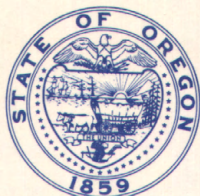
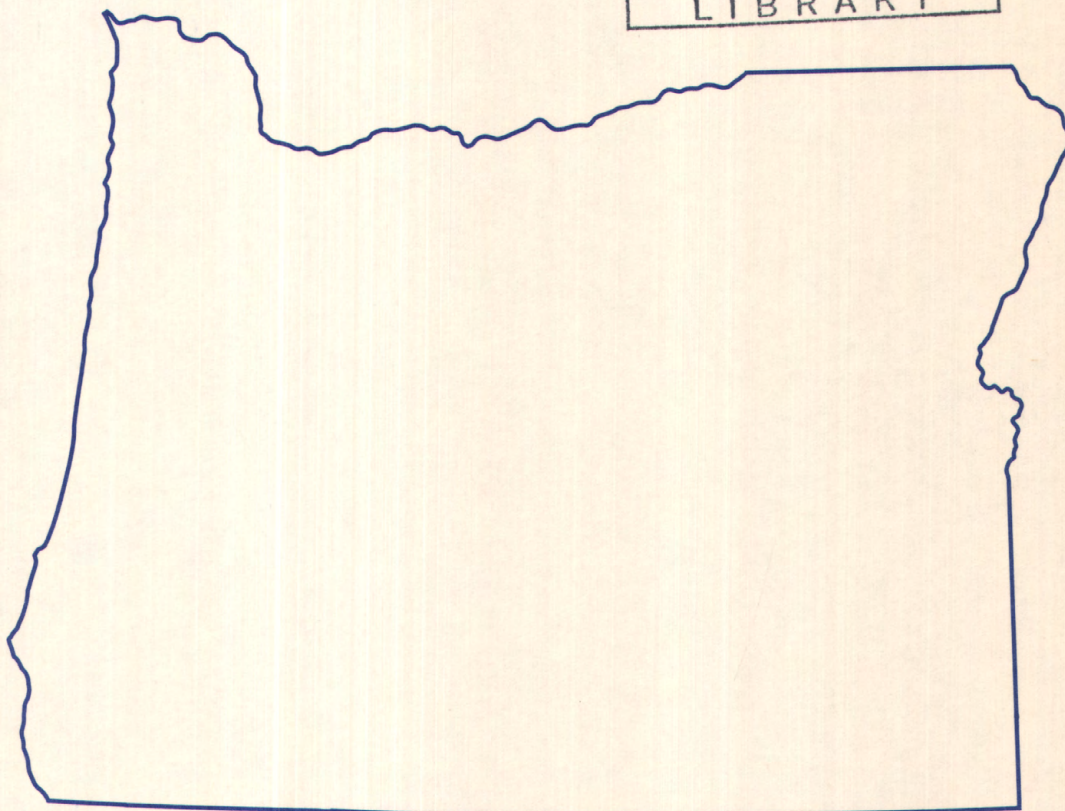
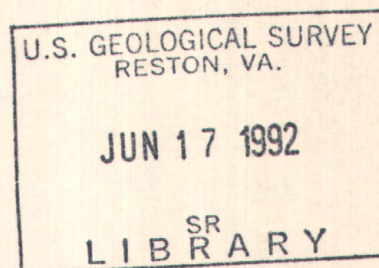


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Water Resources Data Oregon Water Year 1991



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OR-91-1
Prepared in cooperation with the Oregon Water Resources
Department and with other agencies

CALENDAR FOR WATER YEAR 1991

1990

OCTOBER							NOVEMBER							DECEMBER						
S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S
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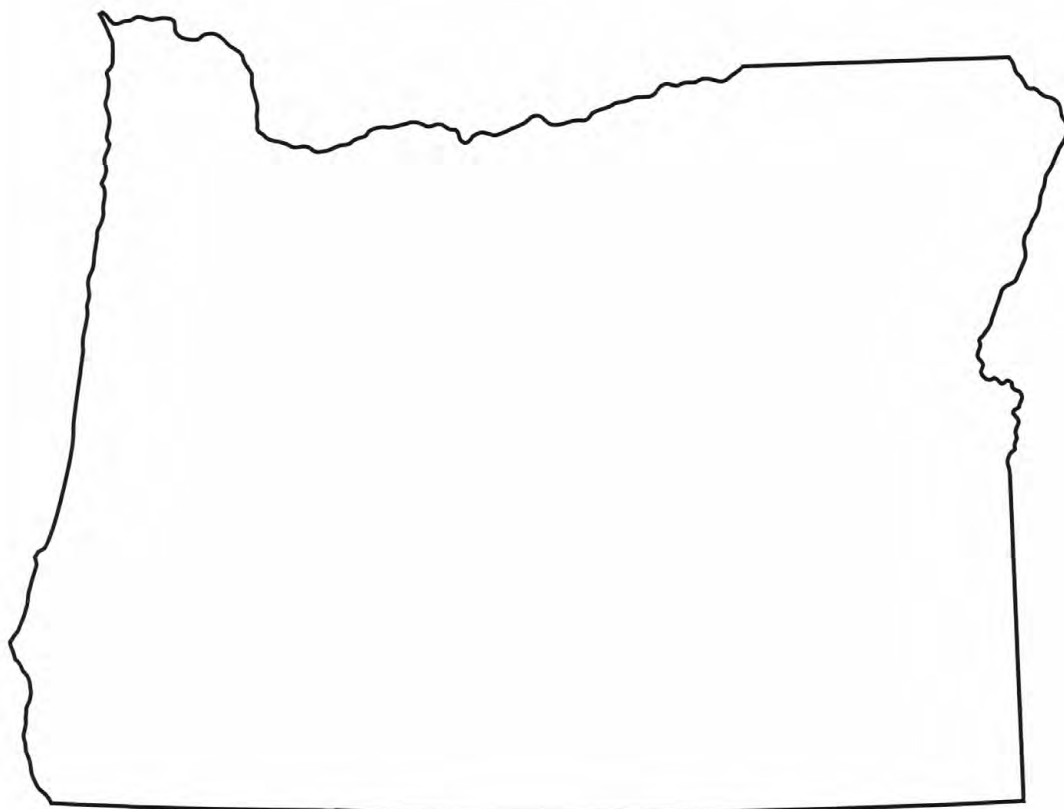
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APRIL							MAY							JUNE						
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Water Resources Data Oregon Water Year 1991

by L.E. Hubbard, C.G. Kroll, T.A. Herrett, R.L. Kraus, and G.P. Ruppert



U.S. GEOLOGICAL SURVEY WATER-DATA REPORT OR-91-1
Prepared in cooperation with the Oregon Water Resources
Department and with other agencies

U.S. DEPARTMENT OF THE INTERIOR

MANUEL LUJAN, JR., Secretary

U.S. GEOLOGICAL SURVEY

Dallas L. Peck, Director

For additional information write to:

District Chief, Water Resources Division
U.S. Geological Survey
10615 S. E. Cherry Blossom Drive
Portland, Oregon 97216

1992

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:

Gilbert C. Bortleson	Jon G. House	John K. Page
David M. Carlson	Larry L. Hubbard	James K. Parham
Mary-Lorraine Courts	Matt W. Johnston	Donita J. Parker
Douglas O. Cushman	Dennis J. Kent	James E. Poole
John E. Dick	Richard L. Kittelson	Michael J. Sarantou
Jack D. Doyle	Karl K. Lee	Margaret L. Smith
Thomas K. Edwards	James L. Moffet	Robert E. Sommer, Jr.
Michael A. Gentile	Melanie A. North	Roger S. Tippet
Janice M. Gordon	Gregory W. Olsen	Mary J. Warwick
Steven A. Gustafson	Jacqueline C. Olson	Roy E. Wellman
Richard A. Hollway	Jeanette F. O'Neil	

This report was prepared in cooperation with the State of Oregon and with other agencies under the general supervision of Marvin O. Fretwell, District Chief, Oregon, Garald G. Parker, Jr., Area Assistant Regional Hydrologist, Pacific Northwest Area, and T. John Conomos, Regional Hydrologist, Western Region.

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16. Abstract (Limit: 200 words) Water Resources Data for the 1991 water year for Oregon consist of records of stage, discharge, and water quality of streams; and stage, contents, and water quality of lakes and reservoirs. This report contains discharge records for 236 gaging stations; stage only records for 7 gaging stations; stage and contents for 36 lakes and reservoirs; water quality for 48 stations, and water quality for 3 precipitation stations. Also included are 5 crest-stage, partial-record stations. Additional water data were collected at various sites, not part of the systematic data collection program, and are published as miscellaneous measurements. These data represent that part of the National Water Data System operated by the U.S. Geological Survey and cooperating State and Federal agencies in Oregon.			
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Letter after station name designates type of data: (d) discharge; (e) elevation; (g) gage height; (v) contents; (c) chemical, including periodic biological, microbiological, sediment, pesticide, and radio-chemical where applicable; (s) daily suspended sediment; (t) water temperature; (tb) turbidity; and (k) specific conductance.

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Santiam River at Jefferson (d).....	14189000	293
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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS
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Haskins Creek below Reservoir, near McMinnville (d)....	14196001	301
Molalla River above Pine Creek, near Wilhoit (d).....	14198500	302
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Henry Hagg Lake near Gaston (e,v).....	14202965	303
Scoggins Creek below Henry Hagg Lake, near Gaston (d)....	14202980	304
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Tualatin River at West Linn (d,c).....	14207500	308
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Willamette River below Falls, at Oregon City (g).....	14207770	311
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Timothy Lake near Government Camp (e,v).....	14208600	313
Oak Grove Fork near Government Camp (d).....	14208700	314
Oak Grove Fork above Powerplant Intake (d).....	14209000	315
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Fish Creek near Three Lynx (d).....	14209700	317
Clackamas River at Estacada (d).....	14210000	318
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Johnson Creek at Sycamore (d).....	14211500	320
Johnson Creek at Milwaukie (d).....	14211550	321
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ARE PUBLISHED IN THIS VOLUME

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SURFACE-WATER STATIONS, IN DOWNSTREAM ORDER, FOR WHICH RECORDS
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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, (g) gage height, (e) elevation]

Station name	Station number	Drainage area (mi ²)	Period of record
WARNER LAKES BASIN			
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
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
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 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
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	--	1966-68;1974-89
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
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
Krumbo Creek near Diamond (d)	10397500	37	1911;1930
Donner und Blitzen River near Narrows (d)	10398500	420	1915-20
Riger 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)	10405000	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 Suntex (d)	10403500	260	1904-06;1909-12;1914-23;1925-26
Chickahominy Creek near Suntex (d)	10404000	90	1917;1922
Rock Quarry Creek near Suntex (d)	10404500	--	1921;1922
Silver Creek below Suntex (d)	10405000	550	1912-13;1921-23
Silver Creek near Narrows (d)	10406000	630	1917;1919-23
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 Dews Canal near Lakeview (d)	11339000	--	1976-81
Dews 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

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
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 near Silver Lake (d)	11491500	220	1917-18;1920-21
Miller Creek near Crescent (d)	11492000	23.7	1912;1914
Sand Creek near Fort Klamath (d)	11492500	35	1917-22
Scott Creek near Fort Klamath (d)	11493000	10	1917-20
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
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
Sycan River near Beatty (d)	11499000	540	1912-25
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	90	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			
Crooked Creek near Rome (d)	13181500	1,700	1950
Owyhee River above Owyhee Reservoir (d)	13182000	10,400	1929-51
Owyhee River at Owyhee (d)	13184000	11,300	1890-96;1904-16; 1920-29;1980-86
MALHEUR RIVER BASIN			
Malheur River at Jones's Ranch, near Drewsey (d)	13213500	530	1914
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 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	1948-79
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)	13225000	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 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 below Nevada Dam, near Vale (d)	13233300	3,880	1926-34;1951-54
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
Middle Fork Burnt River near Audrey (d)	13270000	9.54	1915-16
South Fork Burnt River near Unity (d)	13280500	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 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

WATER RESOURCES DATA FOR OREGON, 1991

XVII

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
POWDER RIVER BASIN			
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
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
Big Creek near Medical Springs (d)	13286000	35.5	1913-14
Goose Creek near Keating (d)	13286500	41.9	1913-14
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
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
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;1967-83
Wallowa River above Wallowa Lake, near Joseph (d)	13325500	43.0	1924-33;1937-38;1940-41
Joseph powerplant tailrace at Joseph (d)	13326500	--	1951-56
Hurricane Creek near Joseph (d)	13329500	29.6	1915;1924-78
Wallowa River at Wallowa (d)	13329900	--	1976-77
Bear Creek near Wallowa (d)	13330500	68.0	1915;1924-85
Wallowa River near Wallowa (d)	13331000	520	1904-07
Wallowa River at Minam (d)	13332000	880	1904-14
Joseph Creek at Chico (d)	13333500	280	1931-33
WALLA WALLA RIVER BASIN			
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 (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
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 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
Butter Creek near Pine City (d)	14032000	291	1928-88
WILLOW CREEK BASIN			
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

WATER RESOURCES DATA FOR OREGON, 1991

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
JOHN DAY RIVER BASIN			
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 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
Mountain Creek near Mitchell (d)	14040600	20.0	1985-89
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
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
John Day River at Clarno (d)	14047000	5,940	1914-15; 1920-21
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
Cultus River below Cultus Creek, near La Pine (d)	14051500	52.8	1922
Charlton Creek above Crane Prairie Reservoir, near La Pine (d)	14053000	15.6	1923-24; 1938-79
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 at Pringle Falls, near La Pine (d)	14057000	507	1916-17; 1922-60
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 Creek below Cold Creek, near Crescent (d)	14060500	77	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, near La Pine (d)	14062000	307	1914-17; 1919-26; 1931-22
Little Deschutes River near La Pine (d)	14063000	859	1924-89
Paulina Creek near La Pine (d)	14063300	10.1	1983-89
Little Deschutes River at Allen's Ranch, near La Pine (d)	14063500	1,020	1905-12; 1913-15; 1931-32
			1943-44
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 Municipal 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
Bridge Creek near Bend (d)	14070700	6.58	1981-85
Tumalo Creek near Tumalo (d)	14071500	30.9	1906-14
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
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
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
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
Shitike Creek at Warm Springs (d)	14093000	111	1911-16; 1923-28; 1973-74
Deschutes River at Mecca (d)	14093500	7,940	1912-27
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

WATER RESOURCES DATA FOR OREGON, 1991

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DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
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
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
Hood River at Winans (d)	14119000	259	1906-07;1910-12;1913
Hood River near Hood River (d)	14121000	329	1913-64
COLUMBIA RIVER MAIN STEM			
Columbia River at Warrendale (g)	14128910	240,000	1972-87
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 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 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			
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
Gray Creek near Oakridge (d)	14146700	5.06	1979-86
Waldo Lake Outlet near Oakridge (d)	14147000	30.5	1937-53;1970-82;1984
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
Budworm Creek near Belknap Springs (d)	14158930	3.00	1979-83;1984-86
McKenzie River above Boulder Creek, near Belknap Springs (d)	14158955	--	1983
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
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
Breitenbush River above French Creek, near Detroit (d)	14179000	106	1933-87
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
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
Mill Creek near Willamina (d)	14193300	27.4	1958-73
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 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

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WATER RESOURCES DATA FOR OREGON, 1991

DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
WILLAMETTE RIVER BASIN--Continued			
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
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
Scoggin Creek near Gaston (d)	14203000	43.3	1941-74
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 Mountaindale (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
Tualatin River at Farmington (d)	14206500	568	1940-58;1973-76
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)	14211000	930	1963-83;1986;1988-89
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
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
SILETZ RIVER BASIN			
Big Rock Creek near Valsetz (d)	14304850	6.90	1986-89
YAQUINA RIVER BASIN			
Mill Creek near Toledo (d)	14306036	4.18	1961-73
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
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
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
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
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;1978-79
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

WATER RESOURCES DATA FOR OREGON, 1991

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DISCONTINUED SURFACE-WATER DISCHARGE OR STAGE-ONLY STATIONS

Station name	Station number	Drainage area (mi ²)	Period of record
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
Rogue River below South Fork Rogue River, near Prospect (d)	14335000	650	1929-65
Rogue River at McLeod (d)	14335075	697	1978-81
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, near 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
Althouse Creek near Holland (d)	14373500	24.3	1947-53
Sucker Creek near Holland (d)	14375000	76.2	1942-65
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

WATER RESOURCES DATA FOR OREGON, 1991

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

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
Columbia River at Umatilla	14019250	214,000	sed	1966
			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
Willow Creek near Arlington	14036000	850	sed	1963-68
			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	1967-68;1976-81
			sc	1976-81
			sed	1963-70
Columbia River at Biggs Junction	14048330	226,400	t	1975-76
DESCHUTES RIVER BASIN				
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 Vancouver	14144700	241,000	t	1968-70;1973-79
			sed	1964-69

DISCONTINUED SURFACE-WATER QUALITY STATIONS

XXIII

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
WILLAMETTE RIVER BASIN				
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
Fall Creek near Lowell	14150300	118	t	1964-87
Winberry Creek near Lowell	14150800	43.9	t	1964-81
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
Gate Creek at Vida	14163000	47.6	sc	1977-85
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 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
North Santiam River near Jefferson	14184100	736	t	1985-86
South Santiam River below Cascadia	14185000	174	t	1963-66;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 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	1964-87
			sc	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
Tualatin River near Gaston	14202500	48.5	t	1979-84
Tualatin River near Dilley	14203500	125	t	1964-68
Gales Creek near Gales Creek	14204000	33.2	t	1964-69
Tualatin River at West Linn	14207500	706	t	1964-68;1976-81
			sc	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	1975-81
			sc	1981
NESTUCCA RIVER BASIN				
Trask River near Tillamook	14302500	145	t	1962-71
Nestucca River near Beaver	14303600	180	t	1965-87
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

XXIV

DISCONTINUED SURFACE-WATER QUALITY STATIONS

Station name	Station number	Drainage area (mi ²)	Type of record	Period of record
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 sed	1980-81 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 sed	1970-75; 1978-81 1968-75
UMPQUA RIVER BASIN				
South Umpqua River at Days Creek	14308600	641	t tb	1971-82 1973-82
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 sed	1968 1968-70
ROGUE RIVER BASIN				
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
Carberry Creek near Copper	14361700	68.9	sed t	1978-80 1978-87
Rogue River near Merlin	14370400	3,268	sed t	1981 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

WATER RESOURCES DATA FOR OREGON 1991

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 surface water in the State. Specifically, it contains: (1) Discharge records for 236 stream-gaging stations, stage only records for 7 gaging stations, 42 partial-record or miscellaneous streamflow stations, and 5 crest-stage, partial-record streamflow stations; (2) stage and content records for 36 lakes and reservoirs; and (3) water-quality records for 48 streamflow-gaging stations and 3 ungaged streamsites.

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. Beginning with the 1985 water year, presentation of ground-water levels in this report was discontinued. 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-91-1." 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. Beginning with the 1990 water year, all water-data reports are available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, are reproduced on a single CD-ROM disc.

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) 231-2009. A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

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, W. H. Young, Director.
State of Oregon Department of Fish and Wildlife, Randy Fisher, Director.
State of Oregon Department of Environmental Quality, Fred Hansen, Director.
Coos Bay-North Bend Water Board, P. A. Matson, General Manager.
Eugene Water and Electric Board, R. L. Berggren, General Manager.
Douglas County, M. J. Youngquist, Coordinator.
City of Ashland, Department of Public Works, S. M. Hall, Director.
City of McMinnville, J. L. Harshman, General Manager.
City of Portland, Bureau of Environmental Services, M. T. Nolan, Director.
City of Portland, Bureau of Water Works, Edward Tenny, Administrator.
The Confederated Tribes of the Umatilla Indian Reservation,
E. H. Patawa, Chairman, Board of Trustees.
The Confederated Tribes of the Warm Springs Indian Reservation,
Zane Jackson, Chairman of Tribal Council.

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; Idaho Power Co., Idaho; Middle Fork Irrigation District; 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.

Surface-water Conditions

Average to below average precipitation and snowpack resulted in generally below normal streamflow for the 1991 water year. Five of the past six years have been abnormally dry for much of the state.

Precipitation for the water year varied across the state, ranging from a high of 105 percent of average in the John Day basin to a low of 67 percent of average in the Klamath basin. Major water shortages were averted due to above normal precipitation across the state during the period March through June. Precipitation amounts were below average for the remainder of the year resulting in a high demand for irrigation water. Supplies were depleted by the end of the water year with irrigation reservoir carryover only 33 percent of average.

The Willamette Valley, where water is usually plentiful, was also impacted by dry conditions. During September many cities were reporting record high temperatures. Portland experienced record highs on 6 days in one 7-day period. As a result, Portland municipal water suppliers called for voluntary cutbacks in water use.

In southeastern Oregon, monthly streamflow averages at the Donner Und Blitzen River near Frenchglen (10396000) continued to be below the 30-year median, as in the previous water year. Flow during the snowmelt months of March through June were 92 percent of the 30-year median (1951-80 water years). The mean annual flow for this stream was 54 percent of the 30-year median. Flows for the Williamson River, in south-central Oregon, were below the median for each month of the water year. The mean annual flow for the Williamson River (11502500), near the town of Chiloquin, was 49 percent of the 30-year median. Monthly and annual mean discharges for these two gages are compared with the 30-year medians in figure 1a.

The Wilson River, representative of the northern Oregon coastal basins, reported monthly flows which were average to below average with the exception of November, February, and April to July which were above average. The annual mean flow for the Wilson River at Tillamook (14301500) was 94 percent of the 30-year median. Figure 1b compares the 1991 water year monthly and annual mean discharges with the 30-year medians.

Southern Oregon streams, located west of the Cascades, followed the same general pattern of below normal flow. The Umpqua River near Elkton (14321000) recorded an annual flow that was 73 percent of the 30-year median. Streamflow at this site for the period March through April was above the 30-year median. The remainder of the year was below the median.

Table 1.--Comparison of peak discharge for the 1991 water year with peak discharge for the period of record at long-term stations

Station number	Station name	Drainage area (mi ²)	Peak discharge 1991 water year Date	ft ³ /s	Exceedance probability	Peak discharge period of record Date	ft ³ /s
10396000	Donner und Blitzen near Frenchglen	a200	May 20	2,000	.25	Apr. 26, 1978	4,270
11502500	Williamson River below Sprague River, near Chiloquin	a3,000	May 23	1,140	<.90	Dec. 26, 1964	16,100
13181000	Owyhee River nome	a8,000	May 21	4,220	---	Feb. 19, 1986	41,400
13214000	Malheur River near Drewsey	a910	May 20	1,190	.74	Dec. 23, 1964	12,000
13331500	Minam River at Minam	a240	May 19	2,990	.59	June 16, 1974	6,260
14048000	John Day River at McDonald Ferry	a7,580	May 21	24,800	.08	Dec. 24, 1964	42,800
14137000	Sandy River near Marmot	262	Jan. 15	13,100	.56	Dec. 22, 1964	61,400
14178000	North Santiam River below Boulder Creek, near Detroit	216	Jan. 15	4,960	.80	Dec. 22, 1964	26,700
14301000	Nehalem River near Foss	667	Apr. 5	34,300	.25	Jan. 9, 1990	53,400
14321000	Umpqua River near Elkton	3,683	Mar. 5	61,000	.83	Dec. 23, 1964	265,000
14325000	South Fork Coquille River at Powers	169	Mar. 4	8,590	.89	Dec. 22, 1964	48,900

a Approximately.
< Less than indicated value.

NOTE.--Exceedance probability refers to the probability that an event will exceed a specific magnitude in a given time period. A flow of 200 ft³/s with an exceedance probability of 0.5 means that there is a 50 percent chance that the flow will exceed 200 ft³/s in any one year.

SPECIAL NETWORKS AND PROGRAMS

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.

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.

The 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).

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.

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.

EXPLANATION OF THE RECORDS

The surface-water records published in this report are for the 1991 water year that began October 1, 1990, and ended September 30, 1991. 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.

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.

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 stations an acoustic velocity meter (AVM) is used instead of the slope method. The AVM measures both water-surface elevation and velocity from which discharge can be computed directly.

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 National Geodetic Vertical Datum of 1929 (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 5 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 5 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 diversions 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 (AC-FT).--Indicates the depth, in acre-feet, to which the drainage area would be covered if all the runoff for the year were uniformly distributed on it.

ANNUAL RUNOFF (CFSM).--Indicates 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 for the year.

ANNUAL RUNOFF (INCHES).--Indicates the depth to which the drainage area would be covered if all the runoff for the year were uniformly distributed on it.

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

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

90 PERCENT EXCEEDS.--The discharge that is exceeded by 90 percent of the flow 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 1982 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 given in publications on "Techniques of Water-Resources Investigations," (TWRI), Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4. All of these references are listed under "PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS" in this report. 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.

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 in analyzing sediment samples and computing sediment records are given in TWRI, Book 5, Chap. C1. Methods used by the Geological Survey laboratory are given in TWRI, Book 1, Chap. D2; Book 3, Chap. C2; Book 5, Chap. A1, A3, and A4.

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, WATSTORE, 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)

ACCESS TO WATSTORE DATA

The U.S. Geological Survey is the principal Federal water-data agency and, as such, collects and disseminates about 70 percent of the water data currently being used by numerous State, local, private, and other Federal agencies to develop and manage our water resources. As part of the Geological Survey's program of releasing water data to the public, a large-scale computerized system has been developed for the storage and retrieval of water data collected through its activities. The National WATER Data STorage and REtrieval System (WATSTORE) was established in 1972 to provide an effective and efficient means for the processing and maintenance of water data collected through the activities of the U.S. Geological Survey and to facilitate release of the data to the public. A variety of useful products, ranging from data tables to complex statistical analyses such as Log Pearson Type III, can be produced using WATSTORE. The system resides on the central computer facilities of the U.S. Geological Survey at its National Center in Reston, Virginia and consists of related files and data bases.

- * Station Header File - Contains descriptive information on more than 440,000 sites throughout the United States and its territories where the U.S. Geological Survey collects or has collected data.
- * Daily Values File - Contains more than 220 million daily values of stream flows, stages, reservoir contents, water temperatures, specific conductances, sediment concentrations, sediment discharges, and ground-water levels.
- * Peak Flow File - Contains approximately 500,000 maximum (peak) streamflow and gage-height values at surface-water sites.

- * Water Quality File - Contains approximately 2 million analyses of water samples that describe the chemical, physical, biological, and radio-chemical characteristics of both surface and ground water.
- * Ground-Water Site Inventory Data Base - Contains inventory data for more than 900,000 wells, springs, and other sources of ground water. The data includes site location, geohydrologic characteristics, well-construction history, and one-time field measurements such as water temperature.

In 1976, the U.S. Geological Survey opened WATSTORE to the public for direct access. The signing of a Memorandum of Agreement with the Survey is required to obtain direct access to WATSTORE. The system can be accessed either synchronously or asynchronously. The requestor will be expected to pay all computer costs he/she incurs. Direct access may be obtained by contacting:

U.S. Geological Survey
National Water Data Exchange
421 USGS National Center
Reston, Virginia 22092

In addition to providing direct access to WATSTORE, data can be provided in various machine-readable formats on magnetic tape or 5-1/4 inch floppy disk and, as noted in the introduction, on CD-ROM discs. Beginning with the 1990 water year, all water-data reports are available on Compact Disc - Read Only Memory (CD-ROM). All data reports published for the current water year for the entire Nation, including Puerto Rico and the Trust Territories, are reproduced on a single CD-ROM disc. 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's District offices. (See address on the back of the title page.) A limited number of CD-ROM discs will be available for sale by the Books and Open-File Reports Section, U.S. Geological Survey, Federal Center, Box 25425, Denver, Colorado 80225.

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 [$(\text{ft}^3/\text{s})/\text{d}$] 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 [$(\text{ft}^3/\text{s})/\text{mi}^2$] 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 (CaCO_3).

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 (ug/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 (UG/L, ug/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 computerized data system, WATSTORE, to uniquely identify a specific constituent. The codes used in WATSTORE 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.....	.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 [mg C/(m².time)] for periphyton and macrophytes and [mg C/(m³.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 [mg O₂/(m².time)] for periphyton and macrophytes and [mg O₂/(m³.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.

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 emerged 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, Books and Open-File Reports Section, Federal Center, Box 25425, 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. Scott 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 Warren 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 MEASUREMENTS 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.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS--Continued

- 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.
- 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 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, by J. F. Wilson, Jr., E. D. Cobb, and F. A. Kilpatrick: USGS--TWRI Book 3, Chapter A12. Revised. 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, N. Yotsukura, G. W. Parker, and L. L. DeLong: USGS--TWRI Book 3, Chapter A18. 1989. 52 pages.
- 3-A19. LEVELS OF STREAMFLOW GAGING STATIONS, by E. J. Kennedy: USGS--TWRI Book 3, Chapter A19. 1990. 27 pages.
- 3-B1. AQUIFER-TEST DESIGN, OBSERVATION, AND DATA ANALYSIS, by R. W. Stallman: USGS--TWRI Book 3, Chapter B1. 1971. 26 pages.
- 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.
- 3-B3. TYPE CURVES FOR SELECTED PROBLEMS OF FLOW TO WELLS IN CONFINED AQUIFERS, by J. E. Reed: USGS--TWRI Book 3, Chapter B3. 1980. 106 pages.
- 3-B4. REGRESSION MODELING OF GROUND-WATER FLOW, by Richard L. Cooley and Richard L. Naff: USGS--TWRI Book 3, Chapter B4. 1990. 232 pages.
- 3-B5. DEFINITION OF BOUNDARY AND INITIAL CONDITIONS IN THE ANALYSIS OF SATURATED GROUND-WATER FLOW SYSTEMS--AN INTRODUCTION, by O. L. Franke, T. E. Reilly, and G. D. Bennett: USGS--TWRI Book 3, Chapter B5. 1987. 15 pages.
- 3-B6. THE PRINCIPLE OF SUPERPOSITION AND ITS APPLICATION IN GROUND-WATER HYDRAULICS, by T. E. Reilly, O. L. Franke, and G. D. Bennett: USGS--TWRI Book 3, Chapter B6. 1987. 28 pages.
- 3-C1. FLUVIAL SEDIMENT CONCEPTS, by H. P. Guy: USGS--TWRI Book 3, Chapter C1. 1970. 55 pages.
- 3-C2. FIELD METHODS FOR MEASUREMENT OF FLUVIAL SEDIMENT, by H. P. Guy and V. W. Norman: USGS--TWRI Book 3, Chapter C2. 1970. 59 pages.
- 3-C3. COMPUTATION OF FLUVIAL-SEDIMENT DISCHARGE, by George Porterfield: USGS--TWRI Book 3, Chapter C3. 1972. 66 pages.
- 4-A1. SOME STATISTICAL TOOLS IN HYDROLOGY, by H. C. Riggs: USGS--TWRI Book 4, Chapter A1. 1968. 39 pages.
- 4-A2. FREQUENCY CURVES, by H. C. Riggs: USGS--TWRI Book 4, Chapter A2. 1968. 15 pages.
- 4-B1. LOW-FLOW INVESTIGATIONS, by H. C. Riggs: USGS--TWRI Book 4, Chapter B1. 1972. 18 pages.
- 4-B2. STORAGE ANALYSES FOR WATER SUPPLY, by H. C. Riggs and C. H. Hardison: USGS--TWRI Book 4, Chapter B2. 1973. 20 pages.

PUBLICATIONS ON TECHNIQUES OF WATER-RESOURCES INVESTIGATIONS--Continued

- 4-B3. REGIONAL ANALYSES OF STREAMFLOW CHARACTERISTICS, by H. C. Riggs:
USGS--TWRI Book 4, Chapter B3. 1973. 15 pages.
- 4-D1. COMPUTATION OF RATE AND VOLUME OF STREAM DEPLETION BY WELLS, by C. T. Jenkins: USGS--TWRI Book 4, Chapter D1. 1970. 17 pages.
- 5-A1. METHODS FOR DETERMINATION OF INORGANIC SUBSTANCES IN WATER AND FLUVIAL SEDIMENTS, by M. J. Fishman and L. C. Friedman, editors: USGS--TWRI Book 5, Chapter A1. 1989. 545 pages.
- 5-A2. DETERMINATION OF MINOR ELEMENTS IN WATER BY EMISSION SPECTROSCOPY, by P. R. Barnett and E. C. Mallory, Jr.: USGS--TWRI Book 5, Chapter A2. 1971. 31 pages.
- 5-A3. METHODS FOR THE DETERMINATION OF ORGANIC SUBSTANCES IN WATER AND FLUVIAL SEDIMENTS, edited by R. L. Wershaw, M. J. Fishman, R. R. Grabbe, and L. E. Lowe: USGS--TWRI Book 5, Chapter A3. 1987. 80 pages.
- 5-A4. METHODS FOR COLLECTION AND ANALYSIS OF AQUATIC BIOLOGICAL AND MICROBIOLOGICAL SAMPLES, by L. J. Britton and P. E. Greenson, editors: USGS--TWRI Book 5, Chapter A4. 1989. 363 pages.
- 5-A5. METHODS FOR DETERMINATION OF RADIOACTIVE SUBSTANCES IN WATER AND FLUVIAL SEDIMENTS, by L. L. Thatcher, V. J. Janzer, and K. W. Edwards: USGS--TWRI Book 5, Chapter A5. 1977. 95 pages.
- 5-A6. QUALITY ASSURANCE PRACTICES FOR THE CHEMICAL AND BIOLOGICAL ANALYSES OF WATER AND FLUVIAL SEDIMENTS, by L. C. Friedman and D. E. Erdmann: USGS--TWRI Book 5, Chapter A6. 1982. 181 pages.
- 5-C1. LABORATORY THEORY AND METHODS FOR SEDIMENT ANALYSIS, by H. P. Guy: USGS--TWRI Book 5, Chapter C1. 1969. 58 pages.
- 6-A1. A MODULAR THREE-DIMENSIONAL FINITE-DIFFERENCE GROUND-WATER FLOW MODEL, by M. G. McDonald and A. W. Harbaugh: USGS--TWRI Book 6, Chapter A1. 1988. 586 pages.
- 7-C1. FINITE-DIFFERENCE MODEL FOR AQUIFER SIMULATION IN TWO DIMENSIONS WITH RESULTS OF NUMERICAL EXPERIMENTS, by P. C. Trescott, G. F. Pinder, and S. P. Larson: USGS--TWRI Book 7, Chapter C1. 1976. 116 pages.
- 7-C2. COMPUTER MODEL OF TWO-DIMENSIONAL SOLUTE TRANSPORT AND DISPERSION IN GROUND WATER, by L. F. Konikow and J. D. Bredehoeft: USGS--TWRI Book 7, Chapter C2. 1978. 90 pages.
- 7-C3. A MODEL FOR SIMULATION OF FLOW IN SINGULAR AND INTERCONNECTED CHANNELS, by R. W. Schaffranek, R. A. Baltzer, and D. E. Goldberg: USGS--TWRI Book 7, Chapter C3. 1981. 110 pages.
- 8-A1. METHODS OF MEASURING WATER LEVELS IN DEEP WELLS, by M. S. Garber and F. C. Koopman: USGS--TWRI Book 8, Chapter A1. 1968. 23 pages.
- 8-A2. INSTALLATION AND SERVICE MANUAL FOR U.S. GEOLOGICAL SURVEY MANOMETERS, by J. D. Craig: USGS--TWRI Book 8, Chapter A2. 1983. 57 pages.
- 8-B2. CALIBRATION AND MAINTENANCE OF VERTICAL-AXIS TYPE CURRENT METERS, by G. F. Smoot and C. E. Novak: USGS--TWRI Book 8, Chapter B2. 1968. 15 pages.

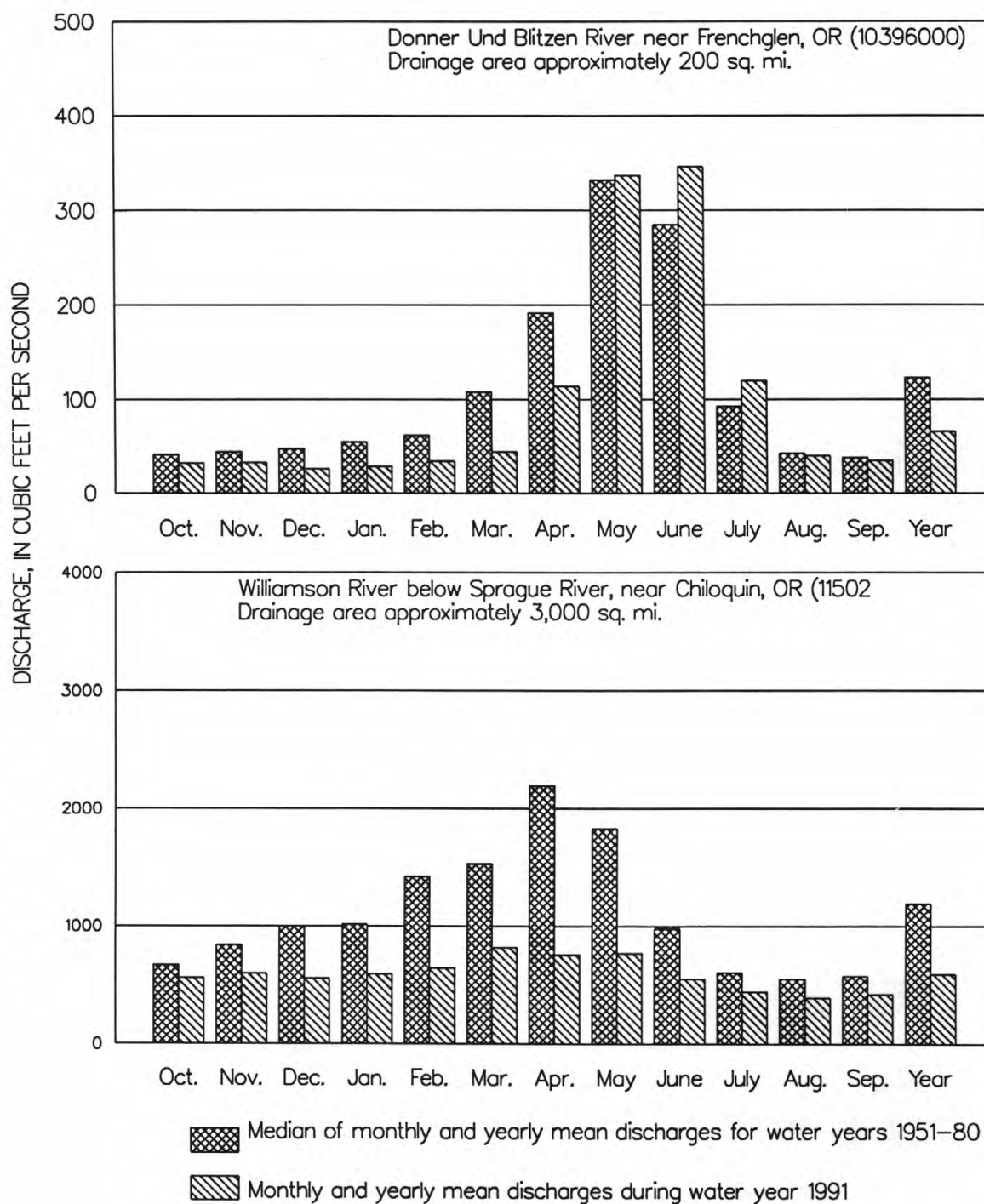


Figure 1a.--Discharge during 1991 water year compared with median discharge for period 1951-80 for two representative gaging stations in Eastern Oregon.

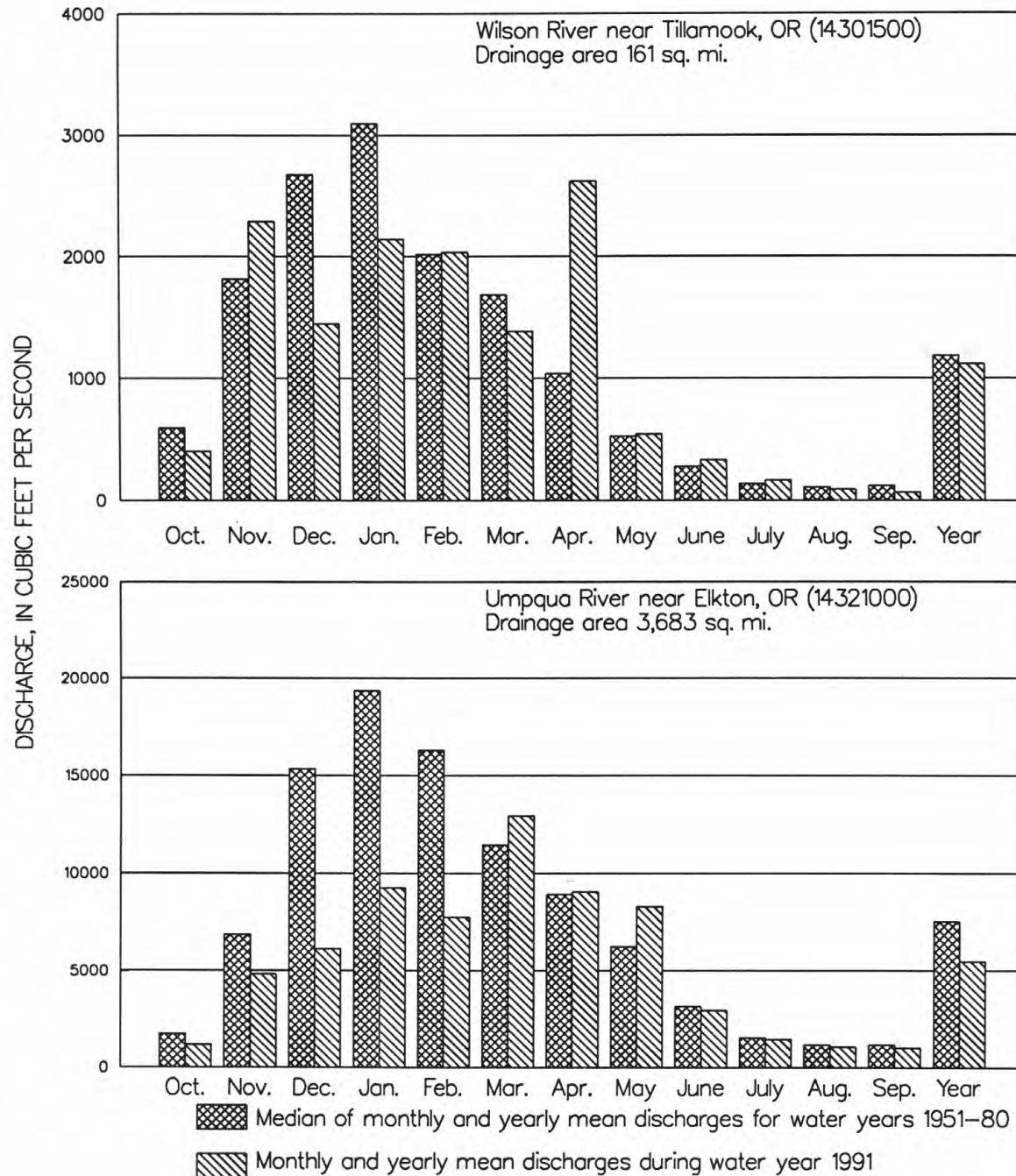


Figure 1b.--Discharge during 1991 water year compared with median discharge for period 1951-80 for two representative gaging stations in Western Oregon.

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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
K	Results based on colony count outside the acceptance range (non-ideal colony count)

NOTE: 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.

Dissolved Trace-Element Concentrations

NOTE: Traditionally, dissolved trace-element concentrations have been reported at the microgram per liter (mg/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). Present data above the mg/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 will begin using new trace-element protocols in the near future.

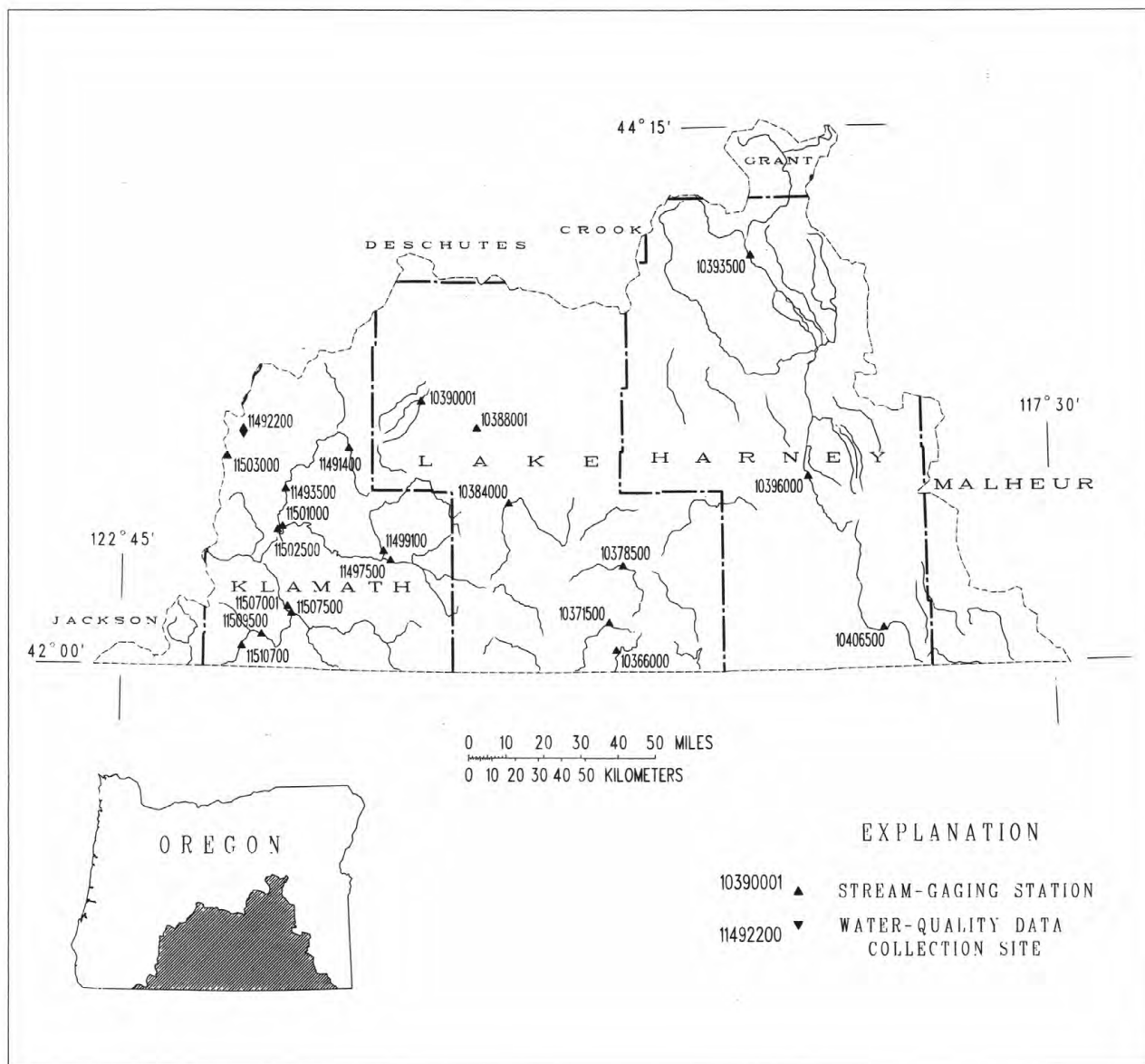


Figure 2.--Location of surface-water and water-quality stations in The Great Basin and the Klamath River basin.

WARNER LAKES BASIN

LOCATION.--Lat 42°04'20", long 119°57'42", in SW 1/4 NW 1/4 sec.25, T.40 S., R.23 E., Lake County, Hydrologic Unit 17120007, on left bank 1.5 mi downstream from Twelvemile Creek and 8 mi southwest of Adel.

PERIOD OF RECORD.-- March 1910 to July 1916, December 1917 to September 1919, and March 1921 to June 1922
(published as "near Warner Lake"), September 1940 to November 1944, March 1945 to September 1991 (discontinued).
See REMARKS.

GAGE.--Water-stage recorder and concrete control. Datum of gage is 4,560.83 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 21, 1940, nonrecording gage or water-stage recorder at sites within 1 mi downstream at various datums. Sept. 21, 1940, to Nov. 30, 1944, water-stage recorder at site 1.8 mi upstream at different datums. Mar. 12, 1945, to June 28, 1952, water-stage recorder at site 70 ft upstream at datum 0.88 ft higher.

AVERAGE DISCHARGE.--56 years (water years 1911-15, 1919, 1941-44, 1946-91), 52.3 ft³/s, 37,890 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 510 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 20	0130	*2,270	*9.21	No other peak greater than base discharge.			
Minimum discharge, 0.14 ft ³ /s Jan. 5, result of freeze-up.							

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	7.3	8.9	e6.2	2.9	1.7	244	14	53	23	3.2	1.8
2	2.7	6.8	9.6	e5.8	3.6	2.7	186	13	60	18	3.1	1.9
3	3.0	6.1	9.9	e4.9	4.9	6.0	118	12	66	16	3.0	2.0
4	3.1	6.4	10	e4.3	5.0	41	97	9.1	66	15	3.8	2.0
5	3.1	7.0	10	e4.3	5.9	59	74	9.3	54	13	6.8	2.5
6	4.6	7.7	8.8	e5.4	5.3	18	142	9.9	52	12	5.7	2.9
7	4.4	7.1	9.1	e6.2	4.6	12	69	12	49	11	3.5	3.5
8	3.9	7.1	10	e5.4	4.5	8.9	24	24	50	11	2.6	2.6
9	3.5	7.9	9.9	e4.8	4.3	8.8	17	22	52	11	2.1	2.5
10	3.5	7.6	12	e4.5	4.1	7.7	14	16	55	8.0	1.9	3.1
11	3.6	7.1	12	e4.5	4.2	6.1	11	16	58	6.1	2.3	2.7
12	3.8	7.1	9.1	5.4	4.2	6.3	10	22	56	6.0	2.7	3.4
13	4.2	7.0	11	7.8	4.4	6.7	8.2	33	50	4.7	2.7	3.8
14	4.1	8.3	8.3	7.1	5.0	6.4	8.2	75	43	4.4	2.7	3.2
15	4.0	8.8	9.1	6.4	5.3	5.8	9.2	47	37	3.8	2.9	2.7
16	4.2	8.0	11	5.0	5.6	5.7	9.1	40	35	4.1	3.4	2.4
17	4.0	8.5	10	4.3	5.6	7.3	8.9	40	33	4.3	3.3	2.2
18	4.2	8.9	11	4.2	e4.4	e8.1	8.1	33	30	4.9	2.9	2.1
19	5.3	8.7	e10	4.0	e3.4	e7.0	7.5	426	30	4.7	3.2	2.0
20	5.3	8.4	e7.0	3.2	e2.6	e5.9	8.3	1270	34	6.3	2.9	1.9
21	5.3	8.4	e4.8	3.2	e2.0	e5.8	10	331	28	7.4	2.7	1.7
22	6.0	8.7	e2.9	3.5	e1.6	e5.8	15	118	25	4.3	2.4	1.8
23	6.0	8.8	e2.0	3.4	e1.5	e5.8	20	86	24	3.9	2.3	2.0
24	5.5	8.9	e1.9	3.1	e1.4	e5.9	19	88	23	3.8	2.2	2.1
25	5.1	9.7	e3.0	3.0	e1.4	e11	19	86	22	3.5	2.1	2.0
26	5.0	10	e4.8	3.0	e1.3	e19	28	73	24	3.1	2.2	1.9
27	4.9	7.7	e4.5	3.3	e1.3	e28	30	64	22	2.8	2.0	1.7
28	4.9	7.9	e4.3	3.0	1.5	23	18	64	29	2.6	3.0	1.8
29	5.6	9.8	e3.8	3.0	---	32	15	60	28	2.5	2.1	2.0
30	5.8	12	e3.1	2.9	---	73	13	57	27	3.1	2.3	2.0
31	6.4	---	e4.9	2.7	---	150	---	51	---	3.0	1.9	---
TOTAL	137.6	243.7	236.7	137.8	101.8	590.4	1260.5	3221.3	1215	227.3	89.9	70.2
MEAN	4.44	8.12	7.64	4.45	3.64	19.0	42.0	104	40.5	7.33	2.90	2.34
MAX	6.4	12	12	7.8	5.9	150	244	1270	66	23	6.8	3.8
MIN	2.6	6.1	1.9	2.7	1.3	1.7	7.5	9.1	22	2.5	1.9	1.7
AC-FT	273	483	469	273	202	1170	2500	6390	2410	451	178	137

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1910 - 1991, BY WATER YEAR (WY)

[illegible]

ANNUAL TOTAL	4732.7		7532.2						
ANNUAL MEAN	13.0		20.6			52.3			
HIGHEST ANNUAL MEAN						125			1952
LOWEST ANNUAL MEAN						4.22			1977
HIGHEST DAILY MEAN	110	Feb 26	1270	May 20	9000			Feb 18	1986
LOWEST DAILY MEAN	1.2	Mar 13	1.3	Feb 26	.30			Aug 19	1955
ANNUAL SEVEN-DAY MINIMUM	1.7	Aug 20	1.4	Feb 22	.56			Aug 13	1955
ANNUAL RUNOFF (AC-FT)	9390		14940		37870				
10 PERCENT EXCEEDS	35		49		122				
50 PERCENT EXCEEDS	6.2		6.0		7.6				
90 PERCENT EXCEEDS	2.0		2.2		7.9				

WARNER LAKES BASIN

10371500 DEEP CREEK ABOVE ADEL, OR

LOCATION.-- Lat 42°11'21", long 120°00'02", in SW 1/4 NW 1/4 sec.15, T.39 S., R.23 E., Lake County, Hydrologic Unit 17120007, on left bank 700 ft downstream from Drake Creek and 5 mi west of Adel.

DRAINAGE AREA.--249 mi².

PERIOD OF RECORD.--September 1922 to September 1923, October 1929 to September 1991 (discontinued). Monthly discharge only October 1929 to September 1932, published in WSP 1314. See REMARKS.

REVISED RECORDS.--WDR OR-83-1: 1979(M), 1980(M,P), 1982(M,P).

GAGE.--Water-stage recorder. Datum of gage is 4,980.34 ft above National Geodetic Vertical Datum of 1929 (State Highway Department bench mark). Sept. 8 to Dec. 20, 1922, nonrecording gage, and Dec. 21, 1922, to Sept. 30, 1923, and Oct. 11, 1929, to Dec. 23, 1964, water-stage recorder at site 700 ft downstream at different datums. Jan. 20 to Sept. 30, 1965, nonrecording gage at site 2,000 ft downstream at different datum.

REMARKS.--Records excellent except those for April 30 to July 31, which are good, and estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--63 years, 131 ft³/s, 94,910 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,420 ft³/s Dec. 23, 1964, gage height, 10.64 ft, from floodmark, from rating curve extended above 1,100 ft³/s on basis of slope-area measurements of peak flow; minimum discharge, 1.7 ft³/s July 20, 27-29, 1934.

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 20	2115	*1,540	*4.26	No other peak greater than base discharge.			
Minimum discharge, 3.2 ft ³ /s Sept. 18.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	22	e13	e13	e13	32	101	96	207	152	7.3	6.2
2	10	14	e13	e18	e13	31	113	95	223	115	7.5	6.3
3	10	13	e12	e17	e17	34	95	88	247	95	7.5	6.3
4	10	16	e15	e15	e23	105	93	81	235	83	7.9	6.5
5	10	21	e13	e14	e32	117	97	101	191	74	10	6.7
6	11	18	e14	e18	e42	59	187	116	213	63	13	7.1
7	11	15	e14	e25	e40	46	146	114	208	54	10	7.5
8	11	18	e14	e26	e35	41	101	200	190	41	8.6	7.4
9	12	18	e14	e23	e30	44	88	170	199	32	7.7	7.3
10	14	16	e15	e20	e25	33	75	142	217	30	7.0	11
11	12	14	e12	e19	e20	33	64	142	235	26	6.6	10
12	12	13	e10	e27	e19	27	68	177	225	23	6.3	9.8
13	12	15	e10	e25	e21	29	67	208	197	22	5.9	9.9
14	11	15	e10	e22	e22	28	72	271	170	20	6.0	9.3
15	12	13	e10	e20	e28	26	73	183	152	18	6.3	9.9
16	12	13	e9.5	e20	44	24	67	176	141	17	6.7	10
17	12	17	e9.0	e20	40	29	66	244	128	17	6.8	10
18	12	18	e10	e20	29	34	73	280	123	17	7.3	9.7
19	16	14	e10	e17	31	28	64	475	120	17	8.1	9.4
20	14	12	e8.0	e15	27	22	64	1320	139	17	7.4	9.3
21	14	15	e5.5	e15	26	22	89	813	118	17	7.3	8.7
22	17	14	e5.0	e15	26	26	129	544	105	16	7.4	9.2
23	18	14	e5.0	e15	25	24	142	371	99	15	6.9	10
24	14	16	e6.0	e14	24	27	151	333	96	16	6.7	10
25	13	14	e7.0	e14	24	28	178	319	108	14	6.6	10
26	12	17	e7.0	e14	25	25	174	277	136	13	6.6	9.7
27	12	e14	e6.5	e13	26	25	131	231	115	11	6.3	9.3
28	12	e13	e7.0	e13	28	31	112	221	138	9.8	6.2	9.4
29	12	e13	e6.0	e13	---	46	103	220	245	8.8	6.6	9.5
30	12	e12	e6.0	e13	---	62	97	319	225	8.4	6.6	9.5
31	13	---	e8.0	e13	---	77	---	242	---	7.8	6.3	---
TOTAL	383	457	304.5	546	755	1215	3080	8579	5145	1069.8	227.4	264.9
MEAN	12.4	15.2	9.82	17.6	27.0	39.2	103	277	171	34.5	7.34	8.83
MAX	18	22	15	27	44	117	187	1320	247	152	13	11
MIN	10	12	5.0	13	13	22	64	88	96	7.8	5.9	6.2
AC-FT	760	906	604	1080	1500	2410	6110	17020	10210	2120	451	525

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1923 - 1991, BY WATER YEAR (WY)

	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935
MEAN	24.0	39.0	76.3	80.7	115	194	395	423	204	33.8	12.9	15.3	
MAX	179	197	605	451	713	825	1072	920	629	115	32.3	31.9	
(WY)	1963	1982	1965	1970	1982	1972	1952	1971	1983	1953	1983	1971	
MIN	5.20	10.3	8.48	7.00	8.00	18.7	45.6	32.3	12.0	2.35	2.08	2.92	
(WY)	1935	1940	1933	1933	1933	1933	1977	1934	1934	1934	1934	1934	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1923 - 1991

	1990	1991	1923-1991
ANNUAL TOTAL	17524.6	22026.6	134
ANNUAL MEAN	48.0	60.3	288
HIGHEST ANNUAL MEAN			27.0
LOWEST ANNUAL MEAN			1971
HIGHEST DAILY MEAN	520	1320	6000
LOWEST DAILY MEAN	4.8	5.0	1.8
ANNUAL SEVEN-DAY MINIMUM	5.0	6.0	1.9
ANNUAL RUNOFF (AC-FT)	34760	43690	97250
10 PERCENT EXCEEDS	144	177	398
50 PERCENT EXCEEDS	16	18	35
90 PERCENT EXCEEDS	6.6	7.3	10

WARNER LAKES BASIN

37

10378500 HONEY CREEK NEAR PLUSH, OR

LOCATION.--Lat 42°25'33", long 119°55'23", in SW 1/4 SW 1/4 sec.20, T.36 S., R.24 E., Lake County, Hydrologic Unit 17120007, on right bank 700 ft upstream from mouth of canyon, 1.4 mi northwest of Plush, and 4 mi downstream from Twelvemile Creek.

DRAINAGE AREA.--170 mi², approximately.

PERIOD OF RECORD.--May 1909 to September 1914 (prior to January 1910, gage heights only), March to May 1915, March to September 1921, March to June 1922, May 1930 to September 1991 (discontinued). Monthly discharge only May 1930 to September 1949, published in WSP 1314. See REMARKS.

REVISED RECORDS.--WSP 1564: 1911-12. WSP 1714: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,552.80 ft above National Geodetic Vertical Datum of 1929. Dec. 24, 1964, to Sept. 30, 1965, nonrecording gage at site 100 ft downstream at different datums. See WSP 1927 for history of changes prior to Dec. 24, 1964.

REMARKS.--Records good except those for Oct. 12 to Mar. 27, and those below 1 ft³/s, which are poor. Slight regulation by five small reservoirs, combined capacity, 870 acre-ft. Diversions for irrigation upstream from station. Records after September 30, 1991 available at the Oregon Resources Department, Salem, OR.

AVERAGE DISCHARGE.--65 years (water years 1911-14, 1931-91), 30.0 ft³/s, 21,740 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft³/s Dec. 23, 1964, gage height, 13.4 ft, from floodmark, from rating curve extended above 250 ft³/s on basis of slope-area measurements at gage height 10.46 ft and of peak flow; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 21	2330	*497	*3.93	No other peak greater than base discharge.			
Minimum discharge, 0.16 ft ³ /s Aug. 2, but may have been lower during period of no gage height, Aug. 3 to Sept. 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.60	.75	2.4	e2.6	e1.4	2.5	5.7	19	34	26	.29	e.21
2	.71	.88	2.0	e2.4	e1.2	3.6	6.5	20	31	17	.24	e.21
3	.78	.94	2.3	e2.4	e1.3	4.8	6.6	19	29	13	e.23	e.21
4	.77	1.1	2.7	e2.5	e1.7	6.8	6.8	20	30	10	e.27	e.21
5	.90	1.3	2.8	e3.0	e2.5	13	7.3	25	35	8.7	e.40	e.22
6	.85	1.2	2.4	e3.2	e3.5	8.0	11	27	53	8.4	e.35	e.23
7	.52	1.2	2.0	e4.0	e4.5	5.2	10	25	48	10	e.30	e.24
8	.51	1.2	2.5	e3.5	e4.0	5.0	8.5	31	38	9.4	e.25	e.23
9	.47	1.6	3.0	e3.5	e3.5	4.2	6.1	31	33	8.4	e.20	e.24
10	.47	1.4	3.7	e3.7	e2.8	4.8	4.9	23	25	7.4	e.20	e.27
11	.38	1.2	3.6	e4.3	2.2	4.2	6.1	24	21	5.9	e.19	e.25
12	.20	1.1	2.7	e5.0	1.7	4.4	5.9	35	19	3.9	e.19	e.26
13	.21	1.2	e2.3	e5.0	1.7	4.5	5.4	40	20	2.8	e.18	e.27
14	.20	1.5	e2.0	e4.8	2.4	4.7	5.4	59	23	1.9	e.18	e.28
15	.21	1.9	e2.0	e4.0	2.2	4.8	6.6	51	24	1.2	e.19	e.29
16	.20	1.7	e2.2	e3.6	2.7	4.2	9.5	37	22	1.1	e.19	e.28
17	.20	2.2	e2.3	e3.6	4.2	3.7	11	35	20	1.0	e.25	e.26
18	.19	2.5	e2.3	e3.8	3.7	3.5	11	45	20	1.1	e.18	e.27
19	.22	2.6	e2.4	e3.8	e3.4	4.7	12	122	19	1.1	e.40	e.27
20	.23	2.2	e1.8	e3.3	e3.0	5.1	15	332	18	.95	e.60	e.25
21	.23	2.2	e1.2	e3.0	e2.7	4.9	26	343	16	2.3	e.25	e.26
22	.24	2.3	e.78	e2.7	e2.5	4.9	34	335	13	1.3	e.35	e.26
23	.42	2.4	e.68	e2.5	e2.3	4.6	29	233	13	1.1	e.28	e.26
24	.78	2.4	e1.2	e2.4	e2.0	4.5	29	172	13	.98	e.23	e.29
25	.73	2.5	e1.5	e2.2	e1.8	4.9	25	115	14	.81	e.23	e.31
26	.75	2.2	e1.8	e2.1	e1.8	5.5	21	82	18	.76	e.23	e.31
27	.71	2.4	e1.7	e2.0	1.7	5.0	17	61	19	.70	e.23	e.30
28	.96	2.1	e1.8	e2.0	1.7	3.9	16	47	20	.56	e.23	e.28
29	.80	2.5	e1.9	e1.9	---	3.7	16	41	26	.45	e.23	e.28
30	.79	2.7	e1.7	e1.7	---	3.7	18	53	32	.37	e.23	e.29
31	.75	---	e2.0	e1.6	---	4.0	---	44	---	.30	e.21	---
TOTAL	15.98	53.37	65.56	96.1	70.1	150.8	392.3	2546	746	148.88	7.98	7.79
MEAN	.52	1.78	2.11	3.10	2.50	4.86	13.1	82.1	24.9	4.80	.26	.26
MAX	.96	2.7	3.7	5.0	4.5	13	34	343	53	26	.60	.31
MIN	.19	.75	.68	1.6	1.2	2.5	4.9	19	13	.30	.18	.21
AC-FT	32	106	130	191	139	299	778	5050	1480	295	16	15

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1991, BY WATER YEAR (WY)

	3.46	6.60	19.1	21.5	31.1	48.0	94.1	113	46.1	8.05	1.43	1.12
MEAN	3.46	6.60	19.1	21.5	31.1	48.0	94.1	113	46.1	8.05	1.43	1.12
MAX	38.5	32.1	253	107	181	181	264	318	158	27.8	7.45	3.87
(WY)	1963	1982	1965	1974	1982	1986	1952	1971	1983	1983	1965	1965
MIN	.12	.92	.96	1.13	2.50	4.62	10.1	10.9	3.19	.32	.19	.23
(WY)	1962	1960	1960	1960	1991	1977	1977	1977	1977	1968	1951	1955

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1930 - 1991
ANNUAL TOTAL	2445.58	4300.86	
ANNUAL MEAN	6.70	11.8	32.8
HIGHEST ANNUAL MEAN			78.8
LOWEST ANNUAL MEAN			3.84
HIGHEST DAILY MEAN	42	343	3500
LOWEST DAILY MEAN	.19	.18	.10
ANNUAL SEVEN-DAY MINIMUM	.20	.19	.10
ANNUAL RUNOFF (AC-FT)	4850	8530	23760
10 PERCENT EXCEEDS	21	26	95
50 PERCENT EXCEEDS	2.6	2.4	7.2
90 PERCENT EXCEEDS	.38	.24	.54

SUMMER LAKE BASIN

39

10388001 ANA RIVER NEAR SUMMER LAKE, OR

LOCATION.--Lat 42°59'42", long 120°44'54", in SE 1/4 sec.6, T.30 S., R.17 E., Lake County, Hydrologic Unit 17120005, on left bank 300 ft downstream from diversion dam and 2.0 mi northeast of town of Summer Lake.

DRAINAGE AREA.--Indeterminate; Ana River Springs, source of the stream located three-quarters of a mile upstream from station, are flooded by pondage behind diversion dam.

PERIOD OF RECORD.--October 1929 to September 1939 (river only); June to September 1928, April 1931 to July 1938, and April 1940 to September 1942 (irrigation season records for Summer Lake Canal only); June 1951 to September 1991 (discontinued). Prior to June 1951 monthly discharge only, published in WSP 1314. See REMARKS.

GAGE.--Water-stage recorder. Elevation of gage is 4,160 ft from plans of Ana River diversion dam. Oct. 1, 1929, to Sept. 30, 1939, at site 80 ft downstream at different datum.

REMARKS.--No estimated daily discharges. Records good. All records presented herein include flow in Summer Lake Canal which diverts 300 ft upstream from station for irrigation of lands along west side of Summer Lake. Flow regulated by gates at diversion dam. Records after September 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--43 years (water years 1931-32, 1936, 1952-91), 90.3 ft³/s, 65,420 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 188 ft³/s Dec. 22, 1964, gage height, 2.81 ft, no flow in canal; maximum gage height, 3.08 ft Nov. 12, 1990; minimum discharge, 1.0 ft³/s Jan. 21, 22, 1970; minimum daily, 3.0 ft³/s Oct. 31, 1970.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 181 ft³/s Nov. 12, gage height, 3.08 ft; minimum daily, 60 ft³/s Jan 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	72	102	102	92	69	85	83	69	80	77	81	85
2	72	102	101	92	72	86	83	68	80	77	81	85
3	72	101	101	92	75	86	82	68	80	77	82	85
4	72	100	99	91	77	86	82	69	80	77	85	86
5	72	100	98	91	78	85	82	69	81	77	84	85
6	72	100	98	91	79	84	82	73	81	77	84	85
7	80	100	98	91	81	84	82	76	81	77	84	84
8	90	99	98	91	82	84	82	82	81	79	83	84
9	90	99	98	92	83	84	82	81	82	79	82	84
10	90	99	97	93	84	85	82	80	82	79	83	83
11	89	99	97	93	84	85	82	77	84	79	83	84
12	89	142	97	82	84	85	82	75	85	79	84	83
13	88	116	97	78	84	84	82	74	87	78	84	82
14	88	72	97	107	84	84	82	76	87	78	84	81
15	87	76	97	100	85	84	82	77	87	78	84	81
16	93	79	96	96	85	84	82	77	86	78	84	81
17	96	82	96	95	85	84	82	80	86	78	84	81
18	95	85	94	94	85	84	80	83	86	78	85	81
19	94	87	94	93	85	84	79	82	86	79	84	80
20	105	119	95	93	84	84	76	80	87	79	85	80
21	132	161	95	92	84	84	72	79	86	79	85	80
22	127	137	95	92	84	84	72	79	86	79	85	80
23	118	124	94	91	85	84	73	79	86	79	85	80
24	113	115	95	91	85	84	73	79	86	79	85	80
25	111	106	95	91	85	84	73	79	80	79	85	80
26	109	103	95	91	85	84	68	79	75	79	85	80
27	108	102	90	91	85	84	69	79	71	79	86	80
28	106	102	88	91	85	84	69	79	69	80	86	80
29	105	102	90	82	---	84	69	80	73	81	86	80
30	104	102	91	60	---	83	70	80	77	81	86	79
31	103	---	91	66	---	84	---	80	---	81	85	---
TOTAL	2942	3113	2969	2785	2303	2614	2339	2388	2458	2436	2609	2459
MEAN	94.9	104	95.8	89.8	82.2	84.3	78.0	77.0	81.9	78.6	84.2	82.0
MAX	132	161	102	107	85	86	83	83	87	81	86	86
MIN	72	72	88	60	69	83	68	68	69	77	81	79
AC-FT	5840	6170	5890	5520	4570	5180	4640	4740	4880	4830	5170	4880
CAL YR 1990	TOTAL 31842	MEAN 87.2	MAX 161	MIN 66	AC-FT 63160							
WTR YR 1991	TOTAL 31415	MEAN 86.1	MAX 161	MIN 60	AC-FT 62310							

SILVER LAKE BASIN

10390001 SILVER CREEK NEAR SILVER LAKE, OR

LOCATION.--Lat 43°06'50", long 121°03'59" in NE 1/4 SW 1/4 sec.28, T.28 S., R.14 E., Lake County, Hydrologic Unit 17120005, on right bank 1.5 mi downstream from diversion dam of Silver Lake Irrigation District, 1.5 mi southwest of town of Silver Lake, and 3 mi upstream from Bridge Creek.

DRAINAGE AREA.--180 mi², approximately.

PERIOD OF RECORD.--January 1905 to March 1907, January 1909 to September 1927, February to December 1928, February 1929 to September 1991 (discontinued). See REMARKS.

REVISED RECORDS.--WSP 1564: 1906, 1910, 1921(M). WSP 1734: Drainage area.

GAGE.--Water-stage recorder. Concrete control since Sept. 15, 1932. Datum of gage is 4,361.22 ft above National Geodetic Vertical Datum of 1929. Prior to May 24, 1932, nonrecording gage or water-stage recorder at practically same location at datum 1.00 ft higher, or nonrecording gage at diversion dam outlet 1.5 mi upstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow regulated by reservoir, capacity, 800 acre-ft, 1.5 mi upstream from station and by Thompson Valley Reservoir, capacity, 19,660 acre-ft, 11 mi upstream from station. Records given herein include flow in Silver Lake Irrigation District Canal which diverts 1.5 mi upstream from station. No record of diversion October 1943 to September 1965. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--79 years (water years 1906, 1910-27, 1930-41, 1944-91), 31.0 ft³/s, 22,460 acre-ft/yr, including diversion by Silver Lake Irrigation District Canal.

EXTREMES FOR PERIOD OF RECORD.--Creek only, maximum discharge, 1,800 ft³/s Mar. 20, 1907, gage height, 10.08 ft, present datum, from rating curve extended above 700 ft³/s; maximum gage height, 10.3 ft Dec. 22, 1964; no flow at times in 1931-32, 1934, 1937.

Combined flow, maximum discharge, 1,800 ft³/s Mar. 20, 1907, gage height, 10.08 ft, present datum, from rating curve extended above 700 ft³/s; maximum gage height, 10.3 ft Dec. 22, 1964; no flow at times in 1931-32, 1934, 1937.

EXTREMES FOR CURRENT YEAR.--Creek only, maximum discharge, 28 ft³/s May 19, 22, June 29, 30, gage height, 2.04 ft; maximum gage height, 2.58 ft Dec. 24 (ice affected); minimum discharge, 0.02 ft³/s Sept. 30.

Combined flow, maximum daily discharge, 40 ft³/s June 15; minimum daily, 0.03 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.8	7.7	4.7	3.0	1.9	1.1	1.8	2.0	30	29	2.2	5.7
2	5.6	7.1	4.8	3.0	1.9	1.0	2.1	2.8	28	27	2.1	5.7
3	5.3	6.9	4.6	3.0	1.9	1.3	1.7	2.2	28	27	2.1	5.2
4	5.2	7.0	3.8	3.1	1.7	.79	1.6	1.3	28	19	2.2	5.2
5	5.2	7.0	3.7	3.3	1.7	.77	1.4	.90	29	18	2.1	4.9
6	5.1	7.2	3.7	3.2	1.8	1.4	1.4	.86	30	17	.84	4.6
7	4.9	7.2	3.7	3.1	2.0	1.7	1.4	2.5	30	16	.72	4.8
8	5.1	7.2	3.6	2.9	1.8	3.0	1.4	5.0	28	15	2.4	5.1
9	5.3	7.2	3.6	2.8	1.6	2.6	1.3	6.4	28	14	6.3	4.3
10	5.8	7.1	3.6	2.7	1.7	2.4	1.2	8.8	32	13	6.5	1.6
11	6.2	7.1	3.8	2.6	1.6	2.5	1.2	16	31	13	7.5	.56
12	6.3	6.9	4.1	2.5	1.7	3.2	1.2	22	30	11	8.5	.58
13	6.6	6.9	4.0	2.5	1.7	2.3	1.1	23	31	8.7	8.5	.61
14	6.9	6.9	3.7	2.5	1.7	2.2	1.1	23	37	8.0	8.4	.46
15	7.0	6.8	3.8	2.5	1.7	2.2	1.2	22	40	6.0	8.1	.20
16	7.2	6.7	3.7	2.5	1.6	2.2	1.2	23	37	4.7	8.1	.26
17	7.3	6.5	3.3	2.4	1.6	2.2	1.1	27	35	4.7	7.8	.25
18	7.3	6.4	3.2	2.4	1.6	2.0	1.3	27	34	3.8	8.1	.35
19	7.4	6.3	2.8	2.4	1.5	2.0	1.3	28	34	2.9	8.3	.21
20	7.4	6.1	2.7	2.3	1.5	2.0	1.3	28	35	2.9	7.8	.18
21	7.5	5.8	2.7	2.3	1.5	2.0	1.5	27	33	2.7	7.7	.16
22	7.5	5.7	2.7	2.3	1.4	2.0	1.3	34	33	2.6	7.5	.14
23	7.7	5.5	2.7	2.2	1.5	1.9	1.5	29	35	2.4	7.2	.13
24	8.0	5.2	2.7	2.2	1.7	2.0	1.5	26	37	2.3	7.1	.11
25	8.5	5.3	2.9	2.1	1.7	2.0	1.5	32	38	2.3	7.0	.11
26	8.6	5.4	3.1	2.1	1.7	2.0	1.6	34	23	2.2	7.0	.10
27	8.8	4.9	3.3	2.1	1.6	1.9	1.6	33	15	2.1	6.7	.10
28	8.5	6.0	3.2	2.0	1.4	1.8	1.7	32	20	2.1	6.6	.08
29	8.5	4.6	3.0	2.0	---	1.9	1.9	32	30	2.1	6.3	.05
30	8.5	4.6	2.8	2.0	---	1.9	1.9	32	30	2.0	6.0	.03
31	8.4	---	2.9	2.1	---	1.9	---	31	---	2.1	5.9	---
TOTAL	213.4	191.2	106.9	78.1	46.7	60.16	42.9	613.06	929	279.6	183.56	51.77
MEAN	6.88	6.37	3.45	2.52	1.67	1.94	1.43	19.8	31.0	9.02	5.92	1.73
MAX	8.8	7.7	4.8	3.3	2.0	3.2	1.9	34	40	29	8.5	5.7
MIN	4.9	4.6	2.7	2.0	1.4	.77	1.1	.86	15	2.0	.72	.03
AC-FT	423	379	212	155	93	119	85	1220	1840	555	364	103

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1991, BY WATER YEAR (WY)

	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
MEAN	8.90	6.63	6.93	12.0	13.6	44.5	74.1	112	63.3	40.5	33.6	21.7														
MAX	14.8	15.6	16.6	53.4	62.8	224	224	304	119	54.5	51.0	42.6														
(WY)	1987	1985	1974	1974	1982	1972	1974	1983	1983	1975	1984	1987														
MIN	2.22	1.19	1.62	2.05	1.67	1.18	1.43	19.8	31.0	9.02	4.80	1.39														
(WY)	1982	1978	1977	1977	1991	1977	1991	1991	1991	1991	1981	1981														

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1966 - 1991

ANNUAL TOTAL	6332.4	2796.35	
ANNUAL MEAN	17.3	7.66	
HIGHEST ANNUAL MEAN			36.6
LOWEST ANNUAL MEAN			72.7
HIGHEST DAILY MEAN	60	40	673
LOWEST DAILY MEAN	2.7	.03	.03
ANNUAL SEVEN-DAY MINIMUM	2.7	.08	.08
ANNUAL RUNOFF (AC-FT)	12560	5550	26540
10 PERCENT EXCEEDS	54	28	75
50 PERCENT EXCEEDS	7.2	3.3	18
90 PERCENT EXCEEDS	3.6	1.3	3.5

MALHEUR AND HARNEY LAKES BASIN

41

10393500 SILVIES RIVER NEAR BURNS, OR

LOCATION.-- Lat 43°42'55", long 119°10'35", in NW 1/4 NW 1/4 sec.31, T.21 S., R.30 E., Harney County, Hydrologic Unit 17120002, on left bank 5 mi downstream from Emigrant Creek and 11 mi northwest of Burns.

DRAINAGE AREA.--934 mi².

PERIOD OF RECORD.--May 1903 to July 1906, December 1908 to December 1912, March 1913 to September 1917 (irrigation seasons only), March 1918 to October 1920, March 1921 to July 1922 (irrigation seasons only), October 1922 to September 1991 (discontinued). See REMARKS.

GAGE.--Water-stage recorder. Datum of gage is 4,195 ft above National Geodetic Vertical Datum of 1929 (river-profile survey). See WSP 1734 for history of changes prior to Oct. 4, 1951.

REMARKS.--Records good Feb. 13 to July 1; fair Oct. 1 to Nov. 25; poor Nov. 26 to Feb. 12, July 2 to Sept. 31. No regulation. Diversions for irrigation upstream from station during periods of high flow only. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--78 years (water years 1904-5, 1910-12, 1918-21, 1923-91), 177 ft³/s, 128,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,960 ft³/s Apr. 6, 1952, gage height, 15.2 ft; no flow July 19 to Sept. 22, 1934.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 511 ft³/s May 22, gage height, 4.49 ft; minimum discharge, 5.6 ft³/s Dec. 1, Sept. 11, 25, 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.8	25	e15	e22	e30	e54	75	94	173	82	11	e7.2
2	8.6	25	e13	e21	e35	54	93	94	160	79	11	e7.2
3	8.6	23	e13	e19	e50	54	95	93	141	73	10	e7.0
4	8.2	24	e14	e18	e70	63	91	87	123	65	9.7	e6.8
5	7.9	27	e16	e18	e100	70	90	78	113	57	10	e6.8
6	8.3	26	e18	e19	e150	68	97	79	133	50	11	e6.4
7	8.8	22	e16	e20	e100	63	98	82	173	44	12	6.2
8	9.3	23	e15	e20	e80	63	96	96	184	39	11	6.1
9	9.5	24	e17	e23	e60	61	91	123	187	36	10	6.1
10	9.9	24	e19	e24	e55	61	93	119	180	33	10	6.3
11	11	22	e21	e25	e70	57	95	118	154	31	9.3	6.2
12	11	21	e17	e27	e90	55	93	126	128	29	9.0	6.1
13	11	22	e16	e30	134	55	92	132	108	28	e9.0	6.4
14	12	24	e18	e33	170	55	93	145	100	26	e9.4	6.4
15	13	23	e19	e36	187	53	96	154	94	24	e9.6	6.5
16	14	19	e20	e50	167	51	95	144	87	23	e9.0	7.2
17	14	20	e21	e53	150	48	92	168	77	22	e8.6	7.2
18	15	23	e21	e55	136	48	87	222	73	21	e9.2	6.9
19	16	21	e20	e58	121	49	84	298	66	21	e9.6	7.1
20	17	19	e19	e50	111	50	85	453	55	20	e9.4	7.0
21	17	20	e16	e40	e95	50	93	477	54	18	e9.0	6.7
22	19	20	e14	e30	e85	49	104	502	58	17	e9.8	6.4
23	20	21	e15	e26	e85	47	111	472	58	16	e8.2	6.5
24	19	20	e16	e25	e80	49	112	373	57	15	e8.0	6.2
25	18	e19	e17	e24	e75	55	116	306	56	15	e8.0	6.0
26	19	e19	e19	e24	e65	60	117	252	62	16	e7.8	6.2
27	19	e20	e20	e23	e55	64	123	219	65	15	e7.6	6.3
28	20	e19	e22	e23	e54	65	125	197	67	15	e7.6	6.9
29	21	e18	e21	e23	---	66	120	183	68	13	e8.0	6.9
30	22	e16	e19	e24	---	65	106	184	75	12	e8.0	6.5
31	23	---	e21	e25	---	64	---	188	---	13	e7.4	---
TOTAL	438.9	649	548	908	2660	1766	2958	6258	3129	968	286.2	197.7
MEAN	14.2	21.6	17.7	29.3	95.0	57.0	98.6	202	104	31.2	9.23	6.59
MAX	23	27	22	58	187	70	125	502	187	82	12	7.2
MIN	7.9	16	13	18	30	47	75	78	54	12	7.4	6.0
AC-FT	871	1290	1090	1800	5280	3500	5870	12410	6210	1920	568	392

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1991, BY WATER YEAR (WY)

	20.6	34.0	51.5	80.5	159	380	767	464	140	33.3	14.0	13.5
MEAN	20.6	34.0	51.5	80.5	159	380	767	464	140	33.3	14.0	13.5
MAX	74.5	142	482	715	799	1653	2716	1898	612	182	69.2	72.5
(WY)	1985	1985	1965	1965	1982	1983	1952	1983	1984	1983	1984	1984
MIN	3.88	5.17	10.0	10.0	18.0	30.0	11.7	5.62	2.24	.45	.000	.59
(WY)	1932	1932	1932	1932	1937	1934	1934	1934	1934	1934	1934	1934

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1903 - 1991

ANNUAL TOTAL	16967.0	20766.8	175
ANNUAL MEAN	46.5	56.9	591
HIGHEST ANNUAL MEAN			15.0
LOWEST ANNUAL MEAN			1983
HIGHEST DAILY MEAN	287	502	4730
LOWEST DAILY MEAN	3.4	6.0	.00
ANNUAL SEVEN-DAY MINIMUM	3.6	6.2	.00
ANNUAL RUNOFF (AC-FT)	33650	41190	126400
10 PERCENT EXCEEDS	124	127	560
50 PERCENT EXCEEDS	24	25	41
90 PERCENT EXCEEDS	7.0	8.0	8.0

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, approximately.

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 National Geodetic Vertical Datum of 1929 (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.--Records good except those for Dec. 19 to Jan. 8, which are fair. 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.--61 years (water years 1912-13, 1915-16, 1918-21, 1939-91), 126 ft³/s, 91,290 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)
May 20	1930	*2,000	*5.37	Jun. 11	2330	841	4.03

Minimum discharge, 15 ft³/s Dec. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	36	22	e23	30	38	66	133	313	262	49	34
2	30	31	34	e21	31	36	74	129	371	256	48	34
3	31	31	27	e25	31	35	70	121	457	272	47	34
4	31	36	35	e20	30	42	76	119	477	251	48	34
5	31	37	31	e24	34	50	80	133	374	234	48	34
6	33	33	22	e22	34	38	94	143	342	221	47	34
7	32	28	25	e27	30	38	85	152	303	189	44	34
8	32	40	35	e31	30	38	69	234	302	165	43	34
9	32	44	32	33	30	45	71	183	354	147	41	34
10	32	34	34	36	29	42	64	157	449	135	41	51
11	32	32	34	36	30	37	62	152	592	117	41	42
12	32	32	21	36	30	39	64	157	609	109	39	37
13	32	31	32	39	37	38	69	207	494	108	38	36
14	32	32	20	37	41	39	71	288	401	102	38	35
15	32	29	24	40	39	39	68	190	368	95	39	35
16	32	30	36	32	50	38	69	206	403	84	40	35
17	31	34	36	32	42	39	74	318	364	81	41	34
18	32	31	32	31	32	40	73	678	332	77	40	34
19	34	30	e23	31	38	39	75	1010	332	74	38	34
20	32	31	e20	20	35	38	84	1200	309	70	39	33
21	33	31	e17	22	34	41	219	648	271	69	38	33
22	37	31	e15	28	35	40	291	452	263	66	37	33
23	36	29	e17	30	34	40	167	410	248	63	36	34
24	33	31	e19	28	33	58	155	430	242	75	36	34
25	32	33	e22	23	34	70	254	460	235	66	35	33
26	32	28	e25	25	35	63	242	427	206	62	35	33
27	32	32	e30	29	35	58	196	385	193	58	35	33
28	31	33	e23	26	36	56	139	371	199	56	35	34
29	32	33	e20	24	---	45	154	341	288	54	36	34
30	32	31	e17	27	---	45	138	340	299	52	35	33
31	33	---	e19	31	---	60	---	286	---	50	34	---
TOTAL	998	974	799	889	959	1364	3413	10460	10390	3720	1241	1046
MEAN	32.2	32.5	25.8	28.7	34.2	44.0	114	337	346	120	40.0	34.9
MAX	37	44	36	40	50	70	291	1200	609	272	49	51
MIN	30	28	15	20	29	35	62	119	193	50	34	33
AC-FT	1980	1930	1580	1760	1900	2710	6770	20750	20610	7380	2460	2070

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1991, BY WATER YEAR (WY)

	MEAN	44.1	48.1	55.8	64.8	92.8	148	225	373	290	98.3	47.8	42.4
MAX	86.4	94.3	181	239	310	414	666	812	802	320	113	87.3	
(WY)	1985	1985	1965	1971	1921	1989	1952	1984	1917	1984	1984	1984	
MIN	25.4	25.3	25.2	25.0	27.8	40.5	61.2	138	67.8	28.9	24.2	23.5	
(WY)	1969	1962	1960	1916	1964	1977	1968	1968	1966	1968	1966	1968	

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1911 - 1991
ANNUAL TOTAL	24142	36253	
ANNUAL MEAN	66.1	99.3	126
HIGHEST ANNUAL MEAN			273
LOWEST ANNUAL MEAN			55.2
HIGHEST DAILY MEAN	309	1200	2180
LOWEST DAILY MEAN	15	15	11
ANNUAL SEVEN-DAY MINIMUM	19	19	14
ANNUAL RUNOFF (AC-FT)	47890	71910	91460
10 PERCENT EXCEEDS	159	289	325
50 PERCENT EXCEEDS	41	37	58
90 PERCENT EXCEEDS	30	28	32

LOCATION.--Lat 42°09'20", long 118°27'14", in NW 1/4 SE 1/4 sec.26, T.39 S., R.36 E., Harney County, Hydrologic Unit 17120009, on right bank 0.4 mi upstream from bridge at mouth of canyon, 5 mi east of Trout Creek Ranch, and 14 mi northeast of Denio.

PERIOD OF RECORD.--March 1911 to March 1912, April 1922 to November 1923, March 1925 to September 1931 (irrigation seasons only), April 1932 to September 1991 (discontinued). Prior to Oct. 1, 1961, published as "near Denio, Oreg." See REMARKS.

Mar. 25, 1911, to Mar. 31, 1912, nonrecording gage at bridge 0.4 mi downstream at different datum.
Apr. 28, 1922, to June 14, 1932, water-stage recorder at site 10 ft upstream at datum 0.50 ft higher.

AVERAGE DISCHARGE.--60 years (water years 1923, 1933-91), 16.3 ft³/s, 11,810 acre-ft/yr.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 6.0 ft, caused by cloudburst, probably occurred in 1924 or 1925.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 20	0430	*102	*2.96	May 30	0430	81	2.78
May 25	0630	90	2.86	June 4	0330	75	2.73

Minimum daily discharge, 0.25 ft³/s Dec. 21, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	e5.0	e3.8	e.45	e1.6	4.4	8.7	27	64	10	4.0	2.5
2	2.9	e4.5	e3.9	e.43	e2.1	4.4	8.9	24	66	8.4	4.1	2.4
3	3.1	e3.9	e3.5	e.42	e2.0	4.1	8.4	18	69	7.4	3.6	2.5
4	3.3	e4.5	e4.0	e.41	e3.7	4.4	7.5	19	68	6.5	3.7	2.5
5	3.1	e5.4	e4.2	e.40	e5.0	6.0	8.0	21	61	5.5	3.9	2.9
6	3.3	e4.5	e3.6	e.48	e6.5	4.7	13	22	54	5.1	4.1	4.5
7	3.5	e4.0	e3.4	e.48	e6.0	7.3	12	19	48	4.7	3.4	4.3
8	3.5	e4.4	e3.6	e.48	e5.0	5.3	9.0	23	43	4.4	2.6	4.1
9	3.8	e4.7	e3.7	e.48	e4.5	6.6	7.9	19	41	4.2	2.6	4.0
10	4.0	e4.9	e4.0	e.55	e4.0	6.2	7.0	19	40	4.0	2.5	6.2
11	4.0	e4.4	e4.6	e.62	e4.0	6.1	6.8	18	32	3.7	2.5	6.5
12	4.0	e4.2	e3.5	e.70	e4.0	7.4	7.1	21	29	3.7	2.5	5.0
13	4.1	e4.6	e3.8	e.78	e4.5	8.3	6.3	32	28	3.3	2.5	4.0
14	4.1	e4.4	e3.4	e.64	e4.6	7.9	6.0	36	25	3.0	2.5	3.5
15	4.2	e4.0	e3.4	e.55	e5.2	7.1	6.4	41	20	3.0	2.6	3.7
16	4.6	e3.9	e3.7	e.45	6.1	6.4	6.2	46	17	3.1	2.8	3.5
17	4.9	e4.2	e4.2	e.48	6.2	7.9	5.0	69	13	4.3	3.1	3.4
18	5.1	e4.5	e4.4	e.47	5.4	7.7	4.8	73	13	6.0	3.0	3.3
19	5.3	e4.3	e2.2	e.45	5.6	7.7	4.5	70	13	6.5	3.0	3.3
20	5.6	e4.1	e1.0	e.42	5.4	7.3	4.9	80	13	6.2	4.0	3.3
21	5.5	e4.6	e.25	e.38	5.1	7.6	10	75	13	6.2	3.6	3.2
22	5.8	e5.0	e.25	e.40	5.0	7.3	10	78	12	6.0	3.4	3.3
23	5.7	e5.1	e.26	e.44	4.6	7.1	11	76	11	5.6	3.2	3.4
24	5.5	e4.5	e.30	e.44	4.4	7.7	17	79	12	5.5	3.1	3.3
25	5.6	e4.5	e.36	e.38	4.7	7.9	21	84	12	5.3	2.9	3.3
26	5.5	e4.0	e.45	e.38	4.4	7.3	22	80	13	5.1	2.8	2.6
27	5.7	e4.0	e.40	e.40	3.5	6.9	25	71	12	4.9	2.5	2.3
28	5.3	e4.2	e.38	e.45	3.7	7.3	21	65	14	4.6	2.6	2.3
29	4.8	e3.9	e.30	e.46	---	7.1	21	68	27	4.6	2.5	2.4
30	4.6	e4.3	e.30	e.60	---	7.1	25	71	20	4.5	2.5	2.4
31	5.7	---	e.40	e.80	---	7.3	---	62	---	4.2	2.5	---
TOTAL	139.1	132.5	75.55	15.27	126.8	207.8	331.4	1506	903	159.5	94.6	103.9
MEAN	4.49	4.42	2.44	.49	4.53	6.70	11.0	48.6	30.1	5.15	3.05	3.46
MAX	5.8	5.4	4.6	.80	6.5	8.3	25	84	69	10	4.1	6.5
MIN	2.9	3.9	.25	.38	1.6	4.1	4.5	18	11	3.0	2.5	2.0
AC-FT	276	263	150	30	252	412	657	2990	1790	316	188	203

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1991, BY WATER YEAR (WY)

MEAN	5.35	6.43	6.61	7.38	9.00	15.3	35.2	61.8	34.0	10.0	3.93	3.84
MAX	12.3	13.8	15.8	24.0	28.5	68.5	105	204	127	40.7	12.7	11.0
(WY)	1985	1985	1984	1971	1982	1972	1952	1984	1984	1952	1983	1983
MIN	1.83	3.03	2.44	.49	3.12	4.51	7.74	4.41	2.50	1.04	.10	.13
(WY)	1935	1935	1991	1991	1990	1977	1968	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1932 - 1991
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ANNUAL TOTAL	2312.55		3795.42						
ANNUAL MEAN	6.34		10.4			16.5			
HIGHEST ANNUAL MEAN						49.4			1984
LOWEST ANNUAL MEAN						3.82			1934
HIGHEST DAILY MEAN	62	Apr 26	84	May 25		450		Apr 11	1982
LOWEST DAILY MEAN	.25	Dec 21	.25	Dec 21		.10		Aug 1	1934
ANNUAL SEVEN-DAY MINIMUM	.32	Dec 21	.32	Dec 21		.10		Aug 1	1934
ANNUAL RUNOFF (AC-FT)	4590		7530			11950			
10 PERCENT EXCEEDS	11		25			45			
50 PERCENT EXCEEDS	4.2		4.5			7.0			
90 PERCENT EXCEEDS	1.8		.58			2.8			

PACIFIC SLOPE BASINS IN CALIFORNIA

KLAMATH RIVER BASIN

11491400 WILLIAMSON RIVER BELOW SHEEP CREEK, NEAR LENZ, OR

LOCATION.--Lat 42°54'42", long 121°28'32", in NE 1/4 SW 1/4 sec.1, T.31 S., R.10 E., Klamath County, Hydrologic Unit 18010201, on left bank at Forest Service bridge, 0.1 mi downstream from Sheep Creek and 17 mi east of Lenz.

DRAINAGE AREA.--205 mi².

PERIOD OF RECORD.--October 1973 to September 1991 (discontinued). Prior to October 1979, in reports of Oregon Water Resources Department. See REMARKS.

GAGE.--Water-stage recorder. Elevation of gage is 4,550 ft, from topographic map.

REMARKS.--Records good except estimated daily discharges, which are poor. Diversions for irrigation upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--18 years, 69.2 ft³/s, 50,140 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 246 ft³/s May 9, 10, 1974, gage height, 3.51 ft; minimum discharge, 16 ft³/s Dec. 13, 1980, result of freezeup.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 63 ft³/s May 17, gage height, 1.24 ft; maximum gage height, 1.86 ft Dec. 20, backwater from ice; minimum discharge, 32 ft³/s Dec. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	45	45	52	e40	49	51	55	52	56	50	40	43
2	44	46	51	e40	50	51	55	52	56	50	40	43
3	44	46	50	e40	52	53	55	52	56	49	40	43
4	43	47	50	e40	53	56	55	52	56	48	40	43
5	43	48	50	e40	55	56	54	52	56	48	40	44
6	43	48	49	e40	53	53	55	51	56	47	41	45
7	43	49	49	e42	52	53	54	49	55	47	41	45
8	43	49	49	e43	52	53	53	50	55	47	43	43
9	43	49	49	e44	52	53	54	50	53	47	43	40
10	43	49	53	e45	51	53	53	50	54	46	43	42
11	43	49	53	e45	51	52	53	50	54	46	43	45
12	43	49	50	52	51	53	53	51	53	46	43	44
13	43	49	e49	53	51	53	53	53	51	46	43	44
14	43	49	e48	53	52	53	53	55	51	46	43	43
15	43	49	e49	54	52	53	53	53	51	46	45	43
16	43	49	49	53	52	53	53	55	51	46	45	43
17	43	49	49	52	51	53	53	61	50	49	45	43
18	43	49	49	52	51	53	53	62	51	47	45	43
19	43	49	e42	52	52	53	53	61	52	46	44	43
20	43	49	e37	51	52	53	53	61	54	46	43	43
21	43	49	e37	51	51	53	55	61	52	46	45	43
22	43	49	e37	50	51	53	56	61	51	46	44	43
23	43	49	e40	50	51	53	56	60	51	46	43	43
24	43	49	e43	50	51	54	56	60	52	46	43	43
25	43	49	e43	51	51	54	55	59	52	46	42	43
26	43	50	e43	50	51	55	55	59	51	45	42	43
27	42	51	e43	50	51	56	55	58	51	45	42	43
28	42	53	e42	50	51	55	53	57	55	44	43	43
29	43	53	e42	e49	---	55	53	57	52	43	43	43
30	44	53	e42	49	---	55	52	57	51	40	43	43
31	45	---	e41	49	---	55	---	56	---	40	42	---
TOTAL	1338	1471	1430	1480	1442	1659	1619	1717	1589	1430	1322	1295
MEAN	43.2	49.0	46.1	47.7	51.5	53.5	54.0	55.4	53.0	46.1	42.6	43.2
MAX	45	53	53	54	55	56	56	62	56	50	45	45
MIN	42	45	37	40	49	51	52	49	50	40	40	40
AC-FT	2650	2920	2840	2940	2860	3290	3210	3410	3150	2840	2620	2570

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1991, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	57.6	61.5	61.8	62.9	69.3	83.6	94.7	92.5	74.1	56.7	52.0	53.6	
MAX	73.2	78.4	78.6	79.2	87.5	143	172	182	141	87.4	71.4	70.3	
(WY)	1985	1985	1984	1985	1982	1986	1983	1983	1983	1982	1983	1984	
MIN	43.2	49.0	46.1	47.7	51.5	53.5	51.1	47.7	48.1	39.5	38.3	40.5	
(WY)	1991	1991	1991	1991	1991	1991	1981	1990	1981	1981	1981	1981	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1979 - 1991

ANNUAL TOTAL	18177		17792										
ANNUAL MEAN	49.8		48.7										
HIGHEST ANNUAL MEAN										68.3			
LOWEST ANNUAL MEAN										98.6		1983	
HIGHEST DAILY MEAN	74	Jan 8	62	May 18	210					48.7		May 29	1983
LOWEST DAILY MEAN	37	Dec 20	37	Dec 20	34							Jul 18	1981
ANNUAL SEVEN-DAY MINIMUM	39	Jul 12	40	Dec 19	37							Aug 6	1981
ANNUAL RUNOFF (AC-FT)	36050		35290							49490			
10 PERCENT EXCEEDS	61		55							102			
50 PERCENT EXCEEDS	49		49							61			
90 PERCENT EXCEEDS	42		43							45			

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LOCATION.--Lat 42°58'45", long 122°04'45", (unsurveyed) 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.

WATER-ELEVATION RECORDS

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to September 1961, nonrecording gage and various reference points used near old boat landing at abandoned trail (Eagle Cove) directly across lake.

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

EXTREMES FOR CURRENT YEAR.--Maximum elevation, 6,171.44 ft Oct. 1; minimum, 6,169.77 ft Sept. 30.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6171.42	6171.11	6170.99	6170.68	6170.76	6170.88	6171.22	6171.29	6171.33	6171.14	6170.87	6170.32
2	6171.39	6171.10	6170.96	6170.67	6170.90	6170.93	6171.21	6171.28	6171.32	6171.13	6170.84	6170.30
3	6171.37	6171.09	6170.95	6170.66	6170.91	6171.09	6171.23	6171.26	6171.32	6171.13	6170.84	6170.29
4	6171.36	6171.13	6170.95	6170.65	6170.98	6171.25	6171.20	6171.25	6171.30	6171.12	6170.83	6170.27
5	6171.32	6171.11	6170.93	6170.64	6170.98	6171.23	6171.25	6171.25	6171.30	6171.11	6170.82	6170.26
6	6171.28	6171.08	6170.91	6170.64	6170.96	6171.24	6171.29	6171.25	6171.29	6171.11	6170.80	6170.24
7	6171.26	6171.11	6170.90	6170.65	6170.95	6171.22	6171.29	6171.27	6171.28	6171.09	6170.77	6170.22
8	6171.24	6171.14	6170.87	6170.62	6170.94	6171.20	6171.31	6171.32	6171.28	6171.08	6170.74	6170.18
9	6171.22	6171.11	6170.88	6170.62	6170.93	6171.21	6171.37	6171.31	6171.27	6171.06	6170.73	6170.14
10	6171.20	6171.10	6170.85	6170.70	6170.92	6171.25	6171.37	6171.29	6171.27	6171.05	6170.70	6170.13
11	6171.17	6171.08	6170.94	6170.74	6170.90	6171.24	6171.34	6171.29	6171.27	6171.04	6170.69	6170.12
12	6171.16	6171.06	6170.92	6170.86	6170.94	6171.26	6171.33	6171.28	6171.26	6171.03	6170.66	6170.10
13	6171.12	6171.07	6170.90	6170.98	6170.95	6171.25	6171.32	6171.30	6171.25	6171.02	6170.64	6170.07
14	6171.11	6171.05	6170.86	6171.08	6170.94	6171.24	6171.30	6171.28	6171.23	6171.01	6170.62	6170.05
15	6171.11	6171.03	6170.86	6171.10	6170.94	6171.22	6171.30	6171.29	6171.23	6170.99	6170.61	6170.04
16	6171.08	6171.02	6170.84	6171.09	6170.95	6171.19	6171.29	6171.33	6171.21	6171.05	6170.60	6170.02
17	6171.06	6171.01	6170.83	6171.08	6170.94	6171.17	6171.29	6171.36	6171.20	6171.03	6170.58	6170.01
18	6171.08	6170.99	6170.93	6171.07	6170.94	6171.18	6171.27	6171.36	6171.20	6171.02	6170.56	6170.00
19	6171.06	6171.01	6170.91	6171.05	6170.94	6171.16	6171.26	6171.35	6171.21	6171.01	6170.55	6169.99
20	6171.04	6171.03	6170.87	6171.02	6170.91	6171.17	6171.27	6171.35	6171.20	6171.00	6170.55	6169.96
21	6171.13	6171.04	6170.85	6171.01	6170.90	6171.16	6171.28	6171.34	6171.19	6170.99	6170.54	6169.92
22	6171.11	6171.03	6170.84	6170.99	6170.88	6171.17	6171.27	6171.33	6171.18	6170.99	6170.53	6169.91
23	6171.10	6171.01	6170.82	6170.97	6170.86	6171.25	6171.28	6171.33	6171.18	6171.00	6170.51	6169.88
24	6171.08	6170.99	6170.80	6170.95	6170.85	6171.25	6171.35	6171.32	6171.17	6171.00	6170.48	6169.87
25	6171.08	6171.05	6170.78	6170.94	6170.83	6171.30	6171.34	6171.31	6171.16	6170.98	6170.46	6169.85
26	6171.04	6171.03	6170.76	6170.92	6170.83	6171.30	6171.35	6171.30	6171.16	6170.96	6170.44	6

KLAMATH RIVER BASIN

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 6,157 ft above National Geodetic Vertical Datum of 1929.

