEET BELOW LAND-SURFACE DATUM

Date	Water Level	Date	Water Level	Date	Water Level	Date	Water Level
SEP 11, 1961	10.50	NOV 05, 1969	7.22	NOV 09, 1977	9.64	OCT 08, 1992	10.70
SEP 18, 1962	10.10	FEB 04, 1970	6.50	FEB 09, 1978	8.35	JAN 07, 1993	6.25
MAR 11, 1963	7.67	MAY 11	8.83	MAY 03	8.55	APR 01	7.50
JUN 11	7.60	JUL 31	11.44	NOV 02	15.73	JUL 01	8.78
JUL 31	9.91	NOV 23	8.56	APR 11, 1979	13.36	OCT 07	10.35
SEP 27	9.94	FEB 04, 1971	7.19	JUL 13	17.70	DEC 28	8.14
DEC 09	7.06	MAY 07	8.69	OCT 16, 1981	9.84	MAR 30, 1994	8.18
FEB 21, 1964	8.40	AUG 04	10.46	MAY 06, 1982	8.57	JUN 29	10.40
JUN 08	9.89	MAR 02, 1972	4.75	NOV 03, 1983	11.48	OCT 10	11.40
AUG 18	28.46	JUN 23	9.78	APR 04, 1984	7.35	DEC 30	6.00
NOV 13	9.61	OCT 09	10.42	OCT 11	10.42	APR 03, 1995	7.96
FEB 11, 1965	8.62	JAN 29, 1973	7.93	APR 26, 1985	9.44	JUL 20	10.79
MAY 12	9.26	JUN 05	9.93	OCT 23	10.06	OCT 02	10.06
AUG 18	10.25	AUG 01	11.02	APR 23, 1986	8.96	JAN 17, 1996	5.88
NOV 09	10.10	NOV 08	8.44	AUG 11, 1987	11.01	APR 01	8.51
FEB 11, 1966	8.02	MAY 02, 1974	9.28	OCT 01	11.10	AUG 19	10.90
MAY 11	10.45	AUG 01	9.66	APR 13, 1988	7.67	NOV 14	8.49
AUG 05	31.02	OCT 31	13.10	OCT 13	10.48	JAN 17, 1997	7.64
NOV 22	7.72	FEB 20, 1975	1.98	APR 10, 1989	7.91	APR 10	8.28
FEB 16, 1967	7.57	APR 30	11.28	NOV 17	14.84	JUL 13	9.78
MAY 09	8.75	JUL 30	10.15	JAN 22, 1990	9.11	OCT 21	8.10
AUG 14	11.40	NOV 07	9.50	APR 05	8.75	JAN 22, 1998	6.02
NOV 16	9.22	FEB 05, 1976	13.38	JUL 31	11.28	FEB 26	6.94
FEB 13, 1968	7.08	MAY 05	8.48	OCT 03	10.82	MAY 14	8.87
MAY 02	9.80	AUG 11	10.93	JAN 24, 1991	7.22	JUN 01	7.55
AUG 12	11.24	OCT 27	10.45	JUN 03	10.73	JUL 20	9.96
NOV 06	7.34	FEB 03, 1977	10.29	SEP 24	10.87	SEP 24	10.57
FEB 14, 1969	4.69	MAR 25	9.19	JAN 23, 1992	7.03		
MAY 12	11.36	MAY 06	9.55	MAR 27	8.76		
AUG 20	11.02	AUG 04	11.44	JUL 15	10.15		

GROUND WATER LEVELS
MARION COUNTY--Continued

Well identifier continued: 444956123031701. Local number, 08S/03W-33DAB



CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN

CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

Water samples were collected from twelve monitoring wells in the Portland Basin during water year 1998. These data were collected to assist the City of Portland Bureau of Environmental Services in their ground-water assessments and to supplement USGS National Water-Quality Assessment Program data. Data are listed by site identification number. Site identification numbers are cross-referenced by latitude, longitude, and township, range and section number below:

Site ID Number	Latitude	Longitude	Township, Range, Section, and position in quarter
453037122373701	453037	1223737	Township 01S Range 01E Section 01 NE quarter
453032122385201	453032	1223852	Township 01S Range 01E Section 02 SE quarter
453447122401501	453447	1224015	Township 01N Range 01E Section 10 SW quarter
453458122412201	453458	1224122	Township 01N Range 01E Section 09 SE quarter
453515122420301	453515	1224203	Township 01N Range 01E Section 09 NW quarter
452807122392901	452807	1223929	Township 01S Range 01E Section 23 SW quarter
452927122374501	452927	1223745	Township 01S Range 01E Section 12 SE quarter
452950122382001	452950	1223820	Township 01S Range 01E Section 12 SW quarter
453523122433001	453523	1224330	Township 01N Range 01E Section 07 NE quarter
453356122372401	453356	1223724	Township 01N Range 01E Section 13 SE quarter
453419122391501	453419	1223915	Township 01N Range 01E Section 14 NW quarter
453317122384101	453317	1223841	Township 01N Range 01E Section 23 SE quarter

STATION	NUMBER	DATE	TEMPER- ATURE WATER (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)
453037122373701		10-06-97	15.0	<.1	218	6.1	6.6	74.4	<.02
453037122373701		10-06-97	15.0	<.1	218	6.1	6.6	74.4	--
453037122373701		04-15-98	14.0	.2	218	7.2	6.5	74.8	.06
453037122373701		04-15-98	14.0	.2	218	7.2	6.5	74.8	--
453032122385201		10-07-97	13.5	.2	249	5.6	6.7	102	<.02
453032122385201		10-07-97	13.5	.2	249	5.6	6.7	102	--
453032122385201		01-16-98	13.5	.4	249	5.8	6.7	104	<.02
453032122385201		01-16-98	13.5	.4	249	5.8	6.7	104	--
453032122385201		04-16-98	13.5	<.4	251	6.2	6.6	103	.02
453032122385201		04-16-98	13.5	<.4	251	6.2	6.6	103	--
453447122401501		10-08-97	14.0	.3	253	6.8	6.6	88.3	<.02
453447122401501		10-08-97	14.0	.3	253	6.8	6.6	88.3	--
453447122401501		01-28-98	14.0	.5	242	7.2	6.6	87.2	<.02
453447122401501		01-28-98	14.0	.5	242	7.2	6.6	87.2	--
453447122401501		04-08-98	14.5	.5	244	7.4	6.5	84.5	<.02
453447122401501		04-08-98	14.5	.5	244	7.4	6.5	84.5	--
453458122412201		10-09-97	14.0	.1	235	7.2	6.5	73.5	<.02
453458122412201		10-09-97	14.0	.1	235	7.2	6.5	73.5	--
453458122412201		01-27-98	14.0	.4	239	7.7	6.5	78.3	<.02
453458122412201		01-27-98	14.0	.4	239	7.7	6.5	78.3	--
453458122412201		04-07-98	14.5	.3	247	7.6	6.4	78.4	.03
453458122412201		04-07-98	14.5	.3	247	7.6	6.4	78.4	--
453515122420301		10-10-97	14.0	.2	252	7.0	6.5	82.5	<.02
453515122420301		10-10-97	14.0	.2	252	7.0	6.5	82.5	--
453515122420301		01-26-98	14.0	.3	270	7.1	6.5	90.6	<.02
453515122420301		01-26-98	14.0	.3	270	7.1	6.5	90.6	--
453515122420301		04-06-98	14.0	.3	267	7.2	6.5	90.3	<.02
453515122420301		04-06-98	14.0	.3	267	7.2	6.5	90.3	--
453515122420301		04-06-98	14.0	.3	267	7.2	6.5	90.3	--
452807122392901		10-16-97	15.0	.2	191	8.6	6.3	51.7	<.02
452807122392901		10-16-97	15.0	.2	191	8.6	6.3	51.7	--
452807122392901		04-02-98	14.0	.4	179	8.3	6.4	53.1	.03
452807122392901		04-02-98	14.0	.4	179	8.3	6.4	53.1	--
452927122374501		10-17-97	14.0	.4	262	7.2	6.5	93.9	.02
452927122374501		10-17-97	14.0	.4	262	7.2	6.5	93.9	--
452927122374501		04-01-98	13.5	.6	264	6.9	6.5	92.4	.03
452927122374501		04-01-98	13.5	.6	264	6.9	6.5	92.4	--
452950122382001		10-21-97	14.0	36	339	4.1	6.5	122	.03
452950122382001		10-21-97	14.0	36	339	4.1	6.5	122	--
452950122382001		04-21-98	14.5	41	344	4.5	6.4	121	.02
452950122382001		04-21-98	14.5	41	344	4.5	6.4	121	--
453523122433001		10-20-97	15.5	.4	334	5.6	6.4	81.2	.02
453523122433001		10-20-97	15.5	.4	334	5.6	6.4	81.2	--
453523122433001		01-22-98	15.0	.3	321	5.7	6.3	82.4	<.02
453523122433001		01-22-98	15.0	.3	321	5.7	6.3	82.4	--
453523122433001		04-09-98	16.0	.3	321	7.2	6.3	75.6	.02
453523122433001		04-09-98	16.0	.3	321	7.2	6.3	75.6	--
453356122372401		10-22-97	14.5	.5	253	8.1	6.9	91.3	<.02
453356122372401		10-22-97	14.5	.5	253	8.1	6.9	91.3	--
453356122372401		01-21-98	13.5	.3	244	8.1	6.9	89.3	<.02
453356122372401		01-21-98	13.5	.3	244	8.1	6.9	89.3	--
453356122372401		04-20-98	14.5	.1	257	8.4	6.7	92.5	.05
453356122372401		04-20-98	14.5	.1	257	8.4	6.7	92.5	--
453419122391501		10-23-97	15.5	.4	251	7.2	6.6	83.4	<.02
453419122391501		10-23-97	15.5	.4	251	7.2	6.6	83.4	--
453419122391501		01-29-98	15.5	4.0	235	9.1	6.6	76.9	.03
453419122391501		01-29-98	15.5	4.0	235	9.1	6.6	76.9	--
453419122391501		04-22-98	16.5	.9	240	8.9	6.6	78.1	.02
453419122391501		04-22-98	16.5	.9	240	8.9	6.6	78.1	--
453317122384101		10-24-97	16.5	2.0	292	6.2	6.8	118	<.02
453317122384101		10-24-97	16.5	2.0	292	6.2	6.8	118	--
453317122384101		01-30-98	17.0	.3	293	7.6	6.8	121	.02
453317122384101		01-30-98	17.0	.3	293	7.6	6.8	121	--
453317122384101		04-23-98	16.5	.7	295	8.1	6.8	120	.04
453317122384101		04-23-98	16.5	.7	295	8.1	6.8	120	--