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; 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, 17.5°C Aug. 24; minimum, 3.5°C many days during January through April.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	SPECIFIC CONDUCTANCE (US/CM)	PH (STANDARD UNITS)	TEMPERATURE WATER (DEG C)	TURBIDITY (NTU)	HARDNESS (MG/L AS CaCO3)	CALCIUM, DIS-SOLVED (MG/L AS Ca)	MAGNESIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DIS-SOLVED (MG/L AS K)
OCT 1990 03...	1130	111	7.8	12.5	0.3	28	7.0	2.6	11	44	0.9	1.4
JUL 1991 01...	1115	114	7.6	9.0	0.4	28	7.0	2.6	10	42	0.8	1.6
AUG 29...	1200	118	7.8	15.5	0.4	28	7.0	2.6	11	44	0.9	1.6

DATE	ALCALINITY, DIS-IT FIELD (MG/L AS CaCO3)	BICARBONATE, DIS-IT FIELD (MG/L AS HCO3)	CARBONATE, DIS-IT FIELD (MG/L AS CO3)	SULFATE, DIS-SOLVED (MG/L AS SO4)	CHLORIDE, DIS-SOLVED (MG/L AS CL)	FLUORIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L)	SOLIDS, SUM OF CONSTITUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED PER AC-FT	NITROGEN, NITRITE DIS-SOLVED (MG/L AS N)
OCT 1990 03...	29	36	0	11	11	0.2	18	71	80	0.10	<0.01
JUL 1991 01...	29	35	0	10	11	0.2	18	65	78	0.09	<0.01
AUG 29...	28	34	0	11	11	<0.1	17	84	78	0.11	<0.01

DATE	NITROGEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITROGEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOSPHORUS, TOTAL (MG/L AS P)	PHOSPHORUS, DIS-SOLVED (MG/L AS P)	PHOSPHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUMINUM, DIS-SOLVED (UG/L AS AL)	ARSENIC, DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYLLIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM, DIS-SOLVED (UG/L AS CD)
OCT 1990 03...	<0.10	<0.01	<0.2	0.01	<0.01	<0.01	20	3	6	<0.5	<1
JUL 1991 01...	<0.05	<0.01	<0.2	<0.01	<0.01	0.02	30	3	6	<0.5	<1
AUG 29...	<0.05	0.01	<0.2	0.01	0.01	<0.01	50	3	5	<0.5	<1

DATE	CHROMIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM, DIS-SOLVED (UG/L AS LI)	MANGANESE, DIS-SOLVED (UG/L AS MN)	MERCURY, DIS-SOLVED (UG/L AS HG)	MOLYBDENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELENIUM, DIS-SOLVED (UG/L AS SE)
OCT 1990 03...	<1	<3	2	6	<1	44	<1	<0.1	<10	<1	<1
JUL 1991 01...	<1	<3	3	5	<1	46	<1	<0.1	<10	5	<1
AUG 29...	<1	<3	3	3	<1	45	<1	<0.1	<10	<1	<1

DATE	SILVER, DIS-SOLVED (UG/L AS AG)	STRONTIUM, DIS-SOLVED (UG/L AS SR)	VANADIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	GROSS ALPHA, DIS-SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS-SOLVED (PCI/L AS CS-137)	GROSS BETA, DIS-SOLVED (PCI/L AS SR-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS SR-90)	RADIUM 226, DIS-SOLVED, RADON METHOD (PCI/L)
OCT 1990 03...	<1	58	<6	4	--	--	--	--	--	--	--
JUL 1991 01...	<1	60	<6	14	--	--	--	--	--	--	--
AUG 29...	<1	57	<6	8	<0.6	<0.6	2.6	2.2	<0.6	<0.6	<0.02

KLAMATH RIVER BASIN

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11492200 CRATER LAKE NEAR CRATER LAKE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	13.0	12.5	12.5	8.5	7.5	8.0	5.5	5.5	5.5	4.5	4.0	4.0
2	13.0	12.5	12.5	8.0	7.5	8.0	5.5	5.5	5.5	4.5	4.0	4.0
3	12.5	12.5	12.5	8.0	8.0	8.0	5.5	5.5	5.5	4.5	4.0	4.0
4	12.5	12.0	12.5	8.0	7.5	8.0	5.5	5.5	5.5	4.5	4.0	4.5
5	12.0	12.0	12.0	7.5	7.5	7.5	5.5	5.5	5.5	4.5	4.0	4.5
6	12.0	11.5	12.0	7.5	7.5	7.5	5.5	5.5	5.5	4.0	4.0	4.0
7	12.0	10.5	11.5	7.5	7.0	7.5	5.5	5.5	5.5	4.0	4.0	4.0
8	11.5	10.0	11.0	7.5	6.5	7.5	5.5	5.5	5.5	4.0	4.0	4.0
9	11.0	10.5	11.0	7.5	7.5	7.5	5.5	5.5	5.5	4.0	4.0	4.0
10	11.0	10.0	11.0	7.5	6.5	7.5	5.5	5.0	5.5	4.0	4.0	4.0
11	11.0	10.0	10.5	7.5	7.5	7.5	5.0	5.0	5.0	4.0	4.0	4.0
12	11.0	10.0	10.5	7.5	7.5	7.5	5.0	5.0	5.0	4.0	4.0	4.0
13	10.5	10.0	10.5	7.5	7.5	7.5	5.0	5.0	5.0	4.0	4.0	4.0
14	10.5	10.0	10.5	7.5	7.5	7.5	5.0	5.0	5.0	4.0	4.0	4.0
15	10.0	10.0	10.0	7.5	7.0	7.0	5.0	5.0	5.0	4.0	4.0	4.0
16	10.0	10.0	10.0	7.0	7.0	7.0	5.0	5.0	5.0	4.0	4.0	4.0
17	10.0	9.5	9.5	7.0	6.0	7.0	5.0	5.0	5.0	4.0	4.0	4.0
18	9.5	9.5	9.5	7.0	7.0	7.0	5.0	4.5	5.0	4.0	4.0	4.0
19	9.5	9.0	9.5	7.0	7.0	7.0	4.5	4.5	4.5	4.0	4.0	4.0
20	9.5	9.0	9.5	7.0	6.0	7.0	4.5	4.5	4.5	4.0	3.5	4.0
21	9.0	9.0	9.0	6.5	6.0	6.5	4.5	4.0	4.0	4.0	3.5	3.5
22	9.0	9.0	9.0	6.5	6.0	6.5	4.5	4.5	4.5	4.0	4.0	4.0
23	9.0	8.5	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	6.5	6.5	6.5	4.5	4.5	4.5	4.0	4.0	4.0
25	9.0	8.0	8.5	6.5	6.0	6.5	4.5	4.0	4.5	4.0	4.0	4.0
26	9.0	8.5	9.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
27	9.0	8.5	9.0	6.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
28	9.0	8.5	8.5	6.0	6.0	6.0	4.0	4.0	4.0	4.0	4.0	4.0
29	8.5	8.5	8.5	6.0	6.0	6.0	4.0	4.0	4.0	4.0	3.5	4.0
30	8.5	8.0	8.0	6.0	5.5	5.5	4.0	4.0	4.0	3.5	3.5	3.5
31	8.5	7.5	8.0	---	---	---	4.5	4.0	4.0	3.5	3.5	3.5
MONTH	13.0	7.5	10.0	8.5	5.5	7.0	5.5	4.0	5.0	4.5	3.5	4.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	3.5	3.5	3.5	4.0	4.0	4.0	4.0	3.5	4.0	4.5	4.0	4.0
2	3.5	3.5	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.0	4.5
3	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.0	4.5
4	4.0	3.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0	4.5	4.0	4.5
5	4.0	3.5	3.5	4.0	4.0	4.0	4.0	3.5	4.0	4.5	4.5	4.5
6	4.0	3.5	4.0	4.0	4.0	4.0	4.0	3.5	4.0	4.5	4.5	4.5
7	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.0	4.5
8	4.0	4.0	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.0	4.5
9	4.0	3.5	4.0	4.0	3.5	4.0	4.0	4.0	4.0	4.5	4.0	4.5
10	4.0	3.5	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.5	4.0	4.5
11	4.0	4.0	4.0	4.0	3.5	3.5	4.0	3.5	3.5	4.5	4.0	4.5
12	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.5	4.5	4.5
13	4.0	4.0	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
14	4.0	4.0	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
15	4.0	4.0	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
16	4.0	4.0	4.0	4.0	3.5	4.0	4.0	3.5	4.0	4.5	4.5	4.5
17	4.0	4.0	4.0	4.0	3.5	3.5	4.0	3.5	4.0	4.5	4.0	4.5
18	4.0	4.0	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.0	4.5
19	4.0	4.0	4.0	4.0	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
20	4.0	4.0	4.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
21	4.0	4.0	4.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
22	4.0	4.0	4.0	4.0	3.5	4.0	4.5	4.0	4.0	4.5	4.5	4.5
23	4.0	4.0	4.0	4.0	3.5	3.5	4.0	4.0	4.0	5.0	4.5	4.5
24	4.0	4.0	4.0	3.5	3.5	3.5	4.0	4.0	4.0	4.5	4.5	4.5
25	4.0	4.0	4.0	3.5	3.5	3.5	4.0	4.0	4.0	5.0	4.5	4.5
26	4.0	4.0	4.0	3.5	3.5	3.5	4.0	4.0	4.0	5.0	4.5	5.0
27	4.0	4.0	4.0	3.5	3.5	3.5	4.0	4.0	4.0	5.0	4.5	5.0
28	4.0	4.0	4.0	4.0	3.5	3.5	4.0	4.0	4.0	5.0	5.0	5.0
29	---	---	---	4.0	3.5	3.5	4.0	4.0	4.0	5.0	4.5	5.0
30	---	---	---	4.0	3.5	4.0	4.5	4.0	4.0	5.0	4.5	4.5
31	---	---	---	4.0	4.0	4.0	---	---	---	5.0	4.5	5.0
MONTH	4.0	3.5	4.0	4.0	3.5	3.5	4.5	3.5	4.0	5.0	4.0	4.5

KLAMATH RIVER BASIN

49

11493500 WILLIAMSON RIVER NEAR KLAMATH AGENCY, OR

LOCATION.--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.

DRAINAGE AREA.--1,290 mi², approximately.

PERIOD OF RECORD.--March 1908 to January 1909, April 1909 to June 1910, October 1954 to current year. Monthly discharge only June 1910, published in WSP 1315-B.

REVISED RECORDS.--WSP 1565: 1908-9.

GAGE.--Water-stage recorder. Datum of gage is 4,483.16 ft above National Geodetic Vertical Datum of 1929. Mar. 25, 1908, to June 30, 1910, nonrecording gage or water-stage recorder at two sites about 0.5 mi upstream at different datums. Oct. 1, 1954, to Sept. 30, 1955, water-stage recorder at present site at datum 2.05 ft higher.

REMARKS.--Records good. Flow affected by natural storage in Klamath Marsh. Small diversions upstream from station for irrigation in vicinity of marsh.

AVERAGE DISCHARGE.--37 years (water years 1955-91), 200 ft³/s, 144,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 1,590 ft³/s Mar. 13, 1910, gage height, 3.7 ft, site and datum then in use, from rating curve extended above 800 ft³/s; maximum gage height, 5.57 ft Mar. 3, 1958; no flow at times during 1960-74, 1977-81, 1988-91.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 170 ft³/s Apr. 11, gage height, 3.94 ft; no flow Oct. 1 to Jan. 16, Jan. 20 to Feb. 6, June 18 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	.00	92	150	10	23	.00	.00	.00
2	.00	.00	.00	.00	.00	90	145	8.9	19	.00	.00	.00
3	.00	.00	.00	.00	.00	90	145	5.9	19	.00	.00	.00
4	.00	.00	.00	.00	.00	103	143	5.1	20	.00	.00	.00
5	.00	.00	.00	.00	.00	117	140	4.1	16	.00	.00	.00
6	.00	.00	.00	.00	.00	126	143	3.2	13	.00	.00	.00
7	.00	.00	.00	.00	1.0	135	146	2.9	11	.00	.00	.00
8	.00	.00	.00	.00	1.5	138	147	2.4	10	.00	.00	.00
9	.00	.00	.00	.00	3.0	136	144	5.0	9.0	.00	.00	.00
10	.00	.00	.00	.00	5.2	138	149	5.8	6.6	.00	.00	.00
11	.00	.00	.00	.00	6.1	137	153	4.6	3.9	.00	.00	.00
12	.00	.00	.00	.01	7.7	141	151	4.3	2.5	.00	.00	.00
13	.00	.00	.00	.01	12	149	141	7.4	1.2	.00	.00	.00
14	.00	.00	.00	.01	17	150	113	9.5	.35	.00	.00	.00
15	.00	.00	.00	.00	24	154	95	9.3	.07	.00	.00	.00
16	.00	.00	.00	.00	31	151	76	11	.01	.00	.00	.00
17	.00	.00	.00	.53	41	151	60	15	.01	.00	.00	.00
18	.00	.00	.00	1.1	52	150	49	19	.00	.00	.00	.00
19	.00	.00	.00	.03	58	149	40	22	.00	.00	.00	.00
20	.00	.00	.00	.00	67	150	32	28	.00	.00	.00	.00
21	.00	.00	.00	.00	75	147	28	28	.00	.00	.00	.00
22	.00	.00	.00	.00	81	144	23	28	.00	.00	.00	.00
23	.00	.00	.00	.00	86	146	16	27	.00	.00	.00	.00
24	.00	.00	.00	.00	88	148	13	25	.00	.00	.00	.00
25	.00	.00	.00	.00	91	149	13	28	.00	.00	.00	.00
26	.00	.00	.00	.00	93	155	9.0	27	.00	.00	.00	.00
27	.00	.00	.00	.00	95	155	12	24	.00	.00	.00	.00
28	.00	.00	.00	.00	94	157	8.9	25	.00	.00	.00	.00
29	.00	.00	.00	.00	---	157	9.1	21	.00	.00	.00	.00
30	.00	.00	.00	.00	---	154	8.0	24	.00	.00	.00	.00
31	.00	.00	.00	.00	---	153	---	25	.00	.00	.00	.00
TOTAL	0.00	0.00	0.00	1.69	1028.60	4312	2502.0	465.4	154.64	0.00	0.00	0.00
MEAN	.000	.000	.000	.055	36.7	139	83.4	15.0	5.15	.000	.000	.000
MAX	.00	.00	.00	1.1	95	157	153	28	23	.00	.00	.00
MIN	.00	.00	.00	.00	.00	90	8.0	2.4	.00	.00	.00	.00
AC-FT	.00	.00	.00	3.4	2040	8550	4960	923	307	.00	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1991, BY WATER YEAR (WY)

	MEAN	46.4	131	240	245	325	469	466	275	131	48.9	16.3	13.1
MAX	255	391	580	730	799	1039	1081	952	531	332	146	95.8	
(WY)	1958	1957	1956	1956	1965	1986	1956	1956	1956	1958	1958	1958	1958
MIN	.000	.000	.000	.055	36.7	128	83.4	15.0	.007	.000	.000	.000	.000
(WY)	1962	1965	1991	1991	1991	1969	1991	1991	1981	1981	1961	1960	

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1955 - 1991
ANNUAL TOTAL	22072.44	8464.33	
ANNUAL MEAN	60.5	23.2	200
HIGHEST ANNUAL MEAN			468
LOWEST ANNUAL MEAN			23.2
HIGHEST DAILY MEAN	353	157	1250
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	43780	16790	144700
10 PERCENT EXCEEDS	197	136	498
50 PERCENT EXCEEDS	.00	.00	134
90 PERCENT EXCEEDS	.00	.00	.00

KLAMATH RIVER BASIN

11497500 SPRAGUE RIVER NEAR BEATTY, OR

LOCATION.--Lat 42°26'50", long 121°14'15", in NW 1/4 SE 1/4 sec.13, T.36 S., R.12 E., Klamath County, Hydrologic Unit 18010202, on right bank 1.6 mi east of Beatty, and 4.6 mi upstream from Sycan River.

DRAINAGE AREA.--513 mi².

PERIOD OF RECORD.--April to September 1912 and November 1912 to September 1913 (fragmentary), October 1913 to September 1915, February to November 1916, March 1917 to June 1918, May 1919 to October 1920, February 1921 to September 1926 (irrigation seasons only), October 1953 to September 1991 (discontinued). Monthly discharge only October 1913, published in WSP 1315-B. Prior to October 1917, published as "near Yainax." See REMARKS.

REVISED RECORDS.--WSP 1315-B: 1917(M).

GAGE.--Water-stage recorder. Datum of gage is 4,305.35 ft above National Geodetic Vertical Datum of 1929. Apr. 19, 1912, to Feb. 19, 1914, nonrecording gage, Feb. 20, 1914, to Sept. 11, 1917, water-stage recorder, and Sept. 12, 1917, to Sept. 30, 1926, nonrecording gage, at site 2 mi upstream at different datum.

REMARKS.--Records good except those for May 20 to Sept. 30, which are poor. No regulation. Diversions for irrigation upstream from station in the vicinity of Bly. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--41 years (water years 1914-15, 1920, 1954-91), 304 ft³/s, 220,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,980 ft³/s Dec. 23, 1964, gage height, 12.19 ft; minimum discharge, 50 ft³/s Aug. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 802 ft³/s May 19, gage height, 5.23 ft; minimum daily discharge, 53 ft³/s Aug. 29, Sept. 1.

REVISIONS.--The minimum discharge for water year 1990 has been revised to 58 ft³/s Sept. 23, 1990. Revised figures of discharge for water year 1990 are given below. These figures supersede those published in the report for 1990.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	159	165	149	e120	145	267	290	250	366	e110	e88	e90
2	163	163	147	122	146	251	310	220	355	e110	e86	e90
3	171	162	148	102	145	370	321	203	302	e110	e71	e90
4	176	165	152	122	137	400	333	190	261	e110	e71	e90
5	170	164	171	138	126	375	332	182	226	e105	e70	e85
6	163	161	197	137	155	289	343	167	226	e105	e70	e80
7	159	161	178	147	139	237	353	158	207	e105	e72	e85
8	158	159	169	582	146	224	361	153	175	e105	e75	e85
9	147	159	172	862	144	202	347	142	167	e105	e85	e90
10	147	158	148	495	146	198	330	128	159	e105	e80	e85
11	153	157	126	268	155	196	339	121	e155	e105	e80	e80
12	154	156	137	209	160	184	318	117	e145	e105	e80	e75
13	152	157	143	206	138	166	308	116	e140	e105	e80	e70
14	150	155	141	216	122	174	309	114	e140	e100	e80	65
15	149	153	140	199	131	187	307	109	e140	e100	e80	64
16	149	154	138	188	141	195	310	100	e145	e95	e83	65
17	149	153	130	174	e130	207	331	93	e150	e90	e88	76
18	148	154	129	157	e130	234	307	98	e155	e95	e94	81
19	149	151	128	146	126	276	278	95	e160	e100	e98	80
20	152	151	124	141	135	298	261	97	e160	e110	e105	73
21	157	149	133	153	147	284	250	110	e160	e105	e110	65
22	165	148	133	158	156	273	249	112	e155	e100	e130	64
23	179	150	131	154	180	283	393	154	e150	e90	e130	61
24	201	164	130	148	223	294	484	228	e145	e85	e125	74
25	198	160	125	150	296	283	397	181	e140	e90	e125	86
26	188	158	121	154	313	295	352	157	e130	e95	e120	106
27	189	150	e120	141	313	302	325	162	e125	e95	e110	118
28	182	145	e120	146	290	286	327	205	e120	e95	e100	130
29	169	130	e120	150	---	276	315	231	e115	e92	e95	121
30	165	146	e118	147	---	271	273	250	e110	e90	e90	114
31	166	---	e118	148	---	276	---	336	---	e90	e90	---
TOTAL	5077	4658	4336	6380	4715	8053	9753	4979	5284	3102	2861	2538
MEAN	164	155	140	206	168	260	325	161	176	100	92.3	84.6
MAX	201	165	197	862	313	400	484	336	366	110	130	130
MIN	147	130	118	102	122	166	249	93	110	85	70	61
AC-FT	10070	9240	8600	12650	9350	15970	19350	9880	10480	6150	5670	5030

CAL YR 1989 TOTAL 126638 MEAN 347 MAX 2450 MIN 91 AC-FT 251200
WTR YR 1990 TOTAL 61736 MEAN 169 MAX 862 MIN 61 AC-FT 122500

e Estimated

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

e Estimated

MEAN	165	192	265	285	352	453	607	664	348	163	120	130
MAX	422	410	1157	898	1102	1217	1673	1703	808	313	210	186
(WY)	1963	1974	1965	1965	1958	1972	1956	1956	1983	1956	1956	1985
MIN	120	135	121	121	127	147	131	161	147	88.9	70.2	77.6
(WY)	1988	1991	1991	1989	1991	1977	1977	1990	1968	1977	1991	1991

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1954 - 1991	
ANNUAL TOTAL	59435		53346			
ANNUAL MEAN	163		146		312	
HIGHEST ANNUAL MEAN					643	1956
LOWEST ANNUAL MEAN					131	1977
HIGHEST DAILY MEAN	862	Jan 9	756	May 20	5670	Dec 23 1964
LOWEST DAILY MEAN	61	Sep 23	53	Aug 29	53	Aug 29 1991
ANNUAL SEVEN-DAY MINIMUM	71	Sep 11	57	Aug 27	56	Aug 25 1981
ANNUAL RUNOFF (AC-FT)	117900		105800		225800	
10 PERCENT EXCEEDS	302		242		679	
50 PERCENT EXCEEDS	134		131		186	
90 PERCENT EXCEEDS	86		74		114	

KLAMATH RIVER BASIN

11499100 SYCAN RIVER BELOW SNAKE CREEK, NEAR BEATTY, OR

LOCATION.--Lat 42°29'10", long 121°16'40", in SW 1/4 SE 1/4 sec.34, T.35 S., R.12 E., Klamath County, Hydrologic Unit 18010202, on left bank 200 ft downstream from Snake Creek and 3.1 mi north of Beatty.

DRAINAGE AREA.--568 mi².

PERIOD OF RECORD.--October 1973 to September 1991 (discontinued). Prior to October 1979, in reports of Oregon Water Resources Department. See REMARKS.

GAGE.--Water-stage recorder. Elevation of gage is 4,310 ft, from topographic map.

REMARKS.--Records good except for those above 70 ft³/s, and June 19 to July 23, which are fair. Diversions for irrigation upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--18 years, 156 ft³/s, 113,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,550 ft³/s Feb. 21 or 22, 1982, gage height, 12.22 ft, from floodmarks; minimum discharge, 3.0 ft³/s Nov. 21, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 265 ft³/s May 21, gage height 3.61 ft; minimum discharge, 7.6 ft³/s July 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	24	e24	e21	24	35	63	44	62	e27	9.7	11
2	19	23	24	21	30	33	50	41	57	e25	10	12
3	20	22	26	21	30	42	40	41	51	e19	9.3	11
4	20	23	27	21	35	56	34	43	46	e14	13	14
5	20	23	26	21	38	69	33	43	43	e12	26	14
6	21	23	24	21	34	48	36	40	41	e11	22	15
7	21	23	24	22	32	38	34	39	38	e10	15	16
8	20	24	25	24	32	36	34	44	35	e10	13	16
9	18	23	26	25	32	35	33	50	33	e9.5	12	16
10	18	27	35	27	30	33	32	54	33	e8.5	9.0	16
11	18	23	31	28	31	30	30	69	28	e8.0	8.9	14
12	19	22	25	40	31	31	28	62	24	e8.0	9.0	14
13	19	23	26	49	32	30	27	64	22	e8.2	11	14
14	19	30	24	37	33	30	27	65	21	e9.4	12	13
15	19	28	24	34	33	30	27	75	19	e10	12	12
16	19	26	26	31	33	29	29	85	19	e12	11	11
17	19	26	26	29	32	29	32	96	20	e13	9.7	12
18	20	29	28	30	31	31	31	114	16	e15	9.1	12
19	20	29	e20	30	32	32	32	178	e12	e15	9.8	12
20	20	27	e17	27	30	30	32	251	e12	e13	12	13
21	20	28	e16	25	31	30	34	258	e12	e12	14	12
22	21	28	e16	25	31	29	39	251	e12	e12	14	12
23	22	25	e16	25	31	31	39	223	e12	e12	12	13
24	22	24	e17	24	29	35	43	174	e12	11	11	13
25	22	30	e19	23	26	34	51	126	e12	12	8.8	14
26	21	27	21	23	28	35	57	102	e15	12	9.9	15
27	22	28	23	23	30	35	54	93	e18	9.9	12	15
28	22	26	23	23	34	31	49	83	e18	9.0	13	15
29	23	25	23	23	---	31	48	75	e20	7.9	13	14
30	22	e24	e21	24	---	45	46	72	e23	9.4	11	18
31	24	---	e20	25	---	116	---	66	---	9.6	11	---
TOTAL	629	763	723	822	875	1179	1144	3021	786	374.4	373.2	409
MEAN	20.3	25.4	23.3	26.5	31.2	38.0	38.1	97.5	26.2	12.1	12.0	13.6
MAX	24	30	35	49	38	116	63	258	62	27	26	18
MIN	18	22	16	21	24	29	27	39	12	7.9	8.8	11
AC-FT	1250	1510	1430	1630	1740	2340	2270	5990	1560	743	740	811

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1979 - 1991, BY WATER YEAR (WY)

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	29.5	49.2	74.4	76.5	220	375	405	342	134	42.3	23.9	26.1	
MAX	48.5	125	383	259	1114	811	868	997	549	115	45.5	42.8	
(WY)	1985	1982	1982	1980	1982	1989	1985	1983	1983	1982	1983	1985	
MIN	16.1	20.5	23.3	26.5	31.2	38.0	38.1	50.1	26.2	12.1	6.26	8.91	
(WY)	1982	1981	1991	1991	1991	1991	1991	1990	1991	1991	1981	1981	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1979 - 1991

ANNUAL TOTAL	18100	11098.6	149	
ANNUAL MEAN	49.6	30.4	361	1982
HIGHEST ANNUAL MEAN			30.4	1991
LOWEST ANNUAL MEAN			4500	Feb 22 1982
HIGHEST DAILY MEAN	286	Mar 5	4.1	Aug 16 1981
LOWEST DAILY MEAN	11	Aug 11	4.5	Aug 24 1981
ANNUAL SEVEN-DAY MINIMUM	11	Aug 9		
ANNUAL RUNOFF (AC-FT)	35900	22010	108100	
10 PERCENT EXCEEDS	122	48	452	
50 PERCENT EXCEEDS	28	24	42	
90 PERCENT EXCEEDS	15	12	18	

KLAMATH RIVER BASIN

53

11501000 SPRAGUE RIVER NEAR CHILOQUIN, OR

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.

DRAINAGE AREA.--1,580 mi², approximately.

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 McCready Ranch, near Chiloquin."

REVISED RECORDS.--WSP 591: 1922(M). WSP 1011: 1943(M). WSP 1565: 1921-22.

GAGE.--Water-stage recorder. Datum of gage is 4,202.43 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1931, nonrecording gage at site 12 mi upstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. Minor regulation from irrigation diversions upstream from station.

AVERAGE DISCHARGE.--70 years (water years 1922-91), 577 ft³/s, 418,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,900 ft³/s Dec. 26, 1964, gage height, 10.37 ft; minimum daily discharge, 50 ft³/s May 26, 1926.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 908 ft³/s May 23, gage height, 2.70 ft; minimum discharge, 87 ft³/s Sept. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	235	265	261	e245	265	289	342	397	433	251	133	110
2	234	269	258	e245	274	301	420	414	418	256	126	106
3	230	273	267	e245	281	326	411	403	366	254	122	98
4	233	270	264	e245	303	368	395	404	331	224	128	95
5	230	263	266	e250	309	423	373	383	326	202	130	91
6	217	265	265	e250	319	436	352	377	313	189	128	96
7	219	267	253	e255	312	485	355	398	316	171	131	112
8	231	269	259	e260	303	390	376	426	323	151	131	131
9	232	263	266	e260	297	334	387	408	299	134	131	143
10	228	262	276	e270	291	324	364	406	260	120	123	136
11	217	267	278	e280	289	316	341	411	243	111	100	132
12	218	265	285	e300	284	312	336	432	224	119	99	134
13	227	261	287	e330	288	304	325	442	227	116	99	137
14	233	265	272	e340	286	307	317	444	218	119	97	135
15	228	267	e270	e350	291	302	311	476	207	128	98	125
16	227	274	e265	377	296	303	327	522	199	139	100	131
17	225	276	e260	366	293	299	352	529	200	144	112	130
18	217	270	e250	339	292	301	371	541	188	160	110	131
19	211	270	e240	326	293	299	374	605	192	175	116	133
20	233	274	e220	319	286	328	351	693	207	165	113	135
21	243	273	e210	e300	283	344	351	775	209	154	133	130
22	254	269	e215	e290	283	335	366	881	206	157	125	133
23	254	269	e220	280	280	323	391	896	212	159	132	138
24	255	268	e225	277	278	324	428	844	215	156	120	131
25	256	264	e230	e275	278	337	451	758	219	153	106	135
26	253	268	e230	e275	274	361	468	672	203	146	105	152
27	250	272	e230	e270	270	371	482	604	210	149	112	163
28	253	270	e235	e270	281	359	476	542	203	139	120	153
29	250	267	e235	e265	---	339	447	502	213	134	121	162
30	253	265	e240	e265	---	325	402	464	233	131	126	168
31	257	---	e240	264	---	320	---	424	---	125	122	---
TOTAL	7303	8040	7772	8883	8079	10485	11442	16473	7613	4931	3649	3906
MEAN	236	268	251	287	289	338	381	531	254	159	118	130
MAX	257	276	287	377	319	485	482	896	433	256	133	168
MIN	211	261	210	245	265	289	311	377	188	111	97	91
AC-FT	14490	15950	15420	17620	16020	20800	22700	32670	15100	9780	7240	7750

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1921 - 1991, BY WATER YEAR (WY)

MEAN	298	347	474	509	666	909	1270	1136	608	283	223	240
MAX	848	789	2853	1961	2764	2904	4250	3211	1762	560	405	374
(WY)	1963	1974	1965	1965	1982	1972	1956	1956	1983	1983	1956	1956
MIN	183	219	215	196	223	288	263	184	169	141	113	130
(WY)	1934	1933	1933	1937	1933	1924	1977	1934	1934	1981	1981	1991

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1921 - 1991

ANNUAL TOTAL	110876	98576	577
ANNUAL MEAN	304	270	1395
HIGHEST ANNUAL MEAN			220
LOWEST ANNUAL MEAN			14500
HIGHEST DAILY MEAN	1070	896	May 23
LOWEST DAILY MEAN	106	91	Sep 5
ANNUAL SEVEN-DAY MINIMUM	113	101	Aug 11
ANNUAL RUNOFF (AC-FT)	219900	195500	418300
10 PERCENT EXCEEDS	524	409	1270
50 PERCENT EXCEEDS	263	265	348
90 PERCENT EXCEEDS	147	127	204

KLAMATH RIVER BASIN

11502500 WILLIAMSON RIVER BELOW SPRAGUE RIVER, NEAR CHILOQUIN, OR

LOCATION (REVISED).--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 18010202, on right bank 0.8 mi downstream from Sprague River and 1.2 mi southwest of Chiloquin.

DRAINAGE AREA.--3,000 mi², approximately.

PERIOD OF RECORD.--June 1917 to current year.

REVISED RECORDS.--WSP 981: 1938(M). WSP 1565: 1920(M), 1927(M), 1938.

GAGE.--Water-stage recorder. Datum of gage is 4,148.50 ft above National Geodetic Vertical Datum of 1929. 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.

REMARKS.--Records excellent except for estimated daily discharges, which are good. Some regulation by diversion dams and logpond operations on Sprague River. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--74 years, 1,047 ft³/s, 758,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 16,100 ft³/s Dec. 26, 1964, gage height, 10.56 ft; minimum discharge, 320 ft³/s Oct. 14, 1920.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,140 ft³/s May 23, gage height, 3.13 ft; minimum discharge, 358 ft³/s July 12, 13, Aug. 16, 17.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	542	590	586	529	587	703	812	635	705	536	394	404
2	540	592	582	530	601	718	880	640	707	540	389	397
3	536	598	582	537	602	771	881	630	648	541	373	390
4	540	598	585	530	622	801	865	630	614	546	386	388
5	535	590	585	526	642	866	845	614	612	547	399	383
6	528	585	585	534	638	876	832	600	603	502	389	386
7	533	590	584	544	638	934	827	601	603	475	396	394
8	544	593	578	546	632	883	839	626	615	e450	397	412
9	548	589	583	548	625	825	857	611	605	e430	397	435
10	543	586	606	561	618	814	839	601	571	e405	389	434
11	538	592	607	573	615	804	817	615	551	e385	371	424
12	541	591	607	611	611	800	816	629	546	e360	365	427
13	550	589	607	652	607	800	802	655	529	363	366	426
14	554	595	568	659	607	800	765	660	525	367	365	425
15	554	590	542	712	614	800	718	678	511	374	365	412
16	550	600	587	697	626	800	686	744	495	412	362	412
17	549	602	588	678	635	795	679	780	484	414	366	420
18	547	595	620	664	643	791	682	778	483	426	375	415
19	540	594	547	649	652	791	676	834	479	442	373	421
20	557	600	461	626	655	799	639	920	483	441	380	422
21	569	604	e450	607	662	816	637	995	486	431	403	417
22	578	595	e470	603	670	816	643	1100	486	431	404	413
23	578	592	e490	591	672	816	651	1130	500	436	408	418
24	578	592	e500	e580	678	816	679	1100	509	436	409	413
25	578	597	e500	e570	678	823	701	1020	521	429	388	416
26	577	592	e510	e560	678	848	717	951	521	424	385	431
27	573	597	e510	e550	679	854	726	889	516	421	393	444
28	578	596	e520	e550	694	850	724	836	516	421	405	438
29	573	592	e520	562	---	831	694	802	516	420	407	439
30	579	592	526	573	---	814	649	766	520	413	414	451
31	586	---	531	590	---	803	---	715	---	397	413	---
TOTAL	17216	17808	17117	18242	17881	25258	22578	23785	16460	13615	12026	12507
MEAN	555	594	552	588	639	815	753	767	549	439	388	417
MAX	586	604	620	712	694	934	881	1130	707	547	414	451
MIN	528	585	450	526	587	703	637	600	479	360	362	383
AC-FT	34150	35320	33950	36180	35470	50100	44780	47180	32650	27010	23850	24810

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1918 - 1991, BY WATER YEAR (WY)

	661	771	960	990	1228	1599	1995	1665	1009	619	548	571
MEAN	661	771	960	990	1228	1599	1995	1665	1009	619	548	571
MAX	1237	1345	3682	3075	3846	4256	5488	4376	2658	1278	934	871
(WY)	1963	1974	1965	1965	1958	1972	1952	1956	1953	1958	1958	1958
MIN	517	561	552	524	547	669	595	472	458	399	382	417
(WY)	1934	1937	1991	1937	1933	1931	1931	1931	1931	1981	1981	1991

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1918 - 1991

ANNUAL TOTAL	245756	214493	1050
ANNUAL MEAN	673	588	2187
HIGHEST ANNUAL MEAN			1956
LOWEST ANNUAL MEAN			548
HIGHEST DAILY MEAN	1590	1130	16000
LOWEST DAILY MEAN	376	360	Dec 26 1964
ANNUAL SEVEN-DAY MINIMUM	380	366	Jul 12 1920
ANNUAL RUNOFF (AC-FT)	487500	425400	760400
10 PERCENT EXCEEDS	1150	814	1960
50 PERCENT EXCEEDS	585	585	759
90 PERCENT EXCEEDS	422	404	513

KLAMATH RIVER BASIN

55

11503000 ANNIE SPRING NEAR CRATER LAKE, OR

LOCATION.--Lat 42°52'20", long 122°10'00", 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 National Geodetic Vertical Datum of 1929 (National Park Service bench mark).

REMARKS.--Records fair. 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.--14 years, 2.91 ft³/s, 2,110 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 discharge, 0.33 ft³/s Nov. 20, 22, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 5.8 ft³/s June 15-18, July 6-9, gage height, 1.38 ft; minimum discharge, 0.34 ft³/s Apr. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	1.1	.81	e.50	e.49	.52	.51	.42	e2.5	5.5	e3.3	1.7
2	1.3	1.1	.79	e.50	e.49	.54	.50	.40	e2.7	5.5	e3.1	1.7
3	1.3	1.0	.79	e.49	e.49	.56	.51	.41	e3.0	5.5	e3.0	1.7
4	1.3	1.1	.76	e.48	e.50	.59	.54	.42	e3.4	5.6	2.8	1.7
5	1.3	1.0	.75	e.47	.53	.57	.52	.44	e3.7	5.6	2.6	1.7
6	1.2	1.0	.74	e.46	.51	.56	.51	.40	4.0	5.7	2.5	1.6
7	1.3	1.0	.75	e.46	.51	.56	.51	.42	4.1	5.7	2.5	1.6
8	1.2	1.0	.71	e.46	.47	.55	.49	.49	4.1	5.8	2.5	1.6
9	1.2	.99	.74	e.47	.46	.54	.47	.51	4.2	5.7	2.4	1.6
10	1.2	.99	.74	e.52	.46	.54	.45	.55	4.3	5.6	2.4	1.6
11	1.2	1.0	.67	.56	.50	.51	.47	.62	4.6	5.6	2.4	1.6
12	1.2	1.0	.64	.61	.52	.51	.50	.64	5.1	5.5	2.3	1.5
13	1.2	.97	e.64	.64	.52	.51	.51	.62	5.4	5.3	2.2	1.5
14	1.2	.94	e.64	.62	.50	.51	.46	.60	5.6	5.3	2.2	1.5
15	1.2	.92	e.63	.56	.48	.54	.46	.59	5.8	5.2	2.2	1.5
16	1.1	.93	e.63	.56	.48	.57	.45	.64	5.8	5.1	2.2	1.5
17	1.2	.91	e.62	.53	.46	.57	.47	.64	5.8	5.0	2.2	1.5
18	1.2	.87	e.62	.52	.47	.54	.47	e.58	5.7	4.9	2.1	1.5
19	1.2	.89	e.61	.57	.48	.51	.45	e.66	5.7	4.8	2.0	1.4
20	1.2	.86	e.61	.57	.47	.50	.44	e.76	5.7	4.6	2.1	1.4
21	1.1	.89	e.60	.57	.48	.51	.47	e.80	5.6	4.5	2.0	1.4
22	1.1	.88	e.60	.55	.52	.52	.43	e.82	5.6	4.4	1.9	1.4
23	1.1	.89	e.59	.53	.51	.51	.42	e.90	5.6	4.3	2.0	1.4
24	1.1	.87	e.58	.54	.49	.51	.40	e1.1	5.6	4.2	1.9	1.4
25	1.1	.90	e.57	e.53	.50	.51	.43	e1.3	5.7	4.0	1.8	1.4
26	1.1	.85	e.56	e.52	.51	.52	.39	e1.4	5.7	3.9	1.8	1.4
27	1.1	.82	e.55	e.52	.51	.53	.41	e1.5	5.6	3.9	1.8	1.4
28	1.0	.81	e.54	e.51	.52	.51	.41	e1.7	5.6	3.8	1.8	1.4
29	1.0	.82	e.53	e.51	---	.54	.39	e1.8	5.6	3.7	1.8	1.4
30	1.0	.82	e.52	e.50	---	.54	.40	e2.0	5.5	3.6	1.7	1.4
31	1.0	---	e.51	e.50	---	.52	---	e2.1	---	e3.5	1.7	---
TOTAL	36.2	28.12	20.04	16.33	13.83	16.52	13.84	26.23	147.3	151.3	69.2	45.4
MEAN	1.17	.94	.65	.53	.49	.53	.46	.85	4.91	4.88	2.23	1.51
MAX	1.3	1.1	.81	.64	.53	.59	.54	2.1	5.8	5.8	3.3	1.7
MIN	1.0	.81	.51	.46	.46	.50	.39	.40	2.5	3.5	1.7	1.4
AC-FT	72	56	40	32	27	33	27	52	292	300	137	90
MEAN†	1.20	0.96	0.67	0.56	0.51	0.55	0.49	0.89	4.96	4.98	2.34	1.60
AC-FT†	73.6	57.1	40.9	34.2	28.4	34.0	28.9	54.6	295.3	306.3	143.9	95.1

cal yr 1990 total 717.52 mean 1.97 max 5.2 min .51 ac-ft 1420 mean† 2.00 ac-ft† 1450
wtr yr 1991 total 584.31 mean 1.60 max 5.8 min .39 ac-ft 1160 mean† 1.65 ac-ft† 1190

e estimated

† adjusted for diversion by pumping.

KLAMATH RIVER BASIN

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 (revised) (gage heights only), October 1922 (revised) 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 National Geodetic Vertical Datum of 1929, 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 daily elevation, 4,142.44 ft May 25, 26; minimum daily, 4,138.20 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 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4138.94	4138.77	4138.99	4138.77	4139.46	4140.42	4141.71	4142.17	4142.39	4141.49	4140.16	4138.96
2	4138.91	4138.73	4139.02	4138.74	4139.50	4140.42	4141.73	4142.20	4142.39	4141.48	4140.12	4138.93
3	4138.85	4138.73	4139.05	4138.71	4139.54	4140.50	4141.74	4142.15	4142.40	4141.46	4140.06	4138.91
4	4138.85	4138.74	4139.03	4138.71	4139.60	4140.66	4141.76	4142.15	4142.38	4141.43	4140.00	4138.90
5	4138.86	4138.78	4139.07	4138.70	4139.67	4140.78	4141.78	4142.14	4142.31	4141.41	4139.97	4138.81
6	4138.83	4138.78	4139.07	4138.68	4139.71	4140.81	4141.81	4142.14	4142.27	4141.37	4139.92	4138.76
7	4138.81	4138.75	4139.07	4138.66	4139.75	4140.86	4141.84	4142.12	4142.24	4141.31	4139.84	4138.71
8	4138.78	4138.75	4139.07	4138.65	4139.78	4140.90	4141.83	4142.16	4142.21	4141.26	4139.86	4138.67
9	4138.76	4138.78	4139.08	4138.65	4139.81	4140.88	4141.88	4142.17	4142.20	4141.20	4139.84	4138.70
10	4138.75	4138.79	4139.11	4138.67	4139.85	4140.97	4141.93	4142.15	4142.18	4141.13	4139.81	4138.62
11	4138.74	4138.81	4139.14	4138.69	4139.88	4140.96	4141.93	4142.12	4142.14	4141.07	4139.76	4138.57
12	4138.71	4138.82	4139.13	4138.73	4139.90	4140.98	4141.92	4142.12	4142.11	4141.03	4139.70	4138.55
13	4138.71	4138.82	4139.14	4138.82	4139.95	4141.08	4141.91	4142.18	4142.04	4140.96	4139.67	4138.52
14	4138.68	4138.87	4139.13	4138.87	4140.00	4141.10	4141.93	4142.20	4141.97	4140.90	4139.65	4138.50
15	4138.67	4138.88	4139.13	4138.94	4140.03	4141.13	4141.94	4142.21	4141.93	4140.79	4139.60	4138.50
16	4138.67	4138.90	4139.13	4138.98	4140.07	4141.10	4141.94	4142.24	4141.91	4140.77	4139.57	4138.47
17	4138.65	4138.91	4139.12	4139.01	4140.10	4141.13	4141.96	4142.33	4141.87	4140.76	4139.55	4138.46
18	4138.65	4138.92	4139.08	4139.05	4140.10	4141.16	4141.95	4142.31	4141.85	4140.71	4139.51	4138.42
19	4138.68	4138.92	4139.16	4139.09	4140.13	4141.21	4141.96	4142.28	4141.77	4140.66	4139.47	4138.41
20	4138.67	4138.92	4139.16	4139.12	4140.17	4141.21	4141.97	4142.32	4141.70	4140.62	4139.45	4138.40
21	4138.66	4138.91	4139.13	4139.15	4140.21	4141.28	4142.00	4142.34	4141.70	4140.57	4139.40	4138.40
22	4138.69	4138.94	4139.08	4139.17	4140.25	4141.29	4142.03	4142.38	4141.67	4140.55	4139.37	4138.37
23	4138.70	4138.96	4139.04	4139.21	4140.29	4141.31	4142.02	4142.39	4141.64	4140.50	4139.32	4138.36
24	4138.71	4138.96	4139.01	4139.25	4140.30	4141.40	4142.06	4142.41	4141.60	4140.49	4139.28	4138.35
25	4138.69	4138.98	4138.97	4139.27	4140.32	4141.46	4142.10	4142.44	4141.60	4140.45	4139.25	4138.33
26	4138.71	4139.02	4138.94	4139.30	4140.35	4141.54	4142.09	4142.44	4141.55	4140.41	4139.20	4138.33
27	4138.70	4138.99	4138.91	4139.32	4140.37	4141.58	4142.12	4142.42	4141.50	4140.36	4139.12	4138.30
28	4138.73	4139.01	4138.87	4139.34	4140.40	4141.61	4142.12	4142.41	4141.51	4140.32	4139.05	4138.24
29	4138.73	4139.00	4138.85	4139.37	---	4141.64	4142.13	4142.36	4141.53	4140.29	4139.02	4138.22
30	4138.66	4139.02	4138.82	4139.40	---	4141.66	4142.14	4142.42	4141.51	4140.25	4139.01	4138.20
31	4138.74	---	4138.79	4139.43	---	4141.68	---	4142.40	---	4140.21	4138.97	---
MEAN	4138.74	4138.87	4139.04	4138.98	4139.98	4141.12	4141.94	4142.27	4141.93	4140.84	4139.56	4138.53
MAX	4138.94	4139.02	4139.16	4139.43	4140.40	4141.68	4142.14	4142.44	4142.40	4141.49	4140.16	4138.96
MIN	4138.65	4138.73	4138.79	4138.65	4139.46	4140.42	4141.71	4142.12	4141.50	4140.21	4138.97	4138.20
(†)	176300	195100	180300	224400	293300	390800	430100	446800	375700	279700	191700	140900
(‡)	-14100	+18800	-14800	+44100	+68900	+97500	+39300	+16700	-71100	-96000	-88000	-50800

CAL YR 1990 MEAN 4140.84 MAX 4142.86 MIN 4138.65 AC-FT† -122500
WTR YR 1991 MEAN 4140.15 MAX 4142.44 MIN 4138.20 AC-FT‡ -49500

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

‡ Change in contents, in acre-feet.

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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.

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 National Geodetic Vertical Datum of 1929, or 4,085.50 ft above mean sea level, datum of Bureau of Reclamation. 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.

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, 2,330 ft³/s Dec. 21; minimum, 68 ft³/s Aug. 7, result of regulation from Upper Klamath Lake, minimum daily, 135 ft³/s Mar. 12, 16-18.

[illegible]

LOCATION.--Lat 42°08'00", long 121°57'40", in NW 1/4 SE 1/4 sec.35, T.39 S., R.7 E., Klamath County, Hydrologic Unit 18010206, on left bank 1.7 mi northwest of Keno and 4.5 mi upstream from Spencer Creek.

PERIOD OR RECORD.--June 1904 to December 1913, October 1929 to current year. Monthly discharge only October to December 1929, published in WSP 1315-B.

GAGE.--Water-stage recorder. Datum of gage is 3,961 ft above National Geodetic Vertical Datum of 1929 (from river-profile survey). See WSP 1735 for history of changes prior to Nov. 6, 1954.

REMARKS.--No estimated daily discharges. Records excellent. Flow regulated since 1919 by Upper Klamath Lake (station 11507001). Fluctuation by Keno powerplant 0.9 mi upstream. Diversions for irrigation upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,300 ft³/s Feb. 28, 1986, gage height, 12.82 ft, caused by regulation from Keno powerplant 0.9 mi upstream; minimum discharge, 26 ft³/s Sept. 23, 1956; minimum daily, 60 ft³/s May 19, 1934.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage, 15.3 ft, from floodmark (original datum), about May 10, 1904, discharge, 9,250 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,670 ft³/s Dec. 20, gage height, 7.68 ft, caused by regulation from Keno powerplant 0.9 mi upstream; minimum discharge, 192 ft³/s Feb. 15; minimum daily, 254 ft³/s July 27, 28.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1010	1030	923	2140	384	367	296	284	419	275	265	543
2	1010	1030	905	2150	389	513	293	283	413	276	268	543
3	1010	800	919	1950	389	542	290	282	404	279	268	542
4	1010	785	913	1610	392	540	285	281	405	278	267	541
5	1010	1010	913	1750	621	339	285	279	404	280	268	539
6	1010	1020	911	1900	642	275	287	279	405	280	269	540
7	1010	1020	915	1750	563	272	284	279	355	278	266	533
8	995	1020	919	1550	491	270	285	278	294	279	260	534
9	1000	1020	920	1540	456	267	286	279	292	280	261	507
10	1000	826	920	1310	426	280	285	277	291	283	262	454
11	1010	1010	915	780	328	277	284	273	292	279	263	454
12	1020	1020	916	784	314	275	283	272	292	291	262	454
13	1020	1020	1080	1030	402	283	280	273	275	278	259	452
14	1020	1020	923	1020	398	308	278	283	261	276	258	450
15	1030	1010	928	970	274	337	358	465	267	277	353	448
16	1030	1010	927	929	273	465	464	471	268	277	460	403
17	1030	1030	926	838	272	657	465	570	263	275	460	355
18	1030	1030	930	365	274	654	464	645	259	279	460	354
19	995	1030	1020	368	272	557	463	711	261	278	459	353
20	918	1030	2040	490	271	473	463	709	267	279	460	352
21	920	1000	2190	550	316	474	461	705	269	260	461	355
22	951	967	2110	511	363	473	367	704	265	263	460	354
23	1010	967	2120	418	357	472	281	698	271	263	462	385
24	1010	966	2130	391	358	472	282	629	287	257	465	408
25	1010	968	2130	392	362	471	282	563	287	257	466	406
26	916	969	2120	391	364	517	325	474	282	257	463	406
27	644	961	2120	391	363	535	322	474	280	254	527	410
28	643	941	2120	393	363	531	321	434	279	254	544	412
29	991	915	2130	390	---	406	316	395	277	259	542	448
30	992	926	2140	386	---	289	286	395	275	264	538	478
31	1020	---	2140	385	---	291	---	408	---	263	540	---
TOTAL	30275	29351	43213	29822	10677	12882	9921	13352	9159	8428	11816	13413
MEAN	977	978	1394	962	381	416	331	431	305	272	381	447
MAX	1030	1030	2190	2150	642	657	465	711	419	291	544	543
MIN	643	785	905	365	271	267	278	272	259	254	258	352
AC-FT	60050	58220	85710	59150	21180	25550	19680	26480	18170	16720	23440	26600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1991, BY WATER YEAR (WY)

[illegible]

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1904 - 1991
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[illegible]

KLAMATH RIVER BASIN

59

11510700 KLAMATH RIVER BELOW JOHN C. BOYLE POWERPLANT, NEAR KENO, OR

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.

DRAINAGE AREA.--4,080 mi², approximately (not including Lost River or Lower Klamath Lake basins).

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

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 3,274.82 ft above National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.).

REMARKS.--Records good except for estimated daily discharges, which are fair. Data for Dec. 20 to Jan. 14 furnished by Pacific Power. 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.--32 years, 1,842 ft³/s, 1,336,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,000 ft³/s Mar. 5, 1972, gage height, 9.33 ft; minimum discharge, 283 ft³/s Feb. 17, 1968.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 3,020 ft³/s Dec. 22, gage height, 5.9 ft; minimum discharge, 308 ft³/s several days in November and July.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1390	1280	1170	e2340	592	576	505	543	609	444	481	796
2	1210	1280	1100	e2250	582	752	326	494	603	525	493	790
3	1220	987	1190	e1840	636	755	549	525	624	505	502	745
4	1120	984	1150	e2110	656	872	569	509	645	600	509	748
5	1300	1280	1150	e1920	602	859	526	504	640	599	456	699
6	1260	1330	1160	e1770	1270	605	512	512	589	604	451	707
7	1250	1290	1140	e1840	724	552	510	521	602	680	449	758
8	1350	1220	1150	e1770	690	509	508	515	508	474	445	750
9	1370	1310	1150	e1980	651	394	541	512	508	312	452	704
10	1200	1090	1170	e1990	689	460	512	504	530	309	502	654
11	1240	1250	1200	e1960	628	521	498	508	507	338	506	662
12	1230	1130	1200	e2280	511	512	544	496	549	489	464	665
13	1170	1510	1300	e1040	647	512	502	540	522	501	444	560
14	1170	1210	1160	e1280	607	469	505	510	506	451	466	652
15	1640	1300	1020	1260	609	520	504	865	456	484	653	597
16	1230	1410	1340	1230	602	506	698	353	442	511	747	606
17	1220	1270	1230	1220	598	1110	661	709	443	495	648	547
18	1220	1060	1200	729	454	881	691	1080	445	495	648	558
19	1270	1230	1250	340	329	858	636	984	468	470	602	559
20	1110	1340	e2150	724	330	592	861	940	472	491	645	558
21	1110	1220	e2370	823	527	685	668	887	457	490	648	593
22	1430	1180	e2210	600	570	701	661	941	575	481	777	609
23	1270	1170	e2630	809	556	722	494	933	500	473	704	561
24	1260	1170	e2410	600	557	700	527	935	453	473	567	557
25	1330	1190	e2310	603	560	730	499	746	574	473	556	613
26	1290	1240	e2340	607	560	646	537	735	533	558	702	646
27	760	1170	e2280	600	594	739	505	746	488	501	788	601
28	762	1130	e2370	607	593	787	522	517	465	632	793	693
29	1300	1150	e2380	608	---	723	499	669	551	488	785	706
30	1280	1200	e2370	598	---	504	515	642	546	445	793	704
31	1280	---	e2350	597	---	505	---	660	---	434	797	---
TOTAL	38242	36581	50600	38925	16924	20257	16585	20535	15810	15225	18473	19598
MEAN	1234	1219	1632	1256	604	653	553	662	527	491	596	653
MAX	1640	1510	2630	2340	1270	1110	861	1080	645	680	797	796
MIN	760	984	1020	340	329	394	326	353	442	309	444	547
AC-FT	75850	72560	100400	77210	33570	40180	32900	40730	31360	30200	36640	38870

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1991, BY WATER YEAR (WY)

	1959	1960	1961	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
MEAN	1637	2083	2549	2528	2564	2995	2422	1646	861	673	912	1250																					
MAX	3157	4506	5733	7905	7780	8755	5645	3935	2327	1424	1198	1898																					
(WY)	1985	1985	1984	1965	1965	1972	1974	1971	1983	1959	1959	1959																					
MIN	786	897	1112	1174	604	634	553	591	527	491	590	653																					
(WY)	1982	1982	1980	1981	1991	1977	1991	1966	1991	1991	1973	1991																					

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1959 - 1991
ANNUAL TOTAL	442572	307755	
ANNUAL MEAN	1213	843	1842
HIGHEST ANNUAL MEAN			3024
LOWEST ANNUAL MEAN			843
HIGHEST DAILY MEAN	2630	2630	10800
LOWEST DAILY MEAN	319	309	309
ANNUAL SEVEN-DAY MINIMUM	467	411	395
ANNUAL RUNOFF (AC-FT)	877800	610400	1335000
10 PERCENT EXCEEDS	1930	1300	3290
50 PERCENT EXCEEDS	1170	648	1400
90 PERCENT EXCEEDS	601	473	630

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 good. 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, 530 ft³/s July 22, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,430 ft³/s Dec. 28, gage height, 4.70 ft; minimum daily discharge, 530 ft³/s July 22.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1350	1330	1310	2400	740	749	875	740	750	578	545	740
2	1340	1330	1310	2390	755	749	801	735	749	592	544	736
3	1340	1330	1300	2390	748	821	780	806	745	535	545	732
4	1340	1330	1300	2110	759	905	795	810	744	544	543	734
5	1340	1330	1300	2020	765	947	795	807	742	538	541	734
6	1350	1330	1320	2010	741	925	796	807	752	540	545	733
7	1350	1330	1340	2020	749	977	793	791	752	546	545	735
8	1340	1330	1350	2010	749	926	790	735	746	551	542	734
9	1350	1350	1360	1940	749	838	798	736	739	551	541	731
10	1350	1320	1370	1890	747	825	801	733	741	538	543	729
11	1350	1320	1360	1340	745	822	800	726	738	539	542	729
12	1350	1320	1360	1310	745	829	798	732	743	537	541	731
13	1350	1330	1360	1320	745	820	796	751	747	538	541	730
14	1350	1340	1350	1320	745	795	797	755	744	538	542	730
15	1350	1330	1350	1320	745	804	797	756	690	536	662	730
16	1350	1320	1350	1310	745	793	797	765	659	538	747	730
17	1350	1330	1350	1310	745	792	797	827	647	542	736	730
18	1350	1330	1360	831	745	1080	797	775	613	535	736	731
19	1350	1330	1360	755	745	1470	767	764	619	535	731	730
20	1350	1320	1480	749	745	1220	742	759	610	531	730	732
21	1350	1320	1690	767	745	972	744	960	606	531	731	735
22	1350	1320	1710	799	745	960	742	1290	603	530	736	731
23	1340	1320	1700	800	745	961	762	1370	603	549	734	740
24	1340	1310	1700	799	744	960	743	1370	603	554	729	747
25	1340	1320	2120	802	745	912	742	1370	603	553	737	749
26	1340	1320	2400	806	745	851	740	1300	602	546	752	749
27	1340	1310	2400	803	749	900	736	1080	603	548	749	765
28	1340	1310	2400	793	749	1010	736	777	603	546	735	870
29	1340	1310	2400	749	---	1030	735	752	603	546	732	870
30	1340	1310	2390	749	---	1000	735	752	601	546	733	870
31	1330	---	2400	749	---	977	---	752	---	545	739	---
TOTAL	41700	39730	50250	41361	20919	28620	23327	27083	20300	16876	20049	22467
MEAN	1345	1324	1621	1334	747	923	778	874	677	544	647	749
MAX	1350	1350	2400	2400	765	1470	875	1370	752	592	752	870
MIN	1330	1310	1300	749	740	749	735	726	601	530	541	729
AC-FT	82710	78800	99670	82040	41490	56770	46270	53720	40270	33470	39770	44560
CAL YR												

LOCATION.--Lat 46°37'44", long 119°51'49", in SE 1/4 NW 1/4 sec.7, T.13 N., R.24 E., Grant County, Hydrologic Unit 17020016, on left bank 2.6 mi downstream from Priest Rapids Dam, 14.7 mi south of Beverly, and at mile 394.5.

WATER-DISCHARGE RECORDS

REVISED RECORDS.--WSP 1933: Drainage area. WDR WA-82-2: 1965 (m), 1971 (m).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1930, nonrecording gages at site 3.4 mi downstream at datum 388.7 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1930, to July 27, 1959, water-stage recorder at site 46.5 mi upstream at datum 499.3 ft above National Geodetic Vertical Datum of 1929 (river-profile survey).

REMARKS.--No estimated daily discharges. Water-discharge records excellent. Diversions for irrigation of about 500,000 acres upstream from station. Flow regulated by 10 major reservoirs and numerous smaller reservoirs and powerplants. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--74 years, 119,500 ft³/s, 86,589,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 692,600 ft³/s June 12, 1948, gage height, 59.35 ft, site and datum then in use; minimum discharge, 4,120 ft³/s Feb. 10, 1932, gage height, 11.40 ft, site and datum then in use.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of June 7, 1894, reached a discharge of about 740,000 ft³/s, based on information obtained at other points.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 288,000 ft³/s May 23, elevation, 416.58 ft; minimum discharge, 35,200 ft³/s Sept. 2, elevation, 396.20 ft; minimum daily discharge, 56,300 ft³/s Sept. 14.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	74200	97600	173000	95800	172000	169000	155000	147000	214000	193000	144000	91900
2	92700	85500	143000	104000	137000	179000	165000	158000	217000	193000	122000	79200
3	88100	87700	143000	144000	129000	142000	170000	169000	218000	184000	126000	91500
4	94400	92700	140000	145000	125000	149000	158000	166000	208000	216000	121000	101000
5	99400	94900	164000	164000	152000	178000	167000	159000	197000	202000	135000	103000
6	82700	102000	148000	149000	143000	177000	183000	163000	237000	207000	145000	103000
7	61400	102000	164000	159000	163000	163000	159000	184000	215000	208000	150000	79900
8	79900	95100	146000	144000	128000	140000	151000	187000	206000	187000	172000	75200
9	75500	101000	134000	159000	145000	140000	173000	194000	201000	178000	184000	81000
10	79300	102000	119000	163000	142000	161000	187000	156000	222000	178000	175000	91400
11	87700	104000	130000	132000	169000	181000	193000	136000	219000	184000	164000	95900
12	77900	99000	135000	136000	161000	178000	186000	137000	205000	190000	159000	95800
13	62000	110000	146000	90200	170000	177000	188000	113000	220000	186000	174000	84500
14	56700	134000	148000	100000	155000	155000	171000	161000	214000	159000	152000	56300
15	68900	135000	137000	117000	139000	178000	166000	181000	204000	153000	171000	58900
16	84100	136000	120000	125000	139000	189000	172000	155000	204000	156000	153000	79300
17	87700	141000	123000	133000	125000	160000	169000	168000	185000	140000	137000	85700
18	71600	89100	140000	159000	122000	179000	193000	206000	182000	124000	107000	88700
19	86500	122000	191000	157000	129000	186000	170000	178000	159000	150000	118000	83900
20	89600	140000	188000	177000	147000	188000	182000	183000	152000	130000	138000	79000
21	82300	128000	188000	181000	144000	137000	158000	215000	144000	130000	111000	76200
22	82100	138000	183000	185000	145000	146000	174000	216000	131000	127000	132000	75200
23	78300	112000	186000	164000	140000	188000	183000	225000	125000	174000	143000	89000
24	85700	131000	197000	174000	132000	179000	193000	201000	142000	142000	137000	95700
25	75300	165000	138000	179000	132000	167000	191000	231000	151000	143000	146000	89600
26	66900	176000	150000	180000	160000	179000	183000	213000	177000	125000	118000	93300
27	67600	164000	150000	174000	172000	170000	176000	209000	199000	118000	125000	83600
28	77600	152000	151000	173000	179000	187000	183000	226000	190000	126000	124000	70900
29	82100	137000	164000	179000	---	168000	171000					

COLUMBIA RIVER MAIN STEM

12472800 COLUMBIA RIVER BELOW PRIEST RAPIDS DAM, WA--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: March 1980 to current year. Temperature records for site "at Vernita Bridge, near Priest Rapids Dam" (station 12472900) for period July 1974 to September 1980 are equivalent.

INSTRUMENTATION.--Temperature recorder since December 1979.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 21.5°C Aug. 4, 1985, Aug. 7, 1989; minimum, 1.0°C Feb. 3-11, 1985, Feb. 6-9, 1989, Jan. 30, 31, 1991.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 21.0°C Aug. 19, 21-23, 26, 27; minimum, 1.0°C Jan. 30, 31.

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	19.0	18.0	18.5	14.0	13.0	13.5	9.5	9.0	9.0	3.5	3.0	3.0
2	18.5	18.0	18.0	13.5	13.0	13.5	9.0	9.0	9.0	3.5	2.5	3.0
3	18.5	17.5	18.0	14.0	13.0	13.5	9.0	9.0	9.0	3.0	2.5	3.0
4	18.0	17.5	17.5	14.0	13.5	13.5	9.0	9.0	9.0	3.0	2.5	2.5
5	17.5	17.0	17.5	13.5	13.0	13.5	9.0	8.5	9.0	2.5	2.5	2.5
6	17.0	16.5	16.5	13.5	12.5	13.0	9.0	8.5	9.0	3.0	2.5	3.0
7	16.5	16.0	16.5	13.5	13.0	13.0	8.5	8.5	8.5	3.0	2.5	3.0
8	16.5	16.0	16.5	13.5	13.0	13.0	8.5	8.5	8.5	3.0	2.5	3.0
9	17.0	16.0	16.5	13.5	13.0	13.0	8.5	8.5	8.5	3.0	2.5	3.0
10	16.5	15.5	16.0	13.5	13.0	13.0	8.5	8.5	8.5	3.0	2.5	3.0
11	16.0	15.5	15.5	13.5	13.0	13.0	8.5	8.5	8.5	3.0	3.0	3.0
12	15.5	15.5	15.5	13.5	13.0	13.0	8.5	8.5	8.5	3.0	3.0	3.0
13	16.0	15.0	15.5	13.0	13.0	13.0	8.5	8.5	8.5	4.0	3.0	3.5
14	15.5	15.0	15.5	13.0	12.0	12.5	8.5	8.0	8.5	3.5	3.5	3.5
15	15.5	15.0	15.0	12.0	12.0	12.0	8.0	8.0	8.0	3.5	3.5	3.5
16	15.5	14.5	15.0	12.0	12.0	12.0	8.0	7.5	8.0	3.5	3.5	3.5
17	15.0	14.0	14.5	12.0	12.0	12.0	8.0	7.5	8.0	3.5	3.5	3.5
18	15.0	14.5	14.5	12.5	11.5	12.0	7.5	7.5	7.5	3.5	3.0	3.5
19	14.5	14.0	14.0	11.5	11.5	11.5	7.0	6.0	6.5	3.0	3.0	3.0
20	14.5	13.5	14.0	11.5	11.0	11.0	6.0	5.5	6.0	3.0	3.0	3.0
21	14.5	13.5	14.0	11.0	11.0	11.0	5.5	5.0	5.5	3.0	2.5	3.0
22	14.5	13.5	14.0	11.0	11.0	11.0	5.0	4.5	5.0	2.5	2.5	2.5
23	14.5	13.5	14.0	11.0	11.0	11.0	4.5	4.5	4.5	2.5	2.0	2.5
24	14.5	13.5	14.0	11.5	11.0	11.0	4.5	4.0	4.5	2.0	2.0	2.0
25	14.5	13.5	14.0	11.5	11.0	11.0	4.5	4.0	4.0	2.0	2.0	2.0
26	15.0	13.5	14.0	11.0	10.5	11.0	4.0	4.0	4.0	2.0	1.5	1.5
27	14.5	14.0	14.0	10.5	10.0	10.5	4.5	4.0	4.5	1.5	1.5	1.5
28	15.0	13.5	14.0	10.0	9.5	9.5	4.5	3.5	4.0	1.5	1.5	1.5
29	14.5	13.5	14.0	9.5	9.5	9.5	3.5	3.0	3.5	1.5	1.5	1.5
30	14.0	14.0	14.0	9.5	9.5	9.5	3.5	3.0	3.0	1.5	1.0	1.5
31	14.5	13.5	14.0	---	---	---	3.0	3.0	3.0	1.5	1.0	1.5
MONTH	19.0	13.5	15.3	14.0	9.5	12.0	9.5	3.0	6.8	4.0	1.0	2.7

WATER TEMPERATURE, DEGREES CELSIUS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	1.5	1.5	1.5	3.0	3.0	3.0	5.5	5.0	5.0	8.5	8.0	8.5
2	1.5	1.5	1.5	3.0	3.0	3.0	5.5	5.5	5.5	9.0	8.5	8.5
3	2.0	1.5	1.5	3.0	3.0	3.0	5.5	5.5	5.5	9.0	8.5	8.5
4	2.0	1.5	2.0	3.5	3.0	3.0	6.0	5.5	5.5	9.0	8.5	9.0
5	2.0	1.5	2.0	3.0	2.5	3.0	6.5	5.5	6.0	9.5	9.0	9.0
6	2.0	2.0	2.0	3.0	2.5	2.5	6.0	5.5	6.0	9.5	9.0	9.0
7	2.0	2.0	2.0	3.0	2.5	3.0	5.5	5.5	5.5	9.5	9.0	9.0
8	2.5	2.0	2.0	3.0	3.0	3.0	5.5	5.5	5.5	9.5	9.0	9.5
9	2.5	2.0	2.5	3.0	3.0	3.0	6.0	5.5	5.5	9.5	9.0	9.5
10	2.5	2.5	2.5	3.5	3.0	3.0	5.5	5.5	5.5	9.5	9.0	9.5
11	2.5	2.0	2.5	3.5	3.0	3.0	5.5	5.5	5.5	9.5	9.5	9.5
12	2.5	2.5	2.5	3.5	3.0	3.5	6.0	5.5	5.5	10.0	9.5	9.5
13	2.5	2.5	2.5	3.5	3.5	3.5	6.0	6.0	6.0	10.5	9.5	10.0
14	2.5	2.5	2.5	4.0	3.5	3.5	6.5	6.0	6.0	10.0	9.5	10.0
15	3.0	2.5	3.0	3.5	3.5	3.5	6.5	6.0	6.0	10.5	10.0	10.5
16	3.0	2.5	3.0	4.0	3.5	4.0	6.5	6.0	6.5	10.5	10.5	10.5
17	3.5	3.0	3.0	4.0	4.0	4.0	6.5	6.5	6.5	11.0	10.5	10.5
18	3.0	3.0	3.0	4.0	4.0	4.0	7.0	6.5	6.5	11.0	10.5	10.5
19	3.5	3.0	3.0	4.0	4.0	4.0	7.0	7.0	7.0	11.0	10.5	10.5
20	3.5	3.0	3.5	4.5	4.0	4.0	7.5	7.0	7.0	11.0	10.5	10.5
21	3.5	3.5	3.5	4.5	4.5	4.5	7.5	7.5	7.5	10.5	10.5	10.5
22	3.5	3.0	3.5	4.5	4.5	4.5	8.0	7.5	7.5	10.5	10.5	10.5
23	3.5	3.0	3.5	5.0	4.5	4.5	8.0	7.5	8.0	10.5	10.5	10.5
24	3.5	3.0	3.5	5.0	4.5	5.0	8.0	7.5	8.0	11.0	10.5	11.0
25	3.5	3.0	3.5	4.5	4.5	4.5	8.0	8.0	8.0	11.0	10.5	11.0
26	3.5	3.0	3.5	4.5	4.5	4.5	8.0	7.5	8.0	11.0	10.5	11.0
27	3.5	3.0	3.0	5.0	4.5	4.5	8.0	7.5	8.0	11.5	11.0	11.0
28	3.5	3.0	3.0	5.0	4.5	4.5	8.0	8.0	8.0	11.0	11.0	11.0
29	---	---	---	5.0	4.5	5.0	8.0	8.0	8.0	11.0	11.0	11.0
30	---	---	---	5.0	4.5	5.0	8.5	8.0	8.0	11.5	11.0	11.0
31	---	---	---	5.0	5.0	5.0	---	---	---	11.5	11.0	11.0
MONTH	3.5	1.5	2.7	5.0	2.5	3.8	8.5	5.0	6.6	11.5	8.0	10.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	12.0	11.5	11.5	15.0	14.5	15.0	18.5	18.0	18.5	20.0	19.0	19.5
2	12.5	11.5	12.0	15.0	15.0	15.0	19.0	18.5	18.5	19.5	18.0	19.0
3	12.0	12.0	12.0	16.0	15.5	15.5	19.0	18.5	19.0	19.5	18.5	19.0
4	12.0	11.5	12.0	16.0	15.5	15.5	19.0	18.5	19.0	20.0	19.0	19.5
5	12.0	11.5	12.0	16.0	15.5	15.5	18.5	18.5	18.5	20.0	19.5	20.0
6	12.0	11.5	12.0	15.5	15.5	15.5	19.0	18.5	18.5	20.0	19.5	20.0
7	12.0	12.0	12.0	16.0	15.5	15.5	19.0	18.5	18.5	20.0	19.0	19.5
8	12.5	12.0	12.0	16.0	15.5	16.0	19.0	18.5	19.0	20.0	18.5	19.5
9	12.0	12.0	12.0	16.5	16.0	16.0	19.0	19.0	19.0	20.0	18.5	19.5
10	12.5	12.0	12.5	16.0	15.5	16.0	19.0	18.5	19.0	20.0	18.5	19.5
11	13.0	12.5	12.5	16.0	15.5	16.0	18.5	18.5	18.5	20.0	19.0	19.5
12	13.0	12.5	12.5	16.0	15.5	15.5	19.0	18.5	18.5	20.5	19.5	19.5
13	12.5	12.5	12.5	16.0	15.5	16.0	19.0	19.0	19.0	19.5	18.5	19.5
14	13.0	12.5	12.5	16.0	16.0	16.0	19.5	19.0	19.0	19.5	18.0	19.0
15	13.0	13.0	13.0	16.5	16.0	16.5	19.5	19.0	19.5	19.5	18.0	19.0
16	13.0	13.0	13.0	16.5	16.0	16.5	20.0	19.5	19.5	19.5	18.0	19.0
17	13.0	12.5	13.0	16.5	16.5	16.5	20.0	19.5	20.0	20.0	19.0	19.5
18	13.0	12.5	13.0	17.0	16.5	16.5	20.5	19.5	20.0	20.0	19.0	19.5
19	13.0	13.0	13.0	17.0	16.5	17.0	20.5	20.0	20.5	19.5	19.0	19.5
20	13.0	13.0	13.0	17.5	17.0	17.0	20.5	20.5	20.5	19.5	18.0	19.0
21	13.5	13.0	13.5	17.5	17.0	17.0	20.5	20.0	20.5	18.5	17.5	18.0
22	13.5	13.5	13.5	17.5	17.0	17.0	20.5	20.0	20.5	19.0	18.0	18.5
23	14.0	13.5	13.5	17.0	17.0	17.0	20.5	20.5	20.5	19.0	18.0	18.5
24	14.0	13.5	14.0	18.0	17.0	17.5	20.5	20.0	20.5	19.0	18.0	19.0
25	14.0	14.0	14.0	18.0	17.5	17.5	20.5	20.0	20.0	19.0	18.5	19.0
26	14.0	14.0	14.0	18.0	17.5	18.0	20.5	20.0	20.0	19.5	18.5	19.0
27	14.5	14.0	14.5	18.5	17.5	18.0	20.5	20.0	20.0	19.5	18.5	19.0
28	15.0	14.5	14.5	18.5	17.5	18.0	20.0	19.5	20.0	19.5	18.5	19.0
29	15.0	14.5	15.0	18.5	18.0	18.0	20.0	19.5	19.5	19.5	18.5	19.0
30	15.0	14.5	14.5	18.5	18.0	18.0	20.5	19.0	19.5	19.0	18.5	19.0
31	---	---	---	18.5	18.0	18.0	20.0	19.5	20.0	---	---	---
MONTH	15.0	11.5	13.0	18.5	14.5	16.5	20.5	18.0	19.5	20.5	17.5	19.2
YEAR	20.5	1.0	10.7									

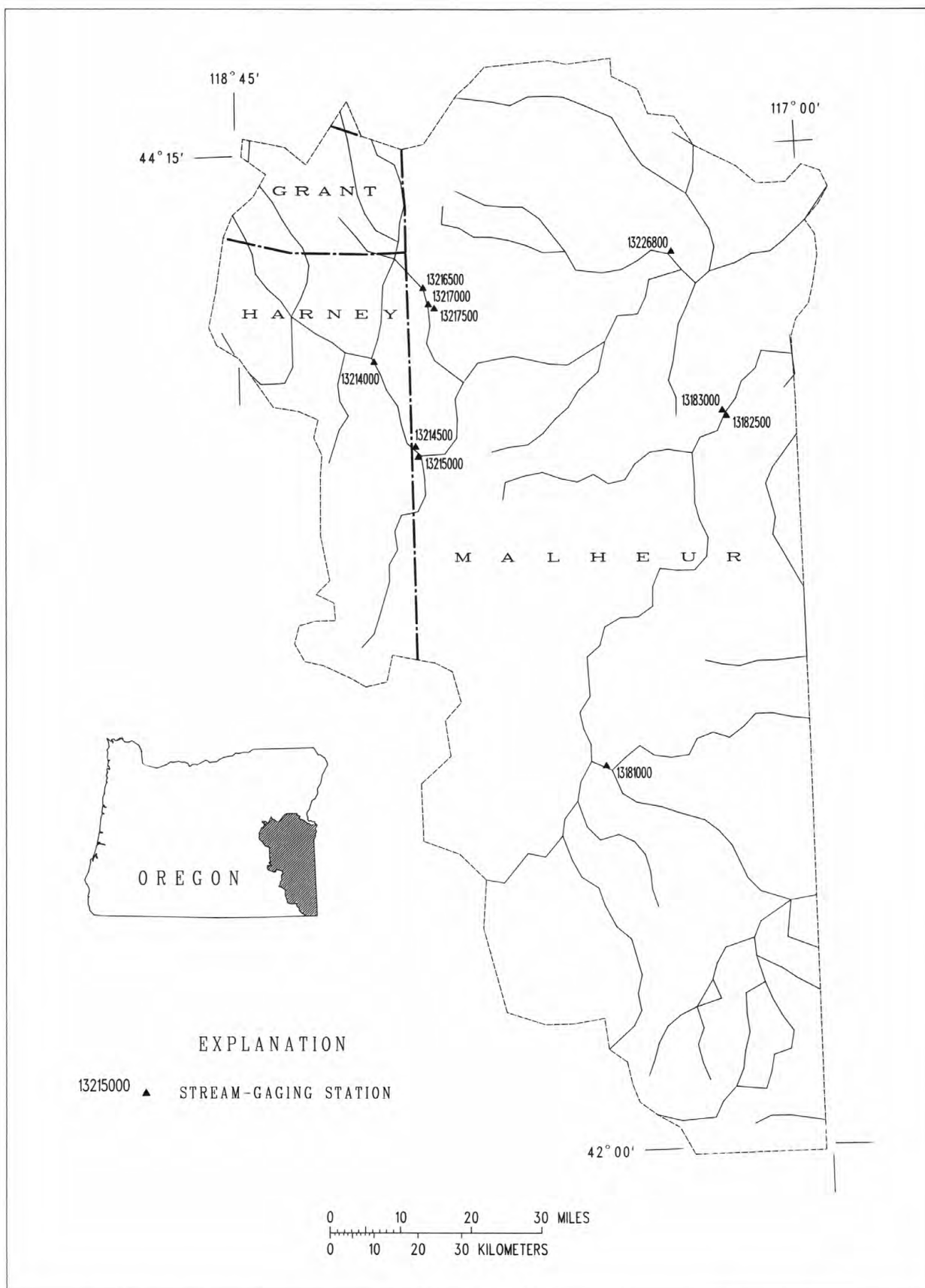


Figure 3.--Location of surface-water and water-quality stations in the Owyhee River, and Malheur River basins.

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 National Geodetic Vertical Datum of 1929. Prior to Feb 10, 1960, at datum 0.24 ft lower.

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

AVERAGE DISCHARGE.--42 years, 979 ft³/s, 709,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 41,400 ft³/s Feb. 19, 1986, gage height, 19.09 ft; minimum, 42 ft³/s Aug. 12, 1954, July 28, Aug. 5, 1961, July 31, 1968.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,400 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 21	1200	*4,220	*5.91				
Minimum discharge, 79 ft ³ /s Sept. 8, 9.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	96	139	139	204	157	387	311	859	969	512	110	87
2	95	141	150	e180	155	423	411	728	1040	574	115	87
3	89	141	135	e150	156	458	444	773	962	584	115	83
4	87	141	143	e135	157	732	416	1000	809	486	126	84
5	89	142	145	e140	169	633	374	903	726	421	148	8
6	95	144	145	e150	172	1390	389	720	666	374	146	86
7	95	146	149	e150	179	1140	523	645	621	332	125	83
8	97	147	146	e160	184	781	743	616	602	292	123	83
9	101	148	143	e160	201	602	533	615	585	257	121	80
10	103	148	136	e165	249	517	447	673	556	232	127	83
11	106	152	147	177	282	458	402	678	518	194	129	87
12	106	156	148	187	300	421	365	719	482	170	120	88
13	113	156	148	204	313	403	331	732	457	162	124	91
14	117	158	159	228	426	390	306	1050	422	149	120	99
15	117	157	146	267	549	412	296	927	417	143	119	97
16	122	156	132	319	586	701	303	732	380	135	109	97
17	126	155	143	303	777	665	303	765	361	132	108	98
18	127	153	138	298	723	614	316	e2570	336	168	102	98
19	128	152	e130	303	775	625	340	e3500	323	170	99	97
20	127	156	e135	262	612	772	376	e4000	309	159	101	93
21	126	155	145	253	522	726	382	3510	291	152	101	92
22	126	153	e130	225	469	571	415	2610	276	145	95	94
23	127	153	e115	210	456	493	904	2020	272	149	94	95
24	128	155	e115	205	481	448	832	1600	269	150	94	95
25	128	156	e130	205	598	379	675	1340	293	156	91	95
26	129	151	e160	205	502	355	705	1170	301	153	90	95
27	131	148	175	186	427	347	732	1060	328	142	88	96
28	133	135	174	175	366	316	1010	1000	365	123	92	97
29	136	133	178	e165	---	297	1060	966	396	120	87	97
30	136	150	151	152	---	276	1130	962	439	115	90	99
31	137	---	e140	e155	---	279	---	1070	---	108	92	---
TOTAL	3573	4477	4470	6278	10943	17011	15774	40513	14771	7159	3401	2743
MEAN	115	149	144	203	391	549	526	1307	492	231	110	91.4
MAX	137	158	178	319	777	1390	1130	4000	1040	584	148	99
MIN	87	133	115	135	155	276	296	615	269	108	87	80
AC-FT	7090	8880	8870	12450	21710	33740	31290	80360	29300	14200	6750	5440

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1991, BY WATER YEAR (WY)

MEAN	167	223	415	683	1292	2427	3094	1989	942	270	158	142
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	206	124	157	61.2	63.7	62.5
(WY)	1955	1955	1955	1955	1955	1977	1968	1968	1966	1968	1954	1955

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1950 - 1991
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ANNUAL TOTAL	154076			131113							
ANNUAL MEAN	422			359				980			
HIGHEST ANNUAL MEAN								3400		1984	
LOWEST ANNUAL MEAN								188		1977	
HIGHEST DAILY MEAN	4700	Mar	4	4000	May	20	36500		Feb	19	1986
LOWEST DAILY MEAN	87	Oct	4	80	Sep	9			Aug	1	1968
ANNUAL SEVEN-DAY MINIMUM	92	Oct	1	84	Sep	3			Jul	26	1968
ANNUAL FLOOD (AC-FT)	30560			26070			70900				
10 PERCENT EXCEEDS	978			752			2570				
50 PERCENT EXCEEDS	185			168			241				
90 PERCENT EXCEEDS	114			96			110				

OWYHEE RIVER BASIN

13182500 LAKE OWYHEE NEAR NYSSA, OR

LOCATION.--Lat 43°38'30", long 117°14'30", in NW 1/4 SE 1/4 sec.20, T.22 S., R.45 E., Malheur County, Hydrologic Unit 17050110, near left abutment on Owyhee Dam on Owyhee River, 21 mi southwest of Nyssa, and at mile 28.5.

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

PERIOD OF RECORD.--October 1932 to current year (month-end contents and change in contents only prior to October 1979). Prior to October 1958, published as Owyhee Reservoir at Owyhee Dam, near Nyssa.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Oct. 1, 1965, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by concrete arch-gravity dam, completed in September 1932; storage began Oct. 16, 1932. Capacity, 1,122,000 acre-ft between elevations 2,367.50 ft bottom of sluice gates and 2,670.00 ft top of spillway gate, 715,000 acre-ft between elevations 2,590.20 ft diversion tunnel and 2,670.00 ft. Dead storage below elevation 2,367.50 ft negligible. Figures given herein are contents above elevation 2,367.50 ft. Reservoir generally will not be drawn below elevation 2,590.2 ft, contents, 406,800 acre-ft, which project considers dead storage. Water is released through diversion tunnel to South Canal for irrigation of lands west of Snake River in vicinity of Homedale, Idaho, and to North Canal for irrigation of lands north and west of Owyhee River and through sluice gates to river for Owyhee Canal, which diverts about 18 mi downstream. Additional data available in files of Oregon Water Resources Department.

COOPERATION.--Capacity tables furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 1,140,000 acre-ft Apr. 15, 1952, elevation, 2,671.50 ft; minimum contents observed since full capacity was attained on May 7, 1936, 409,800 acre-ft Sept. 30, 1988, elevation, 2,590.72 ft, furnished by Owyhee Irrigation District.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 731,400 acre-ft May 28, elevation, 2,634.00 ft; minimum contents, 461,800 acre-ft Sept. 30, elevation, 2,599.31 ft.

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

2,590	405,700	2,640	787,300
2,600	466,300	2,650	888,300
2,610	535,400	2,660	999,700
2,620	611,900	2,670	1,122,000
2,630	695,800	2,671	1,135,000

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2618.53	2615.50	2617.67	2619.68	2622.15	2625.78	2630.15	2629.08	2633.83	2627.75	2617.83	2606.91
2	2618.31	2615.56	2617.71	2619.73	2622.27	2625.87	2630.15	2629.08	2633.80	2627.58	2617.46	2606.59
3	2618.06	2615.62	2617.76	2619.75	2622.35	2625.99	2630.18	2629.00	2633.74	2627.41	2617.08	2606.27
4	2617.91	2615.69	2617.85	2619.75	2622.39	2626.27	2630.20	2628.97	2633.68	2627.18	2616.74	2605.95
5	2617.67	2615.75	2617.93	2619.76	2622.53	2626.35	2630.22	2628.97	2633.58	2626.94	2616.37	2605.64
6	2617.45	2615.85	2617.98	2619.74	2622.58	2626.51	2630.23	2628.92	2633.48	2626.65	2615.98	2605.32
7	2617.27	2615.92	2618.04	2619.78	2622.64	2626.91	2630.15	2628.84	2633.37	2626.39	2615.46	2605.01
8	2617.08	2615.98	2618.13	2619.79	2622.72	2627.17	2630.18	2628.76	2633.24	2626.07	2615.23	2604.67
9	2616.91	2616.11	2618.18	2619.79	2622.80	2627.39	2630.20	2628.65	2633.13	2625.77	2614.83	2604.36
10	2616.72	2616.15	2618.30	2619.83	2622.89	2627.53	2630.23	2628.55	2633.00	2625.47	2614.49	2604.12
11	2616.56	2616.22	2618.34	2619.85	2623.00	2627.71	2630.12	2628.52	2632.78	2625.15	2614.12	2603.84
12	2616.42	2616.30	2618.41	2619.89	2623.10	2627.80	2630.06	2628.44	2632.55	2624.79	2613.79	2603.57
13	2616.19	2616.36	2618.51	2620.38	2623.22	2627.91	2630.03	2628.43	2632.35	2624.44	2613.40	2603.33
14	2616.05	2616.46	2618.56	2620.61	2623.32	2628.03	2629.94	2628.47	2632.15	2624.11	2613.07	2603.05
15	2615.88	2616.51	2618.64	2620.69	2623.49	2628.15	2629.87	2628.50	2631.93	2623.77	2612.76	2602.82
16	2615.73	2616.60	2618.70	2620.79	2623.65	2628.27	2629.80	2628.54	2631.64	2623.41	2612.42	2602.58
17	2615.57	2616.67	2618.79	2620.90	2623.80	2628.46	2629.72	2628.64	2631.52	2623.02	2612.10	2602.32
18	2615.47	2616.76	2618.85	2621.05	2624.01	2628.66	2629.63	2628.80	2631.22	2622.68	2611.73	2602.08
19	2615.37	2616.82	2618.92	2621.10	2624.22	2628.83	2629.52	2629.74	2630.89	2622.34	2611.44	2601.84
20	2615.31	2616.87	2618.97	2621.22	2624.46	2628.93	2629.44	2631.10	2630.58	2622.08	2611.41	2601.60
21	2615.22	2617.00	2619.03	2621.30	2624.64	2629.12	2629.37	2632.22	2630.27	2621.79	2610.74	2601.33
22	2615.20	2617.03	2619.04	2621.41	2624.78	2629.27	2629.23	2632.85	2629.99	2621.47	2610.34	2601.09
23	2615.15	2617.11	2619.08	2621.50	2624.91	2629.43	2629.15	2633.26	2629.71	2621.15	2610.04	2600.85
24	2615.09	2617.21	2619.13	2621.58	2625.05	2629.51	2629.14	2633.54	2629.39	2620.72	2609.68	2600.64
25	2615.03	2617.26	2619.18	2621.65	2625.18	2629.67	2629.15	2633.72	2629.13	2620.38	2609.29	2600.40
26	2615.09	2617.31	2619.23	2621.74	2625.37	2629.73	2629.08	2633.82	2628.84	2620.04	2608.94	2600.17
27	2615.13	2617.37	2619.34	2621.81	2625.51	2629.80	2629.03	2633.89	2628.60	2619.69	2608.63	2600.00
28	2615.22	2617.45	2619.40	2621.89	2625.65	2629.88	2629.04	2633.92	2628.34	2619.31	2608.24	2599.73
29	2615.30	2617.52	2619.47	2621.96	---	2629.96	2629.04	2633.93	2628.15	2618.95	2607.93	2599.51
30	2615.34	2617.55	2619.51	2622.00	---	2630.04	2629.07	2633.85	2627.93	2618.58	2607.56	2599.31
31	2615.48	---	2619.58	2622.06	---	2630.10	---	2633.86	---	2618.26	2607.28	---
MAX	2618.53	2617.55	2619.58	2622.06	2625.65	2630.10	2630.23	2633.93	2633.83	2627.75	2617.83	2606.91
MIN	2615.03	2615.50	2617.67	2619.68	2622.15	2625.78	2629.03	2628.43	2627.93	2618.26	2607.28	2599.31
(†)	576500	592500	608600	628700	658500	696700	787700	730100	677900	598100	515900	461800
(‡)	-25800	+16000	+16100	+20100	+29800	+38200	-9000	+42400	-52200	-79800	-82200	-54100

CAL YR 1990 MAX 2656.85 MIN 2615.03 AC-FT† -194800
WTR YR 1991 MAX 2633.93 MIN 2599.31 AC-FT† -140500

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

OWYHEE RIVER BASIN

67

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 National Geodetic Vertical Datum of 1929 (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. Monthly and annual adjusted flows are furnished by State of Oregon Water Resources Department.

AVERAGE DISCHARGE.--59 years (water years 1933-91), 427 ft³/s, 309,400 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, 243 ft³/s July 19, gage height, 2.14 ft; minimum discharge, 1.9 ft³/s Jan. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	177	2.8	2.2	2.4	2.2	2.7	123	149	180	190	177	172
2	177	2.8	2.2	2.3	2.2	2.6	138	149	180	190	162	172
3	177	2.8	2.2	2.2	2.2	2.6	145	149	180	190	180	172
4	179	2.8	2.2	2.2	2.1	2.9	145	149	181	188	180	172
5	180	2.7	2.2	2.2	2.1	2.7	146	149	182	187	180	172
6	180	2.7	2.2	2.2	2.1	2.5	147	149	183	187	180	171
7	180	2.7	2.2	2.2	2.0	2.5	147	149	185	186	180	170
8	178	2.7	2.2	2.0	3.7	2.5	146	149	185	185	180	170
9	177	2.7	2.2	2.0	2.7	2.5	145	149	185	185	178	170
10	175	2.7	2.3	2.0	2.3	2.5	147	149	185	185	177	172
11	172	2.7	2.4	2.0	2.2	2.5	123	149	184	185	177	172
12	177	2.7	2.4	2.0	2.4	2.4	145	149	185	185	177	171
13	171	2.5	2.4	2.1	2.5	2.4	143	149	185	183	175	170
14	171	2.5	2.4	2.4	2.5	2.2	143	149	185	182	172	170
15	177	2.5	2.4	2.6	2.5	2.2	143	149	186	182	172	157
16	177	2.5	2.4	2.7	2.5	2.8	146	149	185	182	172	166
17	177	2.5	2.3	2.7	2.4	4.0	147	150	185	182	172	167
18	177	2.5	2.3	2.6	2.4	67	147	150	185	182	171	167
19	177	2.5	2.4	2.5	2.2	114	147	147	185	205	170	167
20	177	2.4	2.5	2.5	2.1	111	148	147	185	185	170	167
21	177	2.4	2.7	2.5	2.2	114	149	147	185	185	170	167
22	177	2.3	2.6	2.5	2.4	115	149	147	185	181	162	167
23	177	2.2	2.5	2.5	2.3	115	149	147	185	180	175	151
24	177	2.2	2.5	2.4	2.2	115	149	147	186	180	175	147
25	177	2.2	2.5	2.4	2.3	115	149	147	185	179	175	146
26	82	2.1	2.5	2.4	2.4	115	149	147	185	180	175	145
27	4.5	2.1	2.5	2.4	2.4	117	149	147	185	180	175	145
28	3.5	2.1	2.4	2.4	2.4	121	149	147	185	180	172	145
29	3.3	2.1	2.4	2.3	---	121	149	166	188	174	172	146
30	3.2	2.2	2.4	2.2	---	121	149	180	190	180	172	146
31	3.0	---	2.4	2.2	---	121	---	180	---	178	172	---
TOTAL	4517.5	74.6	73.4	72.0	83.9	1626.5	4351	4680	5535	5703	5397	4892
MEAN	146	2.49	2.37	2.32	3.00	52.5	145	151	184	184	174	163
MAX	180	2.8	2.7	2.7	20	121	149	180	190	205	180	172
MIN	3.0	2.1	2.2	2.0	2.1	2.2	123	147	180	174	162	145
AC-FT	8960	148	146	143	166	3230	8630	9280	10980	11310	10700	9700
MEAN†	255	271	264	329	540	673	649	1649	577	317	183	189
AC-FT†	15670	16150	16250	20240	29970	41400	38600	101400	34310	19470	11630	11220

CAL YR 1990 TOTAL 44242.5 MEAN 121 MAX 205 MIN 2.1 AC-FT 87750 MEAN† 507 AC-FT† 367300
WTR YR 1991 TOTAL 37005.9 MEAN 101 MAX 205 MIN 2.0 AC-FT 73400 MEAN† 492 AC-FT† 356400

† Adjusted for diversions from Lake Owyhee and change in lake contents.

13214000 MALHEUR RIVER NEAR DREWSEY. OR

LOCATION.--Lat 43°47'05", long 118°19'50", in NE 1/4 SE 1/4 sec.31, T.20 S., R.36 E., Harney County, Hydrologic Unit 17050116, on left bank 300 ft downstream from bridge on U.S. Highway 20, 0.5 mi downstream from Cottonwood Creek, 3.0 mi southeast of Drewsey, and at mile 129.0.

DRAINAGE AREA.--910 mi², approximately.

PERIOD OF RECORD.--June 1920 to September 1921, November, December 1921, March, April 1922, April to September 1923, June 1926 to current year. Monthly discharge only for some periods, published in WSP 1317. March to September 1914 at site 13 mi upstream; records not equivalent owing to inflow from several creeks.

REVISED RECORDS.--WSP 1093: 1927. WSP 1287: Drainage area. WSP 1397: 1921, 1927-31, 1937, drainage area (former site). WSP 1517: 1952. WDR OR-78-1: 1976(P).

GAGE.--Water-stage recorder. Datum of gage is 3,479.13 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 27, 1923, water-stage recorder or nonrecording gage at site 0.5 mi downstream at different datum. Apr. 27, 1923, to June 6, 1939, water-stage recorder at site 7 mi downstream at different datum.

REMARKS.--Records good except those for Jan. 24 to Apr. 22, which are fair, and Dec. 1 to Jan. 24, which are poor. Slight regulation by small reservoirs upstream from station. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--65 years (water years 1927-91), 189 ft³/s, 136,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,000 ft³/s Dec. 23, 1964, gage height, 13.50 ft, from rating curve extended above 4,500 ft³/s on basis of contracted-opening measurement at gage height 13.20 ft; no flow at times.

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 20	0530	*1,190	*5.89	No other peak greater than base discharge.			
Minimum discharge, 0.82 ft ³ /s Sept. 8-17.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.1	63	e62	e38	70	114	179	70	128	91	2.2	1.2
2	6.7	63	e56	e35	74	130	219	69	110	76	1.7	1.1
3	7.6	56	e56	e32	75	129	190	76	100	71	1.5	1.1
4	7.5	59	e56	e32	78	190	176	71	115	67	1.5	1.0
5	11	70	e56	e32	123	252	191	69	175	64	1.5	.95
6	13	76	e55	e32	127	179	181	69	230	66	1.6	.95
7	28	65	e52	e35	113	140	181	69	249	65	1.6	.83
8	30	64	e52	e40	103	125	154	82	155	60	1.5	.82
9	31	76	e54	e40	98	119	134	127	129	52	1.5	.82
10	29	76	e58	e55	94	115	144	101	107	56	2.1	.82
11	31	68	e62	e70	91	108	131	97	92	56	3.5	.82
12	32	66	e62	e75	90	103	131	102	79	50	3.4	.82
13	28	65	e58	e100	97	100	124	113	78	50	2.8	.82
14	27	65	e58	e120	134	98	127	139	82	58	2.5	.82
15	31	64	e50	e110	168	92	126	119	81	63	2.5	.82
16	33	59	e50	e110	162	86	125	103	73	62	2.5	.82
17	34	57	e50	e110	161	81	137	143	65	63	2.1	1.1
18	40	65	e56	e110	134	87	127	217	69	61	1.9	1.2
19	45	64	e56	e100	125	102	118	358	67	52	1.8	1.3
20	55	63	e45	e95	117	109	113	531	71	47	1.6	1.4
21	51	63	e40	e95	121	104	115	354	90	38	1.5	1.6
22	55	64	e30	e95	121	99	119	269	95	27	1.3	1.5
23	70	65	e30	e95	123	99	121	226	87	24	1.3	1.7
24	59	65	e35	e90	115	101	131	206	81	24	1.3	2.2
25	55	65	e40	85	107	114	152	185	102	22	1.3	2.5
26	54	65	e40	86	104	123	134	184	103	17	1.1	2.5
27	57	61	e40	89	101	122	124	174	117	14	1.1	2.8
28	61	60	e35	82	106	114	132	148	109	12	1.1	2.9
29	57	58	e30	91	---	107	90	148	100	7.8	1.1	4.0
30	56	63	e30	113	---	106	76	152	102	2.7	1.1	4.4
31	57	---	e35	71	---	133	---	162	---	2.2	1.2	---
TOTAL	1157.9	1933	1489	2363	3132	3681	4202	4933	3241	1420.7	54.7	45.61
MEAN	37.4	64.4	48.0	76.2	112	119	140	159	108	45.8	1.76	1.52
MAX	70	76	62	120	168	252	219	531	249	91	3.5	4.4
MIN	6.1	56	30	32	70	81	76	69	65	2.2	1.1	.82
AC-FT	2300	3830	2950	4690	6210	7300	8330	9780	6430	2820	108	90

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 1991, BY WATER YEAR (WY)

MEAN	42.1	69.8	103	143	261	465	648	348	138	29.0	10.2	14.6
MAX	103	178	739	817	1124	1435	2290	1136	501	158	60.2	68.6
(WY)	1985	1971	1965	1970	1982	1983	1952	1958	1984	1982	1976	1984
MIN	5.32	5.11	8.95	20.0	20.0	55.0	44.1	17.5	7.96	1.87	.000	.000
(WY)	1933	1933	1933	1933	1933	1977	1934	1934	1934	1934	1934	1934

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1927 - 1991
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ANNUAL TOTAL	20316.5		27652.91				
ANNUAL MEAN	55.7		75.8			189	
HIGHEST ANNUAL MEAN						474	1984
LOWEST ANNUAL MEAN						34.3	1934
HIGHEST DAILY MEAN	241	Mar 24	531	May 20		6910	Dec 23 1964
LOWEST DAILY MEAN	1.1	Aug 3	.82	Sep 8		.00	Jul 27 1934
ANNUAL SEVEN-DAY MINIMUM	1.2	Aug 3	.82	Sep 8		.00	Jul 27 1934
ANNUAL RUNOFF (AC-FT)	40300		54850			136600	
10 PERCENT EXCEEDS	106		139			504	
50 PERCENT EXCEEDS	56		65			68	
90 PERCENT EXCEEDS	1.7		1.5			6.0	

UPPER MALHEUR RIVER BASIN

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13214500 WARMSPRINGS RESERVOIR NEAR RIVERSIDE, OR

LOCATION.--Lat 43°35'07", long 118°12'30", NW 1/4 SW 1/4 sec.8, T.23 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on Bureau of Reclamation lands, near right end of dam on Malheur River, 3 mi northwest of Riverside, 4 mi upstream from South Fork, and at mile 114.0.

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

PERIOD OF RECORD.--January 1920 to October 1929, December 1929 to September 1991 (discontinued). Prior to Sept. 3, 1980, monthend contents and change in contents only. See REMARKS.

GAGE.--Water-stage recorder. Datum of gage is 3,327.0 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations NVGD. Prior to May 29, 1964, nonrecording gage read daily or weekly.

REMARKS.--Reservoir is formed by concrete-arch dam. Storage began in 1919. Capacity, 191,000 acre-ft between elevations 3,327.00 ft, bottom of outlet tunnel, and 3,406.00 ft, top of flashboards. Dead storage, 1,400 acre-ft below elevation 3,327.00 ft not included in records. Water used to irrigate lands on both sides of river between Namorf and Ontario. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

COOPERATION.--Capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 196,100 acre-ft Apr. 16, May 13, 1958, elevation, 3,407.10 ft; no contents Sept. 18 to Nov. 1, 1929, Aug. 26 to sometime in November 1935, Sept. 18 to Oct. 11, 1950, sometime in August to Oct. 3, 1977, Sept. 23-25, 1988, Sept. 21-30, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 32,440 acre-ft Apr. 14, elevation, 3,358.60 ft; no contents Sept. 21-30.

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

3,327	0	3,345	10,150	3,380	90,520
3,330	295	3,350	16,930	3,390	124,600
3,335	1,960	3,360	35,400	3,400	164,400
3,340	5,090	3,370	60,140	3,406	191,000

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3327.52	3335.31	3341.87	---	---	3352.27	3356.52	3357.08	3355.40	3349.32	3334.41	3327.24
2	3327.54	3335.64	3341.96	---	---	3352.41	3356.77	3356.78	3355.35	3349.03	3332.99	3327.23
3	3327.60	3335.95	3342.08	---	---	3352.57	3356.98	3356.46	3355.23	3348.70	3331.38	3327.22
4	3327.66	3336.24	3342.21	---	---	3352.81	3357.18	3356.12	3355.09	3348.36	3330.14	3327.22
5	3327.69	3336.53	3342.32	---	---	3353.08	3357.40	3355.75	3354.96	3348.01	3329.34	3327.20
6	3327.75	3336.89	3342.43	---	---	3353.35	3357.61	3355.34	3354.94	3347.62	3328.84	3327.21
7	3327.82	3337.25	3342.55	3345.42	3348.76	3353.52	3357.82	3354.83	3355.01	3347.22	3328.49	3327.19
8	3328.07	3337.54	3342.67	3345.48	3348.91	3353.67	3357.99	3354.35	3354.96	3346.82	3328.25	3327.17
9	3328.28	3337.82	3342.77	3345.55	3349.08	3353.81	3358.15	3353.93	3354.86	3346.38	3328.09	3327.15
10	3328.41	3338.11	3342.94	3345.66	3349.21	3353.96	3358.29	3353.55	3354.71	3345.89	3327.94	3327.15
11	3328.44	3338.37	3343.07	3345.75	3349.35	3354.06	3358.39	3353.20	3354.55	3345.41	3327.82	3327.14
12	3328.51	3338.61	3343.24	3345.85	3349.49	3354.19	3358.53	3352.83	3354.34	3344.87	3327.73	3327.13
13	3328.54	3338.86	3343.40	3345.96	3349.61	3354.31	3358.58	3352.54	3354.09	3344.35	3327.67	3327.12
14	3328.53	3339.06	3343.47	3346.10	3349.79	3354.41	3358.56	3352.35	3353.85	3343.77	3327.63	3327.11
15	3328.52	3339.25	3343.56	3346.30	3350.01	3354.51	3358.54	3352.20	3353.61	3343.30	3327.59	3327.09
16	3328.51	3339.46	3343.65	3346.43	3350.27	3354.60	3358.53	3352.23	3353.40	3342.87	3327.57	3327.09
17	3328.81	3339.63	3343.76	3346.60	3350.50	3354.69	3358.55	3352.27	3353.18	3342.46	3327.54	3327.08
18	3329.33	3339.80	3343.89	3346.72	3350.69	3354.76	3358.57	3352.48	3352.95	3342.13	3327.51	3327.06
19	3329.82	3340.01	3343.99	3346.87	3350.86	3354.88	3358.57	3352.89	3352.68	3341.86	3327.47	3327.04
20	3330.34	3340.18	---	3346.97	3351.02	3354.99	3358.57	3353.55	3352.39	3341.53	3327.45	3327.03
21	3330.90	3340.35	---	3347.10	3351.17	3355.11	3358.57	3354.08	3352.11	3341.18	3327.40	3327.01
22	3331.40	3340.51	---	3347.20	3351.33	3355.22	3358.53	3354.44	3351.79	3340.78	3327.37	3326.99
23	3331.91	3340.68	---	3347.27	3351.48	3355.32	3358.42	3354.75	3351.45	3340.39	3327.35	3326.98
24	3332.45	3340.86	---	3347.34	3351.62	3355.46	3358.30	3354.99	3351.09	3340.07	3327.33	3326.96
25	3332.88	3341.04	---	3347.44	3351.77	3355.58	3358.21	3355.22	3350.74	3339.79	3327.31	3326.95
26	3333.26	3341.17	---	3347.52	3351.89	3355.72	3358.12	3355.40	3350.48	3339.40	3327.30	3326.93
27	3333.63	3341.32	---	3347.62	3352.01	3355.86	3357.95	3355.57	3350.19	3338.84	3327.30	3326.92
28	3333.99	3341.47	---	3347.70	3352.13	3355.98	3357.79	3355.59	3349.94	3338.18	3327.28	3326.93
29	3334.36	3341.62	---	---	---	3356.09	3357.62	3355.54	3349.74	3337.48	3327.27	3326.92
30	3334.74	3341.73	---	---	---	3356.20	3357.36	3355.48	3349.53	3336.69	3327.27	3326.95
31	3335.00	---	---	---	---	3356.34	---	3355.44	---	3335.75	3327.25	---
MAX	3335.00	3341.73	---	---	---	3356.34	3358.58	3357.08	3355.40	3349.32	3334.41	3327.24
MIN	3327.52	3335.31	---	---	---	3352.27	3356.52	3352.20	3349.53	3335.75	3327.25	3326.92
(†)	1960	6620	10040	14080	20290	27890	29910	26170	16240	2330	10	0
(‡)	+1942	+4660	+3420	+4040	+6210	+7600	+2020	-3740	-9930	-13910	-2320	-10

CAL YR 1990 AC-FT† -77390

WTR YR 1991 AC-FT† -18

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

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.

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, by barometer. See WSP 1317 or 1737 for history of changes prior to Sept. 29, 1949.

REMARKS.--Records good except for flows below 100 ft³/s, and estimated daily discharges, which are poor. Flow completely regulated since November 1919 by Warm Springs Reservoir (station 13214500). Diversions for irrigation upstream from station.

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, 467 ft³/s May 7, gage height, 4.87 ft; no flow for many days.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	e.20	e.00	e.00	e.00	e.00	e.00	297	180	242	212	.00
2	3.1	e.10	e.00	e.00	e.00	e.00	e.00	314	171	262	214	.00
3	2.9	e.10	e.00	e.00	e.00	e.00	e.00	317	190	272	196	.00
4	6.8	e.10	e.00	e.00	e.00	e.00	e.00	332	239	271	123	.00
5	9.8	e.00	e.00	e.00	e.00	e.00	e.00	341	262	270	65	.00
6	11	e.00	e.00	e.00	.00	e.00	e.00	364	240	282	27	.00
7	15	e.00	e.00	e.00	.00	e.00	e.00	441	227	289	14	.00
8	20	e.00	e.00	e.00	.00	e.00	e.00	418	228	285	9.4	.00
9	27	e.00	e.00	e.00	e.00	e.00	e.00	397	228	295	6.7	.00
10	31	e.00	e.00	e.00	e.00	e.00	e.00	363	228	301	4.4	.00
11	35	e.00	e.00	e.00	e.00	e.00	e.00	345	227	303	2.9	.00
12	36	e.00	e.00	e.00	e.00	e.00	e.00	342	247	309	3.1	.00
13	38	e.00	e.00	e.00	e.00	e.00	e75	314	259	307	3.1	.00
14	37	e.00	e.00	e.00	e.00	e.00	e150	253	256	301	4.2	.00
15	37	e.00	e.00	e.00	e.00	e.00	e150	228	256	270	4.3	.00
16	38	e.00	e.00	e.00	e.00	e.00	151	227	237	243	4.5	.00
17	25	e.00	e.00	e.00	e.00	e.00	151	136	224	235	4.6	.00
18	5.3	e.00	e.00	e.00	e.00	e.00	133	61	235	194	4.2	.00
19	2.6	e.00	e.00	e.00	e.00	e.00	122	39	254	172	1.2	.00
20	1.2	e.00	e.00	e.00	e.00	e.00	132	5.7	271	179	.61	.00
21	e.50	e.00	e.00	e.00	e.00	e.00	138	6.4	274	181	.85	.00
22	e.50	e.00	e.00	e.00	e.00	e.00	163	6.8	307	182	.21	.00
23	e.50	e.00	e.00	e.00	e.00	e.00	212	8.0	326	172	.00	.00
24	e.40	e.00	e.00	e.00	e.00	e.00	243	8.9	324	140	.00	.00
25	e.40	e.00	e.00	e.00	e.00	e.00	227	9.0	326	126	.00	.00
26	e.40	e.00	e.00	e.00	e.00	e.00	231	25	312	148	.00	.00
27	e.30	e.00	e.00	e.00	e.00	e.00	251	44	301	187	.00	.00
28	e.30	e.00	e.00	e.00	e.00	e.00	263	137	278	197	.00	.00
29	e.30	e.00	e.00	e.00	---	e.00	268	197	253	190	.00	.00
30	e.20	e.00	e.00	e.00	---	e.00	277	196	245	190	.00	.00
31	e.20	---	e.00	e.00	---	e.00	---	194	---	195	.00	---
TOTAL	388.60	0.50	0.00	0.00	0.00	0.00	3337.00	6366.8	7605	7190	905.27	0.00
MEAN	12.5	.017	.000	.000	.000	.000	111	205	253	232	29.2	.000
MAX	38	.20	.00	.00	.00	.00	277	441	326	309	214	.00
MIN	.20	.00	.00	.00	.00	.00	.00	5.7	171	126	.00	.00
AC-FT	771	1.0	.00	.00	.00	.00	6620	12630	15080	14260	1800	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1920 - 1991, BY WATER YEAR (WY)

MEAN	34.1	.87	8.11	17.0	35.9	83.0	314	433	343	430	350	197
MAX	138	19.8	323	452	763	1440	1603	1162	557	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	70.0	.041	.000
(WY)	1934	1933	1933	1933	1933	1933	1935	1932	1942	1988	1988	1988

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1920 - 1991

ANNUAL TOTAL	52624.10			25793.17					
ANNUAL MEAN	144			70.7			188		
HIGHEST ANNUAL MEAN							566		1983
LOWEST ANNUAL MEAN							46.8		1930
HIGHEST DAILY MEAN	711	Jul	1	441	May	7	3030	Mar	22 1984
LOWEST DAILY MEAN	.00	Jan	1	.00	Nov	5	.00	Oct	5 1932
ANNUAL SEVEN-DAY MINIMUM	.00	Jan	1	.00	Nov	5	.00	Oct	5 1932
ANNUAL RUNOFF (AC-FT)	104400			51160			136300		
10 PERCENT EXCEEDS	469			269			496		
50 PERCENT EXCEEDS	1.0			.00			3.0		
90 PERCENT EXCEEDS	.00			.00			.00		

13216500 NORTH FORK MALHEUR RIVER ABOVE BEULAH RESERVOIR, NEAR BEULAH, OR

LOCATION.--Lat 43°56'54", long 118°10'24", in NW 1/4 NE 1/4 sec.4, T.19 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on left bank 1,000 ft upstream from Beulah Reservoir, 3.5 mi northwest of Beulah, and at mile 16.8. Prior to Sept. 24, 1985, at site 800 ft upstream.

DRAINAGE AREA.--355 mi².

PERIOD OF RECORD.--January to September 1914 (published as "at Scott's Ranch, near Beulah"), June 1936 to current year. Published as "above Agency Valley Reservoir, near Beulah", June 1936 to September 1968.

REVISED RECORDS.--WSP 1934: 1960(M).

GAGE.--Water-stage recorder. Elevation of gage is 3,320 ft above National Geodetic Vertical Datum of 1929, from topographic map. Jan. 1 to Sept. 30, 1914, nonrecording gage and June 10, 1936, to Oct. 14, 1958, water-stage recorder at site 0.5 mi upstream at different datums. Oct. 15, 1958, to Oct. 8, 1975, water-stage recorder at site 800 ft upstream, datum of gage 3,351.0 ft. Oct. 9, 1975, to Sept. 24, 1985, at site 800 ft upstream, datum of gage 3,349.4 ft.

REMARKS.--Records good except those above 350 ft³/s, which are fair and estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--55 years (water years 1937-91), 134 ft³/s, 97,080 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,970 ft³/s Dec. 23, 1964, gage height, 9.90 ft, present datum, from floodmark, from rating curve extended above 1,300 ft³/s, on basis of slope-area measurement of peak flow; maximum gage height, 11.0 ft, present datum, sometime during period Dec. 17-23, 1964 (icejam); minimum discharge, 2.0 ft³/s Dec. 5, 1984, result of freezeup.

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)
May 19	0030	*664	*2.67	No other peak greater than base discharge.			
Minimum discharge recorded, 16 ft ³ /s Jan. 21, result of freezeup, but may have been less during periods of ice effect, Dec. 16 to Jan. 11, Jan. 29, 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	51	36	e38	51	70	88	87	187	92	46	42
2	37	44	43	e38	50	71	99	90	191	85	43	40
3	39	46	45	e38	49	72	98	93	207	79	45	41
4	40	56	45	e38	52	99	107	97	218	74	42	42
5	39	64	53	e38	65	111	121	101	240	70	44	42
6	42	53	53	e40	67	74	124	112	230	68	48	44
7	40	46	40	e45	54	61	116	123	221	67	44	37
8	42	58	51	e45	52	68	102	172	182	65	43	36
9	43	55	53	e45	51	64	111	185	168	61	42	39
10	42	52	59	e50	47	61	107	175	161	63	42	42
11	43	50	60	e60	50	56	98	164	171	61	41	41
12	44	49	46	68	47	61	97	173	182	57	41	42
13	43	49	51	72	53	56	92	163	174	59	41	39
14	44	49	51	62	79	59	103	167	164	57	37	39
15	48	43	44	61	84	50	102	153	149	55	43	39
16	46	44	e40	55	74	49	109	157	141	55	44	39
17	46	45	e45	56	69	57	113	223	134	59	37	37
18	49	53	e55	52	53	60	107	272	128	55	38	36
19	56	48	e44	49	53	60	107	451	118	54	38	40
20	47	48	e35	44	52	67	107	384	115	53	38	43
21	50	48	e30	46	54	62	111	326	116	51	41	42
22	58	49	e30	45	57	62	117	293	109	50	41	43
23	51	48	e30	46	64	59	127	280	105	52	41	43
24	49	48	e35	49	56	90	139	280	103	57	38	44
25	48	49	e40	57	57	89	140	287	106	62	40	44
26	47	49	e40	44	59	84	129	280	112	52	40	44
27	47	46	e40	50	58	69	116	263	101	55	42	41
28	47	43	e40	49	62	73	113	245	97	51	44	46
29	47	47	e35	e40	---	69	102	230	116	49	42	58
30	47	53	e35	e40	---	69	93	224	108	44	43	48
31	49	---	e38	45	---	76	---	204	---	46	42	---
TOTAL	1408	1483	1342	1505	1619	2128	3295	6454	4554	1858	1291	1253
MEAN	45.4	49.4	43.3	48.5	57.8	68.6	110	208	152	59.9	41.6	41.8
MAX	58	64	60	72	84	111	140	451	240	92	48	58
MIN	37	43	30	38	47	49	88	87	97	44	37	36
AC-FT	2790	2940	2660	2990	3210	4220	6540	12800	9030	3690	2560	2490

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1914 - 1991, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1914	52.6	80.5	1985	32.2	1937
1915	58.0	97.9	1974	36.5	1940
1916	67.6	346	1965	37.5	1937
1917	75.3	280	1974	31.9	1937
1918	118	517	1982	36.8	1989
1919	222	715	1984	58.0	1977
1920	376	906	1952	110	1991
1921	317	784	1984	83.2	1988
1922	167	418	1984	50.0	1987
1923	66.2	190	1983	33.4	1936
1924	45.8	75.4	1983	24.4	1939
1925	46.9	81.0	1984	28.3	1936

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1914 - 1991
ANNUAL TOTAL	22392	28190	134
ANNUAL MEAN	61.3	77.2	298
HIGHEST ANNUAL MEAN			57.7
LOWEST ANNUAL MEAN			3000
HIGHEST DAILY MEAN	200	451	7.5
LOWEST DAILY MEAN	30	30	19
ANNUAL SEVEN-DAY MINIMUM	31	34	19
ANNUAL RUNOFF (AC-FT)	44410	55910	96820
10 PERCENT EXCEEDS	115	159	332
50 PERCENT EXCEEDS	49	53	64
90 PERCENT EXCEEDS	35	40	39

MALHEUR RIVER BASIN

13217000 BEULAH RESERVOIR AT BEULAH, OR

LOCATION.--Lat 43°54'41", long 118°09'25", in SW 1/4 SE 1/4 sec.15, T.19 S., R.37 E., Malheur County, Hydrologic Unit 17050116, on top of dam near right end of dam on North Fork Malheur River, 0.2 mi northwest of Beulah, and at mile 15.0.

DRAINAGE AREA.--440 mi², approximately.

PERIOD OF RECORD.--December 1935 to current year. Prior to October 1968, published as Agency Valley Reservoir at Beulah. Prior to March 1979, monthend contents only.

REVISED RECORDS.--WSP 1397: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 7.49 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1978, published as "National Geodetic Vertical Datum of 1929, Bureau of Reclamation construction datum." Prior to Mar. 28, 1979, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill, rock-faced dam. Storage began December 1935. Capacity, 59,920 acre-ft between gage heights 3,263.21 ft, bottom of outlet tunnel, and 3,340.0 ft, top of spillway gates; with gates open the capacity is 32,220 acre-ft. No dead storage. Water is used for irrigation of lands below Juntura, on Vale project, Bureau of Reclamation. U.S. Bureau of Reclamation satellite telemeter at station.

COOPERATION.--Prior to Mar. 28, 1979, daily gage heights furnished by Vale-Oregon Irrigation District. Capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 62,770 acre-ft May 3, 1941, gage height, 3,341.50 ft; no contents Sept. 17 to Oct. 13, 1950, Aug. 28 to Oct. 4, 1955, Aug. 13 to Oct. 1, 1961, Sept. 21 to Oct. 5, 1968, Aug. 31 to Oct. 3, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 26,140 acre-ft June 8, gage height, 3,318.29 ft; minimum contents observed, 12 acre-ft Aug. 14, gage height, 3,266.65 ft.

Capacity table (gage height, in feet, and total contents, in acre-feet)

3,263	0	3,290	3,750	3,320	28,250
3,265	3	3,295	6,090	3,325	35,025
3,270	70	3,300	8,980	3,330	42,530
3,275	310	3,305	12,520	3,335	50,820
3,280	925	3,310	16,950	3,340	59,925
3,285	2,020	3,315	22,220	3,341	61,840

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3273.03	3287.39	3294.58	---	3303.48	3307.92	3312.63	3315.17	3318.10	---	3285.93	---
2	3273.01	3287.66	3294.68	---	3303.69	3308.01	3312.81	3314.85	3318.06	---	3283.34	---
3	3273.12	3287.96	3294.94	---	3303.90	3308.36	3313.16	3314.65	3317.87	---	3280.39	---
4	3274.28	3288.32	3295.12	---	3304.06	3308.48	3313.46	3314.49	3317.59	---	3276.63	---
5	3275.17	3288.65	3295.21	---	3304.15	3308.51	3313.50	3314.27	3317.71	---	---	---
6	3275.93	3288.93	3295.35	3299.77	3304.38	3308.68	3313.54	3313.99	3317.87	---	---	---
7	3276.61	3289.20	3295.47	3299.91	3304.54	3308.91	3313.71	3313.83	3318.08	---	---	---
8	3277.25	3289.53	3295.68	3300.05	3304.68	3309.10	3314.12	3313.45	3318.08	---	---	---
9	3277.86	3289.83	3295.91	3300.27	3304.78	3309.37	3314.08	3313.43	3318.13	---	---	---
10	3278.38	3290.10	3296.18	3300.51	3304.89	3309.33	3314.27	3313.35	3318.05	---	---	---
11	3278.88	3290.35	3296.29	3300.68	3305.01	3309.47	3314.61	3313.23	3317.76	3308.69	---	---
12	3279.39	3290.60	3296.54	3300.93	3305.29	3309.60	3314.74	3313.31	3317.50	3308.19	---	---
13	3279.81	3290.85	3296.53	3301.08	3305.47	3309.71	3314.95	3313.15	---	3307.63	---	---
14	3280.26	3291.05	3296.66	3301.27	3305.67	3309.84	3315.01	3313.11	---	3307.06	---	---
15	3280.78	3291.26	3296.60	3301.36	3305.89	3309.91	3315.06	3313.21	---	3306.40	---	---
16	3281.21	3291.49	3296.97	3301.58	3305.93	3310.10	3315.17	3313.10	---	3305.65	---	---
17	3281.68	3291.77	3297.30	3301.68	3305.98	3310.34	3315.19	3313.12	---	3304.93	---	---
18	3282.17	3291.96	3297.31	3301.88	3306.35	3310.43	3315.32	3313.39	---	3304.12	---	---
19	3282.68	3292.18	---	3301.90	3306.40	3310.45	3315.53	3314.18	---	3303.23	---	---
20	3283.11	3292.41	---	3301.95	3306.65	3310.64	3315.64	3314.93	---	3302.31	---	---
21	3283.56	3292.65	---	3302.07	3306.81	3310.83	3315.65	3315.58	---	3301.35	---	---
22	3284.05	3292.88	---	3302.20	3306.88	3310.89	3315.80	3316.00	---	3300.34	---	---
23	3284.47	3293.08	---	3302.34	3306.97	3311.11	3315.83	3316.50	---	3299.24	---	---
24	3284.84	3293.27	---	3302.42	3307.09	3311.24	3315.57	3316.85	---	3298.18	---	---
25	3285.23	3293.45	3297.78	3302.55	3307.25	3311.39	3315.50	3317.08	---	3297.03	---	---
26	3285.55	3293.67	3298.09	3302.62	3307.34	3311.57	3315.50	3317.51	---	3295.80	---	---
27	3285.87	3293.93	3298.36	3302.82	3307.52	3311.76	3315.46	3317.84	3312.82	3294.50	---	---
28	3286.19	3294.05	3298.34	3302.81	3307.84	3311.98	3315.48	3317.98	3312.47	3293.22	---	---
29	3286.52	3294.23	---	3302.96	---	3312.13	3315.38	3317.89	3312.23	3291.69	---	---
30	3286.85	3294.38	---	3303.10	---	3312.34	3315.32	3317.92	3312.05	3290.04	---	---
31	3287.12	---	---	3303.32	---	3312.60	---	3318.07	---	3288.17	---	---
MAX	3287.12	3294.38	---	---	3307.84	3312.60	3315.83	3318.07	---	---	---	---
MIN	3273.01	3287.39	---	---	3303.48	3307.92	3312.63	3313.10	---	---	---	---
(†)	2670	5780	a8340	11240	14900	19600	22590	25860	19030	3030	a13	a16
(‡)	+2470	+3110	+2560	+2900	+3660	+4700	+2990	+3270	-6830	-16000	-3020	+3

CAL YR 1990 AC-FT‡ -13960
WTR YR 1991 AC-FT‡ -180

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

MALHEUR RIVER BASIN

73

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 National Geodetic Vertical Datum of 1929. 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.--Records good except those for Apr. 11 to May 20 and discharges below 10 ft³/s, which are poor. Flow regulated since 1935 by Beulah Reservoir (station 13217000). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--56 years (water years 1936-91), 144 ft³/s, 104,300 acre-ft/yr.

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, 485 ft³/s July 18, gage height, 3.60 ft; no flow Oct. 3, 4, Oct. 16 to Apr. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	.00	.00	.00	.00	.00	.00	189	196	163	408	36
2	.09	e.00	.00	.00	.00	.00	.00	207	194	178	395	35
3	.00	e.00	.00	.00	.00	.00	.00	230	190	181	353	35
4	.00	e.00	.00	.00	.00	.00	.00	242	217	180	306	36
5	.56	e.00	.00	.00	.00	.00	.00	246	211	206	247	36
6	3.8	e.00	.00	.00	.00	.00	.00	247	191	244	70	38
7	3.7	e.00	.00	.00	.00	.00	.00	250	186	256	45	35
8	4.1	.00	e.00	.00	.00	.00	.00	254	184	256	42	31
9	4.3	.00	e.00	.00	.00	.00	.00	257	183	271	41	35
10	4.7	.00	e.00	.00	.00	.00	.00	256	222	274	40	37
11	5.1	.00	e.00	.00	.00	.00	.38	255	277	281	40	36
12	5.4	.00	e.00	.00	.00	.00	.30	259	301	285	39	37
13	5.8	.00	e.00	.00	.00	.00	1.0	249	295	297	e40	35
14	6.6	.00	e.00	.00	.00	.00	2.0	242	290	306	e40	35
15	4.3	.00	e.00	.00	.00	.00	7.3	216	296	340	e40	35
16	.00	.00	e.00	.00	.00	.00	23	197	299	365	41	36
17	.00	.00	e.00	.00	.00	.00	32	188	316	362	34	34
18	.00	.00	e.00	.00	.00	.00	41	133	325	399	33	32
19	.00	.00	.00	.00	.00	.00	32	60	325	410	35	34
20	.00	.00	.00	.00	.00	.00	19	15	322	408	33	36
21	.00	.00	.00	.00	.00	.00	23	6.1	320	403	36	35
22	.00	.00	.00	.00	.00	.00	34	7.4	299	408	36	37
23	.00	.00	.00	.00	.00	.00	66	8.9	287	408	36	36
24	.00	.00	.00	.00	.00	.00	94	23	295	409	33	38
25	.00	.00	.00	.00	.00	.00	99	48	285	411	34	37
26	.00	.00	.00	.00	.00	.00	114	54	261	413	35	37
27	.00	.00	.00	.00	.00	.00	131	54	253	411	36	36
28	.00	.00	.00	.00	.00	.00	140	140	233	408	38	38
29	.00	.00	.00	.00	.00	.00	156	219	201	406	36	49
30	.00	.00	.00	.00	.00	.00	171	210	160	402	36	43
31	.00	---	.00	.00	---	.00	---	197	---	413	36	---
TOTAL	67.45	0.00	0.00	0.00	0.00	0.00	1185.98	5159.4	7614	10154	2714	1090
MEAN	2.18	.000	.000	.000	.000	.000	39.5	166	254	328	87.5	36.3
MAX	19	.00	.00	.00	.00	.00	171	259	325	413	408	49
MIN	.00	.00	.00	.00	.00	.00	.00	6.1	160	163	33	31
AC-FT	134	.00	.00	.00	.00	.00	2350	10230	15100	20140	5380	2160

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1991, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1936	37.0	134	1954	.086	1974
1937	1.12	35.5	1936	.000	1938
1938	1.92	62.7	1943	.000	1938
1939	7.58	287	1943	.000	1936
1940	23.8	478	1965	.000	1938
1941	83.9	936	1983	.000	1938
1942	293	856	1958	2.29	1981
1943	351	810	1983	120	1977
1944	282	510	1974	53.7	1939
1945	280	402	1979	58.4	1945
1946	223	399	1980	31.0	1988
1947	142	341	1945	31.9	1961

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1936 - 1991

ANNUAL TOTAL	31244.36	27984.83	
ANNUAL MEAN	85.6	76.7	144
HIGHEST ANNUAL MEAN			335
LOWEST ANNUAL MEAN			54.6
HIGHEST DAILY MEAN	344	413	3700
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	61970	55510	104300
10 PERCENT EXCEEDS	250	286	364
50 PERCENT EXCEEDS	28	.56	43
90 PERCENT EXCEEDS	.00	.00	.10

MALHEUR RIVER BASIN

13226800 BULLY CREEK RESERVOIR NEAR VALE, OR

LOCATION.--Lat 44°00'55", long 117°23'45", in SE 1/4 SW 1/4 sec.12, T.18 S., R.43 E., Malheur County, Hydrologic Unit 17050118, U.S. Bureau of Reclamation land, on top of dam over outlet works near right end of dam on Bully Creek, 8.0 mi northwest of Vale, and at mile 12.5.

DRAINAGE AREA.--547 mi².

PERIOD OF RECORD.--February 1963 to current year. Prior to March 1979, monthend contents only.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Bureau of Reclamation datum). Prior to Mar. 22, 1979, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill, rock-faced dam. Storage began Feb. 1, 1963. Capacity, 29,980 acre-ft between elevations 2,456.58 ft, outlet works, and 2,516.00 ft, spillway crest. Dead storage, 1,650 acre-ft below elevation 2,456.58 ft. Figures given herein do not include dead storage. Water used for irrigation lands of Vale-Oregon Irrigation District. Bully Creek Reservoir feed canal diverts from Malheur River by way of Vale Oregon canal.

COOPERATION.--Capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents not determined, occurred during period Apr. 4 to May 2, 1969, elevation above 2,516.00 ft, spillway crest; no usable contents at times in 1973, 1977, 1978, 1988, 1989, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 9,410 acre-ft Apr. 8, elevation, 2,489.04 ft (affected by wind); No storage at times during September. Minimum elevation not determined as water surface dropped below minimum recording limit of instrument.

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

2,456.5	0	2,480	5,430	2,505	20,130
2,460	465	2,485	7,430	2,510	24,370
2,465	1,310	2,490	9,930	2,515	29,000
2,470	2,401	2,495	12,900	2,520	34,040
2,475	3,770	2,500	16,290		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	2466.54	2473.43	---	2479.39	2485.39	2488.74	2487.53	2483.77	2476.31	2459.44	---
2	---	2466.79	2473.57	---	2479.54	2485.51	2488.79	2487.23	2483.80	2475.94	2458.88	---
3	---	2467.07	2473.72	---	2479.67	2485.69	2488.82	2486.93	2483.67	2475.52	2458.72	---
4	---	2467.40	2473.88	---	2479.84	2485.79	2488.84	2486.63	2483.45	2475.08	---	---
5	---	2467.64	2474.06	---	2480.03	2485.87	2488.81	2486.34	2483.21	2474.67	---	---
6	---	2467.89	2474.21	---	2480.22	2485.99	2488.78	2486.01	2483.08	2474.20	---	---
7	---	2468.17	2474.36	---	2480.43	2486.12	2488.77	2485.72	2483.10	2473.78	---	---
8	---	2468.44	2474.49	---	2480.68	2486.24	2488.96	---	2483.04	2473.28	---	---
9	---	2468.70	2474.66	---	2480.89	2486.40	2488.76	---	2482.85	2472.71	---	---
10	---	2468.96	2474.88	---	2481.13	2486.49	2488.72	---	2482.63	2472.10	---	---
11	---	2469.22	2475.10	---	2481.35	2486.63	2488.74	---	2482.33	2471.49	---	---
12	---	2469.46	2475.28	---	2481.59	2486.76	2488.72	---	2482.00	2470.88	---	---
13	---	2469.71	2475.53	---	2481.83	2486.88	2488.74	---	2481.65	2470.29	---	---
14	---	2469.94	2475.65	---	2482.09	2486.98	2488.72	---	2481.36	2469.69	---	---
15	2458.70	2470.17	2475.76	---	2482.40	2487.10	2488.70	---	2481.17	2469.09	---	---
16	2459.44	2470.40	2475.91	---	2482.73	2487.22	2488.71	---	2480.92	2468.47	---	---
17	2460.24	2470.64	2476.03	---	2483.05	2487.34	2488.71	---	2480.66	2467.89	---	---
18	2461.05	2470.85	2476.21	---	2483.38	2487.46	2488.69	---	2480.37	2467.34	---	---
19	2461.77	2471.08	2476.38	---	2483.72	2487.55	2488.75	---	2479.99	2466.80	---	---
20	2462.46	2471.30	---	---	2484.02	2487.64	2488.84	---	2479.61	2466.25	---	---
21	2462.97	2471.51	---	---	2484.23	2487.76	2488.96	---	2479.26	2465.69	---	---
22	2463.40	2471.71	---	---	2484.43	2487.84	2488.90	2484.42	2478.87	2465.08	---	---
23	2463.76	2471.89	---	---	2484.56	2487.93	2488.85	2484.54	2478.47	2464.51	---	---
24	2464.15	2472.12	---	2478.17	2484.71	2488.02	2488.70	2484.58	2478.08	2464.05	---	---
25	2464.49	2472.36	---	2478.35	2484.84	2488.11	2488.53	2484.51	2477.68	2463.58	---	---
26	2464.83	2472.51	---	2478.51	2484.98	2488.21	2488.46	2484.51	2477.38	2463.11	---	---
27	2465.14	2472.72	---	2478.68	2485.10	2488.31	2488.28	2484.50	2477.13	2462.58	---	---
28	2465.45	2472.91	---	2478.84	2485.27	2488.42	2488.19	2484.44	2476.85	2461.99	---	---
29	2465.74	2473.11	---	2478.97	---	2488.51	2487.96	2484.27	2476.68	2461.38	---	---
30	2466.04	2473.28	---	2479.11	---	2488.58	2487.76	2484.09	2476.52	2460.78	---	---
31	2466.29	---	---	2479.26	---	2488.68	---	2483.92	---	2460.12	---	---
MAX	---	2473.28	---	---	2485.27	2488.68	2488.96	---	2483.80	2476.31	---	---
MIN	---	2466.54	---	---	2479.39	2485.39	2487.76	---	2476.52	2460.12	---	---
(†)	1570	3260	a4280	5170	7560	9220	8750	6960	4250	483	a46	a0
(‡)	+1420	+1690	+1020	+890	+2390	+1660	-470	-1790	-2710	-3770	-437	-46
CAL YR 1990	AC-FT†	-6280										
WTR YR 1991	AC-FT†	-155										

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

‡ Change in contents, in acre-feet.

a Interpolated.

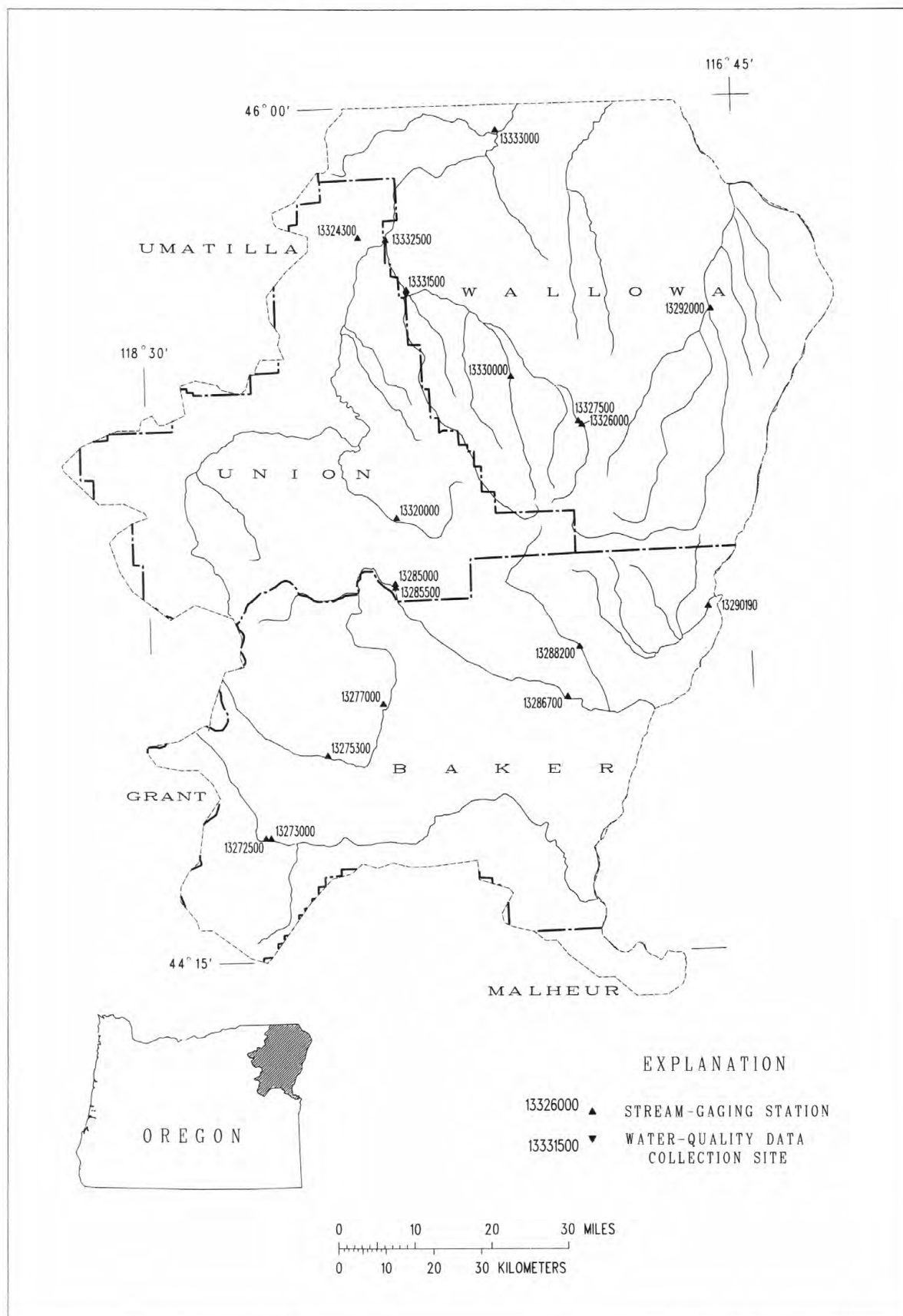


Figure 4.--Location of surface-water and water-quality stations in the Burnt River, Powder River, Pine Creek, Imnaha River, and Grande Ronde River basins.

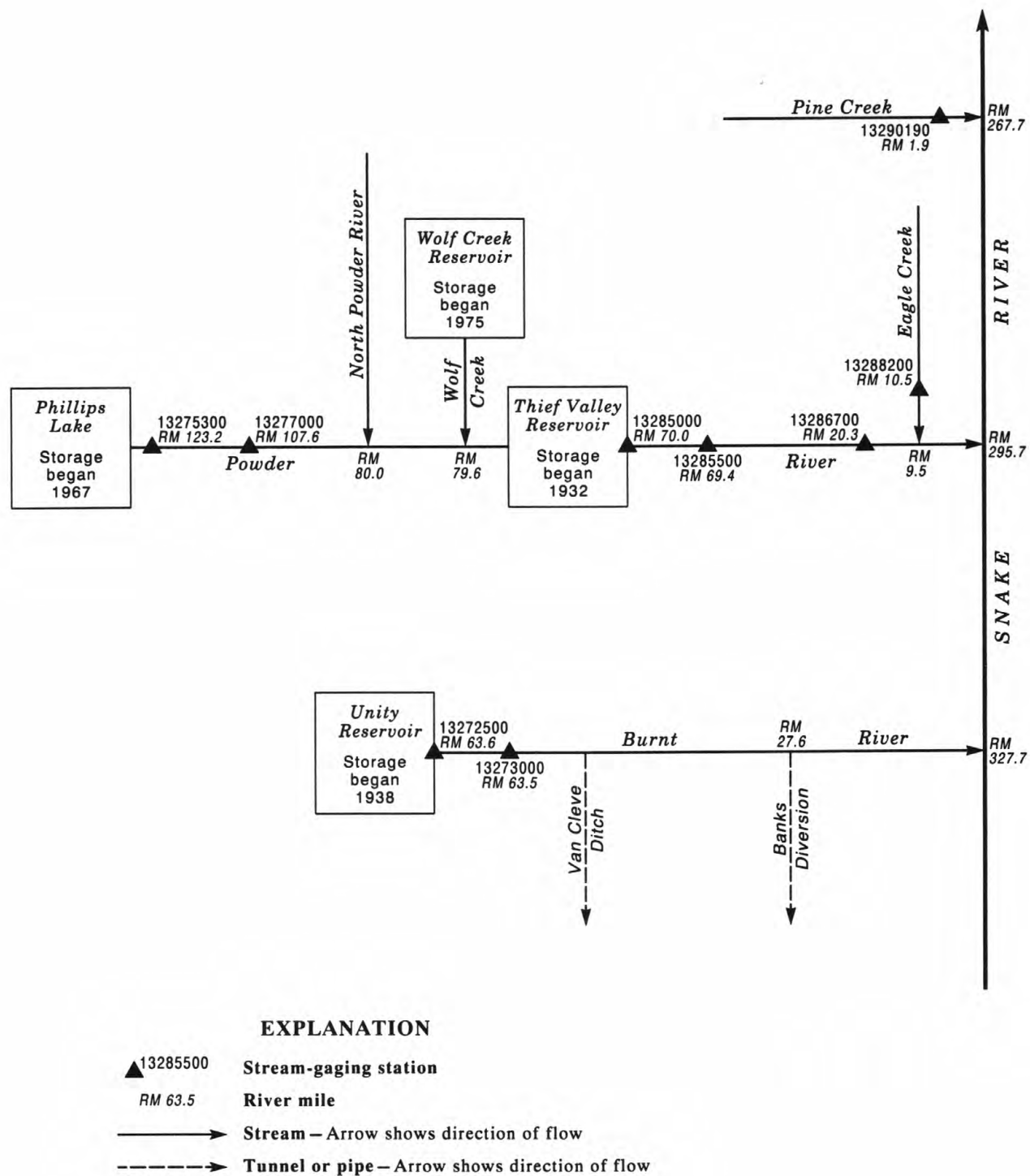


Figure 5.--Schematic diagram showing gaging stations in Powder River, Burnt River basins.

BURNT RIVER BASIN

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13272500 UNITY RESERVOIR NEAR UNITY, OR

LOCATION.--Lat 44°30'13", long 118°10'45", in SE 1/4 SW 1/4 sec.21, T.12 S., R.37 E., Baker County, Hydrologic Unit 17050202, at spillway near right end of dam on Burnt River, 4.4 mi north of Unity, and at mile 63.6.

DRAINAGE AREA.--309 mi².

PERIOD OF RECORD.--March 1938 to current year. Prior to September 1978, monthend contents only.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Mar. 13, 1938, to Nov. 4, 1941, reference mark or manometer pressure gage and Nov. 5, 1941, to Dec. 10, 1978, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam with concrete spillway and outlet works, completed by Bureau of Reclamation in 1937; storage began Feb. 19, 1938. Capacity, 25,200 acre-ft between elevations 3,776.5 ft, bottom of outlet gates, and 3,820.0 ft, top of radial gates on spillway when closed. Dead storage, 600 acre-ft below elevation 3,776.5 ft. Records given herein represent usable contents. Water used for irrigation in the Burnt River Irrigation District near Hereford and Bridgeport. U.S. Bureau of Reclamation satellite telemeter at station.

COOPERATION.--Capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 26,770 acre-ft Apr. 8, 1971, elevation, 3,821.62 ft; no contents Sept. 5 to Oct. 4, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 25,730 acre-ft May 26, elevation, 3,820.56 ft; minimum contents, 3,850 acre-ft Oct. 7, elevation, 3,789.64.

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

3,780	590	3,805	12,960
3,785	1,960	3,810	16,680
3,790	4,020	3,815	20,770
3,795	6,610	3,820	25,220
3,800	9,600	3,821	26,150

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3790.20	3791.67	3795.60	3798.44	3801.51	3805.94	3811.22	3817.87	3820.17	3816.70	3811.12	3802.66
2	3790.01	3791.78	3795.69	3798.52	3801.61	3806.13	3811.48	3817.91	3820.20	3816.55	3810.88	3802.35
3	3789.84	3791.90	3795.82	3798.60	3801.70	3806.35	3811.73	3817.93	3820.16	3816.41	3810.65	3802.04
4	3789.79	3792.10	3795.97	3798.52	3801.80	3806.68	3812.00	3817.90	3820.16	3816.23	3810.40	3801.73
5	3789.73	3792.21	3796.07	3798.76	3801.96	3806.96	3812.28	3817.89	3820.20	3816.07	3810.15	3801.41
6	3789.66	3792.34	3796.17	3798.85	3802.14	3807.18	3812.58	3817.85	3820.19	3815.92	3809.89	3801.13
7	3789.67	3792.48	3796.27	3798.93	3802.30	3807.40	3812.82	3817.82	3820.17	3815.79	3809.58	3800.81
8	3789.69	3792.65	3796.38	3799.01	3802.43	3807.57	3813.09	3817.84	3820.11	3815.64	3809.28	3800.49
9	3789.75	3792.78	3796.51	3799.11	3802.55	3807.73	3813.34	3817.88	3820.07	3815.49	3808.95	3800.22
10	3789.79	3792.91	3796.66	3799.22	3802.67	3807.88	3813.60	3817.91	3820.02	3815.37	3808.63	3799.92
11	3789.88	3793.03	3796.78	3799.35	3802.79	3808.02	3813.88	3817.95	3819.88	3815.27	3808.33	3799.65
12	3789.91	3793.17	3796.91	3799.45	3802.93	3808.18	3814.14	3818.01	3819.78	3815.14	3808.04	3799.39
13	3789.94	3793.31	3797.04	3799.57	3803.13	3808.31	3814.35	3818.08	3819.58	3814.99	3807.74	3799.09
14	3790.01	3793.42	3797.14	3799.69	3803.35	3808.40	3814.56	3818.21	3819.39	3814.86	3807.45	3798.81
15	3790.07	3793.53	3797.22	3799.81	3803.58	3808.55	3814.76	3818.32	3819.21	3814.69	3807.17	3798.55
16	3790.12	3793.64	3797.36	3799.93	3803.89	3808.68	3815.01	3818.37	3818.98	3814.44	3806.89	3798.29
17	3790.18	3793.78	3797.49	3800.05	3804.13	3808.82	3815.23	3818.72	3818.79	3814.19	3806.63	3798.01
18	3790.28	3793.90	3797.59	3800.16	3804.30	3808.93	3815.45	3819.27	3818.62	3813.98	3806.37	3797.76
19	3790.35	3794.04	3797.66	3800.27	3804.48	3809.08	3815.65	3820.35	3818.40	3813.79	3806.13	3797.52
20	3790.42	3794.17	---	3800.37	3804.64	3809.26	3815.84	3820.04	3818.21	3813.63	3805.88	3797.25
21	3790.58	3794.31	---	3800.47	3804.83	3809.42	3816.07	3820.27	3818.06	3813.45	3805.63	3797.00
22	3790.70	3794.45	3797.76	3800.60	3805.00	3809.52	3816.30	3820.07	3817.89	3813.28	3805.36	3796.76
23	3790.81	3794.60	---	3800.70	3805.15	3809.71	3816.54	3820.03	3817.69	3813.06	3805.09	3796.52
24	3790.90	3794.74	3797.84	3800.78	3805.30	3809.88	3816.78	3820.32	3817.54	3812.83	3804.85	3796.28
25	3791.03	3794.88	3797.90	3800.88	3805.43	3810.08	3816.99	3820.48	3817.39	3812.62	3804.59	3796.04
26	3791.10	3794.99	3797.99	3801.00	3805.52	3810.28	3817.20	3820.51	3817.24	3812.43	3804.35	3795.79
27	3791.21	3795.13	3798.07	3801.09	3805.65	3810.44	3817.36	3820.39	3817.10	3812.24	3804.08	3795.58
28	3791.29	3795.26	3798.12	3801.16	3805.76	3810.59	3817.51	3820.21	3817.01	3812.06	3803.82	3795.45
29	3791.37	3795.38	---	3801.23	---	3810.73	3817.64	3820.14	3816.92	3811.85	3803.57	3795.32
30	3791.49	3795.50	3798.28	3801.32	---	3810.87	3817.76	3820.12	3816.84	3811.62	3803.31	3795.18
31	3791.58	---	3798.37	3801.43	---	3811.03	---	3820.12	---	3811.39	3803.01	---
MAX	3791.58	3795.50	---	3801.43	3805.76	3811.03	3817.76	3820.51	3820.20	3816.70	3811.12	3802.66
MIN	3789.66	3791.67	---	3798.44	3801.51	3805.94	3811.22	3817.82	3816.84	3811.39	3803.01	3795.18
(†)	4790	6890	8580	10520	13510	17480	23190	25330	22380	17770	11580	6710
(‡)	+560	+2100	+1690	+1940	+2990	+3970	+5710	+2140	-2950	-4610	-6190	-4870

CAL YR 1990 AC-FT† -5660

WTR YR 1991 AC-FT‡ +2480

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

‡ Change in contents, in acre-feet.

BURNED RIVER BASIN

13273000 BURNT RIVER NEAR HEREFORD, OR

LOCATION.--Lat 44°30'14", long 118°10'35", in SE 1/4 sec.21, T.12 S., R.37 E., Baker County, Hydrologic Unit 17050202, on left bank 800 ft downstream from Unity Dam, 0.4 mi upstream from Van Cleve ditch, 7 mi west of Hereford, and at mile 63.5.

DRAINAGE AREA.--309 mi².

PERIOD OF RECORD.--March to September 1915, April to September 1916, October 1928 to current year. Monthly discharge only for some periods, published in WSP 1317.

REVISED RECORDS.--WSP 903: 1939. WSP 1397: 1916, 1930, 1930(M).

GAGE.--Water-stage recorder. Datum of gage is 3,758.19 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1943, to Oct. 31, 1966, water-stage recorder at site 450 ft downstream at datum 1.44 ft lower. See WSP 1317 or 1737 for history of changes prior to Oct. 1, 1943.

REMARKS.--No estimated daily discharges. Records good except those for discharges below 1.0 ft³/s, which are poor. Flow regulated since 1938 by Unity Reservoir (station 13272500). Diversions for irrigation upstream from station. U.S. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--63 years (water years 1929-91), 85.6 ft³/s, 62,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,220 ft³/s Apr. 17, 1943, gage height, 5.91 ft, present datum, from rating curve extended above 1,300 ft³/s; maximum gage height, 9.07 ft Apr. 8, 1971; no flow at times; minimum discharge before construction of Unity Dam, 1.6 ft³/s Aug. 31, 1935.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 927 ft³/s May 19, 20, gage height, 8.06 ft; minimum discharge, 0.24 ft³/s Jan. 15, 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	53	4.7	4.9	.73	.60	.53	.47	.73	95	111	107	114
2	48	4.7	4.9	.64	.53	.53	.47	21	69	111	107	113
3	44	4.7	4.9	.57	.53	.55	.47	49	69	99	106	113
4	29	4.7	5.3	.46	.53	.63	.47	60	68	73	103	113
5	21	4.7	4.6	.42	.51	.71	.47	53	98	73	109	113
6	21	4.7	4.0	.42	.37	.85	.47	65	117	73	124	104
7	8.4	4.7	3.0	.40	1.5	.96	.47	74	117	73	127	99
8	.50	4.7	1.2	.37	1.8	1.0	.43	74	102	73	127	99
9	.40	4.7	1.1	.37	1.2	1.1	.48	74	91	73	127	98
10	.40	4.7	.93	.37	1.0	1.1	.37	69	92	73	126	98
11	2.2	4.7	.54	.35	1.0	.88	.39	65	84	72	126	93
12	3.9	4.9	.92	.32	1.0	.80	.47	59	76	71	125	89
13	4.0	4.9	1.1	.32	1.1	.80	.60	56	127	71	123	89
14	4.0	4.9	.72	.28	.90	.80	.73	53	148	71	121	88
15	4.0	4.9	.56	.27	1.1	.80	.89	48	140	88	117	88
16	4.1	4.9	.34	.50	1.4	.80	.96	48	131	117	115	87
17	4.2	4.9	.65	.96	1.2	.83	.85	42	131	120	109	86
18	4.4	4.9	.89	1.0	1.2	.82	.75	39	130	112	102	80
19	4.4	4.9	.64	1.0	1.3	.80	.83	318	125	99	102	77
20	4.4	4.9	1.6	.96	1.4	.73	.97	853	116	86	101	76
21	4.4	4.9	2.6	.96	1.4	.73	1.0	467	115	86	100	76
22	4.4	4.8	2.6	.89	1.4	.66	1.1	470	115	85	100	75
23	4.4	4.9	2.6	.88	1.0	.66	1.2	353	115	91	99	75
24	4.4	4.9	2.7	.80	.71	.69	.78	112	115	93	98	74
25	4.4	4.9	2.8	.77	.63	.66	.45	145	115	92	97	74
26	4.4	4.9	2.8	.73	.57	.60	.42	181	115	90	96	74
27	4.4	4.9	2.8	.67	.53	.53	.42	227	115	88	96	71
28	4.4	4.9	1.6	.73	.53	.50	.42	246	115	87	96	59
29	4.4	4.9	.96	.66	---	.42	.47	193	114	84	94	52
30	4.7	4.9	.91	.66	---	.43	.57	156	113	92	102	52
31	4.7	---	.82	.69	---	.47	---	134	---	100	111	---
TOTAL	314.30	144.7	65.98	19.15	26.94	22.37	18.84	4804.73	3273	2727	3393	2599
MEAN	10.1	4.82	2.13	.62	.96	.72	.63	155	109	88.0	109	86.6
MAX	53	4.9	5.3	1.0	1.8	1.1	1.2	853	148	120	127	114
MIN	.40	4.7	.34	.27	.37	.42	.37	.73	68	71	94	52
AC-FT	623	287	131	38	53	44	37	9530	6490	5410	6730	5160
CAL YR 1990	TOTAL 17643.68			MEAN 48.3	MAX 388	MIN .34	AC-FT 35000					
WTR YR 1991	TOTAL 17409.01			MEAN 47.7	MAX 853	MIN .27	AC-FT 34530					

POWDER RIVER BASIN

79

13275300 POWDER RIVER NEAR SUMPTER, OR

LOCATION.--Lat 44°40'20", long 117°59'40", in NE 1/4 NE 1/4 sec.25, T.10 S., R.38 E., Baker County, Hydrologic Unit 17050203, Wallowa Whitman National Forest, on left bank 1,200 ft downstream from Mason Dam, 1.4 mi upstream from California Gulch, 11.4 mi southeast of Sumpter, and at mile 123.2.

DRAINAGE AREA.--168 mi², approximately. Prior to Oct. 1, 1970, 170 mi² at cableway, 0.5 mi downstream.

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

GAGE.--Water-stage recorder. Datum of gage is 3,898.47 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to July 29, 1965, nonrecording gage at datum 1.03 ft higher.

REMARKS.--Records good except: flows below 10 ft³/s, which are fair; flows below 5 ft³/s, which are poor. Flow completely regulated since Oct. 31, 1967, by Phillips Lake, active capacity, 90,540 acre-ft. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--26 years, 109 ft³/s, 78,970 acre-ft/yr, not adjusted for storage in Phillips Lake.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 971 ft³/s Apr. 30, 1965, gage height, 4.43 ft; no flow Nov. 12, 1967; Nov. 23-29, 1988; Sept. 29, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge, 1,600 ft³/s, approximately, Mar. 20, 1910, based on comparison with records for station downstream, near Baker.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 358 ft³/s Aug. 16, gage height, 3.33 ft; minimum discharge, 3.3 ft³/s several days in February, March and May.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	8.3	7.7	6.1	7.4	3.7	8.3	118	172	56	316	163
2	9.5	8.3	7.7	5.6	6.6	3.7	9.1	129	173	53	314	162
3	9.5	8.3	7.9	6.4	6.2	3.8	9.5	149	178	53	314	162
4	9.5	8.3	8.3	6.1	6.8	3.9	9.5	158	192	71	314	162
5	9.5	8.3	8.3	5.9	8.1	3.4	32	174	180	128	314	171
6	9.6	8.3	8.3	5.5	7.2	3.3	44	177	156	159	311	185
7	10	8.3	8.3	5.5	7.5	3.3	44	185	145	159	310	170
8	10	8.3	8.1	5.5	9.2	3.4	44	185	142	159	282	162
9	9.5	8.3	7.7	5.5	9.3	3.4	44	185	144	177	232	162
10	9.5	8.3	7.7	5.5	8.3	3.4	44	185	171	210	215	137
11	9.0	8.3	8.2	5.6	7.1	3.5	36	185	199	246	213	96
12	8.9	8.3	8.5	6.4	7.2	3.3	31	185	219	270	243	79
13	8.9	8.3	8.9	6.5	8.5	3.3	31	185	230	258	230	66
14	8.9	8.3	8.9	6.2	7.1	7.4	31	185	236	224	283	74
15	17	8.3	8.9	5.8	6.9	14	31	190	235	185	340	80
16	23	8.3	8.9	5.5	6.6	8.0	e30	209	236	172	358	80
17	23	8.3	8.9	5.9	6.1	8.3	30	169	234	217	334	74
18	23	8.3	8.9	6.3	5.6	8.6	23	137	220	230	314	64
19	23	8.3	8.3	6.6	5.5	8.9	22	49	209	224	314	56
20	23	7.8	8.3	7.0	4.1	9.0	26	3.7	193	224	282	44
21	23	7.7	8.3	7.1	4.0	8.9	27	3.4	168	224	249	43
22	13	7.7	8.3	7.5	3.7	8.9	44	5.7	157	256	248	43
23	8.3	7.7	8.3	7.4	3.7	8.9	51	11	154	272	248	39
24	8.3	7.7	7.9	7.1	3.4	8.9	58	35	126	258	248	38
25	8.3	7.7	7.7	7.1	3.3	7.2	69	36	96	222	238	38
26	8.3	7.7	8.3	7.4	3.7	4.6	86	36	94	218	201	38
27	7.9	7.7	7.8	7.7	3.7	4.6	94	36	99	241	190	38
28	7.7	7.7	7.7	7.6	3.8	6.5	99	75	85	261	201	39
29	7.7	7.7	7.4	7.3	---	8.3	116	123	80	295	215	39
30	7.7	7.7	6.8	7.7	---	8.3	116	152	65	318	194	29
31	8.1	---	6.3	7.7	---	8.3	---	172	---	318	171	---
TOTAL	376.6	242.5	251.5	201.0	170.6	193.0	1339.4	3827.8	4988	6358	8236	2733
MEAN	12.1	8.08	8.11	6.48	6.09	6.23	44.6	123	166	205	266	91.1
MAX	23	8.3	8.9	7.7	9.3	14	116	209	236	318	358	185
MIN	7.7	7.7	6.3	5.5	3.3	3.3	8.3	3.4	65	53	171	29
AC-FT	747	481	499	399	338	383	2660	7590	9890	12610	16340	5420

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1991, BY WATER YEAR (WY)

	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
MEAN	11.7	9.20	9.14	15.2	18.3	56.8	148	303	280	191	192	74.0															
MAX	19.6	22.7	26.5	105	67.7	317	482	519	546	411	301	171															
(WY)	1981	1966	1967	1984	1984	1982	1965	1975	1983	1984	1974	1974															
MIN	2.55	.46	.50	.36	.78	1.10	8.08	123	72.8	19.7	4.01	3.29															
(WY)	1974	1968	1968	1968	1968	1968	1989	1991	1966	1966	1966	1966															

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1965 - 1991

ANNUAL TOTAL	30530.5	28917.4		
ANNUAL MEAN	83.6	79.2		
HIGHEST ANNUAL MEAN			109	
LOWEST ANNUAL MEAN			186	1983
HIGHEST DAILY MEAN	321	Aug 2	56.9	1966
LOWEST DAILY MEAN	3.1	Feb 13	950	Apr 30 1965
ANNUAL SEVEN-DAY MINIMUM	3.1	Feb 13	.00	Nov 12 1967
ANNUAL RUNOFF (AC-FT)	60560	57360	.02	Nov 22 1988
10 PERCENT EXCEEDS	241	233	78790	
50 PERCENT EXCEEDS	15	14	312	
90 PERCENT EXCEEDS	3.7	5.7	24	4.4

POWDER RIVER BASIN

13277000 POWDER RIVER AT BAKER CITY, OR
(Formerly published as Powder River at Baker)

LOCATION.--Lat 44°46'06", long 117°49'50", in SE 1/4 NE 1/4 sec.20, T.9 S., R.40 E., Baker County, Hydrologic Unit 17050203, on right bank 600 ft upstream from Myrtle Street Bridge in Baker, 0.5 mi downstream from Sutton Creek, and at mile 107.6.

DRAINAGE AREA.--351 mi².

PERIOD OF RECORD.--May to September 1913, April to July 1914, November 1971 to current year. Monthly discharge only May 1913, April 1914 published in WSP 1317. November 1971 to September 1978 in reports of Oregon Water Resources Department.

REVISED RECORDS.--WSP 1317: 1913.

GAGE.--Water-stage recorder. Datum of gage is 3,441.71 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 19, 1971, nonrecording gage at site 0.7 mi downstream at different datum.

REMARKS.--Records good except those for Nov. 15 to Feb. 15, Sept. 17-20, which are poor. Flow regulated since Oct. 31, 1967, by Phillips Lake, active capacity, 90,540 acre-ft. Old Settlers Slough diverts from left bank 0.2 mi upstream for irrigation downstream from station. U.S. Bureau of Reclamation satellite telemeter at station. Continuous water-quality records for the period October 1960 to September 1961 have been collected at this location.

AVERAGE DISCHARGE.--19 years, 107 ft³/s, 77,520 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,120 ft³/s Jan. 15, 1974, gage height, 5.55 ft; maximum gage height, 5.57 ft Jan. 5, 1984 (ice jam); minimum discharge, 0.7 ft³/s Oct. 28, 29, 1973.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 629 ft³/s May 19, gage height, 4.30 ft; minimum daily discharge, 3.2 ft³/s Dec. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	13	e10	e7.4	e13	19	12	101	143	58	260	83
2	13	13	e8.4	e6.6	e16	20	10	101	142	55	271	82
3	12	12	e6.6	e6.0	e19	20	8.6	118	145	52	273	83
4	12	14	e5.2	e5.6	e20	24	8.5	118	161	55	275	78
5	11	16	e4.3	e6.6	e20	24	11	141	168	88	275	76
6	11	14	e4.0	e8.0	e19	20	43	143	146	134	271	98
7	11	13	e4.8	e11	e18	17	44	147	128	128	265	95
8	11	12	e5.6	e13	e19	19	41	153	117	114	252	79
9	11	13	e7.1	e16	e20	18	42	151	109	108	204	85
10	12	13	e6.6	e19	e18	18	40	151	115	135	168	99
11	7.4	13	e5.6	e21	e18	17	40	152	142	166	164	82
12	5.0	7.6	e5.4	e19	e20	17	30	148	160	204	175	56
13	4.8	5.0	e3.6	e18	25	17	29	151	174	210	168	47
14	5.0	5.1	e3.7	e19	45	15	27	155	192	181	192	45
15	7.8	4.9	e4.0	e21	39	15	24	148	198	132	256	48
16	21	e4.2	e5.0	e18	41	20	25	157	201	101	288	52
17	23	e4.5	e8.4	e19	33	18	26	194	198	118	272	53
18	24	4.7	e7.0	e18	25	17	29	189	187	153	236	44
19	25	6.8	e5.6	e16	24	13	21	422	169	143	238	37
20	24	12	e4.8	e11	24	14	24	205	169	140	227	31
21	25	12	e3.8	e12	24	12	25	139	145	140	203	25
22	26	13	e3.2	e13	25	12	30	107	120	156	182	24
23	14	12	e4.5	e14	24	12	46	89	119	186	168	23
24	12	12	e5.6	e11	20	17	38	89	103	201	169	18
25	12	12	e8.0	e10	18	18	46	86	79	195	166	20
26	12	12	e10	e11	18	16	55	79	78	142	132	20
27	12	12	e12	e10	18	12	71	71	86	161	109	26
28	12	e12	e11	e9.4	17	11	80	69	79	184	108	30
29	12	e12	e7.6	e9.0	---	11	100	101	81	214	127	30
30	11	e11	e5.8	e9.6	---	11	102	125	69	248	117	39
31	13	---	e6.4	e11	---	12	---	141	---	256	97	---
TOTAL	435.0	320.8	193.6	399.2	640	506	1128.1	4341	4123	4558	6308	1608
MEAN	14.0	10.7	6.25	12.9	22.9	16.3	37.6	140	137	147	203	53.6
MAX	26	16	12	21	45	24	102	422	201	256	288	99
MIN	4.8	4.2	3.2	5.6	13	11	8.5	69	69	52	97	18
AC-FT	863	636	384	792	1270	1000	2240	8610	8180	9040	12510	3190

CAL YR 1990 TOTAL 21772.0 MEAN 59.6 MAX 253 MIN 3.2 AC-FT 43180
WTR YR 1991 TOTAL 24560.7 MEAN 67.3 MAX 422 MIN 3.2 AC-FT 48720

e Estimated

POWDER RIVER BASIN

81

13285000 THIEF VALLEY RESERVOIR NEAR NORTH POWDER, OR

LOCATION.--Lat 45°00'45", long 117°46'50", in NE 1/4 SW 1/4 sec.26, T.6 S., R.40 E., Baker County, Hydrologic Unit 17050203, Bureau of Reclamation land, on top of right end of dam on Powder River, 7.0 mi east of North Powder, and at mile 70.0.

DRAINAGE AREA.--910 mi², approximately.

PERIOD OF RECORD.--October 1979 to current year.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark).

REMARKS.--Reservoir is formed by concrete dam. Storage began in February 1932. Capacity, 17,400 acre-ft between elevations 3,094.00 ft, minimum pool, and 3,133.00 ft, spillway crest. No dead storage. Water used for irrigation of lands of Lower Powder River Irrigation District. U.S. Bureau of Reclamation satellite telemeter at station.

COOPERATION.--Capacity table furnished by Oregon Water Resources Department. Table uncertain below about 3,096 ft, due to siltation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 18,900 acre-ft July 2, 1982, elevation, 3,134.99 ft; no contents observed Sept. 17, 1987; probably no contents most days during September 1987, Sept. 7-18, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 18,270 acre-ft May 21, elevation, 3,134.16 ft; minimum contents, 300 acre-ft Oct. 1, 2, elevation, 3,096.49 ft.

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

3,096	230	3,120	8,950
3,100	966	3,125	11,880
3,105	2,360	3,130	15,210
3,110	4,170	3,135	18,910
3,115	6,370		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3096.50	3108.76	3117.20	3122.26	3126.86	3133.26	---	3132.12	3133.28	3133.66	3127.41	3114.74
2	3097.94	3109.03	3117.44	3122.36	3126.95	3133.26	---	3131.89	3133.37	3133.60	3127.09	3114.24
3	3099.56	3109.32	3117.73	3122.47	3127.09	3133.30	---	3131.70	3133.42	3133.55	3126.76	3113.74
4	3100.41	3109.66	3118.01	3122.58	3127.29	3133.31	---	3131.48	3133.42	3133.46	3126.44	3113.16
5	3100.91	3110.09	3118.24	3122.69	3127.71	3133.28	---	3131.26	3133.39	3133.38	3126.15	3112.59
6	3101.25	3110.45	3118.42	3122.88	3128.11	3133.27	---	3131.00	3133.42	3133.25	3125.89	3111.99
7	3101.53	3110.75	3118.56	3122.95	3128.47	3133.27	---	3130.81	3133.42	3133.20	3125.61	3111.39
8	3101.80	3111.08	3118.80	3123.07	3128.79	3133.26	---	3130.76	3133.39	3133.15	3125.32	3110.73
9	3102.05	3111.44	3119.08	3123.18	3129.06	3133.26	---	3130.75	3133.41	3133.08	3125.02	3110.24
10	3102.29	3111.75	3119.35	3123.31	3129.31	3133.25	---	3130.66	3133.46	3132.96	3124.65	3109.67
11	3102.46	3112.04	3119.60	3123.46	3129.55	3133.21	---	3130.59	3133.52	3132.77	3124.30	3109.22
12	3102.75	3112.34	3119.83	3123.59	3129.79	3133.23	---	3130.54	3133.54	3132.59	3123.94	3108.81
13	3102.95	3112.64	3120.07	3123.76	3130.09	3133.21	---	3130.51	3133.45	3132.36	3123.53	3108.38
14	3103.21	3112.84	3120.21	3123.93	3130.46	3133.21	---	3130.47	3133.40	3132.20	3123.12	3107.89
15	3103.50	3113.11	3120.24	3124.17	3130.88	3133.20	---	3130.44	3133.37	3132.09	3122.66	3107.35
16	3103.68	3113.35	3120.42	3124.41	3131.39	3133.21	---	3130.35	3133.32	3131.91	3122.21	3106.75
17	3103.89	3113.61	3120.70	3124.69	3131.81	3133.22	---	3130.77	3133.35	3131.69	3121.76	3106.09
18	3104.13	3113.87	3120.98	3124.94	3132.13	3133.23	---	3131.60	3133.33	3131.48	3121.39	3105.37
19	3104.43	3114.14	3121.07	3125.15	3132.42	3133.25	---	3133.78	3133.35	3131.21	3120.98	3104.70
20	3104.77	3114.40	3121.09	3125.31	3132.71	3133.26	---	3134.13	3133.41	3130.93	3120.54	3103.99
21	3105.15	3114.68	3121.14	3125.47	3133.01	3133.28	---	3134.06	3133.42	3130.66	3120.09	3103.18
22	3105.60	3115.00	3121.25	3125.62	3133.21	3133.28	---	3133.85	3133.42	3130.40	3119.62	3102.32
23	3106.17	3115.31	3121.33	3125.77	3133.27	3133.28	3132.70	3133.76	3133.44	3130.13	3119.13	3101.24
24	3106.62	3115.59	3121.40	3125.92	3133.26	3133.19	3132.61	3133.59	3133.59	3129.82	3118.66	3099.93
25	3106.94	3115.89	3121.50	3126.05	3133.25	3133.24	3132.57	3133.52	3133.67	3129.51	3118.14	3098.73
26	3107.22	3116.11	3121.60	3126.17	3133.26	3133.27	3132.57	3133.52	3133.68	3129.33	3117.68	3099.59
27	3107.47	3116.39	3121.72	3126.30	3133.25	3133.29	3132.52	3133.42	3133.68	3129.09	3117.17	3100.16
28	3107.71	3116.61	3121.81	3126.40	3133.25	3133.27	3132.47	3133.42	3133.66	3128.77	3116.71	3100.61
29	3107.95	3116.87	3121.89	3126.50	---	---	3132.35	3133.32	3133.64	3128.42	3116.24	3101.04
30	3108.21	3117.08	3122.01	3126.60	---	---	3132.25	3133.29	3133.70	3128.08	3115.75	3101.53
31	3108.50	---	3122.15	3126.72	---	---	---	3133.26	---	3127.76	3115.26	---
MAX	3108.50	3117.08	3122.15	3126.72	3133.27	---	---	3134.13	3133.70	3133.66	3127.41	3114.74
MIN	3096.50	3108.76	3117.20	3122.26	3126.86	---	---	3130.35	3133.28	3127.76	3115.26	3098.73
(†)	3590	7400	10160	12970	17590	a17580	16840	17600	17920	13660	6500	1340
(+)	+3290	+3810	+2760	+2810	+4620	-10	-740	+760	+320	-4260	-7160	-5160
CAL YR 1990	MAX	3133.52	MIN	3096.48	AC-FT†	-5950						
WTR YR 1991	MAX	--	MIN	--	AC-FT†	+1040						

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

† Change in contents, in acre-feet.

a Interpolated.

POWDER RIVER BASIN

13285500 POWDER RIVER BELOW THIEF VALLEY RESERVOIR, NEAR NORTH POWDER, OR

LOCATION.--Lat 45°00'20", long 117°46'50", in NE 1/4 NW 1/4 sec.35, T.6 S., R.40 E., Baker County, Hydrologic Unit 17050203, on right bank 0.6 mi downstream from Thief Valley Reservoir, 7.0 mi east of North Powder, and at mile 69.4.

DRAINAGE AREA.--910 mi², approximately.

PERIOD OF RECORD.--March 1909 to June 1912, July to September 1932, August 1978 to current year. Prior to July 1932, published as Powder River near North Powder.

REVISED RECORDS.--WSP 1317: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 3,080.166 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). Prior to Aug. 18, 1978, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--No estimated daily discharges. Records good except those below 1.0 ft³/s, which are poor. Flow regulated by Phillips Lake since October 1967, usable capacity, 90,540 acre-ft, by Wolf Creek Reservoir since April 1975, usable capacity, 10,400 acre-ft, by Pilcher Creek Reservoir since April 1984, usable capacity 5,560 acre-ft, and by Thief Valley Reservoir since February 1932, usable capacity, 17,400 acre-ft. Many diversions for irrigation upstream from station. U.S. Bureau of Reclamation satellite telemeter at station.

AVERAGE DISCHARGE.--13 years (water years 1979-91), 215 ft³/s, 155,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge observed, 2,920 ft³/s Mar. 21, 1910, gage height, 10.0 ft, site and datum then in use, from rating curve extended above 1,000 ft³/s; maximum gage height, 10.05 ft July 2, 1982; no flow Aug. 9 to Sept. 10, 1910.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,040 ft³/s May 21, gage height, 8.21 ft; minimum discharge, 1.3 ft³/s Oct. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	20	7.9	9.0	11	12	105	88	90	123	439	121	115
2	19	7.9	9.0	10	12	106	85	102	153	382	120	114
3	4.9	7.9	11	10	12	118	78	107	238	322	119	117
4	10	7.9	9.1	10	12	137	77	117	268	280	118	124
5	10	7.9	11	10	12	140	75	118	221	219	105	122
6	10	7.9	14	10	12	135	74	119	220	161	95	120
7	10	7.9	12	10	12	125	75	119	223	115	95	118
8	10	7.9	11	10	13	117	73	100	205	105	95	113
9	10	7.9	12	9.9	14	110	82	88	186	101	94	105
10	10	7.9	12	10	14	104	78	76	196	95	102	103
11	11	7.9	12	10	14	101	80	64	276	121	115	101
12	10	7.9	11	10	14	96	57	65	342	121	116	99
13	10	7.9	11	10	14	101	53	65	294	120	123	95
14	10	7.9	11	11	14	96	52	66	222	119	124	85
15	10	7.9	11	11	14	92	51	66	185	119	135	84
16	10	7.9	11	11	15	83	48	81	166	119	133	81
17	10	7.9	12	11	14	83	48	71	152	117	133	82
18	10	7.9	12	11	14	83	40	37	149	117	133	88
19	9.9	7.9	15	11	14	90	52	108	144	115	131	85
20	9.7	7.9	16	11	14	104	84	923	188	114	130	83
21	9.7	8.2	12	11	14	106	84	989	238	114	129	80
22	9.3	8.3	12	11	36	83	81	807	245	113	127	76
23	9.1	8.3	12	11	95	68	82	597	235	115	125	72
24	8.2	8.3	27	12	114	69	75	471	312	128	124	72
25	7.9	8.3	12	12	104	94	55	383	426	127	123	60
26	7.9	8.3	11	12	104	122	46	340	456	126	123	10
27	7.9	8.3	11	12	103	136	51	290	445	125	121	9.8
28	7.9	8.3	11	12	104	134	61	222	424	125	120	10
29	7.9	8.5	11	12	---	107	73	166	417	123	119	11
30	7.9	9.0	11	12	---	96	87	158	453	123	118	12
31	7.9	---	11	12	---	92	---	146	---	122	117	---
TOTAL	306.1	241.8	373.1	336.9	940	3233	2045	7151	7802	4742	3683	2446.8
MEAN	9.87	8.06	12.0	10.9	33.6	104	68.2	231	260	153	119	81.6
MAX	20	9.0	27	12	114	140	88	989	456	439	135	124
MIN	4.9	7.9	9.0	9.9	12	68	40	37	123	95	94	9.8
AC-FT	607	480	740	668	1860	6410	4060	14180	15480	9410	7310	4850

CAL YR 1990 TOTAL 29013.0 MEAN 79.5 MAX 349 MIN 4.9 AC-FT 57550
WTR YR 1991 TOTAL 33300.7 MEAN 91.2 MAX 989 MIN 4.9 AC-FT 66050

POWDER RIVER BASIN

83

13286700 POWDER RIVER NEAR RICHLAND, OR

LOCATION.--Lat 44°46'40", long 117°17'30", in SE 1/4 sec.14, T.9 S., R.44 E., Baker County, Hydrologic Unit 17050203, on left bank 0.4 mi upstream from Upper Timber Canyon, 6.0 mi west of Richland, and at mile 20.3.

DRAINAGE AREA.--1,310 mi², approximately.

PERIOD OF RECORD.--October 1957 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,277.42 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for July 16 to September 17, and estimated daily discharges, which are poor. Flow regulated by Phillips Lake since October 1967, usable capacity, 90,540 acre-ft, Wolf Creek Reservoir since April 1975, usable capacity, 10,400 acre-ft, Thief Valley Reservoir since February 1932, usable capacity, 17,400 acre-ft, and Pilcher Creek Reservoir since April 1984, usable capacity, 5,560 acre-ft. Diversions for irrigation upstream and downstream from station. Continuous water-quality records for the period June 1959 to September 1961 have been collected at this location.

AVERAGE DISCHARGE.--34 years, 260 ft³/s, 188,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,090 ft³/s Feb. 21, 1982, gage height, 7.50 ft, from floodmark; maximum gage height, 9.29 ft Jan. 15, 1974 (ice jam); minimum discharge, 0.80 ft³/s Aug. 11, 12, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,690 ft³/s May 20, gage height, 4.70 ft; minimum discharge, 6.0 ft³/s July 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	30	41	e34	e17	e24	184	172	46	170	463	44	77
2	24	41	e32	e16	e27	193	193	42	134	420	35	83
3	25	38	e31	e15	e32	192	206	36	142	360	35	59
4	34	40	e32	e15	e36	219	202	36	208	335	40	54
5	34	43	e25	e15	e35	255	207	40	250	261	38	55
6	28	46	e21	e16	e34	246	204	51	206	205	35	58
7	27	43	e25	e18	e33	231	200	52	216	155	29	61
8	30	44	e27	e20	e31	215	192	65	251	95	31	60
9	35	43	e33	e24	e30	198	176	98	226	64	40	59
10	39	41	e35	e27	e29	189	176	81	217	64	44	60
11	38	40	e25	e34	e28	177	157	72	205	59	50	62
12	37	40	e21	e37	e30	169	152	69	210	53	43	62
13	39	39	e19	e37	e33	167	120	61	266	49	44	68
14	40	39	e17	e35	e35	166	103	62	224	47	43	64
15	42	39	e16	e38	e37	158	93	58	167	51	44	64
16	42	38	e17	e34	e39	152	88	55	116	47	47	61
17	41	38	e20	e36	e35	141	92	86	111	45	49	60
18	43	39	e18	e34	e29	140	82	370	93	42	46	53
19	45	40	e16	e32	e30	140	75	1060	94	38	48	51
20	42	39	e14	e29	e31	151	62	1360	83	29	50	49
21	41	39	e13	e26	e32	159	64	1440	128	13	47	43
22	44	38	e12	e25	e33	160	81	1250	181	8.0	43	49
23	45	38	e13	e27	e35	140	79	956	187	41	26	46
24	41	38	e14	e32	173	135	84	740	192	69	13	48
25	40	38	e15	e29	190	148	100	598	290	78	11	49
26	39	38	e16	e25	177	179	84	506	407	45	9.5	48
27	38	37	e17	e23	177	205	65	421	446	38	9.0	48
28	38	37	e16	e23	180	217	51	346	436	44	29	40
29	36	37	e14	e22	---	209	48	250	425	49	71	39
30	38	36	e15	e20	---	178	45	206	426	61	70	37
31	38	---	e18	e23	---	169	---	193	---	55	61	---
TOTAL	1153	1187	641	804	1635	5582	3653	10706	6707	3383.0	1224.5	1667
MEAN	37.2	39.6	20.7	25.9	58.4	180	122	345	224	109	39.5	55.6
MAX	45	46	35	38	190	255	207	1440	446	463	71	83
MIN	24	36	12	15	24	135	45	36	83	8.0	9.0	37
AC-FT	2290	2350	1270	1590	3240	11070	7250	21240	13300	6710	2430	3310

CAL YR 1990 TOTAL 32944.1 MEAN 90.3 MAX 469 MIN 7.6 AC-FT 65340
WTR YR 1991 TOTAL 38342.5 MEAN 105 MAX 1440 MIN 8.0 AC-FT 76050

e Estimated

POWDER RIVER BASIN

13288200 EAGLE CREEK ABOVE SKULL CREEK, NEAR NEW BRIDGE, OR

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.

DRAINAGE AREA.--156 mi².

PERIOD OF RECORD.--October 1957 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,800 ft, 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.--34 years, 316 ft³/s, 228,900 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 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)
Jan. 13	2200	(a)	*4.69	June 11	2200	*1,500	3.27

Minimum discharge, 58 ft³/s Dec. 22.

(a) Backwater from ice.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	107	86	e80	e88	133	179	318	836	694	152	109
2	81	97	107	e90	e92	135	214	340	1030	729	149	109
3	95	95	91	e94	e100	145	214	362	1170	779	144	107
4	108	120	93	e80	e110	164	222	356	1040	830	140	105
5	89	121	92	e72	e130	166	231	370	808	764	140	103
6	87	107	83	e70	e140	153	235	431	686	663	139	101
7	86	106	115	e84	e130	141	231	450	627	592	133	99
8	85	108	144	e100	e110	136	217	823	596	551	131	98
9	85	111	113	e94	87	132	217	689	681	524	138	97
10	85	110	97	e110	85	128	204	587	876	475	138	97
11	84	107	97	e130	85	125	194	519	1170	448	137	96
12	84	108	82	e150	84	130	193	508	1140	434	135	93
13	87	107	91	e140	87	127	202	522	936	442	134	91
14	90	107	80	e130	93	122	217	526	761	453	135	96
15	89	104	121	e140	103	120	224	550	713	414	133	95
16	90	102	143	e100	116	120	227	588	738	377	131	93
17	85	101	149	e110	116	121	240	883	743	349	129	91
18	98	101	132	e100	107	122	244	1050	734	311	128	89
19	97	100	e100	e96	104	125	245	1280	785	287	126	89
20	86	100	e72	e86	101	129	250	1050	808	270	124	87
21	94	100	e80	e74	105	127	281	987	728	256	121	86
22	104	102	e62	e70	112	128	351	1030	735	244	122	88
23	94	98	e68	e72	116	130	396	1030	740	236	126	87
24	91	98	e70	e84	116	137	446	1020	715	226	123	86
25	94	102	e72	e80	116	134	383	1060	709	214	120	85
26	102	96	e74	e74	118	133	345	943	701	203	118	85
27	97	96	e80	e70	121	130	322	828	647	193	117	83
28	99	94	e100	e66	122	131	303	777	657	184	117	85
29	96	94	e92	e64	---	130	299	768	695	177	116	85
30	96	94	e64	e62	---	134	298	756	685	170	113	83
31	109	---	e70	e66	---	148	---	721	---	163	111	---
TOTAL	2848	3093	2920	2838	2994	4136	7824	22122	23890	12652	4020	2798
MEAN	91.9	103	94.2	91.5	107	133	261	714	796	408	130	93.3
MAX	109	121	149	150	140	166	446	1280	1170	830	152	109
MIN	81	94	62	62	84	120	179	318	596	163	111	83
AC-FT	5650	6130	5790	5630	5940	8200	15520	43880	47390	25100	7970	5550

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1958 - 1991, BY WATER YEAR (WY)

	1958	1959	1960	1961	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	
MEAN	108	124	115	110	123	184	417	918	1023	414	147	106																							
MAX	323	264	211	191	230	493	658	1747	2134	1011	253	172																							
(WY)	1960	1974	1959	1974	1963	1986	1990	1958	1974	1975	1983	1978																							
MIN	56.1	67.9	72.3	58.9	72.0	64.8	191	252	276	84.0	62.8	61.4																							
(WY)	1989	1988	1977	1977	1966	1977	1967	1977	1977	1977	1977	1988																							

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1958 - 1991

	1990	1991	1958-1991
ANNUAL TOTAL	92771	92135	
ANNUAL MEAN	254	252	316
HIGHEST ANNUAL MEAN			519
LOWEST ANNUAL MEAN			118
HIGHEST DAILY MEAN	1030	1280	3400
LOWEST DAILY MEAN	62	62	30
ANNUAL SEVEN-DAY MINIMUM	71	69	48
ANNUAL RUNOFF (AC-FT)	184000	182700	229000
10 PERCENT EXCEEDS	640	728	850
50 PERCENT EXCEEDS	117	122	139
90 PERCENT EXCEEDS	84	85	80

PINE CREEK BASIN

85

13290190 PINE CREEK NEAR OXBOW, OR

LOCATION.--Lat 44°57'13", long 116°52'21", in NE 1/4 SW 1/4 sec.17, T.7 S., R.48 E., Baker County, Hydrologic Unit 17050201, 1.8 mi south of Oxbow, and at mile 1.9.

DRAINAGE AREA.--230 mi², approximately.

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

GAGE.--Water-stage recorder. Datum of gage is 1,850.48 ft above National Geodetic Vertical Datum of 1929 (levels by Idaho Power Co.). Prior to Aug. 24, 1967, nonrecording gage at site 1.7 mi downstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. Diversions upstream from station for irrigation of about 19,000 acres (1966 determination).

AVERAGE DISCHARGE.--24 years, 357 ft³/s, 258,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 7,110 ft³/s Feb. 21, 1968, gage height, 9.82 ft; minimum discharge, 10 ft³/s Aug. 17-24, 1977, gage height, 2.12 ft.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,780 ft³/s May 19, gage height, 6.34 ft; minimum discharge, 24 ft³/s Sept. 22.

Rating table (gage height, in feet, and discharge, in cubic feet per second)
(Shifting-control method used Feb. 15 to July 4; stage-discharge relation
affected by ice Dec. 20 to Feb. 14)

2.4	24	3.5	228
2.5	29	4.0	409
2.7	48	5.0	917
3.0	98	6.1	1690

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	137	71	e77	e78	363	256	299	624	317	33	27
2	29	103	86	e73	e86	366	315	307	681	300	33	27
3	30	95	87	e71	e94	415	327	322	706	282	33	27
4	35	108	86	e62	e90	453	388	302	644	267	32	27
5	35	139	84	e57	e100	450	440	298	570	248	31	26
6	36	112	71	e67	e117	377	451	364	483	211	30	26
7	38	99	74	e74	e113	330	414	404	452	176	30	26
8	38	105	88	e80	e110	298	362	723	434	153	30	27
9	39	103	82	e83	e108	273	343	738	442	136	29	27
10	40	102	88	e79	e107	256	312	554	486	131	29	28
11	41	99	113	e84	e110	235	285	492	592	125	28	31
12	42	95	98	e87	e110	243	266	469	615	107	29	29
13	41	94	98	e90	e108	287	272	504	522	98	28	28
14	42	93	82	e90	e200	282	288	525	438	93	28	27
15	47	93	75	e90	417	255	298	514	407	95	31	27
16	50	86	80	e87	708	239	298	532	414	93	28	26
17	49	85	82	e88	568	230	318	747	402	92	28	26
18	55	86	85	e88	461	230	337	1050	372	95	30	26
19	100	83	77	e87	388	232	329	1630	369	74	29	25
20	69	86	e36	e82	354	246	355	1360	391	64	27	25
21	69	82	e40	e77	392	236	389	1170	342	60	25	25
22	104	89	e46	e80	452	232	445	1090	327	53	25	24
23	78	87	e51	e83	465	226	469	1030	322	45	26	26
24	73	84	e62	e83	414	241	557	959	295	43	26	26
25	71	92	e74	e80	388	247	519	959	319	52	27	26
26	73	104	e80	e72	379	253	444	869	360	39	26	26
27	73	90	e88	e76	365	227	388	759	329	37	26	26
28	74	90	e75	e74	344	214	339	634	287	36	26	27
29	75	90	e65	e70	---	207	313	584	315	37	26	30
30	77	88	e56	e68	---	201	293	601	371	36	26	30
31	100	---	e65	e72	---	212	---	554	---	34	27	---
TOTAL	1752	2899	2345	2431	7626	8556	10810	21343	13311	3629	882	804
MEAN	56.5	96.6	75.6	78.4	272	276	360	688	444	117	28.5	26.8
MAX	104	139	113	90	708	453	557	1630	706	317	33	31
MIN	29	82	36	57	78	201	256	298	287	34	25	24
AC-FT	3480	5750	4650	4820	15130	16970	21440	42330	26400	7200	1750	1590
CAL YR 1990	TOTAL 94119	MEAN 258	MAX 1140	MIN 26	AC-FT 186700							
WTR YR 1991	TOTAL 76388	MEAN 209	MAX 1630	MIN 24	AC-FT 151500							

e Estimated

LOWER SNAKE RIVER BASIN

13292000 IMNAHA RIVER AT IMNAHA, OR

LOCATION.--Lat 45°33'45", long 116°50'00", in 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.

DRAINAGE AREA.--622 mi².

PERIOD OF RECORD.--June 1928 to current year.

REVISED RECORDS.--WSP 833: 1938. WSP 1397: 1929, 1932 (M), 1949. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,941.14 ft above National Geodetic Vertical Datum of 1929. 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 poor. 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.

AVERAGE DISCHARGE.--63 years, 509 ft³/s, 368,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,100 ft³/s Jan. 17, 1974, gage height, 7.86 ft, from rating curve extended above 3,500 ft³/s; minimum discharge observed, 16 ft³/s Nov. 22, 1931, result of freezeup; minimum daily, 25 ft³/s Nov. 22, 23, 1931.

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)
May 8	1630	1,870	4.52	May 20	0030	*2,290	*4.90
Minimum daily discharge, 39 ft ³ /s Dec. 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	111	193	114	e84	e115	200	260	534	998	807	230	126
2	110	161	116	e76	e125	215	345	575	1080	806	225	126
3	114	144	145	e58	152	248	389	604	1170	854	220	126
4	124	159	145	e53	163	288	441	603	1170	894	213	126
5	123	176	145	e57	194	366	589	628	1050	882	211	124
6	122	162	121	e66	163	327	659	765	938	782	206	123
7	121	144	102	e90	152	285	588	860	866	705	195	123
8	119	148	122	e100	149	276	504	1430	818	653	188	124
9	119	150	149	e94	151	252	464	1490	858	627	183	126
10	120	151	146	e90	152	249	433	1230	936	585	179	133
11	117	149	171	e98	157	240	406	1060	1140	534	178	136
12	115	147	120	e110	162	227	372	967	1200	505	176	127
13	118	145	133	e130	164	227	365	945	1080	503	173	123
14	128	154	103	147	170	208	379	973	923	516	168	122
15	128	150	65	154	178	209	401	961	845	498	166	121
16	131	140	110	141	208	195	412	1010	850	458	162	117
17	141	143	148	139	216	205	441	1210	862	449	161	115
18	140	148	156	143	204	199	476	1460	814	418	164	114
19	169	144	104	137	196	202	496	2060	831	380	158	115
20	137	147	78	114	190	214	539	2090	884	360	154	113
21	130	140	e44	85	191	208	587	1840	796	339	150	112
22	138	141	e42	94	194	210	716	1740	772	326	144	114
23	134	143	e56	118	200	207	780	1630	803	315	143	115
24	129	140	e74	132	198	211	949	1520	796	331	142	114
25	128	144	e80	115	196	210	859	1520	833	318	139	116
26	133	149	e84	e100	194	206	737	1350	881	295	138	115
27	137	126	e84	e95	193	197	656	1200	796	277	137	114
28	138	130	e74	e91	195	190	593	1090	766	262	137	113
29	140	137	e40	98	---	196	569	1050	815	255	135	114
30	138	144	e39	e97	---	193	530	1100	847	246	130	112
31	161	---	e60	e105	---	206	---	989	---	239	127	---
TOTAL	4013	4449	3170	3211	4922	7066	15935	36484	27418	15419	5232	3599
MEAN	129	148	102	104	176	228	531	1177	914	497	169	120
MAX	169	193	171	154	216	366	949	2090	1200	894	230	136
MIN	110	126	39	53	115	190	260	534	766	239	127	112
AC-FT	7960	8820	6290	6370	9760	14020	31610	72370	54380	30580	10380	7140

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1991, BY WATER YEAR (WY)

MEAN	159	187	210	199	238	397	935	1551	1335	556	193	144
MAX	501	625	806	855	569	993	1760	2804	2612	1348	380	256
(WY)	1963	1974	1942	1974	1982	1986	1956	1948	1974	1975	1982	1978
MIN	81.5	80.0	88.6	69.3	82.4	114	345	445	417	123	78.8	82.8
(WY)	1937	1937	1936	1937	1937	1977	1977	1977	1987	1977	1931	1931

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1929 - 1991
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[illegible]

87

LOCATION.--Lat 45°09'20", long 117°46'26", in NW 1/4 SE 1/4 sec.2, T.5 S., R.40 E., Union County, Hydrologic Unit 17060104, on right bank 3.0 mi downstream from Little Catherine Creek, 5.5 mi southeast of Union, and at mile 25.4.

PERIOD OF RECORD.--May 1906 to May 1907 (gage heights only), August 1911 to December 1912, March to September 1915, February 1918 to September 1919, October 1925 to current year. Monthly discharge only for some periods, published in WSP 1317.

GAGE.--Water-stage recorder. Datum of gage is 3,081.76 ft above National Geodetic Vertical Datum of 1929 (Oregon State Highway Department bench mark). Prior to Nov. 28, 1938, nonrecording gage at several sites within 1.8 mi of present site at various datums. Nov. 28, 1938, to May 16, 1939, water-stage recorder at site 400 ft downstream at datum 4.29 ft lower.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation. Several small diversions for irrigation upstream from station. Since 1937, diversion to Big Creek in Powder River basin provides a small part of the water used for irrigation in that basin.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,740 ft³/s May 27, 1948, gage height, 4.57 ft; minimum discharge, 6.5 ft³/s Feb. 4, 1955, result of freezeup; minimum daily, 8 ft³/s Nov. 7, 1925.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 8	0900	549	2.72	May 19	2000	*1,070	*3.69
Minimum daily discharge, 19 ft ³ /s Dec. 21.							

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	41	48	e35	e41	91	103	197	399	213	48	28
2	23	33	65	e32	e48	92	129	207	435	211	47	28
3	47	33	39	e26	e54	108	136	213	460	214	46	28
4	41	72	36	e28	e62	114	146	214	430	214	44	27
5	29	71	33	e30	73	118	171	226	379	199	44	27
6	27	53	31	e32	40	114	181	257	351	177	46	26
7	26	48	45	e33	43	104	179	277	323	157	42	26
8	26	48	50	e33	48	96	164	482	300	144	40	26
9	26	48	34	e35	52	91	155	451	306	138	40	27
10	27	47	e30	e39	56	86	143	400	344	129	39	28
11	26	46	e26	e45	59	80	133	352	398	116	39	28
12	27	47	e29	e54	58	76	127	335	384	109	38	27
13	31	48	e33	e48	69	73	130	350	344	103	37	26
14	33	48	e32	e42	93	67	137	362	304	99	36	26
15	33	44	e33	e40	119	66	142	375	282	94	36	26
16	42	41	e36	e43	147	64	142	387	273	89	35	27
17	33	39	e40	e46	137	61	137	575	263	86	34	26
18	35	39	e30	e39	117	61	134	725	258	82	33	26
19	41	38	e25	e35	102	64	133	966	276	76	33	26
20	31	38	e20	e30	90	64	140	937	299	73	32	25
21	61	38	e19	e31	86	63	161	808	280	70	31	25
22	83	38	e20	e34	86	65	199	733	270	66	31	25
23	47	36	e21	e33	91	66	244	669	267	64	31	26
24	40	35	e22	e31	91	71	284	616	262	63	30	25
25	43	39	e23	e29	89	69	262	584	245	63	30	25
26	43	38	e25	e30	88	68	235	522	240	59	30	25
27	39	37	e33	e31	88	66	221	466	235	56	30	24
28	37	38	e28	e26	89	64	202	426	226	54	30	25
29	35	36	e20	e28	---	64	198	417	236	52	30	26
30	34	35	e22	e30	---	66	192	436	225	50	29	25
31	45	---	e27	e33	---	78	---	394	---	49	28	---
TOTAL	1134	1292	975	1081	2216	2430	5060	14359	9294	3369	1119	785
MEAN	36.6	43.1	31.5	34.9	79.1	78.4	169	463	310	109	36.1	26.2
MAX	83	72	65	54	147	118	284	966	460	214	48	28
MIN	23	33	19	26	40	61	103	197	225	49	28	24
AC-FT	2250	2560	1930	2140	4400	4820	10040	28480	18430	6680	2220	1560

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1991, BY WATER YEAR (WY)

MEAN	32.8	39.1	43.4	44.9	55.3	95.9	240	413	304	91.2	36.1	29.5
MAX	138	157	125	101	136	268	445	776	686	248	63.0	57.8
(WY)	1960	1928	1942	1971	1986	1986	1952	1912	1974	1984	1912	1959
MIN	17.6	14.2	13.0	12.0	22.0	27.6	83.4	121	65.6	25.7	11.1	15.6
(WY)	1937	1931	1931	1930	1933	1977	1955	1977	1934	1926	1930	1930

ANNUAL TOTAL	40598		43114						
ANNUAL MEAN	111		118			119			
HIGHEST ANNUAL MEAN						185		1912	
LOWEST ANNUAL MEAN						48.7		1977	
HIGHEST DAILY MEAN	484	May 6	966	May 19	1500		May 27	1948	
LOWEST DAILY MEAN	19	Dec 21	19	Dec 21	8.0		Nov 7	1925	
ANNUAL SEVEN-DAY MINIMUM	21	Dec 19	21	Dec 19	10		Aug 26	1930	
ANNUAL RUNOFF (AC-FT)	80530		85520						
10 PERCENT EXCEEDS	318		305		85890				
50 PERCENT EXCEEDS	43		50		332				
90 PERCENT EXCEEDS	26		26		46				
					24				

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, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, 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.--9 years, 130 ft³/s 94,180 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,100 ft³/s May 30, 1984, gage height, 6.52 ft; 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)
May 21	unknown	*772	*a6.02	No other peak greater than base discharge.			
Minimum daily discharge, 43 ft ³ /s Oct. 2, 8.							
a From crest-stage gage.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	55	e87	e64	82	177	147	e210	e250	97	56	49
2	43	51	e81	e64	83	192	167	e205	e230	99	56	48
3	49	51	e84	e64	84	211	171	e200	e220	93	56	49
4	49	96	e85	e66	86	258	184	e200	211	89	55	49
5	46	88	e84	e68	98	281	222	e200	205	86	55	49
6	46	69	e80	e69	107	254	246	e215	191	82	56	49
7	44	64	e75	e70	107	223	233	e230	209	81	56	49
8	43	63	74	e68	106	e200	215	e300	189	79	55	48
9	44	72	75	e66	103	e195	218	e350	173	77	54	48
10	44	76	89	69	102	e190	209	e340	169	74	53	48
11	44	72	98	71	102	e180	e205	e305	173	73	52	48
12	45	70	93	94	103	176	e200	e295	162	72	52	48
13	54	63	90	95	108	167	e195	e285	150	71	52	48
14	50	63	86	97	137	161	e195	e270	138	69	52	47
15	56	62	82	147	152	154	199	e265	136	68	52	47
16	54	63	82	129	166	147	195	e260	124	67	52	48
17	50	64	83	122	166	143	195	e260	119	70	53	48
18	51	62	85	120	156	139	194	e280	115	68	52	48
19	54	63	80	112	154	142	201	e290	116	66	53	48
20	53	64	86	105	172	142	210	e350	117	64	52	48
21	67	66	106	e95	217	142	230	e600	114	64	51	47
22	83	68	76	e87	214	138	260	e600	110	64	51	47
23	60	72	73	e80	202	135	e290	e540	104	64	51	48
24	52	74	74	e76	191	139	e315	e450	104	68	50	48
25	50	108	78	e73	180	136	e290	e390	104	67	50	49
26	50	104	80	e71	168	137	e265	e360	99	62	50	49
27	51	e95	e66	e69	164	132	e250	e340	95	61	50	49
28	51	e91	e57	e64	161	130	e240	e320	100	61	50	48
29	50	e90	e55	e58	---	130	e230	e290	107	60	51	47
30	51	e90	e60	e69	---	129	e220	e280	103	58	50	47
31	55	---	e64	e74	---	133	---	e260	---	57	50	---
TOTAL	1583	2189	2468	2576	3871	5213	6591	9740	4437	2231	1628	1443
MEAN	51.1	73.0	79.6	83.1	138	168	220	314	148	72.0	52.5	48.1
MAX	83	108	106	147	217	281	315	600	250	99	56	49
MIN	43	51	55	58	82	129	147	200	95	57	50	47
AC-FT	3140	4340	4900	5110	7680	10340	13070	19320	8800	4430	3230	2860

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1991, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	55.4	66.6	66.9	77.4	106	179	307	340	180	71.6
MAX	66.7	79.5	86.0	129	174	314	441	513	425	117
(WY)	1986	1985	1983	1983	1983	1986	1988	1984	1984	1987
MIN	46.1	46.8	53.2	52.9	58.9	83.3	220	213	77.1	54.6
(WY)	1988	1988	1988	1987	1985	1985	1991	1987	1987	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1982 - 1991

ANNUAL TOTAL	42685	43970	130
ANNUAL MEAN	117	120	175
HIGHEST ANNUAL MEAN			97.9
LOWEST ANNUAL MEAN			1984
HIGHEST DAILY MEAN	510	600	895
LOWEST DAILY MEAN	43	43	35
ANNUAL SEVEN-DAY MINIMUM	44	44	44
ANNUAL RUNOFF (AC-FT)	84670	87210	94060
10 PERCENT EXCEEDS	308	236	309
50 PERCENT EXCEEDS	73	84	70
90 PERCENT EXCEEDS	46	49	51

GRANDE RONDE RIVER BASIN

89

13326000 WALLOWA LAKE NEAR JOSEPH, OR

LOCATION.--Lat 45°20'10", long 117°13'15", in NW 1/4 sec.5, T.3 S., R.45 E., Wallowa County, Hydrologic Unit 17060105, at spillway near right end of Wallowa Lake dam on Wallowa River, 1.3 mi southeast of Joseph, and at mile 50.2.

DRAINAGE AREA.--50.8 mi².

PERIOD OF RECORD.--November 1903 to July 1906 (gage height only), January 1912 to March 1914, May to September 1915 (gage heights and change in contents only), October 1925 to June 1926, December 1926 to September 1991 (discontinued). Monthend contents only for some periods, published in WSP 1317. November 1903 to March 1905 published as Wallowa River at Joseph. Change in contents for January 1912 to March 1914 and May to September 1915 published with records for Wallowa River at Joseph.

REVISED RECORDS.--WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,355.66 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1925, nonrecording gage at several sites within 0.5 mi of present site at different datums. Oct. 1, 1925, to June 30, 1926, Dec. 1, 1926, to May 18, 1961, nonrecording gage near left end of dam at same datum.

REMARKS.--Reservoir is formed by concrete dam. Capacity, 42,750 acre-ft between gage heights 0.0 (sill of outlet gates) and 26.8 ft, spillway crest. About 5,300 acre-ft dead storage above outlet gates, because channel is about 3.4 ft above outlet gates. Dead storage below outlet gates not known. Records are based on capacities above outlet gates.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 47,830 acre-ft June 5-7, 1957, gage height, 29.85 ft; minimum contents observed, 4,790 acre-ft Oct. 10, 1929, gage height, 3.10 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents recorded, 39,840 acre-ft July 17, gage height, 25.05 ft; minimum contents, 14,770 acre-ft Sept. 30, gage height, 9.50 ft.

MONTHEND GAGE-HEIGHT AND CONTENTS AT 2400, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Gage Height (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	--	18,890	--
Oct. 31.....	12.61	19,670	+780
Nov. 30.....	13.42	20,960	+1,290
Dec. 31.....	13.80	21,560	+600
CAL YR 1990.....	--	--	+390
Jan. 31.....	14.20	22,200	+640
Feb. 28.....	14.51	22,700	+500
Mar. 31.....	15.31	23,980	+1,280
Apr. 30.....	16.63	26,100	+2,120
May 31.....	--	a35,340	+9,240
June 30.....	23.46	37,220	+1,880
July 31.....	22.74	36,030	-1,190
Aug. 31.....	12.54	19,560	-16,470
Sept. 30.....	9.50	14,770	-4,790
WTR 1991.....	--	--	-4,120

a Interpolated

GRANDE RONDE RIVER BASIN

13327500 WALLOWA RIVER AT JOSEPH, OR

LOCATION.--Lat 45°20'15", long 117°13'35", in NW 1/4 sec.5, T.3 S., R.45 E., Wallowa County, Hydrologic Unit 17060105, on left bank 0.2 mi downstream from Wallowa Lake dam, 1.1 mi south of Joseph, and at mile 50.0.

DRAINAGE AREA.--50.9 mi².

PERIOD OF RECORD.--November 1903 to August 1907, June 1908 to March 1914, May to September 1915, December 1926 to September 1991 (discontinued). Monthly discharge only for some periods, published in WSP 1317. Published as "near Joseph" 1911.

REVISED RECORDS.--WSP 1397: 1906. WSP 1737: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 4,326.86 ft above National Geodetic Vertical Datum of 1929. Nov. 12, 1903, to Sept. 25, 1915, nonrecording gage at several sites at lake outlet or near present site at different datums.

REMARKS.--No estimated daily discharges. Records good. Monthly discharge adjusted for storage in Wallowa Lake (station 13326000) and diversion from Wallowa Lake by Silver Lake ditch. Silver Lake ditch diverts at Wallowa Lake dam for irrigation northeast of Joseph. City of Joseph diverts less than 1.0 ft³/s from Wallowa Lake for municipal use.

AVERAGE DISCHARGE.--64 years (water years 1928-91), 133 ft³/s, 35.48 in/yr, 96,360 acre-ft/yr, adjusted for storage and diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,550 ft³/s June 10, 1969, gage height, 5.15 ft; no flow at times in some years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 355 ft³/s June 19, 20, gage height, 3.26 ft; minimum discharge, 22 ft³/s many days in March and April.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	48	25	31	25	27	30	23	24	69	279	279	200
2	41	24	31	25	27	30	23	24	70	282	278	187
3	39	23	31	25	27	30	23	23	70	282	275	182
4	34	23	31	25	27	30	23	24	86	284	270	169
5	29	23	31	25	27	30	23	24	127	286	265	141
6	26	23	31	25	27	28	23	24	134	288	262	137
7	25	23	31	25	27	25	23	24	136	288	260	136
8	25	23	31	25	27	23	23	24	137	289	259	136
9	25	23	30	25	27	22	23	24	169	289	298	134
10	25	24	30	25	27	22	23	24	194	280	316	141
11	26	24	30	25	28	22	22	24	215	277	310	136
12	26	23	30	26	28	22	22	25	222	276	305	134
13	26	23	30	26	28	22	23	25	262	276	301	134
14	26	23	30	27	28	22	23	25	306	276	287	120
15	26	31	30	27	28	22	23	25	335	277	279	113
16	26	45	30	27	28	22	23	25	341	276	290	99
17	26	45	30	27	28	22	23	25	340	275	272	91
18	26	45	30	27	28	22	23	29	342	276	270	77
19	26	45	30	27	28	22	23	44	348	275	270	71
20	26	45	30	27	28	22	23	48	350	273	266	71
21	26	45	30	27	28	22	23	50	328	264	263	71
22	26	45	29	27	28	22	23	50	320	258	246	71
23	27	45	29	27	28	22	23	51	313	258	231	70
24	27	37	28	27	28	22	23	51	311	257	216	70
25	27	32	28	27	28	22	23	51	311	262	220	70
26	27	32	28	27	28	22	23	52	311	263	227	70
27	27	32	28	27	28	23	23	53	311	262	225	69
28	26	32	28	27	29	23	23	54	310	271	222	69
29	26	32	28	27	---	23	23	64	310	272	215	69
30	26	31	27	27	---	23	23	68	287	271	212	68
31	26	---	25	27	---	23	---	68	---	278	210	---
TOTAL	868	946	916	813	775	737	688	1146	7365	8520	8099	3306
MEAN	28.0	31.5	29.5	26.2	27.7	23.8	22.9	37.0	245	275	261	110
MAX	48	45	31	27	29	30	23	68	350	289	316	200
MIN	25	23	25	25	27	22	22	23	69	257	210	68
AC-FT	1720	1880	1820	1610	1540	1460	1360	2270	14610	16900	16060	6560
MEAN†	49.4	53.8	40.7	38.2	37.3	45	61.2	192	337	363	42.3	42.7
CFSM†	0.97	1.06	0.80	0.75	0.73	0.88	1.20	3.77	6.62	7.13	0.83	0.84
IN.†	1.12	1.18	0.92	0.87	0.76	1.02	1.34	4.34	7.39	8.22	0.96	0.94
AC-FT†	3040	3200	2500	2350	2070	2770	3640	11790	20060	22300	2600	2540

CAL YR 1990 TOTAL 35700 MEAN 97.8 MAX 360 MIN 13 AC-FT 70810 MEAN† 119 CFSM† 2.34 IN.† 31.73 AC-FT† 86120
WTR YR 1991 TOTAL 34179 MEAN 93.6 MAX 350 MIN 22 AC-FT 67790 MEAN† 108 CFSM† 2.12 IN.† 28.75 AC-FT† 78030

† Adjusted for change in contents in Wallowa Lake and diversion by Silver Lake ditch.

GRANDE RONDE RIVER BASIN

91

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 (discontinued). 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, 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 excellent except for estimated daily discharges, which are 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.

AVERAGE DISCHARGE.--67 years (water years 1913, 1926-91), 193 ft³/s, 139,800 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)
June 11	2300	1,210	6.29	July 4	2130	*1,300	*6.49

Minimum daily discharge, 17 ft³/s Dec. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	66	43	e38	e29	47	46	95	422	826	157	52
2	31	57	49	e32	e31	49	51	99	599	894	146	51
3	40	55	50	e26	e32	52	51	98	736	1020	135	50
4	59	93	50	e24	37	55	57	98	675	1130	135	48
5	42	88	47	e26	40	55	72	100	523	1020	135	47
6	38	73	42	25	38	52	78	120	433	842	134	45
7	35	68	42	25	36	50	74	139	394	716	120	45
8	33	67	44	28	36	49	70	337	421	660	111	44
9	33	66	44	29	36	48	70	299	541	636	104	44
10	32	64	62	31	36	47	66	245	753	586	99	45
11	31	62	60	32	36	45	64	219	1020	544	94	45
12	31	62	51	40	36	45	62	209	960	552	87	43
13	35	62	53	41	37	45	62	208	760	606	81	41
14	34	63	43	38	40	43	62	209	599	604	77	41
15	36	59	44	42	43	43	64	207	555	530	74	40
16	43	57	45	36	47	42	65	238	596	482	72	39
17	36	56	49	35	46	42	66	344	616	447	72	39
18	38	55	46	34	44	41	66	441	614	369	68	37
19	39	54	e40	33	45	41	68	567	680	332	65	36
20	33	54	e30	30	47	41	70	464	738	312	63	35
21	61	52	e21	28	49	40	74	472	711	296	61	35
22	101	54	e20	32	48	40	88	546	739	283	58	35
23	60	53	e31	31	47	39	104	567	784	278	57	35
24	53	52	e34	30	46	40	133	584	793	293	55	33
25	57	63	e37	e30	46	40	123	668	742	276	53	33
26	62	57	e40	e30	46	39	114	558	731	240	52	31
27	58	54	e39	e31	46	38	109	465	711	217	50	30
28	58	53	e36	e28	46	39	102	414	771	203	55	31
29	56	52	e19	e26	---	39	99	413	799	194	56	31
30	56	51	e17	e27	---	39	94	429	806	179	54	29
31	73	---	e23	e28	---	41	---	367	---	165	52	---
TOTAL	1425	1822	1251	966	1146	1366	2324	10219	20222	15732	2632	1190
MEAN	46.0	60.7	40.4	31.2	40.9	44.1	77.5	330	674	507	84.9	39.7
MAX	101	93	62	42	49	55	133	668	1020	1130	157	52
MIN	31	51	17	24	29	38	46	95	394	165	50	29
AC-FT	2830	3610	2480	1920	2270	2710	4610	20270	40110	31200	5220	2360

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1991, BY WATER YEAR (WY)

	MEAN	56.5	62.6	57.5	48.8	45.6	54.2	161	516	789	378	84.9	50.0
MAX	291	226	212	158	117	169	393	909	1427	913	180	104	
(WY)	1960	1928	1959	1974	1971	1986	1934	1928	1913	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 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1912 - 1991

ANNUAL TOTAL	62086	60295	193
ANNUAL MEAN	170	165	288
HIGHEST ANNUAL MEAN			90.9
LOWEST ANNUAL MEAN			1974
HIGHEST DAILY MEAN	1070	1130	2540
LOWEST DAILY MEAN	17	17	10
ANNUAL SEVEN-DAY MINIMUM	30	26	11
ANNUAL RUNOFF (AC-FT)	123100	119600	139900
10 PERCENT EXCEEDS	466	585	594
50 PERCENT EXCEEDS	58	54	62
90 PERCENT EXCEEDS	34	31	28

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.