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STATION	NUMBER	NITRO- GEN, NITRITE DIS- SOLVED	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED	NITRO- GEN, NO2+NO3 DIS- SOLVED	PHOS- PHORUS DIS- SOLVED	PHOS- PHORUS ORTHO, DIS- SOLVED	CARBON, ORGANIC DIS- SOLVED	CALCIUM DIS- SOLVED	MAGNE- SIUM, DIS- SOLVED	SODIUM, DIS- SOLVED	POTAS- SIUM, DIS- SOLVED	CHLO- RIDE, DIS- SOLVED
		(MG/L AS N)	(MG/L AS N)	(MG/L AS N)	(MG/L AS P)	(MG/L AS P)	(MG/L AS C)	(MG/L AS CA)	(MG/L AS MG)	(MG/L AS NA)	(MG/L AS K)	(MG/L AS CL)
		(00613)	(00623)	(00631)	(00666)	(00671)	(00681)	(00915)	(00925)	(00930)	(00935)	(00940)
453037122373701		<.01	<.2	4.9	.08	.10	.5	20	8.0	7.5	2.6	6.4
453037122373701		--	--	--	--	--	--	--	--	--	--	--
453037122373701		.01	<.1	4.9	.11	.10	.2	20	8.0	7.8	2.7	5.7
453037122373701		--	--	--	--	--	--	--	--	--	--	--
453032122385201		<.01	<.2	3.9	.10	.11	.6	23	11	6.7	2.9	7.0
453032122385201		--	--	--	--	--	--	--	--	--	--	--
453032122385201		<.01	<.1	4.0	.11	.12	.1	23	10	6.9	2.8	6.6
453032122385201		--	--	--	--	--	--	--	--	--	--	--
453032122385201		<.01	<.1	3.9	.12	.12	.2	24	11	6.9	2.8	6.6
453032122385201		--	--	--	--	--	--	--	--	--	--	--
453447122401501		<.01	<.2	5.3	.14	.15	.8	23	9.9	7.2	3.6	6.3
453447122401501		--	--	--	--	--	--	--	--	--	--	--
453447122401501		<.01	<.1	4.9	.12	.16	.4	23	9.6	7.2	3.6	5.3
453447122401501		--	--	--	--	--	--	--	--	--	--	--
453447122401501		<.01	<.1	5.0	.17	.17	.3	22	9.2	7.1	3.5	6.3
453447122401501		--	--	--	--	--	--	--	--	--	--	--
453458122412201		<.01	<.2	6.0	.14	.14	.6	21	8.5	7.1	3.6	6.7
453458122412201		--	--	--	--	--	--	--	--	--	--	--
453458122412201		<.01	<.1	5.8	.09	.14	.5	23	9.1	7.4	3.5	6.1
453458122412201		--	--	--	--	--	--	--	--	--	--	--
453458122412201		<.01	<.1	6.1	.14	.14	.3	23	9.1	7.6	3.8	6.5
453458122412201		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.01	<.2	6.3	.12	.11	.4	23	8.9	7.8	3.7	6.7
453515122420301		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.01	<.1	6.3	.10	.12	.3	27	10	8.5	3.9	6.5
453515122420301		--	--	--	--	--	--	--	--	--	--	--
453515122420301		.02	<.1	6.5	.13	.15	.3	26	9.9	8.3	3.9	6.9
453515122420301		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.01	<.2	5.2	.10	.10	.3	14	8.0	6.6	2.2	5.5
452807122392901		--	--	--	--	--	--	--	--	--	--	--
452807122392901		<.01	<.1	4.5	.13	.11	.3	13	7.5	6.8	2.1	5.1
452807122392901		--	--	--	--	--	--	--	--	--	--	--
452927122374501		<.01	<.2	5.9	.10	.11	.3	24	11	7.2	3.6	6.6
452927122374501		--	--	--	--	--	--	--	--	--	--	--
452927122374501		<.01	<.1	5.7	.12	.12	.4	24	11	7.6	3.5	6.1
452927122374501		--	--	--	--	--	--	--	--	--	--	--
452950122382001		<.01	<.2	8.2								

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN

CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

STATION	NUMBER	SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)
453037122373701	13	<.1	63	--	--	--	--	--	--	--	--	<3
453037122373701	--	--	--	--	<1	10	<1	<1	1	<1	<1	--
453037122373701	13	<.1	63	--	--	--	--	--	--	--	--	<10
453037122373701	--	--	--	--	<1	11	<1	<1	1	<1	1	--
453032122385201	12	.1	67	--	--	--	--	--	--	--	--	<3
453032122385201	--	--	--	--	1	7	<1	<1	2	<1	1	--
453032122385201	12	.1	67	--	--	--	--	--	--	--	--	<10
453032122385201	--	--	--	--	1	7	<1	<1	<1	<1	<1	--
453032122385201	12	.1	68	--	--	--	--	--	--	--	--	<10
453032122385201	--	--	--	--	<1	7	<1	<1	2	<1	<1	--
453447122401501	17	.1	65	--	--	--	--	--	--	--	--	<3
453447122401501	--	--	--	--	2	7	<1	<1	2	<1	<1	--
453447122401501	18	.1	66	--	--	--	--	--	--	--	--	<10
453447122401501	--	--	--	--	2	6	<1	<1	1	<1	<1	--
453447122401501	18	.1	64	--	--	--	--	--	--	--	--	<10
453447122401501	--	--	--	--	2	6	<1	<1	2	<1	<1	--
453458122412201	17	.1	62	--	--	--	--	--	--	--	--	<3
453458122412201	--	--	--	--	2	4	<1	<1	2	<1	<1	--
453458122412201	16	.1	65	--	--	--	--	--	--	--	--	<10
453458122412201	--	--	--	--	2	4	<1	<1	2	<1	<1	--
453458122412201	18	.2	62	--	--	--	--	--	--	--	--	<10
453458122412201	--	--	--	--	2	4	<1	<1	2	<1	<1	--
453515122420301	17	.1	62	--	--	--	--	--	--	--	--	<3
453515122420301	--	--	--	--	2	6	<1	<1	2	<1	<1	--
453515122420301	18	.1	65	--	--	--	--	--	--	--	--	<10
453515122420301	--	--	--	--	2	6	<1	<1	<1	<1	<1	--
453515122420301	18	.2	62	--	--	--	--	--	--	--	--	<10
453515122420301	--	--	--	--	2	6	<1	<1	1	<1	<1	--
453515122420301	--	--	--	--	--	--	--	--	--	--	--	--
452807122392901	16	.1	68	--	--	--	--	--	--	--	--	3
452807122392901	--	--	--	--	2	11	<1	<1	1	2	<1	--
452807122392901	11	.1	67	--	--	--	--	--	--	--	--	<10
452807122392901	--	--	--	--	2	10	<1	<1	<1	<1	<1	--
452927122374501	16	.1	64	--	--	--	--	--	--	--	--	<3
452927122374501	--	--	--	--	1	15	<1	<1	3	<1	<1	--
452927122374501	15	.1	63	--	--	--	--	--	--	--	--	<10
452927122374501	--	--	--	--	1	16	<1	<1	1	<1	<1	--
452950122382001	24	.1	66	--	--	--	--	--	--	--	--	<3
452950122382001	--	--	--	--	<1	13	<1	<1	2	<1	1	--
452950122382001	23	.1	65	--	--	--	--	--	--	--	--	<10
452950122382001	--	--	--	--	<1	12	<1	<1	3	<1	<1	--
453523122433001	25	.1	69	--	--	--	--	--	--	--	--	4
453523122433001	--	--	--	--	3	30	<1	<1	2	<1	<1	--
453523122433001	22	.2	71	--	--	--	--	--	--	--	--	<10
453523122433001	--	--	--	--	2	29	<1	<1	2	<1	1	--
453523122433001	26	.1	71	--	--	--	--	--	--	--	--	<10
453523122433001	--	--	--	--	2	32	<1	<1	2	<1	1	--
453356122372401	15	.2	59	--	--	--	--	--	--	--	--	3
453356122372401	--	--	--	--	2	6	<1	<1	3	2	<1	--
453356122372401	14	.1	59	--	--	--	--	--	--	--	--	<10
453356122372401	--	--	--	--	1	5	<1	<1	2	2	<1	--
453356122372401	15	.1	58	--	--	--	--	--	--	--	--	<10
453356122372401	--	--	--	--	1	6	<1	<1	3	<1	<1	--
453419122391501	17	.1	60	--	--	--	--	--	--	--	--	4
453419122391501	--	--	--	--	2	5	<1	<1	2	<1	<1	--
453419122391501	17	.1	61	--	--	--	--	--	--	--	--	<10
453419122391501	--	--	--	--	1	4	<1	<1	2	2	<1	--
453419122391501	17	.1	63	--	--	--	--	--	--	--	--	<10
453419122391501	--	--	--	--	2	5	<1	<1	3	<1	<1	--
453317122384101	16	.1	59	--	--	--	--	--	--	--	--	8
453317122384101	--	--	--	--	2	8	<1	<1	4	<1	<1	--
453317122384101	15	.1	61	--	--	--	--	--	--	--	--	<10
453317122384101	--	--	--	--	1	8	<1	<1	4	<1	<1	--
453317122384101	16	.2	60	--	--	--	--	--	--	--	--	20
453317122384101	--	--	--	--	1	8	<1	<1	6	<1	<1	--