WATER-DISCHARGE RECORDS

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 National Geodetic Vertical Datum of 1929. June 1912 to March 1914, nonrecording gage at approximately same site at different datum.

REMARKS.--Water-discharge 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.

AVERAGE DISCHARGE.--27 years, 457 ft³/s, 25.86 in/yr, 331,100 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	1530	1,450	3.00	June 12	0130	2,190	3.70
May 19	0900	*2,990	*4.35	June 24	0330	1,530	3.08
June 3	0200	1,880	3.42	July 5	0300	1,620	3.17

Minimum daily discharge, 32 ft³/s Dec. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	59	137	113	e115	e230	238	239	379	1180	1270	220	87
2	59	112	120	e100	e290	245	281	384	1440	1280	208	87
3	63	98	137	e90	e330	246	292	381	1730	1380	199	86
4	118	148	146	e92	e350	263	292	372	1640	1500	191	85
5	83	209	131	e96	e290	292	342	375	1360	1430	198	82
6	72	158	109	e105	e250	277	370	427	1170	1220	203	80
7	68	136	82	e150	e260	262	346	479	1080	1050	184	78
8	67	141	118	e250	e270	249	310	1070	1040	953	171	78
9	65	137	156	e240	267	239	312	1170	1180	901	163	78
10	66	136	162	e260	288	233	298	974	1440	841	157	79
11	65	132	221	e280	328	222	293	859	1900	764	153	82
12	64	130	194	e340	221	219	281	827	1930	723	148	79
13	75	129	182	e400	219	214	278	824	1660	732	142	76
14	85	133	158	e390	258	207	284	828	1360	759	136	74
15	80	124	126	e340	362	208	283	804	1230	698	132	74
16	95	119	135	e290	447	201	279	868	1220	620	128	73
17	91	118	167	e310	350	201	269	1140	1240	584	126	71
18	78	114	157	e275	263	196	266	1420	1220	509	122	70
19	100	114	122	e250	249	197	263	2560	1280	445	119	69
20	83	121	73	e170	242	199	265	2020	1400	406	115	67
21	83	118	e36	e165	261	194	274	1720	1360	379	111	66
22	239	119	e32	e175	269	192	318	1730	1340	364	108	66
23	140	118	e66	e200	265	189	371	1700	1370	346	105	66
24	116	118	e78	e220	254	197	501	1620	1380	340	103	66
25	112	148	e84	e145	242	194	493	1690	1310	359	101	66
26	123	168	e88	e135	234	194	459	1490	1250	317	99	65
27	116	149	e88	e135	230	182	438	1310	1230	289	98	63
28	111	144	e86	e135	230	185	407	1200	1240	268	96	63
29	109	140	e52	e105	---	184	400	1180	1310	253	96	64
30	106	140	e46	e105	---	185	381	1280	1280	240	93	63
31	126	---	e80	e170	---	202	---	1120	---	230	90	---
TOTAL	2917	4008	3545	6233	7749	6706	9885	34201	40770	21450	4315	2203
MEAN	94.1	134	114	201	277	216	329	1103	1359	692	139	73.4
MAX	239	209	221	400	447	292	501	2560	1930	1500	220	87
MIN	59	98	32	90	219	182	239	372	1040	230	90	63
AC-FT	5790	7950	7030	12360	15370	13300	19610	67840	80870	42550	8560	4370
CF5M	.39	.56	.48	.84	1.15	.90	1.37	4.60	5.66	2.88	.58	.31
IN.	.45	.62	.55	.97	1.20	1.04	1.53	5.				

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1912 - 1991, BY WATER YEAR (WY)

MEAN	98.3	149	179	207	243	312	527	1274	1637	640	157	99.9
MAX	173	493	604	412	567	697	888	2016	3125	1392	276	179
(WY)	1969	1974	1978	1969	1986	1986	1913	1971	1974	1975	1912	1978
MIN	38.1	57.7	62.4	59.6	56.9	66.7	235	484	497	125	72.6	45.9
(WY)	1988	1988	1979	1977	1977	1977	1967	1977	1987	1977	1966	1987

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1912 - 1991
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ANNUAL TOTAL	141596		143982				
ANNUAL MEAN	388		394			456	
HIGHEST ANNUAL MEAN						713	1974
LOWEST ANNUAL MEAN						189	1977
HIGHEST DAILY MEAN	1910	Jun 10	2560	May 19	5160		Jun 15 1974
LOWEST DAILY MEAN	32	Dec 22	32	Dec 22	11		Dec 6 1972
ANNUAL SEVEN-DAY MINIMUM	63	Sep 20	64	Sep 24	15		Dec 6 1972
ANNUAL RUNOFF (AC-FT)	280900		285600		330700		
ANNUAL RUNOFF (CFSM)	1.62		1.64		1.90		
ANNUAL RUNOFF (INCHES)	21.95		22.32		25.84		
10 PERCENT EXCEEDS	1110		1240		1300		
50 PERCENT EXCEEDS	162		207		197		
90 PERCENT EXCEEDS	73		78		73		

GRANDE RONDE RIVER BASIN
13331500 MINAM RIVER AT MINAM, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1966 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1965 to September 1985.

REMARKS.--Radiochemistry data collected, but not available at time of publication. Some samples were analyzed by different methods and may have data with different levels of detection.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCHI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CaCO3)
NOV 1990 15...	1240	124	51	7.9	3.5	0.4	13.9	112	<1	K4	21
MAR 1991 14...	1240	207	58	7.7	4.5	2.0	11.7	100	<1	<1	23
JUN 03...	1415	1730	30	8.0	8.5	2.6	11.0	103	K6	K9	11
SEP 10...	1450	79	56	8.1	17.0	0.3	--	--	K8	65	22

DATE	CALCIUM, DIS-SOLVED (MG/L AS Ca)	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY, DIS IT FIELD (MG/L AS CaCO3)	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3)	CAR-BONATE, DIS IT FIELD (MG/L AS CO3)	SULFATE, DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)
NOV 1990 15...	6.0	1.4	2.4	19	0.2	0.9	42	51	0	<1.0	0.3
MAR 1991 14...	6.5	1.6	2.4	18	0.2	1.1	26	32	0	0.9	0.7
JUN 03...	3.3	0.68	1.3	19	0.2	0.7	14	17	0	0.6	0.3
SEP 10...	6.3	1.4	2.4	19	0.2	1.1	30	37	0	1.0	0.3

DATE	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C (MG/L)	SOLIDS, SUM OF TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRITE, DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA, DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)
NOV 1990 15...	<0.1	17	29	--	--	--	<0.01	<0.10	0.04	0.3	<0.01
MAR 1991 14...	<0.1	22	40	51	0.05	22.4	--	--	--	--	--
JUN 03...	<0.1	13	25	28	0.03	117	0.01	<0.05	0.02	<0.2	0.02
SEP 10...	<0.1	16	33	47	0.05	7.04	<0.01	<0.05	<0.01	<0.2	<0.01

DATE	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC, DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM, DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)
NOV 1990 15...	<0.01	<0.01	20	<1	3	<0.5	<1	2	<3	1	15
MAR 1991 14...	--	--	140	--	3	<0.5	<1	<1	<3	1	170
JUN 03...	<0.01	0.01	40	<1	<1	<0.5	<1	<1	<3	1	34
SEP 10...	<0.01	<0.01	<10	<1	3	<0.5	<1	<1	<3	<1	10

K - Results based on colony count outside acceptable range (non-ideal colony count.)

GRANDE RONDE RIVER BASIN
13331500 MINAM RIVER AT MINAM, OR--Continued
WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM, DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY, DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)
NOV 1990 15...	1	<4	<1	<0.1	<10	1	<1	<1	22	<6
MAR 1991 14...	1	<4	1	<0.1	<10	1	<1	<1	23	<6
JUN 03...	<1	<4	1	<0.1	<10	1	<1	<1	13	<6
SEP 10...	<1	<4	1	<0.1	<10	<1	<1	<1	23	<6
DATE	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	GROSS ALPHA, DIS- SOLVED (UG/L AS U-NAT)	GROSS ALPHA, SUSP. TOTAL (UG/L AS U-NAT)	GROSS BETA, DIS- SOLVED (PCI/L AS CS-137)	GROSS BETA, DIS- SOLVED (PCI/L AS YT-90)	GROSS BETA, SUSP. TOTAL (PCI/L AS CS-137)	GROSS BETA, SUSP. TOTAL (PCI/L AS YT-90)	RADIUM 226, DIS- SOLVED, RADON METHOD (PCI/L)
NOV 1990 15...	7	1	0.33	--	--	--	--	--	--	--
MAR 1991 14...	10	2	1.1	--	--	--	--	--	--	--
JUN 03...	6	28	131	<0.6	<0.6	0.9	0.8	0.7	0.7	<0.02
SEP 10...	5	2	0.43	<0.6	<0.6	1.6	1.4	<0.6	<0.6	0.03

GRANDE RONDE RIVER BASIN

95

13332500 GRANDE RONDE RIVER AT RONDOWA, OR

LOCATION.--Lat 45°43'36", long 117°46'59", in SW 1/4 NW 1/4 sec.23, T.3 N., R.40 E., Wallowa County, Hydrologic Unit 17060106, on right bank at Rondowa, 500 ft downstream from Wallowa River, 13 mi northeast of Elgin, and at mile 81.4.

DRAINAGE AREA.--2,555 mi².

PERIOD OF RECORD.--October 1926 to September 1991 (discontinued). See REMARKS.

REVISED RECORDS.--WSP 1093: 1928-29, 1932-33, 1936, 1938, 1939(M), 1943. WSP 1397: 1927. WSP 1447: 1927.

GAGE.--Water-stage recorder. Datum of gage is 2,281.87 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow slightly regulated by Wallowa Lake (station 13326000) and small reservoirs. Diversions for irrigation upstream from station, chiefly in vicinity of La Grande, Enterprise, and Wallowa; one transbasin diversion from Sheep Creek in Imnaha River basin for irrigation in Wallowa Valley. Continuous water-quality records for the period June 1959 to September 1961 have been collected at this location. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--65 years, 2,146 ft³/s, 1,555,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,700 ft³/s Jan. 30, 1965, gage height, 10.93 ft; minimum discharge, 179 ft³/s Aug. 24, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 6,200 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 19	unknown	*17,800	*a9.16	June 12	0330	6,310	4.94
Minimum discharge, 306 ft ³ /s Sept. 22.							
a From inside high-water mark.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	399	751	785	e620	779	1890	1830	e2500	e4900	4050	665	426
2	414	683	732	e580	765	2130	2090	e2400	e5200	3950	659	431
3	435	655	726	e540	806	2240	2290	e2400	e5400	4100	625	437
4	522	813	754	e520	833	2530	2370	e2400	e5400	4280	586	440
5	489	1030	756	e520	1090	2890	2580	e2400	e5100	4020	620	436
6	473	880	731	e600	1220	2780	2840	e2600	4620	3440	659	424
7	482	833	656	e700	1210	2510	2850	e2700	4420	2990	649	392
8	491	813	639	e680	1230	2270	2730	e3700	4160	2680	641	387
9	493	816	719	e680	1280	2100	e2800	e4300	4320	2500	600	394
10	490	823	813	e700	1310	1960	e2600	e4200	4770	2310	563	389
11	484	785	1070	e720	1370	1840	e2550	e4000	5780	2120	561	395
12	485	762	1070	e900	1410	1810	e2500	e3850	5740	1980	554	384
13	511	754	1040	e1400	1510	1880	e2450	e3700	5000	1940	547	383
14	531	756	955	e2000	2150	1870	e2400	e3400	4250	1970	525	383
15	543	734	795	e3000	3000	1790	e2350	e3600	3830	1830	517	383
16	579	718	712	2310	3210	1680	e2300	e3900	3650	1660	505	380
17	585	709	861	1910	3140	1600	e2250	e4700	3600	1610	491	366
18	562	700	928	1840	2800	1550	e2200	e9000	3450	1460	484	348
19	594	699	818	1720	2550	1570	e2150	e13000	3510	1320	467	337
20	569	720	e540	1500	2540	1650	e2100	e12000	3890	1210	448	334
21	591	718	e400	1290	2850	1640	e2300	e10000	3950	1120	428	322
22	918	731	e360	1170	2890	1610	e2400	e9000	3930	1060	429	308
23	731	732	e380	1110	2740	1570	e2900	e8000	4000	981	424	315
24	704	720	e440	1040	2490	1610	e3500	e7400	4040	925	413	317
25	712	814	e480	959	2270	1730	e3600	e6900	3920	974	407	321
26	694	927	e540	870	2080	1840	e3300	e6400	3760	889	396	331
27	674	876	e600	845	1960	1850	e3100	e6000	3730	824	419	340
28	656	838	e480	825	1870	1820	e2900	e5700	3830	790	435	342
29	655	809	e400	729	---	1770	e2700	e5500	4020	773	445	348
30	650	829	e460	675	---	1700	e2600	e5200	4060	723	438	350
31	699	---	e560	735	---	1700	---	e4700	---	678	429	---
TOTAL	17815	23428	21200	33688	53353	59380	77530	165550	130230	61157	16029	11143
MEAN	575	781	684	1087	1905	1915	2584	5340	4341	1973	517	371
MAX	918	1030	1070	3000	3210	2890	3600	13000	5780	4280	665	440
MIN	399	655	360	520	765	1550	1830	2400	3450	678	396	308
AC-FT	35340	46470	42050	66820	105800	117800	153800	328400	258300	121300	31790	22100
CAL YR 1990	TOTAL 629499	MEAN 1725	MAX 6410	MIN 334	AC-FT 1249000							
WTR YR 1991	TOTAL 670503	MEAN 1837	MAX 13000	MIN 308	AC-FT 1330000							

e Estimated

GRANDE RONDE RIVER BASIN

13333000 GRANDE RONDE RIVER AT TROY, OR

LOCATION.--Lat 45°56'47", long 117°26'54", in NE 1/4 NW 1/4 sec.4, T.5 N., R.43 E., Wallowa County, Hydrologic Unit 17060106, on left bank 500 ft downstream from bridge at Troy, 600 ft downstream from Wenaha River, and at mile 45.2.

DRAINAGE AREA.--3,275 mi².

PERIOD OF RECORD.--August 1944 to current year. Monthly discharge only August 1944, published in WSP 1317.

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

GAGE.--Water-stage recorder. Datum of gage is 1,585.98 ft above National Geodetic Vertical Datum of 1929. Aug. 17, 1944, to Sept. 30, 1949, nonrecording gage at site 500 ft upstream at datum 10.85 ft lower. Oct. 1, 1949, to Sept. 5, 1963, water-stage recorder at site 500 ft upstream at datum 1.15 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are poor. Flow slightly regulated by Wallowa Lake (station 13326000) 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 Imnaha River basin for irrigation in Wallowa Valley.

AVERAGE DISCHARGE.--47 years, 3,047 ft³/s, 2,208,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 42,200 ft³/s Dec. 23, 1964, gage height, 11.25 ft; minimum discharge, 344 ft³/s Aug. 19-21, 23, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 9,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 19	1630	*22,600	*9.18	No other peak greater than base discharge.			
Minimum discharge, 437 ft ³ /s Sept. 22.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	541	1010	1220	e900	1060	2810	2610	3770	6000	4490	866	559
2	569	940	1140	e860	1020	3260	3060	3660	6120	4390	852	564
3	584	894	1080	e820	1040	3710	3350	3590	6500	4480	818	573
4	644	1090	1080	e780	1050	4830	3460	3530	6240	4600	775	577
5	682	1580	1090	e760	1320	5700	3870	3460	5620	4520	798	572
6	637	1320	1070	e900	1820	5030	4310	3510	5120	4010	873	566
7	635	1200	993	e940	1780	4320	4250	3710	4920	3520	850	539
8	652	1150	954	e920	1790	3750	3990	5230	4650	3170	802	521
9	658	1140	1010	e900	1850	3400	4010	6660	4680	2950	761	530
10	658	1180	1110	e880	1890	3130	4200	6130	4920	2770	708	530
11	650	1130	1480	e900	1970	2890	4030	5730	5780	2530	693	532
12	660	1080	1590	e960	2030	2790	3940	5540	5980	2380	698	524
13	700	1050	1540	e1300	2080	2830	3910	5400	5430	2320	678	525
14	720	1040	1430	e2600	2640	2870	3910	5250	4750	2320	671	529
15	784	1020	1270	e5000	4010	2760	3850	5150	4340	2230	655	525
16	812	981	1070	4140	4600	2590	3770	5150	4120	2040	645	525
17	804	969	1170	3050	4560	2460	3680	5720	4010	1960	632	511
18	768	960	1290	2860	4050	2390	3610	7560	3870	1840	619	491
19	792	957	1240	2680	3610	2370	3540	16200	3840	1660	606	478
20	785	977	e1000	2340	3700	2490	3500	16700	4200	1530	584	469
21	807	983	e560	2020	4540	2500	3540	13900	4370	1420	562	462
22	1230	1010	e540	1800	4620	2440	3720	12700	4310	1340	551	442
23	1100	1020	e600	1660	4290	2360	3990	11800	4320	1260	558	453
24	933	1020	e660	1580	3830	2350	4630	10600	4390	1180	541	453
25	947	1310	e720	1440	3440	2470	4990	10300	4360	1240	541	456
26	923	1690	e780	1310	3140	2570	4750	9250	4130	1150	527	464
27	902	1470	e820	1220	2940	2590	4450	8220	4160	1090	539	479
28	868	1340	e740	1230	2800	2540	4150	7370	4220	1010	561	481
29	857	1250	e640	1070	---	2470	4040	6860	4420	977	581	489
30	854	1240	e680	1000	---	2390	3890	6990	4500	937	576	490
31	943	---	e800	997	---	2390	---	6410	---	888	567	---
TOTAL	24099	34001	31367	49817	77470	93450	117000	226050	144270	72202	20688	15309
MEAN	777	1133	1012	1607	2767	3015	3900	7292	4809	2329	667	510
MAX	1230	1690	1590	5000	4620	5700	4990	16700	6500	4600	873	577
MIN	541	894	540	760	1020	2350	2610	3460	3840	888	527	442
AC-FT	47800	67440	62220	98810	153700	185400	232100	448400	286200	143200	41030	30370

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1945 - 1991, BY WATER YEAR (WY)

	MEAN	896	1218	1955	2131	3001	4120	6282	7357	5822	2200	857	783
MAX	2559	3023	6295	6280	7386	11520	10780	13820	11610	4951	1385	1291	
(WY)	1960	1974	1978	1982	1986	1990	1994	1998	2002	2006	2010	2014	
MIN	528	618	685	702	769	888	2257	2368	1947	520	448	465	
(WY)	1988	1988	1945	1979	1977	1977	1968	1977	1987	1977	1977	1988	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1945 - 1991

ANNUAL TOTAL	845974	905723	
ANNUAL MEAN	2318	2481	
HIGHEST ANNUAL MEAN			3047
LOWEST ANNUAL MEAN			4912
HIGHEST DAILY MEAN			1136
LOWEST DAILY MEAN	8280	May 6	16700
ANNUAL SEVEN-DAY MINIMUM	492	Sep 26	442
ANNUAL RUNOFF (AC-FT)	509	Sep 14	457
10 PERCENT EXCEEDS	5610		7390
50 PERCENT EXCEEDS	1240		1640
90 PERCENT EXCEEDS	590		710

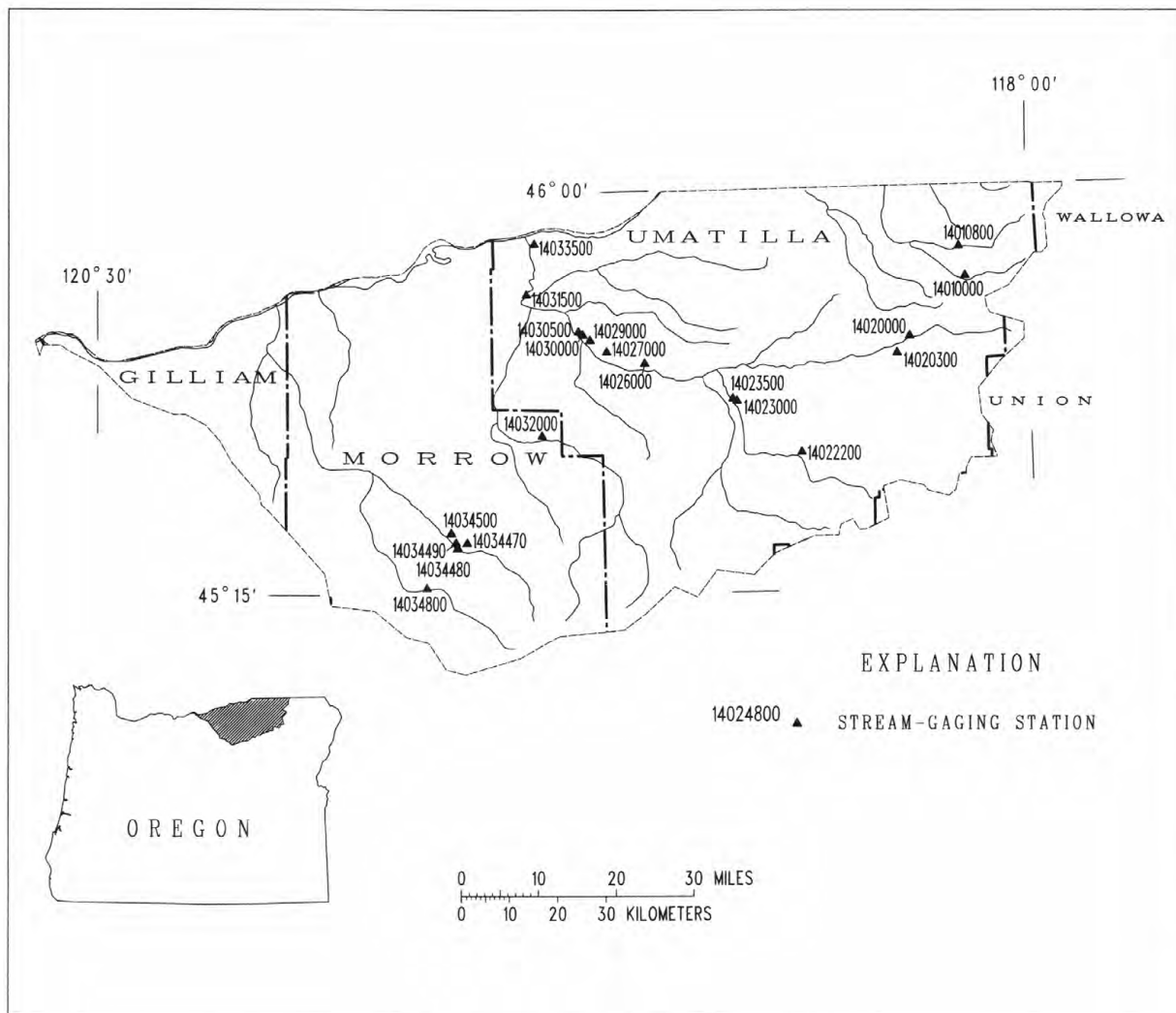


Figure 6.--Location of surface-water and water-quality stations in the Walla Walla River, Umatilla River, and Willow Creek basins.

14010000 SOUTH FORK WALLA WALLA RIVER NEAR MILTON-FREEWATER, OR

LOCATION.--Lat 45°49'48", long 118°10'08", in NE 1/4 NE 1/4 sec.15, T.4 N., R.37 E., Umatilla County, Hydrologic Unit 17070102, on right bank 1.0 mi downstream from Elbow Creek, 13 mi southeast of Milton-Freewater, and at mile 59.1.

DRAINAGE AREA.--63 mi², approximately.

PERIOD OF RECORD.--February to October 1903, August 1906 to November 1917, May 1931 to September 1991 (discontinued). Monthly discharge only for some periods, published in WSP 1318. Published as "12 mi above Milton" 1903, as "above Pacific Power & Light Co.'s intake near Milton" 1907-10, and as "near Milton" 1911-17, 1931-85. See REMARKS.

REVISED RECORDS.--WSP 964: Drainage area. WSP 1398: 1912, 1940, drainage area at former site.

GAGE.--Water-stage recorder. Elevation of gage is 2,050 ft from river-profile map. Prior to Mar. 23, 1934, water-stage recorder or nonrecording gage at several sites within 1.5 mi of present site at various datums.

REMARKS.--Records good except those for June 12 to Sept. 30, which are fair, and estimated daily discharges, which are poor. No regulation or diversion upstream from station. Continuous water-quality records for the period June 1959 to September 1961 have been collected at this location. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--70 years (water years 1908-17, 1932-91), 176 ft³/s, 37.94 in/yr, 127,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,530 ft³/s Jan. 29, 1965, gage height, 5.60 ft; minimum discharge, 72 ft³/s Feb. 14, 1932.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage about 6 ft Mar. 31, 1931, present site and datum.

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 19	1430	*756	*2.61	No other peak greater than base discharge.			
Minimum discharge, 74 ft ³ /s Aug. 24.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	101	116	142	e94	116	184	185	249	204	118	95	90
2	101	110	138	e92	120	183	203	245	202	115	94	90
3	105	110	134	e89	118	186	195	241	197	112	92	90
4	102	173	133	e88	123	202	194	236	186	110	92	90
5	103	176	132	e87	143	227	213	234	181	108	94	88
6	101	147	122	e87	147	215	218	241	184	106	95	87
7	101	139	116	e87	142	201	204	247	220	105	94	89
8	101	140	115	e88	142	189	188	343	192	103	90	89
9	100	143	115	e89	142	185	202	316	178	102	90	89
10	99	141	132	e90	142	180	202	281	169	100	90	89
11	99	133	162	e99	141	171	196	263	169	100	89	89
12	100	128	149	135	142	168	196	259	160	100	87	88
13	106	124	140	161	155	164	204	254	153	100	86	90
14	104	126	133	182	256	161	208	249	145	100	86	91
15	115	122	125	380	287	156	205	244	138	100	86	91
16	109	119	123	275	277	150	198	248	135	100	86	90
17	103	119	119	243	251	144	190	326	129	103	85	90
18	105	120	119	255	227	138	187	364	127	103	85	90
19	111	123	117	228	238	142	189	637	129	103	85	90
20	102	122	e104	195	260	142	196	546	135	103	84	91
21	132	122	e96	170	274	142	211	420	128	101	84	91
22	164	125	e88	158	262	141	229	346	123	101	83	90
23	118	125	e83	150	236	138	243	305	120	99	82	89
24	111	132	e83	145	214	146	269	268	120	101	82	89
25	108	203	e84	137	199	150	244	256	118	101	82	89
26	109	203	e84	132	190	161	222	230	114	98	82	89
27	105	173	e90	129	183	164	212	218	112	97	85	90
28	106	155	e100	128	180	162	208	207	115	97	87	91
29	106	150	e90	122	---	158	220	208	130	96	87	91
30	108	147	e85	119	---	155	233	244	124	96	87	91
31	115	---	e82	118	---	162	---	214	---	96	90	---
TOTAL	3350	4166	3535	4552	5307	5167	6264	8939	4537	3174	2716	2691
MEAN	108	139	114	147	190	167	209	288	151	102	87.6	89.7
MAX	164	203	162	380	287	227	269	637	220	118	95	91
MIN	99	110	82	87	116	138	185	207	112	96	82	87
AC-FT	6640	8260	7010	9030	10530	10250	12420	17730	9000	6300	5390	5340
CFSM	1.72	2.20	1.81	2.33	3.01	2.65	3.31	4.58	2.40	1.63	1.39	1.42
IN.	1.98	2.46	2.09	2.69	3.13	3.05	3.70	5.28	2.68	1.87	1.60	1.59

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1903 - 1991, BY WATER YEAR (WY)

	110	134	166	172	187	214	280	301	202	123	108	107
MEAN	110	134	166	172	187	214	280	301	202	123	108	107
MAX	180	245	376	378	340	399	458	569	484	193	158	177
(WY)	1960	1948	1976	1965	1986	1972	1936	1948	1974	1974	1903	1903
MIN	76.8	88.5	92.8	91.8	102	111	146	123	96.0	84.9	80.0	76.5
(WY)	1990	1940	1945	1937	1937	1917	1941	1934	1987	1931	1988	1988

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1903 - 1991

ANNUAL TOTAL	56151	54398	175
ANNUAL MEAN	154	149	255
HIGHEST ANNUAL MEAN			119
LOWEST ANNUAL MEAN			1870
HIGHEST DAILY MEAN	502	May 4	637
LOWEST DAILY MEAN	82	Dec 31	82
ANNUAL SEVEN-DAY MINIMUM	87	Dec 21	83
ANNUAL RUNOFF (AC-FT)	111400	107900	127000
ANNUAL RUNOFF (CFSM)	2.44	2.37	2.78
ANNUAL RUNOFF (INCHES)	33.16	32.12	37.80
10 PERCENT EXCEEDS	240	242	304
50 PERCENT EXCEEDS	124	127	138
90 PERCENT EXCEEDS	96	89	96

WALLA WALLA RIVER BASIN

99

14010800 NORTH FORK WALLA WALLA RIVER NEAR MILTON-FREEWATER, OR

LOCATION.--Lat 45°53'06", long 118°11'06", in SE 1/4 NW 1/4 sec.28, T.5 N., R.37 E., Umatilla County, Hydrologic Unit 17070102, on right bank 2.8 mi downstream from Little Meadow Canyon, 8.9 mi southeast of Milton-Freewater, and at mile 5.6.

DRAINAGE AREA.--34.4 mi².

PERIOD OF RECORD.--October 1969 to September 1991 (discontinued). See REMARKS.

GAGE.--Water-stage recorder. Elevation of gage is 1,940 ft, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation; one diversion upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--22 years, 50.2 ft³/s, 19.82 in/yr, 36,370 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,240 ft³/s Feb. 23, 1986, gage height, 7.02 ft; minimum discharge, 3.3 ft³/s Aug. 26-28, 1986.

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. 15	0730	387	5.18	May 19	1030	*597	*5.76

Minimum discharge, 4.8 ft³/s several days in October and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.8	16	41	e10	25	61	61	92	59	21	8.4	5.4
2	5.0	14	37	e9.3	26	57	70	90	55	19	8.3	5.4
3	5.2	12	33	e9.0	27	55	68	83	50	17	8.1	5.3
4	5.2	40	31	e8.8	29	65	70	77	45	16	8.1	5.3
5	5.4	45	30	e8.6	37	75	82	71	43	14	8.2	5.2
6	5.4	33	26	e8.5	40	77	86	69	46	13	8.3	5.1
7	5.1	31	23	e8.5	40	74	84	68	63	12	8.3	5.3
8	5.0	36	22	e8.5	41	68	73	131	50	12	7.6	5.3
9	4.9	33	22	e8.6	42	65	90	125	46	12	7.5	5.3
10	5.1	28	29	11	42	64	90	108	42	12	7.5	5.3
11	5.0	23	50	24	41	59	85	93	41	12	7.4	5.1
12	5.1	19	48	69	43	56	87	87	38	11	7.4	5.1
13	5.6	17	41	84	57	51	89	79	36	11	7.4	5.1
14	5.9	22	36	94	135	49	89	71	34	11	7.3	5.1
15	7.9	21	32	297	152	46	87	63	32	11	7.3	5.1
16	7.2	21	30	176	149	43	84	59	31	11	7.2	4.9
17	6.4	20	27	124	134	41	78	105	28	12	7.3	4.9
18	6.1	20	26	116	116	39	71	156	26	11	7.4	4.9
19	7.8	23	24	96	142	41	66	473	25	10	7.3	4.9
20	5.9	23	e20	75	161	42	64	353	29	10	7.3	4.9
21	12	24	e13	60	159	43	67	259	27	9.7	7.2	4.9
22	30	26	e10	49	138	42	70	185	24	9.4	7.2	4.9
23	14	31	e9.6	42	114	41	77	132	23	9.2	7.2	4.9
24	11	34	e10	38	96	48	100	106	22	9.1	7.2	5.4
25	9.6	65	e12	35	82	54	90	89	22	10	7.2	6.3
26	9.5	83	e13	33	69	58	81	71	20	8.6	7.2	6.3
27	8.7	62	e14	31	61	58	74	61	19	8.2	6.8	6.3
28	8.1	48	e14	30	58	58	69	54	22	8.1	6.3	6.3
29	7.8	42	e10	28	---	54	79	52	27	8.3	6.2	6.3
30	8.0	43	e8.8	27	---	51	86	88	25	8.3	5.8	6.3
31	11	---	e11	26	---	53	---	65	---	8.3	5.4	---
TOTAL	243.7	955	753.4	1644.8	2256	1688	2367	3615	1050	355.2	227.3	160.8
MEAN	7.86	31.8	24.3	53.1	80.6	54.5	78.9	117	35.0	11.5	7.33	5.36
MAX	30	83	50	297	161	77	100	473	63	21	8.4	6.3
MIN	4.8	12	8.8	8.5	25	39	61	52	19	8.1	5.4	4.9
AC-FT	483	1890	1490	3260	4470	3350	4690	7170	2080	705	451	319
CFSM	.23	.93	.71	1.54	2.34	1.58	2.29	3.39	1.02	.33	.21	.16
IN.	.26	1.03	.81	1.78	2.44	1.83	2.56	3.91	1.14	.38	.25	.17

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1991, BY WATER YEAR (WY)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	9.49	25.9	48.1	70.0	77.6	95.2	115	94.4	41.6	11.7	8.01	7.43										
MAX	19.1	86.4	170	175	181	236	222	198	136	20.5	12.6	11.6										
(WY)	1983	1974	1976	1975	1982	1972	1974	1974	1981	1984	1985	1986										
MIN	4.47	6.14	7.65	12.3	14.6	42.6	55.1	26.3	9.33	5.09	3.68	4.39										
(WY)	1989	1988	1988	1979	1977	1977	1973	1973	1987	1986	1986	1988										

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1970 - 1991

ANNUAL TOTAL	14775.4	15316.2	
ANNUAL MEAN	40.5	42.0	
HIGHEST ANNUAL MEAN			50.2
LOWEST ANNUAL MEAN			94.5
HIGHEST DAILY MEAN			21.9
LOWEST DAILY MEAN	314	473	872
ANNUAL SEVEN-DAY MINIMUM	4.8	4.8	3.4
ANNUAL RUNOFF (AC-FT)	29310	30380	36370
ANNUAL RUNOFF (CFSM)	1.18	1.22	1.46
ANNUAL RUNOFF (INCHES)	15.98	16.56	19.83
10 PERCENT EXCEEDS	88	89	131
50 PERCENT EXCEEDS	23	27	23
90 PERCENT EXCEEDS	5.6	5.4	6.7

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 National Geodetic Vertical Datum of 1929. Prior to June 27, 1939, at site 1 mi downstream at datum 43.94 ft lower.

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 June 1959 to September 1980 have been collected at this location. Records for March 25 to April 1 provided by National Weather Service.

AVERAGE DISCHARGE.--58 years, 225 ft³/s, 23.32 in/yr, 163,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,930 ft³/s Jan. 25, 1975, gage height, 9.18 ft, 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)
Jan. 15	0500	1,760	5.54	May 19	1230	*3,300	*7.02

Minimum discharge, 38 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	86	152	e80	95	307	335	542	325	111	54	43
2	40	81	135	e70	96	324	427	509	302	104	54	42
3	49	79	119	e64	98	337	417	467	276	99	54	42
4	51	121	112	e64	102	414	408	434	250	95	53	42
5	49	137	108	67	162	575	494	411	245	92	54	41
6	47	99	102	66	226	541	530	410	252	89	56	41
7	46	89	98	66	222	457	465	413	516	86	59	41
8	45	94	94	66	222	395	399	689	459	84	55	41
9	45	97	93	66	217	375	576	639	404	81	53	42
10	45	99	118	68	213	352	654	546	350	79	51	42
11	45	89	260	90	213	314	570	486	317	76	50	42
12	47	80	237	309	211	310	543	452	276	74	50	42
13	49	75	197	380	251	316	534	425	250	74	50	42
14	53	78	167	503	715	330	517	402	227	73	50	42
15	57	72	145	1380	757	309	478	384	207	72	50	42
16	58	68	131	693	675	276	437	375	191	72	49	42
17	55	66	119	536	583	251	408	716	174	76	49	41
18	55	66	114	552	476	240	382	1230	162	73	49	41
19	59	66	e100	438	474	246	374	2560	156	69	49	41
20	55	67	e90	331	534	250	386	1900	167	66	48	41
21	74	70	e85	262	736	254	426	1220	157	64	47	41
22	109	73	e70	220	696	250	478	878	144	63	46	42
23	81	79	e85	192	561	238	498	684	135	61	45	42
24	71	86	e90	172	455	265	564	568	130	61	45	42
25	67	199	e100	152	376	303	496	494	126	67	45	42
26	66	261	e110	138	328	315	429	423	119	62	44	42
27	65	199	e95	127	298	296	410	371	113	60	45	42
28	64	160	e90	120	280	296	406	330	113	58	45	42
29	64	146	e70	108	---	267	504	318	133	58	45	42
30	68	162	e75	104	---	243	541	413	126	56	44	42
31	81	---	e90	98	---	244	---	353	---	55	43	---
TOTAL	1799	3144	3651	7582	10272	9890	14086	20042	6802	2310	1531	1252
MEAN	58.0	105	118	245	367	319	470	647	227	74.5	49.4	41.7
MAX	109	261	260	1380	757	575	654	2560	516	111	59	43
MIN	39	66	70	64	95	238	335	318	113	55	43	41
AC-FT	3570	6240	7240	15040	20370	19620	27940	39750	13490	4580	3040	2480
CFSM	.44	.80	.90	1.87	2.80	2.44	3.58	4.94	1.73	.57	.38	.32
IN.	.51	.89	1.04	2.15	2.92	2.81	4.00	5.69	1.93	.66	.43	.36

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1991, BY WATER YEAR (WY)

	MEAN	58.6	125	233	260	317	384	540	448	196	65.6	47.5	47.2
MAX	169	405	716	656	910	989	885	1135	591	110	63.4	81.6	
(WY)	1952	1948	1976	1965	1982	1972	1974	1948	1974	1948	1975	1959	
MIN	39.1	40.2	44.4	45.7	71.8	189	162	67.0	63.7	39.5	36.9	34.9	
(WY)	1936	1936	1966	1937	1977	1955	1941	1934	1934	1934	1939	1935	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1933 - 1991

ANNUAL TOTAL	66462	82361	225
ANNUAL MEAN	182	226	415
HIGHEST ANNUAL MEAN			114
LOWEST ANNUAL MEAN			114
HIGHEST DAILY MEAN	1050	2560	5130
LOWEST DAILY MEAN	35	39	28
ANNUAL SEVEN-DAY MINIMUM	36	41	31
ANNUAL RUNOFF (AC-FT)	131800	163400	163000
ANNUAL RUNOFF (CFSM)	1.39	1.72	1.72
ANNUAL RUNOFF (INCHES)	18.87	23.39	23.33
10 PERCENT EXCEEDS	420	512	550
50 PERCENT EXCEEDS	101	113	119
90 PERCENT EXCEEDS	38	45	45

UMATILLA RIVER BASIN

101

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 National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--16 years, 197 ft³/s, 15.20 in/yr, 142,700 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,750 ft³/s Feb. 20, 1982, gage height, 6.60 ft, from floodmark, from rating curve extended above 2,600 ft³/s; 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)
May 19	1630	*4,290	*6.84	No other peak greater than base discharge.			
Minimum discharge, 9.1 ft ³ /s Oct. 1.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.5	23	116	47	97	381	510	701	258	74	17	11
2	9.7	21	107	43	95	401	626	645	240	66	17	11
3	12	21	98	41	94	401	618	564	217	61	16	11
4	12	29	90	39	92	465	565	487	194	56	16	11
5	11	61	87	34	116	567	586	426	186	51	16	11
6	12	64	83	35	239	549	614	393	180	47	16	11
7	12	60	80	37	308	491	548	376	238	44	17	11
8	13	62	77	37	352	427	465	559	231	41	16	11
9	13	68	75	36	370	394	641	580	221	38	15	11
10	13	72	84	40	387	367	869	500	206	36	15	11
11	13	68	195	72	391	328	861	431	195	34	15	11
12	13	61	228	217	379	329	877	390	176	31	15	10
13	13	56	200	259	514	335	917	366	161	30	14	10
14	14	56	172	345	1330	374	874	334	147	28	14	11
15	15	51	149	1350	1350	374	801	308	134	27	13	11
16	14	48	132	1040	1230	332	747	294	118	27	13	10
17	15	45	116	809	1100	297	697	617	106	28	13	10
18	16	44	106	871	888	283	639	1300	97	27	13	10
19	18	43	100	764	826	300	610	3030	92	25	12	10
20	16	44	76	599	866	306	580	2420	99	24	12	10
21	20	46	e50	440	1050	315	564	1500	103	22	12	9.9
22	23	47	e40	330	1050	322	571	1040	92	21	11	10
23	20	50	e40	258	888	310	557	757	84	21	11	9.9
24	20	58	e44	218	738	346	599	557	78	22	11	9.9
25	22	108	e46	177	609	398	565	431	74	20	12	9.9
26	24	192	e50	154	504	444	500	338	68	21	11	10
27	22	176	e50	133	428	443	477	286	64	20	11	10
28	22	150	e42	121	379	468	477	246	61	19	11	10
29	21	133	e36	109	---	431	645	231	72	18	11	10
30	21	125	e38	107	---	395	710	307	88	18	11	10
31	22	---	53	102	---	404	---	281	---	18	11	---
TOTAL	501.2	2082	2860	8864	16670	11977	19310	20695	4280	1015	418	312.6
MEAN	16.2	69.4	92.3	286	595	386	644	668	143	32.7	13.5	10.4
MAX	24	192	228	1350	1350	567	917	3030	258	74	17	11
MIN	9.5	21	36	34	92	283	465	231	61	18	11	9.9
AC-FT	994	4130	5670	17580	33060	23760	38300	41050	8490	2010	829	620
CFSM	.09	.39	.52	1.62	3.38	2.20	3.66	3.79	.81	.19	.08	.06
IN.	.11	.44	.60	1.87	3.52	2.53	4.08	4.37	.90	.21	.09	.07

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1991, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	16.9	64.4	191	218	380	478	557	316	113	25.2	13.0	12.4					
MAX	26.7	200	582	503	950	804	956	668	354	52.2	19.6	16.7					
(WY)	1985	1987	1976	1984	1986	1984	1985	1991	1984	1984	1976	1978					
MIN	8.48	11.2	18.0	22.2	27.1	134	228	122	27.0	13.2	8.48	9.37					
(WY)	1988	1988	1977	1977	1977	1977	1986	1977	1987	1977	1986	1987					

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1975 - 1991

ANNUAL TOTAL	53445.4		88984.8	
ANNUAL MEAN	146		244	
HIGHEST ANNUAL MEAN			197	
LOWEST ANNUAL MEAN			301	1984
HIGHEST DAILY MEAN	1070	May 2	66.2	1977
LOWEST DAILY MEAN	8.8	Sep 28	4220	Feb 23 1986
ANNUAL SEVEN-DAY MINIMUM	9.3	Sep 24	7.5	Aug 11 1977
ANNUAL RUNOFF (AC-FT)	106000		9.9	Aug 8 1977
ANNUAL RUNOFF (CFSM)			176500	
ANNUAL RUNOFF (INCHES)	11.83		1.39	
10 PERCENT EXCEEDS	383		18.81	
50 PERCENT EXCEEDS	72		631	
90 PERCENT EXCEEDS	11		87	
			11	

UMATILLA RIVER BASIN

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 National Geodetic Vertical Datum of 1929, from topographic map.

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

AVERAGE DISCHARGE.--18 years, 42.7 ft³/s, 30,940 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. 14	1900	575	4.13	May 19	0530	*11,290	*6.45
Jan. 15	0430	937	5.38				

Minimum discharge, 0.75 ft³/s several days in August and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.90	3.7	17	7.5	19	56	88	62	38	16	1.7	.88
2	.93	3.7	16	7.3	20	55	81	55	33	14	1.7	.90
3	1.2	3.9	15	7.3	20	53	72	48	28	12	1.6	.88
4	1.2	7.9	15	7.1	22	61	63	41	24	11	1.5	.85
5	1.2	11	15	7.0	31	75	60	36	25	9.8	1.8	.83
6	1.2	8.9	14	6.7	33	75	57	32	24	8.6	1.9	.82
7	1.1	11	13	6.8	32	72	55	31	27	7.6	1.8	.84
8	1.1	17	12	7.1	33	72	54	100	23	6.7	1.7	.78
9	1.1	14	12	6.7	34	75	128	100	21	5.8	1.5	.84
10	1.1	12	15	20	34	75	136	87	19	4.9	1.4	.89
11	1.1	11	43	81	34	72	178	80	19	4.2	1.3	.88
12	1.2	9.6	35	196	35	70	228	72	16	3.7	1.3	.93
13	1.2	8.8	28	159	96	73	195	66	14	3.7	1.3	.96
14	1.4	11	23	228	173	77	155	60	13	3.4	1.3	1.0
15	1.8	10	19	550	141	73	131	52	12	3.2	1.2	1.0
16	1.6	10	17	233	138	67	122	46	11	3.1	1.2	.95
17	1.5	9.9	16	172	125	61	106	159	10	3.5	1.1	.98
18	1.9	9.5	15	138	111	57	91	291	9.1	3.3	1.1	.98
19	2.4	9.3	14	105	117	58	79	1000	9.3	3.0	1.2	1.0
20	1.9	9.5	12	80	111	61	68	613	13	2.8	1.1	.90
21	3.0	9.9	10	62	116	63	58	330	12	2.6	1.1	.94
22	4.5	10	9.0	51	103	61	49	215	10	2.5	1.0	.98
23	3.3	12	9.0	43	89	60	43	140	9.1	2.3	1.0	.99
24	2.6	12	10	37	75	72	52	105	9.7	2.3	1.0	1.0
25	2.5	22	11	32	64	86	49	84	9.4	2.3	1.0	1.0
26	2.5	29	12	23	56	100	45	66	8.3	2.2	.95	1.1
27	2.6	22	10	21	51	113	49	54	7.5	2.1	.88	1.1
28	2.7	18	9.0	24	46	121	56	45	8.2	2.0	1.0	1.1
29	2.7	16	8.0	17	---	108	72	40	18	1.9	1.0	1.2
30	2.8	17	10	16	---	99	69	57	20	1.9	.90	1.2
31	3.5	---	8.2	20	---	92	---	43	---	1.8	.89	---
TOTAL	59.73	359.6	472.2	2371.5	1959	2313	2689	4210	500.6	154.2	39.42	28.70
MEAN	1.93	12.0	15.2	76.5	70.0	74.6	89.6	136	16.7	4.97	1.27	.96
MAX	4.5	29	43	550	173	121	228	1000	38	16	1.9	1.2
MIN	.90	3.7	8.0	6.7	19	53	43	31	7.5	1.8	.88	.78
AC-FT	118	713	937	4700	3890	4590	5330	8350	993	306	78	57

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1991, BY WATER YEAR (WY)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	2.77	19.4	52.4	77.0	97.1	114	90.9	41.1	14.2	2.18	1.05	1.27							
MAX	8.50	72.1	197	170	213	223	200	136	60.4	4.97	1.59	2.74							
(WY)	1983	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MIN	.90	1.30	3.11	5.01	4.39	45.5	20.2	5.43	2.09	.73	.72	.78							
(WY)	1988	1988	1977	1977	1977	1988	1987	1987	1973	1985	1987	1987							

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1973 - 1991

ANNUAL TOTAL	9873.08	15156.95	
ANNUAL MEAN	27.0	41.5	
HIGHEST ANNUAL MEAN			42.7
LOWEST ANNUAL MEAN			72.5
HIGHEST DAILY MEAN	306	1000	1070
LOWEST DAILY MEAN	.77	.78	.45
ANNUAL SEVEN-DAY MINIMUM	.79	.83	.50
ANNUAL RUNOFF (AC-FT)	19580	30060	30930
10 PERCENT EXCEEDS	72	104	120
50 PERCENT EXCEEDS	11	14	9.7
90 PERCENT EXCEEDS	.90	1.0	.98

UMATILLA RIVER BASIN

103

14023000 MCKAY RESERVOIR NEAR PENDLETON, OR

LOCATION.--Lat 45°36'28", long 118°47'30", in SE 1/4 sec.34, T.2 N., R.32 E., Umatilla County, Hydrologic Unit 17070103, on Bureau of Reclamation land, near right end of McKay Dam on McKay Creek, 4.0 mi south of Pendleton, and at mile 4.9.

DRAINAGE AREA.--186 mi².

PERIOD OF RECORD.--December 1927 to current year. Prior to Oct. 1, 1982, monthend contents and change in contents only.

REVISED RECORDS.--WSP 1154: Drainage area. WDR OR-79-1: 1978.

GAGE.--Water-stage recorder. Datum of gage is 0.16 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 6, 1973, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by gravel-fill dam with concrete facing, completed in 1926; storage began in 1927. Usable capacity, 73,830 acre-ft, between gage heights 1,182.0 ft, floor of trashrack structure, and 1,322.0 ft top of spillway gates. Dead storage, about 6 acre-ft included in records. Water is used for irrigation of land along McKay Creek and Umatilla River. U. S. Bureau of Reclamation satellite telemeter at station.

COOPERATION.--Capacity tables furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 74,100 acre-ft, from capacity table extended above 73,840 acre-ft, May 20, 1991, gage height, 1,322.20 ft; no usable contents Sept. 7, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 74,100 acre-ft, from capacity table extended above 73,840 acre-ft, May 20, gage height 1,322.20 ft; minimum contents, 7,840 acre-ft Oct. 27, gage height, 1,231.95 ft.

Capacity table (gage height, in feet, and contents, in acre-feet)

1,182	6	1,210	1,610	1,260	20,880
1,185	24	1,220	3,720	1,280	33,540
1,190	117	1,230	7,120	1,300	49,840
1,200	565	1,240	11,060	1,322	73,840

CORRECTIONS.--The minimum contents for water year 1990 has been corrected to 7,920 acre-ft.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1232.17	---	1236.60	---	1265.40	1282.72	1298.01	1313.29	1320.59	1317.54	1301.82	1279.00
2	1232.16	---	---	---	1265.55	1283.11	1298.52	---	1320.64	1317.39	1301.11	1278.17
3	1232.13	---	1237.15	---	1265.71	1283.53	1299.01	1313.85	1320.66	1317.16	1300.40	1277.35
4	1232.14	---	1237.45	---	1265.88	1284.03	1299.43	1314.06	1320.77	1316.79	1299.68	1276.54
5	1232.13	---	---	---	1266.08	1284.62	1299.84	1314.18	1320.86	1316.39	1299.02	1275.75
6	1232.07	1232.21	1237.69	1243.57	1266.33	1285.14	1300.27	1314.32	1320.85	1315.96	1298.47	1274.94
7	1232.06	1232.27	1238.15	1243.67	1266.55	1285.68	1300.66	1314.51	1320.67	1315.55	1297.73	1274.12
8	---	1232.41	1238.33	1243.76	1266.80	1286.24	1301.03	1314.85	1320.75	1315.13	1297.02	1273.36
9	---	1232.57	1238.57	1243.86	1267.05	1286.79	1301.51	1315.09	1320.77	1314.68	1296.30	1272.37
10	---	1232.74	1238.70	1244.03	1267.35	1287.34	1302.07	1315.41	1320.83	1314.24	1295.58	1271.31
11	---	1232.91	1239.07	1244.77	1267.65	1287.94	1302.76	1315.65	1320.73	1313.81	1294.87	1270.28
12	---	1233.03	1239.54	1246.81	1267.93	1288.33	1303.80	1315.87	1320.71	1313.34	1294.15	1269.25
13	---	1233.18	---	1248.66	1268.49	1288.80	1304.81	1316.12	1320.70	1312.78	1293.44	1268.18
14	---	1233.29	---	1250.32	1269.91	1289.29	1305.65	1316.36	1320.66	1312.25	1292.74	1267.16
15	---	1233.41	---	1254.70	1271.26	1289.78	1306.53	1316.56	1320.51	1311.70	1292.06	1266.18
16	---	1233.52	1240.70	1256.99	1272.59	1290.22	1307.25	1316.72	1320.31	1311.15	1291.39	1265.19
17	---	1233.64	1240.99	1258.58	1273.87	1290.64	1307.91	1317.10	1320.17	1310.64	1290.73	1264.24
18	---	1233.77	1241.45	1259.90	1274.97	1291.04	1308.55	1318.34	1320.00	1310.12	1290.03	1263.31
19	---	1233.90	1241.89	1261.00	1276.04	1291.38	1309.14	1322.17	1319.81	1309.59	1289.33	1262.37
20	---	1234.07	---	1261.78	1277.08	1291.81	1309.60	1321.45	1319.65	1309.08	1288.63	1261.41
21	---	1234.18	---	1262.38	1278.08	1292.18	1310.03	1320.94	1319.57	1308.55	1287.94	1260.48
22	---	1234.31	---	1262.84	1279.00	1292.61	1310.39	1320.52	1319.47	1308.02	1287.24	1259.55
23	---	1234.44	---	1263.31	1279.77	1292.94	1310.71	1320.11	1319.27	1307.48	1286.51	1258.62
24	---	1234.59	---	1263.69	1280.43	1293.41	1310.96	1319.75	1319.01	---	1285.72	1257.69
25	---	1234.76	---	1263.99	1280.97	1293.82	1311.26	1319.35	1318.79	1306.29	1284.93	1256.76
26	1231.99	1235.12	---	1264.25	1281.47	1294.37	---	1319.42	1318.56	1305.69	1284.12	1255.76
27	1232.00	1235.46	---	1264.52	1281.91	1294.99	1311.74	1319.67	1318.32	1305.08	1283.33	1254.77
28	1232.02	1235.78	---	1264.69	1282.31	1295.64	1312.18	1319.93	1317.99	1304.47	1282.47	1253.72
29	---	1236.05	---	1264.90	---	1296.28	1312.36	1320.16	1317.77	1303.84	1281.56	1252.70
30	---	1236.33	---	1265.09	---	1296.92	1313.00	1320.40	1317.67	1303.18	1280.75	1251.66
31	---	---	---	1265.25	---	1297.48	---	1320.53	---	1302.54	1279.87	---
MAX	---	---	---	---	1282.31	1297.48	---	---	1320.86	---	1301.82	1279.00
MIN	---	---	---	---	1265.40	1282.72	---	---	1317.67	---	1279.87	1251.66
(†)	a7940	9550	a12350	23920	35190	47540	63160	71980	68500	52220	33450	16430
(‡)	0	+1610	+2800	+11570	+11270	+12350	+15620	+8820	-3480	-16280	-18770	-17020
CAL YR	1990	AC-FT†	-170									
WTR YR	1991	AC-FT†	+8490									

a Interpolated.

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

‡ Change in contents, in acre-feet.

UMATILLA RIVER BASIN

14023500 MCKAY CREEK NEAR PENDLETON, OR

LOCATION.--Lat 45°36'34", long 118°47'55", in SE 1/4 NW 1/4 sec.34, T.2 N., R.32 E., Umatilla County, Hydrologic Unit 17070103, on right bank 35 ft upstream from diversion dam, 0.2 mi downstream from McKay Dam, 4.5 mi south of Pendleton, and at mile 4.7.

DRAINAGE AREA.--186 mi².

PERIOD OF RECORD.--November 1918 to May 1919, October 1919 to September 1923, October 1924 to September 1927, November 1927 to September 1943, April 1944 to October 1947 (irrigation seasons only), March 1948 to September 1991 (discontinued). Monthly discharge only for some periods, published in WSP 1318. See REMARKS.

REVISED RECORDS.--WSP 1154: Drainage area. WSP 1398: 1923.

GAGE.--Water-stage recorder. Concrete control since Mar. 23, 1928. Datum of gage is 1,163.71 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). See WSP 1318 or 1738 for history of changes prior to Nov. 16, 1948.

REMARKS.--Records good except for daily discharges below 2.0 ft³/s, and those for May 19-26, which are poor. Flow completely regulated since 1927 by McKay Reservoir (station 14023000). Many diversions for irrigation upstream from station. From 1932 to 1970, records excluded flow in Elder ditch, which diverts water between the gage and the control. Since 1971, records include flow in Elder ditch. During the irrigation season, from 1953 to 1982, Elder ditch diverted a maximum of 1.5 ft³/s; since 1982, diversion has been less than 1.0 ft³/s. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--54 years (water years 1933-43, 1949-91), 97.5 ft³/s, 70,640 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge recorded, 3,540 ft³/s May 19, 1991, gage height, 4.96 ft, when gage washed out, from rating curve extended above 4,340 ft³/s; no flow at times most years.

EXTREMES FOR CURRENT YEAR.--Maximum discharge recorded, 3,540 ft³/s May 19, gage height, 4.96 ft, when gage washed out; minimum discharge, no flow at times October to June.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.10	6.0	.00	.00	3.9	.75	3.3	2.6	e55	e160	e325	e290
2	e.10	.00	.00	.00	.00	.18	2.9	2.7	e90	e160	e325	e290
3	e.10	.00	.00	.00	.00	.06	3.0	3.1	e40	e190	e325	e280
4	e.10	.00	.00	.00	.00	.04	2.6	3.2	e.00	e235	e325	e275
5	e.10	.00	.00	.00	.00	.00	2.6	2.9	e30	e250	e230	e275
6	e.10	.00	.00	.00	.00	.01	2.9	3.4	e150	e260	e210	e270
7	e.10	.00	.00	.00	.00	.07	2.2	3.0	e200	e260	e325	e260
8	e.10	.00	.00	.00	.00	.23	2.4	2.8	e45	e260	e315	e245
9	e.10	.01	.00	.00	.00	.14	1.1	2.5	e60	e260	e310	e315
10	e.10	.00	.00	.00	.00	.10	.43	2.5	e55	e260	e310	e330
11	e.10	.00	.00	.00	.00	.06	.67	2.9	e55	e260	e310	e315
12	e.10	.00	.00	.00	.00	.12	1.8	2.8	e50	e275	e310	e315
13	e.10	.00	.02	.00	.00	.23	2.7	2.9	e45	e280	e300	e310
14	e.10	.00	.00	.00	.00	.35	2.6	2.8	e90	e280	e290	e300
15	e.10	.00	.00	.00	.03	.47	2.4	3.1	e135	e280	e280	e300
16	e.10	.00	.00	.00	.06	.55	2.0	3.3	e135	e280	e265	e295
17	e.10	.00	.00	.00	.00	.82	2.6	3.0	e135	e280	e265	e270
18	e.10	.00	.00	.00	.00	.91	2.8	2.2	e135	e280	e265	e260
19	e.10	.00	.00	.00	.00	.91	2.5	e858	e135	e270	e265	e265
20	.00	.00	.00	.00	.00	1.1	3.1	e2885	e140	e260	e265	e260
21	.00	.00	.00	.00	.00	1.6	3.0	e1670	e120	e270	e265	e260
22	.00	.00	.00	.00	.00	1.4	1.5	e850	e130	e275	e265	e260
23	.00	.00	.00	.00	.00	1.5	1.6	e620	e165	e285	e275	e260
24	.00	.00	.00	.00	.00	1.9	1.3	e390	e180	e300	e290	e260
25	.00	.00	.00	.00	.02	1.6	1.1	e250	e180	e300	e290	e255
26	.00	.00	.00	.00	.10	2.2	1.4	e200	e180	e300	e290	e260
27	.00	.00	.00	.00	.13	3.4	1.3	e50	e180	e300	e290	e260
28	.00	.00	.00	.01	.34	2.9	1.6	e.00	e195	e300	e310	e260
29	.00	.00	.00	.00	---	2.5	1.8	e.00	e210	e300	e310	e260
30	.00	.00	.00	.02	---	3.1	2.4	e45	e175	e310	e300	e260
31	.00	---	.00	8.3	---	3.6	---	e40	---	e315	e290	---
TOTAL	1.90	6.01	0.02	8.33	4.58	32.80	63.60	7909.70	3495.00	8295	8990	8315
MEAN	.061	.20	.001	.27	.16	1.06	2.12	255	116	268	290	277
MAX	.10	6.0	.02	8.3	3.9	3.6	3.3	2880	210	315	325	330
MIN	.00	.00	.00	.00	.00	.00	.43	.00	.00	160	210	245
AC-FT	3.8	12	.04	17	9.1	65	126	15690	6930	16450	17830	16490

CAL YR 1990 TOTAL 20156.78 MEAN 55.2 MAX 311 MIN .00 AC-FT 39980
WTR YR 1991 TOTAL 37121.94 MEAN 102 MAX 2880 MIN .00 AC-FT 73630

e Estimated

UMATILLA RIVER BASIN

105

14026000 UMATILLA RIVER AT YOAKUM, OR

LOCATION.--Lat 45°40'38", long 119°02'09", in SW 1/4 SW 1/4 sec.2, T.2 N., R.30 E., Umatilla County, Hydrologic Unit 17070103, at left bank on downstream side of highway bridge, 0.5 mi northeast of Yoakum, 2.5 mi downstream from abandoned Furnish Reservoir, 12.0 mi downstream from Birch Creek, and at mile 37.7.

DRAINAGE AREA.--1,280 mi², approximately.

PERIOD OF RECORD.--May 1903 to September 1991 (discontinued). Records published as "above Furnish Reservoir, near Yoakum" October 1916 to September 1934 are equivalent. See REMARKS.

REVISED RECORDS.--WSP 794: 1906(M). WSP 1398: 1904-6, 1908-9, 1922-23, 1926, 1936.

GAGE.--Water-stage recorder. Datum of gage is 768.21 ft above National Geodetic Vertical Datum of 1929. See WSP 1318 or 1738 for history of changes prior to Oct. 21, 1948.

REMARKS.--Records good except for estimated daily discharges, which are fair. Slight regulation by Furnish Reservoir, capacity 3,900 acre-ft, beginning in 1910 and continuing until 1934 when reservoir filled with silt. Flow regulated to some extent since 1927 by McKay Reservoir (station 14023000). Many diversions for irrigation upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--88 years, 676 ft³/s, 489,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 20,000 ft³/s May 30, 1906, gage height, about 15.0 ft, site and datum then in use, from floodmarks, from rating curve extended about 6,600 ft³/s; minimum discharge, 12 ft³/s Aug. 10-12, 1908, Aug. 4, 1910.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 13,900 ft³/s May 20, gage height, 10.84 ft, from high-water mark; minimum discharge, 39 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	39	86	330	e130	285	749	938	1250	926	450	392	332
2	41	94	311	e120	272	778	1090	1190	848	408	393	329
3	45	89	282	e115	273	782	1170	1100	782	388	389	328
4	51	93	256	e115	269	843	1100	997	658	411	389	325
5	53	143	245	e115	290	1140	1120	929	601	423	461	323
6	49	193	233	e120	434	1200	1220	885	694	418	405	318
7	48	173	221	e120	555	1110	1150	884	1280	419	399	313
8	49	166	213	e120	590	991	1040	1110	1050	414	389	307
9	52	175	205	e120	613	924	1150	1330	958	403	364	322
10	49	183	208	e120	621	881	1620	1190	857	398	355	382
11	46	186	320	e200	629	814	1600	1080	768	390	355	364
12	49	173	535	716	629	765	1630	1010	700	389	355	362
13	53	159	493	1050	666	796	1650	965	629	398	352	364
14	57	158	422	895	1440	824	e1550	926	587	399	347	355
15	63	153	362	2690	2110	837	e1450	883	621	398	338	355
16	65	144	312	2310	1870	773	e1370	854	581	394	333	354
17	64	137	278	1520	1730	710	e1300	1140	541	396	325	334
18	64	135	e250	1480	1420	667	e1250	2920	499	399	320	332
19	66	132	e230	1320	1260	652	1200	e7200	468	398	319	320
20	65	131	e200	1060	1280	685	1170	e10800	481	384	319	319
21	64	132	e170	853	1530	680	1170	6610	485	364	316	314
22	82	134	e150	721	1670	683	1200	4340	438	362	314	311
23	104	135	e140	628	1450	673	1190	3090	430	365	312	310
24	87	146	e150	550	1200	683	1260	2400	442	366	316	305
25	80	181	e165	482	1020	820	1250	2020	440	377	329	299
26	77	443	e180	432	885	941	1120	1490	430	384	332	299
27	79	470	e170	388	807	969	1040	1130	411	384	332	301
28	79	400	e150	368	744	1050	1000	946	403	384	337	301
29	77	343	e130	346	---	997	1100	871	472	379	352	301
30	78	336	e130	332	---	912	1220	962	514	373	353	301
31	84	---	e140	307	---	874	---	1010	---	366	337	---
TOTAL	1959	5623	7581	19843	26542	26203	37318	63512	18994	12181	10929	9780
MEAN	63.2	187	245	640	948	845	1244	2049	633	393	353	326
MAX	104	470	535	2690	2110	1200	1650	10800	1280	450	461	382
MIN	39	86	130	115	269	652	938	854	403	362	312	299
AC-FT	3890	11150	15040	39360	52650	51970	74020	126000	37670	24160	21680	19400

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1904 - 1991, BY WATER YEAR (WY)

	MEAN	94.3	264	593	753	1024	1390	1783	1123	471	282	232	134
MAX	455	1539	2054	2761	3057	3654	4636	4786	1622	456	416	326	
(WY)	1928	1928	1965	1918	1982	1972	1904	1917	1917	1960	1959	1991	
MIN	40.0	58.0	75.7	82.0	115	413	358	230	47.6	19.7	18.7	22.2	
(WY)	1920	1918	1937	1937	1977	1977	1941	1926	1926	1914	1914	1935	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1904 - 1991

ANNUAL TOTAL	163091	240465	676
ANNUAL MEAN	447	659	1237
HIGHEST ANNUAL MEAN			248
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	2090	10800	18000
LOWEST DAILY MEAN	38	39	12
ANNUAL SEVEN-DAY MINIMUM	39	47	13
ANNUAL RUNOFF (AC-FT)	323500	477000	489800
10 PERCENT EXCEEDS	992	1250	1710
50 PERCENT EXCEEDS	316	398	358
90 PERCENT EXCEEDS	85	115	60

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 1.6 mi downstream from West Division main canal of Umatilla project, 1.2 mi southeast of Umatilla, 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 National Geodetic Vertical Datum of 1929. Oct. 21, 1903, to Jan. 25, 1931, nonrecording gage.

REMARKS.--Records fair. Some regulation since 1927 by McKay Reservoir (station 14023000). 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 radio telemeter at station.

AVERAGE DISCHARGE.--64 years (water years 1928-91), 460 ft³/s, 333,300 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)
Jan. 16	0145	4,410	5.77	May 20	1745	*13,300	*8.02

Minimum discharge, 1.2 ft³/s Aug. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	152	173	380	185	610	628	834	592	49	2.1	1.9
2	53	154	166	339	155	652	685	803	500	6.3	1.7	7.3
3	45	160	167	282	141	669	794	696	411	3.3	4.7	2.9
4	43	159	139	263	142	712	761	574	340	2.8	1.8	2.7
5	44	161	106	237	138	906	709	461	222	2.1	1.6	1.5
6	47	226	98	224	177	1100	802	387	193	2.5	44	1.6
7	50	257	100	212	381	1050	782	592	449	2.1	58	5.1
8	52	242	97	217	451	939	640	639	637	2.4	39	14
9	69	239	97	217	488	837	521	1020	468	2.4	19	41
10	81	244	104	218	520	795	999	786	387	2.6	2.8	47
11	69	255	79	225	496	742	1170	692	300	2.7	3.1	133
12	61	250	284	539	440	647	1150	616	271	2.5	1.6	119
13	62	236	422	1280	453	653	1170	556	204	2.5	1.6	103
14	86	219	367	1200	811	669	1130	495	149	4.2	2.5	123
15	99	221	280	1970	2080	721	1050	461	104	3.3	1.6	128
16	117	213	243	3140	1890	672	964	497	111	3.1	1.6	145
17	121	205	206	1790	1770	590	876	628	102	24	1.9	143
18	125	199	176	1440	1460	526	815	2200	98	7.9	1.7	112
19	125	191	162	1390	1210	475	709	4480	75	3.0	1.6	115
20	123	147	e150	1160	1170	482	656	12200	48	2.4	1.7	103
21	122	99	e140	927	1300	433	648	10800	56	2.1	2.2	108
22	124	91	e140	770	1610	447	666	5250	93	2.0	1.5	110
23	139	90	e200	640	1470	472	694	3560	58	7.2	1.3	106
24	158	87	e250	475	1220	485	741	2590	32	5.3	1.7	107
25	146	89	e300	370	1010	593	799	2020	31	2.4	1.5	127
26	137	141	e350	288	855	687	680	1630	37	3.6	1.6	123
27	135	382	e300	242	750	770	570	1160	38	5.2	1.6	149
28	138	306	e280	194	638	821	548	848	25	6.3	2.4	165
29	137	234	e250	230	---	826	602	630	5.1	6.1	1.7	160
30	143	182	e300	277	---	713	821	524	65	5.5	1.5	164
31	150	---	e400	234	---	649	---	638	---	5.5	1.8	---
TOTAL	3027	5831	6526	21370	23411	21343	23780	59267	6101.1	182.3	212.4	2668.0
MEAN	97.6	194	211	689	836	688	793	1912	203	5.88	6.85	88.9
MAX	158	382	422	3140	2080	1100	1170	12200	637	49	58	165
MIN	26	87	79	194	138	433	521	387	5.1	2.0	1.3	1.5
AC-FT	6000	11570	12940	42390	46440	42330	47170	117600	12100	362	421	5290

CAL YR 1990 TOTAL 95872.6 MEAN 263 MAX 1880 MIN 1.3 AC-FT 190200
WTR YR 1991 TOTAL 173718.8 MEAN 476 MAX 12200 MIN 1.3 AC-FT 344600

e Estimated

WILLOW CREEK BASIN

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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 National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

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

AVERAGE DISCHARGE.--9 years, 22.0 ft³/s, 15,940 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 445 ft³/s Mar. 4, 1983, gage height, 6.93 ft; minimum discharge, 0.01 ft³/s July 31 to Sept. 14, 1988, 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 17	2115	*243	*7.16	No other peak greater than base discharge.			
Minimum discharge, 0.09 ft ³ /s Oct. 1, 2.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.09	1.5	4.4	4.3	7.2	22	e53	e38	26	15	1.7	.61
2	.10	1.5	3.9	4.1	7.5	21	e60	e36	22	14	2.1	1.1
3	.12	1.5	4.3	3.8	8.3	28	67	32	19	13	2.0	1.3
4	.15	1.5	4.1	3.6	8.5	46	e62	31	19	12	1.8	1.5
5	.27	1.9	3.9	3.4	11	63	e62	30	20	12	2.2	1.5
6	.38	2.3	3.7	3.3	10	55	e62	30	26	11	2.7	1.2
7	.41	2.2	3.5	3.7	9.8	48	e62	32	24	9.7	2.7	.90
8	.50	2.9	4.0	4.3	9.8	43	e58	e31	21	9.3	2.5	.96
9	.57	3.2	4.0	4.3	9.8	40	e70	e30	19	8.7	2.0	.92
10	.57	3.7	5.1	6.0	9.9	40	e64	e34	16	8.3	1.9	.94
11	.69	3.8	7.2	8.5	10	36	e64	e36	16	7.7	2.0	.68
12	.66	4.2	6.1	10	11	33	e63	e38	16	6.9	1.6	.67
13	.72	3.7	5.6	12	30	31	e60	e36	14	5.8	2.2	.75
14	.69	3.7	5.1	11	46	28	e56	e32	14	5.3	2.3	.74
15	.74	3.7	4.5	17	45	26	e55	e32	14	3.2	1.7	.75
16	.72	3.6	4.6	e16	47	24	e62	39	14	1.7	1.5	.64
17	1.4	3.5	5.0	e14	43	22	e65	109	12	3.4	1.1	.66
18	1.5	3.4	5.3	e13	36	22	e62	182	12	3.6	1.7	.73
19	1.5	3.4	4.1	e12	36	25	e58	163	13	2.6	2.2	.82
20	1.5	3.5	e2.4	e11	34	27	e56	135	19	3.0	2.0	.93
21	1.6	3.3	e2.0	e10	35	29	e55	112	19	2.6	1.3	.89
22	1.7	3.2	e2.0	e9.4	33	32	e54	88	16	2.8	.69	.82
23	1.7	3.1	e2.1	e8.6	30	30	e56	70	16	2.4	.67	.72
24	1.7	3.2	e2.2	e8.0	27	29	e64	59	15	2.9	.93	.70
25	1.6	4.3	2.5	e7.6	24	29	e60	51	14	3.7	1.2	.69
26	1.5	4.7	2.9	e7.2	22	31	e58	45	14	4.3	.81	.69
27	1.6	4.3	4.0	e7.0	21	33	e54	39	13	4.0	1.3	.72
28	1.6	4.0	4.1	e6.8	20	47	e52	34	14	3.7	1.4	.74
29	1.6	3.9	e3.8	e6.6	---	e80	e46	32	19	3.0	1.3	.80
30	1.7	4.5	4.0	e6.8	---	e70	e42	33	16	2.2	.61	.77
31	1.8	---	4.1	e7.0	---	e60	---	29	---	2.1	.56	---
TOTAL	31.38	97.2	124.5	250.3	641.8	1150	1762	1718	512	189.9	50.67	25.84
MEAN	1.01	3.24	4.02	8.07	22.9	37.1	58.7	55.4	17.1	6.13	1.63	.86
MAX	1.8	4.7	7.2	17	47	80	70	182	26	15	2.7	1.5
MIN	.09	1.5	2.0	3.3	7.2	21	42	29	12	1.7	.56	.61
AC-FT	62	193	247	496	1270	2280	3490	3410	1020	377	101	51

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1991, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	3.90	8.73	13.1	18.6	35.0	61.6	55.7	44.6	17.0
MAX	7.10	21.2	29.8	53.1	95.5	109	116	102	55.4
(WY)	1983	1984	1984	1984	1986	1983	1984	1983	1984
MIN	.20	2.79	4.02	6.68	8.07	9.81	19.7	17.1	5.22
(WY)	1989	1988	1991	1990	1988	1988	1990	1986	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1983 - 1991

ANNUAL TOTAL	3174.29	6553.59	22.0
ANNUAL MEAN	8.70	18.0	44.3
HIGHEST ANNUAL MEAN			8.99
LOWEST ANNUAL MEAN			
HIGHEST DAILY MEAN	121	182	300
LOWEST DAILY MEAN	.02	.09	.01
ANNUAL SEVEN-DAY MINIMUM	.02	.22	.01
ANNUAL RUNOFF (AC-FT)	6300	13000	15930
10 PERCENT EXCEEDS	22	55	63
50 PERCENT EXCEEDS	4.3	6.8	8.8
90 PERCENT EXCEEDS	.13	.79	.55

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 National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

REMARKS.--Records fair. Diversion for irrigation of about 170 acres upstream from station.

AVERAGE DISCHARGE.--9 years, 2.74 ft³/s, 1,990 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; no flow for part or all of several days in 1982, 1990, 1991.

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 18	1015	*30	*4.12				
No flow part or all of several days during year.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.01	.02	.04	.04	.56	1.6	6.9	1.9	2.0	.48	.06	.01
2	.01	.02	.04	.04	.58	1.5	5.2	1.9	2.1	.53	.06	.01
3	.01	.02	.04	.04	.59	1.6	3.5	1.7	1.9	.49	.05	.00
4	.01	.02	.04	.04	.64	1.6	3.2	1.5	1.8	.45	.05	.00
5	.01	.02	.04	.04	.64	1.5	2.7	1.4	1.8	.40	.04	.01
6	.01	.02	.04	.03	.68	1.8	3.1	1.4	1.9	.38	.03	.01
7	.01	.02	.04	.04	.72	1.9	3.2	1.4	1.9	.38	.03	.01
8	.01	.02	.04	.04	.78	1.9	3.0	1.5	1.7	.35	.02	.02
9	.01	.02	.04	.04	.80	1.9	2.9	1.4	1.5	.32	.02	.02
10	.01	.02	.06	.80	.85	2.1	2.9	1.3	1.4	.25	.02	.02
11	.01	.02	.05	.50	.88	2.7	2.9	1.5	1.4	.22	.02	.01
12	.01	.02	.05	.29	.95	2.7	3.3	1.3	1.2	.20	.03	.01
13	.01	.02	.05	.23	1.2	2.6	3.2	1.2	.97	.20	.03	.01
14	.01	.02	.06	.22	1.2	2.6	3.3	1.2	1.2	.17	.03	.01
15	.01	.02	.05	.39	1.6	2.9	3.4	1.2	1.8	.17	.03	.01
16	.01	.02	.05	.27	1.8	3.5	3.4	1.5	1.6	.21	.03	.01
17	.01	.02	.06	.26	1.9	3.3	3.2	2.4	1.5	.25	.03	.01
18	.01	.02	.06	.28	1.6	2.9	2.9	18	1.4	.25	.02	.00
19	.01	.02	.06	.27	.85	2.9	2.6	16	1.1	.21	.02	.00
20	.01	.02	e.04	.28	1.0	3.0	2.3	15	1.2	.19	.02	.00
21	.01	.02	e.02	.31	.94	3.3	2.4	12	1.1	.16	.02	.00
22	.01	.02	e.01	.36	1.1	3.6	2.6	9.7	.97	.13	.01	.00
23	.01	.03	e.01	.37	1.3	4.1	2.7	7.8	.90	.14	.01	.00
24	.01	.03	e.01	.38	1.4	3.9	3.0	6.6	.89	.14	.01	.00
25	.01	.04	.00	.39	1.3	2.9	3.0	5.2	.91	.14	.01	.00
26	.01	.03	e.01	.40	1.3	3.4	2.7	2.5	.89	.14	.01	.00
27	.01	.03	e.01	.42	1.5	4.2	2.6	2.2	.70	.14	.01	.00
28	.01	.03	.05	.46	1.4	8.6	2.2	1.4	.70	.12	.01	.00
29	.01	.04	.04	.49	---	7.7	2.2	2.1	.60	.10	.01	.00
30	.01	.04	.04	.50	---	8.0	2.0	2.1	.53	.08	.01	.00
31	.02	---	.04	.53	---	7.6	---	2.0	---	.07	.01	---
TOTAL	0.32	0.71	1.19	8.75	30.06	103.8	92.5	128.3	39.56	7.45	0.76	0.18
MEAN	.010	.024	.038	.28	1.07	3.35	3.08	4.14	1.32	.24	.025	.006
MAX	.02	.04	.06	.80	1.9	8.6	6.9	18	2.1	.53	.06	.02
MIN	.01	.02	.00	.03	.56	1.5	2.0	1.2	.53	.07	.01	.00
AC-FT	.6	1.4	2.4	17	60	206	183	254	78	15	1.5	.4

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1991, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	.50	1.13	2.19	3.07	5.96	9.20	4.79	3.96	1.34
MAX	1.53	3.01	4.60	7.81	17.1	19.9	16.4	10.4	3.82
(WY)	1985	1987	1984	1984	1986	1984	1983	1984	1984
MIN	.010	.024	.038	.28	.66	.58	.37	.52	.46
(WY)	1991	1991	1991	1991	1990	1990	1990	1990	1989

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1983 - 1991

ANNUAL TOTAL	107.32	413.58	2.74
ANNUAL MEAN	.29	1.13	6.15
HIGHEST ANNUAL MEAN			.40
LOWEST ANNUAL MEAN			80
HIGHEST DAILY MEAN	1.2	May 14	18
LOWEST DAILY MEAN	.00	Dec 25	.00
ANNUAL SEVEN-DAY MINIMUM	.01	Sep 30	.00
ANNUAL RUNOFF (AC-FT)	213	820	1990
10 PERCENT EXCEEDS	.67	2.9	7.4
50 PERCENT EXCEEDS	.27	.23	.95
90 PERCENT EXCEEDS	.01	.01	.06

WILLOW CREEK BASIN

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14034490 WILLOW CREEK LAKE AT HEPPNER, 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 National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to Dec. 22, 1983, nonrecording gage at nearby site at present datum.

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.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 6,200 acre-ft June 11-13, 1988, elevation, 2,076.16 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 4,990 acre-ft May 22, elevation, 2,067.98 ft; minimum contents, 3,230 acre-ft Nov. 24, 25, elevation, 2,053.76 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2056.13	2054.39	2053.81	2053.96	2056.78	2062.07	2064.10	2061.93	---	2063.35	2061.46	2060.38
2	2056.06	2054.32	2053.82	2053.97	2056.84	2062.20	2064.15	2062.06	---	2063.32	2061.43	2060.34
3	2056.02	2054.29	2053.83	2053.97	2056.91	2062.37	2063.96	2062.17	2064.03	2063.26	2061.43	2060.31
4	2055.93	2054.21	2053.82	2053.97	2057.03	2062.76	2063.73	2062.27	2063.75	2063.18	2061.36	2060.27
5	2055.86	2054.15	2053.82	2053.97	2057.09	2063.26	2063.51	2062.36	2063.55	2063.10	2061.33	2060.24
6	2055.80	2054.11	2053.82	2053.97	2057.17	2063.49	2063.33	2062.47	2063.59	2062.99	2061.31	2060.20
7	2055.73	2054.07	2053.82	2053.97	2057.27	2063.54	2063.10	2062.62	2063.63	2062.87	2061.30	2060.14
8	2055.68	2054.04	2053.81	2053.97	2057.36	2063.54	2062.94	2062.87	2063.62	2062.78	2061.27	2060.11
9	2055.63	2053.99	2053.82	2053.97	2057.48	2063.47	2062.98	2063.01	2063.56	2062.68	2061.21	2060.05
10	2055.56	2053.96	2053.85	2053.99	2057.58	2063.46	2063.01	2063.08	2063.44	2062.61	2061.17	2060.01
11	2055.51	2053.95	2053.92	2054.08	2057.71	2063.41	2063.03	2063.22	2063.30	2062.53	2061.14	2059.97
12	2055.44	2053.94	2053.94	2054.17	2057.85	2063.38	2063.10	2063.33	2063.18	2062.45	2061.10	2059.93
13	2055.39	2053.93	2053.96	2054.27	2058.27	2063.42	2063.19	2063.46	2063.01	2062.33	2061.08	2059.87
14	2055.34	2053.91	2053.99	2054.40	2058.78	2063.49	2063.26	2063.51	2062.86	2062.22	2061.05	2059.83
15	2055.30	2053.90	2054.02	2054.62	2059.14	2063.59	2063.28	2063.49	2062.72	2062.11	2061.03	2059.78
16	2055.23	2053.89	2054.02	2054.90	2059.52	2063.65	2063.41	2063.51	2062.56	2062.02	2061.00	2059.75
17	2055.18	2053.89	2054.03	2055.10	2059.80	2063.71	2063.48	2063.88	2062.47	2061.95	2060.98	2059.70
18	2055.13	2053.88	2054.05	2055.32	2060.09	2063.74	2063.43	---	2062.47	2061.90	2060.99	2059.66
19	2055.07	2053.87	2054.05	2055.52	2060.34	2063.77	2063.35	---	2062.51	2061.80	2060.94	2059.63
20	2055.02	2053.81	2054.04	2055.68	2060.52	2063.88	2063.23	---	2062.65	2061.72	2060.91	2059.57
21	2054.98	2053.80	2054.04	2055.79	2060.78	2063.96	2063.13	2067.84	2062.78	2061.64	2060.87	2059.52
22	2054.93	2053.79	2054.03	2055.92	2061.02	2063.98	2062.99	2067.96	2062.86	2061.59	2060.82	2059.48
23	2054.87	2053.77	2054.02	2056.06	2061.25	2064.00	2062.95	2067.81	2062.93	2061.58	2060.76	2059.44
24	2054.82	2053.76	2054.00	2056.16	2061.43	2063.93	2062.97	2067.45	2062.98	2061.57	2060.71	2059.41
25	2054.76	2053.77	2054.00	2056.28	2061.57	2063.87	2062.95	2066.95	2063.01	2061.56	2060.66	2059.37
26	2054.71	2053.78	2053.96	2056.31	2061.71	2063.84	2062.82	2066.33	2063.05	2061.56	2060.62	2059.34
27	2054.64	2053.80	2053.95	2056.39	2061.82	2063.81	2062.64	2065.60	2063.07	2061.56	2060.59	2059.30
28	2054.59	2053.81	2053.96	2056.46	2061.92	2063.88	2062.40	2064.89	2063.14	2061.57	2060.55	2059.26
29	2054.53	2053.80	2053.95	2056.50	---	2064.00	2062.13	2064.65	2063.24	2061.55	2060.52	2059.22
30	2054.50	2053.81	2053.96	2056.60	---	2064.04	2061.91	2064.65	2063.33	2061.53	2060.48	2059.19
31	2054.45	---	2053.96	2056.68	---	2064.04	---	2064.60	---	2061.49	2060.43	---
MAX	2056.13	2054.39	2054.05	2056.68	2061.92	2064.04	2064.15	---	---	2063.35	2061.46	2060.38
MIN	2054.45	2053.76	2053.81	2053.96	2056.78	2062.07	2061.91	---	---	2061.49	2060.43	2059.19
(†)	3310	3240	3250	3560	4190	4460	4190	4530	4370	4140	4000	3850
(‡)	-190	-70	+10	+310	+630	+270	-270	+340	-160	-230	-140	-150

CAL YR 1990 MAX 2064.47 MIN 2053.76 AC-FT† -720
WTR YR 1991 MAX -- MIN -- AC-FT† +350

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

WILLOW CREEK BASIN

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14034800 RHEA CREEK NEAR HEPPNER, OR

LOCATION.--Lat 45°15'46", long 119°36'51", in NW 1/4 SW 1/4 sec.32, T.3 S., R.26 E., Morrow County, Hydrologic Unit 17070104, on left bank 150 ft downstream from road bridge, 0.8 mi downstream from Sanford Canyon, 8 mi southwest of Heppner, and at mile 25.6. Prior to Nov. 4, 1982, at site 1,000 ft downstream.

DRAINAGE AREA.--120 mi², approximately.

PERIOD OF RECORD.--August 1960 to September 1991 (discontinued). See REMARKS.

REVISED RECORD.--WDR OR-84-1: 1983.

GAGE.--Water-stage recorder. Elevation of gage is 2,320 ft, from topographic map. Prior to May 28, 1976, at site 0.6 mi downstream at different datum and May 28, 1976 to Nov. 3, 1982, at site 1,000 ft downstream at datum 10.5 ft lower.

REMARKS.--Records poor. No regulation. Many diversions for irrigation upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--31 years, 22.3 ft³/s, 16,160 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,280 ft³/s June 10, 1969, gage height, 7.05 ft, site and datum then in use, from rating curve extended above 130 ft³/s on basis of slope-area measurement at gage height 6.72 ft; maximum gage height, 7.41 ft Dec. 22, 1964, site and datum then in use; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 230 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	0930	*129	*3.09				
Minimum discharge, 0.26 ft ³ /s Oct. 1, 2, result of diversion upstream.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	20	5.2	.82	5.1	18	47	22	17	17	3.4	2.1
2	1.6	18	4.9	.75	6.8	18	46	21	16	16	3.3	2.3
3	3.3	17	5.7	.73	8.7	24	43	19	15	14	3.0	2.2
4	3.6	18	5.1	.71	9.1	31	40	19	14	13	3.0	2.0
5	3.8	21	4.3	.69	15	54	39	18	16	13	3.4	1.8
6	6.6	19	3.3	.66	12	51	39	18	18	13	5.1	1.6
7	5.8	19	4.3	.69	11	47	39	19	16	12	4.5	1.6
8	5.9	19	4.7	.78	11	42	36	26	15	12	3.9	2.6
9	5.9	19	4.7	.81	11	41	40	22	14	12	3.5	3.3
10	5.9	18	7.6	2.3	11	43	37	22	13	11	3.8	3.9
11	6.1	17	10	5.6	11	41	37	24	13	11	3.5	3.9
12	6.2	17	5.1	9.9	12	40	36	26	13	11	3.6	3.1
13	6.5	17	4.9	9.8	29	40	34	27	13	11	3.2	2.3
14	7.8	18	3.4	7.6	42	39	31	26	13	10	3.3	3.6
15	9.4	13	2.4	15	37	36	31	23	12	10	3.2	3.9
16	9.4	12	3.0	13	36	32	37	24	12	11	3.2	3.6
17	9.9	12	3.6	13	32	29	37	43	12	14	3.1	3.5
18	10	13	4.3	13	28	29	35	110	12	13	3.0	3.6
19	13	13	e1.7	9.8	29	34	34	109	12	11	3.9	3.8
20	10	13	e1.2	9.0	26	39	32	119	14	10	3.7	3.6
21	11	12	e1.0	e8.4	25	43	31	94	13	9.7	3.2	3.6
22	15	11	e.82	e8.0	24	44	31	70	13	7.8	2.7	4.2
23	13	10	e.70	e7.6	22	42	32	52	13	4.5	2.7	4.5
24	12	7.4	e.74	e7.8	20	41	36	41	12	4.6	2.9	3.3
25	12	9.6	e.80	e7.8	19	40	33	35	12	6.0	3.0	1.8
26	12	11	e1.1	e7.2	17	42	32	30	11	5.0	3.3	1.5
27	13	8.5	e2.5	e6.6	17	46	31	27	11	4.5	2.7	1.5
28	13	7.0	e2.7	e6.0	16	58	29	24	12	4.3	3.1	2.8
29	14	6.6	e3.2	e5.6	---	52	27	22	23	3.9	3.5	5.8
30	15	8.6	3.1	5.1	---	50	24	21	19	3.7	2.7	4.6
31	19	---	1.0	4.7	---	48	---	19	---	3.4	2.2	---
TOTAL	280.8	424.7	107.06	189.44	542.7	1234	1056	1172	419	302.4	102.6	91.9
MEAN	9.06	14.2	3.45	6.11	19.4	39.8	35.2	37.8	14.0	9.75	3.31	3.06
MAX	19	21	10	15	42	58	47	119	23	17	5.1	5.8
MIN	1.1	6.6	.70	.66	5.1	18	24	18	11	3.4	2.2	1.5
AC-FT	557	842	212	376	1080	2450	2090	2320	831	600	204	182

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1991, BY WATER YEAR (WY)

	4.04	9.01	22.7	35.9	44.1	56.7	46.9	30.5	11.5	3.85	2.01	2.27
MEAN	4.04	9.01	22.7	35.9	44.1	56.7	46.9	30.5	11.5	3.85	2.01	2.27
MAX	12.5	48.5	86.7	124	132	201	155	90.6	52.1	19.8	9.69	10.3
(WY)	1985	1974	1974	1974	1986	1983	1984	1983	1984	1984	1984	1984
MIN	.79	2.49	2.85	3.18	3.23	7.24	4.69	2.44	.66	.051	.000	.18
(WY)	1977	1977	1977	1977	1977	1968	1968	1968	1973	1973	1973	1967

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1961 - 1991

ANNUAL TOTAL	3617.06	5922.60	
ANNUAL MEAN	9.91	16.2	
HIGHEST ANNUAL MEAN			22.3
LOWEST ANNUAL MEAN			59.0
HIGHEST DAILY MEAN	34	Mar 11	803
LOWEST DAILY MEAN	.19	Aug 13	3.64
ANNUAL SEVEN-DAY MINIMUM	.20	Aug 8	.00
ANNUAL RUNOFF (AC-FT)	7170	11750	.00
10 PERCENT EXCEEDS	19	39	16180
50 PERCENT EXCEEDS	9.0	12	59
90 PERCENT EXCEEDS	.81	2.7	7.9
			.81

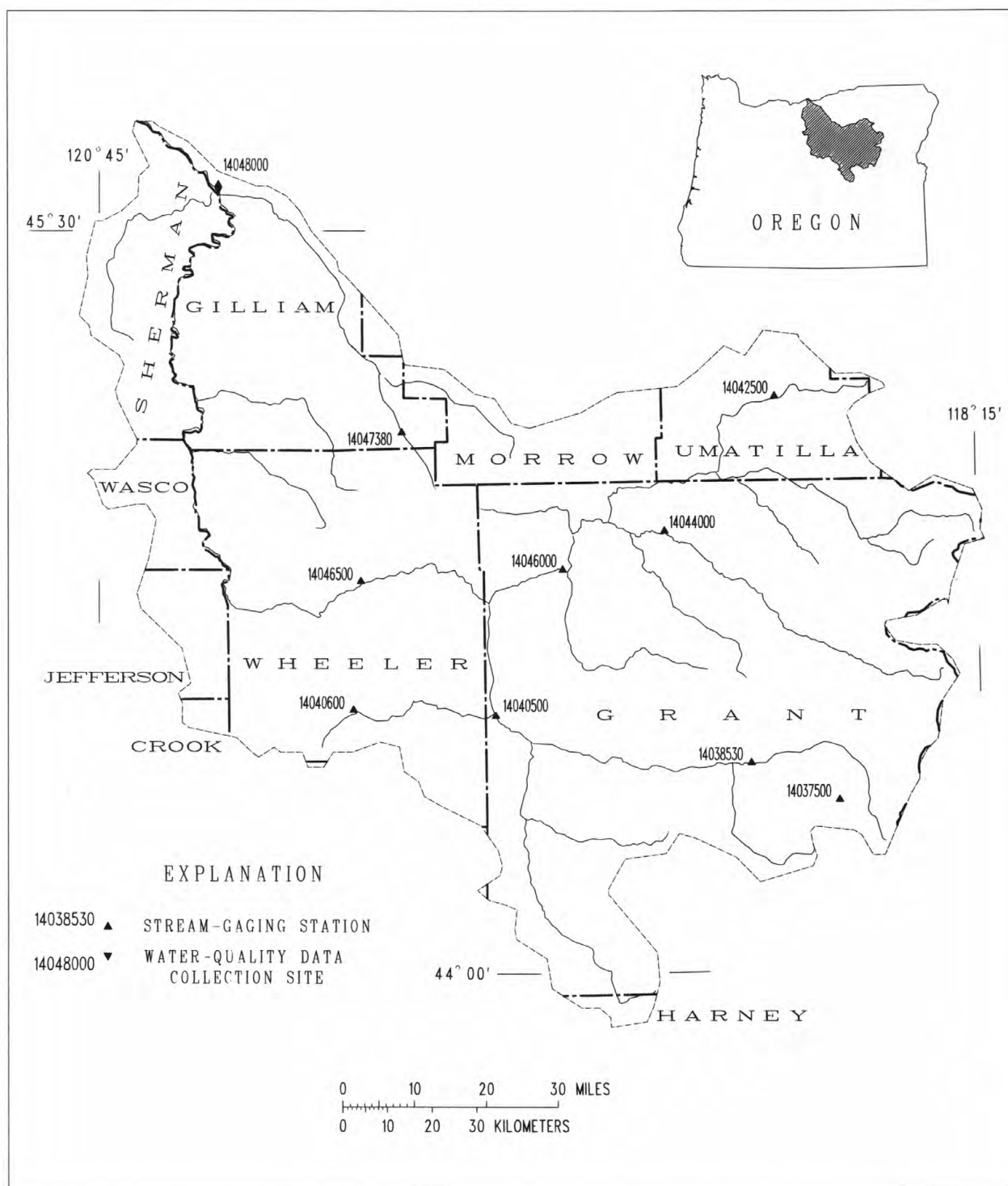


Figure 7.--Location of surface-water and water-quality stations in the John Day River basin.

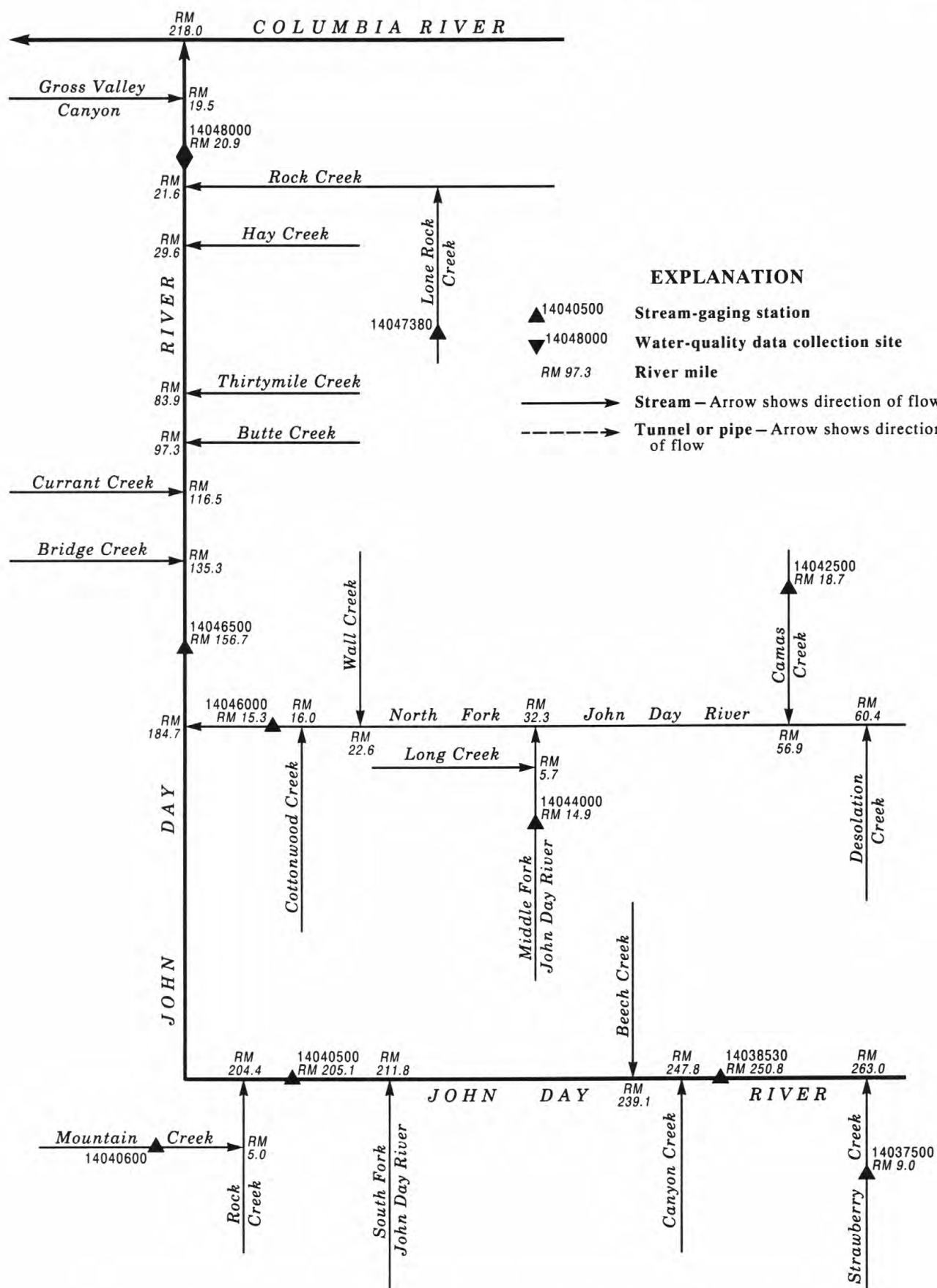


Figure 8.--Schematic diagram showing gaging stations in John Day River basin.

JOHN DAY RIVER BASIN

14037500 STRAWBERRY CREEK ABOVE SLIDE CREEK, NEAR PRAIRIE CITY, OR

LOCATION.--Lat 44°20'30", long 118°39'20", in SE 1/4 NW 1/4 sec.20, T.14 S., R.34 E., Grant County, Hydrologic Unit 17070201, on left bank 100 ft upstream from Slide Creek, 8.5 mi south of Prairie City, and at mile 9.0.

DRAINAGE AREA.--7.00 mi².

PERIOD OF RECORD.--October 1930 to September 1991 (discontinued). Prior to October 1944, published as "above South Fork, near Prairie City." See REMARKS.

REVISED RECORDS.--WSP 1488: 1932-33. WSP 1738: Drainage area.

GAGE.--Water-stage recorder and log control. Datum of gage is 4,909.57 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. Flow affected by natural storage in Strawberry Lake. No diversion upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--61 years, 12.7 ft³/s, 24.64 in/yr, 9,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.—Maximum discharge, 354 ft³/s May 31, 1983, gage height, 2.45 ft, from rating curve extended above 190 ft³/s; maximum gage height, 3.23 ft May 24, 1956 (backwater from logs); minimum discharge, 1.0 ft³/s Mar. 20, 1955.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 97 ft³/s June 12, gage height, 1.76 ft; minimum daily discharge, 1.4 ft³/s Feb. 6-11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.4	2.1	2.4	e1.9	1.7	2.1	2.2	4.6	23	47	10	3.5
2	2.4	2.1	2.4	e2.0	1.6	2.1	2.6	4.6	27	48	9.8	3.5
3	2.4	2.3	2.4	e2.0	1.5	2.2	2.8	4.7	32	50	9.8	3.5
4	2.4	2.8	2.4	e1.9	1.5	2.2	3.4	5.1	33	53	9.6	3.4
5	2.4	2.7	2.4	e1.8	1.6	2.4	3.7	5.5	34	54	9.2	3.2
6	2.4	2.6	2.1	e1.9	1.4	2.4	3.9	6.4	36	50	8.8	3.2
7	2.2	2.8	2.1	e2.1	1.4	2.4	3.9	7.2	38	42	8.2	3.2
8	2.1	2.9	2.1	e2.1	1.4	2.3	3.9	16	37	36	7.7	3.2
9	2.1	2.9	2.2	e2.1	1.4	2.1	3.8	16	38	32	7.3	3.1
10	2.1	2.9	2.5	e2.3	1.4	2.1	3.5	13	40	28	7.2	2.9
11	2.2	2.9	2.4	e2.4	1.4	2.1	3.3	12	57	25	6.8	2.8
12	2.1	2.9	2.3	2.1	1.5	2.1	3.2	11	83	23	6.5	2.7
13	2.1	2.7	2.4	1.9	1.8	1.9	3.1	11	90	20	6.3	2.7
14	2.2	2.7	2.4	1.9	1.9	1.9	3.2	12	77	19	5.9	2.7
15	2.1	2.5	2.4	1.9	2.1	1.9	3.2	12	63	17	5.9	2.7
16	2.1	2.4	2.4	1.9	2.4	2.0	3.2	13	55	17	5.7	2.7
17	2.1	2.4	2.3	1.9	2.4	1.9	3.2	18	51	16	5.4	2.7
18	2.3	2.4	2.2	1.7	2.4	1.9	3.1	20	48	15	5.3	2.7
19	2.0	2.4	e2.2	1.7	2.4	1.9	2.9	22	48	14	5.0	2.6
20	1.9	2.4	e2.1	1.7	2.3	1.9	3.1	25	47	14	4.8	2.5
21	2.4	2.4	e2.0	1.8	2.4	1.9	3.4	24	46	14	4.6	2.4
22	2.5	2.4	e1.8	1.7	2.4	1.9	4.0	25	45	13	4.6	2.4
23	2.4	2.4	e1.6	1.7	2.4	1.9	4.5	26	45	13	4.6	2.4
24	2.4	2.4	e1.6	1.7	2.4	1.9	5.3	26	46	13	4.5	2.4
25	2.4	2.5	e1.7	1.7	2.4	1.9	5.4	27	47	12	4.2	2.4
26	2.4	2.4	e1.8	2.7	2.4	1.9	5.1	26	46	12	4.2	2.4
27	2.4	2.4	e1.9	2.1	2.1	1.9	4.8	24	45	12	4.0	2.4
28	2.4	2.4	e2.1	1.8	2.1	1.9	4.6	23	45	12	3.9	2.4
29	2.1	2.4	e2.0	1.7	---	1.9	4.6	23	45	11	3.7	2.4
30	2.1	2.4	e1.7	1.7	---	1.8	4.6	23	46	11	3.5	2.3
31	2.3	---	e1.7	1.7	---	2.0	---	23	---	11	3.5	---
TOTAL	69.8	75.9	66.0	59.5	54.1	62.7	111.5	509.1	1413	754	190.5	83.4
MEAN	2.25	2.53	2.13	1.92	1.93	2.02	3.72	16.4	47.1	24.3	6.15	2.78
MAX	2.5	2.9	2.5	2.7	2.4	2.4	5.4	27	90	54	10	3.5
MIN	1.9	2.1	1.6	1.7	1.4	1.8	2.2	4.6	23	11	3.5	2.3
AC-FT	138	151	131	118	107	124	221	1010	2800	1500	378	165
CFSM	.32	.36	.30	.27	.28	.29	.53	2.35	6.73	3.47	.88	.40
IN.	.37	.40	.35	.32	.29	.33	.59	2.71	7.51	4.01	1.01	.40

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1932 - 1991, BY WATER YEAR (WY)

MEAN	3.26	3.57	4.08	3.59	3.45	3.78	9.44	36.5	53.3	21.6	7.33	4.01
MAX	7.03	10.6	14.4	8.40	12.9	16.0	22.5	71.4	130	65.3	15.4	7.07
(WY)	1963	1974	1938	1965	1963	1986	1934	1956	1974	1984	1984	1984
MIN	1.44	1.67	1.62	1.69	1.46	1.32	1.86	9.59	16.4	6.65	2.75	2.14
(WY)	1932	1988	1932	1932	1937	1955	1955	1977	1934	1977	1977	1977

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1932 - 1991
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ANNUAL TOTAL	3121.6			3449.5					
ANNUAL MEAN	8.55			9.45			12.8		
HIGHEST ANNUAL MEAN							22.2		1974
LOWEST ANNUAL MEAN							4.82		1977
HIGHEST DAILY MEAN	35	Jun 1		90	Jun 13		215	Jun 1	1983
LOWEST DAILY MEAN	1.6	Dec 23		1.4	Feb 6		1.2	Feb 25	1955
ANNUAL SEVEN-DAY MINIMUM	1.8	Dec 21		1.4	Feb 6		1.2	Mar 12	1955
ANNUAL RUNOFF (AC-FT)	6190			6840			9300		
ANNUAL RUNOFF (CFSM)	1.22			1.35			1.83		
ANNUAL RUNOFF (INCHES)	16.59			18.33			24.93		
10 PERCENT EXCEEDS	24			32			38		
50 PERCENT EXCEEDS	2.9			2.6			4.5		
90 PERCENT EXCEEDS	2.1			1.9			2.2		

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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 17070201, on left bank 1,200 ft downstream from Dog Creek, 2.5 mi east of John Day, and at mile 250.8.

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

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1991, BY WATER YEAR (WY)

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1969 - 1991	
ANNUAL TOTAL	42679		63478			
ANNUAL MEAN	117		174		208	
HIGHEST ANNUAL MEAN					393	1984
LOWEST ANNUAL MEAN					73.5	1977
HIGHEST DAILY MEAN	617	Apr 28	2640	May 19	2640	May 19 1991
LOWEST DAILY MEAN	13	Sep 13	14	Aug 30	3.5	Aug 27 1969
ANNUAL SEVEN-DAY MINIMUM	15	Sep 9	16	Aug 26	4.3	Aug 24 1969
ANNUAL RUNOFF (AC-FT)	84650		125900		150600	
10 PERCENT EXCEEDS	225		361		466	
50 PERCENT EXCEEDS	100		123		133	
90 PERCENT EXCEEDS	25		29		40	

14040500 JOHN DAY RIVER AT PICTURE GORGE, NEAR DAYVILLE, OR

LOCATION.--Lat 44°31'15", long 119°37'30", in SW 1/4 sec.17, T.12 S., R.26 E., Grant County, Hydrologic Unit 17070201, on right bank 0.7 mi upstream from Rock Creek, 5.5 mi northwest of Dayville, and at mile 205.1.

DRAINAGE AREA.--1,680 mi², approximately.

PERIOD OF RECORD.--April 1926 to September 1991, (discontinued). Monthly discharge only April 1926, published in WSP 1318. See REMARKS.

REVISED RECORDS.--WSP 1218: 1950. WSP 1348: Drainage area. WSP 1448: 1926, 1928, 1932 (M), 1936.

GAGE.--Water-stage recorder. Datum of gage is 2,229.84 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 11, 1926, nonrecording gage and Oct. 11, 1926, to Sept. 30, 1930, water-stage recorder at same site at datum 2.50 ft higher. Oct. 1, 1930, to Aug. 28, 1970, at datum 2.00 ft higher.

REMARKS.--Records good except except for estimated daily discharges, which are fair. No regulation. Many diversions for irrigation upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--65 years, 494 ft³/s, 357,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,170 ft³/s Dec. 22, 1964, gage height, 14.97 ft; minimum discharge, 1.0 ft³/s for several days in August and September 1930, Aug. 8, 9, 1936, Sept. 9, 1966.

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)
May 20	1100	*6,360	*12.47	No other peak greater than base discharge.			
Minimum discharge, 9.9 ft ³ /s Sept. 7.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	182	191	e250	211	343	423	538	997	626	68	24
2	26	179	182	e210	207	354	474	507	930	546	65	24
3	27	174	182	e170	237	352	508	489	922	497	54	24
4	30	176	181	e150	251	391	527	469	873	450	47	24
5	34	204	187	e130	288	455	570	448	948	404	50	13
6	45	210	181	e130	315	443	582	466	1050	365	58	12
7	82	194	173	e170	272	422	575	503	1020	335	61	10
8	94	203	176	290	254	406	543	725	944	303	57	10
9	115	220	177	256	251	388	548	1080	871	269	53	12
10	130	207	186	262	249	377	588	994	813	247	49	13
11	125	198	219	288	251	369	565	914	796	234	45	12
12	123	191	232	325	261	361	551	879	810	225	44	13
13	120	187	212	420	329	353	527	872	796	214	39	15
14	122	193	205	451	741	344	518	988	784	211	34	20
15	131	194	184	509	653	336	506	917	718	196	36	21
16	147	186	183	501	629	321	519	879	642	194	34	26
17	155	183	188	390	707	313	508	1340	592	190	33	30
18	154	182	194	409	555	309	503	2260	557	184	30	30
19	164	182	190	361	501	325	498	3110	529	176	31	27
20	167	183	129	300	472	357	486	5560	563	166	31	26
21	163	185	e105	261	438	364	483	3640	627	162	28	27
22	182	185	e86	255	415	381	496	2680	578	153	27	27
23	193	185	e78	251	400	387	508	2180	523	134	26	28
24	176	181	e110	233	382	390	590	1900	632	135	24	28
25	172	183	182	225	366	408	651	1720	684	169	24	25
26	167	194	240	214	352	466	648	1560	617	152	24	31
27	162	194	277	210	344	488	666	1390	581	137	25	33
28	156	192	287	204	339	437	646	1250	568	121	27	34
29	156	190	194	187	---	405	609	1190	671	107	28	35
30	156	192	e140	185	---	388	573	1240	759	94	26	39
31	163	---	e200	219	---	391	---	1170	---	80	24	---
TOTAL	3861	5709	5651	8416	10670	11824	16389	43858	22395	7476	1202	693
MEAN	125	190	182	271	381	381	546	1415	746	241	38.8	23.1
MAX	193	220	287	509	741	488	666	5560	1050	626	68	39
MIN	24	174	78	130	207	309	423	448	523	80	24	10
AC-FT	7660	11320	11210	16690	21160	23450	32510	86990	44420	14830	2380	1370

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1927 - 1991, BY WATER YEAR (WY)

	145	231	364	463	650	962	1231	1058	600	137	47.3	63.8
MEAN	145	231	364	463	650	962	1231	1058	600	137	47.3	63.8
MAX	337	640	1377	1706	2493	3083	3310	2955	1899	577	228	319
(WY)	1985	1985	1965	1965	1982	1983	1952	1948	1948	1982	1984	1984
MIN	14.7	74.7	105	97.1	136	196	146	79.0	78.3	7.21	1.57	2.55
(WY)	1936	1937	1937	1937	1929	1977	1934	1934	1931	1936	1936	1934

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1927 - 1991

ANNUAL TOTAL	80796.6	138144	
ANNUAL MEAN	221	378	
HIGHEST ANNUAL MEAN			495
LOWEST ANNUAL MEAN			1207
HIGHEST DAILY MEAN	948	Apr 28	124
LOWEST DAILY MEAN	5.9	Aug 6	6940
ANNUAL SEVEN-DAY MINIMUM	6.4	Aug 4	1.0
ANNUAL RUNOFF (AC-FT)	160300	274000	1.0
10 PERCENT EXCEEDS	487		358300
50 PERCENT EXCEEDS	193		1260
90 PERCENT EXCEEDS	18		250
			27

JOHN DAY RIVER BASIN

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14040600 MOUNTAIN CREEK NEAR MITCHELL, OR

LOCATION.--Lat 44°32'06", long 120°01'45", in NW 1/4 NE 1/4 sec.13, T.12 S., R.22 E., Wheeler County, Hydrologic Unit 17070201, on left bank about 1.5 mi southwest of Highway 26, and about 7 mi southeast of Mitchell.

DRAINAGE AREA.--20.0 mi².

PERIOD OF RECORD.--October 1985 to September 1991 (discontinued). Records May 1966 to September 1985, and after September 1991 available from Oregon Water Resources Department.

GAGE.--Water-stage recorder. Datum of gage is 4,140 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except those for November 1 to Feb. 20, which are poor. Several diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--25 years (1966-91), 11.0 ft³/s, 7,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 538 ft³/s June 9, 1969, gage height, 2.46 ft; maximum gage height, 3.57 ft Feb. 14, 1981, backwater from ice; no flow at times.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 82 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Feb. 4	unknown	(a)	*2.13	May 18	0630	*100	1.94

Minimum discharge, 0.04 ft³/s Sept. 20.

(a) Backwater from ice.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.10	2.1	.70	e1.1	e1.5	3.9	19	14	13	6.1	1.4	.07
2	.14	1.4	.88	e1.3	e2.0	4.8	21	13	12	5.2	1.3	.08
3	.16	1.2	1.5	e1.1	e2.5	10	18	12	9.9	4.5	1.2	.09
4	.20	2.7	e1.5	e1.1	e3.5	17	26	12	9.1	3.6	1.2	.13
5	.24	e2.0	e1.5	e1.1	e6.0	13	26	11	20	3.5	1.3	.07
6	.29	e2.5	e2.5	e1.2	e9.0	9.8	22	12	18	3.1	1.6	.08
7	.27	e1.3	e3.0	e1.3	e6.0	16	17	13	13	2.7	1.3	.09
8	.29	e1.4	e2.8	e1.3	e4.8	12	13	25	10	2.7	.19	.10
9	.29	e1.7	e2.8	e1.4	e4.0	7.9	16	18	9.0	2.6	.32	.12
10	.29	1.5	e3.7	e1.5	e3.7	8.2	14	20	8.0	2.4	.48	.06
11	.31	1.3	e3.7	e1.6	3.1	8.3	12	29	7.1	2.3	.67	.07
12	.35	1.2	e.70	e1.9	3.3	7.5	10	28	6.7	2.3	.69	.09
13	.35	1.1	e1.4	e2.2	9.4	8.7	10	28	6.1	2.3	.57	.10
14	.46	1.4	e1.9	e1.7	8.6	7.2	11	23	5.8	2.5	.53	.12
15	.69	1.1	e2.0	e1.4	7.3	6.5	11	18	5.4	2.4	.49	.14
16	.70	1.3	e1.8	e1.4	7.4	6.1	15	28	5.0	3.1	.61	.07
17	.64	e1.1	e1.8	e1.4	5.0	5.6	15	70	4.7	4.0	.83	.09
18	.79	e1.1	e1.8	e1.4	5.4	7.1	18	88	4.7	3.6	1.0	.19
19	.94	e1.1	e1.5	e1.3	4.6	7.7	21	72	5.7	2.9	1.5	.18
20	.74	e1.2	e1.3	e1.2	4.2	13	20	78	21	2.5	.71	.15
21	.84	e1.1	e.90	e1.1	4.2	8.3	21	51	13	2.2	.63	.24
22	1.1	e1.1	e.65	e1.1	4.1	8.8	20	38	7.8	2.1	.63	.31
23	1.7	e1.1	e.65	e1.1	3.8	8.9	20	30	6.8	1.9	.66	.27
24	1.4	e1.2	e.70	e1.1	4.3	11	24	26	6.3	1.9	.66	.27
25	1.3	e1.2	e.80	e1.1	4.1	9.5	22	23	6.4	2.2	.46	.27
26	1.3	e1.2	e1.0	e1.1	3.3	10	22	21	6.0	1.8	.07	.27
27	1.2	e1.2	e1.2	e1.1	3.7	8.3	22	19	5.6	1.7	.06	.27
28	1.1	e1.5	e1.4	e1.1	3.7	7.4	19	19	7.4	1.6	.18	.27
29	1.1	e1.5	e1.0	e1.1	---	6.6	16	20	11	1.6	.42	.27
30	1.4	e1.2	e.70	e1.1	---	7.2	15	21	7.9	1.6	.36	.27
31	2.9	---	e.80	e1.1	---	11	---	16	---	1.3	.06	---
TOTAL	23.58	42.4	48.58	40.0	132.5	277.3	536	896	272.4	84.2	22.08	4.80
MEAN	.76	1.41	1.57	1.29	4.73	8.95	17.9	28.9	9.08	2.72	.71	.16
MAX	2.9	2.7	3.7	2.2	9.4	17	26	88	21	6.1	1.6	.31
MIN	.10	1.1	.65	1.1	1.5	3.9	10	11	4.7	1.3	.06	.06
AC-FT	.47	.84	.96	.79	263	550	1060	1780	540	167	44	9.5

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1991, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991
MEAN	1.93	5.15	4.74	6.09	10.1	24.1	32.5
MAX	5.83	20.5	11.4	13.0	24.8	42.1	66.8
(WY)	1985	1985	1985	1987	1986	1987	1988
MIN	.14	1.41	1.57	1.29	4.73	7.67	8.13
(WY)	1989	1991	1991	1991	1991	1988	1990

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1985 - 1991

ANNUAL TOTAL	1331.12	2379.84	9.54
ANNUAL MEAN	3.65	6.52	14.8
HIGHEST ANNUAL MEAN			3.91
LOWEST ANNUAL MEAN			124
HIGHEST DAILY MEAN	21	88	Mar 13 1987
LOWEST DAILY MEAN	.02	.06	Aug 11 1988
ANNUAL SEVEN-DAY MINIMUM	.03	.08	Aug 6 1988
ANNUAL RUNOFF (AC-FT)	2640	4720	6910
10 PERCENT EXCEEDS	8.7	19	26
50 PERCENT EXCEEDS	2.0	2.0	3.4
90 PERCENT EXCEEDS	.15	.27	.49

JOHN DAY RIVER BASIN

14042500 CAMAS CREEK NEAR UKIAH, OR

LOCATION.--Lat 45°09'25", long 118°49'10", in SE 1/4 SE 1/4 sec.3, T.5 S., R.32 E., Umatilla County, Hydrologic Unit 17070202, on right bank 1.2 mi upstream from Cable Creek, 5.8 mi east of Ukiah, and at mile 18.7.

DRAINAGE AREA.--121 mi².

PERIOD OF RECORD.--May 1914 to September 1917, November 1919 to July 1920, November 1920 to June 1924, March 1932 to June 1940 (fragmentary), November 1940 to September 1991. (discontinued). Monthly discharge only for some periods, published in WSP 1318. Published as "above Cable Creek, near Ukiah" 1914-17, 1919-24. See REMARKS.

REVISED RECORDS.--WSP 1448: 1916, 1920, 1922(M), 1924.

GAGE.--Water-stage recorder. Datum of gage is 3,588.61 ft above National Geodetic Vertical Datum of 1929 (levels by State Highway Department). May 1, 1914, to June 30, 1924, nonrecording gage and Mar. 1, 1932, to July 2, 1940, water-stage recorder at site 1.2 mi downstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are poor. No regulation. Diversions for irrigation upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--55 years (water years 1915-17, 1922-23, 1942-91), 95.7 ft³/s, 69,330 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,840 ft³/s Jan. 30, 1965, gage height, 5.21 ft; maximum gage height, 5.92 ft Jan. 24, 1982 (ice jam); minimum discharge recorded, 1.0 ft³/s Aug. 9, 1932, June 24 to July 2, 1940.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 550 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 19	1300	*2,570	*4.48	No other peak greater than base discharge.			
Minimum discharge, 4.1 ft ³ /s Sept. 24.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.4	17	22	e14	e50	140	169	222	124	77	11	5.1
2	4.5	12	34	e11	e74	163	206	210	114	68	11	5.2
3	5.7	11	39	e9.4	e75	204	210	197	107	61	9.5	5.1
4	7.1	14	32	e11	e72	291	215	188	98	55	9.2	5.0
5	7.8	19	22	e12	e78	280	250	183	103	49	11	4.9
6	7.7	16	35	e13	e75	224	265	190	111	45	16	4.8
7	6.8	15	101	e14	e90	189	250	208	130	41	14	4.8
8	6.4	16	164	e16	e64	175	229	354	115	37	11	5.2
9	6.2	15	90	e18	e64	174	282	414	107	35	11	5.2
10	5.8	14	69	e21	e66	163	300	338	99	32	10	4.9
11	5.9	13	137	26	e71	151	303	292	99	29	9.5	5.0
12	5.9	13	95	56	e84	145	341	262	92	27	9.1	5.1
13	6.2	13	83	e70	219	156	363	254	83	26	8.7	5.0
14	7.4	16	64	e100	422	152	335	247	75	24	8.3	4.7
15	8.6	15	77	e115	364	142	300	229	66	23	8.0	4.8
16	8.7	13	105	e100	318	123	309	227	59	21	7.7	4.7
17	8.5	13	87	e80	268	118	294	510	54	24	7.6	4.6
18	8.5	14	40	e82	220	115	263	734	49	22	7.4	4.6
19	10	14	e20	e65	230	123	251	1960	48	19	7.3	4.5
20	9.1	15	e9.0	e35	219	127	247	1550	63	18	6.9	4.5
21	9.2	14	e7.6	e28	220	129	253	866	62	17	6.4	4.5
22	12	15	e8.0	e29	211	129	256	573	49	15	6.2	4.6
23	10	16	e9.3	e31	190	123	263	421	45	14	6.1	5.0
24	9.0	17	e10	e30	168	128	369	331	43	13	6.0	4.6
25	8.6	25	e13	e27	154	131	374	278	45	17	6.1	4.7
26	7.9	33	e20	e25	143	140	320	227	41	14	5.6	4.6
27	7.8	29	e32	e23	133	141	301	192	44	13	5.6	4.7
28	8.1	26	e25	e12	127	136	284	165	54	12	5.8	5.1
29	7.7	25	e8.0	e13	---	124	262	153	76	11	5.6	5.2
30	8.1	25	e11	e19	---	121	238	166	91	10	5.3	4.9
31	14	---	e20	e30	---	137	---	141	---	9.3	5.1	---
TOTAL	243.6	513	1488.9	1135.4	4469	4794	8302	12282	2346	878.3	258.0	145.6
MEAN	7.86	17.1	48.0	36.6	160	155	277	396	78.2	28.3	8.32	4.85
MAX	14	33	164	115	422	291	374	1960	130	77	16	5.2
MIN	4.4	11	7.6	9.4	50	115	169	141	41	9.3	5.1	4.5
AC-FT	483	1020	2950	2250	8860	9510	16470	24360	4650	1740	512	289

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 1991, BY WATER YEAR (WY)

	MEAN	8.93	27.5	62.9	72.9	112	192	334	239	78.3	15.3	5.21	5.40
MAX	39.0	140	263	338	384	575	658	925	314	77.0	10.9	14.3	
(WY)	1942	1974	1956	1965	1916	1972	1920	1917	1917	1923	1976	1941	
MIN	3.40	4.35	4.66	3.48	5.00	5.00	52.7	18.6	4.87	3.06	2.18	2.42	
(WY)	1975	1917	1955	1915	1915	1917	1968	1934	1940	1932	1973	1967	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1915 - 1991

	ANNUAL TOTAL	23188.7	36855.8	95.7	
ANNUAL MEAN	63.5	101		171	1948
HIGHEST ANNUAL MEAN				36.3	1968
LOWEST ANNUAL MEAN				3130	Jan 30 1965
HIGHEST DAILY MEAN	435	Apr 28	1960	1.0	Jun 24 1940
LOWEST DAILY MEAN	3.1	Aug 14	4.4	1.0	Jun 24 1940
ANNUAL SEVEN-DAY MINIMUM	3.6	Aug 10	4.6	1.0	Jun 24 1940
ANNUAL RUNOFF (AC-FT)	45990		73100	69300	
10 PERCENT EXCEEDS	179		262	299	
50 PERCENT EXCEEDS	19		34	27	
90 PERCENT EXCEEDS	4.5		5.6	4.3	

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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.

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

GAGE.--Water-stage recorder. Datum of gage is 2,544.56 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except for estimated daily discharges, which are fair, and those above 3,000 ft³/s, 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.--62 years, 253 ft³/s, 183,300 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)
Feb. 14	0530	1,080	5.05	May 19	1830	*3,860	*7.66
May 8	1830	1,000	4.96				

Minimum daily discharge, 6.2 ft³/s Dec. 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	69	44	e18	e33	220	256	436	665	334	56	31
2	28	56	40	e26	e39	242	310	425	697	302	56	31
3	29	47	49	e23	e46	285	331	413	719	273	52	31
4	32	50	55	e21	e56	438	345	405	659	249	51	30
5	34	77	64	e20	e70	523	388	406	612	225	54	30
6	34	71	42	e20	e66	408	410	439	580	203	69	30
7	33	57	46	e21	e66	353	398	463	547	188	64	29
8	32	57	49	e23	e66	318	370	752	507	174	55	29
9	33	61	62	e26	e70	290	405	877	490	162	51	30
10	33	59	70	e30	e72	269	434	753	504	149	48	30
11	33	55	117	e34	e80	240	427	666	548	138	45	32
12	33	52	80	e41	110	221	442	634	547	129	44	32
13	34	50	65	e52	222	216	458	652	498	123	44	30
14	35	56	60	e72	570	202	438	691	445	115	42	29
15	39	54	33	e100	544	192	414	639	410	110	39	30
16	40	48	e43	e160	791	166	408	646	390	105	38	31
17	40	47	e60	e130	561	170	393	1070	376	107	39	30
18	40	49	e80	e100	389	163	368	1530	359	110	39	29
19	47	50	e60	e82	373	173	367	2960	352	100	43	29
20	50	52	e21	e66	342	185	362	3030	382	92	41	29
21	44	52	e7.0	e50	343	190	371	2310	406	85	37	28
22	63	55	e6.2	e41	340	203	414	1820	352	80	36	29
23	66	55	e7.2	e39	325	204	457	1510	329	75	36	30
24	50	54	e9.2	e39	286	215	546	1310	349	73	35	30
25	45	59	e13	e37	254	239	554	1180	357	84	34	30
26	44	78	e20	e34	232	278	500	1010	348	81	34	30
27	42	66	e34	e31	219	253	495	875	324	71	33	29
28	42	61	e40	e29	212	229	506	795	328	67	31	30
29	41	55	e26	e27	---	212	502	772	384	63	32	33
30	42	57	e10	e26	---	202	460	815	383	59	33	34
31	49	---	e12	e29	---	213	---	712	---	55	31	---
TOTAL	1236	1709	1324.6	1447	6777	7712	12529	30996	13847	4181	1342	905
MEAN	39.9	57.0	42.7	46.7	242	249	418	1000	462	135	43.3	30.2
MAX	66	78	117	160	791	523	554	3030	719	334	69	34
MIN	28	47	6.2	18	33	163	256	405	324	55	31	28
AC-FT	2450	3390	2630	2870	13440	15300	24850	61480	27470	8290	2660	1800

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1991, BY WATER YEAR (WY)

MEAN	44.0	72.2	123	155	237	456	747	704	359	80.4	30.9	31.4
MAX	99.5	231	482	580	707	1214	1426	1457	1127	285	98.4	108
(WY)	1983	1974	1956	1965	1958	1972	1984	1984	1984	1984	1984	1984
MIN	17.4	20.2	29.0	23.4	31.3	69.8	175	79.2	80.3	17.4	3.75	10.0
(WY)	1937	1937	1933	1937	1937	1977	1968	1934	1931	1973	1966	1935

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1930 - 1991
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ANNUAL TOTAL	57700.6		84005.6						
ANNUAL MEAN	158		230			253			
HIGHEST ANNUAL MEAN						538			1984
LOWEST ANNUAL MEAN						85.1			1977
HIGHEST DAILY MEAN	1320	Apr 28	3030	May 20	4360		Jan 30	1965	
LOWEST DAILY MEAN	6.2	Dec 22	6.2	Dec 22		.90	Aug 20	1966	
ANNUAL SEVEN-DAY MINIMUM	12	Dec 20	12	Dec 20	1.1		Aug 19	1966	
ANNUAL RUNOFF (AC-FT)	114400		166600		183200				
10 PERCENT EXCEEDS	424		547		724				
50 PERCENT EXCEEDS	64		70		90				
90 PERCENT EXCEEDS	27		30		25				

JOHN DAY RIVER BASIN

14046000 NORTH FORK JOHN DAY RIVER AT MONUMENT. OR

LOCATION.--Lat 44°48'50", long 119°25'50", in SE 1/4 sec.2, T.9 S., R.27 E., Grant County, Hydrologic Unit 17070202, on right bank just downstream from entrance to canyon, 0.7 mi downstream from Cottonwood Creek, 0.8 mi west of Monument, and at mile 15.3.

DRAINAGE AREA.--2,520 mi², approximately.

PERIOD OF RECORD.--March 1925 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WSP 754: 1932 (M). WSP 1448: 1927, 1931 (M), 1949.

GAGE.--Water-stage recorder. Datum of gage is 1,959.64 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 24, 1925, nonrecording gage and Nov. 24, 1925, to Oct. 16, 1928, water-stage recorder at datum 1.10 ft higher. Oct. 17, 1928, to Sept. 30, 1930, water-stage recorder at datum 1.00 ft higher.

REMARKS.--Records good except for estimated daily discharges, which are fair. Very slight regulation by small reservoirs upstream. Many small diversions for irrigation upstream from station. Continuous water-quality records for the period July 1966 to September 1968 have been collected at this location. National Weather Service gage-height telemeter at station.

AVERAGE DISCHARGE.--66 years, 1,282 ft³/s, 928,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 33,400 ft³/s Jan. 30, 1965, gage height, 18.45 ft, from rating curve extended above 17,000 ft³/s; minimum discharge, 6 ft³/s sometime during period Nov. 2-13, 1936 (result of freezeup); minimum daily, 17 ft³/s Dec. 12, 1932.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 5,300 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 8	2000	6,460	8.25	May 19	2300	*21,600	*14.60
Minimum daily discharge, 56 ft ³ /s Dec. 22.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	100	197	210	304	258	1140	1510	2360	3230	1560	227	117
2	99	231	165	e270	288	1320	1970	2370	3240	1380	225	115
3	100	191	128	e260	383	1440	2140	2350	3320	1270	216	114
4	104	170	202	e240	430	2670	2150	2330	3130	1160	214	116
5	114	199	221	e230	540	3350	2590	2360	2890	1050	219	115
6	132	297	207	e230	582	2460	2880	2560	2980	944	246	113
7	125	245	141	e240	541	2040	2740	2860	2950	853	253	111
8	122	207	114	e250	539	1840	2460	4440	2640	775	229	110
9	118	220	217	e270	553	1680	2600	5480	2470	707	203	111
10	116	218	282	e300	560	1550	2840	4470	2430	658	187	111
11	116	209	436	319	598	1410	2590	3930	2580	606	178	112
12	116	196	499	372	653	1300	2770	3700	2630	562	173	113
13	115	188	334	649	e960	1350	2760	3540	2390	523	167	115
14	118	193	317	598	e3000	1380	2710	3700	2120	488	162	112
15	130	203	244	945	3110	1270	2570	3420	1890	462	156	113
16	142	190	183	1130	2960	1120	2520	3420	1730	446	151	109
17	146	168	235	834	2780	1050	2570	6030	1630	447	149	108
18	153	169	323	756	2070	1000	2380	9210	1520	452	149	105
19	152	188	256	616	1910	1090	2320	15300	1450	423	157	107
20	178	185	e100	496	1820	1250	2320	16700	1690	378	161	103
21	170	189	e60	428	1770	1190	2420	11500	1880	350	154	101
22	158	186	e56	369	1760	1190	2760	9170	1640	327	142	101
23	236	190	e58	353	1650	1160	3040	7690	1460	309	135	103
24	218	191	67	342	1470	1160	3650	6630	1420	326	130	105
25	178	197	93	338	1320	1250	3830	5980	1560	356	127	107
26	162	234	165	300	1230	1360	3350	5160	1490	384	125	105
27	156	267	228	262	1150	1510	3050	4480	1390	317	123	105
28	153	236	247	243	1110	1440	2890	4010	1370	284	124	104
29	151	221	218	250	---	1250	2720	3800	1550	263	123	108
30	150	216	204	220	---	1160	2490	3870	1780	247	123	112
31	162	---	273	239	---	1210	---	3520	---	235	120	---
TOTAL	4390	6191	6483	12653	35995	45590	79590	166340	64450	18542	5248	3281
MEAN	142	206	209	408	1286	1471	2653	5366	2148	598	169	109
MAX	236	297	499	1130	3110	3350	3830	16700	3320	1560	253	117
MIN	99	168	56	220	258	1000	1510	2330	1370	235	120	101
AC-FT	8710	12280	12860	25100	71400	90430	157900	329900	127800	36780	10410	6510

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1991, BY WATER YEAR (WY)

MEAN	162	317	705	915	1389	2365	3630	3608	1721	388	131	121
MAX	420	1621	3374	4126	4970	6456	6695	8794	5227	1211	345	423
(WY)	1983	1974	1965	1965	1982	1983	1943	1948	1948	1982	1984	1984
MIN	58.5	64.5	96.6	75.8	134	345	822	378	326	97.4	36.6	45.2
(WY)	1937	1937	1937	1937	1929	1977	1968	1934	1931	1973	1931	1934

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1929 - 1991
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ANNUAL TOTAL	294258		448753						
ANNUAL MEAN	806		1229			1285			
HIGHEST ANNUAL MEAN						2608			1984
LOWEST ANNUAL MEAN						441			1977
HIGHEST DAILY MEAN	4860	Apr 28	16700	May 20	31900		Jan 30	1965	
LOWEST DAILY MEAN	56	Dec 22	56	Dec 22	17		Dec 12	1932	
ANNUAL SEVEN-DAY MINIMUM	86	Dec 20	86	Dec 20	29		Aug 28	1931	
ANNUAL RUNOFF (AC-FT)	583700		890100		931100				
10 PERCENT EXCEEDS	2200		2900		3720				
50 PERCENT EXCEEDS	273		356		422				
90 PERCENT EXCEEDS	103		114		95				

JOHN DAY RIVER BASIN

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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 National Geodetic Vertical Datum of 1929. See WSP 1738 for history of changes prior to Feb. 24, 1957.

REMARKS.--Records good except for estimated daily discharges, which are fair. 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.--63 years (water years 1926, 1930-91), 1,915 ft³/s, 1,387,000 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)
May 9	0630	7,380	7.83	May 20	1000	*24,200	*13.59

Minimum discharge, 94 ft³/s Sept. 8, 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	118	373	464	e420	582	1540	1890	2940	4260	2480	331	118
2	114	435	444	e470	598	1650	2370	2880	4060	2080	304	114
3	117	450	386	e430	625	1770	2710	2890	4080	1870	288	117
4	117	414	352	e390	762	2490	2750	2840	3980	1700	273	116
5	118	400	438	e370	833	3690	3030	2830	3710	1530	292	116
6	139	479	463	e350	983	3190	3420	2900	4000	1390	292	114
7	185	546	406	e355	962	2670	3450	3240	3910	1260	339	98
8	212	483	347	e380	924	2400	3170	3850	3720	1150	326	97
9	227	465	326	e460	910	2200	3020	6890	3410	1040	285	96
10	240	490	476	e570	902	2070	3510	5780	3230	942	250	102
11	253	472	548	685	927	1940	3260	5070	3230	885	230	106
12	258	452	784	714	974	1790	3270	4680	3350	828	214	99
13	258	434	696	765	1110	1790	3260	4440	3220	778	207	99
14	257	426	593	1110	2660	1840	3260	4610	3010	734	191	103
15	267	436	538	1140	3970	1750	3170	4440	2730	698	175	101
16	289	443	457	1540	3330	1670	3060	4230	2510	667	167	111
17	315	419	434	1500	3730	1470	3110	5690	2340	661	163	116
18	332	398	491	1310	2910	1470	3010	11100	2170	658	164	109
19	345	402	543	1250	2470	1490	2880	13900	2050	647	170	105
20	349	421	e300	1180	2440	1670	2860	23000	2210	603	182	112
21	387	417	e250	1030	2260	1690	2900	16800	2620	554	159	101
22	382	421	e220	899	2240	1690	3140	12700	2530	524	157	100
23	383	418	e210	850	2180	1700	3480	10500	2190	487	136	100
24	477	421	e230	775	2010	1670	3900	8940	2020	451	125	107
25	434	431	e260	700	1820	1760	4590	7920	2350	586	117	108
26	393	437	e275	721	1700	1870	4180	7010	2280	574	116	110
27	370	495	e315	739	1620	2120	3780	6070	2100	553	116	109
28	358	503	e350	666	1560	2050	3610	5340	2010	479	115	115
29	348	474	e320	673	---	1880	3360	4960	2130	430	117	115
30	346	460	e290	597	---	1710	3170	4860	2530	386	120	120
31	349	---	e320	528	---	1680	---	4920	---	350	123	---
TOTAL	8737	13315	12526	23567	47992	60370	96570	208220	87940	27975	6244	3234
MEAN	282	444	404	760	1714	1947	3219	6717	2931	902	201	108
MAX	477	546	784	1540	3970	3690	4590	23000	4260	2480	339	120
MIN	114	373	210	350	582	1470	1890	2830	2010	350	115	96
AC-FT	17330	26410	24850	46750	95190	119700	191500	413000	174400	55490	12380	6410

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1930 - 1991, BY WATER YEAR (WY)

	326	596	1186	1543	2299	3646	5246	4943	2471	572	179	185
MEAN	326	596	1186	1543	2299	3646	5246	4943	2471	572	179	185
MAX	811	2284	5540	6335	7930	9773	10280	12050	8327	1850	594	862
(WY)	1985	1974	1965	1965	1982	1983	1984	1948	1948	1982	1984	1984
MIN	70.5	152	216	195	358	597	1010	491	416	90.6	15.2	31.4
(WY)	1937	1937	1936	1937	1937	1977	1968	1934	1931	1973	1973	1935

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1930 - 1991
ANNUAL TOTAL	388934	596690	1928
ANNUAL MEAN	1066	1635	4116
HIGHEST ANNUAL MEAN			1984
LOWEST ANNUAL MEAN			619
HIGHEST DAILY MEAN	5830	23000	36400
LOWEST DAILY MEAN	56	96	6.2
ANNUAL SEVEN-DAY MINIMUM	64	100	7.7
ANNUAL RUNOFF (AC-FT)	771500	1184000	1397000
10 PERCENT EXCEEDS	2830	3720	5380
50 PERCENT EXCEEDS	495	667	750
90 PERCENT EXCEEDS	113	118	130

JOHN DAY RIVER BASIN

14047380 LONE ROCK CREEK NEAR LONEROCK, OR

LOCATION.--Lat 45°05'30", long 119°53'10", in SE 1/4 NE 1/4 sec.36, T.5 S., R.23 E., Gilliam County, Hydrologic Unit 17070204, on left bank about 800 ft downstream from road bridge in Lonerock.

DRAINAGE AREA.--69 mi², approximately.

PERIOD OF RECORD.--January 1966 to September 1974, October 1975 to September 1991 (discontinued). Records prior to October 1985 and after September 1991, available at the Oregon Water Resources Department.

GAGE.--Water-stage recorder. Elevation of gage is 2,810 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Sept. 9, 1975, at datum approximately 0.5 ft higher.

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

AVERAGE DISCHARGE.--24 years (1966-74, 1975-91), 18.4 ft³/s, 3.62 in/yr, 13,330 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded discharge, 1,210 ft³/s Jan. 23, 1970, gage height, 5.78 ft, datum then in use; no flow at times.

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)
Mar. 4	1900	*232	*3.42	No other peak greater than base discharge.			
No flow, Dec. 23, result of freezeup.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.03	7.2	.63	3.7	4.1	34	98	11	11	7.2	.65	.05
2	.03	7.9	1.1	4.0	5.1	42	81	9.8	9.6	6.1	.33	.05
3	.03	8.9	1.3	4.3	6.4	80	60	7.8	8.9	5.3	.48	.05
4	.03	9.9	1.7	4.5	14	137	51	6.3	8.3	4.7	.49	.04
5	.03	8.7	1.6	4.3	27	76	42	6.4	9.8	4.3	.38	.04
6	.03	7.8	1.2	4.3	17	39	39	7.4	14	3.9	.43	.04
7	.03	6.3	1.7	4.1	14	29	38	8.0	19	3.5	.37	.04
8	.04	6.8	1.9	4.2	15	26	32	15	13	3.2	.39	.04
9	.05	6.4	2.0	5.0	16	25	63	12	10	2.9	.32	.04
10	.06	5.4	2.6	6.7	16	34	45	12	8.8	2.6	.27	.04
11	.08	5.5	3.1	9.7	18	30	33	15	7.8	2.3	.26	.03
12	.13	5.0	2.2	14	22	26	27	14	7.2	1.9	.23	.03
13	.16	4.7	2.1	12	57	27	24	13	6.9	1.7	.21	.03
14	.28	3.8	1.8	14	60	26	23	12	6.7	1.5	.19	.03
15	.35	3.3	1.7	24	47	25	22	9.8	6.2	1.4	.15	.03
16	.41	2.6	2.1	11	42	24	24	11	5.9	1.7	.28	.03
17	.45	2.2	2.3	9.5	35	26	22	54	5.6	2.6	.24	.03
18	.54	2.1	2.4	9.2	32	35	19	94	5.2	2.2	.11	.03
19	.55	1.7	.78	6.9	35	47	18	68	5.3	1.6	.22	.03
20	.44	1.0	1.7	4.8	37	45	16	135	9.4	1.1	.21	.03
21	.76	.86	.38	4.7	40	45	15	65	12	.75	.12	.03
22	3.0	.91	.06	4.9	38	41	14	40	8.6	.60	.09	.03
23	3.3	.93	.02	4.6	35	39	14	27	6.9	.78	.07	.03
24	2.1	.87	.06	4.3	32	51	16	23	6.4	.97	.08	.03
25	1.5	1.7	.07	3.9	30	49	15	20	6.1	1.2	.08	.04
26	1.2	1.2	.26	3.5	29	51	14	18	5.8	1.1	.07	.04
27	1.3	.67	1.2	3.2	28	55	15	17	5.5	1.0	.07	.04
28	.95	.45	2.0	3.1	28	52	14	15	5.8	.87	.06	.04
29	.72	.57	2.1	3.1	---	42	13	14	13	.76	.06	.04
30	1.1	.98	2.0	3.3	---	53	11	14	9.0	.53	.06	.04
31	3.2	---	2.4	3.7	---	83	---	12	---	.45	.05	---
TOTAL	22.88	116.34	46.46	202.5	779.6	1394	918	786.5	257.7	70.71	7.02	1.09
MEAN	.74	3.88	1.50	6.53	27.8	45.0	30.6	25.4	8.59	2.28	.23	.036
MAX	3.3	9.9	3.1	24	60	137	98	135	19	7.2	.65	.05
MIN	.03	.45	.02	3.1	4.1	24	11	6.3	5.2	.45	.05	.03
AC-FT	.45	.231	.92	.402	1550	2760	1820	1560	511	140	14	2.2
CFSM	.01	.06	.02	.09	.40	.65	.44	.37	.12	.03	.00	.00
IN.	.01	.06	.03	.11	.42	.75	.49	.42	.14	.04	.00	.00

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1991, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991
MEAN	1.19	3.09	3.58	12.5	40.4	75.2
MAX	3.05	7.06	7.02	41.8	131	125
(WY)	1986	1987	1988	1989	1990	1991
MIN	.14	.75	1.12	3.27	12.6	12.6
(WY)	1989	1990	1990	1990	1988	1990

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1986 - 1991

ANNUAL TOTAL	2563.41	4602.80	15.2	
ANNUAL MEAN	7.02	12.6	25.4	
HIGHEST ANNUAL MEAN			6.72	1990
LOWEST ANNUAL MEAN			460	Feb 23 1986
HIGHEST DAILY MEAN	117	Mar 10	.02	Sep 5 1988
LOWEST DAILY MEAN	.02	Jul 17	.03	Sep 5 1988
ANNUAL SEVEN-DAY MINIMUM	.02	Jul 17	.00	
ANNUAL RUNOFF (AC-FT)	5080		11000	
ANNUAL RUNOFF (CFSM)	.10		.22	
ANNUAL RUNOFF (INCHES)	1.38		2.99	
10 PERCENT EXCEEDS	18	39	40	
50 PERCENT EXCEEDS	2.1	4.3	3.1	
90 PERCENT EXCEEDS	.02	.05	.05	

123

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 current year. 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 National Geodetic Vertical Datum of 1929. Prior to Aug. 30, 1930, nonrecording gage at same site and datum.

REMARKS.--Water-discharge records good except for estimated daily discharges, which are fair. No regulation. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--86 years (water years 1906-91), 2,081 ft³/s, 1,508,000 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)
May 21	0730	*24,800	*12.09	No other peak greater than base discharge.			
Minimum discharge, 89 ft ³ /s Sept. 12.							

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	104	365	480	512	639	1720	2010	3180	4580	2400	415	128
2	102	355	468	543	628	1690	2080	2940	4040	2580	379	122
3	106	359	454	529	687	1710	2380	2840	3850	2170	358	119
4	114	388	459	e450	697	1870	2760	2850	3840	1920	335	123
5	118	441	419	e430	724	2210	2840	2820	3820	1760	302	123
6	115	428	377	e410	869	3420	2980	2800	3670	1610	290	112
7	115	411	394	e410	970	3290	3380	2830	3780	1470	292	114
8	120	417	439	e410	1130	2780	3480	3150	3750	1360	322	111
9	115	523	450	e440	1070	2500	3280	3490	3650	1230	314	105
10	134	487	396	e500	1030	2330	3090	6260	3390	1120	324	109
11	188	456	371	690	1030	2240	3430	5440	3240	1010	313	104
12	218	471	397	810	1030	2120	3320	4820	3190	941	286	93
13	231	472	515	929	1070	2000	3230	4450	3270	886	259	99
14	247	456	726	871	1160	1940	3260	4190	3200	838	250	107
15	259	438	675	932	1790	1960	3270	4270	3060	779	224	104
16	260	424	583	1210	3680	1960	3200	4210	2780	742	210	113
17	269	423	553	1310	3240	1860	3070	4060	2540	732	202	119
18	276	439	489	1740	3520	1750	3090	5400	2340	700	212	118
19	304	435	439	1560	3010	1700	3050	10800	2190	676	198	123
20	320	412	377	1490	2540	1700	2900	15200	2190	663	189	118
21	340	400	e330	1360	2460	1800	2880	23200	2160	650	198	117
22	352	407	e280	1210	2320	1930	2900	15800	2480	604	187	120
23	363	413	e250	1060	2270	1910	3030	11900	2580	557	176	120
24	382	413	e260	892	2220	1950	3370	9880	2240	525	159	122
25	372	423	e290	869	2120	1940	3660	8380	2030	499	150	120
26	411	425	e320	931	1970	1980	4370	7440	2150	459	154	113
27	438	427	378	837	1850	2070	4080	6540	2260	531	139	111
28	399	427	382	708	1770	2220	3720	5700	2130	564	130	112
29	376	450	e350	700	---	2330	3560	5040	2160	557	129	117
30	379	500	e330	667	---	2230	3340	4670	2070	500	125	121
31	386	---	e390	633	---	2060	---	4520	---	453	123	---
TOTAL	7913	12885	13021	26043	47494	65170	95010	199070	88650	31486	7344	3437
MEAN	255	429	420	840	1696	2102	3167	6422	2955	1016	237	115
MAX	438	523	726	1740	3680	3420	4370	23200	4580	2580	415	128
MIN	102	355	250	410	628	1690	2010	2800	2030	453	123	93
AC-FT	15700	25560	25830	51660	94200	129300	188500	394900				

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1991, BY WATER YEAR (WY)

MEAN	328	614	1189	1662	2594	3934	5669	5185	2727	658	193	185
MAX	892	2310	7030	6402	8882	11450	11900	13180	9531	2130	700	9230
(WY)	1985	1974	1965	1965	1982	1983	1984	1917	1948	1984	1984	1984
MIN	59.9	157	221	217	374	557	964	533	376	88.0	5.70	23.8
(WY)	1937	1937	1937	1937	1933	1977	1968	1934	1926	1926	1973	1934

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1905 - 1991
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ANNUAL TOTAL	406201		597523					
ANNUAL MEAN	1113		1637			2081		
HIGHEST ANNUAL MEAN						4724		1984
LOWEST ANNUAL MEAN						603		1977
HIGHEST DAILY MEAN	5940	Apr 30	23200	May 21	39400		Dec 24	1964
LOWEST DAILY MEAN	40	Aug 20	93	Sep 12		.00	Aug 15	1973
ANNUAL SEVEN-DAY MINIMUM	46	Aug 14	103	Sep 9		.00	Aug 15	1973
ANNUAL RUNOFF (AC-FT)	8057000		11850000			15070000		
20 PERCENT EXCEEDS	2960		3600			5800		
50 PERCENT EXCEEDS	543		700			800		
90 PERCENT EXCEEDS	104		123			141		

JOHN DAY RIVER BASIN

14048000 JOHN DAY RIVER AT McDONALD FERRY, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1911-12, 1960-68, 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1975 to September 1981.

WATER TEMPERATURE: October 1962 to September 1968, October 1975 to September 1981.

SEDIMENT CONCENTRATION: October 1962 to September 1968.

SEDIMENT DISCHARGE: October 1962 to September 1968.

REMARKS.--Some samples were analyzed by different methods and may have data with different levels of detection.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECA, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECA, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CaCO3)	CALCIUM, DIS-SOLVED (MG/L AS Ca)
NOV 1990												
20...	1200	408	239	8.5	6.0	2.1	13.0	107	K5	24	98	23
FEB 1991												
12...	1200	984	174	8.2	5.5	7.2	13.4	107	K10	K110	73	17
JUN												
04...	1330	3750	137	8.4	18.0	6.0	10.0	107	K16	K15	59	14
SEP												
11...	1400	103	289	8.6	22.5	1.1	12.0	141	K9	95	110	23
DATE		MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY, DIS IT FIELD (MG/L AS CaCO3)	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3)	CAR-BONATE, DIS IT FIELD (MG/L AS CO3)	SULFATE, DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
NOV 1990												
20...	9.8	13	22	0.6	1.8	117	138	2	6.8	3.6	0.1	24
FEB 1991												
12...	7.3	9.1	21	0.5	1.6	91	111	0	4.7	1.5	<0.1	22
JUN												
04...	5.9	6.6	19	0.4	1.5	61	74	0	4.1	9.7	<0.1	30
SEP												
11...	12	20	28	0.8	3.1	134	144	10	12	10	0.2	19
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)
NOV 1990												
20...	144	152	0.20	159	<0.01	<0.100	0.05	0.5	<0.01	<0.01	<0.01	
FEB 1991												
12...	112	118	0.15	298	<0.01	<0.100	0.02	0.3	0.05	0.01	<0.01	
JUN												
04...	104	109	0.14	1050	<0.01	0.055	<0.01	0.4	0.07	0.02	0.01	
SEP												
11...	155	180	0.21	43.1	<0.01	<0.050	0.04	0.4	0.02	0.03	<0.01	
DATE		ALUM-INUM, DIS-SOLVED (UG/L AS AL)	ARSENIC, DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM, DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM, DIS-SOLVED (UG/L AS LI)
NOV 1990												
20...	<10	<1	12	<0.5	<1	<1	<3	2	8	<1	5	
FEB 1991												
12...	30	<1	9	<0.5	<1	1	<3	3	34	3	<4	
JUN												
04...	70	1	7	<0.5	<1	<1	<3	2	52	<1	<4	
SEP												
11...	<10	<1	13	<0.5	<1	<1	<3	3	11	<1	<4	
DATE		MANGA-NESE, DIS-SOLVED (UG/L AS MN)	MERCURY, DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)
NOV 1990												
20...	4	<0.1	<10	2	<1	<1	91	6	4	7	7.7	
FEB 1991												
12...	7	<0.1	<10	<1	<1	<1	65	<6	<3	19	50	
JUN												
04...	3	<0.1	<10	2	<1	<1	62	<6	<3	36	365	
SEP												
11...	3	<0.1	<10	2	<1	<1	110	9	<3	6	1.7	

K - Results based on colony count outside acceptable range (non-ideal colony count).



Figure 9.--Location of surface-water and water-quality stations in the Deschutes River basin.

DESCHUTES RIVER BASIN

14050000 DESCHUTES RIVER BELOW SNOW CREEK, NEAR LA PINE, OR

LOCATION.--Lat 43°48'51", long 121°46'33", in NW 1/4 sec.28, T.20 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, in Deschutes National Forest, on left bank at flow line of Crane Prairie Reservoir, 20 ft downstream from Snow Creek, 200 ft upstream from highway bridge, and 17 mi northwest of La Pine.

DRAINAGE AREA.--132 mi², including Sparks, Elk, and Mud Lake basins, which have no surface outflow to Deschutes River; hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--October 1937 to September 1991 (discontinued). Monthly discharge only October 1937, published in WSP 1318. Published as "near Lapine" 1937-64. See REMARKS.

REVISED RECORDS.--WSP 1248: 1951.

GAGE.--Water-stage recorder. Elevation of gage is 4,445 ft, from elevation of Crane Prairie Reservoir when slack water extended to gage. Prior to Sept. 10, 1938, nonrecording gage at site 450 ft downstream at different datum.

REMARKS.--Records good. No regulation. Crater Creek Canal diverts water to Tumalo Creek basin from tributaries of Soda Creek. Stream is spring fed and peak discharge may occur several months after the precipitation which caused it. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--54 years, 147 ft³/s, 106,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 480 ft³/s Aug. 19, 1974, gage height, 3.17 ft; maximum gage height, 4.12 ft Jan. 21, 1943 (ice jam); minimum discharge, 40 ft³/s sometime during period Dec. 22, 1959, to Mar. 2, 1960, result of freezeup; minimum daily, 55 ft³/s for many days April to June 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 114 ft³/s Oct. 1, 2, gage height 1.14 ft; maximum recorded gage height, 2.36 ft Dec. 23, backwater from ice; minimum discharge, 71 ft³/s many days March to May.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	94	83	82	76	78	71	72	74	76	76	98
2	112	92	82	80	78	79	71	72	74	76	76	98
3	112	92	81	80	79	82	71	71	74	76	76	98
4	112	94	81	79	79	82	73	71	74	76	77	98
5	112	92	81	78	79	77	73	71	75	75	77	100
6	110	90	82	78	78	76	72	71	74	75	78	101
7	109	91	81	79	78	76	72	72	74	74	77	103
8	108	93	80	78	78	74	71	75	74	74	77	103
9	106	91	80	78	78	74	72	72	74	74	77	103
10	106	90	82	80	77	74	71	72	74	74	77	103
11	104	88	80	80	76	75	71	72	74	74	76	103
12	103	88	80	83	76	76	71	72	74	74	76	106
13	104	88	81	81	78	73	71	73	74	75	77	107
14	103	87	81	83	76	72	71	72	74	75	77	109
15	103	86	80	83	76	72	71	72	74	76	78	108
16	103	84	80	80	76	72	71	75	75	76	78	109
17	103	84	81	80	78	72	71	77	75	75	80	109
18	103	84	83	80	78	73	71	75	74	74	80	109
19	101	84	80	80	78	72	71	74	76	76	82	109
20	98	84	e81	80	79	72	72	73	76	75	84	111
21	103	84	e82	80	79	72	72	74	74	75	85	110
22	102	84	e82	79	78	72	72	74	74	75	86	109
23	100	82	e82	78	78	72	72	74	74	76	87	109
24	98	82	e83	78	78	72	73	74	74	76	88	109
25	98	84	e84	78	78	72	72	74	74	76	89	108
26	98	82	86	78	78	72	72	74	74	76	90	106
27	96	82	84	78	77	72	72	74	76	76	92	107
28	95	82	84	77	77	72	71	74	79	76	93	106
29	93	82	e84	76	---	72	71	75	77	76	95	106
30	98	82	e84	76	---	72	71	76	76	76	95	104
31	97	---	83	76	---	71	---	75	---	76	96	---
TOTAL	3203	2602	2538	2456	2174	2292	2146	2272	2239	2334	2552	3159
MEAN	103	86.7	81.9	79.2	77.6	73.9	71.5	73.3	74.6	75.3	82.3	105
MAX	113	94	86	83	79	82	73	77	79	76	96	111
MIN	93	82	80	76	76	71	71	71	74	74	76	98
AC-FT	6350	5160	5030	4870	4310	4550	4260	4510	4440	4630	5060	6270

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1991, BY WATER YEAR (WY)

	174	146	130	115	104	97.6	102	131	156	178	218	207
MEAN	174	146	130	115	104	97.6	102	131	156	178	218	207
MAX	315	236	205	192	173	166	195	267	331	419	457	408
(WY)	1975	1973	1951	1951	1965	1951	1951	1956	1956	1956	1972	1974
MIN	64.1	61.8	61.6	59.6	61.4	59.0	58.5	58.3	56.3	58.2	60.2	62.8
(WY)	1942	1978	1942	1942	1942	1941	1941	1941	1941	1941	1941	1941

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1939 - 1991

ANNUAL TOTAL	35198	29967	147
ANNUAL MEAN	96.4	82.1	243
HIGHEST ANNUAL MEAN			65.9
LOWEST ANNUAL MEAN			1972
HIGHEST DAILY MEAN	124	113	476
LOWEST DAILY MEAN	74	71	55
ANNUAL SEVEN-DAY MINIMUM	75	71	55
ANNUAL RUNOFF (AC-FT)	69820	59440	106300
10 PERCENT EXCEEDS	119	103	253
50 PERCENT EXCEEDS	95	78	123
90 PERCENT EXCEEDS	80	72	80

DESCHUTES RIVER BASIN

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14050500 CULTUS RIVER ABOVE CULTUS CREEK, NEAR LA PINE, OR

LOCATION.--Lat 43°49'06", long 121°47'40", near line between secs.20 and 29, T.20 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, Deschutes National Forest, on left bank at highway culvert, 2 mi upstream from Cultus Creek, and 18 mi northwest of La Pine.

DRAINAGE AREA.--16.5 mi², hydrologic drainage boundry uncertain owing to ground-water exchange.

PERIOD OF RECORD.--October 1922 to September 1925, October 1937 to September 1991 (discontinued). Monthly discharge only October 1937, published in WSP 1318. Prior to Oct. 1, 1964, published as "near Lapine." See REMARKS.

REVISED RECORDS.--WSP 1448: 1923-25, 1947.

GAGE.--Water-stage recorder and cement bag control. Elevation of gage is 4,450 ft, by barometer. Oct 1, 1922, to Sept. 30, 1925, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--Records good. No regulation or diversions upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--57 years, 62.2 ft³/s, 45,060 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 178 ft³/s May 31, 1956, gage height, 1.04 ft; maximum gage height, 1.32 ft May 16, 1972 (backwater from Crane Prairie Reservoir); minimum discharge, 26 ft³/s May 26-31, Nov. 23 to Dec. 4, 1959.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 56 ft³/s Oct. 1-3; maximum gage height, 0.75 ft Oct. 1-4, 15-24; minimum discharge, 33 ft³/s Feb. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	54	49	48	40	34	39	37	38	43	48	50	52
2	56	48	48	39	34	39	37	39	43	50	50	52
3	55	48	48	41	34	39	37	40	43	49	50	52
4	52	48	48	41	35	39	38	40	44	48	50	52
5	52	49	48	40	40	39	37	39	44	47	51	52
6	52	48	48	39	38	39	37	41	44	47	52	51
7	52	49	48	39	37	38	37	41	44	46	52	51
8	52	50	48	39	38	38	37	39	44	46	52	51
9	51	48	48	39	39	37	37	39	44	46	52	50
10	50	50	48	40	39	37	37	39	45	46	52	50
11	50	50	47	41	39	37	37	39	46	48	53	50
12	50	50	46	45	40	37	37	39	46	48	53	50
13	50	49	45	46	e40	37	37	39	46	48	53	50
14	50	48	44	47	e40	37	37	39	46	48	53	50
15	49	50	44	50	e40	37	37	39	45	48	54	50
16	48	48	44	52	e40	37	37	39	44	48	54	49
17	48	49	44	52	e40	37	37	41	45	48	54	47
18	49	50	44	51	e40	37	38	41	46	48	54	46
19	50	47	44	50	e40	37	38	41	47	49	54	46
20	49	49	44	50	e40	37	39	41	48	50	54	46
21	49	49	44	49	e40	37	39	41	48	50	54	46
22	48	49	44	46	e40	37	39	41	48	50	54	46
23	48	50	44	44	e40	37	39	41	48	50	54	46
24	47	50	44	43	e40	37	39	43	47	50	53	45
25	47	50	44	42	e40	37	39	43	47	50	52	45
26	47	50	43	41	40	37	39	43	48	50	52	44
27	46	50	41	40	39	37	39	43	48	50	52	44
28	48	50	41	37	39	37	37	43	48	50	52	44
29	48	50	41	36	---	37	37	43	48	50	52	44
30	47	48	41	36	---	37	37	43	48	50	52	44
31	50	---	41	35	---	37	---	43	---	50	52	---
TOTAL	1544	1473	1394	1330	1085	1161	1129	1260	1375	1506	1626	1445
MEAN	49.8	49.1	45.0	42.9	38.7	37.5	37.6	40.6	45.8	48.6	52.5	48.2
MAX	56	50	48	52	40	39	39	43	48	50	54	52
MIN	46	47	41	35	34	37	37	38	43	46	50	44
AC-FT	3060	2920	2760	2640	2150	2300	2240	2500	2730	2990	3230	2870

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1991, BY WATER YEAR (WY)

	64.4	60.7	56.5	52.9	50.4	50.1	54.3	70.5	73.2	74.2	73.2	68.2
MEAN	64.4	60.7	56.5	52.9	50.4	50.1	54.3	70.5	73.2	74.2	73.2	68.2
MAX	93.2	90.8	88.0	85.7	84.1	80.5	96.1	142	136	126	117	103
(WY)	1957	1957	1951	1951	1951	1951	1957	1956	1956	1956	1951	1956
MIN	32.3	31.4	33.5	32.0	30.2	31.9	30.6	35.9	34.3	37.4	38.3	33.6
(WY)	1942	1942	1942	1942	1942	1941	1941	1941	1941	1941	1941	1941

SUMMARY STATISTICS FOR 1990 CALENDAR YEAR FOR 1991 WATER YEAR WATER YEARS 1939 - 1991

	18698	16328	
ANNUAL TOTAL	18698	16328	
ANNUAL MEAN	51.2	44.7	62.5
HIGHEST ANNUAL MEAN			96.5
LOWEST ANNUAL MEAN			36.3
HIGHEST DAILY MEAN	67	Apr 28	177
LOWEST DAILY MEAN	39	Mar 6	26
ANNUAL SEVEN-DAY MINIMUM	39	Mar 6	26
ANNUAL RUNOFF (AC-FT)	37090	32390	45240
10 PERCENT EXCEEDS	60	52	91
50 PERCENT EXCEEDS	50	46	58
90 PERCENT EXCEEDS	42	37	40

DESCHUTES RIVER BASIN

14051000 CULTUS CREEK ABOVE CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°49'17", long 121°49'22", in SW 1/4 sec.19, T.20 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, on left bank 1,000 ft upstream from highway bridge, 1.0 mi downstream from Cultus Lake, and 19 mi northwest of La Pine.

DRAINAGE AREA.--33.2 mi², hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--March to September 1924 (published as "above Crane Prairie, near Lapine"), October 1937 to September 1991 (discontinued). Monthly discharge only October 1937 to September 1949, published in WSP 1318. Records for October 1923 to February 1924, published in WSP 594, have been found to be unreliable and should not be used. Published as "near Lapine" 1937-64. See REMARKS.

REVISED RECORDS.--WSP 1568: 1957. WRD Ore. 1973: 1972. See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Elevation of gage is 4,545 ft, by barometer. Mar. 1 to Sept. 30, 1924, nonrecording gage at site 100 ft upstream at different datum.

REMARKS.--Records good except those for Oct. 1 to Jan. 18, which are poor. Some regulation by fish screens at Cultus Lake since 1962. No diversion upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--54 years (water years 1938-91), 22.0 ft³/s, 15,940 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 336 ft³/s Dec. 25, 1964, gage height, 4.15 ft, from floodmark, from rating curve extended above 90 ft³/s; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 78 ft³/s Jan. 18, gage height, 2.36 ft; no flow on many days.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	.00	.00	.00	13	15	12	17	43	27	7.2	.16
2	.00	.00	.00	.00	13	15	12	17	44	26	6.8	.09
3	.00	.00	.00	.00	14	18	12	18	44	25	6.4	.05
4	.00	.00	.00	.00	14	20	13	18	44	24	6.1	.03
5	.00	.00	.00	.00	15	21	13	18	43	24	5.8	.03
6	.00	.00	.00	.00	15	22	14	19	41	22	5.8	.03
7	.00	.00	.00	.00	14	21	14	20	41	21	5.6	.03
8	.00	.00	.00	.00	14	21	14	23	41	20	5.4	.03
9	.00	.00	.00	.00	14	21	15	25	40	19	5.3	.03
10	.00	.00	.00	.00	14	20	16	26	40	18	4.8	.02
11	.00	.00	.00	.00	13	19	15	26	40	17	4.3	.02
12	.00	.00	.00	.00	13	20	15	27	40	16	3.9	.02
13	.00	.00	.00	.00	14	20	15	28	39	16	3.6	.02
14	.00	.00	.00	.03	15	19	14	29	38	15	3.3	.02
15	.00	.00	.00	.05	15	18	14	30	37	14	3.2	.00
16	.00	.00	.00	.01	15	18	14	33	35	14	2.9	.00
17	.00	.00	.00	35	16	17	14	37	34	13	2.6	.00
18	.00	.00	.00	27	16	17	14	40	33	13	2.9	.00
19	.00	.00	.00	18	16	17	13	41	33	13	2.7	.00
20	.00	.00	.00	18	16	16	14	41	33	12	2.5	.00
21	.00	.00	.00	17	16	16	14	41	32	11	2.3	.00
22	.00	.00	.00	17	16	16	14	42	32	11	2.2	.00
23	.00	.00	.00	17	16	15	14	43	31	11	2.0	.00
24	.00	.00	.00	17	16	15	15	43	30	12	1.7	.00
25	.00	.00	.00	16	16	15	16	43	29	11	1.4	.00
26	.00	.00	.00	16	15	15	16	43	28	10	.99	.00
27	.00	.00	.00	15	15	14	17	42	27	10	.75	.00
28	.00	.00	.00	15	15	14	17	42	29	9.7	.54	.00
29	.00	.00	.00	14	---	13	16	42	29	9.1	.40	.00
30	.00	.00	.00	14	---	13	16	44	28	8.4	.32	.00
31	.00	---	.00	13	---	13	---	44	---	7.8	.22	---
TOTAL	0.00	0.00	0.00	269.09	414	534	432	1002	1078	480.0	103.92	0.58
MEAN	.000	.000	.000	8.68	14.8	17.2	14.4	32.3	35.9	15.5	3.35	.019
MAX	.00	.00	.00	35	16	22	14	44	44	27	7.2	.16
MIN	.00	.00	.00	.00	13	13	12	17	27	7.8	.22	.00
AC-FT	.00	.00	.00	534	821	1060	857	1990	2140	952	206	1.2

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1938 - 1991, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1938	.83	4.52	17.2	20.6	20.6
1939	6.23	48.9	79.7	75.8	57.0
1940	1963	1951	1978	1965	1953
1941	.000	.000	.000	.000	.007
1942	.000	.000	.000	.000	.019
1943	.000	.000	.000	.000	.019
1944	.000	.000	.000	.000	.019
1945	.000	.000	.000	.000	.019
1946	.000	.000	.000	.000	.019
1947	.000	.000	.000	.000	.019
1948	.000	.000	.000	.000	.019
1949	.000	.000	.000	.000	.019
1950	.000	.000	.000	.000	.019
1951	.000	.000	.000	.000	.019
1952	.000	.000	.000	.000	.019
1953	.000	.000	.000	.000	.019
1954	.000	.000	.000	.000	.019
1955	.000	.000	.000	.000	.019
1956	.000	.000	.000	.000	.019
1957	.000	.000	.000	.000	.019
1958	.000	.000	.000	.000	.019
1959	.000	.000	.000	.000	.019
1960	.000	.000	.000	.000	.019
1961	.000	.000	.000	.000	.019
1962	.000	.000	.000	.000	.019
1963	.000	.000	.000	.000	.019
1964	.000	.000	.000	.000	.019
1965	.000	.000	.000	.000	.019
1966	.000	.000	.000	.000	.019
1967	.000	.000	.000	.000	.019
1968	.000	.000	.000	.000	.019
1969	.000	.000	.000	.000	.019
1970	.000	.000	.000	.000	.019
1971	.000	.000	.000	.000	.019
1972	.000	.000	.000	.000	.019
1973	.000	.000	.000	.000	.019
1974	.000	.000	.000	.000	.019
1975	.000	.000	.000	.000	.019
1976	.000	.000	.000	.000	.019
1977	.000	.000	.000	.000	.019
1978	.000	.000	.000	.000	.019
1979	.000	.000	.000	.000	.019
1980	.000	.000	.000	.000	.019
1981	.000	.000	.000	.000	.019
1982	.000	.000	.000	.000	.019
1983	.000	.000	.000	.000	.019
1984	.000	.000	.000	.000	.019
1985	.000	.000	.000	.000	.019
1986	.000	.000	.000	.000	.019
1987	.000	.000	.000	.000	.019
1988	.000	.000	.000	.000	.019
1989	.000	.000	.000	.000	.019
1990	.000	.000	.000	.000	.019
1991	.000	.000	.000	.000	.019

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1938 - 1991

ANNUAL TOTAL	5618.64	4313.59	22.0
ANNUAL MEAN	15.4	11.8	43.9
HIGHEST ANNUAL MEAN			3.01
LOWEST ANNUAL MEAN			1956
HIGHEST DAILY MEAN	255	44	300
LOWEST DAILY MEAN	.00	.00	.00
ANNUAL SEVEN-DAY MINIMUM	.00	.00	.00
ANNUAL RUNOFF (AC-FT)	11140	8560	15950
10 PERCENT EXCEEDS	39	33	58
50 PERCENT EXCEEDS	5.2	12	12
90 PERCENT EXCEEDS	.00	.00	.10

14052000 DEER CREEK ABOVE CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°48'48", long 121°50'18", in SE 1/4 SW 1/4 sec.25, T.20 S., R.7 E., Deschutes County, Hydrologic Unit 17070301, on right bank 150 ft downstream from highway bridge, 1.2 mi downstream from Little Cultus Lake, and 19 mi northwest of La Pine.

DRAINAGE AREA.--21.5 mi², hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--February to September 1924 (published as "above Crane Prairie, near Lapine"). October 1937 to September 1991 (discontinued). Monthly discharge only October 1937 to September 1949, published in WSP 1318. Records for October 1923 to January 1924, published in WSP 594, have been found to be unreliable and should not be used. Published as "near Lapine" 1937-64. See REMARKS.

REVISED RECORDS.--See PERIOD OF RECORD.

GAGE.--Water-stage recorder and weir control. Elevation of gage is 4,520 ft, by barometer. Feb. 1 to Sept. 30, 1924, nonrecording gage at site 75 ft upstream at various datums. Oct. 1, 1937, to Sept. 30, 1938, water-stage recorder at bridge 150 ft upstream at different datum. Oct. 1, 1938, to Aug. 13, 1968, water-stage recorder and wooden weir control at present site and datum 0.60 ft higher.

REMARKS.--Records good except those for Dec. 17 to Jan. 23, and discharges below 1.0 ft³/s, which are poor. No regulation or diversion upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--54 years (water years 1938-91), 7.28 ft³/s, 5,270 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 200 ft³/s, estimated, Dec. 25, 1964; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 28 ft³/s May 19, gage height, 2.39 ft; minimum discharge, 0.01 ft³/s several days in October and November.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.02	.07	.19	e.84	1.8	5.3	2.9	11	15	3.3	.12	.06
2	.01	.06	.52	e.85	1.9	6.1	3.2	11	14	2.9	.11	.06
3	.02	.06	.48	e.86	2.1	9.6	3.3	12	13	2.7	.11	.05
4	.03	.17	.56	e.86	2.6	14	4.9	12	12	2.4	.28	.04
5	.05	.10	.58	e.85	3.5	16	6.0	12	11	2.1	.21	.04
6	.06	.07	.82	e.85	3.3	15	7.0	13	11	1.8	.24	.04
7	.04	.08	1.5	e.85	3.1	14	7.7	14	10	1.5	.16	.04
8	.03	.13	.89	e1.0	2.9	12	7.7	18	9.1	1.4	.13	.04
9	.03	.11	.58	e1.3	2.7	11	10	20	8.1	1.2	.12	.05
10	.03	.08	.93	e1.5	2.5	9.9	10	20	7.4	.98	.11	.06
11	.03	.05	.86	e1.3	2.4	8.8	9.5	19	6.5	.85	.09	.06
12	.03	.03	1.8	e1.7	2.5	8.3	8.7	18	5.6	.77	.09	.05
13	.08	.03	1.7	e2.4	3.7	7.5	8.2	18	5.2	.72	.09	.06
14	.07	.03	2.6	3.1	4.2	6.7	7.7	17	5.1	.60	.09	.06
15	.09	.03	2.1	e4.7	4.7	5.9	7.3	17	4.7	.56	.14	.05
16	.12	.02	2.1	e7.9	5.6	5.2	7.1	19	4.3	.67	.12	.05
17	.09	.02	1.6	e12	6.9	4.7	6.9	22	3.8	.69	.09	.05
18	.11	.03	2.3	e11	7.3	4.6	6.7	24	3.6	.61	.09	.05
19	.07	.03	5.7	e9.6	7.9	4.5	6.5	25	4.2	.56	.09	.05
20	.07	.03	e4.1	e8.3	7.9	4.2	6.7	25	4.6	.49	.09	.05
21	.17	.03	e2.8	e7.2	7.8	3.9	7.8	22	4.4	.41	.09	.06
22	.10	.04	e2.0	e6.2	7.5	3.7	8.4	21	4.0	.34	.08	.05
23	.06	.03	e1.4	e5.4	7.0	3.8	9.0	20	3.6	.28	.08	.05
24	.05	.03	e.96	4.8	6.5	3.8	11	20	3.4	.25	.06	.04
25	.03	.12	e.86	4.2	6.0	3.6	12	19	3.1	.23	.06	.04
26	.05	.06	e.86	3.6	5.6	3.5	13	19	2.8	.19	.06	.05
27	.05	.07	e1.1	3.1	5.3	3.2	14	17	2.8	.17	.06	.06
28	.06	.07	e1.3	2.7	5.0	3.0	13	16	3.8	.17	.06	.06
29	.06	.12	e1.1	2.4	---	2.8	12	16	4.0	.17	.06	.06
30	.13	.15	e.95	2.2	---	2.8	11	17	3.6	.16	.06	.06
31	.14	---	e.82	2.0	---	2.9	---	16	---	.15	.06	---
TOTAL	1.98	1.95	46.06	115.56	130.2	210.3	249.2	550	193.7	29.32	3.30	1.54
MEAN	.064	.065	1.49	3.73	4.65	6.78	8.31	17.7	6.46	.95	.11	.051
MAX	.17	.17	5.7	12	7.9	16	14	25	15	3.3	.28	.06
MIN	.01	.02	.19	.84	1.8	2.8	2.9	11	2.8	.15	.06	.04
AC-FT	3.9	3.9	91	229	258	417	494	1090	384	58	6.5	3.1

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1991, BY WATER YEAR (WY)

	MEAN	MAX	MIN	(WY)	1951	1951	1943	1943	1982	1972	1943	1946	1974	1974	1976	1951
MEAN	.34	2.00	.000	(WY)	1940	1940	1941	1941	1941	1977	1977	1977	1940	1924	1924	1924
MAX	2.00	14.3	.000	(WY)	1940	1940	1941	1941	1941	1977	1977	1977	1940	1924	1924	1924
MIN	.000	.000	.000	(WY)	1940	1940	1941	1941	1941	1977	1977	1977	1940	1924	1924	1924
(WY)	1940	1940	1941	1941	1941	1941	1941	1941	1977	1977	1977	1977	1940	1924	1924	1924

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1924 - 1991

ANNUAL TOTAL	1518.40	1533.11	7.28
ANNUAL MEAN	4.16	4.20	15.2
HIGHEST ANNUAL MEAN			1943
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	81	25	108
LOWEST DAILY MEAN	.01	.01	.00
ANNUAL SEVEN-DAY MINIMUM	.02	.03	.00
ANNUAL RUNOFF (AC-FT)	3010	3040	5270
10 PERCENT EXCEEDS	12	12	21
50 PERCENT EXCEEDS	1.4	1.8	2.5
90 PERCENT EXCEEDS	.04	.05	.10

DESCHUTES RIVER BASIN

14052500 QUINN RIVER NEAR LA PINE, OR

LOCATION.--Lat 43°47'03", long 121°50'06", in SW 1/4 NW 1/4 sec.1, T.21 S., R.7 E., Deschutes County, Hydrologic Unit 17070301, Deschutes National Forest, on left bank at flow line of Crane Prairie Reservoir, 150 ft downstream from springs at head of river, and 18 mi northwest of La Pine.

DRAINAGE AREA.--Indeterminate, normal flow is entirely from springs 150 ft upstream.

PERIOD OF RECORD.--June 1922 to September 1925, October 1937 to September 1991 (discontinued). Published as "above Crane Prairie Reservoir near Lapine" 1922-25, and as "near Lapine" 1937-64. Monthly discharge only October 1937, published in WSP 1318. See REMARKS.

REVISED RECORDS.--WSP 1448: 1939, 1941.

GAGE.--Water-stage recorder and log control. Datum of gage is 4,442.1 ft above National Geodetic Vertical Datum of 1929, based on elevation of Crane Prairie Reservoir when slack water reached station. June 1, 1922, to Sept. 30, 1925, nonrecording gage at site 150 ft downstream at different datum.

REMARKS.--Records good. No regulation or diversion upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--57 years, 23.7 ft³/s, 17,170 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 59 ft³/s July 4, 1949, gage height, 1.97 ft; maximum gage height, 3.92 ft June 25, 1943 (backwater from Crane Prairie Reservoir); practically no flow Nov. 14, 1941.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 22 ft³/s several days in July, August; maximum gage height 1.69 ft Aug. 4; minimum discharge, 9.1 ft³/s several days in February, March.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	12	11	11	11	9.9	11	14	16	21	20	19
2	13	12	11	11	9.4	9.3	11	13	17	21	20	19
3	14	12	11	11	9.1	10	11	13	17	21	20	19
4	14	12	11	11	9.5	10	11	13	17	21	20	19
5	14	12	11	11	9.1	10	11	13	17	21	21	18
6	14	12	11	11	9.7	11	12	13	17	21	21	18
7	14	12	11	11	9.4	11	12	13	17	21	21	18
8	14	12	11	11	9.3	11	12	13	17	21	21	18
9	15	12	11	11	9.4	11	13	14	18	21	21	17
10	14	12	11	11	9.5	11	12	14	18	21	20	17
11	14	11	11	11	9.6	11	13	14	18	21	20	17
12	13	11	11	9.6	9.1	11	13	14	19	21	20	17
13	13	12	11	9.9	9.5	11	13	14	19	22	20	17
14	13	12	12	10	11	11	13	14	19	22	20	17
15	13	12	12	10	11	11	13	14	20	21	19	16
16	13	12	11	10	10	11	13	14	20	21	20	16
17	14	12	11	11	9.9	11	13	14	20	21	20	16
18	13	12	11	10	10	11	14	14	20	21	20	16
19	12	12	11	10	11	11	15	14	20	21	19	16
20	12	12	11	11	9.9	10	14	14	20	21	20	16
21	13	11	11	11	10	9.9	14	15	21	21	20	16
22	12	11	11	11	10	10	14	15	21	22	20	16
23	12	11	11	12	10	11	14	15	21	21	20	15
24	13	11	11	11	9.7	10	14	15	21	20	19	15
25	12	11	11	11	9.4	11	14	15	20	20	19	15
26	12	11	11	11	9.9	10	14	15	20	20	20	15
27	12	11	11	11	11	10	14	15	20	20	19	15
28	12	11	11	11	11	11	14	16	20	20	19	15
29	12	11	11	12	---	11	14	17	20	20	19	15
30	12	11	11	12	---	11	15	16	20	20	19	15
31	12	---	11	12	---	11	---	16	---	20	19	---
TOTAL	404	348	343	337.5	277.4	329.1	391	443	570	646	616	498
MEAN	13.0	11.6	11.1	10.9	9.91	10.6	13.0	14.3	19.0	20.8	19.9	16.6
MAX	15	12	12	12	11	11	15	17	21	22	21	19
MIN	12	11	11	9.6	9.1	9.3	11	13	16	20	19	15
AC-FT	801	690	680	669	550	653	776	879	1130	1280	1220	985

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1939 - 1991, BY WATER YEAR (WY)

[illegible]

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1939 - 1991

[illegible]

DESCHUTES RIVER BASIN

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14053500 CRANE PRAIRIE RESERVOIR NEAR LA PINE, OR

LOCATION.--Lat 43°45'20", long 121°47'00", in SW 1/4 NW 1/4 sec.16, T.21 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, in Deschutes National Forest, on control structure at Crane Prairie Dam on Deschutes River, 15.0 mi northwest of La Pine, and at mile 238.3.

DRAINAGE AREA.--254 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--November 1922 to November 1935, April to December 1936, April 1937 to September 1991 (discontinued). Prior to Oct. 1, 1964, published as "near Lapine." See REMARKS.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1318: 1925, 1940-41, 1950. WSP 1448: 1925(M,m), 1940(m), 1950(m).

GAGE.--Water-stage recorder. Datum of gage is 4,400.0 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation); gage readings have been reduced to elevations NGVD. Prior to July 13, 1940, nonrecording gage, at site 150 ft upstream at same datum. July 13, 1940, to Sept. 15, 1966, nonrecording gage, at present site and datum.

REMARKS.--Reservoir originally formed by earthfill dam completed in 1922, reconstructed as rock-faced, earthfill dam in 1940. Capacity, 55,340 acre-ft between elevation 4,424.0 ft lip of fish-screen structure and 4,445.0 ft crest of spillway. Some dead storage in isolated pools in reservoir at stages below 4,428 ft and natural flow passing through reservoir when outlet gates are open prevents withdrawal of remaining storage to elevation of sill of gates. Crater Creek Canal diverts water to Tumalo Creek basin from tributaries of Soda Creek upstream from station. Released water diverted from Deschutes River near Bend for irrigation near Bend and Redmond. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 60,500 acre-ft June 5-7, 1943, elevation, 4,446.0 ft; no usable contents at times.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 33,160 acre-ft Mar. 5, elevation, 4,440.12 ft; minimum contents, 13,280 acre-ft Sept. 30, elevation, 4,434.74 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	4,435.93	17,240	-
Oct. 31.....	4,437.32	22,200	+4,960
Nov. 30.....	4,438.29	25,850	+3,650
Dec. 31.....	4,438.94	28,380	+2,530
CAL YR 1990.....	-	-	+4,880
Jan. 31.....	4,439.43	30,350	+1,970
Feb. 28.....	4,439.75	31,650	+1,300
Mar. 31.....	4,439.31	29,870	-1,780
Apr. 30.....	4,438.92	28,300	-1,570
May 31.....	4,438.97	28,490	+190
June 30.....	4,438.84	27,990	-500
July 31.....	4,438.03	24,840	-3,150
Aug. 31.....	4,436.07	17,690	-7,150
Sept. 30.....	4,434.74	13,280	-4,410
WTR YR 1991.....	-	-	-3,960

DESCHUTES RIVER BASIN

14054000 DESCHUTES RIVER BELOW CRANE PRAIRIE RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°45'13", long 121°46'57", in SW 1/4 NW 1/4 sec.16, T.21 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, Deschutes National Forest, on left bank 0.1 mi downstream from Crane Prairie Dam, 15 mi northwest of La Pine, and at mile 238.2.

DRAINAGE AREA.--254 mi², hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--August 1907 to November 1908 and August 1912 to September 1913 (fragmentary), October 1913 to September 1917, February 1922 to September 1991 (discontinued). Monthly discharge only for some periods, published in WSP 1318. Prior to October 1949, published as "at Crane Prairie, near Lapine." Published as "near Lapine" 1949-64. See REMARKS.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1318: 1929(M). WDR OR-90-1: 1989.

GAGE.--Water-stage recorder. Datum of gage is 4,419.78 ft above National Geodetic Vertical Datum of 1929 (Pacific Power & Light Co. bench mark). Aug. 15, 1907, to Sept. 30, 1917, and Feb. 23 to June 8, 1922, nonrecording gage at site 0.5 mi upstream at different datums. June 9, 1922, to May 9, 1932, nonrecording gage or water-stage recorder at present site and datum.

REMARKS.--No estimated daily discharges. Records good. Flows regulated by Crane Prairie Reservoir. Records after September 30, 1991 available at Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--73 years (water years 1914-17, 1923-91), 212 ft³/s, 153,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,170 ft³/s July 28, 1947, gage height, 3.34 ft; no flow Nov. 15, 1978, when gates in Crane Prairie Dam were closed.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 364 ft³/s Aug. 7, gage height, 1.59 ft; minimum discharge, 62 ft³/s Oct. 1, result of regulation at Crane Prairie Reservoir.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	152	85	90	95	97	137	205	165	160	163	209	242
2	84	86	90	97	97	137	169	166	160	163	205	236
3	84	86	90	97	97	137	169	166	160	163	197	232
4	84	86	90	97	97	137	166	166	159	163	188	224
5	84	86	90	97	97	134	166	166	160	163	184	221
6	84	86	90	97	97	134	166	166	157	163	208	221
7	84	86	90	97	97	134	166	166	157	163	283	216
8	84	87	90	97	97	134	166	166	157	163	304	210
9	84	88	90	97	97	134	163	166	157	162	304	206
10	84	88	90	97	97	134	163	166	157	160	296	224
11	84	88	90	97	97	134	165	166	157	160	291	231
12	84	88	90	97	97	134	166	166	157	160	291	227
13	84	88	90	97	97	134	166	166	157	160	291	227
14	84	88	90	97	97	134	166	166	162	160	291	227
15	84	88	90	97	97	134	166	166	166	157	286	226
16	84	88	90	97	97	134	166	166	166	162	282	223
17	84	88	90	97	97	134	166	166	165	169	274	223
18	84	88	90	97	97	134	166	166	163	169	269	220
19	84	88	90	97	97	134	166	166	163	169	261	219
20	84	88	90	97	97	137	166	165	163	169	247	215
21	84	88	90	97	97	189	166	163	163	169	243	209
22	84	88	90	97	126	242	165	163	163	169	264	205
23	84	90	93	97	143	242	163	163	163	204	287	205
24	84	90	93	97	137	242	163	163	163	240	286	205
25	84	90	93	97	137	242	163	163	163	231	282	205
26	84	90	93	97	137	242	163	163	163	227	282	217
27	84	90	93	97	137	242	163	163	163	227	282	231
28	84	90	95	97	137	241	163	163	163	224	280	231
29	84	90	95	97	---	238	163	163	163	223	274	231
30	84	90	95	97	---	238	163	163	163	220	265	227
31	84	---	95	97	---	238	---	162	---	213	253	---
TOTAL	2672	2640	2825	3005	2991	5291	4993	5110	4833	5608	8159	6636
MEAN	86.2	88.0	91.1	96.9	107	171	166	165	161	181	263	221
MAX	152	90	95	97	143	242	205	166	166	240	304	242
MIN	84	85	90	95	97	134	163	162	157	157	184	205
AC-FT	5300	5240	5600	5960	5930	10490	9900	10140	9590	11120	16180	13160

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1922 - 1991, BY WATER YEAR (WY)

	206	147	114	105	104	102	136	254	335	354	341	293
MEAN	206	147	114	105	104	102	136	254	335	354	341	293
MAX	675	700	489	334	380	273	370	750	782	647	709	635
(WY)	1950	1953	1952	1928	1924	1922	1924	1950	1950	1956	1956	1971
MIN	12.6	5.23	3.34	3.35	5.57	4.97	7.70	14.4	107	119	109	19.1
(WY)	1978	1943	1978	1978	1941	1941	1942	1943	1942	1943	1949	1948

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1922 - 1991

ANNUAL TOTAL	57430	54763	207	
ANNUAL MEAN	157	150	323	1956
HIGHEST ANNUAL MEAN			101	1941
LOWEST ANNUAL MEAN			1160	1947
HIGHEST DAILY MEAN	421	Aug 16	304	Aug 8
LOWEST DAILY MEAN	21	Mar 3	84	Oct 2
ANNUAL SEVEN-DAY MINIMUM	21	Mar 3	84	Oct 2
ANNUAL RUNOFF (AC-FT)	113900		108600	
10 PERCENT EXCEEDS	354		430	
50 PERCENT EXCEEDS	121		175	
90 PERCENT EXCEEDS	32		27	

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LOCATION.--Lat 43°42'57", long 121°48'10", in NE 1/4 SW 1/4 sec.29, T.21 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, in Deschutes National Forest, on right bank at highway crossing and 15 mi northwest of La Pine.

PERIOD OF RECORD.--May 1922 to September 1925, July 1938 to September 1991 (discontinued). Monthly discharge only July 1938 to September 1949, published in WSP 1318. Prior to Oct. 1, 1964, published as "near Lapine." See REMARKS.

GAGE.--Water-stage recorder. Elevation of gage is 4,370 ft, from topographic map. May 24, 1922, to Sept. 30, 1925, nonrecording gage, and July 1, 1938, to Nov. 1, 1945, water-stage recorder at site 0.4 mi downstream at different datums. Nov. 2, 1945, to Aug. 25, 1971, water-stage recorder at site 0.8 mi upstream at datum of 4,372.94 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No regulation. No diversion upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 104 ft³/s Aug. 4, 1956, gage height, 1.64 ft; maximum gage height, 3.50 ft Jan. 30, 1980, backwater from ice; minimum discharge, 16 ft³/s July 22-25, 1941, and at times December 1941 to March 1942.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 32 ft³/s Oct. 21, 30, 31, gage height, 0.40 ft; maximum gage height, 2.23 ft Dec. 21, backwater from ice; minimum discharge, 22 ft³/s May 26, June 2, 3, 10, 11.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	31	30	26	27	24	24	25	24	23	24	25	29
2	31	30	26	27	25	24	25	24	23	24	25	29
3	31	30	27	27	25	28	25	24	23	24	25	29
4	31	30	28	26	26	29	25	24	23	24	26	30
5	31	30	28	26	27	26	26	24	23	24	26	30
6	31	30	28	26	25	25	26	24	24	24	26	30
7	31	29	28	26	25	24	25	24	23	24	26	30
8	31	29	28	26	25	24	25	25	23	24	26	30
9	31	29	28	26	25	24	26	24	23	24	26	30
10	31	29	28	26	24	24	25	24	23	24	26	30
11	31	29	28	26	24	24	25	25	23	24	26	29
12	31	29	28	27	25	24	25	25	23	24	26	29
13	31	29	28	27	26	23	24	25	23	24	26	29
14	31	29	27	28	25	23	24	24	23	24	26	29
15	31	29	27	29	25	23	25	24	23	24	26	29
16	31	28	27	27	25	24	25	25	23	25	26	29
17	31	28	27	27	24	24	25	26	23	25	26	29
18	31	28	28	26	24	24	25	25	23	24	26	28
19	31	28	28	26	24	24	24	26	24	24	26	28
20	31	28	e28	26	24	23	25	25	24	24	26	28
21	31	28	e28	26	24	23	25	25	23	24	26	28
22	31	28	e28	26	24	24	25	25	23	24	26	28
23	31	28	e28	26	24	25	24	25	23	24	26	28
24	31	28	e28	26	24	25	25	24	24	25	26	28
25	31	28	e29	26	24	25	24	24	24	25	26	28
26	30	27	e29	26	23	25	25	23	23	25	26	28
27	30	27	29	25	23	24	25	23	24	25	27	28
28	30	26	28	25	23	24	24	23	25	25	27	28
29	30	26	e28	25	---	24	24	23	25	25	27	28
30	31	26	e28	25	---	25	24	23	24	25	28	28
31	31	---	27	25	---	25	---	23	---	25	29	---
TOTAL	957	853	861	813	686	757	745	752	701	754	811	864
MEAN	30.9	28.4	27.8	26.2	24.5	24.4	24.8	24.3	23.4	24.3	26.2	28.8
MAX	31	30	29	29	27	29	26	26	25	25	29	30
MIN	30	26	26	25	23	23	24	23	23	24	25	28
AC-FT	1900	1690	1710	1610	1360	1500	1480	1490	1390	1500	1610	1710

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1991, BY WATER YEAR (WY)

MEAN	43.5	41.7	39.3	36.8	35.5	35.9	38.0	38.8	39.8	40.7	43.8	44.2
MAX	70.9	66.0	61.7	55.3	52.8	53.6	56.4	68.8	71.1	74.9	77.4	70.0
(WY)	1957	1957	1957	1957	1957	1957	1951	1956	1956	1956	1956	1956
MIN	23.9	22.9	20.8	22.2	21.6	21.5	23.1	22.2	23.4	24.3	25.9	25.7
(WY)	1969	1969	1969	1969	1969	1969	1979	1979	1979	1991	1968	1977

WATER YEARS 1950 - 1991

ANNUAL TOTAL	10875		9554						
ANNUAL MEAN	29.8		26.2			39.8			
HIGHEST ANNUAL MEAN						59.3			1951
LOWEST ANNUAL MEAN						25.5			1979
HIGHEST DAILY MEAN	37	Jan 7	31	Oct 1		86		Aug 4	1956
LOWEST DAILY MEAN	26	Nov 28	23	Feb 26		20		Dec 13	1968
ANNUAL SEVEN-DAY MINIMUM	26	Nov 26	23	May 26		20		Mar 15	1969
ANNUAL RUNOFF (AC-FT)	21570		18950			28860			
10 PERCENT EXCEEDS	32		30			56			
50 PERCENT EXCEEDS	30		26			38			
90 PERCENT EXCEEDS	27		24			26			

DESCHUTES RIVER BASIN

14056500 DESCHUTES RIVER BELOW WICKIUP RESERVOIR, NEAR LA PINE, OR

LOCATION.--Lat 43°41'10", long 121°41'13", in NW 1/4 NE 1/4 sec.7, T.22 S., R.9 E., Deschutes County, Hydrologic Unit 17070301, on left bank 1,000 ft downstream from Wickiup Dam, 9 mi west of La Pine, and at mile 226.4.

DRAINAGE AREA.--483 mi², hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--June 1938 to September 1991 (discontinued). Monthly discharge only June 1938, published in WSP 1318. Published as "near Lapine" 1938-64. See REMARKS.

REVISED RECORDS.--WSP 1448: 1944(m), 1947-51(m).

GAGE.--Water-stage recorder. Datum of gage is 4,257.41 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

REMARKS.--No estimated daily discharges. Records good except those for Oct. 19 to April 7, May 17 to June 3, June 20 to Aug. 15, which are fair. Flow regulated by Crane Prairie Reservoir (station 14053500), and since 1942 by Wickiup Reservoir (station 14056000). Some leakage from Crane Prairie and Wickiup Reservoirs does not pass station. Some spill bypassed station in 1955. Crater Creek canal diverts water upstream from station to Tumalo Creek basin. U.S. Bureau of Reclamation satellite telemeter at station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--53 years (water years 1939-91), 733 ft³/s, 531,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,280 ft³/s July 28 to Aug. 1, 1956, July 31, Aug. 1, 2, 1962; minimum, 1.9 ft³/s Nov. 10, 1973; minimum daily, 10 ft³/s Jan. 17, 1952.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,920 ft³/s July 16, gage height, 6.32 ft; minimum discharge, 14 ft³/s Nov. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	772	28	20	26	20	21	28	1020	1160	1000	1590	1190
2	595	26	20	27	20	21	28	1030	1200	1140	1590	1180
3	555	27	20	28	20	21	28	1060	1280	1390	1590	1190
4	561	27	20	28	20	22	28	1100	1350	1460	1570	1200
5	557	27	20	28	21	22	29	1090	1370	1520	1550	1200
6	555	27	20	27	19	22	29	1100	1380	1580	1480	1240
7	553	28	20	27	18	23	29	877	1380	1590	1410	1250
8	637	27	21	27	19	24	113	611	1380	1610	1350	1250
9	722	27	21	27	19	24	237	616	1380	1610	1320	1250
10	780	27	21	27	20	24	236	911	1370	1680	1310	1240
11	815	27	22	27	19	24	237	941	1370	1740	1300	1230
12	813	27	22	26	18	24	236	1050	1370	1800	1260	1230
13	799	27	22	26	19	25	281	980	1370	1840	1230	1230
14	485	27	22	26	21	25	492	917	1370	1860	1200	1220
15	484	28	22	24	20	25	503	900	1370	1890	1190	1240
16	468	27	22	22	20	24	643	901	1370	1790	1190	1240
17	307	26	23	22	20	25	689	667	1380	1610	1190	1210
18	281	27	23	22	20	26	707	478	1380	1540	1190	1180
19	43	26	23	23	20	26	809	477	1380	1530	1180	1130
20	41	26	23	23	19	26	807	477	1290	1510	1170	1100
21	41	27	23	22	20	26	802	603	1110	1500	1170	1100
22	40	27	23	22	20	26	799	836	1070	1510	1160	1090
23	40	28	24	22	20	25	863	1000	1080	1610	1180	1050
24	40	28	24	22	21	25	907	1190	1010	1650	1200	995
25	41	27	25	22	22	26	905	1270	966	1630	1200	962
26	31	28	26	21	22	26	903	1270	964	1620	1190	907
27	26	28	27	21	22	26	901	1260	958	1610	1190	882
28	26	27	27	22	20	26	901	1260	933	1610	1190	883
29	26	24	27	21	---	27	912	1230	878	1590	1190	884
30	27	20	27	21	---	27	1030	1180	899	1610	1190	660
31	27	---	26	21	---	27	---	1160	---	1610	1190	---
TOTAL	11188	803	706	750	559	761	15112	29462	36768	49240	39910	33613
MEAN	361	26.8	22.8	24.2	20.0	24.5	504	950	1226	1588	1287	1120
MAX	815	28	27	28	22	27	1030	1270	1380	1890	1590	1250
MIN	26	20	20	21	18	21	28	477	878	1000	1160	660
AC-FT	22190	1590	1400	1490	1110	1510	29970	58440	72930	97670	79160	66670

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1943 - 1991, BY WATER YEAR (WY)

	MEAN	558	156	163	205	240	255	550	1034	1347	1642	1508	1213
MAX	1200	1050	887	851	780	735	990	1542	1788	2079	2123	1698	
(WY)	1947	1944	1985	1944	1975	1972	1959	1973	1952	1962	1951	1950	
MIN	112	14.4	16.0	17.7	16.3	17.6	221	476	638	922	908	803	
(WY)	1978	1960	1960	1980	1961	1961	1989	1945	1948	1943	1944	1985	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1943 - 1991

ANNUAL TOTAL	230128	218872	
ANNUAL MEAN	630	600	742
HIGHEST ANNUAL MEAN			997
LOWEST ANNUAL MEAN			552
HIGHEST DAILY MEAN	1850	1890	2280
LOWEST DAILY MEAN	20	18	10
ANNUAL SEVEN-DAY MINIMUM	20	19	12
ANNUAL RUNOFF (AC-FT)	456500	434100	537600
10 PERCENT EXCEEDS	1530	1380	1630
50 PERCENT EXCEEDS	605	478	651
90 PERCENT EXCEEDS	25	21	25

LOCATION.--Lat 43°47'48", long 121°34'18", in NW 1/4 SE 1/4 sec.31, T.20 S., R.10 E., Deschutes County, Hydrologic Unit 17070301, on left bank 50 ft downstream from pond spillway at State fish hatchery, 9 mi northwest of La Pine, and at mile 4.8.

PERIOD OF RECORD.--July 1938 to September 1991 (discontinued). Records for May to September 1912 at site 3 mi downstream not equivalent owing to difference in drainage area. Prior to Oct. 1, 1964, published as "near Lapine." See REMARKS.

REMARKS.--No estimated daily discharges. Records excellent. Diversion only to ponds at fish hatchery 50 ft upstream from station, from which water returns to river upstream from station. Stream is spring fed and momentary extremes are caused by operation of fish hatchery. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 254 ft³/s June 5, 1965, gage height, 2.02 ft; minimum discharge, 67 ft³/s sometime during period Sept. 20-30, 1969.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 130 ft³/s Dec. 3, gage height, 1.29 ft, result of regulation; minimum discharge, 71 ft³/s May 6, result of regulation.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	102	98	97	90	90	90	88	85	85	91	90	87
2	101	98	97	89	91	91	88	85	86	91	90	86
3	101	98	97	89	91	93	89	85	86	91	90	86
4	100	99	97	88	91	93	89	85	86	91	90	86
5	100	98	95	89	91	90	89	84	87	91	90	88
6	100	98	95	89	90	90	88	83	87	91	90	88
7	102	99	96	90	90	90	88	84	86	91	90	87
8	101	100	96	90	90	90	89	84	87	90	89	87
9	100	98	97	89	90	90	87	84	87	90	89	87
10	100	98	97	90	90	90	87	84	87	91	89	87
11	100	98	95	91	90	90	86	84	87	91	89	87
12	100	98	95	91	91	90	87	84	87	92	90	87
13	100	98	95	90	91	90	87	84	86	92	90	87
14	100	98	93	91	90	90	87	84	88	92	89	87
15	101	98	93	91	90	90	87	84	89	92	90	86
16	100	97	93	90	90	90	87	86	90	92	89	86
17	100	98	94	90	90	90	87	85	89	91	89	86
18	101	98	94	90	90	90	87	85	89	90	89	86
19	100	98	94	90	90	90	85	84	90	90	89	86
20	100	98	93	90	89	90	87	84	89	90	88	86
21	101	98	93	90	90	88	87	83	89	90	88	85
22	100	97	93	90	89	88	85	82	89	90	88	85
23	100	97	93	90	89	89	85	82	91	90	88	85
24	98	97	93	90	88	88	85	82	90	91	87	86
25	98	98	93	90	88	89	85	82	89	91	87	87
26	98	97	93	90	88	89	85	83	89	90	87	87
27	98	97	93	90	88	88	84	85	91	90	87	87
28	98	97	93	90	89	88	84	87	92	90	87	87
29	98	97	92	90	---	88	84	87	91	90	87	87
30	100	97	90	90	---	89	85	87	90	90	87	87
31	99	---	90	90	---	89	---	86	---	90	87	---
TOTAL	3097	2935	2919	2787	2514	2780	2598	2613	2649	2812	2749	2595
MEAN	99.9	97.8	94.2	89.9	89.8	89.7	86.6	84.3	88.3	90.7	88.7	86.5
MAX	102	100	97	91	91	93	89	87	92	92	90	88
MIN	98	97	90	88	88	88	84	82	85	90	87	85
AC-FT	6140	5820	5790	5530	4990	5510	5150	5180	5250	5580	5450	5150

[illegible]

ANNUAL TOTAL	38079		33048						
ANNUAL MEAN	104		90.5			147			
HIGHEST ANNUAL MEAN						202			1952
LOWEST ANNUAL MEAN						81.5			1942
HIGHEST DAILY MEAN						244	Jun 5		1951
LOWEST DAILY MEAN	114	Jan 7	102	Oct 1		77	Feb 28		1942
ANNUAL SEVEN-DAY MINIMUM	90	Dec 30	82	May 22		77	Feb 28		1942
ANNUAL RUNOFF (AC-FT)	92	Dec 25	83	May 20		77	Feb 28		1942
10 PERCENT EXCEEDS	75500		65500			106100			
50 PERCENT EXCEEDS	109		98			187			
90 PERCENT EXCEEDS	106		90			147			
	97		85			105			

DESCHUTES RIVER BASIN

14059500 CRESCENT LAKE NEAR CRESCENT, OR

LOCATION.--Lat 43°30'05", long 121°58'20", in SW 1/4 sec.11, T.24 S., R.6 E., Klamath County, Hydrologic Unit 17070302, Deschutes National Forest, on outlet works at dam on Crescent Creek, 0.8 mi south of town of Crescent Lake, 14.0 mi west of Crescent, and at mile 30.0.

DRAINAGE AREA.--60.7 mi², hydrologic drainage boundary uncertain because of interbasin ground-water exchange.

PERIOD OF RECORD.--August 1922 to September 1991 (discontinued). See REMARKS.

REVISED RECORDS.--WSP 1218: Drainage area. WSP 1318: 1922-31. WSP 1448: 1923-31(M,m).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Oct. 1, 1956, nonrecording gage at nearby site at datum 4,825.16 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1956, to Sept. 12, 1966, nonrecording gage, at present site and datum.

REMARKS.--Reservoir originally formed by dam of earth and logs completed in 1922, reconstructed as earthfill dam in 1956. Capacity, 117,200 acre-ft between elevations 4,821.5 ft, sill of outlet gate and 4,853.0 ft, crest of spillway. Maximum allowable storage, 86,050 acre-ft elevation, 4,845.32 ft. Dead storage about 500,000 acre-ft, Oregon Game Commission survey. Records given herein represent total contents (previously reported as usable contents) above elevation 4,821.5 ft, water surface probably cannot be lowered below elevation 4,823.4 ft, 5,360 acre-ft, because of natural flow through reservoir. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 93,010 acre-ft June 6, 1975, elevation, 4,847.09 ft; minimum contents observed, 9,640 acre-ft Oct. 21, 1931, elevation, 4,827.91 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 38,730 acre-ft June 30, elevation, 4,832.88 ft; minimum contents, 13,800 acre-ft Sept. 30, elevation, 4,825.90 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	4,829.03	24,820	-
Oct. 31.....	4,829.14	25,200	+380
Nov. 30.....	4,829.65	27,020	+1,820
Dec. 31.....	--	a27,880	+860
CAL YR 1990.....	-	-	-13,780
Jan. 31.....	4,830.29	29,320	+1,440
Feb. 28.....	4,830.63	30,550	+1,230
Mar. 31.....	4,831.14	32,250	+1,700
Apr. 30.....	4,831.51	33,730	+1,480
May 31.....	4,832.27	36,480	+2,750
June 30.....	4,832.86	38,650	+2,170
July 31.....	4,830.97	31,770	-6,880
Aug. 31.....	4,827.93	20,920	-10,850
Sept. 30.....	4,825.90	13,800	-7,120
WTR YR 1991.....	-	-	-11,020

a Interpolated.

DESCHUTES RIVER BASIN

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14060000 CRESCENT CREEK AT CRESCENT LAKE, NEAR CRESCENT, OR

LOCATION.--Lat 43°30'11", long 121°58'20", in SE 1/4 SW 1/4 sec.11, T.24 S., R.6 E., Klamath County, Hydrologic Unit 17070302, Deschutes National Forest, on left bank 400 ft downstream from Crescent Lake Dam, 0.5 mi south of town of Crescent Lake, 14 mi west of Crescent, and at mile 29.9.

DRAINAGE AREA.--60.7 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--January to September 1911 (gage heights and discharge measurements only), January 1912 to July 1915, July to September 1927, May 1928 to September 1991 (discontinued). Published as Crescent Lake outlet near Crescent January 1911 to September 1912, and as Crescent Creek at outlet of Crescent Lake, near Crescent October 1913 to July 1915. See REMARKS.

REVISED RECORDS.--WSP 1218: Drainage area.

GAGE.--Water-stage recorder and Parshall flume. Datum of gage is 4,819.96 ft above National Geodetic Vertical Datum of 1929. See WSP 1935 for history of changes prior to Sept. 11, 1956.