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STATION	NUMBER	LEAD, DIS-	MANGA- NESE, DIS-	MOLYB- DENUM, DIS-	NICKEL, DIS-	SILVER, DIS-	ZINC, DIS-	ANTI- MONY, DIS-	ALUM- INUM, DIS-	SELE- NIUM, DIS-	PROP- CHLOR, WATER,	BUTYL- ATE, WATER,
		SOLVED (UG/L AS PB) (01049)	SOLVED (UG/L AS MN) (01056)	SOLVED (UG/L AS MO) (01060)	SOLVED (UG/L AS NI) (01065)	SOLVED (UG/L AS AG) (01075)	SOLVED (UG/L AS ZN) (01090)	SOLVED (UG/L AS SB) (01095)	SOLVED (UG/L AS AL) (01106)	SOLVED (UG/L AS SE) (01145)	REC (UG/L) (04024)	REC (UG/L) (04028)
453037122373701	--	--	<1	--	--	--	--	--	--	--	<.007	<.002
453037122373701	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453037122373701	--	--	<4	--	--	--	--	--	--	--	<.007	<.002
453037122373701	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453032122385201	--	--	<1	--	--	--	--	--	--	--	<.007	<.002
453032122385201	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453032122385201	--	--	<4	--	--	--	--	--	--	--	<.007	<.002
453032122385201	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453447122401501	--	--	1	--	--	--	--	--	--	--	<.007	<.002
453447122401501	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	--	--
453447122401501	--	--	<4	--	--	--	--	--	--	--	<.007	<.002
453447122401501	<1	<1	1	<1	1	<1	1	<1	<1	<1	--	--
453447122401501	--	--	<4	--	--	--	--	--	--	--	<.007	<.002
453447122401501	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	--	--
453458122412201	--	--	<1	--	--	--	--	--	--	--	<.007	<.002
453458122412201	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453458122412201	--	--	<4	--	--	--	--	--	--	--	<.007	<.002
453458122412201	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	--	--
453458122412201	--	--	<4	--	--	--	--	--	--	--	<.007	<.002
453458122412201	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453515122420301	--	--	<4	--	--	--	--	--	--	--	<.007	<.002
453515122420301	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453515122420301	--	--	<1	--	--	--	--	--	--	--	<.007	<.002
453515122420301	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453515122420301	--	--	<4	--	--	--	--	--	--	--	<.007	<.002
453515122420301	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453515122420301	--	--	<4	--	--	--	--	--	--	--	<.007	<.002
453515122420301	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453515122420301	--	--	<1	--	--	--	--	--	--	--	<.007	<.002
453515122420301	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453515122420301	--	--	<1	--	--	--	--	--	--	--	<.007	<.002
453515122420301	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453515122420301	--	--	<1	--	--	--	--	--	--	--	<.007	<.002
453515122420301	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	--	--
453515122420301	--	--	<1	--	--	--	--	--				

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN
CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

STATION	NUMBER	SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOFOS WATER, DISS, REC (UG/L) (04095)	URANIUM NATURAL DIS- SOLVED (UG/L) AS U (22703)	DI- BROMO- METHANE WATER RECOVER (UG/L) (30217)	DI- CHLORO- BROMO- METHANE TOTAL (UG/L) (32101)	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L) (32102)	1,2-DI- CHLORO- ETHANE TOTAL (UG/L) (32103)	BROMO- FORM TOTAL (UG/L) (32104)
453037122373701		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	.104	<.134	<.104
453037122373701		--	--	--	--	--	<1	--	--	--	--	--
453037122373701		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.09	<.134	<.104
453037122373701		--	--	--	--	--	<1	--	--	--	--	--
453032122385201		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	.279	<.134	<.104
453032122385201		--	--	--	--	--	<1	--	--	--	--	--
453032122385201		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	.275	<.134	<.104
453032122385201		--	--	--	--	--	<1	--	--	--	--	--
453032122385201		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	.286	<.134	<.104
453032122385201		--	--	--	--	--	<1	--	--	--	--	--
453447122401501		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.04	<.134	<.104
453447122401501		--	--	--	--	--	<1	--	--	--	--	--
453447122401501		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.041	<.134	<.104
453447122401501		--	--	--	--	--	<1	--	--	--	--	--
453447122401501		<.005	<.018	<.002	<.004	<.003	--	<.05	E.009	E.048	<.134	<.104
453447122401501		--	--	--	--	--	<1	--	--	--	--	--
453458122412201		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.05	<.134	<.104
453458122412201		--	--	--	--	--	<1	--	--	--	--	--
453458122412201		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.055	<.134	<.104
453458122412201		--	--	--	--	--	<1	--	--	--	--	--
453458122412201		<.005	<.018	<.002	<.004	<.003	--	<.05	E.012	E.058	<.134	<.104
453458122412201		--	--	--	--	--	<1	--	--	--	--	--
453515122420301		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.06	<.134	<.104
453515122420301		--	--	--	--	--	<1	--	--	--	--	--
453515122420301		<.005	<.018	E.0017	<.004	<.003	--	<.05	E.0082	E.047	<.134	<.104
453515122420301		--	--	--	--	--	<1	--	--	--	--	--
453515122420301		<.005	<.018	E.0035	<.004	<.003	--	<.05	E.0092	E.049	<.134	<.104
453515122420301		--	--	--	--	--	<1	--	--	--	--	--
453515122420301		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	<.088	<.134	<.104
452807122392901		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	<.088	<.134	<.104
452807122392901		--	--	--	--	--	<1	--	--	--	--	--
452807122392901		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	<.088	<.134	<.104
452807122392901		--	--	--	--	--	<1	--	--	--	--	--
452927122374501		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.02	<.134	<.104
452927122374501		--	--	--	--	--	<1	--	--	--	--	--
452927122374501		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.03	<.134	<.104
452927122374501		--	--	--	--	--	<1	--	--	--	--	--
452950122382001		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	<.088	<.134	<.104
452950122382001		--	--	--	--	--	<1	--	--	--	--	--
452950122382001		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	<.088	<.134	<.104
452950122382001		--	--	--	--	--	<1	--	--	--	--	--
453523122433001		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.01	<.134	<.104
453523122433001		--	--	--	--	--	<1	--	--	--	--	--
453523122433001		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.021	<.134	<.104
453523122433001		--	--	--	--	--	<1	--	--	--	--	--
453523122433001		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.019	<.134	<.104
453523122433001		--	--	--	--	--	<1	--	--	--	--	--
453356122372401		<.005	<.018	<.002	<.004	<.003	--	<.05	E.02	E.03	<.134	<.104
453356122372401		--	--	--	--	--	<1	--	--	--	--	--
453356122372401		<.005	<.018	E.0030	<.004	<.003	--	<.05	E.026	E.037	<.134	<.104
453356122372401		--	--	--	--	--	<1	--	--	--	--	--
453356122372401		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.036	<.134	<.104
453356122372401		--	--	--	--	--	<1	--	--	--	--	--
453419122391501		<.005	<.018	<.002	<.004	<.003	--	<.05	E.02	E.04	<.134	<.104
453419122391501		--	--	--	--	--	<1	--	--	--	--	--
453419122391501		<.005	<.018	E.0020	<.004	<.003	--	<.05	E.024	E.039	<.134	<.104
453419122391501		--	--	--	--	--	<1	--	--	--	--	--
453419122391501		<.005	<.018	E.0025	<.004	<.003	--	<.05	E.02	E.039	<.134	<.104
453419122391501		--	--	--	--	--	<1	--	--	--	--	--
453317122384101		<.005	<.018	<.002	<.004	<.003	--	--	--	--	--	--
453317122384101		--	--	--	--	--	<1	--	--	--	--	--
453317122384101		<.005	<.018	<.002	<.004	<.003	--	<.05	<.048	E.052	<.134	<.104
453317122384101		--	--	--	--	--	<1	--	--	--	--	--
453317122384101		<.005	<.018	E.0014	<.004	<.003	--	<.05	<.048	E.055	<.134	<.104
453317122384101		--	--	--	--	--	<1	--	--	--	--	--

E Estimated

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN

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CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

STATION	NUMBER	CHLORO- DI- BROMO- METHANE TOTAL (UG/L) (32105)	CHLORO- FORM TOTAL (UG/L) (32106)	TOLUENE TOTAL (UG/L) (34010)	BENZENE TOTAL (UG/L) (34030)	ACRO- LEIN TOTAL (UG/L) (34210)	ACRYLO- NITRILE TOTAL (UG/L) (34215)	ALPHA BHC DIS- SOLVED TOTAL (UG/L) (34253)	CHLORO- BENZENE TOTAL (UG/L) (34301)	CHLORO- ETHANE TOTAL (UG/L) (34311)	ETHYL- BENZENE TOTAL (UG/L) (34371)	ETHANE HEXA- CHLORO- WATER UNPLTRD RECOVER (UG/L) (34396)
453037122373701		<.182	E.07	<.038	<.032	<1.43	<1.23	<.002	<.028	<.12	<.03	<.362
453037122373701		---	---	---	---	---	---	---	---	---	---	---
453037122373701		<.182	E.069	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453037122373701		---	---	---	---	---	---	---	---	---	---	---
453032122385201		<.182	E.02	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453032122385201		---	---	---	---	---	---	---	---	---	---	---
453032122385201		<.182	E.027	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453032122385201		---	---	---	---	---	---	---	---	---	---	---
453032122385201		<.182	E.028	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453032122385201		---	---	---	---	---	---	---	---	---	---	---
453447122401501		<.182	.230	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453447122401501		---	---	---	---	---	---	---	---	---	---	---
453447122401501		<.182	.266	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453447122401501		---	---	---	---	---	---	---	---	---	---	---
453447122401501		<.182	.281	E.0087	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453447122401501		---	---	---	---	---	---	---	---	---	---	---
453458122412201		<.182	1.32	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453458122412201		---	---	---	---	---	---	---	---	---	---	---
453458122412201		<.182	.615	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453458122412201		---	---	---	---	---	---	---	---	---	---	---
453458122412201		<.182	.654	E.012	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453458122412201		---	---	---	---	---	---	---	---	---	---	---
453515122420301		<.182	.901	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453515122420301		---	---	---	---	---	---	---	---	---	---	---
453515122420301		<.182	.481	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453515122420301		---	---	---	---	---	---	---	---	---	---	---
453515122420301		<.182	.545	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453515122420301		---	---	---	---	---	---	---	---	---	---	---
453515122420301		<.182	E.06	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453515122420301		---	---	---	---	---	---	---	---	---	---	---
452807122392901		<.182	E.053	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
452807122392901		---	---	---	---	---	---	---	---	---	---	---
452807122392901		<.182	1.47	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
452927122374501		---	---	---	---	---	---	---	---	---	---	---
452927122374501		<.182	1.30	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
452927122374501		---	---	---	---	---	---	---	---	---	---	---
452950122382001		<.182	E.05	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
452950122382001		---	---	---	---	---	---	---	---	---	---	---
452950122382001		<.182	E.073	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
452950122382001		---	---	---	---	---	---	---	---	---	---	---
452950122382001		<.182	E.04	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453523122433001		---	---	---	---	---	---	---	---	---	---	---
453523122433001		<.182	E.034	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453523122433001		---	---	---	---	---	---	---	---	---	---	---
453523122433001		<.182	E.038	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453523122433001		---	---	---	---	---	---	---	---	---	---	---
453356122372401		<.182	.546	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453356122372401		---	---	---	---	---	---	---	---	---	---	---
453356122372401		<.182	.654	E.0042	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453356122372401		---	---	---	---	---	---	---	---	---	---	---
453356122372401		<.182	.601	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453356122372401		---	---	---	---	---	---	---	---	---	---	---
453419122391501		<.182	.388	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453419122391501		---	---	---	---	---	---	---	---	---	---	---
453419122391501		<.182	.471	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453419122391501		---	---	---	---	---	---	---	---	---	---	---
453419122391501		<.182	.402	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453419122391501		---	---	---	---	---	---	---	---	---	---	---
453317122384101		---	---	---	---	---	---	<.002	---	---	---	---
453317122384101		<.182	.386	<.038	<.032	<250	<1.23	<.002	<.028	<.12	<.03	<.362
453317122384101		---	---	---	---	---	---	---	---	---	---	---
453317122384101		<.182	.415	<.038	<.032	---	<1.23	<.002	<.028	<.12	<.03	<.362
453317122384101		---	---	---	---	---	---	---	---	---	---	---

E Estimated

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN
CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

STATION	NUMBER	METHYL- BROMIDE TOTAL (UG/L) (34413)	METHYL- CHLO- RIDE TOTAL (UG/L) (34418)	METHYL- ENE CHLO- RIDE TOTAL (UG/L) (34423)	TETRA- CHLORO- ETHYL- ENE TOTAL (UG/L) (34475)	TRI- CHLORO- FLUORO- METHANE TOTAL (UG/L) (34488)	1,1-DI- CHLORO- ETHANE TOTAL (UG/L) (34496)	1,1-DI- CHLORO- ETHYL- ENE TOTAL (UG/L) (34501)	1,1,1- TRI- CHLORO- ETHANE TOTAL (UG/L) (34506)	1,1,2- TRI- CHLORO- ETHANE TOTAL (UG/L) (34511)	ETHANE, 1,1,2,2 TETRA- CHLORO- WAT UNF REC (UG/L) (34516)	BENZENE O-DI- CHLORO- WATER UNFLTRD REC (UG/L) (34536)
453037122373701		<.148	<.254	<.382	4.31	<.092	<.066	<.044	E.06	<.064	<.132	<.048
453037122373701		--	--	--	--	--	--	--	--	--	--	--
453037122373701		<.148	<.254	<.382	4.27	<.092	E.01	E.011	E.062	<.064	<.132	<.048
453037122373701		--	--	--	--	--	--	--	--	--	--	--
453032122385201		<.148	E.01	<.382	.151	<.092	<.066	<.044	E.01	<.064	<.132	<.048
453032122385201		--	--	--	--	--	--	--	--	--	--	--
453032122385201		<.148	<.254	<.382	.166	<.092	<.066	<.044	E.012	<.064	<.132	<.048
453032122385201		--	--	--	--	--	--	--	--	--	--	--
453032122385201		<.148	<.254	<.382	.192	<.092	<.066	<.044	E.013	<.064	<.132	<.048
453032122385201		--	--	--	--	--	--	--	--	--	--	--
453447122401501		<.148	E.02	<.382	6.82	<.092	<.066	<.044	.142	<.064	<.132	<.048
453447122401501		--	--	--	--	--	--	--	--	--	--	--
453447122401501		<.148	<.254	<.382	6.63	<.092	<.066	<.044	.116	<.064	<.132	<.048
453447122401501		--	--	--	--	--	--	--	--	--	--	--
453447122401501		<.148	<.254	<.382	E5.96	<.092	<.066	<.044	.139	<.064	<.132	<.048
453447122401501		--	--	--	--	--	--	--	--	--	--	--
453458122412201		<.148	E.01	<.382	E4.39	<.092	<.066	<.044	.222	<.064	<.132	<.048
453458122412201		--	--	--	--	--	--	--	--	--	--	--
453458122412201		<.148	<.254	<.382	3.52	<.092	<.066	E.014	.228	<.064	<.132	<.048
453458122412201		--	--	--	--	--	--	--	--	--	--	--
453458122412201		<.148	<.254	<.382	E3.06	<.092	<.066	E.043	.402	<.064	<.132	<.048
453458122412201		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.148	E.01	<.382	E3.90	<.092	<.066	E.01	.261	<.064	<.132	<.048
453515122420301		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.148	<.254	<.382	2.10	<.092	E.016	E.029	.322	<.064	<.132	<.048
453515122420301		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.148	<.254	<.382	E2.14	<.092	E.018	E.03	.300	<.064	<.132	<.048
453515122420301		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.148	<.254	<.382	E2.14	<.092	E.018	E.03	.300	<.064	<.132	<.048
453515122420301		--	--	--	--	--	--	--	--	--	--	--
452807122392901		<.148	E.02	<.382	.130	<.092	<.066	<.044	E.08	<.064	<.132	<.048
452807122392901		--	--	--	--	--	--	--	--	--	--	--
452807122392901		<.148	<.254	<.382	E.088	<.092	<.066	<.044	E.058	<.064	<.132	<.048
452807122392901		--	--	--	--	--	--	--	--	--	--	--
452927122374501		<.148	<.254	<.382	.271	<.092	<.066	<.044	.195	<.064	<.132	<.048
452927122374501		--	--	--	--	--	--	--	--	--	--	--
452927122374501		<.148	<.254	<.382	.238	<.092	<.066	<.044	.161	<.064	<.132	<.048
452927122374501		--	--	--	--	--	--	--	--	--	--	--
452950122382001		<.148	<.254	<.382	<.038	<.092	<.066	<.044	<.032	<.064	<.132	<.048
452950122382001		--	--	--	--	--	--	--	--	--	--	--
452950122382001		<.148	<.254	<.382	<.038	<.092	<.066	<.044	<.032	<.064	<.132	<.048
452950122382001		--	--	--	--	--	--	--	--	--	--	--
453523122433001		<.148	<.254	<.382	E.01	<.092	<.066	<.044	E.07	<.064	<.132	<.048
453523122433001		--	--	--	--	--	--	--	--	--	--	--
453523122433001		<.148	<.254	<.382	E.016	<.092	<.066	<.044	E.071	<.064	<.132	<.048
453523122433001		--	--	--	--	--	--	--	--	--	--	--
453523122433001		<.148	<.254	<.382	E.017	<.092	<.066	<.044	E.07	<.064	<.132	<.048
453523122433001		--	--	--	--	--	--	--	--	--	--	--
453356122372401		<.148	<.254	<.382	.337	<.092	<.066	E.01	.132	<.064	<.132	<.048
453356122372401		--	--	--	--	--	--	--	--	--	--	--
453356122372401		<.148	<.254	<.382	.418	E.01	<.066	E.023	.150	<.064	<.132	<.048
453356122372401		--	--	--	--	--	--	--	--	--	--	--
453356122372401		<.148	<.254	<.382	.352	<.092	<.066	<.044	.128	<.064	<.132	<.048
453356122372401		--	--	--	--	--	--	--	--	--	--	--
453419122391501		<.148	<.254	<.382	1.86	<.092	<.066	<.044	E.09	<.064	<.132	<.048
453419122391501		--	--	--	--	--	--	--	--	--	--	--
453419122391501		<.148	<.254	<.382	1.68	<.092	<.066	<.044	E.07	<.064	<.132	<.048
453419122391501		--	--	--	--	--	--	--	--	--	--	--
453419122391501		<.148	<.254	<.382	.952	<.092	<.066	<.044	E.071	<.064	<.132	<.048
453419122391501		--	--	--	--	--	--	--	--	--	--	--
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		<.148	<.254	<.382	.775	E.03	E.028	E.037	.272	<.064	<.132	<.048
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		<.148	<.254	<.382	E.51	E.035	E.032	E.048	.286	<.064	<.132	<.048
453317122384101		--	--	--	--	--	--	--	--	--	--	--

E Estimated

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E Estimated

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN
CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