REMARKS.--Records good except those below 10 ft³/s and estimated daily discharges, which are fair. Flow regulated since 1922 by Crescent Lake (station 14059500). No diversion upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--65 years (water years 1913-14, 1929-91), 57.3 ft³/s, 41,510 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 313 ft³/s July 9, 1929, Aug. 9, 1936; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 205 ft³/s Sept. 16, gage height, 2.46 ft; minimum discharge, 3.3 ft³/s Oct. 8.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	128	3.9	4.3	4.7	4.7	4.7	e4.7	e5.0	e4.7	47	142	126
2	82	3.9	4.3	4.7	4.7	4.7	e4.7	5.0	e5.0	91	156	113
3	81	3.9	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	91	169	107
4	80	3.9	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	91	168	107
5	78	3.9	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	91	166	104
6	78	3.9	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	90	171	126
7	78	3.9	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	89	177	139
8	38	4.0	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	90	174	126
9	5.0	4.3	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	89	172	121
10	5.0	4.3	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	89	170	116
11	4.7	4.3	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	89	175	112
12	4.7	4.3	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	89	181	107
13	4.7	4.3	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	89	177	121
14	4.7	4.3	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	89	178	128
15	4.7	4.3	4.3	4.7	4.7	4.7	e4.7	5.0	e4.3	89	177	134
16	4.6	4.3	4.3	4.7	4.7	4.7	e4.7	5.0	e3.9	88	172	143
17	4.3	4.3	4.3	4.7	4.7	4.7	e4.7	5.0	e4.7	92	168	138
18	4.0	4.3	4.3	4.7	4.7	4.7	e4.7	5.1	4.7	91	162	123
19	3.9	4.3	4.3	4.7	4.7	4.7	e4.7	5.4	4.7	91	157	120
20	3.9	4.3	4.3	4.7	4.7	4.7	e4.7	e5.4	4.7	90	166	118
21	3.9	4.3	4.3	4.7	4.7	4.7	e4.7	e5.4	4.7	90	181	109
22	3.9	4.3	4.3	4.7	4.7	e4.7	e4.7	e5.4	4.7	112	175	107
23	3.9	4.3	4.6	4.3	4.7	e4.7	e4.7	e5.4	4.7	145	168	107
24	3.9	4.3	4.7	4.3	4.7	e4.7	e4.7	e5.4	4.7	146	162	104
25	3.9	4.3	4.7	4.3	4.7	e4.7	e4.7	e5.4	4.7	145	156	104
26	3.9	4.3	4.7	4.4	4.7	e4.7	e4.7	e5.4	4.7	144	152	85
27	3.9	4.3	4.7	4.7	4.7	e4.7	e4.7	e5.4	4.7	143	146	71
28	3.9	4.3	4.7	4.7	4.7	e4.7	e4.7	e5.0	4.7	144	152	62
29	3.9	4.3	4.7	4.7	---	e4.7	e5.0	e5.0	4.7	143	159	56
30	3.9	4.3	4.7	4.7	---	e4.7	e5.0	e5.0	4.8	144	151	50
31	3.9	---	4.7	4.7	---	e4.7	---	e5.0	---	142	141	---
TOTAL	740.1	125.9	136.8	144.2	131.6	145.7	141.6	158.7	140.2	3253	5121	3284
MEAN	23.9	4.20	4.41	4.65	4.70	4.70	4.72	5.12	4.67	105	165	109
MAX	128	4.3	4.7	4.7	4.7	4.7	5.0	5.4	5.0	146	181	143
MIN	3.9	3.9	4.3	4.3	4.7	4.7	4.7	5.0	3.9	47	141	50
AC-FT	1470	250	271	286	261	289	281	315	278	6450	10160	6510

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1928 - 1991, BY WATER YEAR (WY)

	MEAN	21.0	13.2	15.6	17.5	19.4	23.0	23.4	55.0	103	161	153	76.5
MAX	233	135	146	148	147	166	148	173	260	287	276	250	250
(WY)	1957	1952	1951	1951	1951	1954	1954	1957	1957	1958	1958	1956	1956
MIN	.000	.000	.000	.000	.000	.000	.000	.000	.000	14.3	10.8	.000	.000
(WY)	1929	1929	1929	1929	1929	1929	1929	1931	1931	1956	1931	1930	1930

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1928 - 1991
ANNUAL TOTAL	18155.5	13522.8	
ANNUAL MEAN	49.7	37.0	57.0
HIGHEST ANNUAL MEAN			148
LOWEST ANNUAL MEAN			8.16
HIGHEST DAILY MEAN	245	181	311
LOWEST DAILY MEAN	3.9	3.9	.00
ANNUAL SEVEN-DAY MINIMUM	3.9	3.9	.00
ANNUAL RUNOFF (AC-FT)	36010	26820	41290
10 PERCENT EXCEEDS	207	143	185
50 PERCENT EXCEEDS	9.4	4.7	8.4
90 PERCENT EXCEEDS	4.3	4.3	.00

DESCHUTES RIVER BASIN

14063000 LITTLE DESCHUTES RIVER NEAR LA PINE, OR

LOCATION.--Lat 43°41'21", long 121°30'06", in SW 1/4 SW 1/4 sec.2, T.22 S., R.10 E., Deschutes County, Hydrologic Unit 17070302, on right bank 10 ft downstream from highway bridge, 1.1 mi north of La Pine, and at mile 26.8.

DRAINAGE AREA.--859 mi², hydrologic drainage boundary uncertain owing to ground-water exchange.

PERIOD OF RECORD.--September 1910 to January 1911, March, April, August 1911, March to September 1912, June to October 1913, June to November 1918, August to October 1920, May 1924 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as Deschutes River near Lapine 1910-12, as East Fork Deschutes River near Lapine 1913-20, and as Little Deschutes River near Lapine 1924-64.

REVISED RECORDS.--WSP 1218: 1950.

GAGE.--Water-stage recorder. Datum of gage is 4,192.81 ft above National Geodetic Vertical Datum of 1929. Sept. 1, 1910, to Aug. 31, 1911, nonrecording gage at present site at different datum. Mar. 1 to Sept. 30, 1912, nonrecording gage at site 1.2 mi downstream at different datum. June 1, 1913, to Sept. 28, 1928, nonrecording gage and Sept. 29, 1928, to Sept. 30, 1931, water-stage recorder at present site at different datums.

REMARKS.--Records good except those for Jan. 14 to Mar. 13 and estimated daily discharges, which are poor. Flow regulated since 1922 by Crescent Lake (station 14059500). Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--67 years (water years 1925-91), 204 ft³/s, 147,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,660 ft³/s Dec. 25, 1964, gage height, 8.18 ft; minimum discharge, 8 ft³/s Sept. 2, 3, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 329 ft³/s Jan. 17, gage height, 4.51 ft; minimum daily discharge, 37 ft³/s on several days in December and January.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	206	69	61	e40	104	81	109	134	142	97	154	152
2	198	74	56	e39	109	87	112	130	136	89	151	144
3	130	70	55	e38	118	116	113	126	125	134	150	132
4	115	65	66	e37	140	162	112	125	114	151	164	123
5	116	68	64	e37	165	239	117	123	110	148	206	119
6	113	72	65	e37	175	231	135	121	120	145	209	116
7	112	74	57	e38	183	191	151	122	129	143	190	113
8	112	75	56	e37	163	153	141	130	125	141	193	135
9	112	76	49	e38	147	137	136	154	112	138	188	135
10	72	79	57	e44	134	134	141	165	99	134	181	128
11	52	80	68	e60	118	130	145	167	93	131	175	122
12	47	76	e40	e80	117	123	133	166	90	129	179	116
13	45	71	e40	e100	100	120	127	166	89	126	191	112
14	44	68	e39	154	114	114	121	166	96	123	182	106
15	43	65	e39	239	127	113	120	163	101	121	177	123
16	43	60	e39	278	129	111	118	161	97	123	184	121
17	43	53	e40	308	120	107	120	174	89	148	191	130
18	43	54	e45	324	108	105	123	193	82	165	188	135
19	44	59	e42	300	103	108	122	198	78	161	182	128
20	46	57	e40	226	100	106	122	193	82	146	174	121
21	48	57	e38	176	98	100	129	184	96	133	172	121
22	51	59	e38	160	97	97	144	169	93	123	182	118
23	56	59	e37	156	96	96	143	155	86	117	184	112
24	58	60	e37	136	92	100	139	145	95	156	178	114
25	57	61	e39	120	87	100	146	144	97	182	170	111
26	52	67	e41	122	84	104	157	137	88	180	162	113
27	47	75	e44	116	82	101	159	138	88	175	157	108
28	42	69	e43	111	80	97	154	139	100	169	153	94
29	41	62	e40	100	---	95	146	138	117	166	151	85
30	41	58	e37	101	---	92	139	139	112	162	164	79
31	48	---	e37	98	---	98	---	142	---	159	161	---
TOTAL	2277	1992	1449	3850	3290	3748	3974	4707	3081	4415	5443	3566
MEAN	73.5	66.4	46.7	124	117	121	132	152	103	142	176	119
MAX	206	80	68	324	183	239	159	198	142	182	209	152
MIN	41	53	37	37	80	81	109	121	78	89	150	79
AC-FT	4520	3950	2870	7640	6530	7430	7880	9340	6110	8760	10800	7070

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1991, BY WATER YEAR (WY)

	MEAN	83.3	113	156	156	183	203	293	376	322	236	194	122
MAX	350	356	712	656	562	709	716	990	788	470	342	320	
(WY)	1957	1951	1965	1965	1951	1972	1943	1956	1974	1974	1976	1956	
MIN	17.3	27.1	32.1	35.0	30.0	60.4	67.5	82.5	63.2	92.7	30.0	11.7	
(WY)	1932	1932	1940	1929	1929	1933	1977	1926	1931	1931	1931	1931	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1924 - 1991

ANNUAL TOTAL	47316	41792		
ANNUAL MEAN	130	114		
HIGHEST ANNUAL MEAN			204	
LOWEST ANNUAL MEAN			374	1956
HIGHEST DAILY MEAN	377	Jan 11	324	Jan 18
LOWEST DAILY MEAN	37	Dec 23	37	Dec 23
ANNUAL SEVEN-DAY MINIMUM	39	Dec 20	37	Jan 3
ANNUAL RUNOFF (AC-FT)	93850		82890	
10 PERCENT EXCEEDS	227		175	
50 PERCENT EXCEEDS	109		116	
90 PERCENT EXCEEDS	49		44	
				147900
				402
				164
				57

DESCHUTES RIVER BASIN

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14064500 DESCHUTES RIVER AT BENHAM FALLS, NEAR BEND, OR

LOCATION.--Lat 43°55'49", long 121°24'39", in SW 1/4 NE 1/4 sec.16, T.19 S., R.11 E., Deschutes County, Hydrologic Unit 17070301, Deschutes National Forest, on right bank 0.5 mi upstream from Benham Falls, 10 mi southwest of Bend, and at mile 181.4.

DRAINAGE AREA.--1,759 mi².

PERIOD OF RECORD.--April 1906 to September 1913, April to September 1914, August to December 1920, April to September 1921, February 1924 to September 1991 (discontinued). Monthly discharge only for some periods, published in WSP 1318. Published as "at West's ranch, near Lava" April 1906 to February 1909, April to September 1914. Records for January 1905 to March 1906 and October 1913 to September 1914, published under present name in WSP 370 and 394, have been found to be unreliable and should not be used. See REMARKS.

REVISED RECORDS.--See PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 4,142.10 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark). See WSP 1738 for history of changes prior to Nov. 20, 1958.

REMARKS.--Records excellent. Flow regulated by Crane Prairie Reservoir, Crescent Lake, and Wickiup Reservoir (see elsewhere in this report). Many diversions for irrigation upstream from station. Continuous water-quality records for the period November 1967 to September 1980 have been collected at this location. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--74 years (water years 1907-13, 1925-91), 1,404 ft³/s, 1,017,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 5,000 ft³/s, estimated, Nov. 27, 1909 (gage height not determined); minimum discharge, 363 ft³/s Jan. 20, 1962.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,160 ft³/s July 16, 17, gage height, 5.52 ft; minimum discharge, 386 ft³/s Dec. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1550	490	480	444	470	514	531	1570	1730	1450	2060	1730
2	1440	491	483	440	472	517	538	1570	1730	1530	2060	1720
3	1280	505	474	440	481	549	543	1580	1750	1640	2050	1710
4	1210	510	473	442	491	594	552	1600	1810	1810	2060	1700
5	1170	511	476	443	506	627	550	1620	1860	1900	2060	1690
6	1150	506	465	445	520	664	561	1630	1870	1940	2070	1690
7	1150	509	463	447	533	677	567	1630	1880	2020	2050	1700
8	1140	517	480	451	551	645	583	1440	1890	2040	1990	1710
9	1200	522	484	450	548	606	618	1210	1890	2050	1940	1710
10	1280	512	486	455	542	586	784	1250	1880	2060	1910	1720
11	1310	513	488	469	547	577	796	1490	1870	2070	1890	1720
12	1330	515	476	487	537	570	805	1540	1860	2110	1890	1700
13	1320	515	479	493	537	565	802	1620	1850	2140	1860	1690
14	1290	509	463	501	536	560	821	1580	1850	2150	1840	1690
15	1070	503	476	528	539	556	1020	1520	1850	2150	1830	1680
16	1020	499	485	529	557	551	1050	1520	1850	2150	1820	1680
17	996	497	481	545	558	547	1180	1520	1850	2120	1810	1690
18	852	495	486	569	551	545	1240	1310	1850	1980	1820	1680
19	791	491	451	584	540	543	1260	1150	1850	1930	1810	1670
20	596	491	407	588	533	543	1340	1140	1850	1920	1790	1630
21	524	494	e405	571	531	541	1360	1140	1780	1900	1770	1590
22	522	496	e400	543	527	534	1360	1240	1640	1890	1760	1580
23	517	495	e400	524	525	535	1370	1440	1610	1890	1760	1570
24	513	495	e420	514	524	536	1420	1570	1620	1960	1760	1540
25	514	498	439	500	522	536	1460	1720	1550	2080	1770	1490
26	513	500	452	492	520	537	1470	1790	1510	2070	1770	1470
27	513	501	448	483	516	539	1480	1800	1510	2050	1760	1420
28	494	502	448	476	513	537	1480	1800	1520	2050	1750	1400
29	485	500	444	477	---	533	1480	1800	1480	2050	1740	1380
30	484	500	429	472	---	532	1490	1780	1440	2040	1730	1370
31	494	---	452	472	---	529	---	1740	---	2050	1730	---
TOTAL	28718	15082	14193	15274	14727	17425	30511	47310	52480	61190	57910	48720
MEAN	926	503	458	493	526	562	1017	1526	1749	1974	1868	1624
MAX	1550	522	488	588	558	677	1490	1800	1890	2150	2070	1730
MIN	484	490	400	440	470	514	531	1140	1440	1450	1730	1370
AC-FT	56960	29920	28150	30300	29210	34560	60520	93840	104100	121400	114900	96640

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1991, BY WATER YEAR (WY)

	1150	850	881	906	967	1028	1305	1750	1947	2075	1940	1650
MEAN	1150	850	881	906	967	1028	1305	1750	1947	2075	1940	1650
MAX	2089	1540	1661	1540	1620	2068	2103	2521	3017	2938	2795	2486
(WY)	1957	1944	1985	1975	1951	1972	1952	1956	1952	1957	1952	1956
MIN	646	487	458	493	506	542	837	940	1037	1029	930	850
(WY)	1978	1970	1991	1991	1989	1969	1941	1931	1931	1931	1941	1941

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1924 - 1991
ANNUAL TOTAL	430585	403540	
ANNUAL MEAN	1180	1106	1377
HIGHEST ANNUAL MEAN			1977
LOWEST ANNUAL MEAN			921
HIGHEST DAILY MEAN	2310	2150	3410
LOWEST DAILY MEAN	400	400	400
ANNUAL SEVEN-DAY MINIMUM	417	417	417
ANNUAL RUNOFF (AC-FT)	854100	800400	997300
10 PERCENT EXCEEDS	2030	1890	2300
50 PERCENT EXCEEDS	1180	1050	1260
90 PERCENT EXCEEDS	491	476	630

DESCHUTES RIVER BASIN

14070500 DESCHUTES RIVER BELOW BEND, OR

LOCATION.--Lat 44°04'59", long 121°18'24", in SE 1/4 SE 1/4 sec.20, T.17 S., R.12 E., Deschutes County, Hydrologic Unit 17070301, on right bank 0.4 mi downstream from North Canal, at city limits of town of Bend, and at mile 164.4.

DRAINAGE AREA.--1,899 mi².

PERIOD OF RECORD.--October 1914 to September 1991 (discontinued). See REMARKS.

REVISED RECORDS.--WSP 1318: 1916-18 (M), 1926 (M), 1931 (M).

GAGE.--Water-stage recorder. Datum of gage is 3,503.96 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1931, water-stage recorder at site 200 ft downstream at datum 1.00 ft higher.

REMARKS.--Records good except those for Oct. 1 to Dec. 6, those below 40 ft³/s, and estimated daily discharges, which are fair. Flow regulated by powerplant at Bend, Crescent Lake, Crane Prairie Reservoir, and Wicklup Reservoir (see elsewhere in this report). Six large canals and several small ditches divert water upstream from station for irrigation. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--77 years (water years 1915-91), 487 ft³/s, 352,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,820 ft³/s Dec. 27, 1964, gage height, 4.90 ft; maximum gage height, 5.38 ft Dec. 15, 1932 (backwater from ice); minimum discharge, 1.0 ft³/s Aug. 25, 1930.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum discharge near this site since 1905, 4,820 ft³/s Nov. 27, 1909.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 696 ft³/s Oct. 20, gage height, 2.95 ft; minimum discharge, 16 ft³/s May 14, Aug. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	35	515	445	e415	363	280	383	38	30	32	e28	29
2	38	514	428	e415	363	386	368	35	29	32	e28	29
3	37	523	425	418	385	430	235	34	30	37	e28	30
4	36	534	416	419	427	366	170	34	31	33	e28	33
5	34	535	417	419	439	314	165	34	32	35	e28	29
6	35	528	410	418	448	338	173	34	33	35	e28	29
7	35	527	400	420	460	352	177	163	34	37	28	30
8	35	536	410	385	466	483	189	306	33	35	27	30
9	34	544	421	373	475	525	180	57	32	36	27	29
10	38	538	309	379	470	499	160	34	33	35	28	29
11	38	532	207	396	470	486	61	35	33	36	27	30
12	36	371	209	418	469	481	43	34	34	35	27	27
13	35	300	200	417	464	461	45	34	33	35	28	29
14	34	293	326	378	465	465	46	35	34	34	28	30
15	37	286	382	234	465	458	42	34	33	34	28	29
16	37	432	388	241	476	451	38	32	32	34	26	28
17	37	498	312	300	480	447	39	81	33	34	26	29
18	109	472	118	436	468	434	38	103	32	31	26	30
19	287	377	176	411	438	412	37	30	33	30	25	31
20	460	225	e370	349	420	397	37	33	33	29	26	27
21	501	201	e370	327	411	388	37	33	33	29	26	28
22	484	217	e370	250	407	396	36	30	32	28	31	28
23	465	300	e370	261	403	427	37	32	33	28	29	26
24	472	397	e380	356	420	424	37	30	34	28	28	26
25	474	381	e400	438	324	412	39	31	33	31	28	26
26	471	390	e420	429	215	414	38	31	41	30	52	33
27	470	420	e430	420	218	414	37	31	32	e30	29	28
28	457	455	e430	415	170	424	37	31	33	e30	32	27
29	435	469	e430	415	---	415	36	31	32	e29	26	29
30	439	451	e420	411	---	418	36	31	32	e29	27	223
31	485	---	e410	367	---	414	---	31	---	e28	29	---
TOTAL	6620	12761	11199	11730	11479	13011	2996	1562	983	999	882	1061
MEAN	214	425	361	378	410	420	99.9	50.4	32.8	32.2	28.5	35.4
MAX	501	544	445	438	480	525	383	306	41	37	52	223
MIN	34	201	118	234	170	280	36	30	29	28	25	26
AC-FT	13130	25310	22210	23270	22770	25810	5940	3100	1950	1980	1750	2100

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1991, BY WATER YEAR (WY)

MEAN	223	589	654	719	775	773	303	65.6	63.4	48.7	52.4	67.0
MAX	661	1131	1552	1369	1339	1767	1193	300	301	128	153	280
(WY)	1985	1973	1985	1975	1957	1957	1984	1957	1958	1958	1976	1972
MIN	30.7	358	338	378	370	270	22.0	21.6	23.9	24.3	21.1	19.0
(WY)	1965	1965	1970	1991	1989	1968	1968	1968	1968	1968	1964	1968

SUMMARY STATISTICS

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1957 - 1991	
ANNUAL TOTAL	77666		75283			
ANNUAL MEAN	213		206		359	
HIGHEST ANNUAL MEAN					708	1984
LOWEST ANNUAL MEAN					205	1968
HIGHEST DAILY MEAN	700	Jan 13	544	Nov 9	2720	Dec 27 1964
LOWEST DAILY MEAN	26	Jul 30	25	Aug 19	13	Oct 20 1964
ANNUAL SEVEN-DAY MINIMUM	27	Jul 27	26	Aug 15	15	Aug 9 1968
ANNUAL RUNOFF (AC-FT)	154100		149300		260100	
10 PERCENT EXCEEDS	482		465		946	
50 PERCENT EXCEEDS	58		52		157	
90 PERCENT EXCEEDS	32		28		28	

DESCHUTES RIVER BASIN

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14074900 SNOW CREEK NEAR SISTERS, OR

LOCATION.--Lat 44°06'59", long 121°39'34", in NE 1/4 SW 1/4 sec.9, T.17 S., R.9 E., Deschutes County, Hydrologic Unit 17070301, on left bank about 250 ft upstream from diversion dam, and 13 mi southwest of Sisters.

DRAINAGE AREA.--1.65 mi².

PERIOD OF RECORD.--October 1985 to September 1991 (discontinued). Records from November 1970 to September 1985 and after September 1991 available from Oregon Water Resources Department, Salem, OR.

GAGE.--Water-stage recorder. Prior to Oct 14, 1975, on right bank at different datum.

REMARKS.--Records good except those for Dec. 11 to June 5, and estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--20 years (water years 1971-91), 6.59 ft³/s, 54.24 in/yr, 4,770 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 341 ft³/s Dec. 10, 1987, gage height 2.68 ft; maximum gage height, 5.73 ft (backwater from ice), discharge not determined, Jan. 18, 1971; minimum daily discharge, 0.40 ft³/s Dec. 29, 1990 to Jan. 4, 1991.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 25 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
June 11	0030	*16	*1.11	No other peak greater than base discharge.			
Minimum daily discharge, 0.40 ft ³ /s Dec. 29 to Jan. 4.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.7	e10	4.0	e.40	1.9	e3.0	e2.1	e2.1	e6.0	10	6.8	5.1
2	4.6	e8.0	e3.8	e.40	1.9	e4.5	e2.2	e2.3	e9.0	11	6.8	5.1
3	4.6	4.5	4.0	e.40	1.8	e7.0	e2.3	e2.7	e10	12	6.7	5.1
4	4.5	5.0	e3.9	e.40	2.3	e9.0	e2.4	e3.0	e8.5	12	6.8	5.1
5	4.6	4.4	e3.9	e.45	2.1	e6.0	e2.4	e3.5	e7.8	11	6.9	5.1
6	e5.0	e4.2	3.9	e.50	1.9	e3.5	e2.3	e4.0	7.2	10	6.7	5.1
7	e4.5	4.6	3.7	e.50	1.8	e3.0	e2.3	e5.0	7.6	9.6	6.7	5.0
8	e4.3	4.4	3.8	e.50	1.8	e2.7	e2.2	e9.0	8.2	9.6	6.6	4.9
9	4.3	4.2	4.6	e.50	1.7	e2.5	e2.2	e5.0	8.9	9.3	6.5	4.9
10	4.3	4.1	4.8	e1.0	1.7	e2.4	e2.2	e4.5	10	8.9	6.3	4.9
11	e4.3	4.1	4.0	e3.0	1.7	e2.3	e2.1	e4.0	14	8.6	6.3	4.9
12	e4.3	4.1	e3.5	e6.0	1.7	e2.3	e2.1	e4.0	12	9.0	6.2	4.8
13	4.3	4.2	e3.4	e5.0	1.9	e2.2	e2.3	e4.0	10	9.6	6.1	4.8
14	4.5	e4.4	e3.3	6.1	2.1	e2.2	e2.6	e4.0	8.6	8.5	6.1	4.8
15	4.5	e4.5	e3.3	7.5	2.1	e2.1	e3.0	e4.0	8.6	8.7	5.9	4.7
16	4.4	4.2	e3.3	3.3	2.0	e2.1	e3.2	e4.5	8.9	9.0	5.7	4.6
17	e4.4	4.1	e3.4	2.5	1.8	e2.1	e3.0	e5.0	8.9	8.4	5.8	4.6
18	e4.4	4.1	e3.5	2.3	1.8	e2.1	e2.8	e4.5	8.9	7.9	5.7	4.6
19	e5.0	4.1	e3.0	2.2	e3.0	e2.0	e2.0	e4.2	8.9	7.8	5.7	4.6
20	e5.5	e4.0	e1.5	2.2	e7.5	e2.0	e1.5	e4.5	8.2	7.8	5.6	4.6
21	5.9	e3.8	e1.0	2.2	e7.0	e2.0	e1.7	e5.0	8.2	7.7	5.6	4.6
22	4.5	e3.8	e.80	2.2	e5.0	e1.9	e2.0	e5.4	8.6	7.8	5.5	4.6
23	4.3	e4.0	e.70	2.1	e4.0	e1.9	e2.4	e5.3	9.3	7.8	5.4	4.5
24	4.3	e4.5	e.60	2.1	e3.0	e1.9	e2.2	e5.2	8.9	7.7	5.4	4.5
25	4.3	e6.3	e.50	2.1	e2.5	e1.9	e2.0	e5.0	8.2	7.5	5.4	4.5
26	4.2	e5.5	e.45	2.1	e2.2	e1.8	e1.9	e4.5	8.9	7.2	5.4	4.4
27	4.1	e4.5	e.50	2.1	e2.2	e1.8	e1.4	e4.5	9.6	7.1	5.4	4.5
28	4.2	e4.0	e.45	2.1	e2.5	e1.8	e1.3	e4.5	11	7.1	5.7	4.3
29	4.1	3.6	e.40	2.0	---	e1.9	e1.9	e4.5	11	7.1	5.4	4.3
30	5.2	4.7	e.40	1.9	---	e2.0	e2.0	e4.5	10	7.0	5.3	4.3
31	4.4	---	e.40	1.9	---	e2.0	---	e4.5	---	6.9	5.2	---
TOTAL	140.5	139.9	78.80	67.95	72.9	85.9	66.0	136.7	273.9	269.6	185.6	141.8
MEAN	4.53	4.66	2.54	2.19	2.60	2.77	2.20	4.41	9.13	8.70	5.99	4.73
MAX	5.9	10	4.8	7.5	7.5	9.0	3.2	9.0	14	12	6.9	5.1
MIN	4.1	3.6	4.0	4.0	1.7	1.8	1.3	2.1	6.0	6.9	5.2	4.3
AC-FT	279	277	156	135	145	170	131	271	543	535	368	281
CFSM	2.75	2.83	1.54	1.33	1.58	1.68	1.33	2.67	5.53	5.27	3.63	2.86
IN.	3.17	3.15	1.78	1.53	1.64	1.94	1.49	3.08	6.18	6.08	4.18	3.20

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1991, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991
MEAN	5.49	6.12	4.37	3.27	2.87	3.35	6.46
MAX	7.74	11.8	10.3	4.48	4.79	5.55	22.9
(WY)	1985	1986	1987	1988	1989	1990	1985
MIN	4.24	3.85	2.48	2.19	1.53	1.77	2.20
(WY)	1989	1986	1989	1991	1989	1988	1991

SUMMARY STATISTICS

	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1985 - 1991
ANNUAL TOTAL	1811.20	1659.55	
ANNUAL MEAN	4.96	4.55	6.01
HIGHEST ANNUAL MEAN			8.26
LOWEST ANNUAL MEAN			4.55
HIGHEST DAILY MEAN	23	14	87
LOWEST DAILY MEAN	.40	.40	.40
ANNUAL SEVEN-DAY MINIMUM	.44	.40	.40
ANNUAL RUNOFF (AC-FT)	3590	3290	4360
ANNUAL RUNOFF (CFSM)	3.01	2.76	3.64
ANNUAL RUNOFF (INCHES)	40.83	37.42	49.52
10 PERCENT EXCEEDS	8.1	8.6	10
50 PERCENT EXCEEDS	4.6	4.4	4.7
90 PERCENT EXCEEDS	2.2	1.8	2.3

DESCHUTES RIVER BASIN

14075000 SQUAW CREEK NEAR SISTERS, OR

LOCATION.--Lat 44°14'02", long 121°33'57", in SE 1/4 SW 1/4 sec.29, T.15 S., R.10 E., Deschutes County, Hydrologic Unit 17070301, on right bank 800 ft upstream from intake of McAllister ditch, 4 mi south of Sisters, and at mile 26.8.

DRAINAGE AREA.--45.2 mi², not including 12.6 mi² of Pole Creek. See REMARKS.

PERIOD OF RECORD.--July 1906 to October 1918, June to August 1919, October 1919 to September 1920, May 1921 to September 1924 (no winter records), April 1925 to current year. Monthly discharge only for some periods, published in WSP 1318.

REVISED RECORDS.--WDR OR-83-1: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 3,490 ft. by barometer. July 1, 1906, to May 29, 1913, nonrecording gage at site 1,000 ft downstream at different datum, below intake of McAllister ditch (records include flow in McAllister ditch). May 30, 1913, to Sept. 2, 1915, nonrecording gage and Mar. 24, 1916, to Oct. 5, 1928, water-stage recorder at site 300 ft downstream at different datum. Oct. 6, 1928, to Nov. 7, 1967, water-stage recorder at site 200 ft downstream at datum 2.64 ft lower.

REMARKS.--Records good except those for Sept. 2-18, which are fair, and Dec. 6 to Jan. 31, and estimated daily discharges, which are poor. No regulation. A canal near mouth of Pole Creek has diverted the entire flow of that creek since 1885. Prior to Oct. 1, 1982, drainage area of 57.8 mi² included that of Pole Creek. Water is diverted from Snow Creek, a tributary upstream from station, for irrigation in Three Creek basin.

AVERAGE DISCHARGE.--79 years (water years 1907-18, 1920, 1926-91), 104 ft³/s, 75,350 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge since 1909, 2,000 ft³/s Dec. 25, 1980, from rating curve extended above 690 ft³/s on basis of slope-area measurement of peak flow; a maximum gage height of 9.2 ft from water-borne ice was observed on Jan. 11, 1979, and probably occurred on Jan. 10, 1979; previous maximum gage height, about 8.75 ft, over top of gage Nov. 22, 1909, site and datum then in use (discharge not determined); minimum discharge, 14 ft³/s Mar. 2, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 470 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 12	1830	(a)	*3.50	July 4	0030	*285	2.52

Minimum daily discharge, 23 ft³/s Jan. 4, result of freezeup.

(a) Backwater from ice.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55	53	57	e25	47	36	43	47	101	165	106	78
2	53	50	53	e24	43	36	42	47	123	186	101	e70
3	61	54	58	e24	42	50	40	46	130	224	101	e75
4	60	103	55	e23	52	59	48	49	115	237	104	e80
5	59	77	51	e35	65	51	57	53	106	202	101	e78
6	51	60	e50	e34	53	49	51	58	98	176	100	e75
7	50	72	e50	e32	47	51	47	72	100	161	103	e70
8	49	102	e50	e40	45	50	47	125	119	161	101	e65
9	50	87	57	e50	43	48	50	84	138	159	100	e60
10	51	68	83	e60	43	47	47	71	170	147	93	e60
11	48	63	61	e80	42	47	46	68	214	143	86	e62
12	56	60	e50	e90	43	45	46	67	182	153	85	e64
13	51	60	e47	e110	74	45	46	71	144	190	85	e66
14	52	57	e46	e120	69	44	47	70	126	168	87	e60
15	59	55	e50	e100	64	43	46	71	129	161	85	e55
16	54	55	e55	e75	62	44	46	86	127	172	86	e56
17	50	55	e56	e62	57	42	45	88	118	152	88	e58
18	52	55	e50	e58	51	42	44	75	120	140	97	e62
19	49	54	e47	e54	47	42	44	75	130	130	99	69
20	47	49	e42	e50	46	41	46	87	121	127	94	65
21	109	50	e37	e45	44	41	49	98	109	125	97	58
22	84	53	e35	e43	42	40	50	104	114	128	94	57
23	57	54	e33	e42	40	40	52	107	124	130	88	57
24	52	54	e31	e40	37	40	52	115	130	133	79	59
25	51	89	e30	e39	36	39	48	107	124	129	76	62
26	54	65	e35	e38	36	39	46	101	124	115	75	62
27	51	57	e30	e37	36	38	45	100	143	112	74	64
28	51	59	e28	e36	36	39	45	100	162	113	85	62
29	49	57	e27	e35	---	38	45	94	166	112	83	58
30	76	53	e26	e40	---	39	46	90	160	109	81	58
31	69	---	e25	e45	---	41	---	86	---	106	80	---
TOTAL	1760	1880	1405	1586	1342	1346	1406	2512	3967	4666	2814	1925
MEAN	56.8	62.7	45.3	51.2	47.9	43.4	46.9	81.0	132	151	90.8	64.2
MAX	109	103	83	120	74	59	57	125	214	237	106	80
MIN	47	49	25	23	36	36	40	46	98	106	74	55
AC-FT	3490	3730	2790	3150	2660	2670	2790	4980	7870	9260	5580	3820

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1991, BY WATER YEAR (WY)

MEAN	64.7	78.2	80.6	69.9	68.6	61.7	77.3	141	221	190	120	80.6
MAX	132	255	220	180	220	158	133	279	390	347	209	136
(WY)	1948	1910	1965	1971	1907	1972	1934	1956	1933	1917	1916	1913
MIN	39.9	36.5	35.1	23.6	24.3	33.5	36.9	57.9	113	69.5	67.7	50.6
(WY)	1978	1940	1932	1937	1937	1966	1929	1977	1977	1977	1944	1944

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1906 - 1991

ANNUAL TOTAL	29847		26609						
ANNUAL MEAN	81.8		72.9			104			
HIGHEST ANNUAL MEAN						164			1956
LOWEST ANNUAL MEAN						60.6			1977
HIGHEST DAILY MEAN	392	Apr 28	237	Jul 4	1230			Dec 25	1980
LOWEST DAILY MEAN	25	Dec 31	23	Jan 4	20			Jan 8	1937
ANNUAL SEVEN-DAY MINIMUM	29	Dec 25	25	Dec 29	21			Jan 7	1937
ANNUAL RUNOFF (AC-FT)	59200		52780		75530				
10 PERCENT EXCEEDS	138		127		206				
50 PERCENT EXCEEDS	65		58		80				
90 PERCENT EXCEEDS	45		40		46				

DESCHUTES RIVER BASIN

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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 120.6.

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 National Geodetic Vertical Datum of 1929 (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 (see elsewhere in this report). 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.--39 years, 911 ft³/s, 660,000 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 2,200 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, 1,170 ft³/s Jan. 14, gage height, 3.78 ft; minimum discharge, 479 ft³/s Aug. 2, 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	550	979	989	952	914	646	968	501	497	511	483	489
2	549	976	981	942	907	791	922	501	496	499	482	490
3	551	984	980	943	905	882	919	501	511	504	482	491
4	553	1020	977	938	942	958	730	499	506	525	486	488
5	550	1110	969	930	1020	841	708	499	496	541	489	492
6	550	1030	966	936	1020	830	709	500	495	517	486	491
7	552	1010	961	946	1020	858	712	502	495	505	490	490
8	555	1060	970	966	1030	866	714	655	496	495	486	491
9	555	1130	977	919	1040	1050	734	741	495	495	489	492
10	555	1070	962	932	1040	1030	719	547	494	493	489	490
11	556	1030	765	951	1040	1000	651	508	502	493	489	492
12	558	966	688	973	1050	1000	556	507	533	491	487	492
13	559	752	691	1030	1050	991	522	506	537	490	483	490
14	559	718	681	990	1070	983	523	506	505	493	485	490
15	560	708	923	975	1060	978	522	507	497	498	485	490
16	565	705	970	781	1050	975	521	512	493	494	484	490
17	565	932	984	812	1060	969	515	526	494	497	486	488
18	563	991	860	877	1060	965	510	550	492	498	488	488
19	612	970	706	1080	1030	955	512	591	499	495	492	490
20	768	842	712	942	1010	932	510	518	510	493	488	489
21	916	741	769	920	994	901	513	511	511	492	487	490
22	974	727	779	870	957	887	513	517	507	492	486	490
23	930	747	816	839	945	942	510	519	505	488	485	490
24	931	853	841	829	942	980	510	511	506	488	488	487
25	934	945	919	973	969	977	508	507	512	489	488	488
26	944	941	1010	1000	800	963	510	499	501	488	488	489
27	942	945	1030	991	744	963	508	497	500	488	488	525
28	940	964	977	990	699	966	507	496	510	487	503	532
29	929	996	921	972	---	969	507	498	506	488	489	533
30	917	1000	870	988	---	968	504	499	509	485	489	534
31	967	---	916	974	---	970	---	498	---	484	487	---
TOTAL	21709	27842	27560	29161	27368	28986	18267	16229	15110	15396	15107	14861
MEAN	700	928	889	941	977	935	609	524	504	497	487	495
MAX	974	1130	1030	1080	1070	1050	968	741	537	541	503	534
MIN	549	705	681	781	699	646	504	496	492	484	482	487
AC-FT	43060	55220	54670	57840	54280	57490	36230	32190	29970	30540	29960	29480

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1953 - 1991, BY WATER YEAR (WY)

	708	1160	1282	1352	1405	1358	848	586	633	549	529	554
MEAN	708	1160	1282	1352	1405	1358	848	586	633	549	529	554
MAX	1172	1706	2130	2012	2034	2360	1799	1228	1020	766	741	782
(WY)	1985	1985	1985	1975	1975	1972	1984	1956	1956	1975	1953	1953
MIN	470	837	889	941	945	839	510	457	455	430	441	455
(WY)	1964	1965	1991	1991	1989	1964	1968	1964	1964	1964	1964	1963

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1953 - 1991

ANNUAL TOTAL	270069											
ANNUAL MEAN	740											
HIGHEST ANNUAL MEAN												
LOWEST ANNUAL MEAN												
HIGHEST DAILY MEAN	1330	Jan 14				1130	Nov 9			4790	Dec 24	1964
LOWEST DAILY MEAN	498	Aug 4				482	Aug 2			425	Jul 7	1964
ANNUAL SEVEN-DAY MINIMUM	501	Aug 10				484	Jul 29			426	Jul 7	1964
ANNUAL RUNOFF (AC-FT)	535700					510900				660100		
10 PERCENT EXCEEDS	1070					992				1580		
50 PERCENT EXCEEDS	596					559				744		
90 PERCENT EXCEEDS	513					489				489		

DESCHUTES RIVER BASIN

14080400 PRINEVILLE RESERVOIR NEAR PRINEVILLE, OR

LOCATION.--Lat 44°06'50", long 120°46'50", in SW 1/4 NW 1/4 sec.11, T.17 S., R.16 E., Crook County, Hydrologic Unit 17070304, at right end of Prineville Dam on Crooked River, 13.8 mi south of Prineville, and at mile 72.5.

DRAINAGE AREA.--2,700 mi², approximately, of which 500 mi² is probably noncontributing.

PERIOD OF RECORD.--October 1960 to September 1991 (discontinued).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to Aug. 13, 1969, nonrecording gage at same site and datum.

REMARKS.--Reservoir is formed by earthfill dam with ungated concrete spillway and concrete outlet tunnel controlled by two 4-ft by 6-ft regulating gates. Storage began in December 1960. Total capacity at elevation 3,234.80 ft, crest of spillway, is 154,700 acre-ft, of which 152,800 acre-ft is active storage above 3,114.00 ft, proposed minimum pool. Reservoir used for flood control, irrigation, and recreation. Figures given herein represent active storage.

COOPERATION.--Gage inspected, and elevations and capacity table furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 178,100 acre-ft Apr. 20, 1984, elevation, 3,242.75 ft; minimum contents, 33,110 acre-ft Sept. 30, 1991, elevation, 3,173.71 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 82,320 acre-ft May 27-29, elevation, 3,205.98 ft; minimum contents, 33,110 acre-ft Sept. 30, elevation, 3,173.71 ft.

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

3,175	34,560	3,210	90,380
3,180	40,600	3,215	101,100
3,185	47,390	3,220	112,600
3,190	54,740	3,230	138,700
3,195	62,640	3,235	153,400
3,200	71,190	3,240	169,100
3,205	80,430	3,243	178,900

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	3188.17	3187.65	3186.67	3188.50	3192.95	3198.37	3203.79	3205.77	3201.48	3195.11	3183.87
2	---	3188.15	3187.65	3186.66	3188.53	3193.14	3198.60	3203.76	3205.67	3201.47	3194.79	3183.46
3	---	3188.12	3187.63	3186.66	3188.62	3193.34	3198.89	3203.69	3205.54	3201.33	3194.56	3183.08
4	---	3188.06	3187.56	3186.55	3188.69	3193.47	3199.13	3203.66	3205.37	3201.12	3194.33	3182.67
5	---	3188.06	3187.56	3186.55	3188.95	3193.82	---	3203.60	3205.22	3201.00	3193.94	3182.30
6	---	3188.06	3187.56	3186.54	3189.24	3194.06	---	3203.53	3205.09	3200.87	3193.82	3181.94
7	---	3188.05	3187.51	3186.53	3189.39	3194.26	---	3203.50	3204.95	3200.66	3193.46	3181.56
8	---	3188.05	3187.50	3186.51	3189.53	3194.42	---	3203.47	3204.84	3200.54	3193.22	3181.17
9	3189.84	3187.99	3187.49	3186.50	3189.66	3194.57	---	3203.47	3204.73	3200.33	3192.73	3180.81
10	3189.61	3187.99	3187.49	3186.50	3189.82	3194.72	---	3203.49	3204.62	3200.23	3192.37	3180.45
11	3189.42	3187.99	3187.49	3186.46	3190.01	3194.85	3201.39	3203.49	3204.42	3199.97	3192.04	3180.10
12	3189.25	3187.95	3187.48	3186.46	3190.07	3195.00	3201.54	3203.49	3204.24	3199.65	3191.65	3179.74
13	3189.07	3187.95	3187.48	3186.47	3190.33	3195.16	3201.69	3203.49	3204.05	3199.49	3191.25	3179.31
14	3188.93	3187.94	3187.47	3186.50	3190.53	3195.24	3201.94	3203.52	3203.85	3199.24	3190.87	3178.96
15	3188.78	3187.91	3187.44	3186.84	3190.93	3195.37	3202.02	3203.52	3203.66	3198.93	3190.52	3178.60
16	3188.64	3187.84	3187.38	3187.24	3191.25	3195.48	3202.04	3203.54	3203.45	3198.69	3190.13	3178.22
17	3188.64	3187.84	3187.38	3187.56	3191.50	3195.61	3202.14	3203.64	3203.24	3198.53	3189.72	3177.85
18	3188.64	3187.84	3187.38	3187.76	3191.68	3195.80	3202.23	3203.98	3203.07	3198.36	3189.35	3177.49
19	3188.58	3187.82	3187.38	3187.85	3191.86	3195.94	3202.38	3204.36	3202.86	3198.13	3189.11	3177.13
20	3188.57	3187.82	3187.28	3187.94	3191.97	3196.07	3202.47	3204.76	3202.74	3197.92	3188.68	3176.72
21	3188.56	3187.81	3187.21	3187.99	3192.09	3196.28	3202.59	3205.23	3202.57	3197.73	3188.40	3176.35
22	3188.55	3187.81	3187.13	3188.04	3192.23	3196.47	3202.80	3205.60	3202.47	3197.54	3188.05	3175.97
23	3188.47	3187.72	3187.08	3188.08	3192.30	3196.66	3203.07	3205.79	3202.35	3197.32	3187.59	3175.59
24	3188.45	3187.72	3186.98	3188.17	3192.42	3196.80	3203.24	3205.92	3202.24	3197.13	3187.18	3175.28
25	3188.42	3187.72	3186.92	3188.25	3192.48	3197.02	3203.43	3205.94	3202.10	3196.90	3186.77	3174.96
26	3188.38	3187.71	3186.85	3188.28	3192.60	3197.27	3203.55	3205.96	3201.99	3196.64	3186.38	3174.66
27	3188.33	3187.70	3186.83	3188.30	3192.73	3197.49	3203.63	3205.98	3201.87	3196.42	3185.98	3174.41
28	3188.30	3187.70	3186.83	3188.32	3192.90	3197.71	3203.70	3205.98	3201.70	3196.21	3185.49	3174.19
29	3188.25	3187.69	3186.77	3188.37	---	3197.86	3203.73	3205.98	3201.62	3195.94	3185.10	3173.97
30	3188.23	3187.67	3186.73	3188.40	---	3198.02	3203.79	3205.90	3201.49	3195.65	3184.68	3173.71
31	3188.17	---	3186.68	3188.44	---	3198.20	---	3205.81	---	3195.38	3184.28	---
MAX	---	3188.17	3187.65	3188.44	3192.90	3198.20	---	3205.98	3205.77	3201.48	3195.11	3183.87
MIN	---	3187.67	3186.68	3186.46	3188.50	3192.95	---	3203.47	3201.49	3195.38	3184.28	3173.71
(†)	51990	51250	49800	52390	59240	68030	78130	82000	73880	63270	46380	33110
(‡)	-6540	-740	-1450	+2590	+6850	+8790	+10100	+3870	-8120	-10610	-16890	-13270

CAL YR 1990 AC-FT† -44760

WTR YR 1991 AC-FT† -25420

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

‡ Change in contents, in acre-feet.

DESCHUTES RIVER BASIN

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14080500 CROOKED RIVER NEAR PRINEVILLE, OR

LOCATION.--Lat 44°06'50", long 120°47'40", in SW 1/4 NE 1/4 sec.10, T.17 S., R.16 E., Crook County, Hydrologic Unit 17070304, on right bank 0.4 mi downstream from Prineville Dam, 13.6 mi south of Prineville, and at mile 72.1.

DRAINAGE AREA.--2,700 mi², approximately, of which 500 mi² is probably noncontributing.

PERIOD OF RECORD.--November 1908 to September 1914, March 1941 to September 1991 (discontinued). Published as "near Prineville" 1908-12, as "at Hoffman's ranch, near Prineville" 1913-14, and as "above Hoffman Dam, near Prineville" March 1941 to September 1960. The estimate of monthly mean discharge for October 1908, published in WSP 370, has been found to be unreliable and should not be used.

REVISED RECORDS.--WSP 1448: 1909-13, 1914(M), drainage area (at sites prior to Apr. 24, 1961). See also PERIOD OF RECORD.

GAGE.--Water-stage recorder. Datum of gage is 3,070.85 ft above National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation). Prior to September 1914, nonrecording gage at several sites from 9 mi to 23 mi downstream at various datums. Mar. 26, 1941, to Apr. 23, 1961, water-stage recorder at site 5.5 mi downstream at different datum.

REMARKS.--No estimated daily discharges. Records excellent above 300 ft³/s, good below. Flow completely regulated since December 1960 by Prineville Reservoir (station 14080400). Diversions for irrigation upstream from station. Discharge not adjusted for storage or release from Prineville Reservoir as evaporation from reservoir at times exceeds natural flow. Continuous water-quality records for the period April 1958 to July 1959 have been collected at this location. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--24 years (water years 1910-14, 1942-60), 378 ft³/s, 273,900 acre-ft/yr; 31 years (water years 1961-91), 354 ft³/s, 256,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,410 ft³/s Mar. 26, 1952, gage height, 8.2 ft, from floodmark, site and datum then in use; no flow Aug. 13-21, 1959, Jan. 3-5, 1961.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 285 ft³/s Aug. 7-9, gage height, 3.67 ft; minimum discharge, 9.1 ft³/s Oct. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	198	77	77	77	48	30	30	189	193	181	218	255
2	195	77	77	77	47	30	30	198	193	181	218	255
3	191	77	77	77	46	30	30	198	193	181	218	255
4	190	77	77	77	46	30	30	198	193	181	218	249
5	177	77	77	77	43	30	30	198	193	181	218	233
6	165	77	77	77	36	30	30	198	193	181	235	226
7	164	77	77	77	30	30	30	198	193	181	269	226
8	164	77	77	77	30	30	30	198	193	181	285	226
9	164	77	78	77	30	30	30	198	193	181	279	224
10	164	77	78	77	30	30	30	198	193	181	275	224
11	164	77	78	77	30	30	30	198	193	181	273	224
12	150	77	78	77	30	30	30	198	193	181	273	224
13	136	77	78	77	30	30	30	198	193	193	271	224
14	137	77	78	77	30	30	40	198	193	203	266	224
15	136	77	78	74	30	30	86	198	193	203	265	224
16	91	77	71	71	30	30	103	198	193	193	264	224
17	62	77	77	60	30	30	105	154	193	181	264	224
18	62	77	77	52	30	30	107	99	193	179	264	224
19	71	77	77	50	30	30	120	100	192	180	264	222
20	77	77	77	49	30	30	130	100	191	181	247	222
21	77	77	77	49	30	30	132	100	181	181	236	222
22	77	77	77	49	30	30	134	100	175	181	234	222
23	77	77	77	49	30	30	141	100	175	181	248	214
24	77	77	77	49	30	30	152	132	175	181	258	200
25	77	77	77	49	30	30	152	154	175	181	258	190
26	77	77	77	49	31	29	152	154	174	184	258	179
27	77	77	77	49	31	29	152	168	174	185	258	161
28	77	77	77	49	31	29	152	191	178	185	258	157
29	77	77	77	49	---	29	152	200	181	199	258	157
30	77	77	77	49	---	30	164	200	181	218	257	153
31	77	---	77	49	---	30	---	196	---	218	255	---
TOTAL	3705	2310	2388	1973	929	926	2564	5307	5626	5779	7862	6464
MEAN	120	77.0	77.0	63.6	33.2	29.9	85.5	171	188	186	254	215
MAX	198	77	78	77	48	30	164	200	193	218	285	255
MIN	62	77	71	49	30	29	30	99	174	179	218	153
AC-FT	7350	4580	4740	3910	1840	1840	5090	10530	11160	11460	15590	12820

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1991, BY WATER YEAR (WY)

	1961	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
MEAN	160	137	247	330	470	616	789	559	259	242	235	209																			
MAX	315	791	1037	1682	1625	2035	3001	2004	679	331	337	351																			
(WY)	1985	1985	1985	1965	1965	1972	1984	1984	1984	1983	1988	1987																			
MIN	26.2	12.6	11.9	.21	2.71	13.1	18.6	66.5	72.1	87.1	86.6	88.0																			
(WY)	1961	1988	1989	1961	1961	1961	1961	1961	1961	1961	1961	1961																			

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1961 - 1991

ANNUAL TOTAL	54009	45833	354	1984
ANNUAL MEAN	148	126	886	1961
HIGHEST ANNUAL MEAN			47.0	1961
LOWEST ANNUAL MEAN			3280	1984
HIGHEST DAILY MEAN	253	285	Mar 15	1984
LOWEST DAILY MEAN	57	29	Mar 26	1961
ANNUAL SEVEN-DAY MINIMUM	57	29	Mar 23	1961
ANNUAL RUNOFF (AC-FT)	107100	90910	256200	1961
10 PERCENT EXCEEDS	240	224	896	
50 PERCENT EXCEEDS	124	99	218	
90 PERCENT EXCEEDS	58	30	37	

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 National Geodetic Vertical Datum of 1929 (Portland General Electric Co. bench mark).

REMARKS.--Records good except estimated daily discharges, which are fair. Flow regulated since December 1960 by Prineville Reservoir (station 14080400) and Ochoco Reservoir, capacity, 47,500 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.--30 years, 1,573 ft³/s, 1,140,000 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.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,720 ft³/s Oct. 16, gage height, 4.91 ft, due to powerplant operation; minimum discharge, 691 ft³/s on several days, due to powerplant operation.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1300	1330	1310	1300	e1270	e1270	1250	1220	1230	1260	1230	1230
2	1300	1320	1310	1290	e1270	1270	1250	1210	1220	1240	1230	1230
3	1310	1320	1310	1290	e1270	1270	1250	1210	1220	1230	1230	1240
4	1350	1330	1310	1290	e1270	1260	1250	1220	1220	1220	1220	1230
5	1340	1330	1300	1290	e1270	1260	1250	1220	1210	1220	1230	1230
6	1340	1320	1310	1290	e1270	1280	1250	1210	1220	1220	1240	1220
7	1300	1320	1310	1290	e1270	1280	1250	1220	1230	1220	1230	1230
8	1280	1320	1310	1290	e1270	1280	1250	1220	1230	1220	1230	1230
9	1270	1320	1310	1290	e1270	1270	1250	1210	1220	1220	1230	1220
10	1280	1320	1310	1290	e1270	1260	1250	1220	1220	1220	1240	1230
11	1330	1320	1310	1290	e1270	1260	1270	1230	1210	1220	1230	1230
12	1330	1320	1310	1290	e1270	1260	1260	1230	1210	1220	1230	1230
13	1340	1320	1320	1300	e1270	1260	1250	1240	1210	1220	1230	1230
14	1330	1320	1330	1290	e1270	1260	1250	1250	1210	1230	1230	1240
15	1340	1320	1310	1300	e1270	1260	1250	1280	1220	1220	1220	1230
16	1390	1320	1310	1300	e1270	1260	1250	1240	1220	1220	1220	1240
17	1380	1320	1300	1310	e1270	1250	1270	1250	1230	1220	1230	1240
18	1340	1320	1300	1310	e1270	1250	1280	1310	1230	1230	1220	1240
19	1340	1320	1310	1290	e1270	1260	1270	1300	1220	1220	1270	1230
20	1350	1320	1290	1270	e1270	1260	1260	1280	1240	1220	1250	1230
21	1400	1310	1280	1270	e1270	1250	1250	1260	1240	1220	1240	1230
22	1340	1320	1280	1270	e1270	1250	1250	1240	1250	1210	1230	1230
23	1330	1320	1290	1280	e1270	1250	1240	1220	1250	1220	1220	1240
24	1330	1330	1300	e1280	e1270	1260	1220	1220	1250	1220	1220	1250
25	1330	1320	1300	e1280	e1270	1260	1210	1210	1250	1220	1230	1240
26	1330	1310	1300	e1270	e1270	1260	1220	1210	1240	1220	1230	1250
27	1330	1310	1310	e1270	e1270	1260	1230	1220	1270	1230	1230	1260
28	1320	1310	1310	e1270	e1270	1250	1210	1220	1250	1220	1230	1260
29	1330	1310	1290	e1270	---	1250	1220	1220	1230	1220	1230	1260
30	1330	1310	1290	e1270	---	1250	1220	1220	1250	1220	1230	1250
31	1330	---	1300	e1270	---	1250	---	1230	---	1220	1230	---
TOTAL	41240	39580	40430	39860	35560	39070	37380	38240	36900	37910	38160	37100
MEAN	1330	1319	1304	1286	1270	1260	1246	1234	1230	1223	1231	1237
MAX	1400	1330	1330	1310	1270	1280	1280	1310	1270	1260	1270	1260
MIN	1270	1310	1280	1270	1270	1250	1210	1210	1210	1210	1220	1220
AC-FT	81800	78510	80190	79060	70530	77500	74140	75850	73190	75190	75690	73590

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1991, 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
MEAN	1441	1386	1523	1625	1822	2006	2127	1701	1316	1271	1304	1374																		
MAX	1650	2069	2686	3551	3490	4208	4793	3295	1777	1475	1593	1541																		
(WY)	1970	1985	1965	1965	1972	1984	1984	1984	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 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1962 - 1991

	1990	1991	1962-1991
ANNUAL TOTAL	457880	461430	
ANNUAL MEAN	1254	1264	1573
HIGHEST ANNUAL MEAN			2196
LOWEST ANNUAL MEAN			1257
HIGHEST DAILY MEAN	1450	1400	6130
LOWEST DAILY MEAN	1160	1210	1090
ANNUAL SEVEN-DAY MINIMUM	1160	1210	1100
ANNUAL RUNOFF (AC-FT)	908200	915200	1140000
10 PERCENT EXCEEDS	1330	1320	2250
50 PERCENT EXCEEDS	1270	1260	1360
90 PERCENT EXCEEDS	1170	1220	1200

DESCHUTES RIVER BASIN

147

14088000 LAKE CREEK NEAR SISTERS, OR

LOCATION.--Lat 44°25'35", long 121°43'30", in NE 1/4 SW 1/4 sec.24, T.13 S., R.8 E., Jefferson County, Hydrologic Unit 17070301, on left bank 300 ft downstream from Suttle Lake and 13 mi northwest of Sisters.

DRAINAGE AREA.--22.2 mi².

PERIOD OF RECORD.--June to November 1911, March to September 1912, May to October 1913, April 1915 to September 1991 (discontinued). Monthly discharge only for some periods, published in WSP 1318. See REMARKS.

REVISED RECORDS.--WSP 1124: 1943, 1947. WSP 1218: Drainage area. WSP 1448: 1916(M), 1925. WDR OR-81-1: 1974(M), 1978(M).

GAGE.--Water-stage recorder. Datum of gage is 3,431.68 ft above National Geodetic Vertical Datum of 1929. Prior to Apr. 1, 1916, nonrecording gage at two sites 400 ft upstream at different datums. Apr. 1, 1916, to Oct. 12, 1928, nonrecording gage or water-stage recorder at site 640 ft downstream at different datum. Oct. 13, 1928, to Aug. 13, 1967, water-stage recorder at site 600 ft downstream at datum 1.61 ft lower.

REMARKS.--Records good. Flow occasionally regulated by Suttle Lake 300 ft upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--76 years (water years 1916-91), 51.9 ft³/s, 37,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded discharge not determined but probably occurred about Dec. 23, 1964; minimum discharge, 1.0 ft³/s Nov. 4, 5, 1940; minimum daily, 8 ft³/s Nov. 5, 1940, Oct. 6, 1942.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 90 ft³/s Jan. 18, gage height, 2.75 ft; minimum discharge, 21 ft³/s Oct. 11, Aug. 31.

REVISIONS.--Revised daily discharges, in cubic feet per second, for Dec. 15-18, 1977 are given below. These figures supersede those published in the report for 1978.

Dec. 15... 404	Dec. 16... 426	Dec. 17... 358	Dec. 18... 274
TOTAL	MEAN	MAX	MIN
AC-FT			
December 1977	5233	169	426
WTR YR 1978	19598	53.7	426
CAL YR 1977	17050	46.7	426
		28	27
			33870
			33820

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	28	37	28	42	50	39	48	41	30	25	23
2	24	26	37	28	43	55	40	47	42	30	25	24
3	26	26	33	28	44	62	41	47	40	31	26	25
4	25	30	35	28	45	70	40	45	39	30	26	25
5	23	30	33	28	51	70	47	44	39	29	25	26
6	23	28	33	28	49	74	47	45	39	29	25	26
7	23	27	33	31	51	73	48	46	39	29	25	25
8	25	27	32	30	52	69	50	51	37	29	25	23
9	26	27	32	29	52	66	57	48	37	29	25	23
10	24	26	35	30	50	64	53	49	37	27	24	24
11	21	26	33	31	49	61	51	51	36	27	24	25
12	26	26	33	44	46	63	51	51	36	28	24	24
13	28	27	32	42	59	59	51	50	36	30	24	24
14	29	27	e31	47	52	55	51	49	35	28	24	24
15	30	26	e30	67	54	53	50	47	30	27	24	24
16	30	26	e29	69	57	51	50	50	29	27	24	25
17	27	26	e29	79	60	50	50	54	32	27	25	25
18	27	26	e32	87	58	49	49	50	34	27	26	25
19	26	26	e35	83	58	50	49	49	35	27	26	27
20	25	27	e32	78	59	48	49	48	37	26	25	26
21	28	29	e30	72	55	47	49	50	35	26	24	22
22	30	30	e29	66	58	46	48	49	34	26	23	24
23	27	26	e29	62	59	46	47	47	32	26	23	25
24	26	26	e28	56	58	46	51	47	31	27	23	25
25	26	36	e29	53	56	44	52	48	31	26	22	25
26	27	33	e32	51	54	43	52	42	31	25	22	25
27	26	32	e33	49	52	42	51	42	31	25	23	25
28	26	30	e34	46	51	41	50	41	33	25	27	24
29	25	34	e32	44	---	39	48	42	31	26	28	24
30	28	35	e30	43	---	39	48	44	30	26	26	25
31	30	---	e29	42	---	39	---	41	---	26	22	---
TOTAL	813	849	991	1499	1474	1664	1459	1462	1049	851	760	737
MEAN	26.2	28.3	32.0	48.4	52.6	53.7	48.6	47.2	35.0	27.5	24.5	24.6
MAX	30	36	37	87	60	74	57	54	42	31	28	27
MIN	21	26	28	28	42	39	39	41	29	25	22	22
AC-FT	1610	1680	1970	2970	2920	3300	2890	2900	2080	1690	1510	1460

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 1991, BY WATER YEAR (WY)

MEAN	32.4	40.3	58.3	63.2	61.8	57.0	63.1	78.2	64.2	38.6	31.9	30.7
MAX	67.4	97.8	169	147	132	169	111	157	162	69.1	42.9	40.2
(WY)	1927	1951	1978	1923	1953	1972	1931	1949	1933	1917	1954	1954
MIN	17.4	24.4	23.0	23.1	27.7	26.7	33.5	38.3	28.5	22.3	21.6	19.1
(WY)	1943	1945	1945	1941	1931	1937	1977	1934	1940	1941	1942	1941

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1917 - 1991

ANNUAL TOTAL	14798	13608	
ANNUAL MEAN	40.5	37.3	
HIGHEST ANNUAL MEAN			51.4
LOWEST ANNUAL MEAN			77.0
HIGHEST DAILY MEAN	197	87	27.4
LOWEST DAILY MEAN	21	21	500
ANNUAL SEVEN-DAY MINIMUM	24	23	8.0
ANNUAL RUNOFF (AC-FT)	29350	26990	12
10 PERCENT EXCEEDS	67	54	86
50 PERCENT EXCEEDS	33	32	42
90 PERCENT EXCEEDS	25	25	28

DESCHUTES RIVER BASIN

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 National Geodetic Vertical Datum of 1929, from topographic map.

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

AVERAGE DISCHARGE.--8 years, 88.8 ft³/s, 43.38 in/yr, 64,340 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 428 ft³/s Feb. 23, 1986, gage height, 3.21 ft; 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)
Nov. 25	0730	*316	*2.82	No other peak greater than base discharge.			
Minimum daily discharge, 36 ft ³ /s Dec. 22, but could have been lower during period of ice effect Dec. 19-25.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	64	70	68	60	67	78	73	69	89	92	81	75
2	64	66	68	58	75	79	72	71	100	95	80	73
3	71	70	68	58	82	86	70	70	98	100	80	73
4	69	138	67	57	88	94	72	73	89	100	82	74
5	70	87	65	57	109	84	84	75	84	96	81	73
6	65	72	65	56	85	82	77	82	81	91	80	73
7	65	79	64	58	79	79	73	90	83	88	83	72
8	66	85	65	59	75	78	72	118	93	89	81	70
9	65	99	72	58	74	77	73	87	98	88	80	71
10	65	78	79	62	73	76	71	79	105	86	78	71
11	65	71	71	71	73	75	70	77	117	86	76	70
12	69	68	68	143	76	76	70	77	98	88	76	70
13	67	71	66	125	118	74	70	78	87	94	75	70
14	69	69	65	131	109	74	71	79	84	89	75	70
15	73	67	65	131	95	73	70	79	85	87	75	69
16	69	66	64	95	93	73	69	87	86	91	76	70
17	66	66	64	88	85	73	68	89	82	89	76	71
18	74	66	65	83	82	73	68	81	83	85	77	72
19	67	65	e56	79	90	73	69	80	87	84	77	71
20	65	63	e44	75	97	72	70	86	92	83	77	70
21	93	64	e38	73	102	71	72	91	89	83	76	69
22	81	65	e36	73	89	71	75	94	87	82	76	69
23	68	67	e37	71	84	71	75	92	87	82	75	69
24	66	72	e38	70	82	70	75	93	88	83	73	69
25	64	166	e40	69	80	70	72	88	89	84	72	70
26	71	87	45	68	79	70	71	84	87	81	71	70
27	65	76	59	68	78	69	69	84	87	81	71	71
28	65	71	62	67	78	69	69	85	89	81	77	70
29	64	73	60	66	---	69	69	83	92	81	77	69
30	97	70	60	66	---	69	69	82	90	81	75	70
31	81	---	61	66	---	71	---	80	---	81	75	---
TOTAL	2163	2327	1845	2361	2397	2319	2148	2583	2706	2701	2384	2124
MEAN	69.8	77.6	59.5	76.2	85.6	74.8	71.6	83.3	90.2	87.1	76.9	70.8
MAX	97	166	79	143	118	94	84	118	117	100	83	75
MIN	64	63	36	56	67	69	68	69	81	81	71	69
AC-FT	4290	4620	3660	4680	4750	4600	4260	5120	5370	5360	4730	4210
CFSM	2.51	2.79	2.14	2.74	3.08	2.69	2.58	3.00	3.24	3.13	2.77	2.55
IN.	2.89	3.11	2.47	3.16	3.21	3.10	2.87	3.46	3.62	3.61	3.19	2.84

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1991, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995
MEAN	76.8	80.6	71.2	75.3	75.6	77.8	92.0	111	126	108	91.0	79.9
MAX	90.1	101	86.4	112	107	129	110	122	153	145	117	98.5
(WY)	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
MIN	62.0	59.3	59.5	63.0	50.6	57.9	71.6	83.3	90.2	87.1	76.9	69.1
(WY)	1988	1988	1991	1989	1989	1985	1991	1991	1991	1991	1991	1990

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1984 - 1991

ANNUAL TOTAL	28995	28058	88.8
ANNUAL MEAN	79.4	76.9	109
HIGHEST ANNUAL MEAN			76.9
LOWEST ANNUAL MEAN			1984
HIGHEST DAILY MEAN	209	166	Nov 25
LOWEST DAILY MEAN	36	36	Dec 22
ANNUAL SEVEN-DAY MINIMUM	40	40	Dec 22
ANNUAL RUNOFF (AC-FT)	57510	55650	64360
ANNUAL RUNOFF (CFSM)	2.86	2.77	3.20
ANNUAL RUNOFF (INCHES)	38.80	37.55	43.42
10 PERCENT EXCEEDS	107	92	127
50 PERCENT EXCEEDS	72	74	83
90 PERCENT EXCEEDS	59	65	62

DESCHUTES RIVER BASIN

149

14090400 WHITEWATER RIVER NEAR CAMP SHERMAN, OR

LOCATION.--Lat 44°43'04", long 121°38'07", in SE 1/4 NE 1/4 sec.11, T.10 S., R.9 E., Jefferson County, Hydrologic Unit 17070301, Warm Springs Indian Reservation, on left bank 0.2 mi downstream from Lionshead Creek, 18 mi north of Camp Sherman, and at mile 7.1.

DRAINAGE AREA.--22.9 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 National Geodetic Datum of 1929, from topographic map.

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

AVERAGE DISCHARGE.--9 years, 80.2 ft³/s, 47.56 in/yr, 58,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 613 ft³/s Dec. 10, 1987, from rating curve extended above 170 ft³/s, gage height, 3.24 ft; 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. 21	1830	338	2.58	Dec. 24	1130	(a)	*3.07
Nov. 25	0730	*342	2.59				

Minimum daily discharge, 28 ft³/s Dec. 22, but could be less because of ice effect.

(a) Backwater from ice.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	51	46	57	36	51	63	47	49	68	87	76	65
2	44	43	52	36	60	67	47	49	82	100	73	58
3	64	49	53	35	66	81	46	49	86	118	75	60
4	68	143	60	35	76	88	48	50	77	121	76	65
5	59	71	55	34	102	73	59	52	72	109	79	61
6	43	54	52	34	80	68	53	56	67	97	79	62
7	41	60	50	34	74	64	51	64	68	93	88	59
8	40	73	50	34	71	62	50	90	80	96	85	50
9	41	110	69	34	68	61	58	70	90	97	82	49
10	43	66	76	34	66	59	51	63	97	89	71	48
11	39	56	68	39	66	57	50	61	119	87	63	50
12	52	52	63	87	68	57	50	59	97	94	63	51
13	43	55	60	81	84	55	49	59	78	113	63	54
14	42	53	58	97	88	54	49	59	70	97	64	47
15	58	50	56	115	83	52	49	59	69	94	66	48
16	49	48	55	86	81	52	49	65	71	99	78	52
17	43	47	56	83	75	50	48	74	66	93	74	56
18	53	48	60	79	72	51	47	67	68	85	76	59
19	44	46	52	76	74	50	47	63	74	82	78	57
20	42	45	e40	72	87	49	47	65	82	80	78	51
21	114	44	e30	69	96	48	50	72	71	82	77	44
22	74	45	e28	66	80	47	52	78	68	85	75	45
23	43	48	e30	64	75	47	54	76	70	85	69	47
24	38	53	e33	61	71	48	55	77	77	89	61	51
25	37	174	e36	59	68	47	53	74	80	89	57	56
26	57	91	e40	57	66	46	52	69	77	78	56	56
27	40	68	39	56	65	45	51	67	76	78	55	57
28	42	61	39	54	64	45	49	69	77	81	77	54
29	39	66	e38	52	---	44	49	67	83	80	74	52
30	74	60	e39	50	---	43	49	67	84	79	71	54
31	59	---	38	53	---	45	---	62	---	76	69	---
TOTAL	1576	1925	1532	1802	2077	1718	1509	2001	2344	2833	2228	1618
MEAN	50.8	64.2	49.4	58.1	74.2	55.4	50.3	64.5	78.1	91.4	71.9	53.9
MAX	114	174	76	115	102	88	59	90	119	121	88	65
MIN	37	43	28	34	51	43	46	49	66	76	55	44
AC-FT	3130	3820	3040	3570	4120	3410	2990	3970	4650	5620	4420	3210
CFSM	2.22	2.80	2.16	2.54	3.24	2.42	2.20	2.82	3.41	3.99	3.14	2.36
IN.	2.56	3.13	2.49	2.93	3.37	2.79	2.45	3.25	3.81	4.60	3.62	2.63

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1991, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	51.0	63.1	61.9	69.3	72.1	78.3	90.7	103	125
MAX	65.3	97.9	93.9	121	125	132	134	120	157
(WY)	1983	1985	1983	1983	1986	1986	1989	1983	1983
MIN	39.5	36.6	46.5	45.0	38.9	50.1	50.3	64.5	78.1
(WY)	1990	1988	1986	1987	1989	1985	1991	1991	1991

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1983 - 1991

ANNUAL TOTAL	27007	23163	80.2
ANNUAL MEAN	74.0	63.5	105
HIGHEST ANNUAL MEAN			63.5
LOWEST ANNUAL MEAN			1983
HIGHEST DAILY MEAN	205	174	Nov 25
LOWEST DAILY MEAN	28	28	Dec 22
ANNUAL SEVEN-DAY MINIMUM	34	34	Dec 21
ANNUAL RUNOFF (AC-FT)	53570	45940	58120
ANNUAL RUNOFF (CFSM)	3.23	2.77	3.50
ANNUAL RUNOFF (INCHES)	43.87	37.63	47.60
10 PERCENT EXCEEDS	117	87	128
50 PERCENT EXCEEDS	63	60	73
90 PERCENT EXCEEDS	43	43	45

DESCHUTES RIVER BASIN

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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 National Geodetic Vertical Datum of 1929 (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, 535,700 acre-ft Aug. 11, elevation, 1,945.23 ft; minimum contents observed, 506,300 acre-ft Oct. 11, elevation, 1,937.65 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	1,941.31	520,300	--
Oct. 31.....	1,943.00	526,800	+6,500
Nov. 30.....	1,942.52	525,000	-1,800
Dec. 31.....	1,938.68	510,200	-14,800
CAL YR 1990.....	--	--	-16,300
Jan. 31.....	1,941.91	522,600	+12,400
Feb. 28.....	1,942.67	525,600	+3,000
Mar. 31.....	1,941.80	522,200	-3,400
Apr. 30.....	1,943.12	527,300	+5,100
May 31.....	1,944.26	531,800	+4,500
June 30.....	1,944.92	534,400	+2,600
July 31.....	1,944.46	532,600	-1,800
Aug. 31.....	1,944.62	533,200	+600
Sept. 30.....	1,944.72	533,600	+400
WTR YR 1991.....	--	--	+13,300

DESCHUTES RIVER BASIN

14092150 SEEKSEEQUA CREEK NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°40'28", long 121°17'28", in SW 1/4 NW 1/4 sec.27, T.10 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on right bank 75 ft upstream from culvert, 8.3 mi east of Madras, and at mile 2.5.

DRAINAGE AREA.--93.3 mi².

PERIOD OF RECORD.--May 1987 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,860 ft, from topographic map.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 100 ft³/s Mar. 10, 1989, gage height, 5.57 ft; minimum discharge, 0.57 ft³/s Aug. 10, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 3.6 ft³/s Jan. 15, Feb. 5, 6; minimum daily discharge, 0.60 ft³/s Dec. 21, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.0	2.8	2.9	e1.4	e2.6	e2.7	e1.9	1.7	2.4	2.6	1.1	1.1
2	2.1	2.9	2.3	e1.4	e2.6	e2.6	e1.9	1.9	2.4	2.6	1.2	1.2
3	2.1	3.0	2.4	e1.0	e2.8	e2.6	e1.9	1.6	2.4	2.1	1.2	1.4
4	2.2	2.9	2.6	e.8	e3.2	e2.9	e2.0	1.9	2.2	2.0	.79	1.8
5	2.3	2.8	2.6	e.7	e3.6	e2.8	e2.1	1.8	2.4	2.0	1.1	2.1
6	2.6	3.0	2.6	e.8	e3.6	e2.7	e2.0	1.5	2.6	1.8	1.7	2.3
7	2.9	3.0	2.5	e1.4	e3.4	e2.6	e2.0	1.9	2.9	1.5	1.4	2.2
8	2.8	3.0	2.4	e1.6	e3.2	e2.6	e2.0	1.8	3.3	1.4	.93	2.3
9	2.9	3.0	2.4	e1.6	e3.2	e2.5	e2.2	1.6	2.9	1.3	1.3	2.6
10	2.1	2.8	2.7	e1.6	e3.2	e2.5	e2.1	1.7	1.8	1.7	1.5	2.4
11	1.7	2.9	e2.8	e2.4	e3.2	e2.4	e2.1	1.6	1.7	1.6	1.3	2.3
12	2.1	3.0	e2.7	e3.4	e3.2	e2.4	e2.0	1.5	1.6	1.1	1.4	2.5
13	3.0	2.9	e2.2	e3.4	e3.4	e2.4	e2.0	1.4	1.6	1.4	1.4	2.5
14	3.0	2.9	e2.2	e3.4	e3.4	e2.3	e2.0	1.4	2.4	1.5	1.1	2.0
15	3.4	2.8	e2.3	e3.6	e3.2	e2.3	e1.9	1.4	1.6	1.7	1.2	2.0
16	2.7	3.0	e2.1	e3.4	e3.0	e2.3	e1.9	1.5	1.8	2.1	1.5	1.9
17	2.3	2.8	e2.0	e3.0	e3.0	e2.2	e1.9	2.9	1.7	2.3	.94	2.0
18	2.4	2.8	e2.0	e1.9	e3.0	e2.2	e1.9	2.4	1.8	2.1	.86	2.2
19	2.3	2.8	e1.4	e1.6	e3.0	e2.2	e1.9	2.1	1.5	2.0	.94	2.3
20	1.9	2.8	e.8	e1.5	e3.0	e2.1	e1.9	2.1	2.2	1.8	1.8	2.1
21	2.1	2.8	e.6	e1.6	e3.0	e2.1	e2.0	2.2	3.0	1.6	1.8	2.2
22	2.4	2.8	e.6	e1.7	e3.2	e2.1	e2.0	1.7	2.6	1.9	1.8	2.3
23	2.1	2.8	e.7	e2.0	e3.4	e2.0	1.9	1.7	2.5	1.9	1.7	2.2
24	2.2	2.8	e1.2	e2.0	e3.4	e2.0	1.9	2.2	2.6	1.2	1.2	2.3
25	2.3	2.8	e1.6	e2.0	e3.0	e2.0	1.8	2.3	2.8	.88	1.2	2.2
26	2.2	2.8	e1.8	e1.7	e2.9	e2.0	2.0	2.3	2.3	.83	1.2	2.1
27	1.7	3.0	e1.8	e1.3	e2.8	e2.0	2.1	2.3	2.6	.91	.99	1.9
28	1.9	3.0	e1.8	e1.3	e2.7	e1.9	1.5	2.3	2.6	.86	1.1	2.2
29	2.1	3.1	e1.2	e1.5	---	e1.9	1.4	2.4	3.1	.80	1.2	2.1
30	2.6	3.1	e1.0	e1.6	---	e1.9	1.6	2.4	2.9	.78	1.1	2.3
31	3.0	---	e1.0	e2.0	---	e1.9	---	2.4	---	1.1	1.1	---
TOTAL	73.4	86.9	59.2	58.6	87.2	71.1	57.8	59.9	70.2	49.36	39.05	63.0
MEAN	2.37	2.90	1.91	1.89	3.11	2.29	1.93	1.93	2.34	1.59	1.26	2.10
MAX	3.4	3.1	2.9	3.6	3.6	2.9	2.2	2.9	3.3	2.6	1.8	2.6
MIN	1.7	2.8	.60	.70	2.6	1.9	1.4	1.4	1.5	.78	.79	1.1
AC-FT	146	172	117	116	173	141	115	119	139	.98	.77	125
CFSM	.03	.03	.02	.02	.03	.02	.02	.02	.03	.02	.01	.02
IN.	.03	.03	.02	.02	.03	.03	.02	.02	.03	.02	.02	.03

CAL YR 1990 TOTAL 999.66 MEAN 2.74 MAX 8.4 MIN .60 AC-FT 1980 CFMS .03 IN. .40
WTR YR 1991 TOTAL 775.71 MEAN 2.13 MAX 3.6 MIN .60 AC-FT 1540 CFMS .02 IN. .31

e Estimated

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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.

GAGE.--Water-stage recorder. Datum of gage is 1,390.25 ft above National Geodetic Vertical Datum of 1929 (levels by Portland General Electric Co.). See WSP 1738 for history of changes prior to Nov. 23, 1957.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1924 - 1991, BY WATER YEAR (WY)

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1924 - 1991	
ANNUAL TOTAL	1499240		1439580			
ANNUAL MEAN	4108		3944		4548	
HIGHEST ANNUAL MEAN					5878	
LOWEST ANNUAL MEAN					3558	
HIGHEST DAILY MEAN	5640	Feb 28	5170	Mar 8	15100	Dec 28 1984
LOWEST DAILY MEAN	3440	Oct 17	3440	Oct 17	2440	Dec 3 1964
ANNUAL SEVEN-DAY MINIMUM	3460	Oct 15	3460	Oct 15	2590	Nov 30 1957
ANNUAL RUNOFF (AC-FT)	2974000		2855000		3295000	
10 PERCENT EXCEEDS	4760		4450		5930	
50 PERCENT EXCEEDS	4010		3730		4260	
90 PERCENT EXCEEDS	3610		3580		3460	

DESCHUTES RIVER BASIN

14092750 SHITIKI 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.

DRAINAGE AREA.--22.9 mi².

WATER-DISCHARGE RECORDS

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

GAGE.--Water-stage recorder. Elevation of gage is 3,580 ft, from topographic map.

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

AVERAGE DISCHARGE.--9 years, 73.2 ft³/s, 43.41 in/yr, 53,030 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,170 ft³/s Feb. 23, 1986, gage height, 3.65 ft, from rating curve extended above 170 ft³/s; minimum daily 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)
Dec. 22	1400	(a)	*2.59	Jan. 15	---	*260	unknown
Minimum daily discharge, 17 ft ³ /s Dec. 22.							
(a) Backwater from ice.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	46	49	e21	42	58	38	43	63	76	47	35
2	23	39	44	e22	47	59	40	43	78	84	47	35
3	23	38	44	e22	67	76	41	44	87	92	46	34
4	23	98	e48	e20	77	113	43	45	77	91	45	34
5	28	66	44	e19	148	97	56	45	70	83	45	34
6	27	50	41	e20	120	84	63	55	65	74	45	33
7	25	46	39	e22	99	77	61	69	63	69	46	32
8	24	55	e38	e24	86	71	56	128	75	70	46	32
9	24	76	e40	e25	77	68	64	97	84	72	43	31
10	24	57	e70	e26	71	64	61	79	87	68	43	31
11	24	46	e76	e31	67	60	56	70	109	64	44	31
12	24	41	e60	e76	68	59	54	64	90	67	43	31
13	25	43	e48	e130	91	55	53	62	71	76	42	31
14	26	44	e40	e150	115	52	52	61	63	69	41	30
15	33	39	e36	e210	105	51	51	60	59	63	38	29
16	39	37	e33	e160	100	49	49	65	63	66	47	29
17	31	36	e31	139	90	45	48	91	58	67	42	28
18	35	35	e36	118	81	43	46	83	57	63	40	28
19	34	34	e30	103	79	43	45	74	60	60	40	28
20	29	33	e22	86	95	42	45	72	81	59	40	27
21	48	32	e18	76	115	42	39	76	70	57	39	28
22	65	32	e17	71	98	41	47	86	66	58	39	27
23	38	35	e18	65	86	40	52	82	68	56	39	27
24	32	36	e19	60	77	40	56	80	74	56	39	26
25	30	e90	e20	56	71	39	57	79	78	56	38	26
26	49	103	e21	53	66	38	55	73	73	55	37	26
27	36	76	e21	50	62	36	51	68	68	53	37	26
28	34	63	e20	46	60	36	48	65	71	52	40	25
29	34	57	e19	43	---	35	43	65	81	51	39	25
30	71	54	e19	43	---	35	43	65	78	48	37	25
31	65	---	e20	42	---	36	---	62	---	48	36	---
TOTAL	1046	1537	1081	2029	2360	1684	1513	2151	2187	2023	1290	884
MEAN	33.7	51.2	34.9	65.5	84.3	54.3	50.4	69.4	72.9	65.3	41.6	29.5
MAX	71	103	76	210	148	113	64	128	109	92	47	35
MIN	23	32	17	19	42	35	38	43	57	48	36	25
AC-FT	2070	3050	2140	4020	4680	3340	3000	4270	4340	4010	2560	1750
CFSM	1.47	2.24	1.52	2.86	3.68	2.37	2.20	3.03	3.18	2.85	1.82	1.29
IN.	1.70	2.50	1.76	3.30	3.83	2.74	2.46	3.49	3.55	3.29	2.10	1.44

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1991, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	37.0	60.5	60.0	75.8	83.6	86.1	98.4	113	114	76.2
MAX	60.2	103	117	152	190	166	137	156	154	119
(WY)	1983	1985	1983	1983	1986	1986	1990	1983	1983	1982
MIN	20.3	23.8	34.9	38.2	34.0	41.4	50.4	69.4	67.4	42.7
(WY)	1988	1988	1991	1985	1989	1985	1991	1991	1987	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1982 - 1991

ANNUAL TOTAL	23640	19785	73.2
ANNUAL MEAN	64.8	54.2	106
HIGHEST ANNUAL MEAN			54.2
LOWEST ANNUAL MEAN			1991
HIGHEST DAILY MEAN	458	210	930
LOWEST DAILY MEAN	17	17	17
ANNUAL SEVEN-DAY MINIMUM	19	19	19
ANNUAL RUNOFF (AC-FT)	46890	39240	53000
ANNUAL RUNOFF (CFSM)	2.83	2.37	3.19
ANNUAL RUNOFF (INCHES)	38.40	32.14	43.40
10 PERCENT EXCEEDS	115	85	131
50 PERCENT EXCEEDS	49	48	59
90 PERCENT EXCEEDS	26	26	31

DESCHUTES RIVER BASIN

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14092750 SHITIKE CREEK AT PETERS PASTURE, NEAR WARM SPRINGS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1989 to current year.

REMARKS.--Additional data available for water year 1990 and included below. All data republished for water year 1990.

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	TEMPER- ATURE WATER (DEG C)	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, SUS- PENDEDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) *
OCT 23...	1545	6.5	38	1	0.10
FEB 27...	1500	3.0	50	0	0.0
APR 18...	1700	7.0	136	3	1.1
JUN 06...	1500	--	106	2	0.57
JUL 30...	1710	11.0	48	2	0.26
SEP 27...	1310	10.0	24	4	0.26

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	TEMPER- ATURE WATER (DEG C)	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, SUS- PENDEDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDEDED (T/DAY) *
JAN 16...	1300	--	161	2	0.87
FEB 26...	1330	6.5	66	1	0.18
APR 25...	1330	5.5	57	16	2.5
JUN 17...	1740	9.0	57	1	0.15
AUG 29...	1400	10.0	39	7	0.74

* Sediment discharges shown are estimated instantaneous values. The values were calculated by multiplying the water discharge times the sediment concentration times the coefficient of 0.0027 to get sediment discharge in tons per day. They do not reflect the actual sediment discharge for the given date.

DESCHUTES RIVER BASIN

14092885 SHITIKE CREEK BELOW WOLFORD CANYON, NEAR WARM SPRINGS, OR

LOCATION.--Lat 44°46'20", long 121°18'15", in NW 1/4 SE 1/4 sec.21, T.9 S., R.12 E., Jefferson County, Hydrologic Unit 17070306, Warm Springs Indian Reservation, on left bank at bridge crossing 2.3 mi upstream from Tenino Creek, and 2.1 mi northwest of Warm Springs.

DRAINAGE AREA.--75.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1974 to current year. Records for June 1911 to October 1916, April 1923 to September 1928, and October 1972 to September 1974 (see sta 14093000) at sites downstream not equivalent owing to difference in drainage areas.

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

REMARKS.--Water-discharge records good except for estimated daily discharges, and flows above 1,000 ft³/s, which are poor. No regulation. Some diversion for irrigation and Warm Springs water supply.

AVERAGE DISCHARGE.--17 years, 94.9 ft³/s, 17.00 in/yr, 68,760 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,980 ft³/s Feb. 23, 1986, gage height, 6.40 ft, from rating curve extended above 860 ft³/s; maximum gage height, 7.35 ft Dec. 13, 1977; minimum daily discharge, 17 ft³/s Oct. 12-15, 17-22, 24-27, Nov. 12, 1978.

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)
Nov. 25	1400	*451	*4.91	No other peak greater than base discharge.			
Minimum daily discharge, 23 ft ³ /s Dec. 21, 22, 29, 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	40	93	103	e28	49	68	54	61	77	93	53	48
2	40	75	80	e29	54	71	56	61	95	99	54	48
3	41	69	72	e27	80	94	58	62	116	115	56	45
4	42	140	75	e26	90	162	59	62	103	127	59	45
5	45	149	72	e27	174	143	70	63	92	110	60	44
6	50	102	63	e28	158	118	88	70	85	91	57	43
7	46	87	58	e30	129	106	81	88	78	77	57	43
8	45	99	54	e31	110	99	75	155	92	79	55	43
9	44	137	60	e32	96	91	88	144	112	85	52	43
10	43	121	118	e33	87	85	83	117	111	82	54	43
11	42	93	123	e40	79	79	77	98	139	73	50	42
12	42	80	96	111	78	77	72	86	131	73	48	41
13	45	71	78	174	102	72	72	81	99	90	48	41
14	49	87	66	175	146	69	73	78	83	90	52	41
15	52	74	60	330	133	66	71	77	76	72	52	41
16	74	70	55	233	125	63	70	85	79	81	58	42
17	62	68	53	177	116	61	67	126	73	83	56	41
18	57	67	57	149	100	61	66	125	71	73	52	40
19	64	65	e50	127	96	61	64	105	74	64	51	40
20	51	63	e32	108	114	59	63	98	113	63	54	40
21	49	62	e23	e96	147	57	63	104	97	61	52	40
22	134	63	e23	e86	126	56	67	119	87	62	52	40
23	76	70	e25	76	107	56	74	117	85	60	50	40
24	59	71	e27	e68	94	57	79	115	88	65	50	39
25	52	264	e30	64	84	55	79	113	98	68	48	39
26	76	223	e31	60	78	56	76	104	93	64	46	39
27	68	163	e30	e56	72	53	72	93	84	61	45	38
28	59	131	e27	e53	70	52	68	89	87	60	46	38
29	60	117	e23	e50	---	50	65	85	101	55	47	38
30	93	116	e23	e48	---	49	63	84	103	55	44	37
31	144	---	e24	49	---	51	---	78	---	55	45	---
TOTAL	1844	3090	1711	2621	2894	2297	2113	2943	2822	2386	1603	1242
MEAN	59.5	103	55.2	84.5	103	74.1	70.4	94.9	94.1	77.0	51.7	41.4
MAX	144	264	123	330	174	162	88	155	139	127	60	48
MIN	40	62	23	26	49	49	54	61	71	55	44	37
AC-FT	3660	6130	3390	5200	5740	4560	4190	5840	5600	4730	3180	2460
CFSM	.78	1.36	.73	1.12	1.36	.98	.93	1.25	1.24	1.02	.68	.55
IN.	.90	1.52	.84	1.29	1.42	1.13	1.04	1.44	1.38	1.17	.79	.61

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1991, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	49.3	77.1	112	102	129	115	111	127	129	86.5	56.8	47.3					
MAX	76.5	134	238	183	324	263	167	173	217	147	86.5	67.9					
(WY)	1983	1985	1978	1976	1982	1986	1989	1982	1982	1982	1983	1982					
MIN	17.9	29.7	43.9	40.4	39.2	40.3	50.8	56.3	65.8	37.6	29.0	25.7					
(WY)	1979	1979	1986	1979	1977	1977	1977	1977	1978	1977	1978	1978					

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1975 - 1991

ANNUAL TOTAL	31552	27566	94.9
ANNUAL MEAN	86.4	75.5	143
HIGHEST ANNUAL MEAN			1982
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	501	330	1360
LOWEST DAILY MEAN	23	23	17
ANNUAL SEVEN-DAY MINIMUM	27	26	17
ANNUAL RUNOFF (AC-FT)	62580	54680	68760
ANNUAL RUNOFF (CFSM)	1.14	1.00	1.25
ANNUAL RUNOFF (INCHES)	15.48	13.53	17.01
10 PERCENT EXCEEDS	139	118	165
50 PERCENT EXCEEDS	70	68	76
90 PERCENT EXCEEDS	41	40	40

DESCHUTES RIVER BASIN

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14092885 SHITKE CREEK BELOW WOLFORD CANYON, NEAR WARM SPRINGS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1989 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	TEMPER- ATURE WATER (DEG C)	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, DIS- CHARGE, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) *
DEC 07...	1030	0.0	61	6	0.99
FEB 26...	1600	6.0	78	2	0.42
APR 22...	1530	15.0	68	4	0.73
JUL 24...	1100	15.0	68	4	0.73
AUG 26...	1500	18.0	45	3	0.36

* Sediment discharges shown are estimated instantaneous values. The values were calculated by multiplying the water discharge times the sediment concentration times the coefficient of 0.0027 to get sediment discharge in tons per day. They do not reflect the actual sediment discharge for the given date.

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.

DRAINAGE AREA.--107 mi².

WATER-DISCHARGE RECORDS

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 National Geodetic Vertical Datum of 1929. 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.--Water-discharge records excellent except for estimated daily discharges, which are fair. No regulation or diversions.

AVERAGE DISCHARGE.--13 years (water years 1950-54, 1984-91), 163 ft³/s, 20.69 in/yr, 118,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,700 ft³/s Feb. 23, 1986, gage height, 5.70 ft, from floodmark; minimum discharge observed, 97 ft³/s July 30, Sept. 5, 30, 1915.

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. 4	1430	*295	*3.41	No other peak greater than base discharge.			
Minimum daily discharge, 98 ft ³ /s Dec. 22, but may have been less during period of no gage height record, Dec. 19 to Jan. 12.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	105	106	113	e120	117	157	139	143	128	115	109	105
2	105	104	110	e125	122	166	140	142	125	115	109	104
3	106	104	108	e115	147	201	141	141	123	114	109	104
4	106	110	121	e105	144	282	143	138	122	114	108	104
5	107	111	116	e102	165	253	156	138	122	113	108	104
6	105	107	110	e100	164	224	163	138	122	113	109	104
7	104	105	108	e120	158	208	156	141	122	113	111	104
8	104	106	108	e115	152	198	152	146	121	113	109	104
9	104	107	107	e105	148	193	170	145	119	112	108	104
10	104	105	112	e105	146	187	165	141	119	112	108	104
11	104	104	111	e106	145	181	160	140	118	112	108	104
12	104	104	108	e112	149	181	159	138	118	112	107	104
13	105	105	107	124	180	175	159	136	118	113	107	104
14	104	106	107	148	188	170	160	135	118	112	107	104
15	104	104	107	208	185	164	160	133	118	112	107	104
16	105	104	107	188	183	160	158	138	117	118	107	104
17	104	104	106	167	179	157	156	159	117	118	107	104
18	106	104	113	159	171	156	155	154	117	114	106	104
19	106	104	e115	151	172	156	152	148	118	113	106	104
20	104	104	e110	144	180	154	152	145	123	112	106	104
21	108	105	e100	138	186	151	151	140	121	112	105	104
22	109	105	e98	136	178	148	151	138	120	111	106	104
23	105	105	e105	132	171	148	151	135	117	111	105	104
24	104	104	e110	129	166	152	153	135	117	109	105	104
25	104	132	e120	126	162	148	153	135	116	109	105	104
26	107	121	e140	123	160	146	152	134	117	109	105	104
27	105	114	e145	121	159	142	152	133	117	109	105	104
28	105	110	e120	119	157	139	148	132	119	109	106	104
29	104	115	e105	117	---	137	146	131	117	109	106	104
30	110	119	e110	119	---	136	145	133	115	109	105	104
31	110	---	e115	117	---	137	---	130	---	109	105	---
TOTAL	3267	3238	3472	3996	4534	5307	4598	4315	3581	3476	3314	3121
MEAN	105	108	112	129	162	171	153	139	119	112	107	104
MAX	110	132	145	208	188	282	170	159	128	118	111	105
MIN	104	104	98	100	117	136	139	130	115	109	105	104
AC-FT	6480	6420	6890	7930	8990	10530	9120	8560	7100	6890	6570	6190
CFSM	.98	1.01	1.05	1.20	1.51	1.60	1.43	1.30	1.12	1.05	1.00	.97
IN.	1.14	1.13	1.21	1.39	1.58	1.85	1.60	1.50	1.24	1.21	1.15	1.09

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1991, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	115	128	125	140	192	208	212	176
MAX	125	175	150	189	412	374	262	173
(WY)	1984	1985	1986	1987	1988	1989	1990	1991
MIN	105	106	111	123	116	154	153	139
(WY)	1991	1988	1990	1987	1989	1990	1991	1987

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1984 - 1991
ANNUAL TOTAL	48172	46219	149
ANNUAL MEAN	132	127	179
HIGHEST ANNUAL MEAN			127
LOWEST ANNUAL MEAN			1600
HIGHEST DAILY MEAN	418	282	1600
LOWEST DAILY MEAN	98	98	102
ANNUAL SEVEN-DAY MINIMUM	104	104	102
ANNUAL RUNOFF (AC-FT)	95550	91680	107600
ANNUAL RUNOFF (CFSM)	1.23	1.18	1.39
ANNUAL RUNOFF (INCHES)	16.75	16.07	18.86
10 PERCENT EXCEEDS	176	160	209
50 PERCENT EXCEEDS	120	115	127
90 PERCENT EXCEEDS	105	104	108

DESCHUTES RIVER BASIN

14095500 WARM SPRINGS RIVER NEAR SIMNASHO, OR--Continued

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WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1989 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	TEMPER- ATURE WATER (DEG C)	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) *
OCT 15...	1325	9.0	104	1	0.28
DEC 06...	1300	3.0	109	1	0.29
FEB 28...	1305	4.5	157	1	0.42
MAY 09...	1530	9.5	145	2	0.78
JUL 18...	1045	10.0	114	2	0.62
AUG 30...	1245	11.5	105	2	0.57

* Sediment discharges shown are estimated instantaneous values. The values were calculated by multiplying the water discharge times the sediment concentration times the coefficient of 0.0027 to get sediment discharge in tons per day. They do not reflect the actual sediment discharge for the given date.

DESCHUTES RIVER BASIN

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.

DRAINAGE AREA.--26.8 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 3,380 ft above National Geodetic Vertical Datum of 1929, from topographic map.

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

AVERAGE DISCHARGE.--8 years, 62.1 ft³/s, 31.47 in/yr, 44,990 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 478 ft³/s Apr. 27, 1990; maximum gage height, 7.30 ft Feb. 23, 1986, from high-water mark on crest-stage gage; minimum discharge, 27 ft³/s Oct. 10, 1990.

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)
Jan. 15	0530	*239	5.90	Mar. 4	0400	131	5.52
Jan. 15	0530	(a)	*6.20				

Minimum discharge, 27 ft³/s Oct. 10.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	41	68	e42	49	60	52	54	65	47	34	36
2	30	36	67	e44	57	67	52	54	65	46	34	35
3	31	36	63	e44	70	93	52	54	65	43	34	35
4	31	47	67	e42	70	120	59	53	66	41	35	35
5	35	48	62	43	101	95	71	53	65	40	34	34
6	33	47	57	43	97	84	72	57	64	40	36	34
7	31	45	55	46	86	77	69	65	62	39	37	34
8	32	43	52	46	77	72	67	85	60	38	37	33
9	31	45	58	45	72	70	85	88	59	36	36	34
10	31	45	67	47	67	67	75	80	59	36	35	34
11	31	44	66	e54	65	64	69	73	59	36	35	33
12	32	42	62	e68	71	67	67	70	59	36	35	34
13	34	42	58	e98	92	64	65	66	60	36	34	34
14	35	43	54	e120	91	61	63	65	60	36	34	34
15	36	40	52	204	89	59	62	64	57	36	35	34
16	38	39	50	140	86	57	61	70	56	38	37	34
17	34	38	49	109	81	56	59	93	54	39	37	34
18	39	38	57	93	76	55	58	91	53	37	36	35
19	36	38	e54	83	75	56	57	83	55	35	35	34
20	33	39	e46	74	81	54	56	76	62	35	34	34
21	40	40	e36	68	90	54	56	74	63	35	34	33
22	44	44	e28	65	88	52	57	75	61	35	33	34
23	36	43	e30	62	79	54	57	75	59	35	33	34
24	34	44	e32	59	74	56	65	74	55	36	33	34
25	33	103	e34	54	69	53	65	75	55	35	33	34
26	39	102	e36	52	65	52	64	73	53	34	33	35
27	35	84	e40	50	63	50	63	69	51	35	33	34
28	34	74	e42	48	61	49	59	66	52	34	35	34
29	34	76	e38	47	---	49	57	66	50	35	37	33
30	45	74	e38	47	---	49	55	68	48	34	36	33
31	47	---	e40	48	---	50	---	66	---	34	34	---
TOTAL	1083	1520	1558	2085	2142	1966	1871	2175	1752	1152	1078	1022
MEAN	34.9	50.7	50.3	67.3	76.5	63.4	62.4	70.2	58.4	37.2	34.8	34.1
MAX	47	103	68	204	101	120	85	93	66	47	37	36
MIN	29	36	28	42	49	49	52	53	48	34	33	33
AC-FT	2150	3010	3090	4140	4250	3900	3710	4310	3480	2280	2140	2030
CFSM	1.30	1.89	1.88	2.51	2.85	2.37	2.33	2.62	2.18	1.39	1.30	1.27
IN.	1.50	2.11	2.16	2.89	2.97	2.73	2.60	3.02	2.43	1.60	1.50	1.42

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1991, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	42.2	60.5	61.5	70.2	72.3	72.6	85.8	85.7	71.7
MAX	50.6	80.5	72.8	92.0	121	106	106	94.6	92.1
(WY)	1985	1985	1984	1990	1986	1988	1988	1988	1984
MIN	34.9	38.2	50.3	55.5	44.0	59.5	62.4	70.2	58.4
(WY)	1991	1988	1991	1987	1989	1985	1991	1991	1991

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1983 - 1991

	1990	1991	1983-1991
ANNUAL TOTAL	21469	19404	62.1
ANNUAL MEAN	58.8	53.2	69.0
HIGHEST ANNUAL MEAN			53.2
LOWEST ANNUAL MEAN			
HIGHEST DAILY MEAN	342	204	342
LOWEST DAILY MEAN	28	28	28
ANNUAL SEVEN-DAY MINIMUM	30	31	30
ANNUAL RUNOFF (AC-FT)	42580	38490	45000
ANNUAL RUNOFF (CFSM)	2.19	1.98	2.32
ANNUAL RUNOFF (INCHES)	29.80	26.93	31.49
10 PERCENT EXCEEDS	88	76	93
50 PERCENT EXCEEDS	52	50	56
90 PERCENT EXCEEDS	33	34	36

DESCHUTES RIVER BASIN

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14096300 MILL CREEK NEAR BADGER BUTTE, NEAR WARM SPRINGS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1989 to current year.

REMARKS.--Additional data available for water year 1990 and included below. All data republished for water year 1990.

WATER QUALITY DATA, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990

DATE	TIME	TEMPER- ATURE WATER (DEG C)	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) *
OCT 24...	1000	5.0	45	1	0.12
FEB 28...	1230	2.0	55	1	0.15
APR 17...	1300	--	104	5	1.4
JUN 04...	1230	8.0	83	2	0.45
AUG 01...	1100	10.0	38	3	0.31
SEP 26...	1200	9.5	33	2	0.18

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	TEMPER- ATURE WATER (DEG C)	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) *
DEC 06...	1600	--	59	1	0.16
FEB 25...	1500	3.5	71	1	0.19
APR 22...	1200	8.0	59	1	0.16
JUL 09...	1200	10.0	128	2	0.69
AUG 26...	1200	6.5	34	1	0.09

* Sediment discharges shown are estimated instantaneous values. The values were calculated by multiplying the water discharge times the sediment concentration times the coefficient of 0.0027 to get sediment discharge in tons per day. They do not reflect the actual sediment discharge for the given date.

DESCHUTES RIVER BASIN

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.

DRAINAGE AREA.--145 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1983 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,260 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Water-discharge records good except those for Jan. 2-9 and estimated daily discharges, which are poor. No regulation or diversions upstream from station.

AVERAGE DISCHARGE.--8 years, 78.2 ft³/s, 7.32 in/yr, 56,660 acre-ft/yr.EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,340 ft³/s, Feb. 23, 1986, gage height, 7.96 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)
Mar. 4	1430	*192	*2.96				
Minimum discharge, 4.5 ft ³ /s Jan. 7.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	36	39	45	23	50	71	62	60	50	41	35	34
2	36	37	43	12	51	73	63	59	49	40	35	34
3	36	37	42	8.6	71	97	64	58	48	40	35	34
4	36	38	42	7.0	70	176	64	57	48	39	35	34
5	36	40	47	6.6	91	158	67	57	48	39	35	34
6	36	39	44	6.4	91	129	72	57	48	39	35	34
7	36	38	42	5.8	83	114	69	59	47	39	37	34
8	36	38	41	12	77	103	68	62	47	38	36	34
9	36	39	41	17	73	97	88	61	47	38	35	34
10	36	39	44	25	69	93	90	60	46	37	35	34
11	36	38	46	37	68	89	84	59	45	37	35	34
12	37	37	44	45	69	87	82	58	45	37	35	34
13	37	37	43	56	89	84	81	57	45	37	35	34
14	37	38	42	74	90	81	79	56	45	37	35	34
15	37	37	41	146	89	78	79	55	45	40	34	34
16	38	37	41	114	89	74	77	56	44	39	35	34
17	38	37	41	89	86	73	74	72	44	40	35	34
18	37	37	46	80	82	72	73	68	43	38	35	34
19	37	37	43	73	80	73	71	64	43	37	34	34
20	37	37	e30	66	84	70	70	62	46	36	34	34
21	38	37	e29	60	90	67	70	60	48	36	34	34
22	40	39	e28	61	86	66	69	58	48	36	34	34
23	38	40	e30	59	82	66	68	57	45	36	34	34
24	37	40	e35	56	78	69	69	56	43	36	34	34
25	37	49	e45	54	74	67	69	56	42	36	34	34
26	37	53	71	52	72	66	68	55	42	35	34	34
27	37	47	44	50	71	64	68	54	42	35	34	34
28	37	44	33	51	71	62	65	53	43	35	34	34
29	37	43	31	47	---	60	63	53	43	35	34	34
30	39	47	32	50	---	59	61	53	42	35	34	34
31	42	---	33	49	---	59	---	51	---	35	34	---
TOTAL	1150	1195	1259	1492.4	2176	2597	2147	1803	1361	1158	1074	1020
MEAN	37.1	39.8	40.6	48.1	77.7	83.8	71.6	58.2	45.4	37.4	34.6	34.0
MAX	42	53	71	146	91	176	90	72	50	41	37	34
MIN	36	37	28	5.8	50	59	61	51	42	35	34	34
AC-FT	2280	2370	2500	2960	4320	5150	4260	3580	2700	2300	2130	2020
CFSM	.26	.27	.28	.33	.54	.58	.49	.40	.31	.26	.24	.23
IN.	.30	.31	.32	.38	.56	.67	.55	.46	.35	.30	.28	.26

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1991, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	38.7	52.5	54.2	97.6	183	153	118	79.3	53.9
MAX	42.6	104	85.5	244	634	305	175	93.6	68.8
(WY)	1985	1985	1984	1984	1986	1986	1988	1984	1984
MIN	35.1	35.6	40.0	47.6	60.0	83.8	71.6	55.1	41.7
(WY)	1989	1988	1986	1987	1989	1991	1991	1987	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1983 - 1991

ANNUAL TOTAL	21657	18432.4	78.2
ANNUAL MEAN	59.3	50.5	123
HIGHEST ANNUAL MEAN			50.5
LOWEST ANNUAL MEAN			1986
HIGHEST DAILY MEAN	310	176	3680
LOWEST DAILY MEAN	28	5.8	5.8
ANNUAL SEVEN-DAY MINIMUM	34	8.3	8.3
ANNUAL RUNOFF (AC-FT)	42960	36560	56680
ANNUAL RUNOFF (CFSM)			
ANNUAL RUNOFF (INCHES)	5.41	.35	.54
10 PERCENT EXCEEDS	93	4.73	7.33
50 PERCENT EXCEEDS	46	79	143
90 PERCENT EXCEEDS	36	43	48
		34	36

DESCHUTES RIVER BASIN

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14096850 BEAVER CREEK BELOW QUARTZ CREEK, NEAR SIMNASHO, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--October 1989 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	TEMPER- ATURE WATER (DEG C)	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, SUS- PENDED (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDED (T/DAY) *
OCT 15...	1505	10.0	37	2	0.20
DEC 05...	1300	5.0	46	2	0.25
FEB 27...	1300	4.5	71	3	0.58
MAY 08...	1400	10.0	64	4	0.69
JUL 09...	1400	15.5	37	2	0.20
AUG 29...	1430	15.0	34	2	0.18

* Sediment discharges shown are estimated instantaneous values. The values were calculated by multiplying the water discharge times the sediment concentration times the coefficient of 0.0027 to get sediment discharge in tons per day. They do not reflect the actual sediment discharge for the given date.