STATION	NUMBER	ALKALINITY	VINYL	TRI-CHLORO-	LINDANE	DI-ELDRIN	METO-	MALA-	PARA-	DI-	ATRA-	HEXA-
		WAT DIS	CHLO-	CHLORO-		DI-	LACHLOR	THION-	AZINON-	ZINE,	CHLORO-	
		TOT IT	RIDE	ETHYL-		SOLVED	WATER	DIS-	DIS-	WATER,	BUT-	
		MG/L AS	TOTAL	TOTAL	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	ADIENE
		CAC03	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	(UG/L)	TOTAL
		(39086)	(39175)	(39180)	(39341)	(39381)	(39415)	(39532)	(39542)	(39572)	(39632)	(39702)
453037122373701	61.0		<.112	1.72	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453037122373701	61.0		---	---	---	---	---	---	---	---	---	---
453037122373701	61.3		<.112	1.43	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453037122373701	61.3		---	---	---	---	---	---	---	---	---	---
453032122385201	83.5		<.112	E.01	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453032122385201	83.5		---	---	---	---	---	---	---	---	---	---
453032122385201	85.0		<.112	E.015	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453032122385201	85.0		---	---	---	---	---	---	---	---	---	---
453032122385201	84.5		<.112	E.014	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453032122385201	84.5		---	---	---	---	---	---	---	---	---	---
453447122401501	72.4		<.112	E.05	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453447122401501	72.4		---	---	---	---	---	---	---	---	---	---
453447122401501	71.5		<.112	E.053	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453447122401501	71.5		---	---	---	---	---	---	---	---	---	---
453447122401501	69.3		<.112	E.05	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453447122401501	69.3		---	---	---	---	---	---	---	---	---	---
453458122412201	60.2		<.112	.557	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453458122412201	60.2		---	---	---	---	---	---	---	---	---	---
453458122412201	64.2		<.112	.427	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453458122412201	64.2		---	---	---	---	---	---	---	---	---	---
453458122412201	64.3		<.112	.636	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453458122412201	64.3		---	---	---	---	---	---	---	---	---	---
453515122420301	67.6		<.112	1.13	<.004	<.001	<.002	<.005	<.004	<.002	E.0013	<.142
453515122420301	67.6		---	---	---	---	---	---	---	---	---	---
453515122420301	74.3		<.112	2.17	<.004	<.001	<.002	<.005	<.004	<.002	E.0011	<.142
453515122420301	74.3		---	---	---	---	---	---	---	---	---	---
453515122420301	74.0		<.112	1.94	<.004	<.001	<.002	<.005	<.004	<.002	E.0013	<.142
453515122420301	74.0		---	---	---	---	---	---	---	---	---	---
453515122420301	74.0		---	---	---	---	---	---	---	---	---	---
452807122392901	42.4		<.112	.154	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
452807122392901	42.4		---	---	---	---	---	---	---	---	---	---
452807122392901	43.5		<.112	E.091	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
452807122392901	43.5		---	---	---	---	---	---	---	---	---	---
452927122374501	77.0		<.112	.367	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
452927122374501	77.0		---	---	---	---	---	---	---	---	---	---
452927122374501	75.7		<.112	.294	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
452927122374501	75.7		---	---	---	---	---	---	---	---	---	---
452950122382001	99.6		<.112	<.038	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
452950122382001	99.6		---	---	---	---	---	---	---	---	---	---
452950122382001	99.5		<.112	<.038	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
452950122382001	99.5		---	---	---	---	---	---	---	---	---	---
453523122433001	66.6		<.112	<.038	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453523122433001	66.6		---	---	---	---	---	---	---	---	---	---
453523122433001	67.5		<.112	<.038	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453523122433001	67.5		---	---	---	---	---	---	---	---	---	---
453523122433001	62.0		<.112	<.038	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453523122433001	62.0		---	---	---	---	---	---	---	---	---	---
453356122372401	74.8		<.112	E.05	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453356122372401	74.8		---	---	---	---	---	---	---	---	---	---
453356122372401	73.2		<.112	E.062	<.004	<.001	<.002	<.005	<.004	<.002	E.0035	<.142
453356122372401	73.2		---	---	---	---	---	---	---	---	---	---
453356122372401	75.8		<.112	E.058	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453356122372401	75.8		---	---	---	---	---	---	---	---	---	---
453419122391501	68.4		<.112	.201	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453419122391501	68.4		---	---	---	---	---	---	---	---	---	---
453419122391501	63.0		<.112	.135	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453419122391501	63.0		---	---	---	---	---	---	---	---	---	---
453419122391501	64.0		<.112	.145	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453419122391501	64.0		---	---	---	---	---	---	---	---	---	---
453317122384101	96.9		---	---	<.004	<.001	<.002	<.005	<.004	<.002	<.001	---
453317122384101	96.9		---	---	---	---	---	---	---	---	---	---
453317122384101	99.0		<.112	.221	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453317122384101	99.0		---	---	---	---	---	---	---	---	---	---
453317122384101	98.5		<.112	.214	<.004	<.001	<.002	<.005	<.004	<.002	<.001	<.142
453317122384101	98.5		---	---	---	---	---	---	---	---	---	---

E Estimated

425

STATION	NUMBER	ALA-CHLOR,	ACETO-CHLOR,	METHYL-ACRY-LATE	PREH-NITENE	ISO-DURENE	BROMO-ETHENE	ETHER-TERT-BUTYL	ETHER-TERT-PENTYL	SOLIDS, RESIDUE AT 180 DEG. C	BROMIDE DIS-SOLVED (AS BR)
		WATER, DISS, REC, (UG/L) (46342)	WATER, FLTRD REC (UG/L) (49260)	WATER UNFLTRD RECOVER (UG/L) (49991)	WATER UNFLTRD RECOVER (UG/L) (49999)	WATER UNFLTRD RECOVER (UG/L) (50000)	WATER UNFLTRD RECOVER (UG/L) (50002)	ETHYL-UNFLTRD RECOVER (UG/L) (50004)	METHYL-UNFLTRD RECOVER (UG/L) (50005)	(70300)	(71870)
453037122373701	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	185	.04	
453037122373701	--	--	--	--	--	--	--	--	--	--	
453037122373701	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	185	.05	
453037122373701	--	--	--	--	--	--	--	--	--	--	
453032122385201	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	199	.03	
453032122385201	--	--	--	--	--	--	--	--	--	--	
453032122385201	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	198	.03	
453032122385201	--	--	--	--	--	--	--	--	--	--	
453032122385201	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	201	.03	
453032122385201	--	--	--	--	--	--	--	--	--	--	
453447122401501	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	205	.04	
453447122401501	--	--	--	--	--	--	--	--	--	--	
453447122401501	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	198	.05	
453447122401501	--	--	--	--	--	--	--	--	--	--	
453447122401501	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	200	.05	
453447122401501	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	194	.05	
453458122412201	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	192	.06	
453458122412201	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	199	.06	
453458122412201	--	--	--	--	--	--	--	--	--	--	
453515122420301	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	200	.04	
453515122420301	--	--	--	--	--	--	--	--	--	--	
453515122420301	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	209	.05	
453515122420301	--	--	--	--	--	--	--	--	--	--	
453515122420301	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	207	.05	
453515122420301	--	--	--	--	--	--	--	--	--	--	
453515122420301	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	179	.01	
453515122420301	--	--	--	--	--	--	--	--	--	--	
452807122392901	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	166	.02	
452807122392901	--	--	--	--	--	--	--	--	--	--	
452807122392901	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	204	.03	
452807122392901	--	--	--	--	--	--	--	--	--	--	
452927122374501	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	204	.04	
452927122374501	--	--	--	--	--	--	--	--	--	--	
452927122374501	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112	254	.27	
452927122374501	--	--	--	--	--	--	--	--	--	--	
452950122382001	<.002	<.002	<.612	<.23	<.24	<.1	<.054	<.112			

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN

CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

STATION	NUMBER	2BUTENE	METHAC-	CARBON	CIS-1,2	2-HEXA-	STYRENE	O-	1,1-DI	2,2-DI	1,3-DI-
		TRANS-1 4-DI- CHLORO UNFLTRD RECOVER (UG/L) (73547)	RYLATE- ETHYL- WATER UNFLTRD RECOVER (UG/L) (73570)	D.I. SULFIDE WATER WHOLE TOTAL (UG/L) (77041)	-DI- CHLORO- ETHENE WATER TOTAL (UG/L) (77093)			NONE WATER WHOLE TOTAL (UG/L) (77103)	XYLENE WATER WHOLE TOTAL (UG/L) (77135)	CHLORO- PRO- PENE, WAT, WH TOTAL (UG/L) (77168)	CHLORO- FRANE WAT, WH TOTAL (UG/L) (77170)
453037122373701		<.692	<.278	<.08	E.02	<.746	<.042	<.064	<.026	<.078	<.116
453037122373701		---	---	---	---	---	---	---	---	---	---
453037122373701		<.692	<.278	<.08	E.02	<.746	<.042	<.064	<.026	<.078	<.116
453037122373701		---	---	---	---	---	---	---	---	---	---
453032122385201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453032122385201		---	---	---	---	---	---	---	---	---	---
453032122385201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453032122385201		---	---	---	---	---	---	---	---	---	---
453032122385201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453032122385201		---	---	---	---	---	---	---	---	---	---
453447122401501		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453447122401501		---	---	---	---	---	---	---	---	---	---
453447122401501		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453447122401501		---	---	---	---	---	---	---	---	---	---
453447122401501		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453447122401501		---	---	---	---	---	---	---	---	---	---
453447122401501		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453447122401501		---	---	---	---	---	---	---	---	---	---
453447122401501		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453447122401501		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.692	<.278	<.08	<.038	<.746	<.042	<.064	<.026	<.078	<.116
453458122412201		---	---	---	---	---	---	---	---	---	---
453458122412201		<.									

E Estimated

427

STATION	NUMBER	TOLUENE	BENZENE	BENZENE	ISO-	BENZENE	BENZENE	BENZENE	O-	TOLUENE	METHANE	BENZENE	BENZENE
		O-ETHYL WATER UNFLTRD RECOVER (UG/L) (77220)	123-TRI METHYL- WATER UNFLTRD RECOVER (UG/L) (77221)	124-TRI METHYL UNFLTRD RECOVER (UG/L) (77222)	PROPYL- BENZENE WATER WHOLE REC (UG/L) (77223)	N-PROPY WATER UNFLTRD REC (UG/L) (77224)	135-TRI METHYL WATER UNFLTRD REC (UG/L) (77226)	CHLORO- TOLUENE WATER WHOLE TOTAL (UG/L) (77275)	P-CHLOR WATER UNFLTRD REC (UG/L) (77277)	BROMO CHLORO- WAT UNFLTRD REC (UG/L) (77297)	N-BUTYL WATER UNFLTRD REC (UG/L) (77342)	SEC BUTYL- WATER UNFLTRD REC (UG/L) (77350)	
453037122373701	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453037122373701	--	--	--	--	--	--	--	--	--	--	--		
453037122373701	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453037122373701	--	--	--	--	--	--	--	--	--	--	--		
453032122385201	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453032122385201	--	--	--	--	--	--	--	--	--	--	--		
453032122385201	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453032122385201	--	--	--	--	--	--	--	--	--	--	--		
453032122385201	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453032122385201	--	--	--	--	--	--	--	--	--	--	--		
453447122401501	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453447122401501	--	--	--	--	--	--	--	--	--	--	--		
453447122401501	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453447122401501	--	--	--	--	--	--	--	--	--	--	--		
453447122401501	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453447122401501	--	--	--	--	--	--	--	--	--	--	--		
453447122401501	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453447122401501	--	--	--	--	--	--	--	--	--	--	--		
453458122412201	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453458122412201	--	--	--	--	--	--	--	--	--	--	--		
453458122412201	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453458122412201	--	--	--	--	--	--	--	--	--	--	--		
453458122412201	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453458122412201	--	--	--	--	--	--	--	--	--	--	--		
453458122412201	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453458122412201	--	--	--	--	--	--	--	--	--	--	--		
453515122420301	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453515122420301	--	--	--	--	--	--	--	--	--	--	--		
453515122420301	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453515122420301	--	--	--	--	--	--	--	--	--	--	--		
453515122420301	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048		
453515122420301	--	--	--	--	--	--	--	--	--	--	--		
453515122420301	<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048</		

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN
CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

STATION	NUMBER	BENZENE TERT- BUTYL- WATER UNFLTRD REC (UG/L) (77353)	P-ISO- PROPYL- TOLUENE WATER WHOLE REC (UG/L) (77356)	METHYL IODIDE WATER UNFLTRD RECOVER (UG/L) (77424)	123-TRI CHLORO- PROPANE WATER WHOLE TOTAL (UG/L) (77443)	ETHANE, 1112- TRI- CHLORO- TETRA- WAT UNF REC (UG/L) (77562)	1,2,3- TRI- CHLORO BENZENE WAT, WH REC (UG/L) (77613)	1,2- DIBROMO ETHANE WATER WHOLE TOTAL (UG/L) (77651)	FREON- 113 WATER UNFLTRD REC (UG/L) (77652)	METHYL TERT- BUTYL ETHER WAT UNF REC (UG/L) (78032)	PROPENE 3- CHLORO- WATER UNFLTRD RECOVER (UG/L) (78109)	METHYL- ISO- BUTYL- KETONE WAT, WH. TOTAL (UG/L) (78133)
453037122373701		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
453037122373701		--	--	--	--	--	--	--	--	--	--	--
453037122373701		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
453037122373701		--	--	--	--	--	--	--	--	--	--	--
453032122385201		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
453032122385201		--	--	--	--	--	--	--	--	--	--	--
453032122385201		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
453032122385201		--	--	--	--	--	--	--	--	--	--	--
453032122385201		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
453032122385201		--	--	--	--	--	--	--	--	--	--	--
453447122401501		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.01	<.112	<.196	<.374
453447122401501		--	--	--	--	--	--	--	--	--	--	--
453447122401501		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.01	<.112	<.196	<.374
453447122401501		--	--	--	--	--	--	--	--	--	--	--
453447122401501		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
453447122401501		--	--	--	--	--	--	--	--	--	--	--
453458122412201		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
453458122412201		--	--	--	--	--	--	--	--	--	--	--
453458122412201		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.017	<.112	<.196	<.374
453458122412201		--	--	--	--	--	--	--	--	--	--	--
453458122412201		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.013	<.112	<.196	<.374
453458122412201		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.096	<.11	<.076	<.07	<.044	<.266	.101	E.01	<.112	<.196	<.374
453515122420301		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.096	<.11	<.076	<.07	<.044	<.266	E.015	<.032	<.112	<.196	<.374
453515122420301		--	--	--	--	--	--	--	--	--	--	--
453515122420301		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
453515122420301		--	--	--	--	--	--	--	--	--	--	--
452807122392901		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
452807122392901		--	--	--	--	--	--	--	--	--	--	--
452807122392901		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
452807122392901		--	--	--	--	--	--	--	--	--	--	--
452927122374501		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
452927122374501		--	--	--	--	--	--	--	--	--	--	--
452927122374501		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
452927122374501		--	--	--	--	--	--	--	--	--	--	--
452927122374501		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
452927122374501		--	--	--	--	--	--	--	--	--	--	--
452950122382001		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
452950122382001		--	--	--	--	--	--	--	--	--	--	--
452950122382001		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
452950122382001		--	--	--	--	--	--	--	--	--	--	--
452950122382001		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.01	<.112	<.196	<.374
452950122382001		--	--	--	--	--	--	--	--	--	--	--
453523122433001		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.015	<.112	<.196	<.374
453523122433001		--	--	--	--	--	--	--	--	--	--	--
453523122433001		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.013	<.112	<.196	<.374
453523122433001		--	--	--	--	--	--	--	--	--	--	--
453523122433001		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.005	<.112	<.196	<.374
453523122433001		--	--	--	--	--	--	--	--	--	--	--
453356122372401		<.096	<.11	<.076	<.07	<.044	<.266	<.036	<.032	<.112	<.196	<.374
453356122372401		--	--	--	--	--	--	--	--	--	--	--
453356122372401		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.02	<.112	<.196	<.374
453356122372401		--	--	--	--	--	--	--	--	--	--	--
453356122372401		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.021	<.112	<.196	<.374
453356122372401		--	--	--	--	--	--	--	--	--	--	--
453356122372401		<.096	<.11	<.076	<.07	<.044	<.266	<.036	E.016	<.112	<.196	<.374
453356122372401		--	--	--	--	--	--	--	--	--	--	--
453317122384101		<.096	<.11	<.076	<.07	<.044	<.266	E.08	E.013	<.112	<.196	<.374
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		<.096	<.11	<.076	<.07	<.044	<.266	E.083	E.0093	<.112	<.196	<.374
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		<.096	<.11	<.076	<.07	<.044	<.266	--	--	<.112	<.196	<.374
453317122384101		--	--	--	--	--	--	--	--	--	--	--

E Estimated

STATION	NUMBER	ACETONE WATER WHOLE TOTAL (UG/L) (81552)	BROMO- BENZENE WATER, WHOLE, TOTAL (UG/L) (81555)	ETHER ETHYL- WATER UNFLTRD RECOVER (UG/L) (81576)	DI-ISO- PROPYL- ETHER, WATER, UNFLTRD RECOVER (UG/L) (81577)	METH- ACRYLO- NITRILE WATER UNFLTRD RECOVER (UG/L) (81593)	METHYL- ETHYL- KETONE WATER WHOLE TOTAL (UG/L) (81595)	METHAC- RYLATE METHYL WATER UNFLTRD RECOVER (UG/L) (81597)	FURAN TETRA HYDRO- WATER UNFLTRD RECOVER (UG/L) (81607)	DIBROMO CHLORO- PROPANE WATER WHOLE TOT. REC (UG/L) (82625)	METRI- BUZIN SENSOR WATER DISSOLV (UG/L) (82630)
453037122373701		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453037122373701		--	--	--	--	--	--	--	--	--	--
453037122373701		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453037122373701		--	--	--	--	--	--	--	--	--	--
453032122385201		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453032122385201		--	--	--	--	--	--	--	--	--	--
453032122385201		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453032122385201		--	--	--	--	--	--	--	--	--	--
453032122385201		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453032122385201		--	--	--	--	--	--	--	--	--	--
453447122401501		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453447122401501		--	--	--	--	--	--	--	--	--	--
453447122401501		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453447122401501		--	--	--	--	--	--	--	--	--	--
453447122401501		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453447122401501		--	--	--	--	--	--	--	--	--	--
453447122401501		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453447122401501		--	--	--	--	--	--	--	--	--	--
453458122412201		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453458122412201		--	--	--	--	--	--	--	--	--	--
453458122412201		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453458122412201		--	--	--	--	--	--	--	--	--	--
453458122412201		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453458122412201		--	--	--	--	--	--	--	--	--	--
453458122412201		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453458122412201		--	--	--	--	--	--	--	--	--	--
453515122420301		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453515122420301		--	--	--	--	--	--	--	--	--	--
453515122420301		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453515122420301		--	--	--	--	--	--	--	--	--	--
453515122420301		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453515122420301		--	--	--	--	--	--	--	--	--	--
453515122420301		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<1.15	<.214	<.004
453515122420301		--	--	--	--	--	--	--	--	--	--
453515122420301		<4.90	<.036	<.17	<.098	<.57	<1.65				

STATION	NUMBER	2,6-DI-ETHYL ANILINE WAT FLT 0.7 U	TRI-FLUR- ALIN WAT FLT 0.7 U	ETHAL- FLUR- ALIN WAT FLT 0.7 U	PHORATE WATER FLT RD 0.7 U	TER-BACIL WATER FLT RD 0.7 U	LIN-URON WATER FLT RD 0.7 U	METHYL PARA- THION WAT FLT 0.7 U	EPTC WATER FLT RD 0.7 U	PBB-ULATE WATER FILTRD 0.7 U	TBU-THIURON WATER FLT RD 0.7 U	MOL-INATE WATER FLT RD 0.7 U
		GF, REC (UG/L) (82660)	GF, REC (UG/L) (82661)	GF, REC (UG/L) (82663)	GF, REC (UG/L) (82664)	GF, REC (UG/L) (82665)	GF, REC (UG/L) (82666)	GF, REC (UG/L) (82667)	GF, REC (UG/L) (82668)	GF, REC (UG/L) (82669)	GF, REC (UG/L) (82670)	GF, REC (UG/L) (82671)
453037122373701	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453037122373701	--	--	--	--	--	--	--	--	--	--	--	
453037122373701	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453037122373701	--	--	--	--	--	--	--	--	--	--	--	
453032122385201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453032122385201	--	--	--	--	--	--	--	--	--	--	--	
453032122385201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453032122385201	--	--	--	--	--	--	--	--	--	--	--	
453032122385201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453032122385201	--	--	--	--	--	--	--	--	--	--	--	
453447122401501	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453447122401501	--	--	--	--	--	--	--	--	--	--	--	
453447122401501	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453447122401501	--	--	--	--	--	--	--	--	--	--	--	
453447122401501	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453447122401501	--	--	--	--	--	--	--	--	--	--	--	
453447122401501	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453447122401501	--	--	--	--	--	--	--	--	--	--	--	
453447122401501	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453447122401501	--	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453458122412201	--	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453458122412201	--	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453458122412201	--	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453458122412201	--	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453458122412201	--	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<.002	<.004	<.010	<.004	
453458122412201	--	--	--	--	--	--	--	--	--	--	--	
453458122412201	<.003	<.002	<.004	<.002	<.007	<.002	<.006	<				