DESCHUTES RIVER BASIN

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.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,400 ft, from topographic map.

REMARKS.--Water-discharge records good except for estimated daily discharges, which are poor. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--19 years, 431 ft³/s, 11.13 in/yr, 312,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,240 ft³/s Feb. 23, 1986, gage height, 10.54 ft; 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)
Mar. 4	2200	*803	*2.81				

Minimum discharge, 149 ft³/s Dec. 20, but may have been less during period of ice effect Dec. 20 to Jan. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	208	246	307	e300	261	345	302	310	301	270	234	237
2	211	233	296	e330	265	351	302	305	293	265	234	237
3	214	228	282	e270	325	427	308	300	288	259	234	236
4	217	235	278	e240	346	704	308	295	289	253	235	234
5	219	253	312	e230	405	711	333	293	288	252	237	234
6	222	251	282	e220	456	583	384	295	293	251	238	234
7	218	243	265	e310	422	525	368	309	292	251	253	233
8	217	240	263	e290	389	485	353	333	284	251	253	232
9	216	239	260	e240	367	460	394	361	279	249	241	234
10	213	241	281	e230	350	442	428	344	275	248	238	235
11	212	237	291	239	339	421	393	334	273	247	237	233
12	215	233	282	268	346	413	377	326	272	248	236	232
13	219	231	271	364	418	406	370	317	275	251	236	232
14	224	235	262	434	473	385	364	309	277	248	234	226
15	226	234	259	715	459	371	365	305	277	252	234	224
16	225	228	256	678	448	357	363	316	272	261	243	224
17	226	228	254	546	439	346	355	380	269	280	247	224
18	225	230	270	476	415	341	347	408	270	261	246	224
19	231	228	263	430	399	346	341	382	263	251	243	224
20	224	227	e200	377	411	340	337	361	302	244	239	222
21	222	230	e170	339	448	329	335	347	308	242	236	221
22	250	233	e170	337	444	321	331	336	301	241	236	223
23	236	240	e200	333	418	321	333	332	291	240	235	224
24	224	239	e230	315	392	335	340	328	281	242	235	224
25	219	287	e280	300	375	329	350	328	276	244	236	224
26	225	389	e350	286	362	320	346	326	273	241	237	225
27	228	345	e390	259	353	310	349	321	275	238	237	225
28	223	311	e270	270	346	300	334	315	283	238	240	224
29	221	293	e210	248	---	294	325	310	287	236	244	224
30	233	327	e210	253	---	290	316	312	273	236	240	224
31	263	---	e270	258	---	292	---	312	---	236	237	---
TOTAL	6926	7614	8184	10385	10871	12200	10451	10150	8480	7726	7401	6849
MEAN	223	254	264	335	388	394	348	327	283	249	239	228
MAX	263	389	390	715	473	711	428	408	308	280	253	237
MIN	208	227	170	220	261	290	302	293	263	236	234	221
AC-FT	13740	15100	16230	20600	21560	24200	20730	20130	16820	15320	14680	13580
CFSM	.42	.48	.50	.64	.74	.75	.66	.62	.54	.47	.45	.43
IN.	.49	.54	.58	.73	.77	.86	.74	.72	.60	.55	.52	.48

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1991, BY WATER YEAR (WY)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	261	319	486	572	689	629	559	503	385	279	256	252							
MAX	318	570	1210	1520	1732	1285	805	819	803	401	323	301							
(WY)	1973	1985	1978	1974	1986	1986	1974	1974	1974	1974	1974	1974							
MIN	220	239	264	201	264	274	278	278	246	216	212	213							
(WY)	1978	1988	1991	1979	1977	1977	1977	1977	1977	1977	1977	1990							

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1973 - 1991

ANNUAL TOTAL	116051	107237		
ANNUAL MEAN	318	294		
HIGHEST ANNUAL MEAN			431	
LOWEST ANNUAL MEAN			660	1974
HIGHEST DAILY MEAN	1440	715	7560	Feb 23 1986
LOWEST DAILY MEAN	170	170	160	Jan 1 1979
ANNUAL SEVEN-DAY MINIMUM	209	215	174	Dec 31 1978
ANNUAL RUNOFF (AC-FT)	230200	212700	312400	
ANNUAL RUNOFF (CFSM)	.60	.56	.82	
ANNUAL RUNOFF (INCHES)	8.21	7.58	11.14	
10 PERCENT EXCEEDS	454	391	711	
50 PERCENT EXCEEDS	278	271	318	
90 PERCENT EXCEEDS	215	224	231	

DESCHUTES RIVER BASIN

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14097100 WARM SPRINGS RIVER NEAR KAHNEETA HOT SPRINGS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--November 1989 to current year.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	TEMPER- ATURE WATER (DEG C)	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY) *
OCT 16...	1315	9.0	221	2	1.2
DEC 05...	1530	5.0	308	3	2.5
FEB 27...	1600	6.0	347	3	2.8
MAY 09...	1320	10.0	362	4	3.9
JUL 10...	1225	18.5	249	4	2.7
AUG 29...	1645	18.0	246	3	2.0

* Sediment discharges shown are estimated instantaneous values. The values were calculated by multiplying the water discharge times the sediment concentration times the coefficient of 0.0027 to get sediment discharge in tons per day. They do not reflect the actual sediment discharge for the given date.

DESCHUTES RIVER BASIN

14103000 DESCHUTES RIVER AT MOODY, NEAR BIGGS, OR

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.

DRAINAGE AREA.--10,500 mi², approximately.

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.

REVISED RECORDS.--WSP 754: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 167.54 ft above National Geodetic Vertical Datum of 1929. 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.

REMARKS.--No estimated daily discharges. Water-discharge records good. Some fluctuation caused by regulation at Lake Simtustus since 1957. Some winter and spring runoff stored in Ochoco Reservoir, capacity, 46,420 acre-ft, in Crescent Lake, Crane Prairie, and Wickiup Reservoirs, combined capacity, 323,390 acre-ft, and since 1960, in Prineville Reservoir (station 14080400), and since 1964 in Lake Billy Chinook (station 14092100). Large diversions in upper river basin for irrigation. Water-quality records for periods 1911-12, 1953-58, 1962-90, have been collected at this location.

AVERAGE DISCHARGE.--87 years, 5,830 ft³/s, 4,224,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 75,500 ft³/s Dec. 22, 1964, gage height, 11.80 ft, from rating curve extended above 47,000 ft³/s; minimum discharge, 2,400 ft³/s Dec. 5, 1957.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,900 ft³/s Mar. 5, gage height, 3.50 ft; minimum discharge, 3,590 ft³/s Sept. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4980	4350	4990	5200	4940	5110	4430	4370	4310	4400	4240	3910
2	5040	4360	4970	4850	4930	5110	4460	4360	4300	4410	4240	3910
3	5070	4400	4940	4810	4880	5200	4470	4350	4310	4400	4190	3910
4	5100	4440	4890	4800	5010	5560	4480	4340	4300	4390	4070	3870
5	5110	4490	4900	4590	5080	6280	4550	4340	4280	4370	4080	3860
6	5100	4550	4900	4530	5280	6590	4650	4380	4310	4460	4090	3860
7	5060	4570	4860	4530	5380	6360	4650	4390	4290	4570	4130	3890
8	4830	4690	4840	4540	5300	6230	4600	4480	4270	4570	4110	3970
9	4690	4810	4850	4540	5200	6140	4630	4530	4280	4450	4090	3960
10	4620	4870	4910	4460	5150	6080	4750	4510	4290	4210	4090	4030
11	4360	4920	4950	4460	5090	6010	4770	4410	4280	4210	4090	4170
12	4250	4940	4920	4290	5070	5980	4740	4380	4300	4190	4070	4160
13	4210	4940	4860	4410	5170	5950	4710	4360	4290	4200	4070	4150
14	4090	4940	4640	4650	5620	5900	4700	4330	4270	4220	4150	4090
15	4050	4940	4640	4940	5720	5670	4690	4310	4250	4240	4150	3920
16	4020	4940	4610	5480	5660	5250	4630	4330	4250	4260	4150	3930
17	4020	4940	4600	5430	5580	4980	4550	4420	4250	4310	4180	3880
18	4020	4940	4640	5200	5500	4840	4530	4590	4220	4310	4170	3890
19	4020	4940	4780	5260	5470	4840	4530	4660	4240	4250	4190	3980
20	4020	4920	4880	5230	5510	4830	4520	4610	4400	4190	4140	3960
21	4020	4910	5130	5100	5800	4800	4490	4630	4370	4190	4020	3860
22	4030	4850	5170	5000	5730	4730	4500	4810	4360	4290	3990	3670
23	4060	4830	5170	5040	5630	4590	4510	4760	4320	4290	3990	3660
24	4060	4830	5180	5100	5570	4470	4500	4730	4360	4300	4020	3720
25	4140	4840	5200	5090	5480	4460	4500	4680	4510	4300	4030	3710
26	4190	5040	5280	5050	5410	4460	4480	4480	4480	4280	3970	3710
27	4230	5100	5380	5020	5370	4420	4480	4460	4440	4280	3960	3720
28	4260	5070	5400	4970	5280	4400	4450	4450	4380	4280	4000	3770
29	4270	5030	5350	4940	---	4390	4430	4450	4420	4270	4110	3800
30	4290	5000	5240	4930	---	4380	4410	4380	4410	4250	4080	3780
31	4320	---	5200	4910	---	4390	---	4350	---	4250	4020	---
TOTAL	136530	144390	154270	151350	149810	162400	136790	138630	129740	133590	126880	116700
MEAN	4404	4813	4976	4882	5350	5239	4560	4472	4325	4309	4093	3890
MAX	5110	5100	5400	5480	5800	6590	4770	4810	4510	4570	4240	4170
MIN	4020	4350	4600	4290	4880	4380	4410	4310	4220	4190	3960	3660
AC-FT	270800	286400	306000	300200	297100	322100	271300	275000	257300	265000	251700	231500

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1991, BY WATER YEAR (WY)

MEAN	4713	5414	6563	7215	7238	7231	6634	5863	5283	4634	4404	4459
MAX	5594	7814	13150	11290	13090	13580	10930	8267	7643	5917	5359	5185
(WY)	1973	1985	1965	1974	1986	1972	1984	1984	1974	1974	1976	1984
MIN	3385	3910	4610	4378	4021	4192	4467	4141	4202	3597	3411	3394
(WY)	1965	1965	1970	1964	1964	1964	1977	1977	1968	1964	1964	1964

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1964 - 1991
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ANNUAL TOTAL	1763380		1681080			
ANNUAL MEAN	4831		4606		5797	
HIGHEST ANNUAL MEAN					7376	1984
LOWEST ANNUAL MEAN					4303	1964
HIGHEST DAILY MEAN	7350	Jan 11	6590	Mar 6	62400	Dec 23 1964
LOWEST DAILY MEAN	3900	Aug 8	3660	Sep 23	3320	Oct 14 1964
ANNUAL SEVEN-DAY MINIMUM	4020	Oct 16	3710	Sep 22	3360	Oct 10 1964
ANNUAL RUNOFF (AC-FT)	3498000		3334000		4200000	
10 PERCENT EXCEEDS	5610		5270		8120	
50 PERCENT EXCEEDS	4760		4480		5140	
90 PERCENT EXCEEDS	4140		4020		4180	

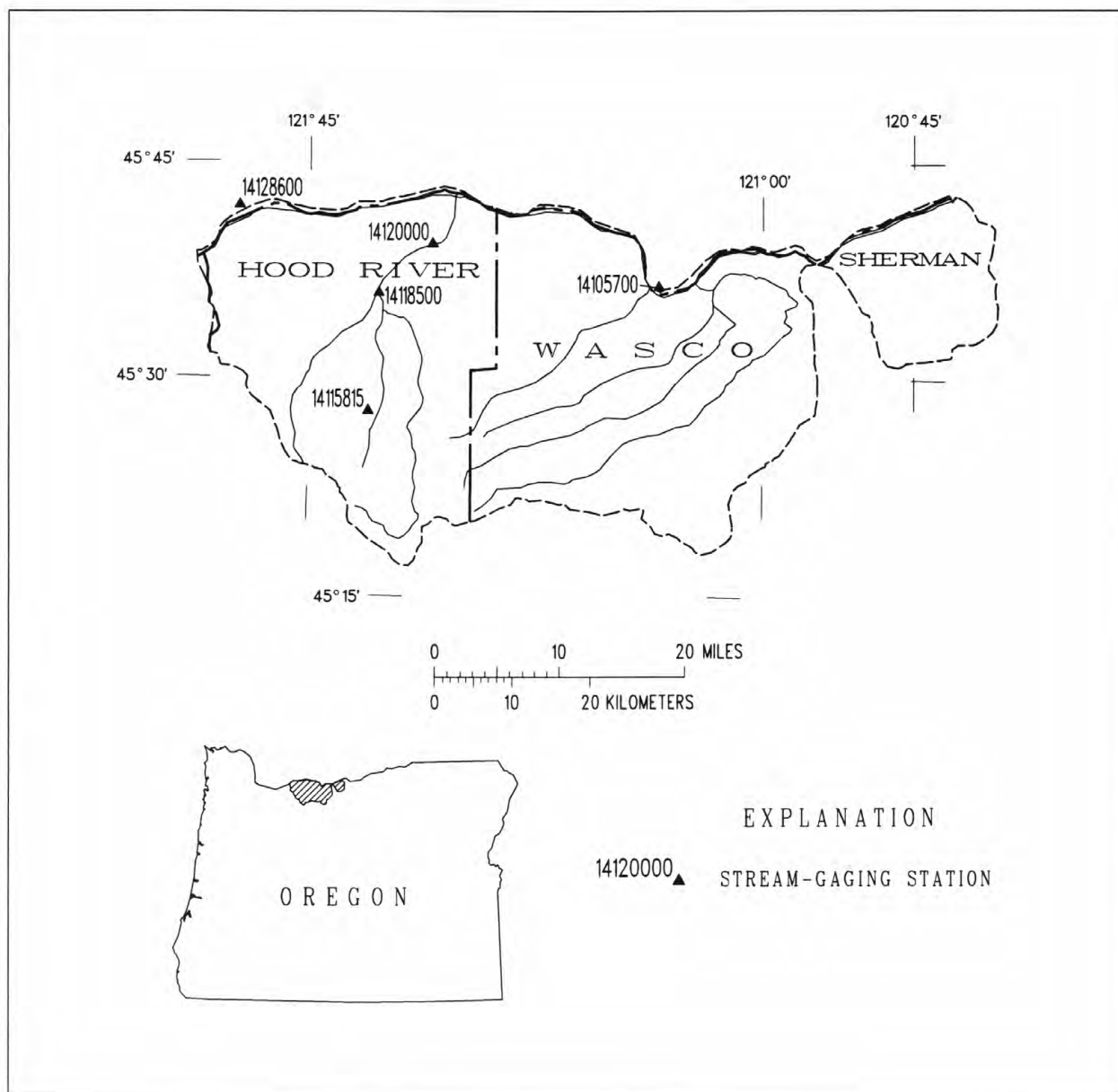


Figure 10.--Location of surface-water and water-quality stations in the Middle and Lower Columbia River area, and Hood River basin.

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.

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.

GAGE.--Acoustic velocity meter (AVM) with water-stage and velocity-index recorder. Datum of gage is National Geodetic Vertical Datum of 1929. 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.

AVERAGE DISCHARGE.--113 years, 192,200 ft³/s, 139,200,000 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 372,000 ft³/s May 26; maximum elevation, 81.71 ft May 10; minimum daily discharge, 90,900 ft³/s Oct. 27.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113000	130000	180000	149000	224000	229000	219000	249000	333000	267000	179000	123000
2	115000	126000	214000	186000	202000	227000	212000	261000	322000	288000	164000	106000
3	113000	121000	213000	153000	171000	223000	204000	243000	332000	282000	150000	118000
4	112000	114000	193000	228000	183000	216000	209000	260000	343000	262000	134000	140000
5	130000	133000	194000	200000	189000	208000	202000	243000	335000	277000	164000	128000
6	132000	148000	229000	208000	192000	255000	227000	238000	329000	276000	164000	133000
7	108000	145000	228000	201000	202000	250000	241000	239000	335000	289000	176000	111000
8	121000	152000	199000	209000	201000	245000	239000	249000	341000	251000	187000	117000
9	115000	133000	195000	192000	173000	220000	233000	270000	325000	221000	177000	142000
10	117000	119000	199000	208000	200000	190000	229000	325000	305000	241000	200000	128000
11	116000	140000	178000	201000	207000	207000	237000	247000	324000	235000	199000	129000
12	109000	152000	203000	174000	210000	216000	244000	215000	325000	233000	192000	153000
13	97700	145000	205000	155000	219000	238000	250000	245000	346000	222000	183000	116000
14	105000	153000	221000	179000	220000	229000	215000	230000	341000	247000	220000	107000
15	121000	169000	193000	166000	231000	237000	244000	257000	336000	198000	192000	96500
16	126000	175000	191000	223000	209000	254000	232000	313000	273000	209000	166000	111000
17	145000	177000	199000	200000	215000	227000	241000	266000	299000	166000	157000	140000
18	93400	169000	123000	199000	202000	219000	243000	294000	271000	151000	129000	139000
19	93300	150000	232000	240000	211000	234000	227000	347000	263000	161000	151000	140000
20	104000	168000	245000	219000	211000	244000	208000	362000	237000	166000	160000	127000
21	100000	164000	259000	241000	199000	211000	216000	362000	253000	144000	147000	98200
22	125000	153000	233000	233000	191000	211000	228000	359000	206000	167000	141000	102000
23	101000	186000	221000	234000	205000	190000	219000	364000	221000	169000	158000	120000
24	125000	147000	226000	238000	170000	248000	260000	369000	219000	195000	192000	138000
25	125000	177000	230000	232000	212000	222000	283000	365000	227000	165000	164000	136000
26	111000	220000	181000	236000	224000	220000	267000	372000	253000	179000	149000	147000
27	90900	249000	179000	208000	214000	232000	265000	343000	267000	137000	153000	134000
28	91900	251000	219000	243000	221000	216000	216000	315000	278000	152000	149000	94200
29	126000	235000	205000	253000	---	220000	288000	336000	274000	---	122000	96400
30	132000	211000	203000	229000	---	156000	248000	336000	270000	191000	136000	129000
31	105000	---	221000	211000	---	193000	---	324000	---	186000	126000	---
TOTAL	3519200	4912000	6411000	6448000	5708000	6887000	7101000	9200000	8783000	6498000	5091000	3699300
MEAN	113500	163700	206800	208000	203900	222200	236700	296800	292800	209600	164200	123300
MAX	145000	251000	259000	253000	231000	255000	288000	372000	346000	289000	220000	153000
MIN	90900	114000	123000	149000	170000	156000	202000	215000	206000	137000	126000	94200
AC-FT	6980000	9743000	12720000	12790000	11320000	13660000	14080000	18250000	17420000	12890000	10100000	7338000
CAL YR 1990	TOTAL 67016900		MEAN 183600		MAX 391000		MIN 72300		AC-FT .13292801E9			
WTR YR 1991	TOTAL 74257500		MEAN 203400		MAX 372000		MIN 90900		AC-FT .14728973E9			

HOOD RIVER BASIN

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14115815 CLEAR BRANCH BELOW LAURANCE LAKE, NEAR PARKDALE, OR

LOCATION.--Lat 45°27'44", long 121°39'04", in SE 1/4 SE 1/4 sec.22, T.1 S., R.9 E., Hood River County, Hydrologic Unit 17070105, on right bank 0.3 mi downstream from Laurance Lake, and 5.0 mi southwest of Parkdale.

DRAINAGE AREA.--8.62 mi².

PERIOD OF RECORD.--May 1986 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,790 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Flow regulated by Laurance Lake 0.3 mi upstream. Water is diverted from Laurance Lake for irrigation.

AVERAGE DISCHARGE.--5 years, 20.2 ft³/s, 14,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 184 ft³/s Apr. 27, 1990, gage height, 7.03 ft; minimum discharge, 0.65 ft³/s Oct. 9, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 182 ft³/s Jan. 15, gage height, 7.02 ft; minimum discharge, 2.4 ft³/s Aug. 26, gage height, 5.44 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	29	33	29	e29	e30	e29	32	7.4	7.4	4.2	11
2	13	29	33	29	e29	e30	e31	32	7.8	7.4	4.2	15
3	13	29	33	29	e30	e30	e31	32	9.0	7.4	4.1	15
4	13	29	33	29	e29	e49	e31	32	9.7	7.4	3.9	16
5	13	29	33	29	e30	e56	31	32	9.7	7.4	3.8	16
6	13	29	33	29	e68	e39	31	32	10	7.4	3.7	16
7	13	29	33	29	e57	e36	31	32	11	7.4	3.6	16
8	13	29	32	29	e44	e32	31	32	12	7.2	3.5	16
9	13	29	32	29	e37	e30	31	32	13	7.0	3.3	16
10	13	29	33	29	e33	e30	31	32	14	7.0	3.2	16
11	14	29	33	29	e30	e30	31	32	16	6.5	3.2	16
12	14	29	33	30	e30	e30	31	32	9.1	6.3	3.2	16
13	15	29	33	29	e30	e30	31	32	8.2	6.3	3.2	16
14	15	29	33	31	e51	e30	31	32	8.2	6.2	3.1	16
15	16	29	33	149	e49	e30	31	14	8.2	6.0	3.1	16
16	16	29	33	104	e43	e30	31	7.4	8.1	5.8	3.0	16
17	19	29	33	86	e43	e30	31	7.4	7.8	5.6	2.9	16
18	22	29	31	e74	e38	e29	32	7.4	7.8	5.6	2.9	16
19	28	29	30	e65	e36	e29	32	7.4	7.8	5.5	2.9	16
20	30	29	30	e51	e52	e29	32	7.4	8.0	5.4	2.7	16
21	29	29	30	e41	e123	e29	32	7.4	7.8	5.3	2.7	16
22	29	29	30	e38	e87	e29	32	7.4	7.8	5.2	2.9	16
23	29	30	30	e36	e61	e29	32	7.4	7.8	5.1	2.9	16
24	29	30	30	e32	e48	e29	32	7.4	7.8	5.0	2.9	16
25	29	32	29	e30	e40	e29	32	7.4	7.6	4.8	2.6	16
26	29	32	29	e30	e34	e29	32	7.4	7.4	4.7	3.0	16
27	29	32	29	e30	e32	e29	32	7.4	7.4	4.6	3.5	16
28	29	32	30	e30	e30	e28	32	7.4	7.4	4.6	3.6	16
29	29	33	29	e29	---	e29	32	7.4	7.4	4.6	4.1	16
30	29	33	29	e29	---	e29	32	7.4	7.4	4.5	4.6	16
31	29	---	29	e29	---	e29	---	7.4	---	4.3	4.6	---
TOTAL	638	892	974	1292	1243	977	941	580.4	268.6	184.9	105.1	473
MEAN	20.6	29.7	31.4	41.7	44.4	31.5	31.4	18.7	8.95	5.96	3.39	15.8
MAX	30	33	33	149	123	56	32	32	16	7.4	4.6	16
MIN	13	29	29	29	29	28	29	7.4	7.4	4.3	2.6	11
AC-FT	1270	1770	1930	2560	2470	1940	1870	1150	533	367	208	938

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1987 - 1991, BY WATER YEAR (WY)

	1987	1988	1989	1990	1991
MEAN	13.0	18.2	21.7	27.1	29.4
MAX	20.6	29.8	31.8	41.7	44.4
(WY)	1991	1989	1989	1991	1988
MIN	4.45	5.59	8.53	8.22	10.3
(WY)	1988	1988	1987	1987	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1987 - 1991

ANNUAL TOTAL	9419.5	8569.0	20.2
ANNUAL MEAN	25.8	23.5	25.8
HIGHEST ANNUAL MEAN			8.12
LOWEST ANNUAL MEAN			1989
HIGHEST DAILY MEAN	130	149	149
LOWEST DAILY MEAN	5.6	2.6	1.3
ANNUAL SEVEN-DAY MINIMUM	5.9	2.8	1.3
ANNUAL RUNOFF (AC-FT)	18680	17000	14640
10 PERCENT EXCEEDS	35	33	33
50 PERCENT EXCEEDS	29	29	15
90 PERCENT EXCEEDS	7.0	4.7	6.0

HOOD RIVER RIVER BASIN

14118500 WEST FORK HOOD RIVER NEAR DEE, OR

LOCATION.--Lat 45°35'55", long 121°38'05", in SE 1/4 sec.1, T.1 N., R.9 E., Hood River County, Hydrologic Unit 17070105, on left bank 0.3 mi upstream from Dead Point Creek, 0.8 mi northwest of Dee, and at mile 0.4.

DRAINAGE AREA.--95.6 mi².

PERIOD OF RECORD.--September 1913 to February 1916 (incomplete), June 1932 to September 1991 (discontinued).
See REMARKS.

REVISED RECORDS.--WDR OR-80-1: 1972 (M).

GAGE.--Water-stage recorder. Datum of gage is 802.1 ft above National Geodetic Vertical Datum of 1929.
Sept. 1, 1913, to Feb. 12, 1916, nonrecording gage at site 0.5 mi upstream at different datum.

REMARKS.--Records good. No regulation. Dee Irrigation District canal diverts from right bank about 6 mi upstream from station for irrigation upstream from station and in Middle Fork Basin. Diversions from Green Point Creek basin upstream from station for irrigation near Oak Grove; water from two of these diversions is carried in Hood River Irrigation District canal. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--60 years (water years 1914, 1933-91), 549 ft³/s, 397,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, not determined, Dec. 22, 1964, gage height, 27.0 ft, from floodmarks; maximum daily discharge, 15,000 ft³/s Dec. 23, 1964; minimum, 90 ft³/s Oct. 25, 29, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 4,100 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0600	4,900	8.71	Jan. 15	0300	*7,570	*10.68

Minimum discharge, 97 ft³/s Sept. 22, 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	108	574	745	427	372	494	409	463	344	272	163	145
2	116	449	653	314	486	591	441	458	350	269	157	131
3	148	439	588	288	956	879	436	441	335	279	155	128
4	150	797	745	275	1060	1240	864	428	303	270	159	128
5	195	749	757	263	1620	950	1740	424	292	246	160	127
6	148	582	639	252	1100	793	1200	481	323	229	158	127
7	134	549	564	265	847	692	914	559	314	222	162	121
8	130	540	516	307	713	634	794	836	317	218	161	115
9	130	623	585	282	630	598	1320	718	305	213	160	111
10	132	576	965	367	574	562	1030	643	307	206	153	109
11	128	494	902	643	541	527	832	589	317	201	141	107
12	180	420	734	2040	654	530	755	559	295	207	137	106
13	232	563	633	2530	1170	508	717	539	309	224	136	111
14	192	626	561	2980	1090	485	748	512	326	216	136	112
15	331	546	507	4560	902	457	715	470	306	199	135	105
16	373	487	454	1910	884	434	665	457	293	208	139	107
17	321	455	519	1360	820	418	624	559	280	220	144	107
18	375	434	992	1120	724	413	594	607	274	204	144	108
19	366	385	691	926	932	405	569	541	263	190	147	108
20	262	386	e550	776	1630	388	567	500	420	183	141	105
21	529	480	e500	674	1360	379	582	476	381	181	130	101
22	531	1000	e490	608	998	532	577	446	339	185	129	100
23	351	1090	e470	555	814	381	549	418	331	187	128	99
24	283	1270	e470	511	701	418	568	413	316	190	125	107
25	265	3340	e510	465	620	407	532	429	303	194	122	111
26	464	1420	e490	429	564	383	510	393	289	179	119	108
27	319	1050	e500	403	523	365	563	364	282	171	118	108
28	334	784	499	381	493	351	516	346	274	178	150	109
29	357	847	e440	358	---	361	492	342	280	176	146	108
30	594	815	e430	342	---	349	474	397	281	175	149	105
31	723	---	e465	355	---	374	---	354	---	167	142	---
TOTAL	8901	22770	18564	26966	23778	16148	21297	15162	9349	6459	4446	3374
MEAN	287	759	599	870	849	521	710	489	312	208	143	112
MAX	723	3340	992	4560	1630	1240	1740	836	420	279	163	145
MIN	108	385	430	252	372	349	409	342	263	167	118	99
AC-FT	17660	45160	36820	53490	47160	32030	42240	30070	18540	12810	8820	6690

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1933 - 1991, BY WATER YEAR (WY)

	272	633	889	845	783	688	751	674	464	255	174	168
MEAN	272	633	889	845	783	688	751	674	464	255	174	168
MAX	817	1499	2589	2362	1918	1391	1335	1305	1131	496	267	378
(WY)	1948	1956	1934	1953	1961	1972	1943	1949	1933	1955	1950	1959
MIN	96.7	109	202	191	229	386	288	312	195	140	109	109
(WY)	1988	1937	1977	1937	1977	1981	1941	1934	1940	1940	1941	1942

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1933 - 1991

ANNUAL TOTAL	190428	177214	548
ANNUAL MEAN	522	486	837
HIGHEST ANNUAL MEAN			267
LOWEST ANNUAL MEAN			15000
HIGHEST DAILY MEAN	4020	Jan 8	Dec 23
LOWEST DAILY MEAN	103	Sep 30	Oct 25
ANNUAL SEVEN-DAY MINIMUM	107	Sep 25	Oct 24
ANNUAL RUNOFF (AC-FT)	377700	351500	397400
10 PERCENT EXCEEDS	824	881	1050
50 PERCENT EXCEEDS	482	409	400
90 PERCENT EXCEEDS	129	129	147

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.

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.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 383.2 ft above National Geodetic Vertical Datum of 1929 (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.

AVERAGE DISCHARGE.--31 years (water years 1898-99, 1914, 1916-17, 1966-91), 1,030 ft³/s, 746,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,300 ft³/s Dec. 13, 1977, gage height, 15.59 ft; 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)
Nov. 25	0500	7,190	a9.14	Jan. 15	0515	*12,400	*a11.43

Minimum discharge, 199 ft³/s Aug. 26, Sept. 21, 22.

a Adjusted for drawdown.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	258	905	e1100	643	751	904	741	768	605	480	344	309
2	263	757	e950	608	795	939	765	756	637	500	329	264
3	319	727	e840	560	1450	1280	757	733	629	528	330	244
4	367	1280	e1050	529	1490	2000	1290	721	578	558	347	254
5	414	1130	1080	513	2530	1700	2520	723	548	543	349	271
6	301	894	925	499	1820	1370	1720	790	583	484	355	264
7	265	851	835	504	1440	1190	1330	899	561	459	389	272
8	258	823	775	540	1240	1100	1200	1310	582	e450	387	244
9	263	974	868	522	1110	1040	1850	1120	569	e395	370	225
10	273	893	1350	564	1030	995	1520	1000	595		321	224
11	257	763	1240	892	968	948	1270	927	655	e380	280	219
12	368	673	1030	2530	1040	955	1170	890	612	e390	259	213
13	404	809	917	3460	1650	922	1120	871	577	e400	249	239
14	342	887	832	3920	1800	896	1140	843	557	e390	260	238
15	578	769	774	7970	1510	860	1110	778	538	e380	263	217
16	622	707	722	3630	1450	827	1040	760	495	e400	282	232
17	539	670	762	2380	1350	802	994	903	503	e410	314	244
18	598	658	1320	1820	1210	790	952	941	476	394	311	258
19	581	605	970	1530	1370	784	919	865	465	367	336	251
20	477	607	853	1320	2260	758	921	815	656	356	335	242
21	867	686	771	1170	2510	740	931	804	618	359	293	218
22	893	1290	735	1070	1720	731	936	774	570	372	273	207
23	634	1430	694	993	1420	738	916	744	538	376	270	225
24	550	1620	695	929	1240	772	925	742	520	399	251	254
25	521	e5000	784	872	1130	764	875	752	500	414	226	285
26	796	e2200	715	822	1030	741	840	708	490	372	214	276
27	601	e1600	732	791	965	711	895	668	473	347	214	269
28	615	e1100	697	764	924	705	834	657	469	368	320	265
29	626	e1200	640	729	---	682	803	628	490	373	327	259
30	920	e1150	642	710	---	656	772	677	493	372	342	261
31	1100	---	674	705	---	707	---	623	---	353	325	---
TOTAL	15870	33658	26972	44489	39203	29007	33056	25190	16582	12789	9465	7443
MEAN	512	1122	870	1435	1400	936	1102	813	553	413	305	248
MAX	1100	5000	1350	7970	2530	2000	2520	1310	656	558	389	309
MIN	257	605	640	499	751	656	741	623	465	347	214	207
AC-FT	31480	66760	53500	88240	77760	57540	65570	49960	32890	25370	18770	14760

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1898 - 1991, BY WATER YEAR (WY)

MEAN	479	1037	1466	1615	1571	1352	1319	1224	980	616	416	391
MAX	929	1989	4109	3313	3367	2915	2358	2418	2439	1687	1088	804
(WY)	1900	1898	1978	1974	1982	1972	1916	1969	1899	1899	1899	1899
MIN	218	282	438	363	430	681	704	559	445	256	252	229
(WY)	1988	1988	1977	1979	1977	1977	1973	1973	1987	1977	1987	1987

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1898 - 1991
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ANNUAL TOTAL	325344		293724				
ANNUAL MEAN	891		805			1031	
HIGHEST ANNUAL MEAN						1664	1899
LOWEST ANNUAL MEAN						465	1977
HIGHEST DAILY MEAN	6140	Jan 8	7970	Jan 15	18000		Dec 13 1977
LOWEST DAILY MEAN	232	Sep 20	207	Sep 22	172		Sep 12 1986
ANNUAL SEVEN-DAY MINIMUM	250	Sep 18	225	Sep 9	190		Sep 8 1986
ANNUAL RUNOFF (AC-FT)	645300		582600		746700		
10 PERCENT EXCEEDS	1310		1340		1900		
50 PERCENT EXCEEDS	840		710		800		
90 PERCENT EXCEEDS	282		265		324		

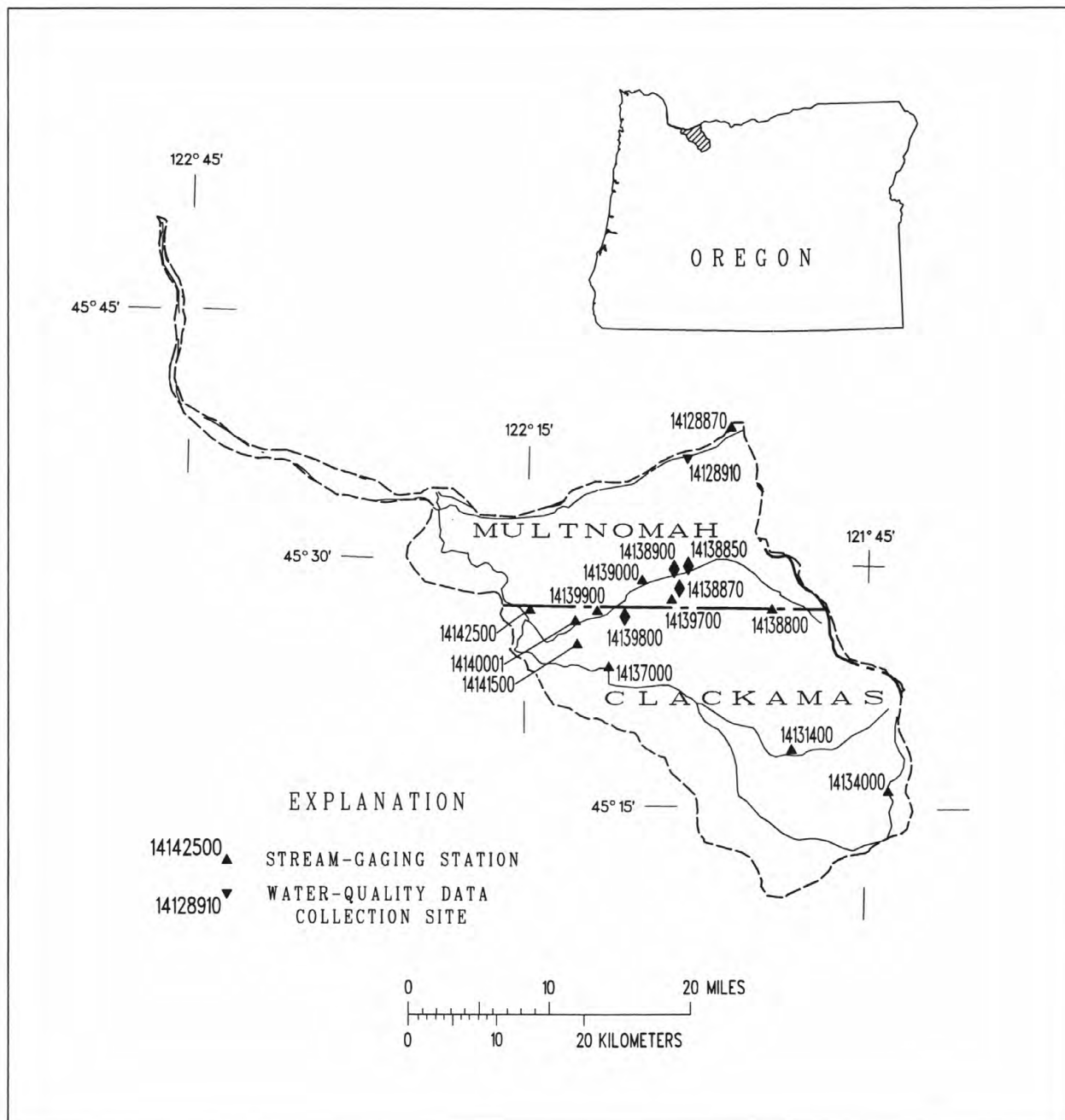


Figure 11.--Location of surface-water and water-quality stations in the Middle and Lower Columbia River area, and Sandy River basin.

COLUMBIA RIVER MAIN STEM

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14128600 COLUMBIA RIVER AT STEVENSON, WA

LOCATION.--Lat 45°41'58", long 121°52'02", in NW 1/4 SE 1/4 sec.36, T.3 N., R.7-1/2 E., Skamania County,
Hydrologic Unit 17070105, on right bank 0.9 mi east of Stevenson, and at mile 151.3.

DRAINAGE AREA.--239,800 mi², approximately.

PERIOD OF RECORD.--October 1973 to current year (gage heights only).

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 79.79 ft June 20, 1974; minimum, 70.39 ft Oct. 25, 1981.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 77.88 ft May 10; minimum, 72.25 ft Oct. 15.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	75.62	74.18	74.66	75.27	73.79	74.25	74.63	72.63	73.74	76.06	74.30	74.92
2	75.24	74.34	74.92	75.37	73.60	74.15	75.26	74.01	74.61	75.22	73.72	74.32
3	75.14	74.18	74.77	74.83	73.69	74.24	74.82	73.20	74.11	74.62	72.93	73.84
4	74.73	73.42	74.18	74.70	73.01	73.82	74.93	73.32	74.10	76.14	73.35	74.81
5	76.09	73.33	74.60	74.91	73.13	73.99	75.20	72.50	73.62	76.19	73.78	74.66
6	75.95	74.59	75.21	74.71	72.90	73.91	76.06	74.47	75.27	76.02	74.13	75.08
7	75.83	74.29	74.80	75.10	72.96	74.07	76.19	73.80	74.95	75.96	72.98	74.43
8	74.76	73.23	74.15	75.03	73.64	74.39	76.10	73.74	74.77	75.28	72.78	74.21
9	74.75	73.48	74.20	74.51	73.07	73.79	75.58	73.83	74.52	75.27	72.45	74.15
10	74.52	73.32	74.08	74.34	73.48	73.92	75.35	73.75	74.42	76.73	73.08	74.54
11	74.37	72.55	73.30	74.46	73.28	73.86	75.87	73.24	74.23	77.32	75.95	76.58
12	74.97	73.66	74.22	74.50	73.53	73.86	75.83	74.12	74.73	76.21	74.23	75.17
13	75.02	73.45	74.06	74.10	72.56	73.51	75.88	73.48	74.56	75.72	74.61	75.26
14	74.64	73.34	73.73	74.86	72.45	73.58	75.79	73.98	74.86	75.64	73.93	74.99
15	73.84	72.25	73.18	74.64	72.80	73.60	75.08	72.81	73.64	76.08	74.23	75.24
16	74.63	73.04	73.66	74.88	72.87	74.09	76.07	73.62	74.65	75.91	73.85	74.90
17	74.86	73.76	74.25	75.74	74.00	74.68	75.47	73.58	74.38	75.85	73.17	74.70
18	75.09	73.77	74.49	75.92	74.77	75.33	75.64	73.62	74.12	75.90	73.92	74.81
19	74.77	73.52	74.25	75.97	74.04	74.94	76.30	73.24	74.70	76.32	74.74	75.34
20	74.85	73.78	74.28	75.75	73.59	74.69	76.39	73.48	74.49	76.64	73.88	74.88
21	75.12	74.43	74.76	75.53	73.50	74.03	75.14	74.00	74.53	75.02	73.28	73.97
22	75.15	73.82	74.53	74.64	73.30	74.04	75.43	73.78	74.42	75.31	73.66	74.45
23	75.03	73.55	73.91	75.54	73.42	74.24	75.72	73.62	74.43	75.58	74.36	75.15
24	75.08	73.03	73.98	75.96	73.20	74.44	75.42	73.35	74.66	75.62	73.73	74.46
25	75.08	73.39	74.39	75.98	74.28	74.89	75.88	73.40	74.83	75.07	73.74	74.31
26	75.70	73.99	74.90	75.48	73.26	74.41	76.09	73.50	74.74	76.40	73.65	74.49
27	75.71	74.50	75.16	75.56	73.80	74.79	76.07	73.77	74.76	76.25	74.30	75.42
28	74.49	73.74	73.99	75.32	73.53	74.50	76.32	73.98	75.03	75.60	73.03	74.31
29	75.10	73.46	74.26	75.52	74.17	74.94	76.32	73.82	74.82	75.60	74.18	75.04
30	76.10	73.81	74.77	75.08	73.02	74.19	75.66	73.35	74.54	75.79	73.33	74.69
31	76.07	74.52	75.39	---	---	---	76.28	73.89	75.02	75.94	73.65	74.64
MONTH	76.10	72.25	74.36	75.98	72.45	74.24	76.39	72.50	74.52	77.32	72.45	74.77

14128600 COLUMBIA RIVER AT STEVENSON, WA--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	75.53	73.65	74.66	75.75	74.41	74.96	75.14	73.73	74.34	75.73	74.56	75.16
2	75.52	74.07	74.74	75.52	74.00	74.66	76.65	73.53	74.87	76.06	74.93	75.41
3	75.27	73.42	73.88	76.25	74.87	75.32	76.66	73.44	74.21	76.16	74.16	75.08
4	75.29	72.45	73.53	76.13	73.48	74.79	76.87	73.13	74.70	76.20	74.92	75.51
5	75.83	73.94	74.86	76.12	73.78	74.86	76.83	76.05	76.55	76.27	75.23	75.61
6	75.87	73.90	74.92	76.37	74.64	75.22	76.39	75.14	75.55	76.28	74.84	75.61
7	75.94	73.35	74.46	76.77	75.17	75.80	75.35	74.85	75.18	76.06	73.71	74.99
8	75.95	73.86	74.98	76.92	75.51	75.85	75.56	74.69	75.24	75.50	74.10	75.03
9	75.48	73.49	74.41	76.02	74.53	75.20	75.56	74.00	75.03	75.81	74.68	75.25
10	75.86	74.10	74.69	75.38	74.19	74.63	74.99	73.21	74.05	77.88	75.45	76.44
11	75.82	73.70	74.54	75.31	72.99	74.21	76.92	74.75	75.96	77.80	74.94	76.01
12	75.58	73.49	74.68	75.50	73.68	74.59	77.31	75.49	76.24	75.05	74.07	74.44
13	76.01	74.10	74.80	75.97	74.94	75.54	76.62	74.87	75.61	74.13	73.65	73.92
14	76.09	73.96	74.92	75.31	74.46	75.03	76.69	74.38	75.41	74.31	73.53	73.93
15	76.25	74.10	75.09	75.05	74.26	74.78	75.28	73.86	74.35	74.31	73.53	73.95
16	76.23	74.57	75.21	75.43	74.84	75.20	75.64	74.32	74.94	75.92	73.43	74.06
17	76.03	74.71	75.36	75.98	74.89	75.44	76.43	75.06	75.77	75.60	73.55	74.15
18	75.98	73.74	74.83	74.79	73.24	73.99	76.12	75.39	75.78	74.93	73.55	74.00
19	75.90	73.98	75.09	75.41	74.12	74.67	76.97	75.44	76.34	75.65	74.65	75.13
20	76.05	74.88	75.29	76.16	74.84	75.43	75.41	74.68	75.05	75.04	74.31	74.71
21	76.44	74.96	75.40	76.02	73.85	75.08	76.11	74.29	74.82	76.27	74.89	75.47
22	75.49	73.82	74.62	76.81	73.64	75.49	76.66	75.56	76.08	76.60	75.87	76.20
23	75.69	73.95	74.90	76.71	74.33	75.64	75.86	74.68	75.36	77.05	76.41	76.71
24	75.64	73.63	74.63	77.36	74.77	76.10	77.24	75.08	76.24	77.50	76.54	77.02
25	75.70	73.37	74.60	75.81	74.03	74.83	77.19	76.47	76.95	76.79	75.89	76.28
26	75.22	74.29	74.81	75.92	73.42	74.82	76.55	74.82	75.65	76.56	75.39	75.94
27	75.29	73.68	74.49	76.36	73.94	75.03	77.03	75.45	76.43	76.62	74.77	75.76
28	75.16	74.00	74.60	76.08	74.58	75.42	75.90	74.93	75.38	76.58	75.19	75.61
29	---	---	---	75.93	73.97	74.97	76.50	75.38	75.81	76.06	74.13	75.15
30	---	---	---	75.74	73.38	74.46	76.36	74.82	75.75	76.82	75.26	76.10
31	---	---	---	75.54	74.57	74.98	---	---	---	76.63	76.14	76.38
MONTH	76.44	72.45	74.75	77.36	72.99	75.06	77.31	73.13	75.45	77.88	73.43	75.32
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	76.78	75.99	76.27	76.60	74.77	75.51	75.29	74.03	74.69	76.65	75.96	76.23
2	76.80	75.79	76.37	76.05	74.15	74.91	75.39	73.55	74.31	76.40	75.70	76.03
3	76.24	75.66	76.01	75.02	74.32	74.73	75.44	74.16	74.58	76.35	74.89	75.29
4	76.57	75.70	76.23	75.51	74.52	75.03	74.79	73.62	74.12	75.76	72.77	74.07
5	76.54	75.56	75.96	76.39	74.37	75.25	75.86	73.77	74.64	76.48	73.77	74.97
6	76.28	75.54	75.94	76.36	74.89	75.62	76.17	73.94	75.01	76.44	74.54	75.20
7	76.75	75.74	76.11	76.65	75.86	76.25	75.94	73.94	75.08	76.01	75.25	75.58
8	77.06	76.62	76.80	76.73	75.23	75.63	76.30	73.76	75.15	75.86	75.51	75.66
9	76.85	75.90	76.38	75.33	73.56	74.42	75.95	74.00	75.20	76.01	74.94	75.38
10	76.46	74.98	75.48	75.50	74.85	75.25	76.27	75.23	75.72	75.57	74.40	74.94
11	76.22	75.09	75.60	75.89	74.53	75.20	76.79	75.72	76.31	75.59	74.68	75.16
12	77.01	75.78	75.60	76.02	75.10	75.62	75.71	74.79	75.25	75.86	74.98	75.47
13	76.38	75.57	75.88	75.92	74.23	75.12	75.37	74.26	74.95	75.93	74.71	75.26
14	76.62	75.30	75.85	75.96	75.03	75.49	76.81	74.49	75.40	75.89	75.36	75.60
15	77.69	76.49	76.81	76.54	75.33	75.71	77.20	73.70	75.31	75.57	75.17	75.38
16	77.79	75.48	76.16	76.70	74.82	75.68	77.38	74.20	75.74	75.16	74.54	74.84
17	76.98	75.86	76.46	76.44	74.52	75.18	76.51	74.43	75.41	74.65	74.14	74.36
18	76.89	74.80	75.75	75.96	74.58	75.25	76.16	74.59	75.31	74.42	73.92	74.21
19	77.09	76.32	76.70	76.22	74.09	75.09	75.68	73.92	74.80	75.30	74.19	74.65
20	76.88	75.08	75.93	75.84	74.27	75.21	76.01	73.89	74.77	76.09	74.14	74.94
21	76.85	75.57	76.32	75.83	73.85	74.43	76.27	73.83	74.86	76.09	75.40	75.69
22	76.62	75.71	76.02	75.58	73.57	74.38	76.41	75.28	75.90	76.15	75.37	75.62
23	77.38	75.27	76.19	75.73	72.64	74.15	76.15	74.46	75.37	76.13	75.24	75.63
24	77.11	75.78	76.52	76.37	75.30	75.94	75.88	74.53	75.14	76.37	74.59	75.41
25	76.76	75.21	76.07	76.08	74.59	75.22	76.06	74.01	74.93	76.36	74.87	75.46
26	76.65	74.93	76.08	76.17	73.23	74.55	75.97	74.64	75.19	76.70	74.54	75.50
27	77.45	74.57	75.72	75.64	73.49	74.12	77.25	75.70	76.50	76.72	75.72	76.19
28	77.47	75.93	76.60	74.84	73.82	74.23	75.66	74.12	74.96	76.59	75.54	75.91
29	76.57	75.40	75.99	74.97	73.99	74.55	76.02	74.92	75.49	76.28	75.68	75.98
30	76.41	75.46	75.85	75.16	73.99	74.54	75.98	74.87	75.50	76.56	75.22	75.79
31	---	---	---	75.75	73.59	74.73	76.26	75.44	75.74	---	---	---
MONTH	77.79	74.57	76.14	76.73	72.64	75.06	77.38	73.55	75.20	76.72	72.77	75.35
YEAR	77.88	72.25	75.02									

COLUMBIA RIVER MAIN STEM

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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 National Geodetic Vertical Datum of 1929. Prior to August 15, 1990, at a site .5 mi upstream at the same datum.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 30.40 ft June 11, 1981; minimum, 6.69 ft Oct. 10, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 26.16 ft May 25; minimum, 7.76 ft Sept. 29.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	11.21	9.61	10.53	12.70	9.60	11.50	18.90	15.83	17.24	17.32	14.18	14.91
2	11.43	8.17	10.19	13.14	11.04	12.53	19.40	16.84	17.65	16.85	14.22	15.83
3	11.69	9.69	10.92	12.80	10.93	11.62	19.46	17.76	18.44	14.79	12.11	13.69
4	11.61	9.85	10.80	12.80	10.43	11.82	18.98	15.09	17.33	17.38	13.50	15.81
5	12.05	9.91	11.07	13.84	10.77	12.57	19.87	15.59	17.34	17.74	14.85	16.38
6	12.70	11.24	11.84	14.62	11.68	13.26	20.34	16.51	18.09	16.69	14.61	15.65
7	12.70	10.68	11.44	13.87	12.17	13.02	20.35	16.19	18.29	17.15	15.91	16.62
8	11.50	9.58	10.68	15.10	12.26	13.64	19.20	16.22	17.01	17.39	15.43	16.80
9	11.42	9.44	10.44	14.13	11.41	13.36	17.81	16.21	16.71	17.39	14.17	16.12
10	12.16	9.61	11.00	12.93	9.39	11.51	19.83	15.60	17.43	17.05	14.91	16.01
11	11.71	8.66	10.62	13.10	12.23	12.61	18.46	14.49	15.96	19.14	14.53	16.64
12	10.97	7.98	9.39	14.40	12.35	13.82	19.20	14.81	17.34	17.88	15.07	16.83
13	10.07	9.24	9.66	14.85	11.84	13.40	18.78	15.09	17.05	17.04	15.52	16.37
14	11.75	9.34	10.26	15.38	12.24	13.63	19.54	15.62	18.22	19.10	15.08	16.91
15	12.54	9.82	11.14	16.96	13.88	15.08	17.98	15.60	16.73	18.76	15.72	17.34
16	11.58	10.04	10.96	17.11	12.48	14.90	18.41	14.64	16.18	20.55	17.64	19.27
17	13.38	10.96	12.43	17.08	12.34	15.05	19.47	14.39	17.37	19.08	17.90	18.50
18	12.62	9.91	10.53	16.22	12.44	15.01	17.36	12.71	13.51	18.92	16.91	17.57
19	9.98	8.66	9.27	15.67	12.01	13.90	19.91	13.24	16.98	19.85	18.33	18.97
20	10.79	8.47	9.34	16.77	13.84	15.06	20.97	17.23	19.77	19.56	18.34	18.89
21	10.76	9.51	10.06	16.20	13.95	15.49	21.02	15.93	19.63	20.84	17.66	19.29
22	13.04	8.84	10.99	15.93	12.62	14.27	20.18	16.32	18.20	19.47	17.62	18.77
23	12.75	9.40	11.31	16.22	14.75	15.75	19.24	16.61	17.83	19.82	17.81	18.72
24	12.13	8.54	10.30	16.26	13.43	14.70	19.45	15.12	17.64	19.98	18.44	19.31
25	11.69	11.10	11.35	19.42	15.19	17.66	18.75	16.77	17.92	20.47	17.22	18.89
26	11.12	8.66	10.09	20.77	16.57	19.16	16.73	13.99	15.43	18.90	16.75	17.42
27	9.58	8.48	9.06	23.31	16.90	20.32	17.92	12.74	15.66	19.77	16.75	17.91
28	9.87	8.89	9.43	22.17	18.14	20.54	19.66	13.18	16.82	20.04	17.19	18.49
29	11.55	9.31	10.27	20.71	18.62	19.71	18.68	15.69	17.18	20.54	18.59	19.64
30	12.11	9.87	11.30	20.73	16.63	18.60	18.03	15.00	16.55	19.56	16.71	18.08
31	12.21	10.62	11.69	---	---	---	18.82	15.50	17.45	18.52	16.32	17.70
MONTH	13.38	7.98	10.59	23.31	9.39	14.78	21.02	12.71	17.26	20.84	12.11	17.40

COLUMBIA RIVER MAIN STEM

14128870 COLUMBIA RIVER BELOW BONNEVILLE DAM, OR--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	19.01	16.25	18.11	20.09	16.16	17.95	19.00	15.64	17.57	20.30	17.62	18.98
2	18.44	16.94	17.34	21.48	17.20	18.89	18.43	15.23	16.86	20.47	18.69	19.98
3	17.59	16.30	16.74	19.66	17.64	18.60	19.73	17.22	18.22	20.68	17.95	18.82
4	17.06	13.39	15.53	20.93	18.28	19.21	17.21	16.12	16.48	20.93	18.62	20.11
5	17.89	15.27	16.67	19.95	18.15	18.93	19.08	16.40	17.94	20.29	17.54	19.34
6	17.71	16.45	17.10	21.50	19.08	20.25	20.72	19.03	19.72	20.04	17.31	18.81
7	17.49	15.62	16.99	21.11	18.65	20.16	21.07	19.70	20.19	20.24	18.12	19.02
8	18.47	15.79	17.11	20.79	18.43	20.18	20.04	18.72	19.53	20.53	18.37	19.60
9	17.11	14.37	15.64	20.45	17.56	19.08	20.87	19.98	20.41	21.51	19.53	20.46
10	16.60	14.14	15.82	18.62	16.05	16.90	20.10	18.74	19.33	24.09	20.07	22.06
11	18.82	16.24	17.53	20.27	16.29	17.83	19.88	16.78	18.64	23.33	20.36	21.48
12	18.70	14.65	17.01	19.05	15.39	17.33	20.85	17.30	19.89	20.48	18.54	19.17
13	18.77	16.45	17.91	20.56	17.17	18.94	20.22	19.08	19.52	20.44	18.44	19.55
14	19.01	17.89	18.48	19.71	18.12	18.88	20.18	18.05	19.32	---	---	---
15	19.55	17.87	18.62	21.05	18.17	19.12	21.14	18.01	19.73	---	---	---
16	19.00	17.96	18.40	20.85	18.53	19.69	19.72	17.16	19.01	22.83	20.14	21.31
17	18.87	17.60	18.21	20.48	18.16	19.08	19.58	17.97	19.05	23.07	20.46	21.91
18	18.26	17.54	17.70	20.61	16.76	18.38	20.54	17.82	19.41	23.60	19.73	21.21
19	18.45	17.45	17.87	19.79	17.28	18.35	19.84	17.67	18.73	25.12	23.10	24.28
20	19.55	17.95	18.45	19.72	18.50	19.06	18.34	17.22	17.87	25.67	24.12	25.21
21	19.52	17.60	18.41	19.44	15.81	17.73	18.06	16.95	17.37	26.01	24.70	25.28
22	19.38	14.73	17.00	18.59	14.98	16.94	19.22	17.45	18.54	25.48	24.68	25.07
23	20.17	14.43	17.78	18.26	15.47	16.43	19.15	16.61	18.05	25.58	24.75	25.23
24	19.39	13.57	15.67	20.76	18.01	18.92	20.60	17.01	18.89	25.78	24.95	25.31
25	19.13	15.48	17.28	21.68	17.13	19.00	22.34	20.03	21.24	26.16	25.32	25.57
26	19.14	16.19	17.85	20.38	16.48	17.47	22.19	19.46	20.99	26.02	25.07	25.43
27	20.24	16.46	17.84	20.86	17.10	18.39	21.29	20.56	20.80	25.29	23.75	24.37
28	20.00	16.60	18.05	20.19	16.02	18.41	21.97	20.23	21.06	24.13	23.25	23.67
29	---	---	---	19.51	16.32	17.94	22.14	20.35	20.90	24.18	22.97	23.44
30	---	---	---	16.97	14.23	14.95	22.16	18.37	20.57	24.28	23.33	23.57
31	---	---	---	17.91	14.20	16.35	---	---	---	23.66	23.17	23.46
MONTH	20.24	13.39	17.40	21.68	14.20	18.37	22.34	15.23	19.19	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	24.04	23.18	23.44	21.55	19.86	20.26	16.62	14.45	15.80	12.73	10.19	11.34
2	24.21	23.13	23.62	22.31	21.38	21.81	14.34	12.80	13.52	11.46	8.86	10.19
3	24.38	23.21	23.65	21.53	20.42	20.80	13.88	13.04	13.59	12.66	9.62	11.08
4	23.85	23.14	23.60	20.90	18.95	19.89	13.83	10.77	12.60	12.95	9.42	11.58
5	23.89	23.38	23.65	21.35	19.20	20.10	15.00	10.65	12.97	13.01	8.88	11.04
6	23.87	23.03	23.48	21.59	20.30	20.65	14.51	12.54	14.09	13.13	10.86	12.57
7	23.77	22.92	23.28	22.08	20.39	21.02	15.70	14.05	14.88	12.70	8.97	10.83
8	24.02	22.99	23.67	21.32	19.90	20.29	16.07	15.01	15.50	11.60	9.73	10.82
9	24.39	22.91	23.44	19.97	16.65	18.44	16.93	13.36	15.09	13.97	11.39	12.97
10	23.30	22.77	22.98	19.22	18.14	18.65	17.03	15.90	16.43	12.57	10.40	11.58
11	23.18	22.85	23.00	19.47	17.71	18.46	17.21	15.93	16.69	12.42	10.95	11.65
12	24.12	22.82	23.27	19.20	17.52	18.22	17.40	15.53	16.54	14.67	12.14	12.98
13	24.40	23.59	24.07	18.73	17.57	18.27	16.73	15.08	15.71	13.68	10.41	11.42
14	24.26	23.41	23.74	19.86	18.04	19.19	17.97	15.17	16.54	11.34	9.21	10.02
15	24.04	22.55	23.37	18.04	15.99	16.69	18.06	14.67	15.85	9.93	8.39	9.28
16	22.53	21.33	21.83	18.00	15.35	16.97	16.71	13.69	15.15	11.81	8.52	9.98
17	22.39	21.11	21.71	17.27	14.64	15.54	14.08	13.63	13.85	12.76	11.44	12.06
18	21.14	20.10	20.71	14.50	12.42	13.57	14.22	11.32	12.60	13.77	10.53	11.99
19	21.25	18.15	19.89	14.28	12.43	13.57	14.38	11.33	12.94	13.58	9.91	11.45
20	19.71	18.19	18.98	14.94	12.93	14.24	14.45	11.62	13.29	12.93	9.83	11.10
21	19.89	18.88	19.54	14.31	13.25	13.92	14.45	11.95	13.42	9.88	9.02	9.49
22	19.23	17.03	18.09	14.44	11.28	13.50	14.54	9.52	12.12	9.72	8.43	9.02
23	18.26	15.89	16.94	15.22	11.48	13.92	15.95	10.84	13.47	11.78	8.39	10.52
24	19.01	15.91	17.56	16.46	13.52	15.74	17.49	15.24	16.30	12.58	9.80	11.37
25	19.01	17.20	18.28	16.11	12.22	15.14	17.94	12.53	13.98	12.98	11.59	12.28
26	20.29	17.09	19.25	15.35	12.86	14.75	14.87	10.36	13.37	13.04	10.76	12.28
27	20.43	18.17	19.65	14.50	11.74	13.39	16.10	10.13	12.88	13.00	11.04	12.17
28	21.56	20.39	20.96	13.54	11.66	13.04	14.69	12.04	13.58	12.72	8.24	10.14
29	21.47	20.22	20.92	15.21	13.11	14.61	13.32	10.38	11.71	10.23	7.76	9.26
30	21.01	19.81	20.44	16.59	14.13	15.51	13.28	11.29	12.33	11.93	9.24	10.95
31	---	---	---	15.62	13.88	15.18	12.51	9.63	11.08	---	---	---
MONTH	24.40	15.89	21.57	22.31	11.28	16.95	18.06	9.52	14.12	14.67	7.76	11.11

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.--Water years 1974 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to current year.

WATER TEMPERATURE: October 1975 to current year.

INSTRUMENTATION.--Specific conductance and temperature recorders from October 1975 to current year.

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; minimum recorded, 0.0°C many days in January and February, 1979.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 240 microsiemens May 5; minimum recorded, 113 microsiemens June 27.

WATER TEMPERATURE: Maximum recorded, 21.5°C Sept. 6, 7; minimum, 1.0°C Jan. 6-8.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, IN CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCHI, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CaCO3)	CALCIUM, DIS-SOLVED (MG/L AS Ca)
NOV 1990												
06...	1040	148000	163	7.6	12.0	1.8	9.9	91	--	K2	66	18
MAR 1991												
27...	1110	232000	154	8.0	6.0	3.1	13.8	110	K1	K1	71	20
MAY												
22...	1100	359000	131	8.3	12.5	3.5	11.5	107	K13	K8	57	16
AUG												
27...	1031	153000	131	8.3	20.5	3.5	8.6	95	K4	K14	57	16

DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS Mg)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY, DIS IT FIELD (MG/L AS CaCO3)	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3)	CAR-BONATE, DIS IT FIELD (MG/L AS CO3)	SULFATE, DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS Cl)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
NOV 1990												
06...	5.1	6.6	18	0.4	1.2	63	77	0	13	4.7	0.1	8.9
MAR 1991												
27...	5.0	4.8	13	0.2	1.1	64	78	0	11	2.8	<0.1	9.0
MAY												
22...	4.1	4.9	--	0.3	--	53	65	0	8.9	1.6	0.1	9.8
AUG												
27...	4.1	4.8	15	0.3	0.9	55	67	0	8.8	3.6	0.2	6.8

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (MG/L AS Al)
NOV 1990												
06...	96	97	0.13	38400	<0.01	0.200	0.02	<0.2	0.03	0.02	0.02	<10
MAR 1991												
27...	86	94	0.12	53900	<0.01	0.290	<0.01	0.2	0.03	0.01	<0.01	30
MAY												
22...	79	--	--	--	<0.01	0.075	0.01	0.4	0.01	<0.01	<0.01	10
AUG												
27...	83	78	0.11	34300	<0.01	<0.050	<0.01	0.2	0.02	0.01	<0.01	10

DATE	ARSENIC, DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM, DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM, DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)
NOV 1990											
06...	<1	26	<0.5	<1	<1	<3	4	6	<1	5	1
MAR 1991											
27...	<1	25	<0.5	<1	<1	<3	2	19	<1	<4	2
MAY											
22...	<1	22	<0.5	<1	<1	<3	2	12	1	<4	2
AUG											
27...	<1	23	<0.5	<1	<1	<3	3	10	<1	<4	2

DATE	MERCURY, DIS-SOLVED (UG/L AS Hg)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 1990											
06...	<0.1	<10	1	<1	<1	100	<6	<3	7	2800	93
MAR 1991											
27...	<0.1	<10	<1	<1	<1	100	<6	5	5	3130	91
MAY											
22...	0.1	<10	<1	<1	<1	83	<6	<3	25	24200	80
AUG											
27...	<0.1	<10	1	<1	<1	79	<6	<3	5	2070	--

K - Results based on colony count outside acceptable range (non-ideal count).

COLUMBIA RIVER MAIN STEM

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	153	152	153	154	153	153	157	155	156	173	171	172
2	154	153	153	155	153	154	158	157	157	172	169	171
3	156	154	154	157	155	155	159	157	158	170	168	169
4	157	155	156	157	154	155	159	157	158	168	166	167
5	158	156	157	155	154	155	158	157	158	167	166	166
6	159	157	158	155	153	155	160	158	159	169	165	167
7	160	158	159	156	154	155	160	157	159	170	169	169
8	160	158	159	157	155	156	159	157	158	170	167	169
9	159	158	158	157	155	156	158	157	158	168	166	167
10	158	157	158	156	154	155	158	156	157	166	163	165
11	159	158	158	155	153	154	156	154	155	165	163	164
12	159	158	158	156	154	155	155	153	154	164	157	160
13	159	158	159	156	156	156	155	153	154	160	157	159
14	160	159	159	157	155	156	162	155	158	161	159	160
15	159	157	158	157	156	156	164	162	163	158	151	155
16	158	156	157	156	154	155	165	164	164	157	152	155
17	157	156	156	155	152	153	165	164	165	159	157	158
18	156	155	156	153	152	153	166	163	164	159	158	159
19	157	156	156	153	152	153	167	165	166	160	158	159
20	158	157	158	154	152	153	172	167	169	161	159	160
21	158	156	158	156	153	154	177	172	175	162	160	161
22	157	156	157	156	154	155	180	177	178	164	162	163
23	157	155	156	158	156	157	180	179	180	171	165	167
24	156	155	155	157	152	156	180	177	179	178	171	175
25	156	154	155	151	146	148	178	177	178	183	178	181
26	155	153	154	155	150	152	180	178	179	184	182	183
27	156	154	155	156	154	155	182	180	181	183	180	181
28	157	155	156	155	152	154	182	178	181	180	176	178
29	157	156	157	153	151	152	178	174	176	176	174	175
30	158	155	156	155	153	154	174	173	174	174	170	172
31	156	153	155	---	---	---	173	172	173	171	169	170
MONTH	160	152	157	158	146	154	182	153	166	184	151	167

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	170	168	169	163	160	161	161	159	160	161	158	159
2	170	168	169	163	162	162	160	159	159	176	160	168
3	167	165	166	163	161	162	159	156	157	234	177	205
4	165	163	164	163	161	161	158	156	157	236	219	230
5	163	160	161	164	161	163	157	153	155	240	223	230
6	161	159	160	168	164	165	155	153	154	232	222	225
7	163	160	162	169	167	169	157	154	155	236	220	227
8	165	163	164	169	167	168	157	156	157	235	213	225
9	165	164	165	167	165	166	157	153	155	227	218	222
10	165	164	165	165	163	164	156	153	154	233	197	222
11	165	163	164	164	163	164	159	155	157	197	186	193
12	163	161	162	163	162	163	160	159	159	192	185	189
13	162	160	161	165	162	163	161	159	160	190	187	188
14	162	161	161	167	164	166	163	161	162	194	189	192
15	164	162	163	169	167	168	163	161	162	191	174	182
16	163	161	162	171	169	170	165	162	163	173	169	171
17	162	159	161	171	170	171	166	164	165	182	171	175
18	160	157	159	171	169	170	166	165	166	183	174	179
19	158	157	157	171	169	170	166	164	165	178	159	172
20	157	152	154	169	165	167	165	164	164	170	159	165
21	153	152	152	165	163	164	164	161	163	167	157	160
22	153	151	152	165	162	163	161	158	159	156	147	151
23	152	150	151	162	160	161	159	157	158	148	142	145
24	151	150	151	162	160	161	158	157	157	145	143	144
25	152	150	151	162	160	161	159	157	158	145	143	144
26	155	151	153	161	159	160	160	158	159	144	141	142
27	156	154	155	160	159	159	160	158	159	142	140	141
28	160	156	158	160	159	159	159	157	158	142	139	140
29	---	---	---	160	159	160	157	156	157	139	138	139
30	---	---	---	160	159	159	158	156	157	140	138	140
31	---	---	---	160	158	159	---	---	---	140	135	138
MONTH	170	150	160	171	158	164	166	153	159	240	135	178

COLUMBIA RIVER MAIN STEM

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14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	135	132	133	---	---	---	---	---	---	---	---	---
2	132	129	131	---	---	---	---	---	---	---	---	---
3	131	128	129	---	---	---	---	---	---	---	---	---
4	129	128	129	---	---	---	---	---	---	---	---	---
5	131	128	129	---	---	---	---	---	---	141	133	138
6	130	129	130	---	---	---	---	---	---	140	137	138
7	132	130	131	---	---	---	---	---	---	139	136	139
8	134	131	132	---	---	---	---	---	---	140	138	139
9	135	132	134	---	---	---	---	---	---	140	138	139
10	135	133	134	---	---	---	---	---	---	140	138	139
11	135	133	134	---	---	---	---	---	---	139	138	139
12	134	133	133	---	---	---	---	---	---	140	138	138
13	135	133	134	---	---	---	---	---	---	140	138	139
14	135	130	133	---	---	---	---	---	---	140	138	139
15	133	130	132	---	---	---	---	---	---	141	137	139
16	132	130	131	---	---	---	---	---	---	141	137	140
17	132	128	130	---	---	---	---	---	---	142	137	140
18	130	128	129	---	---	---	---	---	---	142	140	141
19	128	127	128	---	---	---	---	---	---	143	140	142
20	129	126	127	---	---	---	---	---	---	143	140	142
21	128	126	127	---	---	---	---	---	---	145	142	144
22	126	123	125	---	---	---	---	---	---	145	142	144
23	123	121	122	---	---	---	---	---	---	146	142	144
24	121	117	118	---	---	---	---	---	---	148	145	146
25	117	115	116	---	---	---	---	---	---	148	145	147
26	117	114	115	---	---	---	---	---	---	151	147	149
27	116	113	114	---	---	---	---	---	---	152	148	151
28	119	116	117	---	---	---	---	---	---	153	151	152
29	123	119	121	---	---	---	---	---	---	154	152	153
30	122	117	120	---	---	---	---	---	---	156	153	154
31	---	---	---	---	---	---	---	---	---	---	---	---
MONTH	135	113	127	---	---	---	---	---	---	---	---	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	19.5	19.0	19.5	13.0	12.5	13.0	10.0	9.5	9.5	2.0	2.0	2.0
2	19.0	18.5	19.0	12.5	12.5	12.5	9.5	9.0	9.0	2.0	2.0	2.0
3	19.0	18.5	18.5	12.5	12.0	12.0	9.0	9.0	9.0	2.0	2.0	2.0
4	18.5	18.5	18.5	12.5	12.0	12.5	9.0	9.0	9.0	2.0	2.0	2.0
5	18.5	18.0	18.5	12.0	12.0	12.0	9.0	9.0	9.0	2.0	1.5	2.0
6	18.0	18.0	18.0	12.0	12.0	12.0	9.0	9.0	9.0	1.5	1.0	1.5
7	18.0	17.5	17.5	12.0	12.0	12.0	8.5	8.5	8.5	1.0	1.0	1.0
8	17.5	17.5	17.5	12.0	11.5	12.0	8.5	8.0	8.0	1.5	1.0	1.5
9	17.5	17.0	17.5	12.0	12.0	12.0	8.0	8.0	8.0	1.5	1.5	1.5
10	17.0	17.0	17.0	12.0	12.0	12.0	8.0	8.0	8.0	1.5	1.5	1.5
11	17.0	16.5	17.0	12.0	12.0	12.0	8.0	8.0	8.0	1.5	1.5	1.5
12	16.5	16.5	16.5	12.0	12.0	12.0	8.0	7.5	7.5	2.0	1.5	2.0
13	16.5	16.5	16.5	12.0	12.0	12.0	7.5	7.5	7.5	2.5	2.0	2.5
14	16.5	16.0	16.0	11.5	11.5	11.5	7.5	7.0	7.5	2.5	2.5	2.5
15	16.0	16.0	16.0	11.5	11.5	11.5	7.0	7.0	7.0	2.5	2.5	2.5
16	16.0	15.5	16.0	11.5	11.0	11.5	7.0	7.0	7.0	2.5	2.5	2.5
17	15.5	15.0	15.0	11.0	11.0	11.0	7.0	7.0	7.0	2.5	2.5	2.5
18	15.0	15.0	15.0	11.0	11.0	11.0	7.0	7.0	7.0	3.0	2.5	2.5
19	15.0	14.5	15.0	11.0	11.0	11.0	7.0	6.0	6.5	3.0	2.5	2.5
20	14.5	14.5	14.5	11.0	10.5	10.5	6.0	5.5	6.0	2.5	2.5	2.5
21	14.5	14.0	14.0	10.5	10.5	10.5	5.5	5.0	5.0	2.5	2.5	2.5
22	14.0	14.0	14.0	10.5	10.5	10.5	5.0	4.5	4.5	3.0	2.5	2.5
23	14.0	13.5	14.0	10.5	10.5	10.5	4.5	4.0	4.0	3.0	3.0	3.0
24	13.5	13.5	13.5	11.0	10.5	10.5	4.0	4.0	4.0	3.0	3.0	3.0
25	14.0	13.5	13.5	11.0	10.5	10.5	4.0	3.5	3.5	3.0	3.0	3.0
26	13.5	13.5	13.5	10.5	10.0	10.5	3.5	3.0	3.5	3.0	3.0	3.0
27	13.5	13.0	13.5	10.0	9.5	10.0	3.5	3.0	3.0	3.0	2.5	2.5
28	13.0	13.0	13.0	10.5	9.5	10.0	3.5	3.0	3.0	3.5	2.5	3.0
29	13.5	13.0	13.0	10.5	10.0	10.0	2.5	1.5	2.0	3.0	3.0	3.0
30	13.5	13.0	13.0	10.0	10.0	10.0	1.5	1.5	1.5	3.0	3.0	3.0
31	13.0	13.0	13.0	---	---	---	2.0	1.5	1.5	3.0	2.5	2.5
MONTH	19.5	13.0	15.5	13.0	9.5	11.5	10.0	1.5	6.0	3.5	1.0	2.5

COLUMBIA RIVER MAIN STEM

14128910 COLUMBIA RIVER AT WARRENDALE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	3.0	2.5	2.5	5.0	5.0	5.0	7.5	7.0	7.0	10.5	10.0	10.0
2	2.5	2.5	2.5	5.0	5.0	5.0	7.5	7.5	7.5	10.5	10.0	10.5
3	2.5	2.5	2.5	5.0	5.0	5.0	7.5	7.5	7.5	10.5	10.0	10.5
4	3.0	2.5	2.5	5.0	5.0	5.0	7.5	7.5	7.5	11.0	10.5	10.5
5	3.0	3.0	3.0	5.0	5.0	5.0	7.5	7.5	7.5	11.0	10.5	10.5
6	3.0	2.5	2.5	5.0	5.0	5.0	7.5	7.5	7.5	11.0	10.5	11.0
7	2.5	2.5	2.5	5.0	5.0	5.0	7.5	7.5	7.5	11.0	11.0	11.0
8	2.5	2.5	2.5	5.0	5.0	5.0	7.5	7.5	7.5	11.0	11.0	11.0
9	2.5	2.5	2.5	5.0	5.0	5.0	7.5	7.5	7.5	11.0	10.5	11.0
10	2.5	2.5	2.5	5.0	5.0	5.0	8.0	7.5	7.5	11.0	11.0	11.0
11	2.5	2.5	2.5	5.0	5.0	5.0	8.0	7.5	8.0	11.0	11.0	11.0
12	3.0	3.0	3.0	5.0	4.5	5.0	8.0	8.0	8.0	11.0	11.0	11.0
13	3.0	3.0	3.0	5.0	5.0	5.0	8.5	8.0	8.0	11.0	11.0	11.0
14	3.5	3.0	3.5	5.0	5.0	5.0	8.5	8.0	8.0	11.5	11.0	11.0
15	3.5	3.5	3.5	5.0	5.0	5.0	8.5	8.0	8.5	11.5	11.0	11.5
16	4.0	3.5	3.5	5.5	5.0	5.0	9.0	8.5	8.5	12.0	11.5	11.5
17	4.0	4.0	4.0	5.5	5.0	5.0	9.0	8.5	8.5	11.5	11.5	11.5
18	4.0	4.0	4.0	5.5	5.0	5.0	9.0	8.5	9.0	11.5	11.0	11.5
19	4.0	4.0	4.0	5.5	5.0	5.0	9.5	9.0	9.0	12.0	11.5	11.5
20	4.5	4.5	4.5	5.5	5.0	5.5	9.5	9.0	9.0	12.0	12.0	12.0
21	4.5	4.0	4.5	5.5	5.5	5.5	9.5	9.0	9.5	12.5	12.0	12.0
22	4.5	4.5	4.5	5.5	5.5	5.5	10.0	9.5	9.5	12.5	12.0	12.5
23	4.5	4.5	4.5	6.0	5.5	5.5	10.0	9.5	9.5	12.5	12.5	12.5
24	4.5	4.5	4.5	6.0	5.5	5.5	9.5	9.5	9.5	12.5	12.5	12.5
25	4.5	4.5	4.5	6.0	5.5	6.0	10.0	9.5	9.5	13.0	12.5	12.5
26	5.0	4.5	4.5	6.0	5.5	6.0	10.0	9.5	10.0	13.0	12.5	13.0
27	5.0	5.0	5.0	6.5	6.0	6.0	10.0	9.5	9.5	13.0	13.0	13.0
28	5.0	5.0	5.0	6.5	6.0	6.5	10.0	10.0	10.0	13.0	13.0	13.0
29	---	---	---	7.0	6.0	6.5	10.0	9.5	10.0	13.0	12.5	13.0
30	---	---	---	7.0	6.5	7.0	10.0	10.0	10.0	13.0	12.5	12.5
31	---	---	---	7.5	7.0	7.0	---	---	---	13.0	12.5	13.0
MONTH	5.0	2.5	3.5	7.5	4.5	5.5	10.0	7.0	8.5	13.0	10.0	11.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	13.5	13.0	13.0									
2	13.5	13.5	13.5									
3	13.5	13.5	13.5									
4	13.5	13.5	13.5									
5	13.5	13.5	13.5							21.0	21.0	21.0
6	13.5	13.5	13.5							21.5	21.0	21.5
7	14.0	13.5	14.0							21.5	21.0	21.0
8	14.5	14.0	14.0							21.0	20.5	20.5
9	14.5	14.5	14.5							20.5	20.0	20.5
10	15.0	14.5	15.0							20.5	20.5	20.5
11	15.0	14.5	15.0							20.5	20.0	20.5
12	14.5	14.5	14.5							20.5	20.0	20.0
13	14.5	14.5	14.5							20.5	20.0	20.0
14	14.5	14.5	14.5							20.0	20.0	20.0
15	15.0	14.5	15.0							20.0	19.5	20.0
16	15.0	14.5	15.0							20.0	19.5	20.0
17	15.0	14.5	15.0							20.0	20.0	20.0
18	15.5	15.0	15.0							20.0	20.0	20.0
19	15.5	15.0	15.0							20.5	20.0	20.0
20	15.0	14.5	15.0							20.0	19.5	20.0
21	14.5	14.5	14.5							19.5	19.0	19.5
22	14.5	14.5	14.5							19.0	18.5	19.0
23	15.0	14.5	14.5							19.0	18.5	19.0
24	15.0	15.0	15.0							19.0	19.0	19.0
25	15.0	15.0	15.0							19.0	18.5	19.0
26	15.5	15.0	15.0							19.5	19.0	19.0
27	15.5	15.0	15.5							19.5	19.0	19.5
28	16.0	15.5	15.5							19.5	19.0	19.0
29	17.0	16.0	16.5							19.0	19.0	19.0
30	18.0	17.5	17.5							19.0	19.0	19.0
31	---	---	---							---	---	---
MONTH	18.0	13.0	14.5							---	---	---

COLUMBIA RIVER MAIN STEM

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14129400 COLUMBIA RIVER AT WASHOUGAL, WA

LOCATION.--Lat 45°34'30", long 122°21'10", in SE 1/4 sec.18, T.1 N., R.4 E., Clark County, Hydrologic Unit 17080001, on right bank on rock-fill point at south end of 17th Street, in Washougal, and at river mile 122.9.

DRAINAGE AREA.--240,000 mi², approximately.

PERIOD OF RECORD.--October 1971 to September 1981, February 1990 to current year, gage heights only.

GAGE.--Water stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929.

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum recorded gage height, 28.87 ft June 19, 1972; minimum, 3.68 ft July 10, 1977.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 18.86 ft May 21; minimum, 4.84 ft Oct. 12, but could have been less during period of missing record.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	7.17	5.35	6.41	8.86	7.17	7.81	13.59	12.15	12.83	12.05	9.65	10.54
2	7.13	5.74	6.39	9.35	7.93	8.52	13.35	11.93	12.35	11.41	9.41	10.40
3	7.83	6.32	6.99	8.91	7.23	7.95	13.59	12.67	13.15	11.06	8.97	9.55
4	8.08	6.59	7.24	9.54	7.43	8.25	13.42	11.68	12.68	11.30	8.85	9.99
5	8.13	6.63	7.31	9.75	7.54	8.53	13.28	12.02	12.67	11.33	10.47	10.96
6	8.45	7.05	7.56	9.48	8.08	8.94	13.45	11.70	12.56	10.62	9.79	10.18
7	8.34	6.79	7.47	9.35	8.09	8.69	13.48	11.87	12.69	11.00	10.25	10.67
8	8.06	6.36	6.91	9.58	8.26	8.72	12.48	11.41	11.89	11.13	10.28	10.80
9	7.66	5.98	6.57	9.50	8.25	8.86	11.62	11.03	11.35	11.22	9.99	10.64
10	7.67	5.89	6.68	8.49	6.51	7.66	12.84	11.09	11.91	11.20	10.21	10.62
11	7.76	5.85	6.69	8.60	7.74	8.12	12.15	10.71	11.31	12.41	9.87	10.78
12	6.30	4.84	5.77	9.37	7.99	8.71	12.44	10.54	11.61	12.69	11.03	11.98
13	6.69	5.59	6.19	9.63	8.13	8.93	12.32	11.14	11.77	12.47	11.71	12.11
14	6.93	5.58	6.28	9.82	8.66	9.27	13.23	11.40	12.30	13.54	11.42	12.12
15	7.88	6.44	7.15	10.66	9.44	10.17	13.23	11.53	12.00	13.93	12.67	13.27
16	7.71	6.69	7.15	11.05	9.17	9.97	11.79	10.53	10.93	14.93	13.39	14.11
17	8.73	6.88	7.74	10.88	9.22	10.09	12.77	10.43	11.55	14.65	13.61	13.82
18	8.26	6.56	7.41	10.85	9.21	10.07	12.48	9.29	10.24	13.83	12.43	12.98
19	7.20	5.74	6.48	10.28	8.74	9.45	---	---	---	13.83	13.04	13.39
20	7.13	5.53	6.13	10.72	9.03	9.77	---	---	---	13.48	13.20	13.31
21	7.60	6.01	6.66	10.64	9.69	10.13	---	---	---	14.02	12.78	13.47
22	8.35	5.95	6.99	10.43	8.92	9.56	---	---	---	13.15	12.28	12.82
23	8.35	6.93	7.56	10.85	10.05	10.42	---	---	---	12.93	12.07	12.52
24	7.68	5.58	6.40	10.89	9.63	10.20	---	---	---	13.30	12.49	12.93
25	7.66	6.69	7.07	13.79	10.64	12.11	12.28	11.33	11.70	13.57	12.08	12.90
26	7.52	5.83	6.60	14.39	13.08	13.83	11.85	9.65	10.39	12.18	11.25	11.70
27	6.05	5.15	5.68	15.74	13.43	14.31	11.33	8.49	9.92	12.48	10.98	11.67
28	6.37	5.56	6.03	15.69	14.09	14.94	12.53	9.08	10.62	13.04	11.46	12.04
29	6.84	5.65	6.23	14.90	13.93	14.40	---	---	---	13.44	12.63	13.17
30	8.05	6.69	7.38	14.00	12.60	13.44	---	---	---	13.36	11.64	12.25
31	8.78	7.36	7.96	---	---	---	12.56	10.56	11.39	12.86	11.54	12.02
MONTH	8.78	4.84	6.81	15.74	6.51	10.06	---	---	---	14.93	8.85	11.93

COLUMBIA RIVER MAIN STEM

14129400 COLUMBIA RIVER AT WASHOUGAL, WA--Continued

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	12.98	11.58	12.24	13.03	11.55	12.39	11.99	10.27	11.24	13.36	12.46	12.86
2	12.96	11.64	12.09	13.89	12.50	13.15	11.99	10.48	11.24	13.81	13.07	13.41
3	12.00	11.23	11.60	13.58	12.59	12.97	12.24	11.17	11.74	13.54	12.00	12.62
4	11.52	10.27	10.86	14.57	13.53	14.21	11.84	10.98	11.19	13.42	12.81	13.23
5	12.05	10.70	11.40	14.49	14.49	14.49	13.45	11.23	12.34	13.22	12.17	12.88
6	12.09	11.55	11.89	14.49	14.46	14.47	14.42	13.48	13.95	12.51	11.84	12.23
7	11.88	11.21	11.62	14.78	14.05	14.45	14.79	14.11	14.45	12.87	12.03	12.28
8	11.95	10.90	11.44	14.57	13.72	14.18	14.11	13.55	13.84	13.54	12.40	12.95
9	11.68	10.13	10.74	13.84	12.70	13.28	14.73	13.84	14.35	14.24	13.47	13.75
10	10.75	9.96	10.37	13.41	11.50	11.93	14.47	13.37	13.99	16.17	14.17	14.87
11	12.06	10.43	11.25	12.66	11.24	11.77	13.44	12.31	13.08	16.13	14.65	15.18
12	12.25	10.54	11.34	12.45	11.33	11.82	14.15	12.91	13.71	14.56	12.77	13.58
13	12.83	11.83	12.29	13.48	11.88	12.71	14.04	13.40	13.68	13.69	12.67	13.29
14	13.32	12.61	13.07	13.23	12.75	12.98	13.93	12.78	13.52	13.64	12.66	13.22
15	13.65	12.76	13.08	13.50	12.78	13.13	14.10	12.73	13.52	14.09	12.48	13.51
16	13.53	12.92	13.04	13.97	13.09	13.47	13.50	12.54	13.26	15.42	13.77	14.46
17	12.95	12.43	12.70	14.00	12.79	13.42	13.27	12.94	13.09	16.05	14.81	15.55
18	12.75	12.03	12.28	13.51	12.10	12.74	13.73	12.72	13.37	16.10	14.23	14.89
19	12.48	11.79	12.11	13.13	12.07	12.43	13.14	12.19	12.73	18.11	16.17	17.18
20	13.49	12.41	12.84	13.25	12.46	12.86	12.70	11.81	12.10	18.61	18.13	18.45
21	13.60	12.92	13.25	13.04	11.59	12.25	11.92	11.27	11.48	18.86	18.46	18.69
22	13.37	11.32	12.21	11.73	10.36	11.18	12.41	11.41	11.96	18.51	18.25	18.39
23	13.26	10.99	12.27	11.57	10.50	10.91	12.18	11.11	11.72	18.48	18.19	18.35
24	12.55	9.85	11.11	12.75	11.18	12.20	13.22	11.73	12.38	18.41	18.11	18.26
25	11.90	10.06	11.23	13.69	11.89	12.91	14.87	13.26	14.11	18.53	18.38	18.43
26	12.47	11.19	11.84	12.40	11.38	11.83	15.06	13.88	14.58	18.53	18.10	18.35
27	12.97	11.66	12.32	13.22	11.58	12.25	14.40	13.95	14.21	18.10	16.96	17.57
28	12.77	11.31	12.15	12.67	11.27	12.09	14.82	14.19	14.52	16.96	16.55	16.76
29	---	---	---	12.91	11.32	12.11	14.85	14.00	14.22	16.59	16.24	16.40
30	---	---	---	11.29	9.49	10.25	14.91	13.25	14.38	16.65	16.41	16.53
31	---	---	---	11.36	9.30	10.53	---	---	---	16.47	16.27	16.41
MONTH	13.65	9.85	11.95	14.78	9.30	12.62	15.06	10.27	13.13	18.86	11.84	15.31
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	16.46	16.14	16.28	13.94	13.32	13.55	10.25	9.45	9.85	---	---	---
2	16.58	16.15	16.38	14.81	14.04	14.58	10.01	8.14	8.71	---	---	---
3	16.51	16.22	16.39	14.59	13.70	14.09	8.96	8.07	8.43	---	---	---
4	16.39	16.12	16.29	13.83	12.79	13.20	9.02	7.29	7.97	---	---	---
5	16.35	16.26	16.31	13.67	12.66	13.08	8.56	7.52	7.87	---	---	---
6	16.33	16.01	16.24	13.97	13.48	13.62	9.32	8.54	8.85	8.32	6.45	7.90
7	16.20	15.84	16.01	14.29	13.76	13.99	9.61	8.68	9.38	8.51	6.37	7.43
8	16.48	15.83	16.21	14.29	13.25	13.75	10.64	9.57	10.13	7.70	6.16	7.08
9	16.51	15.91	16.25	13.41	11.44	12.42	10.63	9.49	9.99	9.22	7.18	8.26
10	16.03	15.75	15.88	12.47	11.96	12.24	11.08	10.29	10.78	8.40	7.05	7.87
11	15.99	15.76	15.86	12.47	12.11	12.28	11.28	10.45	10.89	---	---	---
12	16.39	15.80	16.01	12.47	11.87	12.17	11.34	10.43	10.95	9.38	7.55	8.83
13	16.87	16.41	16.72	12.36	11.94	12.19	10.54	9.95	10.27	9.37	7.56	7.72
14	16.85	16.46	16.66	13.02	12.23	12.71	11.73	9.84	10.50	7.73	5.80	6.96
15	16.50	16.01	16.33	12.61	10.62	11.39	11.76	9.90	10.45	---	---	---
16	15.96	14.77	15.23	11.77	10.33	10.88	10.57	9.06	9.79	6.43	5.05	5.57
17	14.90	14.54	14.75	11.72	9.59	10.30	9.38	8.33	8.73	7.03	6.47	6.82
18	14.53	13.88	14.03	9.96	8.12	8.81	9.00	7.06	7.99	7.41	6.34	6.91
19	14.14	12.92	13.25	8.65	8.21	8.34	8.20	7.43	7.74	7.38	5.92	6.50
20	13.08	12.23	12.54	8.95	8.38	8.63	8.48	7.45	8.00	7.67	5.96	6.69
21	13.03	12.78	12.86	9.13	8.12	8.65	9.01	7.65	8.32	6.31	5.28	5.72
22	12.86	11.33	12.17	8.67	7.59	8.40	8.45	6.61	7.47	6.09	5.03	5.64
23	11.37	10.60	10.98	8.89	7.69	8.57	9.34	7.50	8.17	7.22	5.04	6.20
24	11.97	10.89	11.25	10.22	8.61	9.78	10.78	9.34	10.09	7.80	5.95	6.84
25	12.14	11.77	11.91	9.97	9.01	9.64	10.37	8.21	9.06	8.57	7.15	8.01
26	13.22	11.71	12.50	9.66	9.00	9.33	9.23	7.50	8.66	8.61	7.07	7.85
27	13.42	12.71	13.04	9.16	8.05	8.64	9.60	6.63	7.92	8.58	7.22	8.10
28	14.37	13.49	13.93	8.57	7.94	8.23	9.38	8.32	8.70	8.40	5.68	7.12
29	14.28	14.00	14.14	9.54	8.06	8.89	8.73	7.14	7.78	6.99	5.01	6.06
30	14.04	13.54	13.72	10.05	9.35	9.75	8.39	7.44	8.01	---	---	---
31	---	---	---	9.91	9.28	9.55	8.32	6.15	7.21	---	---	---
MONTH	16.87	10.60	14.67	14.81	7.59	11.02	11.76	6.15	8.99	---	---	---

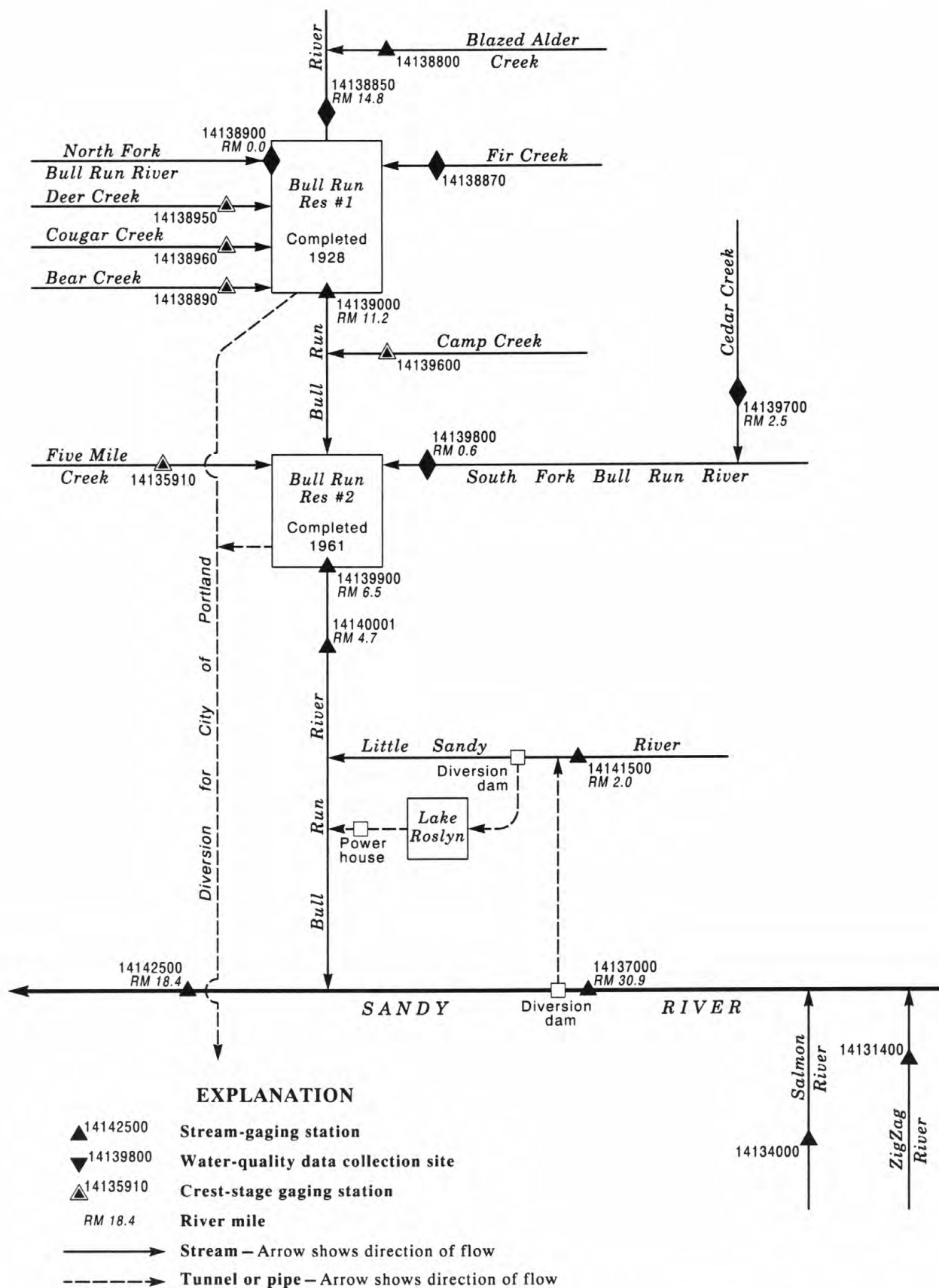


Figure 12.--Schematic diagram showing gaging stations and diversions in the Sandy River basin.

SANDY RIVER BASIN

14131400 ZIGZAG RIVER NEAR RHODODENDRON, OR

LOCATION.--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 Mount Hood National Forest, on right bank at bridge, 0.5 mi upstream from Devil Canyon Creek, 1.2 mi downstream from Lady Creek, and 2.8 mi southeast of Rhododendron.

DRAINAGE AREA.--14.8 mi².

PERIOD OF RECORD.--July 1981 to current year.

GAGE.--Water-stage recorder. Datum of gage is 2,191.52 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records fair. No regulation. Small diversion for private water supply from Lady Creek.

AVERAGE DISCHARGE.--10 years (water years 1982-91), 78.9 ft³/s, 72.40 in/yr, 57,160 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 438 ft³/s Jan. 6, 1983, gage height, 5.35 ft; minimum discharge, 32 ft³/s Oct. 26, 1987.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 25, 1980, reached a stage of 6.0 ft, discharge, 863 ft³/s, from slope-area measurement of peak flow.

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. 21	1500	232	4.92	Jan. 15	0230	*274	*5.03
Nov. 25	0300	*274	*5.03				

Minimum discharge, 38 ft³/s Oct. 7.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	49	68	85	58	78	100	83	88	106	96	67	59
2	50	61	81	58	85	106	82	89	109	100	65	57
3	63	81	79	57	95	115	81	89	106	105	64	57
4	55	120	84	57	98	120	102	90	102	101	64	58
5	61	92	79	56	125	103	118	91	100	91	63	59
6	54	83	74	55	103	100	98	98	102	89	66	57
7	45	91	73	56	107	106	102	103	101	86	64	55
8	45	94	72	56	93	95	93	114	101	85	63	55
9	48	109	89	56	91	95	108	104	103	85	67	54
10	50	93	115	72	88	91	99	106	108	83	66	54
11	47	83	98	92	88	89	94	106	109	82	65	54
12	67	76	88	127	97	89	94	103	106	82	63	54
13	66	84	83	122	173	86	94	100	111	88	63	55
14	55	81	78	146	159	86	97	99	105	82	62	54
15	75	78	76	196	140	85	94	95	98	78	62	53
16	70	74	73	150	131	82	91	98	98	77	62	54
17	55	74	78	133	117	82	91	120	94	78	62	54
18	73	70	89	118	117	82	90	124	95	74	60	56
19	60	66	80	110	128	81	90	116	96	73	60	56
20	56	65	e78	102	167	80	92	112	125	72	58	56
21	102	67	e74	95	155	79	95	112	113	70	57	54
22	75	84	e72	91	133	79	96	109	103	72	56	54
23	61	89	e70	88	123	80	92	104	100	71	56	53
24	56	113	68	84	116	79	91	107	97	72	56	54
25	58	204	66	81	109	78	88	106	102	71	55	55
26	65	131	65	81	104	76	87	108	101	71	55	54
27	51	109	65	79	101	75	88	105	100	71	56	53
28	55	96	62	77	100	75	87	103	101	69	59	53
29	55	98	e61	75	---	74	87	104	103	68	57	54
30	76	90	e60	74	---	76	86	107	97	67	57	59
31	79	---	59	79	---	80	---	102	---	66	58	---
TOTAL	1877	2724	2374	2781	3211	2714	2787	3212	3092	2475	1888	1654
MEAN	60.5	90.8	76.6	89.7	115	87.5	92.9	104	103	79.8	60.9	55.1
MAX	102	204	115	196	173	120	118	124	125	105	67	59
MIN	45	61	59	55	78	74	81	88	94	66	55	53
AC-FT	3720	5400	4710	5520	6370	5380	5530	6370	6130	4910	3740	3280
CFSM	4.09	6.14	5.17	6.06	7.75	5.92	6.28	7.00	6.96	5.39	4.12	3.73
IN.	4.72	6.85	5.97	6.99	8.07	6.82	7.01	8.07	7.77	6.22	4.75	4.16

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1991, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	55.7	76.3	79.3	88.0	90.8	86.0	95.6	101	96.5	70.6
MAX	66.9	97.7	101	151	120	112	117	112	119	88.0
(WY)	1986	1985	1983	1983	1986	1988	1988	1988	1984	1984
MIN	38.6	44.3	67.7	58.1	54.2	59.1	75.4	88.4	65.5	54.0
(WY)	1988	1988	1989	1985	1985	1985	1982	1987	1987	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1982 - 1991

ANNUAL TOTAL	29842	30789	78.9
ANNUAL MEAN	81.8	84.4	88.8
HIGHEST ANNUAL MEAN			68.4
LOWEST ANNUAL MEAN			
HIGHEST DAILY MEAN	223	204	349
LOWEST DAILY MEAN	40	45	35
ANNUAL SEVEN-DAY MINIMUM	44	50	35
ANNUAL RUNOFF (AC-FT)	59190	61070	57150
ANNUAL RUNOFF (CFSM)	5.52	5.70	5.33
ANNUAL RUNOFF (INCHES)	75.01	77.39	72.42
10 PERCENT EXCEEDS	112	111	112
50 PERCENT EXCEEDS	78	83	74
90 PERCENT EXCEEDS	50	55	49

LOCATION.--Lat 45°15'55", long 121°43'00", in SE 1/4 NW 1/4 sec.31, T.3 S., R.9 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank near lower end of Red Top Meadows and 3.0 mi southeast of Government Camp.

PERIOD OF RECORD.--May 1910 to May 1912, April 1926 to September 1991 (discontinued). Published as "near Rowe" 1910-12. See REMARKS.

GAGE.--Water-stage recorder. Datum of gage is 3,445.53 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 21, 1910, nonrecording gage at site 0.2 mi upstream at different datum. Nov. 21, 1910, to May 31, 1912, and Apr. 21, 1926, to Sept. 30, 1933, at site 75 ft upstream from former site at different datums. Oct. 1, 1933, to Sept. 30, 1960, at datum 1.00 ft higher.