STATION	NUMBER	ETHO- PROP WATER	BEN- FLUR- ALIN	CARBO- FURAN WATER	TER- BUFOS WATER	PRON- AMIDE WATER	DISUL- FOTON WATER	TRIAL- LATE WATER	PRO- PANIL WATER	CAR- BARYL WATER	THIO- BENCARB WATER
		FLTRD 0.7 U GF, REC (82672)	WAT FLD 0.7 U GF, REC (82673)	FLTRD 0.7 U GF, REC (82674)	FLTRD 0.7 U GF, REC (82675)	FLTRD 0.7 U GF, REC (82676)	FLTRD 0.7 U GF, REC (82677)	FLTRD 0.7 U GF, REC (82678)	FLTRD 0.7 U GF, REC (82679)	FLTRD 0.7 U GF, REC (82680)	FLTRD 0.7 U GF, REC (82681)
453037122373701		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453037122373701		--	--	--	--	--	--	--	--	--	--
453037122373701		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453037122373701		--	--	--	--	--	--	--	--	--	--
453032122385201		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453032122385201		--	--	--	--	--	--	--	--	--	--
453032122385201		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453032122385201		--	--	--	--	--	--	--	--	--	--
453032122385201		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453032122385201		--	--	--	--	--	--	--	--	--	--
453032122385201		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453032122385201		--	--	--	--	--	--	--	--	--	--
453447122401501		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453447122401501		--	--	--	--	--	--	--	--	--	--
453447122401501		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453447122401501		--	--	--	--	--	--	--	--	--	--
453447122401501		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453447122401501		--	--	--	--	--	--	--	--	--	--
453447122401501		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453447122401501		--	--	--	--	--	--	--	--	--	--
453447122401501		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453447122401501		--	--	--	--	--	--	--	--	--	--
453447122401501		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453447122401501		--	--	--	--	--	--	--	--	--	--
453458122412201		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453458122412201		--	--	--	--	--	--	--	--	--	--
453458122412201		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453458122412201		--	--	--	--	--	--	--	--	--	--
453458122412201		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453458122412201		--	--	--	--	--	--	--	--	--	--
453458122412201		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453458122412201		--	--	--	--	--	--	--	--	--	--
453458122412201		<.003	<.002	<.003	<.013	<.003	<.017	<.001	<.004	<.003	<.002
453458122412201		--	--	--	--	--	--	--	--	--	--
453458122412201		<.003	<.002								

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN

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CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

STATION	NUMBER	DATE	TEMPER- ATURE (DEG C) (00010)	TUR- BID- ITY (NTU) (00076)	SPE- CIFIC CON- DUCT- ANCE (US/CM) (00095)	OXYGEN, DIS- SOLVED (MG/L) (00300)	PH WATER WHOLE FIELD (STAND- ARD UNITS) (00400)	BICAR- BONATE WATER DIS IT FIELD MG/L AS HCO3 (00453)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N) (00608)										
453317122384101		04-23-98	16.5	.7	295	8.1	6.8	120	--										
453317122384101		07-06-98	--	--	--	--	--	--	--										
453317122384101		07-06-98	--	--	--	--	--	--	--										
STATION	NUMBER		NITRO- GEN, AM- NITRITE DIS- SOLVED (MG/L AS N) (00613)	NITRO- GEN, AM- MONIA + ORGANIC DIS- SOLVED (MG/L AS N) (00623)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N) (00631)	PHOS- PHORUS DIS- SOLVED (MG/L AS P) (00666)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P) (00671)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C) (00681)	CALCIUM DIS- SOLVED (MG/L AS CA) (00915)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG) (00925)	SODIUM, DIS- SOLVED (MG/L AS NA) (00930)	POTAS- SIUM, DIS- SOLVED (MG/L AS K) (00935)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL) (00940)						
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
STATION	NUMBER		SULFATE DIS- SOLVED (MG/L AS SO4) (00945)	FLUO- RIDE, DIS- SOLVED (MG/L AS F) (00950)	SILICA, DIS- SOLVED (MG/L AS SiO2) (00955)	ARSENIC DIS- SOLVED (UG/L AS AS) (01000)	BARIIUM, DIS- SOLVED (UG/L AS BA) (01005)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE) (01010)	CADMIUM DIS- SOLVED (UG/L AS CD) (01025)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR) (01030)	COBALT, DIS- SOLVED (UG/L AS CO) (01035)	COPPER, DIS- SOLVED (UG/L AS CU) (01040)	IRON, DIS- SOLVED (UG/L AS FE) (01046)						
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
STATION	NUMBER		LEAD, DIS- SOLVED (UG/L AS PB) (01049)	MANGA- NESE, DIS- SOLVED (UG/L AS MN) (01056)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO) (01060)	NICKEL, DIS- SOLVED (UG/L AS NI) (01065)	SILVER, DIS- SOLVED (UG/L AS AG) (01075)	ZINC, DIS- SOLVED (UG/L AS ZN) (01090)	ANTI- MONY, DIS- SOLVED (UG/L AS SB) (01095)	ALUM- INUM, DIS- SOLVED (UG/L AS AL) (01106)	SELE- NIUM, DIS- SOLVED (UG/L AS SE) (01145)	PROP- CHLOR, WATER, DISS, REC (UG/L) (04024)	BUTYL- ATE, WATER, DISS, REC (UG/L) (04028)						
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
STATION	NUMBER		SI- MAZINE, WATER, DISS, REC (UG/L) (04035)	PRO- METON, WATER, DISS, REC (UG/L) (04037)	DEETHYL ATRA- ZINE, WATER, DISS, REC (UG/L) (04040)	CYANA- ZINE, WATER, DISS, REC (UG/L) (04041)	FONOPOS WATER, DISS REC (UG/L) (04095)	URANIUM NATURAL DIS- SOLVED (UG/L AS U) (22703)	DI- BROMO- METHANE WATER WHOLE RECOVER (UG/L) (30217)	DI- CHLORO- BROMO- METHANE TOTAL (UG/L) (32101)	CARBON- TETRA- CHLO- RIDE TOTAL (UG/L) (32102)	1,2-DI- CHLORO- ETHANE TOTAL (UG/L) (32103)	BROMO- FORM TOTAL (UG/L) (32104)						
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
STATION	NUMBER		CHLORO- DI- BROMO- METHANE TOTAL (UG/L) (32105)	CHLORO- FORM TOTAL (UG/L) (32106)	TOLUENE TOTAL (UG/L) (34010)	BENZENE TOTAL (UG/L) (34030)	ACRO- LEIN TOTAL (UG/L) (34210)	ACRYLO- NITRILE TOTAL (UG/L) (34215)	ALPHA BHC DIS- SOLVED (UG/L) (34253)	CHLORO- BENZENE TOTAL (UG/L) (34301)	CHLORO- ETHANE TOTAL (UG/L) (34311)	ETHYL- BENZENE TOTAL (UG/L) (34371)	ETHANE HEXA- CHLORO- WATER UNFLTRD RECOVER (UG/L) (34396)						
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					
453317122384101		--	--	--	--	--	--	--	--	--	--	--	--	--					

E Estimated

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN

CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

		ETHANE, BENZENE										
		1,1,2,2-TETRA-CHLORO-WAT UNF REC (UG/L) (34516) (34536)										
STATION	NUMBER	METHYL-BROMIDE TOTAL (UG/L) (34413)	METHYL-CHLORIDE TOTAL (UG/L) (34418)	METHYL-CHLORIDE TOTAL (UG/L) (34423)	TETRA-CHLORO-ETHYLENE TOTAL (UG/L) (34475)	TRI-CHLORO-FLUORO-METHANE TOTAL (UG/L) (34488)	1,1-DI-CHLORO-ETHANE TOTAL (UG/L) (34496)	1,1-DI-CHLORO-ETHYLENE TOTAL (UG/L) (34501)	1,1,1-TRI-CHLORO-ETHANE TOTAL (UG/L) (34506)	1,1,2-TRI-CHLORO-ETHANE TOTAL (UG/L) (34511)	ETHANE, 1,1,2,2-TETRA-CHLORO-WAT UNF REC (UG/L) (34516)	BENZENE O-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34536)
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		<.148	<.254	<.382	.729	E.031	E.032	E.027	.289	<.064	<.132	<.048
453317122384101		--	--	--	--	--	--	--	--	--	--	--
STATION	NUMBER	1,2-DI-CHLORO-PROPANE TOTAL (UG/L) (34541)	1,2-TRANS-DI-CHLORO-ETHENE TOTAL (UG/L) (34546)	BENZENE 1,2,4-TRI-CHLORO-CHLORO-WAT UNF REC (UG/L) (34551)	BENZENE 1,3-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34566)	BENZENE 1,4-DI-CHLORO-WATER UNFLTRD REC (UG/L) (34571)	P,P'-DDE DISSOLV (UG/L) (34653)	DI-CHLORO-DI-FLUORO-METHANE TOTAL (UG/L) (34668)	NAPHTH-ALENE TOTAL (UG/L) (34696)	TRANS-1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34699)	CIS-1,3-DI-CHLORO-PROPENE TOTAL (UG/L) (34704)	CHLORO-PYRIFOS DIS-SOLVED TOTAL (UG/L) (38933)
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		<.068	<.032	<.188	<.054	<.05	--	E.33	<.25	<.134	<.092	--
453317122384101		--	--	--	--	--	--	--	--	--	--	--
STATION	NUMBER	ALKA-LINITY WAT DIS TOT IT FIELD MG/L AS CAC03 (39086)	VINYL CHLORIDE TOTAL (UG/L) (39175)	TRI-CHLORO-ETHYLENE TOTAL (UG/L) (39180)	LINDANE DIS-SOLVED (UG/L) (39341)	DI-ELDRIN DIS-SOLVED (UG/L) (39381)	METO-LACHLOR WATER DISSOLV (UG/L) (39415)	MALA-THION, DIS-SOLVED (UG/L) (39532)	PARA-THION, DIS-SOLVED (UG/L) (39542)	DI-AZINON, DIS-SOLVED (UG/L) (39572)	ATRA-ZINE, WATER, DISS, REC (UG/L) (39632)	HEXA-CHLORO-BUT-ADIENE TOTAL (UG/L) (39702)
453317122384101		98.5	--	--	--	--	--	--	--	--	--	--
453317122384101		--	<.112	.230	--	--	--	--	--	--	--	<.142
453317122384101		--	--	--	--	--	--	--	--	--	--	--
STATION	NUMBER	ALA-CHLOR, WATER, DISS, REC, (UG/L) (46342)	ACETO-CHLOR, WATER, FLTRD REC (UG/L) (49260)	METHYL-ACRY-LATE WATER UNFLTRD RECOVER (UG/L) (49991)	PREH-NITENE WATER UNFLTRD RECOVER (UG/L) (49999)	ISO-DURENE WATER UNFLTRD RECOVER (UG/L) (50000)	BROMO-ETHENE WATER UNFLTRD RECOVER (UG/L) (50002)	ETHER-TERT-BUTYL ETHYL-UNFLTRD RECOVER (UG/L) (50004)	ETHER-TERT-PENTYL METHYL-UNFLTRD RECOVER (UG/L) (50005)	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L) (70300)	BROMIDE DIS-SOLVED (MG/L AS BR) (71870)	
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		--	--	<1.36	<.23	<.24	<.1	<.054	<.112	--	--	--
453317122384101		--	--	--	--	--	--	--	--	--	--	--
STATION	NUMBER	2BUTENE TRANS-1 4-DI-CHLORO UNFLTRD RECOVER (UG/L) (73547)	METHAC-RYLATE ETHYL-WATER UNFLTRD RECOVER (UG/L) (73570)	CARBON DI-SULFIDE WATER WHOLE TOTAL (UG/L) (77041)	CIS-1,2 -DI-CHLORO-ETHENE WATER WHOLE TOTAL (UG/L) (77093)	2-HEXA-NONE WATER WHOLE TOTAL (UG/L) (77103)	STYRENE WATER WHOLE TOTAL (UG/L) (77128)	O-XYLENE WATER WHOLE TOTAL (UG/L) (77135)	1,1-DI-CHLORO-PRO-PENE, WAT, WH TOTAL (UG/L) (77168)	2,2-DI-CHLORO-PRO-PANE WAT, WH TOTAL (UG/L) (77170)	1,3-DI-CHLORO-PROPANE WAT, WH TOTAL (UG/L) (77173)	
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		<.692	<.278	<.37	.0946	<.746	<.042	<.064	<.026	<.078	<.116	--
453317122384101		--	--	--	--	--	--	--	--	--	--	--
STATION	NUMBER	TOLUENE O-ETHYL WATER UNFLTRD RECOVER (UG/L) (77220)	BENZENE 123-TRI METHYL-WATER UNFLTRD RECOVER (UG/L) (77221)	BENZENE 124-TRI METHYL-WATER UNFLTRD RECOVER (UG/L) (77222)	ISO-PROPYL-BENZENE WATER WHOLE REC (UG/L) (77223)	BENZENE N-PROPY WATER UNFLTRD REC (UG/L) (77224)	BENZENE 135-TRI METHYL-WATER UNFLTRD REC (UG/L) (77226)	O-CHLORO-TOLUENE WATER WHOLE TOTAL (UG/L) (77275)	TOLUENE P-CHLOR WATER UNFLTRD REC (UG/L) (77277)	METHANE BROMO CHLORO-WAT UNFLTRD REC (UG/L) (77297)	BENZENE N-BUTYL WATER UNFLTRD REC (UG/L) (77342)	BENZENE SEC BUTYL-WATER UNFLTRD REC (UG/L) (77350)
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		<.1	<.124	<.056	<.032	<.042	<.044	<.042	<.056	<.044	<.186	<.048
453317122384101		--	--	--	--	--	--	--	--	--	--	--

E Estimated

CHEMICAL ANALYSES OF GROUND WATER SAMPLES IN PORTLAND BASIN

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CHEMICAL ANALYSES USGS/CITY OF PORTLAND BUREAU OF ENVIRONMENTAL SERVICES STUDY

STATION	NUMBER	BENZENE TERT- BUTYL- WATER UNFLTRD REC (UG/L) (77353)	P-ISO- PROPYL- TOLUENE WATER WHOLE REC (UG/L) (77356)	METHYL IODIDE WATER UNFLTRD RECOVER (UG/L) (77424)	123-TRI CHLORO- PROPANE WATER WHOLE TOTAL (UG/L) (77443)	ETHANE, 1112- TETRA- CHLORO- WAT UNF REC (UG/L) (77562)	1,2,3- TRI- CHLORO BENZENE WAT, WH REC (UG/L) (77613)	1,2- DIBROMO ETHANE WATER WHOLE TOTAL (UG/L) (77651)	FREON- 113 WATER UNFLTRD REC (UG/L) (77652)	METHYL TERT- BUTYL ETHER WAT UNF REC (UG/L) (78032)	PROPENE 3- CHLORO- WATER RECOVER (UG/L) (78109)	METHYL- ISO- BUTYL- KETONE WAT.WH. TOTAL (UG/L) (78133)
453317122384101		--	--	--	--	--	--	<.04	--	--	--	--
453317122384101		<.096	<.11	<.208	<.162	<.044	<.266	.0980	E.013	<.166	<.196	<.374
453317122384101		--	--	--	--	--	--	.08	--	--	--	--
STATION	NUMBER	ACETONE WATER WHOLE TOTAL (UG/L) (81552)	BROMO- BENZENE WATER, WHOLE TOTAL (UG/L) (81555)	ETHER ETHYL- WATER UNFLTRD RECOVER (UG/L) (81576)	DI-ISO- PROPYL- ETHER, WATER UNFLTRD RECOVER (UG/L) (81577)	METH- ACRYLO- NITRITE WATER UNFLTRD RECOVER (UG/L) (81593)	METHYL- ETHYL- KETONE WATER WHOLE TOTAL (UG/L) (81595)	METHAC- RYLATE METHYL WATER UNFLTRD RECOVER (UG/L) (81597)	FURAN TETRA- HYDRO- WATER UNFLTRD RECOVER (UG/L) (81607)	DIBROMO CHLORO- PROPANE WATER WHOLE TOT.REC (UG/L) (82625)	METRI- BUZIN WATER SENCOR DISSOLV (UG/L) (82630)	
453317122384101		--	--	--	--	--	--	--	--	<.03	--	--
453317122384101		<4.90	<.036	<.17	<.098	<.57	<1.65	<.35	<8.79	<.214	--	--
453317122384101		--	--	--	--	--	--	--	--	<.03	--	--
STATION	NUMBER	2,6-DI- ETHYL ANILINE WAT FLT 0.7 U GF, REC (UG/L) (82660)	TRI- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82661)	ETHAL- FLUR- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82663)	PHORATE WATER FLTRD 0.7 U GF, REC (UG/L) (82664)	TER- BACIL WATER FLTRD 0.7 U GF, REC (UG/L) (82665)	LIN- URON WATER FLTRD 0.7 U GF, REC (UG/L) (82666)	METHYL PARA- THION WAT FLT 0.7 U GF, REC (UG/L) (82667)	EPTC WATER FLTRD 0.7 U GF, REC (UG/L) (82668)	PEB- ULATE WATER FILTRD 0.7 U GF, REC (UG/L) (82669)	TEBU- THIURON WATER FLTRD 0.7 U GF, REC (UG/L) (82670)	MOL- INATE WATER FLTRD 0.7 U GF, REC (UG/L) (82671)
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		--	--	--	--	--	--	--	--	--	--	--
STATION	NUMBER	ETHO- PROP WATER FLTRD 0.7 U GF, REC (UG/L) (82672)	BEN- FLUR- ALIN WAT FLD 0.7 U GF, REC (UG/L) (82673)	CARBO- FURAN WATER FLTRD 0.7 U GF, REC (UG/L) (82674)	TER- BUFOS WATER FLTRD 0.7 U GF, REC (UG/L) (82675)	PRON- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82676)	DISUL- FOTON WATER FLTRD 0.7 U GF, REC (UG/L) (82677)	TRIAL- LATE WATER FLTRD 0.7 U GF, REC (UG/L) (82678)	PRO- PANIL WATER FLTRD 0.7 U GF, REC (UG/L) (82679)	CAR- BARYL WATER FLTRD 0.7 U GF, REC (UG/L) (82680)	THIO- BENCARB WATER FLTRD 0.7 U GF, REC (UG/L) (82681)	
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		--	--	--	--	--	--	--	--	--	--	--
STATION	NUMBER	DCPA WATER FLTRD 0.7 U GF, REC (UG/L) (82682)	PENDI- METH- ALIN WAT FLT 0.7 U GF, REC (UG/L) (82683)	NAPROP- AMIDE WATER FLTRD 0.7 U GF, REC (UG/L) (82684)	PRO- PARGITE WATER FLTRD 0.7 U GF, REC (UG/L) (82685)	METHYL AZIN- PHOS WAT FLT 0.7 U GF, REC (UG/L) (82686)	PER- METHRIN CIS WAT FLT 0.7 U GF, REC (UG/L) (82687)	META/ PARA- XYLENE WATER UNFLTRD REC (UG/L) (85795)				
453317122384101		--	--	--	--	--	--	--	--	--	--	--
453317122384101		--	--	--	--	--	--	<.064	--	--	--	--
453317122384101		--	--	--	--	--	--	--	--	--	--	--

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CONVERSION FACTORS AND VERTICAL DATUM

Multiply	By	To obtain
<i>Length</i>		
inch (in.)	2.54×10^1	millimeter
	2.54×10^{-2}	meter
foot (ft)	3.048×10^{-1}	meter
mile (mi)	1.609×10^0	kilometer
<i>Area</i>		
acre	4.047×10^3	square meter
	4.047×10^{-1}	square hectometer
	4.047×10^{-3}	square kilometer
square mile (mi ²)	2.590×10^0	square kilometer
<i>Volume</i>		
gallon (gal)	3.785×10^0	liter
	3.785×10^0	cubic decimeter
	3.785×10^{-3}	cubic meter
million gallons (Mgal)	3.785×10^3	cubic meter
	3.785×10^{-3}	cubic hectometer
cubic foot (ft ³)	2.832×10^1	cubic decimeter
	2.832×10^{-2}	cubic meter
cubic-foot-per-second day [(ft ³ /s) d]	2.447×10^3	cubic meter
	2.447×10^{-3}	cubic hectometer
acre-foot (acre-ft)	1.233×10^3	cubic meter
	1.233×10^{-3}	cubic hectometer
	1.233×10^{-6}	cubic kilometer
<i>Flow</i>		
cubic foot per second (ft ³ /s)	2.832×10^1	liter per second
	2.832×10^1	cubic decimeter per second
	2.832×10^{-2}	cubic meter per second
gallon per minute (gal/min)	6.309×10^{-2}	liter per second
	6.309×10^{-2}	cubic decimeter per second
	6.309×10^{-5}	cubic meter per second
million gallons per day (Mgal/d)	4.381×10^1	cubic decimeter per second
	4.381×10^{-2}	cubic meter per second
<i>Mass</i>		
ton (short)	9.072×10^{-1}	megagram or metric ton

Sea level: In this report "sea level" refers to the National Geodetic Vertical Datum of 1929 (NGVD of 1929)—a geodetic datum derived from a general adjustment for the first-order level nets of both the United States and Canada, formerly called Sea Level Datum of 1929.

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