AVERAGE DISCHARGE.--66 years (water years 1911, 1927-91), 44.2 ft³/s, 75.03 in/yr, 32,020 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 150 ft³/s and maximum (*):

Minimum daily discharge, 15 ft³/s December 21.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	17	31	45	e20	37	61	47	53	55	42	32	24
2	18	27	44	e22	45	68	45	53	54	42	31	23
3	32	37	42	e21	60	79	43	52	42	31	23	23
4	22	60	42	e20	57	74	62	53	50	41	32	23
5	32	48	39	e19	90	59	71	55	49	40	32	23
6	21	37	38	e19	60	55	55	61	50	38	32	23
7	19	45	36	e20	53	52	49	66	49	38	32	24
8	18	50	36	e21	50	51	45	74	49	37	30	23
9	17	63	46	e22	49	51	47	62	48	37	32	22
10	19	46	59	33	48	49	43	63	49	36	30	22
11	17	38	47	52	47	47	44	61	50	35	27	22
12	33	34	42	79	57	46	47	60	50	36	27	22
13	35	42	39	73	136	44	48	58	58	39	27	25
14	26	38	38	94	103	43	51	57	55	38	27	22
15	40	34	37	123	85	42	48	55	48	35	27	22
16	38	33	36	72	82	41	48	60	48	38	27	22
17	26	33	46	72	70	41	47	82	46	39	27	22
18	37	32	55	62	71	41	47	80	44	37	27	22
19	32	30	44	55	93	40	49	67	46	35	28	22
20	25	30	e28	50	138	39	52	63	63	34	27	21
21	55	29	e15	47	104	39	58	66	57	35	26	19
22	38	52	e16	45	82	38	61	62	50	35	25	19
23	26	56	e17	43	73	38	57	59	48	35	25	20
24	23	78	e17	40	67	39	56	60	47	35	25	24
25	24	161	e18	39	62	38	51	62	49	36	24	21
26	28	72	e18	38	60	36	50	59	46	34	23	20
27	23	60	e19	37	59	36	50	55	44	33	24	20
28	24	52	e18	36	57	36	51	53	44	34	28	20
29	25	54	e17	35	---	36	51	55	45	34	26	20
30	39	50	e17	35	---	39	50	60	44	34	25	20
31	40	---	e18	38	---	43	---	54	---	32	25	---
TOTAL	869	1452	1029	1382	1995	1441	1523	1880	1487	1136	861	655
MEAN	28.0	48.4	33.2	44.6	71.2	46.5	50.8	60.6	49.6	36.6	27.8	21.8
MAX	55	161	59	123	138	79	71	82	63	42	32	25
MIN	17	27	15	19	37	36	43	52	44	32	23	19
AC-FT	1720	2880	2040	2740	3960	2860	3020	3730	2950	2250	1710	1300
CFSM	3.50	6.05	4.15	5.57	8.91	5.81	6.35	7.58	6.20	4.58	3.47	2.73
IN.	4.04	6.75	4.78	6.43	9.28	6.70	7.08	8.74	6.91	5.28	4.00	3.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1910 - 1991, BY WATER YEAR (WY)

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1910 - 1991	
ANNUAL TOTAL	16335		15710			
ANNUAL MEAN	44.8		43.0		44.2	
HIGHEST ANNUAL MEAN					62.9	1956
LOWEST ANNUAL MEAN					24.3	1941
HIGHEST DAILY MEAN	243	Apr 27	161	Nov 25	728	Dec 22 1964
LOWEST DAILY MEAN	15	Dec 21	15	Dec 21	11	Nov 25 1952
ANNUAL SEVEN-DAY MINIMUM	17	Dec 21	17	Dec 21	12	Nov 22 1952
ANNUAL RUNOFF (AC-FT)	32400		31160		32000	
ANNUAL RUNOFF (CFSM)	5.59		5.38		5.52	
ANNUAL RUNOFF (INCHES)	75.96		73.05		75.03	
10 PERCENT EXCEEDS	72		62		80	
50 PERCENT EXCEEDS	38		40		35	
90 PERCENT EXCEEDS	20		22		20	

SANDY RIVER BASIN

14137000 SANDY RIVER NEAR MARMOT, OR

LOCATION.--Lat 45°23'30", long 122°07'40", in SE 1/4 sec.13, T.2 S., R.5 E., Clackamas County, Hydrologic Unit 17080001, on right bank 0.7 mi southwest of Marmot, 0.8 mi upstream from Sandy River Dam of Portland General Electric Co., 6.6 mi downstream from Salmon River, and at mile 30.9.

DRAINAGE AREA.--262 mi².

PERIOD OF RECORD.--August 1911 to current year. 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).

GAGE.--Water-stage recorder. Elevation of gage is 730 ft, from river-profile map. Aug. 15, 1911, to Dec. 20, 1915, and July 2, 1919, to Oct. 19, 1933, nonrecording gage at site 1.0 mi upstream at different datum. Oct. 20, 1933, to Sept. 30, 1958, water-stage recorder at site 0.6 mi upstream at different datum.

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

AVERAGE DISCHARGE.--80 years, 1,357 ft³/s, 70.34 in/yr, 983,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 61,400 ft³/s Dec. 22, 1964, gage height, 17.05 ft, from rating curve extended above 7,000 ft³/s; maximum gage height, 17.10 ft, Feb. 23, 1986; minimum, 195 ft³/s Nov. 27, 28, 1952.

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)
Nov. 25	0830	11,200	12.40	Jan. 15	0530	*13,100	*12.87
Minimum discharge, 278 ft ³ /s Sept. 22.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	313	1880	2020	808	873	1210	1190	1350	1120	839	449	375
2	314	1450	1740	e670	1010	1420	1220	1340	1100	833	436	338
3	486	1310	1540	e610	1780	1670	1150	1260	1050	852	438	332
4	462	2530	1780	e560	1790	2440	1880	1200	964	818	456	336
5	677	2760	1830	e500	3150	1960	3770	1180	915	766	459	342
6	460	2160	1550	e470	2430	1680	3040	1370	916	710	458	336
7	380	1980	1360	670	1880	1500	2190	1540	871	679	462	337
8	351	2060	1280	696	1610	1470	1900	2640	859	664	452	333
9	336	2240	1620	691	1440	1480	3320	2410	832	638	453	319
10	350	1990	2960	1430	1320	1410	2580	2250	849	612	428	312
11	331	1650	2560	2620	1240	1330	2000	2050	892	586	388	307
12	631	1380	1960	4480	1350	1430	1820	1860	853	607	382	307
13	752	1720	1620	4170	5080	1390	1760	1740	1070	644	377	327
14	630	2010	1400	4810	5140	1310	1880	1650	1120	612	377	331
15	852	1660	1250	9730	3290	1210	1900	1490	962	564	379	311
16	1310	1440	1130	4830	2970	1120	1690	1440	906	581	382	316
17	978	1330	1220	3250	2630	1070	1560	2270	859	630	394	317
18	1170	1270	2600	2560	2340	1070	1470	3060	796	566	394	316
19	1090	1160	1810	2120	2860	1040	1400	2570	775	531	407	313
20	845	1160	e950	1780	4960	985	1400	2140	1280	515	398	307
21	1790	1340	e500	1540	5030	975	1420	1870	1360	506	368	293
22	2160	2070	e560	1370	3250	994	1410	1670	1300	510	356	287
23	1270	2340	e620	1240	2440	998	1350	1490	1150	508	352	286
24	944	2270	e580	1130	2000	1100	1370	1390	1040	530	347	306
25	833	7960	e700	1040	1710	1070	1310	1360	1060	541	336	320
26	1310	4100	e850	962	1480	987	1320	1300	1010	494	328	310
27	966	2900	1070	906	1330	908	1710	1190	954	474	333	305
28	1000	2210	987	868	1240	873	1560	1120	918	490	411	302
29	1010	2220	e650	807	---	836	1480	1090	914	481	399	300
30	1640	2240	e650	775	---	828	1380	1270	893	475	391	294
31	2180	---	e700	818	---	992	---	1180	---	459	377	---
TOTAL	27821	64790	42047	58911	67623	38756	53430	51740	29588	18715	12367	9515
MEAN	897	2160	1356	1900	2415	1250	1781	1669	986	604	399	317
MAX	2180	7960	2960	9730	5140	2440	3770	3060	1360	852	462	375
MIN	313	1160	500	470	873	828	1150	1090	775	459	328	286
AC-FT	55180	128500	83400	116800	134100	76870	106000	102600	58690	37120	24530	18870
CFSM	3.43	8.24	5.18	7.25	9.22	4.77	6.80	6.37	3.76	2.30	1.52	1.21
IN.	3.95	9.20	5.97	8.36	9.60	5.50	7.59	7.35	4.20	2.66	1.76	1.30

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1991, BY WATER YEAR (WY)

MEAN	653	1570	2058	2022	1855	1654	1899	1836	1242	648	431	422
MAX	2168	3699	6278	4752	4686	3983	3134	3443	3457	1385	663	1056
(WY)	1960	1956	1965	1953	1961	1972	1962	1949	1917	1917	1974	1959
MIN	239	236	445	498	464	631	658	744	496	356	268	265
(WY)	1988	1937	1977	1937	1977	1941	1941	1926	1926	1926	1940	1942

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1911 - 1991
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ANNUAL TOTAL	533349		475303						
ANNUAL MEAN	1461		1302			1353			
HIGHEST ANNUAL MEAN						1933			1974
LOWEST ANNUAL MEAN						766			1977
HIGHEST DAILY MEAN	12000	Apr 27	9730	Jan 15		41400	Dec 22		1964
LOWEST DAILY MEAN	313	Oct 1	286	Sep 23		207	Nov 28		1952
ANNUAL SEVEN-DAY MINIMUM	322	Sep 26	301	Sep 21		212	Oct 13		1931
ANNUAL RUNOFF (AC-FT)	1058000		942800			980000			
ANNUAL RUNOFF (CFSM)	5.58		4.97			5.16			
ANNUAL RUNOFF (INCHES)	75.73		67.49			70.15			
10 PERCENT EXCEEDS	2500		2420			2620			
50 PERCENT EXCEEDS	1360		1090			995			
90 PERCENT EXCEEDS	396		345			356			

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 below the confluence of Bedrock and Hickman Creeks and 8.6 mi north of Rhododendron.

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 National Geodetic Vertical Datum of 1929, from topographic map.

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

AVERAGE DISCHARGE.--28 years, 58.4 ft³/s, 97.07 in/yr, 42,310 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, 1.3 ft³/s Sept. 24, 25, 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)
Nov. 25	0500	929	4.69	Jan. 15	0130	*1,250	*5.47
Jan. 12	1330	518	3.54	Apr. 5	1030	514	3.53

Minimum discharge, 1.3 ft³/s Sept. 24, 25.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	106	51	30	28	34	53	59	40	21	4.0	2.7
2	2.9	69	39	21	71	78	66	62	35	18	3.5	2.3
3	11	77	33	18	190	93	64	57	32	17	3.5	2.0
4	7.4	249	62	16	198	130	223	53	28	15	3.5	1.9
5	19	193	60	e15	295	83	356	52	27	14	3.5	1.8
6	10	113	44	14	138	60	182	66	27	13	3.3	1.8
7	7.4	109	35	25	87	46	112	97	25	12	3.3	1.8
8	6.2	103	31	34	65	43	88	161	23	11	3.2	1.8
9	5.6	135	71	30	55	41	192	126	21	10	3.2	1.8
10	6.1	131	190	127	46	37	113	98	20	9.7	3.3	1.8
11	5.4	93	132	200	43	33	78	80	20	9.5	3.1	1.8
12	25	64	72	384	76	37	68	73	22	8.1	3.0	1.8
13	46	122	48	371	309	35	64	68	30	8.1	2.7	1.9
14	30	123	37	525	205	32	90	61	33	8.0	2.6	1.8
15	84	98	30	652	131	29	87	53	26	6.6	2.5	1.8
16	115	73	25	194	124	28	74	50	27	7.7	2.5	1.7
17	67	66	98	121	119	28	66	92	26	14	2.4	1.4
18	88	58	244	97	100	28	63	119	23	9.1	2.3	1.4
19	69	45	93	77	159	27	62	100	22	7.4	2.5	1.4
20	45	40	e45	58	388	26	66	81	57	6.6	2.2	1.4
21	176	83	e20	45	234	27	71	67	54	6.2	1.9	1.4
22	147	288	e23	39	129	28	64	56	48	5.8	1.9	1.4
23	74	245	e27	34	81	30	58	47	40	5.7	1.9	1.4
24	44	264	e26	30	58	34	66	45	34	5.4	1.9	1.4
25	47	625	e27	27	45	32	58	52	33	5.6	1.9	1.4
26	83	197	e28	24	39	29	60	45	28	5.4	1.8	1.4
27	48	109	30	23	35	28	79	39	26	4.6	1.9	1.4
28	55	62	22	21	31	28	65	35	25	4.5	5.2	1.4
29	55	78	e21	20	---	29	61	38	25	4.2	3.2	1.4
30	147	67	e21	20	---	29	57	51	24	4.2	2.5	1.4
31	157	---	e25	23	---	37	---	43	---	4.0	2.3	---
TOTAL	1685.9	4085	1710	3315	3479	1279	2806	2126	901	281.4	86.5	50.1
MEAN	54.4	136	55.2	107	124	41.3	93.5	68.6	30.0	9.08	2.79	1.67
MAX	176	625	244	652	388	130	356	161	57	21	5.2	2.7
MIN	2.9	40	20	14	28	26	53	35	20	4.0	1.8	1.4
AC-FT	3340	8100	3390	6580	6900	2540	5570	4220	1790	558	172	99
CFSM	6.66	16.7	6.75	13.1	15.2	5.05	11.4	8.39	3.68	1.11	.34	.20
IN.	7.68	18.60	7.79	15.09	15.84	5.82	12.78	9.68	4.10	1.28	.39	.23

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1991, BY WATER YEAR (WY)

	MEAN	29.4	86.2	105	108	82.5	66.3	78.1	77.4	41.2	11.1	5.90	12.0
MAX	82.5	177	288	207	183	167	150	165	115	35.4	27.6	35.5	
(WY)	1968	1978	1965	1974	1982	1972	1990	1969	1964	1983	1968	1977	
MIN	1.57	15.1	22.6	19.2	17.5	29.4	33.1	26.7	10.5	4.00	2.37	1.67	
(WY)	1988	1977	1977	1985	1969	1978	1983	1987	1986	1965	1967	1991	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1964 - 1991

ANNUAL TOTAL	24663.1	21804.9		
ANNUAL MEAN	67.6	59.7		
HIGHEST ANNUAL MEAN			58.4	
LOWEST ANNUAL MEAN			88.1	1974
HIGHEST DAILY MEAN	625	Nov 25	33.5	1977
LOWEST DAILY MEAN	2.9	Sep 11	1780	Dec 22 1964
ANNUAL SEVEN-DAY MINIMUM	2.9	Sep 22	1.4	Oct 17 1987
ANNUAL RUNOFF (AC-FT)	48920	43250	1.4	Oct 17 1987
ANNUAL RUNOFF (CFSM)	8.27	7.31		
ANNUAL RUNOFF (INCHES)	112.30	99.28		
10 PERCENT EXCEEDS	134	131	130	
50 PERCENT EXCEEDS	47	34	33	
90 PERCENT EXCEEDS	3.8	2.3	3.7	

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.

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

REMARKS.--Water-discharge records good. Regulation at times since 1915 by Bull Run Lake, usable capacity, 12,270 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--25 years, 414 ft³/s, 117.37 in/yr, 299,900 acre-ft/yr.EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,610 ft³/s Jan. 20, 1972, gage height, 13.22 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)
Nov. 25	0330	4,940	10.26	Jan. 15	0200	*6,130	*11.30
Jan. 12	1500	4,070	9.49				

Minimum discharge, 53 ft³/s Sept. 5, 6.

REVISIONS.--Revised figures of discharge for water year 1990, superseding those published in the report for 1990, are given below.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1989 TO SEPTEMBER 1990
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	114	131	286	362	346	464	532	e640	432	102	58	58
2	79	117	258	303	390	447	586	533	374	114	58	56
3	70	107	868	262	403	495	577	483	469	125	58	54
4	67	306	3130	674	354	623	580	450	525	102	57	53
5	65	263	2160	1400	339	636	584	433	432	105	56	52
6	64	734	949	2410	305	582	580	389	586	123	56	51
7	62	1660	645	3120	271	631	547	361	739	103	56	50
8	61	741	1320	2840	298	622	500	330	632	94	55	51
9	60	1690	1040	2380	1520	515	422	292	530	89	55	56
10	61	1130	692	1490	3350	806	408	272	568	86	54	60
11	66	751	509	821	1500	556	451	285	711	83	53	62
12	62	1780	410	586	854	432	451	325	1130	87	52	66
13	60	1140	349	499	583	367	419	408	1110	96	52	69
14	60	1030	304	445	445	455	447	487	661	102	52	71
15	60	673	274	403	392	464	515	414	477	105	52	77
16	59	467	250	374	342	453	580	360	384	105	52	126
17	58	664	223	331	298	503	527	324	323	104	54	91
18	57	493	199	297	e270	580	466	317	274	102	56	86
19	57	394	181	272	244	666	412	293	238	100	54	85
20	57	327	166	250	384	831	391	373	214	91	53	86
21	107	290	154	230	1080	756	365	344	187	80	63	93
22	128	250	145	375	806	666	479	383	169	72	83	99
23	104	446	228	624	725	890	1260	406	158	68	62	100
24	127	686	187	405	678	736	589	471	147	67	56	99
25	146	737	161	352	684	566	1870	450	137	67	55	99
26	276	663	151	317	661	480	1120	394	128	67	54	99
27	477	573	143	307	570	448	e2520	417	121	66	55	97
28	370	471	144	650	501	448	e2250	432	117	63	53	95
29	248	389	136	775	---	459	e1490	463	111	61	58	96
30	185	331	130	524	---	476	e880	411	107	60	83	96
31	150	---	174	393	---	499	---	468	---	61	66	---
TOTAL	3617	19434	15966	24471	18593	17552	22798	12408	12191	2750	1781	2333
MEAN	117	648	515	789	664	566	760	400	406	88.7	57.5	77.8
MAX	477	1780	3130	3120	3350	890	2520	640	1130	125	83	126
MIN	57	107	130	230	244	367	365	272	107	60	52	50
AC-FT	7170	38550	31670	48540	36880	34810	45220	24610	24180	5450	3530	4630
CFSM	2.44	13.5	10.8	16.5	13.9	11.8	15.9	8.36	8.48	1.85	1.20	1.62
IN.	2.81	15.09	12.40	19.00	14.44	13.63	17.71	9.64	9.47	2.14	1.38	1.81

CAL YR 1989	TOTAL 149942	MEAN 411	MAX 3710	MIN 57	AC-FT 297400	CFSM 8.58	IN. 116.45
WTR YR 1990	TOTAL 153894	MEAN 422	MAX 3350	MIN 50	AC-FT 305200	CFSM 8.80	IN. 119.52

e Estimated

SANDY RIVER BASIN

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14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	95	638	508	319	211	252	358	399	275	186	110	67
2	96	444	432	253	413	487	402	384	258	169	109	59
3	192	500	399	209	991	617	388	349	236	156	108	56
4	139	1250	622	181	1050	838	1190	323	217	146	107	54
5	276	1010	641	162	1600	583	2250	309	199	138	105	54
6	166	639	499	148	803	451	1130	431	205	130	94	55
7	133	632	402	223	542	395	740	588	180	123	81	63
8	119	628	357	337	439	416	633	1060	171	116	74	67
9	110	678	632	311	383	392	1650	805	159	110	71	68
10	114	692	1410	1140	338	354	822	e590	153	106	71	68
11	105	536	963	1640	316	317	584	e480	151	102	66	68
12	324	413	620	2960	509	382	518	e470	160	98	64	67
13	427	810	458	2390	2030	367	490	e430	215	94	63	67
14	338	826	372	2930	1330	328	608	e380	253	94	62	67
15	668	633	315	3570	783	287	579	e340	206	91	61	65
16	716	489	274	1310	684	260	481	e310	210	91	60	63
17	476	472	718	790	701	252	427	e650	200	113	59	62
18	752	438	1510	623	648	259	393	e920	173	94	58	61
19	557	371	647	514	1070	252	377	e640	165	88	58	65
20	378	361	441	431	2290	239	381	e520	493	85	57	72
21	1040	634	361	366	1360	249	381	441	467	83	57	73
22	856	1760	379	316	751	266	355	376	389	81	56	74
23	480	1340	e370	280	524	276	332	331	330	79	55	73
24	335	1400	e350	252	414	311	402	315	288	78	55	73
25	364	e3800	210	224	349	290	379	345	273	85	55	76
26	669	e1200	226	199	305	253	427	321	253	99	54	81
27	401	e870	346	180	272	229	653	287	227	108	55	84
28	423	565	276	173	249	226	507	265	206	112	92	88
29	421	625	215	158	---	222	453	272	214	113	66	90
30	866	612	214	151	---	225	413	345	211	114	60	90
31	939	---	197	175	---	291	---	300	---	112	59	---
TOTAL	12975	25266	15364	22915	21355	10566	18703	13976	7137	3394	2202	2070
MEAN	419	842	496	739	763	341	623	451	238	109	71.0	69.0
MAX	1040	3800	1510	3570	2290	838	2250	1060	493	186	110	90
MIN	95	361	197	148	211	222	332	265	151	78	54	54
AC-FT	25740	50120	30470	45450	42360	20960	37100	27720	14160	6730	4370	4110
CFSM	8.74	17.6	10.3	15.4	15.9	7.12	13.0	9.41	4.97	2.29	1.48	1.44
IN.	10.08	19.62	11.93	17.80	16.58	8.21	14.53	10.85	5.54	2.64	1.71	1.61

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1991, BY WATER YEAR (WY)

MEAN	237	593	705	722	620	503	510	458	295	117	87.6	132
MAX	535	1050	1434	1238	1215	1120	760	885	699	292	231	294
(WY)	1968	1978	1978	1975	1972	1972	1990	1969	1974	1983	1968	1977
MIN	36.5	147	193	177	185	236	242	206	111	54.0	43.7	42.6
(WY)	1988	1977	1977	1985	1969	1981	1967	1987	1986	1977	1967	1967

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1966 - 1991

ANNUAL TOTAL	168482	155923	414
ANNUAL MEAN	462	427	643
HIGHEST ANNUAL MEAN			249
LOWEST ANNUAL MEAN			7000
HIGHEST DAILY MEAN	3800	3800	30
LOWEST DAILY MEAN	50	54	31
ANNUAL SEVEN-DAY MINIMUM	52	55	31
ANNUAL RUNOFF (AC-FT)	334200	309300	300000
ANNUAL RUNOFF (CFSM)	9.64	8.92	8.64
ANNUAL RUNOFF (INCHES)	130.85	121.09	117.46
10 PERCENT EXCEEDS	840	845	862
50 PERCENT EXCEEDS	391	316	261
90 PERCENT EXCEEDS	60	68	62

SANDY RIVER BASIN

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 current year.

WATER TEMPERATURE: October 1977 to current year.

TURBIDITY: August 1990 to September 1991.

SUSPENDED SEDIMENT DISCHARGE: October 1977 to September 1986.

INSTRUMENTATION.--Water-quality monitor, turbidimeter with data recording interval dependent upon river stage.

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 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, 17.5°C Aug. 11-13, 1990; minimum, 0.0°C on many days during winter periods.

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 Aug. 19, 20; minimum, 12 microsiemens Apr. 5.

pH: Maximum recorded, 8.0 units Aug. 2; minimum recorded, 5.7 units Jan. 18.

WATER TEMPERATURE: Maximum, 16.5°C Aug. 18-20; minimum, 0.0°C Dec. 19, 24, 29.

TURBIDITY: Maximum recorded, 44 NTU Jan. 15, 1991; minimum recorded, 0.13 NTU several days in 1990, 1991.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

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SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

SANDY RIVER BASIN

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued
 PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.7	7.6	7.6	7.7	7.4	7.5	---	6.9	---	6.7	6.6	6.7
2	7.7	7.6	7.6	7.8	7.5	7.6	7.0	6.9	7.0	6.7	---	---
3	7.7	7.4	7.6	7.7	7.2	7.5	7.0	6.9	7.0	---	---	---
4	7.7	7.5	7.6	7.5	7.2	7.3	6.9	6.7	6.8	---	---	---
5	7.7	7.6	7.6	7.5	7.3	7.4	6.8	6.7	6.8	---	---	---
6	7.7	7.6	7.6	7.7	7.3	7.5	6.9	6.8	6.8	---	---	---
7	7.7	7.6	7.6	7.6	7.4	7.5	6.9	6.7	6.8	---	---	---
8	7.7	7.6	7.6	7.5	---	---	6.8	6.8	6.8	---	---	---
9	7.7	7.6	7.6	7.4	---	---	6.8	6.6	6.7	---	---	---
10	7.7	7.6	7.6	7.4	---	---	6.7	6.4	6.5	---	---	---
11	7.7	7.6	7.6	7.5	---	---	---	---	---	---	---	---
12	7.7	7.5	7.6	7.5	---	---	---	---	---	---	---	---
13	7.6	7.5	7.5	---	---	---	---	---	---	---	---	---
14	7.6	7.5	7.5	7.3	---	---	6.6	6.4	6.4	---	---	---
15	7.5	7.4	7.4	---	---	---	6.7	6.4	6.6	6.1	---	---
16	7.5	7.4	7.5	---	---	---	6.9	6.7	6.7	5.9	---	---
17	7.6	7.5	7.5	---	---	---	6.9	6.4	6.6	6.1	---	---
18	7.5	7.4	7.5	7.4	---	---	6.8	6.3	6.5	6.0	5.7	5.9
19	7.6	7.5	7.5	7.3	---	---	6.7	6.5	6.6	6.2	6.0	6.1
20	7.6	7.5	7.6	---	---	---	6.7	6.6	6.7	6.5	6.1	6.3
21	7.6	7.3	7.5	7.2	---	---	6.9	6.6	6.7	6.4	6.2	6.3
22	7.6	7.4	7.5	7.1	6.9	7.0	6.9	6.7	6.8	6.4	6.3	6.3
23	7.7	7.5	7.6	7.0	6.9	6.9	6.9	6.8	6.9	6.3	6.2	6.3
24	7.7	7.6	7.6	7.1	6.9	7.0	6.9	6.6	6.8	6.4	6.3	6.3
25	7.7	7.5	7.6	7.0	6.7	6.9	6.7	6.6	6.7	6.4	6.3	6.4
26	7.6	7.5	7.6	7.0	6.9	6.9	6.7	6.6	6.7	6.5	6.4	6.4
27	7.7	7.6	7.6	7.0	6.7	6.9	6.7	6.6	6.7	6.5	6.4	6.5
28	7.7	7.6	7.7	---	6.9	---	6.7	6.7	6.7	6.5	6.3	6.4
29	7.7	7.6	7.6	---	7.0	---	6.7	6.6	6.7	6.6	6.4	6.5
30	7.6	7.4	7.6	---	6.9	---	6.7	6.6	6.7	6.6	6.4	6.5
31	7.7	7.3	7.5	---	---	---	6.7	6.6	6.7	---	---	---
MONTH	7.7	7.3	7.6	---	---	---	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	---	---	---	7.4	7.1	7.1	7.1	7.0	7.1	7.3	7.1	7.2
2	---	---	---	7.3	7.0	7.1	7.1	7.0	7.1	7.2	7.2	7.2
3	---	---	---	7.2	7.0	7.0	7.1	6.9	7.0	7.3	7.2	7.2
4	---	---	---	7.0	6.9	7.0	7.0	6.8	6.9	7.3	7.2	7.2
5	---	---	---	7.0	7.0	7.0	7.0	6.9	6.9	7.4	7.2	7.3
6	---	---	---	7.1	7.0	7.0	7.0	6.8	6.9	7.3	7.1	7.2
7	---	---	---	7.1	7.0	7.0	7.0	6.9	7.0	7.2	7.0	7.2
8	---	---	---	7.1	7.0	7.1	7.1	7.0	7.0	7.2	7.1	7.1
9	---	---	---	7.1	7.0	7.1	7.2	6.9	7.0	7.2	7.1	7.2
10	---	---	---	7.1	7.0	7.1	7.1	7.0	7.0	7.3	7.2	7.2
11	---	---	---	7.1	7.1	7.1	7.2	7.0	7.1	7.3	7.2	7.3
12	---	---	---	7.1	7.0	7.0	7.2	7.1	7.1	7.4	7.2	7.3
13	---	---	---	7.0	7.0	7.0	7.2	7.1	7.1	7.4	7.2	7.3
14	---	---	---	7.0	6.9	7.0	7.1	7.0	7.1	7.5	7.3	7.3
15	---	---	---	7.1	7.0	7.0	7.1	7.0	7.1	7.4	7.3	7.3
16	---	---	---	7.1	7.0	7.0	7.2	7.1	7.1	7.5	7.3	7.4
17	---	---	---	7.1	7.0	7.1	7.2	7.1	7.1	7.4	7.2	7.3
18	---	---	---	7.1	7.0	7.1	7.2	7.1	7.1	7.2	7.2	7.2
19	---	---	---	7.1	7.0	7.1	7.2	7.1	7.1	7.4	7.2	7.3
20	---	---	---	7.1	7.0	7.1	7.2	7.1	7.1	7.4	7.2	7.3
21	7.0	---	---	7.1	7.0	7.1	7.2	7.0	7.1	7.5	7.3	7.4
22	7.0	6.9	6.9	7.1	7.1	7.1	7.2	7.0	7.1	7.5	7.3	7.4
23	7.0	6.9	7.0	7.2	7.1	7.1	7.1	7.1	7.1	7.5	7.4	7.4
24	7.0	7.0	7.0	7.1	7.1	7.1	7.2	7.0	7.1	7.5	7.4	7.5
25	7.1	7.0	7.1	7.2	7.1	7.1	7.2	7.1	7.1	7.5	7.4	7.4
26	7.3	7.0	7.1	7.2	7.1	7.1	7.2	7.1	7.1	7.5	7.4	7.5
27	7.3	7.1	7.1	7.2	7.1	7.1	7.1	7.0	7.1	7.6	7.4	7.5
28	7.3	7.1	7.1	7.2	7.1	7.1	7.1	7.0	7.1	7.6	7.4	7.5
29	---	---	---	7.2	7.1	7.2	7.2	7.1	7.1	7.6	7.4	7.5
30	---	---	---	7.2	7.1	7.2	7.2	7.1	7.2	7.6	7.4	7.5
31	---	---	---	7.2	7.1	7.2	---	---	---	7.6	7.4	7.5
MONTH	---	---	---	7.4	6.9	7.1	7.2	6.8	7.1	7.6	7.0	7.3

SANDY RIVER BASIN

193

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	7.6	7.4	7.5	7.5	7.2	7.3	7.8	7.6	7.7	7.3	7.1	7.2
2	7.6	7.4	7.5	7.5	7.3	7.4	8.0	7.6	7.7	7.3	7.1	7.2
3	7.6	7.4	7.5	7.6	7.3	7.5	7.9	7.6	7.7	7.3	7.1	7.2
4	7.6	7.2	7.4	7.6	7.4	7.5	7.7	7.6	7.6	7.4	7.2	7.3
5	7.3	7.1	7.2	7.6	7.4	7.5	7.8	7.5	7.7	7.4	7.2	7.3
6	7.3	7.1	7.3	7.6	7.4	7.5	7.8	7.5	7.6	7.5	7.2	7.3
7	7.3	7.1	7.3	7.6	7.4	7.5	7.7	7.3	7.6	7.5	7.3	7.4
8	7.4	7.1	7.3	7.6	7.4	7.5	7.6	7.4	7.5	7.5	7.3	7.4
9	7.4	7.2	7.3	7.7	7.4	7.5	7.7	7.4	7.5	7.5	7.2	7.3
10	7.4	7.2	7.3	7.6	7.4	7.5	7.7	7.4	7.6	7.4	7.1	7.2
11	7.4	7.2	7.3	7.6	7.4	7.5	7.7	7.4	7.5	7.4	7.2	7.3
12	7.4	7.2	7.3	7.6	7.3	7.4	7.7	7.4	7.5	7.4	7.2	7.3
13	7.3	7.2	7.3	7.6	7.3	7.5	7.6	7.3	7.5	7.4	7.2	7.3
14	7.4	7.3	7.3	7.7	7.5	7.6	7.6	7.3	7.4	7.4	7.2	7.3
15	7.4	7.2	7.3	7.7	7.5	7.6	7.6	7.3	7.4	7.4	7.1	7.3
16	7.4	7.3	7.4	7.7	7.4	7.6	7.6	7.3	7.4	7.4	7.2	7.2
17	7.4	7.3	7.4	7.7	7.5	7.6	7.6	7.3	7.4	7.4	7.1	7.2
18	7.5	7.3	7.4	7.7	7.4	7.5	7.6	7.3	7.4	7.4	7.1	7.2
19	7.4	7.2	7.3	7.7	7.5	7.6	7.6	7.3	7.4	7.2	7.0	7.2
20	7.4	7.2	7.3	7.6	7.4	7.5	7.6	7.3	7.4	7.3	7.1	7.1
21	7.3	7.2	7.3	7.7	7.5	7.6	7.6	7.3	7.4	7.2	7.0	7.1
22	7.4	7.2	7.3	7.8	7.6	7.6	7.5	7.3	7.4	7.1	6.9	7.0
23	7.4	7.2	7.3	7.8	7.5	7.6	7.5	7.3	7.4	7.1	6.9	7.0
24	7.4	7.2	7.3	7.7	7.5	7.6	7.5	7.2	7.4	7.1	6.8	7.0
25	7.4	7.2	7.3	7.8	7.6	7.7	7.5	7.3	7.4	7.0	6.8	6.9
26	7.5	7.2	7.4	7.7	7.5	7.6	7.4	7.2	7.3	7.1	6.8	6.9
27	7.5	7.3	7.4	7.8	7.6	7.7	7.5	7.2	7.3	7.2	6.8	7.0
28	7.5	7.2	7.3	7.8	7.6	7.7	7.4	7.2	7.3	7.1	6.8	7.0
29	7.5	7.3	7.4	7.8	7.6	7.7	7.5	7.2	7.3	7.1	6.8	6.9
30	7.5	7.3	7.4	7.8	7.6	7.7	7.5	7.2	7.3	7.1	6.9	7.0
31	---	---	---	7.8	7.6	7.7	7.5	7.2	7.3	---	---	---
MONTH	7.6	7.1	7.3	7.8	7.2	7.6	8.0	7.2	7.5	7.5	6.8	7.2

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	11.0	10.0	10.5	7.0	6.0	6.5	4.5	3.0	3.5	2.5	2.0	2.0
2	10.5	10.0	10.0	6.5	5.5	6.0	4.0	3.0	4.0	2.5	2.0	2.0
3	10.5	9.5	10.0	8.0	6.0	6.5	5.0	4.0	4.5	2.0	1.5	1.5
4	12.0	10.5	11.0	8.5	7.5	8.0	5.0	4.5	4.5	1.5	1.0	1.0
5	11.5	9.0	10.0	7.5	7.0	7.0	5.0	4.5	5.0	1.0	1.0	1.0
6	9.0	8.5	8.5	7.0	5.5	6.0	4.5	4.0	4.5	1.0	.5	1.0
7	8.5	7.0	7.5	7.5	6.5	6.5	4.5	4.0	4.0	2.0	1.0	1.5
8	8.5	7.0	7.5	8.0	7.0	7.5	5.0	4.5	4.5	2.5	2.0	2.5
9	9.5	8.0	8.5	8.5	8.0	8.5	5.5	5.0	5.0	3.0	2.5	3.0
10	9.5	9.0	9.5	8.5	8.0	8.5	5.5	4.5	5.0	3.0	2.0	2.5
11	9.0	7.5	8.0	8.0	7.0	7.5	4.5	4.0	4.5	4.0	3.0	3.5
12	9.5	8.5	9.0	8.0	7.0	7.5	4.5	3.5	4.0	4.0	4.0	4.0
13	9.0	8.5	9.0	8.0	6.0	7.5	4.0	3.5	3.5	4.5	4.0	4.5
14	8.5	8.5	8.5	6.5	6.0	6.5	4.0	3.5	4.0	4.5	4.0	4.5
15	9.5	8.5	9.0	7.0	6.5	6.5	4.0	3.5	3.5	4.0	3.5	4.0
16	9.0	7.5	8.0	6.5	5.5	6.0	3.5	3.5	3.5	4.5	4.0	4.5
17	8.5	6.5	7.5	7.0	5.5	6.5	4.5	3.5	4.0	5.0	4.5	4.5
18	8.5	8.0	8.0	7.0	6.0	6.5	4.5	2.0	3.0	4.5	4.0	4.5
19	8.0	7.0	7.5	6.0	4.5	5.5	2.0	.0	1.0	4.5	3.0	3.5
20	7.5	6.0	7.0	4.5	4.0	4.0	.5	.5	.5	3.0	2.5	3.0
21	8.5	7.5	8.0	5.5	4.5	5.0	.5	.5	.5	3.0	2.5	2.5
22	8.0	6.5	7.5	6.5	5.5	6.0	.5	.5	.5	3.0	2.5	2.5
23	8.5	7.0	7.5	7.0	6.5	6.5	.5	.5	.5	3.0	2.5	2.5
24	8.0	7.0	7.5	7.5	7.0	7.0	1.0	.0	.5	3.5	3.0	3.0
25	9.0	7.0	7.5	7.0	5.5	6.0	1.5	1.0	1.0	3.0	2.0	2.5
26	8.5	8.0	8.5	5.5	5.0	5.0	2.0	1.0	2.0	2.0	1.5	2.0
27	9.0	7.5	8.0	5.5	5.0	5.0	2.0	1.0	2.0	2.0	1.0	1.5
28	9.0	8.5	8.5	5.5	5.0	5.0	2.0	1.0	1.5	2.5	1.5	2.0
29	8.5	7.5	8.0	5.5	4.0	4.5	1.0	.0	.5	2.0	1.0	1.5
30	8.5	8.0	8.5	4.5	4.0	4.5	1.0	.5	.5	2.0	1.0	1.5
31	8.0	7.0	7.5	---	---	---	2.0	1.0	1.5	3.0	2.0	2.5
MONTH	12.0	6.0	8.5	8.5	4.0	6.5	5.5	.0	3.0	5.0	.5	2.5

14138850 BULL RUN RIVER NEAR MULTNOMAH FALLS, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.0	3.0	3.5	6.5	5.5	6.0	6.5	5.5	6.0	8.5	5.5	6.5
2	4.5	4.0	4.5	5.5	5.0	5.5	5.5	5.0	5.0	7.5	5.5	6.5
3	4.5	4.0	4.0	6.0	5.0	5.5	5.5	4.0	5.0	8.0	5.5	6.5
4	5.0	4.0	4.5	5.5	3.5	4.5	5.5	5.0	5.0	8.5	5.5	7.0
5	4.5	4.0	4.5	3.5	3.0	3.5	5.0	4.0	4.5	7.5	7.0	7.5
6	4.5	3.5	4.0	3.5	2.0	3.0	4.5	3.5	4.0	7.5	7.0	7.0
7	5.0	3.5	4.5	4.0	3.5	3.5	4.0	3.0	3.5	7.0	6.5	6.5
8	5.5	4.0	4.5	5.0	3.5	4.0	4.5	3.0	4.0	6.0	4.5	5.0
9	5.0	3.5	4.5	4.5	3.5	4.0	4.0	3.5	4.0	5.5	4.5	5.0
10	5.0	4.0	4.5	3.5	3.0	3.5	4.0	2.5	3.0	5.5	5.0	5.5
11	5.5	4.5	4.5	3.5	2.5	3.0	5.5	3.5	4.5	6.0	5.5	6.0
12	5.5	5.0	5.0	4.0	2.5	3.5	6.5	3.5	4.5	6.5	6.0	6.0
13	5.5	5.0	5.0	4.5	3.0	4.0	6.5	4.0	5.0	6.5	6.0	6.0
14	6.0	5.0	5.5	4.5	3.5	4.0	5.5	5.0	5.0	7.5	5.5	6.5
15	6.0	5.0	5.5	4.5	3.5	4.0	5.5	4.5	5.0	8.0	5.0	6.5
16	5.5	5.0	5.0	4.5	3.0	3.5	7.0	4.5	5.5	8.5	7.0	7.5
17	5.0	4.0	4.5	5.5	4.0	4.5	7.0	5.0	6.0	8.0	6.0	6.5
18	5.5	4.0	4.5	5.0	4.0	4.5	7.5	5.0	6.0	6.0	5.5	6.0
19	6.0	5.5	5.5	5.0	3.5	4.5	8.0	5.0	6.5	6.5	6.0	6.0
20	5.5	5.0	5.5	5.0	3.5	4.5	8.0	6.0	7.0	8.0	6.0	7.0
21	6.0	5.0	5.5	5.0	4.5	4.5	7.5	6.5	7.0	7.5	7.0	7.0
22	6.0	4.5	5.0	4.5	3.0	4.0	8.0	6.5	7.0	9.0	6.0	7.5
23	5.5	4.0	4.5	5.0	3.5	4.5	7.0	5.5	6.0	9.5	6.0	7.5
24	5.5	4.0	5.0	5.0	4.0	4.5	6.0	4.0	5.0	8.0	7.0	7.5
25	6.0	5.0	5.5	4.5	3.0	3.5	5.0	3.5	4.0	7.0	6.0	6.5
26	6.0	5.0	5.5	5.0	3.5	4.0	4.5	4.0	4.0	7.0	6.0	6.5
27	5.5	4.5	5.0	5.0	3.0	4.0	5.0	4.0	4.5	7.0	6.5	6.5
28	6.0	4.0	5.0	4.5	4.5	4.5	5.0	4.5	5.0	7.5	6.5	7.0
29	---	---	---	5.5	4.0	4.5	6.5	4.5	5.5	7.0	6.5	7.0
30	---	---	---	7.0	4.0	5.0	7.5	4.5	6.0	7.0	6.0	6.5
31	---	---	---	7.0	5.0	6.0	---	---	---	9.5	6.5	7.5
MONTH	6.0	3.0	5.0	7.0	2.0	4.5	8.0	2.5	5.0	9.5	4.5	6.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	11.0	7.0	8.5	14.0	10.0	11.5	13.0	10.5	12.0	13.0	12.0	12.5
2	10.5	8.0	9.0	15.5	11.0	13.0	13.5	10.0	11.5	12.5	11.5	12.0
3	8.5	7.0	7.5	16.0	12.5	14.0	14.0	10.5	12.0	13.5	12.0	12.5
4	8.5	6.0	7.0	15.0	12.0	13.5	13.5	11.0	12.0	14.0	12.5	13.0
5	8.0	7.0	7.5	14.0	11.0	12.5	13.0	11.5	12.0	14.0	13.0	13.5
6	10.0	7.5	8.5	14.0	10.5	12.0	13.5	11.0	12.0	14.0	13.0	13.5
7	9.0	8.5	8.5	15.0	11.0	13.0	13.5	12.0	13.0	13.5	12.0	13.0
8	10.0	8.5	9.0	15.0	11.5	13.5	15.0	12.5	13.5	12.0	11.0	11.5
9	12.5	8.5	10.0	14.0	11.5	13.0	15.0	13.0	14.0	11.5	10.0	10.5
10	14.0	10.0	12.0	14.0	11.5	12.5	13.0	12.0	12.5	11.5	10.0	11.0
11	13.0	9.5	11.0	14.5	11.0	12.5	13.5	11.0	12.0	11.5	10.5	11.0
12	9.5	8.5	9.0	15.5	12.0	13.5	13.5	12.0	13.0	11.5	10.0	11.0
13	8.5	7.5	8.0	15.0	12.5	13.0	14.0	12.5	13.0	11.5	10.5	11.0
14	8.5	7.0	8.0	14.5	11.5	13.0	14.5	12.5	13.5	10.5	9.5	10.0
15	9.0	7.5	8.5	13.5	11.5	12.0	15.0	13.5	14.0	11.0	9.5	10.0
16	8.5	8.0	8.5	12.0	11.0	11.5	15.5	14.0	15.0	11.5	10.0	10.5
17	11.0	7.0	9.0	12.5	11.5	12.0	16.0	14.5	15.0	12.5	11.0	11.5
18	11.0	8.0	9.5	13.5	11.0	12.0	16.5	15.0	15.5	12.5	11.5	12.0
19	10.5	9.0	9.5	13.0	11.0	12.5	16.5	15.5	16.0	12.5	11.0	11.5
20	9.0	7.5	8.0	13.5	11.5	12.5	16.5	15.0	16.0	12.0	10.5	11.0
21	8.0	7.0	7.5	14.0	11.0	12.5	15.5	14.0	14.5	10.5	9.5	10.0
22	9.0	7.5	8.0	15.0	12.0	13.5	15.0	14.0	14.5	10.5	9.0	9.5
23	9.0	8.0	8.5	16.0	13.0	14.5	15.0	13.5	14.0	11.0	9.5	10.0
24	9.0	8.0	8.5	15.5	13.5	14.5	13.5	12.5	13.0	12.0	10.5	11.0
25	8.5	8.0	8.5	13.5	12.5	13.0	13.0	12.0	12.5	12.5	11.0	11.5
26	9.5	8.0	8.5	14.0	11.5	12.5	12.5	11.5	12.0	12.5	10.5	11.5
27	11.0	8.0	9.0	14.0	10.5	12.5	12.0	11.5	11.5	12.0	10.5	11.0
28	10.5	9.5	10.0	14.0	11.0	12.5	12.0	11.5	12.0	11.5	11.0	11.0
29	9.5	9.0	9.5	14.0	10.5	12.0	13.0	11.5	12.0	11.5	10.0	10.5
30	11.0	9.0	10.0	14.0	10.5	12.0	14.0	12.5	13.0	12.0	10.5	11.0
31	---	---	---	14.0	10.5	12.0	14.0	13.0	13.5	---	---	---
MONTH	14.0	6.0	9.0	16.0	10.0	12.5	16.5	10.0	13.0	14.0	9.0	11.5
YEAR	16.5	.0	7.5									

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TURBIDITY (NTU), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	.14	.13	.49	.27	.49	.35	---	---	.35	.21	.27	.20
2	---	---	.27	.20	---	---	---	---	2.2	.49	.78	.42
3	---	---	.98	.20	---	---	---	---	---	---	.71	.35
4	---	---	1.7	.63	---	---	---	---	---	---	.86	.42
5	---	---	---	---	---	---	---	---	---	---	.35	.28
6	---	---	---	---	---	---	---	---	---	---	.28	.28
7	---	---	---	---	---	---	---	---	---	---	.28	.20
8	---	---	---	---	---	---	---	---	---	---	.28	.28
9	---	---	---	---	---	---	---	---	---	---	.28	.20
10	---	---	---	---	---	---	3.9	---	---	---	.20	.20
11	---	---	---	---	---	---	3.4	1.9	---	---	.20	.20
12	---	---	---	---	---	---	12	3.1	---	---	.29	.20
13	---	---	---	---	---	.27	5.3	3.3	---	---	.28	.21
14	---	---	---	---	.28	.27	31	1.4	---	---	.21	.21
15	---	---	---	---	.28	.21	---	---	---	---	.21	.21
16	---	---	---	---	.21	.21	---	---	---	---	.21	.21
17	---	---	---	---	8.9	.28	---	---	---	---	.22	.21
18	---	---	---	---	6.3	.34	---	---	---	---	.21	.21
19	---	---	---	---	.41	.34	---	---	---	---	.21	.21
20	---	---	---	---	.47	.27	---	---	---	---	.21	.21
21	---	---	---	---	.67	.40	---	---	---	.63	.21	.21
22	---	---	---	---	.68	.55	---	---	.64	.42	.21	.21
23	---	---	---	---	.96	.54	---	---	.42	.34	.21	.21
24	---	---	---	---	1.1	.68	---	---	.35	.27	.21	.21
25	---	---	---	---	.69	.55	.21	.20	.27	.27	.21	.21
26	---	---	---	---	.68	.48	.21	.20	.27	.20	.22	.14
27	---	---	---	.63	.83	.27	.21	.20	.21	.19	.21	.21
28	---	---	.63	.42	---	---	.21	.13	.28	.19	.21	.21
29	---	---	1.7	.42	---	---	.21	.13	---	---	.21	.21
30	---	---	.76	.42	---	---	.21	.13	---	---	.28	.21
31	---	.49	---	---	---	---	.21	.13	---	---	.29	.21
MONTH	---	---	---	---	---	---	---	---	---	---	.86	.14
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	.36	.28	.36	.21	---	---	.29	.22	.23	.15	---	---
2	.35	.28	.29	.21	---	---	.29	.22	.23	.14	---	---
3	.56	.28	.29	.21	---	---	.29	.29	.23	.14	---	---
4	3.8	.83	.29	.21	.28	.21	.29	.28	.23	.14	---	---
5	7.3	1.3	.29	.21	.28	.21	.29	.22	.22	.14	---	---
6	1.8	.62	.49	.28	.28	.28	.29	.21	.23	.14	---	---
7	.62	.41	1.5	.28	.28	.21	.29	.22	.23	.15	---	---
8	1.3	.34	1.1	.55	.28	.28	.35	.28	.23	.15	---	---
9	3.6	.69	.48	.41	.29	.21	.29	.21	.23	.21	---	---
10	.62	.42	.34	.34	.29	.28	.29	.22	.21	.14	---	---
11	---	---	.34	.28	.28	.28	.29	.22	.21	---	---	---
12	---	---	.41	.28	.36	.28	.29	.28	---	---	---	---
13	---	---	.41	.28	.56	.36	.29	.28	---	---	---	---
14	---	---	.35	.28	.64	.29	.29	.22	---	---	---	---
15	---	---	.35	.28	.29	.29	.29	.21	---	---	---	---
16	---	---	---	---	.29	.29	.29	.21	---	---	---	---
17	---	---	---	---	.29	.22	.36	.29	---	---	---	---
18	---	---	---	---	.29	.21	---	---	---	---	---	---
19	---	---	---	---	.35	.21	.29	.21	---	---	---	---
20	---	---	---	---	1.6	.56	---	---	---	---	---	---
21	---	---	---	---	.49	.35	---	---	---	---	---	---
22	---	---	---	---	.42	.35	---	---	---	---	---	---
23	---	---	---	---	.35	.28	.30	.22	---	---	---	---
24	---	---	---	---	.28	.28	.30	.22	---	---	---	---
25	---	---	---	---	.28	.28	.30	.21	---	---	---	---
26	---	---	---	---	.28	.28	.29	.21	---	---	---	---
27	---	---	---	---	.29	.21	.29	.21	---	---	---	---
28	---	---	---	---	.28	.21	.23	.21	---	---	---	---
29	---	---	---	---	.28	.28	.23	.21	---	---	---	---
30	---	---	---	---	.28	.28	.23	.22	---	---	---	---
31	---	---	---	---	---	---	.23	.22	---	---	---	---
MONTH	---	---	---	---	---	---	---	---	---	---	---	---

14138870 FIR CREEK NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°28'56", long 122°01'36", 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.

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

REMARKS.--Water-discharge records good. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--16 years, 35.0 ft³/s, 87.05 in/yr, 25,360 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,290 ft³/s Dec. 2, 1977, gage height, 5.64 ft; minimum discharge, 1.8 ft³/s Oct. 24-31, 1987.

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)
Nov. 25	0400	447	4.47	Jan. 15	0100	*696	*4.93

Minimum discharge recorded, 1.9 ft³/s Sept. 30.

REVISIONS.--Revised daily discharges, in cubic feet per second, for July 1-26, 1976 are given below.

July	1...	11	7...	8.6	12...	9.7	17...	7.9	22...	6.9
	2...	10	8...	19	13...	9.1	18...	7.7	23...	6.7
	3...	9.6	9...	12	14...	8.7	19...	7.5	24...	6.4
	4...	10	10...	9.9	15...	8.2	20...	7.3	25...	6.1
	5...	9.5	11...	9.6	16...	8.2	21...	7.1	26...	6.2
	6...	8.9								

	July	1976	TOTAL	MEAN	MAX	MIN	CFSM	IN
WTR YR	1976		261.4	8.43	19	5.8	1.54	1.78
CAL YR	1976		17363.8	47.4	495	3.6	8.69	118.30
			11379.5	31.1	368	2.5	5.69	77.53

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3.0	73	53	29	16	25	34	41	23	15	5.1	5.4
2	3.2	51	46	26	32	44	38	37	22	14	4.9	3.5
3	14	50	44	23	72	52	35	33	20	13	4.9	3.2
4	8.1	107	65	20	80	68	111	29	17	12	4.8	2.9
5	25	94	64	18	122	52	202	28	16	11	4.6	2.9
6	13	65	51	16	67	41	109	42	16	10	4.6	2.8
7	9.0	65	43	24	46	35	72	62	15	9.8	4.4	2.8
8	7.4	63	38	32	36	37	66	108	14	9.2	4.3	2.9
9	6.3	62	66	33	31	39	185	76	13	8.8	4.4	2.8
10	7.1	60	166	123	28	35	95	64	12	8.5	4.6	2.6
11	5.9	50	111	184	27	31	64	52	12	8.3	4.3	2.5
12	34	39	63	287	44	37	56	47	12	7.9	3.9	2.5
13	46	81	47	225	218	37	52	45	14	7.6	3.8	2.7
14	35	88	39	264	146	33	62	40	18	7.5	3.8	2.6
15	56	66	34	352	78	29	60	34	14	7.1	3.7	2.5
16	66	52	30	138	71	27	49	31	15	7.3	3.7	2.4
17	45	51	71	87	68	26	43	58	15	9.2	3.6	2.3
18	83	48	165	66	72	26	38	92	13	7.5	3.6	2.3
19	59	40	67	53	105	25	35	72	13	6.9	3.5	2.3
20	39	38	45	42	229	24	35	57	41	6.6	3.4	2.3
21	108	59	36	35	142	25	34	45	38	6.3	3.2	2.3
22	89	150	32	30	77	25	31	37	30	6.1	3.2	2.3
23	52	129	28	27	54	26	28	31	25	6.1	3.2	2.2
24	35	105	25	25	41	28	36	28	22	5.9	3.2	2.1
25	42	331	23	22	34	27	33	28	21	6.1	3.2	2.0
26	76	135	25	20	30	25	38	27	19	6.0	3.1	2.0
27	45	95	35	18	27	23	63	25	17	5.7	3.1	2.0
28	50	64	30	17	25	22	55	23	16	5.5	6.6	2.0
29	49	69	25	16	---	22	51	23	16	5.4	4.1	2.0
30	93	64	22	15	---	22	45	27	16	5.1	3.5	2.0
31	105	---	21	15	---	28	---	25	---	5.1	3.5	---
TOTAL	1309.0	2444	1610	2282	2018	996	1855	1367	555	250.5	123.8	77.1
MEAN	42.2	81.5	51.9	73.6	72.1	32.1	61.8	44.1	18.5	8.08	3.99	2.57
MAX	108	331	166	352	229	68	202	108	41	15	6.6	5.4
MIN	3.0	38	21	15	15	22	12	23	12	5.1	3.1	2.0
AC-FT	2600	4850	3190	4530	4000	1980	3680	2710	1100	470	246	153
CFSM	7.73	14.9	9.51	13.5	13.2	5.88	11.3	8.08	3.39	1.48	.73	.47
IN.	8.92	16.65	10.97	15.55	13.75	6.79	12.64	9.31	3.78	1.71	.84	.53

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1991, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	17.9	52.6	62.2	55.3	58.2	44.8	48.1	35.0	23.9	8.86	5.51	9.66				
MAX	42.2	88.6	133	96.9	126	64.5	67.2	53.0	58.6	27.3	13.0	27.7				
(WY)	1991	1989	1978	1976	1982	1989	1990	1977	1981	1983	1978	1977				
MIN	1.97	11.2	15.3	16.6	16.9	20.7	28.6	16.9	8.64	4.67	3.01	2.57				
(WY)	1988	1977	1977	1979	1977	1978	1983	1987	1986	1977	1987	1991				

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1976 - 1991

	1990	1991	1976-1991
ANNUAL TOTAL	16188.5	14887.4	
ANNUAL MEAN	44.4	40.8	
HIGHEST ANNUAL MEAN			35.0
LOWEST ANNUAL MEAN			47.4
HIGHEST DAILY MEAN			23.4
LOWEST DAILY MEAN			616
ANNUAL SEVEN-DAY MINIMUM			1.8
ANNUAL RUNOFF (AC-FT)	32110	29530	25370
ANNUAL RUNOFF (CFSM)	8.12	7.47	6.41
ANNUAL RUNOFF (INCHES)	110.30	101.43	87.14
10 PERCENT EXCEEDS	89	87	72
50 PERCENT EXCEEDS	36	28	22
90 PERCENT EXCEEDS	4.1	3.2	4.0

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 current year.

WATER TEMPERATURE: October 1977 to current year.

TURBIDITY: August 1990 to September 1991.

SUSPENDED SEDIMENT DISCHARGE: October 1977 to September 1986.

INSTRUMENTATION.--Water-quality monitor, turbidimeter with data recording interval dependent upon river stage.

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 recorded, 49 microsiemens May 6, 1988, Aug. 13, 1990; minimum, 9 microsiemens Dec. 4, 1978, Jan. 6, 1990.

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; minimum recorded, 0.0°C on several days in 1978-80, 1983, 1989, 1991.

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 recorded, 30 microsiemens Oct. 3, 4; minimum recorded, 11 microsiemens Jan. 14, 15.

pH: Maximum recorded, 7.6 units Nov. 29, several days in Dec., but may have been higher during periods of missing record; minimum recorded, 6.0 units Sept. 5, 6, 8, but may have been lower during periods of missing record.

WATER TEMPERATURE: Maximum recorded, 14.5°C Aug. 19, 20; minimum recorded, 0.0°C Dec. 21.

TURBIDITY: Maximum recorded, 9.4 NTU Jan. 15; minimum recorded, 0.11 NTU Mar. 22, July 18.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	22	22	22	23	22	22	20	19	19	19	19	19
2	22	18	21	22	20	21	19	18	19	20	19	19
3	19	17	18	20	19	20	19	18	19	20	19	20
4	18	16	17	19	18	19	19	15	16	20	20	20
5	17	15	16	20	19	19	16	13	15	20	20	20
6	18	16	17	20	20	20	17	16	17	20	18	19
7	19	18	18	21	20	21	18	17	18	19	16	18
8	20	19	19	21	21	21	19	18	19	17	16	17
9	21	19	20	21	20	21	18	15	16	18	16	17
10	21	21	21	21	20	21	19	17	18	19	18	19
11	21	21	21	21	21	21	20	18	19	19	18	19
12	21	17	20	21	20	21	20	19	20	19	19	19
13	17	15	16	21	19	20	20	20	20	19	19	19
14	18	16	17	21	20	20	20	19	19	19	19	19
15	19	17	18	21	20	21	20	19	19	20	19	19
16	19	18	18	21	21	21	20	20	20	20	19	20
17	19	18	18	21	21	21	21	19	20	20	18	19
18	19	17	18	21	21	21	21	20	21	18	17	17
19	18	17	17	21	21	21	21	21	21	19	18	18
20	18	14	16	21	21	21	21	20	21	19	18	19
21	18	16	17	22	21	21	21	20	21	20	19	19
22	19	18	19	21	21	21	21	20	21	20	19	19
23	20	19	20	21	21	21	21	20	21	21	19	20
24	21	20	20	21	20	21	21	20	20	21	20	20
25	22	21	21	21	20	21	21	20	20	21	20	20
26	22	21	22	21	20	21	21	19	20	21	20	21
27	22	21	22	21	20	20	20	19	20	21	20	21
28	22	22	22	21	20	21	20	20	20	22	21	21
29	---	---	---	21	20	21	20	19	20	22	20	21
30	---	---	---	21	20	21	19	19	19	21	20	20
31	---	---	---	20	19	20	---	---	---	21	20	21
MONTH	22	14	19	23	18	21	21	13	19	22	16	19
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	21	21	21	22	21	21	26	24	26	26	25	25
2	21	21	21	22	21	21	26	25	26	26	25	26
3	21	20	21	22	21	22	26	25	26	26	25	26
4	21	20	21	22	21	22	26	25	26	26	25	26
5	22	21	21	22	21	22	26	25	26	26	26	26
6	22	21	21	23	22	22	26	24	25	27	26	26
7	22	21	22	23	22	23	25	24	25	26	25	26
8	22	21	22	23	22	23	26	25	25	26	25	26
9	23	22	22	23	22	23	26	25	25	27	25	26
10	23	22	23	23	22	23	25	24	25	26	25	26
11	23	22	22	24	23	23	25	24	25	26	25	26
12	23	22	22	24	23	24	25	24	25	27	25	26
13	22	21	22	24	23	24	26	25	25	25	24	25
14	22	21	21	24	23	24	26	25	25	25	24	25
15	22	21	22	24	23	24	26	25	26	26	25	25
16	22	21	22	25	24	24	26	25	26	26	25	25
17	22	21	22	24	23	24	27	25	26	26	25	26
18	23	22	22	24	24	24	27	25	26	26	25	26
19	23	22	23	25	23	24	27	26	26	26	25	26
20	22	18	19	25	24	24	27	26	26	26	25	25
21	19	18	19	25	24	25	27	26	26	26	25	25
22	20	19	19	25	24	25	27	25	26	26	25	25
23	20	19	20	26	25	25	26	25	26	26	25	25
24	21	20	20	26	25	26	26	25	26	26	25	26
25	21	19	20	25	24	25	26	24	24	26	25	26
26	20	19	20	26	25	25	25	24	25	27	26	26
27	21	19	20	26	25	26	25	24	25	26	25	26
28	21	20	21	26	25	26	26	24	25	26	25	26
29	22	20	21	26	25	26	27	26	26	26	25	26
30	21	20	20	26	25	26	27	26	26	26	26	26
31	---	---	---	26	26	26	27	25	26	---	---	---
MONTH	23	18	21	26	21	24	27	24	26	27	24	26
YEAR	30	11	21									

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PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

SANDY RIVER BASIN

14138870 FIR CREEK NEAR BRIGHTWOOD, OR--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		JUNE			JULY			AUGUST			SEPTEMBER	
1	7.3	7.2	7.3	---	---	---	6.7	6.5	6.6	6.3	6.2	6.3
2	7.3	7.2	7.2	---	---	---	6.6	6.5	6.5	6.3	6.2	6.2
3	7.3	7.1	7.2	---	---	---	6.6	6.5	6.5	6.2	6.1	6.2
4	7.3	7.1	7.2	---	---	---	6.6	6.5	6.5	6.2	6.1	6.1
5	7.3	7.1	7.2	---	---	---	6.7	6.4	6.6	6.2	6.0	6.1
6	7.3	7.2	7.2	---	---	---	6.7	6.4	6.6	6.1	6.0	6.1
7	7.3	7.1	7.2	---	---	---	6.6	6.4	6.6	6.2	6.1	6.1
8	7.4	7.2	7.3	---	---	---	6.7	6.5	6.6	6.2	6.0	6.1
9	7.4	7.2	7.3	---	---	---	6.8	6.6	6.7	6.2	6.1	6.2
10	7.4	7.2	7.3	---	---	---	6.8	6.5	6.7	6.3	6.1	6.2
11	7.4	7.2	7.3	---	---	---	6.8	6.5	6.7	6.3	6.1	6.2
12	7.4	7.3	7.3	---	---	---	6.8	6.6	6.7	7.0	6.2	6.6
13	7.4	7.2	7.3	---	---	---	6.8	6.5	6.6	7.1	7.0	7.1
14	7.3	7.2	7.3	---	---	---	6.8	6.5	6.7	7.1	7.0	7.1
15	7.4	7.2	7.3	---	---	---	6.8	6.5	6.7	7.3	7.1	7.2
16	7.4	7.2	7.3	---	---	---	6.7	6.6	6.7	---	---	---
17	7.4	7.2	7.3	---	---	---	6.9	6.6	6.8	---	---	---
18	7.4	7.2	7.3	---	---	---	6.9	6.6	6.8	---	---	---
19	7.4	7.2	7.3	7.3	7.2	7.3	7.2	7.0	7.0	---	---	---
20	7.3	7.0	7.1	7.3	7.2	7.3	7.2	7.1	7.2	---	---	---
21	7.2	7.0	7.1	7.3	7.2	7.3	7.2	7.0	7.1	---	---	---
22	7.2	7.1	7.1	7.3	7.2	7.3	7.1	6.9	7.1	---	---	---
23	7.3	7.1	7.2	7.3	7.2	7.3	7.2	7.0	7.0	---	---	---
24	7.2	7.1	7.2	7.3	7.1	7.2	7.1	7.0	7.1	---	---	---
25	7.3	7.1	7.2	7.3	7.1	7.2	7.1	6.9	7.0	---	---	---
26	7.3	7.1	7.2	7.1	7.0	7.1	7.0	6.8	6.9	---	---	---
27	7.3	7.1	7.2	7.0	6.9	7.0	6.8	6.7	6.8	---	---	---
28	7.2	7.1	7.2	6.9	6.8	6.9	6.8	6.6	6.7	---	---	---
29	7.3	7.1	7.2	6.9	6.8	6.8	6.6	6.5	6.6	---	---	---
30	7.2	6.9	7.1	6.8	6.7	6.8	6.6	6.5	6.5	---	---	---
31	---	---	---	6.7	6.6	6.7	6.5	6.3	6.4	---	---	---
MONTH	7.4	6.9	7.2	---	---	---	7.2	6.3	6.7	---	---	---

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
		OCTOBER			NOVEMBER			DECEMBER			JANUARY	
1	10.5	10.0	10.5	7.0	6.0	6.5	5.0	4.0	4.0	3.5	3.0	3.0
2	10.0	9.5	9.5	6.5	5.5	6.0	4.5	4.0	4.5	3.5	3.0	3.5
3	10.0	9.0	9.5	7.5	6.0	6.5	5.0	4.5	5.0	3.0	2.5	3.0
4	10.5	10.0	10.5	7.5	7.0	7.5	5.0	4.5	5.0	2.5	2.5	2.5
5	10.0	8.5	9.5	7.0	6.5	7.0	5.0	4.5	5.0	3.0	2.5	2.5
6	8.5	7.5	8.0	6.5	6.0	6.0	5.0	4.5	4.5	2.5	2.0	2.5
7	7.5	6.5	7.0	7.0	6.0	6.5	5.0	4.5	4.5	3.0	2.5	3.0
8	7.0	6.5	6.5	7.5	7.0	7.0	5.0	5.0	5.0	3.0	3.0	3.0
9	7.5	6.5	7.0	7.5	7.5	7.5	5.5	5.0	5.0	4.0	3.0	3.5
10	8.0	7.0	7.5	7.5	7.5	7.5	5.5	4.5	5.0	3.5	3.0	3.5
11	7.0	6.0	6.5	7.5	7.0	7.0	5.0	4.5	5.0	4.0	3.5	4.0
12	8.0	7.0	7.5	7.5	6.5	7.0	4.5	4.0	4.5	4.5	3.5	4.0
13	8.0	8.0	8.0	7.5	6.0	7.0	4.5	4.0	4.0	4.5	4.0	4.5
14	8.0	7.5	8.0	6.5	6.0	6.5	4.5	4.0	4.0	4.5	3.5	4.0
15	8.5	8.0	8.5	6.5	6.0	6.5	4.0	4.0	4.0	4.5	3.5	4.0
16	8.5	7.0	7.5	6.0	5.5	6.0	4.0	4.0	4.0	4.5	4.0	4.5
17	7.5	6.5	7.0	6.5	5.0	6.5	4.5	4.0	4.5	5.0	4.0	4.5
18	8.0	7.5	7.5	6.5	5.5	6.5	4.0	2.5	3.5	5.0	4.5	4.5
19	7.5	7.0	7.0	6.0	5.0	5.5	3.0	1.5	2.5	4.5	3.5	4.0
20	7.0	6.0	6.5	5.0	4.0	4.5	1.5	.5	1.0	4.0	3.5	3.5
21	8.0	7.0	7.5	5.5	4.5	5.0	.5	.0	.5	3.5	3.0	3.5
22	7.5	6.5	7.0	6.0	5.5	5.5	1.5	.5	1.0	3.5	3.0	3.0
23	7.5	7.0	7.0	6.5	6.0	6.0	1.5	.5	1.0	3.5	3.0	3.5
24	7.5	7.0	7.0	7.0	6.5	6.5	2.5	1.5	2.0	3.5	3.0	3.5
25	8.0	7.0	7.5	7.0	5.5	6.0	3.0	2.5	2.5	3.0	2.5	3.0
26	8.0	7.5	7.5	5.5	5.0	5.5	3.0	2.5	3.0	2.5	2.0	2.5
27	8.0	7.5	7.5	5.5	5.0	5.0	3.0	2.5	3.0	2.5	2.0	2.5
28	8.0	7.5	8.0	5.5	5.0	5.5	3.0	2.5	2.5	2.0	2.0	2.5
29	7.5	7.0	7.5	5.5	5.0	5.0	2.0	.5	2.0	2.5	2.0	2.5
30	7.5	7.5	7.5	5.0	4.5	4.5	2.0	1.0	1.5	2.5	2.0	2.5
31	7.5	7.0	7.0	---	---	---	3.0	2.0	2.5	3.0	2.5	3.0
MONTH	10.5	6.0	8.0	7.5	4.0	6.0	5.5	.0	3.5	5.0	2.0	3.5

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TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	3.0	3.5	6.0	5.5	5.5	5.0	4.5	4.5	6.5	5.0	5.5
2	4.0	3.5	4.0	5.5	5.0	5.5	4.5	4.0	4.5	6.5	5.0	6.0
3	4.0	3.5	4.0	5.5	5.0	5.5	4.5	4.0	4.5	6.5	5.0	5.5
4	4.5	4.0	4.0	5.5	4.0	4.5	4.5	4.0	4.0	7.0	5.5	6.0
5	4.5	4.0	4.0	4.0	3.5	4.0	4.5	3.5	4.0	6.5	6.0	6.5
6	4.5	4.0	4.0	3.5	2.5	3.5	4.0	3.5	4.0	6.5	6.0	6.5
7	5.0	4.0	4.5	4.0	3.5	4.0	4.0	3.0	3.5	6.0	5.5	6.0
8	5.0	4.0	4.5	4.5	4.0	4.0	4.5	3.5	4.0	5.5	4.5	5.0
9	4.5	4.0	4.5	4.5	3.5	4.0	4.0	3.0	3.5	5.0	4.5	4.5
10	5.0	4.0	4.5	4.0	3.5	3.5	3.5	3.0	3.5	5.0	4.5	5.0
11	5.0	4.5	5.0	4.0	3.0	3.5	4.5	3.5	4.0	5.5	5.0	5.5
12	5.0	4.5	5.0	4.0	3.5	4.0	5.0	3.5	4.0	5.5	5.5	5.5
13	5.0	4.5	4.5	4.5	4.0	4.0	5.0	4.0	4.5	5.5	5.5	5.5
14	5.5	4.5	5.0	4.0	3.5	4.0	4.5	4.0	4.5	6.0	5.0	5.5
15	5.5	5.0	5.5	4.0	3.5	4.0	5.0	4.0	4.5	6.5	5.0	6.0
16	5.5	4.5	5.0	4.0	3.5	4.0	5.5	4.5	5.0	7.0	6.0	6.5
17	5.0	4.0	4.5	4.5	3.5	4.0	5.5	4.5	5.0	6.5	5.5	6.0
18	5.0	4.0	4.5	4.5	4.0	4.0	6.0	4.5	5.0	5.5	5.0	5.5
19	5.5	5.0	5.0	4.5	3.5	4.0	6.0	4.5	5.5	6.0	5.5	5.5
20	5.5	5.0	5.0	4.5	3.5	4.0	6.5	5.0	6.0	6.5	5.5	6.0
21	5.5	5.0	5.0	4.5	4.0	4.0	6.0	5.5	6.0	6.5	6.0	6.5
22	5.5	5.0	5.0	4.0	3.0	3.5	6.5	5.5	6.0	7.0	6.0	6.5
23	5.0	4.5	5.0	4.5	3.5	4.0	5.5	5.0	5.5	7.5	5.5	6.5
24	5.5	4.5	5.0	4.5	3.5	4.0	5.5	3.5	4.5	7.0	6.5	6.5
25	5.5	5.0	5.5	4.0	3.0	3.5	4.5	3.5	4.0	6.5	6.0	6.0
26	5.5	5.0	5.5	4.0	3.5	4.0	4.5	3.5	4.0	6.5	6.0	6.0
27	5.5	5.0	5.5	4.5	3.0	4.0	4.5	3.5	4.5	6.5	6.0	6.0
28	5.5	4.5	5.0	4.5	4.0	4.0	4.5	4.0	4.5	6.5	6.0	6.5
29	---	---	---	5.0	3.5	4.0	5.0	4.0	4.5	6.5	6.0	6.5
30	---	---	---	5.5	3.5	4.5	6.0	4.5	5.0	6.0	5.5	6.0
31	---	---	---	5.5	4.0	5.0	---	---	---	7.5	6.0	6.5
MONTH	5.5	3.0	4.5	6.0	2.5	4.0	6.5	3.0	4.5	7.5	4.5	6.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	8.5	6.0	7.5	10.5	8.0	9.5	12.5	11.0	12.0	11.5	10.5	11.0
2	9.0	7.0	8.0	12.0	9.0	10.5	12.5	11.0	12.0	11.5	10.0	11.0
3	7.5	6.0	7.0	12.5	10.5	11.5	13.0	11.0	12.0	12.0	10.5	11.5
4	7.0	5.5	6.0	12.0	10.0	11.0	13.0					

SANDY RIVER BASIN

14138870 FIR CREEK NEAR BRIGHTWOOD, OR--Continued

TURBIDITY (NTU), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	---	---	.28	.27	.21	.21	.37	.22	.37	.22	.40	.21
2	---	---	.36	.28	.21	.21	.22	.21	.91	.30	.55	.27
3	---	---	.58	.29	.21	.21	.22	.21	1.2	.37	.41	.27
4	1.9	.14	.73	.21	.51	.21	.28	.21	1.5	.37	.55	.27
5	.72	.27	.36	.21	.29	.21	.28	.21	1.1	.37	.34	.26
6	.27	.20	.29	.29	.21	.21	.28	.21	.45	.37	.34	.26
7	.20	.20	.36	.29	.21	.21	.37	.28	.37	.30	.33	.26
8	.21	.20	.29	.21	.21	.21	.29	.22	.30	.22	.26	.26
9	.21	.14	.29	.21	1.0	.21	.75	.22	.30	.30	.26	.19
10	.21	.20	.36	.21	1.0	.44	1.6	.51	.30	.22	.26	.19
11	.21	.13	.29	.21	.36	.21	.98	.51	.30	.22	.26	.26
12	1.6	.36	.21	.21	.21	.20	5.3	.67	1.1	.30	.26	.26
13	.57	.21	1.3	.21	.21	.21	1.1	.67	2.1	.91	.26	.19
14	.28	.27	.36	.20	.21	.21	3.8	.51	.84	.45	.26	.19
15	1.4	.28	.29	.29	.21	.20	9.4	1.1	.37	.30	.26	.19
16	.49	.35	.29	.21	.22	.21	1.2	.68	.37	.30	.26	.19
17	.57	.27	.36	.21	3.8	.21	.60	.44	.37	.30	.26	.19
18	1.4	.35	.21	.21	2.5	.29	.45	.44	.69	.30	.26	.18
19	.35	.27	.29	.21	.28	.20	.45	.37	.53	.30	.18	.18
20	.27	.27	.21	.21	---	---	.37	.37	2.4	.38	.25	.18
21	1.9	.27	.73	.29	---	---	.44	.28	.77	.38	.25	.18
22	.65	.35	.88	.51	---	---	.37	.29	.38	.38	.25	.11
23	.35	.27	.51	.29	---	---	.37	.28	.38	.38	.25	.18
24	.28	.27	5.5	.29	---	---	.29	.22	.30	.30	.25	.25
25	1.2	.20	8.9	.88	---	---	.37	.21	.38	.30	.25	.18
26	.73	.27	.81	.43	---	---	.30	.28	.30	.30	.25	.18
27	.36	.21	.44	.29	---	---	.30	.29	.30	.22	.25	.18
28	.35	.21	.29	.29	---	---	.30	.22	.22	.22	.25	.18
29	.35	.21	.95	.29	---	---	.36	.21	---	---	.25	.18
30	.50	.28	.29	.21	---	---	.30	.29	---	---	.24	.17
31	.43	.28	---	---	---	---	.30	.22	---	---	.31	.17
MONTH	---	---	8.9	.20	---	---	9.4	.21	2.4	.22	.55	.11
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	.31	.24	.29	.15	.26	.19	.19	.19	.26	.12	.26	.12
2	.31	.24	.22	.15	.26	.19	.25	.19	.13	.12	.13	.12
3	.52	.24	.22	.14	.19	.19	.25	.19	.13	.13	.13	.12
4	1.6	.45	.21	.14	.19	.19	.19	.18	.13	.12	.13	.13
5	3.3	.45	.21	.14	.19	.19	.19	.18	.13	.13	.13	.13
6	.59	.37	.28	.14	.19	.19	.19	.18	.13	.13	.13	.12
7	.45	.30	1.3	.21	.19	.19	.19	.18	.13	.13	.13	.12
8	.80	.37	.57	.21	.19	.19	.19	.18	.13	.13	.12	.12
9	2.3	.44	.28	.20	.26	.19	.19	.18	.19	.13	.13	.12
10	.37	.31	.27	.26	.26	.19	.19	.18	.13	.12	.13	.12
11	.36	.29	.27	.20	.25	.18	.19	.18	.19	.12	.13	.12
12	.37	.16	.27	.20	.25	.18	.19	.19	.13	.12	.19	.12
13	.30	.23	.27	.27	.32	.18	.19	.19	.13	.13	.19	.12
14	.37	.30	.27	.20	.25	.19	.19	.18	.13	.12	.12	.12
15	.30	.23	.27	.20	.19	.18	.18	.12	.13	.13	.13	.12
16	.30	.23	.27	.20	.25	.18	.32	.12	.13	.13	.13	.12
17	.23	.23	.48	.34	.26	.18	.24	.18	.13	.13	.13	.13
18	.23	.23	.61	.27	.19	.19	.12	.11	.20	.13	.13	.13
19	.23	.23	.34	.27	.38	.19	.12	.12	.13	.13	.13	.13
20	.23	.23	.27	.27	.78	.31	.13	.12	.13	.13	.12	.12
21	.23	.23	.27	.20	.31	.25	.19	.12	.13	.13	.12	.12
22	.23	.15	.27	.20	.26	.25	.13	.13	.13	.13	.13	.12
23	.29	.22	.27	.20	.26	.19	.13	.13	.13	.12	.13	.12
24	.29	.22	.27	.20	.26	.18	.13	.13	.13	.12	.13	.12
25	.22	.15	.27	.20	.26	.19	.13	.12	.13	.12	.13	.12
26	.43	.15	.27	.20	.26	.19	.13	.12	.13	.12	.13	.13
27	.36	.22	.26	.20	.19	.18	.13	.13	.33	.12	.13	.12
28	.29	.22	.25	.20	.19	.19	.13	.13	.47	.19	.12	.12
29	.22	.15	.33	.19	.26	.19	.13	.13	.19	.12	.13	.12
30	.22	.22	.26	.18	.19	.19	.13	.13	.13	.13	.13	.12
31	---	---	.20	.19	---	---	.13	.13	.26	.13	---	---
MONTH	3.3	.15	1.3	.14	.78	.18	.32	.11	.47	.12	.26	.12

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.

GAGE.--Water-stage recorder. Elevation of gage is 1,060 ft, 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.--Water-discharge records good except those above 400 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.--26 years, 74.9 ft³/s, 122.25 in/yr, 54,270 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 (*), from rating curve extended above 250 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0200	1,140	6.47	Jan. 15	0230	*1,210	*6.54
Jan. 12	1430	917	6.19				

Minimum discharge, 11 ft³/s Oct. 1, and several days during September.

REVISIONS.--Revised daily discharges, in cubic feet per second, for Oct. 16-31, 1975 are given below. These figures supersede those published in the report for 1976.

Oct. 16... 30	18... 44	20... 50	22... 106	24... 66	26... 234	28... 122	30... 190
17... 30	19... 67	21... 126	23... 80	25... 280	27... 151	29... 113	31... 124
OCTOBER 1975		TOTAL	MEAN	MAX	MIN	CFSM	IN
WTR YR 1976		2494	80.5	280	16	9.67	11.15
CAL YR 1975		36269	99.1	1410	13	11.9	162.16
		38502	105	1410	16	12.7	172.15

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	110	89	63	40	48	57	63	45	31	15	18
2	12	79	79	50	70	102	62	58	42	29	15	15
3	32	95	76	43	100	104	65	53	39	28	15	14
4	22	216	105	39	134	138	171	49	37	27	15	14
5	45	166	104	36	204	93	355	49	35	25	15	13
6	24	100	83	34	116	77	203	82	37	25	15	13
7	19	97	72	58	83	71	133	118	33	24	15	13
8	17	94	67	76	68	77	117	181	32	23	14	13
9	16	91	126	72	61	72	253	128	30	22	15	13
10	17	93	218	256	54	65	132	97	29	22	16	12
11	15	77	151	299	53	59	99	79	28	21	15	12
12	48	66	102	588	109	71	92	77	32	21	14	12
13	58	141	82	434	334	66	86	70	42	21	14	13
14	50	133	71	516	220	59	98	62	38	20	14	13
15	100	104	62	572	125	53	90	55	33	20	14	12
16	88	76	55	226	106	48	79	51	36	21	14	12
17	61	84	148	143	110	47	70	107	33	22	13	12
18	138	73	258	105	114	48	65	151	30	20	13	11
19	83	64	109	83	203	48	61	105	29	19	14	11
20	59	66	76	70	358	46	59	86	86	19	13	11
21	169	126	e60	61	203	49	58	70	67	18	13	11
22	120	309	e55	55	118	51	54	62	54	18	13	11
23	74	210	e50	50	86	53	52	54	46	18	13	11
24	55	267	e45	46	70	58	71	54	42	17	13	11
25	79	639	e40	42	60	53	65	59	41	18	13	11
26	120	206	e45	39	53	47	75	54	39	17	13	11
27	70	148	e68	37	49	44	105	48	35	17	13	11
28	89	100	56	35	46	44	84	45	33	16	29	11
29	73	115	44	32	---	43	76	50	37	16	19	11
30	147	98	37	31	---	47	68	60	34	16	16	11
31	191	---	44	38	---	53	---	49	---	16	15	---
TOTAL	2103	4243	2677	4229	3347	1934	3055	2326	1174	647	458	367
MEAN	67.8	141	86.4	136	120	62.4	102	75.0	39.1	20.9	14.8	12.2
MAX	191	639	258	588	358	138	355	181	86	31	29	18
MIN	12	64	37	31	40	43	52	45	28	16	13	11
AC-FT	4170	8420	5310	8390	6640	3840	6060	4610	2330	1280	908	728
CFSM	8.15	17.0	10.4	16.4	14.4	7.50	12.2	9.02	4.70	2.51	1.78	1.47
IN.	9.40	18.97	11.97	18.91	14.96	8.65	13.66	10.40	5.25	2.89	2.05	1.64

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1965 - 1991, BY WATER YEAR (WY)

	43.0	105	128	137	110	89.1	87.9	77.4	51.4	26.1	18.3	25.4
MEAN	43.0	105	128	137	110	89.1	87.9	77.4	51.4	26.1	18.3	25.4
MAX	88.2	199	285	309	216	200	135	137	111	62.7	35.2	54.4
(WY)	1969	1974	1976	1975	1982	1972	1990	1972	1974	1983	1968	1977
MIN	9.08	27.9	33.4	32.1	40.4	40.8	49.5	33.4	18.4	13.7	11.2	10.9
(WY)	1988	1977	1977	1979	1977	1978	1967	1987	1979	1977	1987	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1965 - 1991

	28768	26560	74.8
ANNUAL TOTAL	28768	26560	74.8
ANNUAL MEAN	78.8	72.8	
HIGHEST ANNUAL MEAN			121
LOWEST ANNUAL MEAN			46.1
HIGHEST DAILY MEAN	639	639	1910
LOWEST DAILY MEAN	12	11	8.6
ANNUAL SEVEN-DAY MINIMUM	13	11	8.7
ANNUAL RUNOFF (AC-FT)	57060	52680	54180
ANNUAL RUNOFF (CFSM)	9.47	8.75	8.99
ANNUAL RUNOFF (INCHES)	128.63	118.75	122.14
10 PERCENT EXCEEDS	148	139	151
50 PERCENT EXCEEDS	66	53	48
90 PERCENT EXCEEDS	16	13	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 current year.

WATER TEMPERATURE: October 1978 to current year.

TURBIDITY: August 1990 to September 1991.

SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1986.

INSTRUMENTATION.--Water-quality monitor, turbidimeter with data recording interval dependent upon river stage.

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, 9 microsiemens Dec. 25, 1980, Jan. 6, 1983, Feb. 23, 1986.

pH: Maximum recorded, 9.8 units Jan. 13, 1981 (cement spill); minimum recorded, 6.3 units June 19, 1981.

WATER TEMPERATURE: Maximum, 14.5°C Aug. 28, 1988; minimum, 0.0°C on several days during winter periods.

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 recorded, 46 microsiemens Sept. 24; minimum recorded, 12 microsiemens Nov. 24, 25, Jan. 15.

pH: Maximum recorded, 8.0 units several days in September; minimum recorded, 6.6 units Nov. 22, 24, 25, Jan. 12, 14, 15, but may have been lower during period of missing record.

WATER TEMPERATURE: Maximum, 13.5°C July 3, Aug. 18-20; minimum, 0.0°C on several days in December.

TURBIDITY: Maximum recorded, 25 NTU Nov. 24; minimum recorded, 0.07 NTU Dec. 16.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER				NOVEMBER			DECEMBER			JANUARY		
1	45	43	45	19	17	18	21	19	20	25	24	25
2	45	43	44	20	19	20	21	20	21	27	25	26
3	44	34	39	21	18	20	22	21	21	28	27	27
4	42	36	40	18	15	16	22	19	20	29	28	28
5	36	32	34	17	16	16	21	20	20	29	28	29
6	38	36	37	19	17	18	22	21	21	29	28	29
7	39	38	38	20	18	19	22	21	22	29	23	26
8	40	39	40	20	19	19	23	22	23	24	22	23
9	41	40	40	20	19	19	23	17	21	24	20	23
10	41	39	40	20	19	20	18	17	17	20	15	17
11	41	40	41	21	20	20	19	17	18	17	15	16
12	41	30	33	22	21	21	20	19	19	15	13	14
13	33	29	31	22	16	20	21	20	21	15	14	15
14	31	28	30	18	16	18	23	21	22	16	13	14
15	28	24	25	19	18	19	24	23	24	15	12	14
16	25	24	24	22	21	21	25	24	25	17	15	16
17	27	25	26	22	20	21	25	16	22	18	17	18
18	26	21	22	22	21	21	19	16	17	20	18	19
19	24	22	23	23	22	22	21	19	20	21	19	20
20	26	24	25	23	22	22	21	18	20	22	21	21
21	26	19	22	22	18	21	21	20	21	23	22	22
22	22	19	21	18	16	16	25	21	23	24	23	23
23	24	22	23	17	16	17	25	24	25	25	24	24
24	---	---	---	18	12	17	27	25	26	25	25	25
25	---	---	---	15	12	14	27	26	26	26	25	26
26	21	18	19	17	15	16	27	24	26	27	26	27
27	22	21	21	18	17	18	24	23	24	28	27	27
28	22	20	21	20	18	19	26	24	25	28	27	28
29	22	20	21	21	18	19	27	26	26	29	28	29
30	22	18	19	20	18	20	28	27	27	29	29	29
31	18	16	17	---	---	---	28	25	28	30	26	28
MONTH	---	---	---	23	12	19	28	16	22	30	12	23

SANDY RIVER BASIN

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

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	25	24	25	31	29	30	40	38	39	41	39	39
2	26	25	25	33	29	31	41	39	40	42	40	41
3	27	25	26	33	31	32	41	39	40	42	41	41
4	28	26	26	33	31	32	41	39	40	43	41	42
5	28	27	27	36	31	32	40	39	40	43	41	42
6	28	27	27	36	32	33	40	39	40	43	41	42
7	29	28	28	36	32	34	41	40	40	43	41	42
8	30	28	29	35	33	34	41	40	40	42	41	41
9	31	29	30	38	33	34	41	40	41	42	41	42
10	32	30	31	35	33	34	41	39	40	43	42	42
11	33	31	32	36	34	35	42	40	41	43	41	42
12	33	30	32	36	34	35	42	41	41	43	42	42
13	31	27	29	37	35	35	42	41	41	43	41	42
14	30	27	29	36	34	35	42	40	41	43	41	42
15	32	29	30	37	35	36	42	40	41	43	41	42
16	31	28	29	38	36	37	42	40	41	43	42	43
17	32	28	29	41	35	37	42	41	42	44	42	43
18	34	30	31	41	37	38	42	41	41	44	42	43
19	36	29	33	42	36	37	42	41	41	44	43	43
20	29	20	22	39	36	38	42	41	42	43	42	43
21	23	20	21	39	37	38	42	41	42	43	42	42
22	25	23	24	40	38	39	43	42	42	45	42	42
23	28	24	25	40	38	39	42	41	42	43	42	43
24	26	25	26	41	38	39	42	41	42	46	42	43
25	27	26	27	39	37	38	42	41	41	44	42	43
26	30	26	27	39	38	38	42	41	42	44	43	43
27	29	27	28	40	38	39	42	41	42	44	42	43
28	29	28	28	40	39	39	41	35	37	45	43	43
29	29	27	28	40	39	40	40	38	39	44	43	44
30	33	28	29	41	40	40	41	40	41	45	43	44
31	---	---	---	41	39	40	42	40	41	---	---	---
MONTH	36	20	28	42	29	36	43	35	41	46	39	42

SANDY RIVER BASIN

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

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.4	7.3	7.2	---	---	---	6.9	6.8	6.9	7.3	7.2	7.3
2	7.4	7.3	7.3	---	---	---	7.1	6.9	7.0	7.4	7.3	7.3
3	7.6	7.2	7.4	---	---	---	7.1	7.0	7.0	7.4	7.3	7.4
4	7.6	7.4	7.5	---	---	---	7.1	6.8	7.0	7.4	7.3	7.4
5	7.6	7.2	7.4	---	---	---	6.9	6.8	6.9	7.4	7.3	7.4
6	7.6	7.3	7.4	---	---	---	7.0	6.9	6.9	7.4	7.4	7.4
7	7.5	7.4	7.4	---	---	---	7.0	7.0	7.0	7.4	7.3	7.4
8	7.5	7.3	7.4	---	---	---	7.1	7.0	7.0	7.4	7.2	7.3
9	7.4	7.3	7.3	---	---	---	7.1	6.7	6.9	7.4	7.1	7.3
10	7.5	7.3	7.4	---	---	---	6.8	6.7	6.7	7.1	6.8	7.0
11	7.4	7.2	7.3	---	---	---	6.9	6.8	6.8	6.9	6.8	6.9
12	7.4	7.2	7.3	---	---	---	7.0	6.8	6.9	6.9	6.6	6.8
13	7.4	7.2	7.3	---	---	---	7.0	6.9	7.0	7.0	6.7	6.9
14	7.4	7.1	7.3	---	---	---	7.2	7.0	7.1	7.0	6.6	6.9
15	7.2	7.0	7.1	---	---	---	7.2	7.1	7.2	7.0	6.6	6.8
16	7.3	7.1	7.2	7.1	6.9	7.0	7.2	7.2	7.2	7.2	7.0	7.1
17	7.4	7.2	7.3	7.1	7.0	7.1	7.2	6.7	7.1	7.3	7.2	7.3
18	7.4	7.1	7.2	7.2	7.0	7.1	6.9	6.7	6.8	7.4	7.3	7.3
19	7.3	7.1	7.3	7.2	7.1	7.1	7.0	6.9	7.0	7.5	7.4	7.4
20	7.4	7.2	7.3	7.2	7.1	7.1	7.2	7.0	7.1	7.5	7.4	7.4
21	7.4	7.0	7.2	7.1	6.8	7.0	7.2	7.1	7.2	7.5	7.4	7.4
22	7.3	7.1	7.2	6.8	6.6	6.7	7.2	7.1	7.1	7.5	7.5	7.5
23	7.4	7.2	7.3	6.9	6.7	6.8	7.2	7.1	7.1	7.5	7.5	7.5
24	7.4	7.2	7.3	7.1	6.6	6.9	7.2	7.1	7.1	7.5	7.5	7.5
25	---	---	---	6.8	6.6	6.7	7.2	7.1	7.2	7.5	7.5	7.5
26	---	---	---	6.9	6.8	6.9	7.2	7.1	7.2	7.5	7.5	7.5
27	---	---	---	7.0	6.9	6.9	7.3	7.1	7.2	7.6	7.5	7.5
28	---	---	---	7.0	6.9	6.9	7.4	7.3	7.3	7.6	7.5	7.6
29	---	---	---	7.0	6.8	6.9	7.4	7.3	7.3	7.6	7.5	7.6
30	---	---	---	6.9	6.8	6.9	7.3	7.2	7.3	7.6	7.6	7.6
31	---	---	---	---	---	---	7.3	7.2	7.3	7.6	7.5	7.5
MONTH	---	---	---	---	---	---	7.4	6.7	7.1	7.6	6.6	7.3
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.6	7.5	7.5	7.7	7.7	7.7	---	---	---	7.4	7.3	7.4
2	7.6	7.4	7.5	7.7	7.4	7.5	---	---	---	7.5	7.3	7.4
3	7.5	7.4	7.4	7.5	7.4	7.4	---	---	---	7.5	7.3	7.4
4	7.5	7.3	7.4	7.4	7.3	7.4	---	---	---	7.5	7.4	7.4
5	7.3	7.2	7.2	7.4	7.4	7.4	---	---	---	7.5	7.4	7.4
6	7.4	7.3	7.3	7.5	7.4	7.5	---	---	---	7.4	7.3	7.3
7	7.5	7.4	7.4	7.6	7.5	7.5	---	---	---	7.4	7.2	7.3
8	7.5	7.4	7.5	7.6	7.5	7.6	---	---	---	7.2	7.1	7.2
9	7.5	7.4	7.5	7.6	7.5	7.6	---	---	---	7.3	7.2	7.2
10	7.5	7.4	7.5	---	---	---	---	---	---	7.3	7.2	7.3
11	7.6	7.4	7.5	---	---	---	---	---	---	7.4	7.2	7.3
12	7.5	7.2	7.4	---	---	---	---	---	---	7.4	7.3	7.3
13	7.3	7.1	7.2	---	---	---	7.4	7.3	7.3	7.4	7.3	7.4
14	7.3	7.2	7.3	---	---	---	7.3	7.2	7.3	7.4	7.3	7.4
15	7.4	7.3	7.3	---	---	---	7.3	7.2	7.3	7.4	7.3	7.4
16	7.5	7.4	7.4	---	---	---	7.4	7.2	7.3	7.4	7.3	7.4
17	7.5	7.4	7.5	---	---	---	7.4	7.2	7.3	7.4	7.1	7.2
18	7.5	7.4	7.5	---	---	---	7.4	7.2	7.3	7.2	7.1	7.1
19	7.4	7.3	7.3	---	---	---	7.4	7.3	7.3	7.2	7.1	7.2
20	7.4	7.2	7.2	---	---	---	7.4	7.3	7.4	7.2	7.1	7.2
21	7.4	7.3	7.3	---	---	---	7.4	7.3	7.4	7.3	7.1	7.2
22	7.5	7.4	7.4	---	---	---	7.4	7.0	7.2	7.3	7.2	7.3
23	7.5	7.4	7.5	---	---	---	7.4	7.2	7.3	7.3	7.2	7.3
24	7.6	7.5	7.5	---	---	---	7.4	7.2	7.3	7.4	7.2	7.3
25	7.6	7.5	7.6	---	---	---	7.4	7.2	7.3	7.3	7.2	7.3
26	7.7	7.6	7.6	---	---	---	7.4	7.2	7.3	7.4	7.2	7.3
27	7.7	7.7	7.7	---	---	---	7.3	7.2	7.2	7.4	7.3	7.3
28	7.7	7.7	7.7	---	---	---	7.4	7.2	7.3	7.4	7.3	7.3
29	---	---	---	---	---	---	7.4	7.3	7.3	7.4	7.2	7.3
30	---	---	---	---	---	---	7.4	7.3	7.3	7.4	7.2	7.3
31	---	---	---	---	---	---	---	---	---	7.4	7.2	7.3
MONTH	7.7	7.1	7.4	---	---	---	---	---	---	7.5	7.1	7.3

SANDY RIVER BASIN

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

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.4	7.2	7.3	7.3	7.1	7.2	7.7	7.4	7.5	7.9	7.7	7.8
2	7.4	7.3	7.3	7.3	7.1	7.2	7.7	7.4	7.5	7.9	7.6	7.7
3	7.4	7.3	7.3	7.4	7.2	7.3	7.7	7.4	7.5	7.9	7.6	7.7
4	7.4	7.3	7.3	7.5	7.3	7.3	7.7	7.4	7.5	7.8	7.5	7.7
5	7.4	7.3	7.3	7.5	7.3	7.4	7.7	7.4	7.5	7.8	7.5	7.6
6	7.4	7.3	7.3	7.5	7.2	7.3	7.7	7.4	7.5	7.8	7.6	7.7
7	7.5	7.3	7.4	7.4	7.2	7.3	7.7	7.4	7.5	7.9	7.5	7.7
8	7.5	7.4	7.4	7.4	7.2	7.3	7.7	7.3	7.5	8.0	7.7	7.9
9	7.5	7.3	7.4	7.5	7.2	7.3	7.6	7.4	7.5	8.0	7.7	7.8
10	7.5	7.3	7.4	7.5	7.2	7.3	7.8	7.5	7.6	7.9	7.6	7.8
11	7.5	7.4	7.5	7.4	7.1	7.3	7.8	7.5	7.6	8.0	7.7	7.8
12	7.5	7.4	7.5	7.4	7.1	7.3	7.8	7.5	7.6	7.9	7.7	7.8
13	7.5	7.4	7.4	7.4	7.1	7.3	7.8	7.5	7.6	8.0	7.7	7.8
14	7.5	7.3	7.4	7.4	7.1	7.3	7.7	7.4	7.6	8.0	7.7	7.8
15	7.5	7.3	7.4	7.5	7.2	7.3	7.8	7.4	7.6	7.9	7.7	7.8
16	7.5	7.3	7.4	7.5	7.2	7.4	7.8	7.5	7.6	7.9	7.6	7.8
17	7.5	7.3	7.4	7.5	7.3	7.4	7.8	7.5	7.6	7.9	7.5	7.7
18	7.4	7.3	7.4	7.6	7.3	7.4	7.8	7.5	7.6	7.9	7.5	7.7
19	7.5	7.2	7.4	7.6	7.3	7.4	7.9	7.4	7.6	7.9	7.6	7.7
20	7.4	7.3	7.3	7.6	7.3	7.4	7.8	7.4	7.6	8.0	7.7	7.9
21	7.4	7.2	7.3	7.6	7.3	7.4	7.8	7.4	7.6	8.0	7.7	7.9
22	7.4	7.3	7.3	7.6	7.2	7.4	7.8	7.4	7.6	8.0	7.7	7.9
23	7.4	7.2	7.3	7.6	7.2	7.4	7.9	7.5	7.7	8.0	7.6	7.8
24	7.4	7.2	7.3	7.6	7.2	7.4	7.9	7.6	7.7	7.8	7.5	7.7
25	7.4	7.2	7.3	7.6	7.3	7.4	7.9	7.6	7.7	7.8	7.5	7.6
26	7.4	7.3	7.4	7.6	7.3	7.4	7.9	7.6	7.7	7.9	7.6	7.7
27	7.4	7.2	7.3	7.6	7.3	7.4	7.9	7.6	7.7	8.0	7.6	7.8
28	7.4	7.2	7.3	7.7	7.3	7.4	7.8	7.6	7.7	8.0	7.7	7.8
29	7.4	7.2	7.3	7.7	7.3	7.5	7.9	7.5	7.7	8.0	7.6	7.8
30	7.4	7.2	7.3	7.7	7.4	7.5	7.9	7.6	7.7	7.9	7.6	7.8
31	---	---	---	7.7	7.4	7.5	7.9	7.6	7.7	---	---	---
MONTH	7.5	7.2	7.4	7.7	7.1	7.4	7.9	7.3	7.6	8.0	7.5	7.8

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	9.5	8.5	9.0	7.0	6.0	6.5	4.0	3.0	3.5	2.5	2.0	2.5
2	9.0	8.0	8.5	6.0	5.5	6.0	4.0	3.5	3.5	3.0	2.5	2.5
3	10.5	8.0	9.0	7.5	6.0	6.5	4.5	4.0	4.0	2.5	2.0	2.5
4	10.5	9.0	10.0	8.5	7.5	8.0	4.5	3.5	4.0	2.5	1.5	2.0
5	10.5	8.5	9.5	7.5	6.5	7.0	4.5	4.0	4.5	2.0	1.5	2.0
6	9.5	7.5	8.5	7.0	5.5	6.0	4.5	4.0	4.0	2.0	1.5	2.0
7	8.0	6.5	7.5	7.5	6.0	6.5	4.5	3.5	4.0	2.5	2.0	2.5
8	8.0	6.5	7.5	8.0	7.5	7.5	5.0	4.0	4.5	3.0	2.5	2.5
9	8.5	7.0	8.0	8.5	8.0	8.0	5.0	4.5	4.5	3.0	2.0	3.0
10	8.5	7.5	8.0	8.5	8.0	8.5	5.0	4.0	4.5	3.0	2.0	2.5
11	8.0	6.5	7.0	8.0	7.0	7.5	4.0	3.5	4.0	3.5	3.0	3.0
12	9.0	7.0	8.0	8.0	7.0	7.5	4.0	3.5	3.5	3.5	3.0	3.0
13	9.0	8.0	8.5	8.0	6.0	7.5	3.5	3.0	3.5	4.0	3.0	3.5
14	9.0	7.5	8.0	6.5	6.0	6.5	4.0	3.5	3.5	4.0	3.5	4.0
15	9.5	8.0	9.0	7.0	6.0	6.5	4.0	3.5	3.5	4.0	3.5	3.5
16	9.0	7.5	8.5	6.5	5.5	6.0	3.5	3.0	3.5	4.5	3.5	4.0
17	8.5	7.0	7.5	6.5	6.0	6.0	4.5	3.5	4.0	5.0	4.0	4.5
18	8.5	7.5	8.0	6.5	5.5	6.0	4.0	2.0	3.0	4.5	4.0	4.5
19	8.0	7.0	7.5	5.5	4.5	5.0	2.0	.0	1.0	4.5	3.0	4.0
20	8.5	6.5	7.0	4.5	4.0	4.0	.0	.0	.0	3.5	2.5	3.0
21	9.0	7.0	8.0	5.0	4.5	5.0	.0	.0	.0	3.0	2.5	3.0
22	8.5	7.0	7.5	5.5	4.5	5.0	.5	.0	.0	3.0	2.5	2.5
23	9.0	7.0	8.0	6.5	5.5	6.0	.5	.0	.5	3.0	2.5	3.0
24	8.5	7.0	8.0	7.5	6.5	7.0	1.5	.5	1.0	3.5	2.5	3.0
25	8.5	7.5	8.0	7.5	5.0	6.0	2.0	1.0	1.5	3.0	2.0	2.5
26	8.5	7.5	8.0	5.0	4.5	5.0	2.5	1.5	2.0	2.5	2.0	2.0
27	8.5	7.5	8.0	5.0	4.5	5.0	2.5	2.0	2.5	2.5	1.5	2.0
28	8.5	8.0	8.0	5.5	4.5	5.0	2.0	.5	2.0	2.5	2.0	2.5
29	8.5	7.5	8.0	5.5	4.0	4.5	.5	.0	.0	2.5	1.5	2.0
30	8.5	8.0	8.0	4.5	4.0	4.0	1.5	.0	1.0	2.5	1.5	2.0
31	8.0	7.0	7.5	---	---	---	2.5	1.5	2.0	3.0	2.5	2.5
MONTH	10.5	6.5	8.0	8.5	4.0	6.0	5.0	.0	2.5	5.0	1.5	3.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.0	3.0	3.5	6.0	5.5	6.0	6.0	5.5	5.5	7.5	5.5	6.5
2	4.0	3.5	4.0	5.5	5.0	5.5	5.5	5.0	5.0	7.0	6.0	7.0
3	4.0	3.5	4.0	5.5	4.5	5.0	5.0	4.5	4.5	7.0	6.0	6.5
4	4.5	4.0	4.0	5.5	3.5	4.5	5.0	4.5	4.5	8.5	6.0	7.0
5	4.5	3.5	4.0	3.5	2.5	3.0	5.0	4.0	4.5	7.5	7.0	7.5
6	4.5	3.5	4.0	3.0	1.5	2.5	4.0	3.0	4.0	7.5	7.0	7.5
7	5.0	3.5	4.5	3.5	3.0	3.5	3.5	2.5	3.0	7.5	6.5	7.0
8	5.0	4.0	4.5	4.5	3.5	4.0	4.0	3.0	3.5	6.5	5.0	5.5
9	5.0	4.0	4.5	4.5	3.0	4.0	4.0	3.0	3.5	5.5	4.5	5.0
10	5.0	4.0	4.5	4.0	3.0	3.5	3.5	2.0	3.0	6.0	5.5	5.0
11	5.0	4.5	5.0	3.5	3.0	3.5	5.0	3.0	4.0	6.0	5.5	6.0
12	5.0	4.5	5.0	4.0	3.0	3.5	5.5	3.5	4.5	6.5	6.0	6.5
13	5.5	5.0	5.5	4.5	3.0	3.5	6.0	4.0	5.0	6.5	6.0	6.5
14	6.5	5.0	6.0	4.0	3.5	4.0	5.5	4.5	5.0	7.0	5.5	6.0
15	6.0	5.5	6.0	4.0	3.5	4.0	5.0	4.5	4.5	7.5	5.5	6.5
16	6.0	5.0	5.5	4.5	3.0	4.0	6.0	4.5	5.0	8.0	6.5	7.0
17	5.0	4.0	4.5	5.0	3.5	4.0	6.0	5.5	5.5	7.5	6.0	7.0
18	5.5	4.5	4.5	4.5	4.0	4.5	7.0	5.0	6.0	6.0	5.5	6.0
19	6.0	5.5	5.5	5.0	3.5	4.0	7.5	5.5	6.5	6.0	6.0	6.0
20	6.0	5.5	5.5	4.0	2.5	3.5	8.0	6.0	7.0	7.5	5.0	6.0
21	6.5	5.5	6.0	4.0	3.5	3.5	7.5	6.5	7.0	5.0	4.5	4.5
22	6.0	5.0	5.5	3.5	2.5	3.0	7.5	6.5	7.0	7.0	4.0	5.5
23	5.5	4.5	5.0	4.0	3.0	3.5	6.5	6.0	6.0	8.5	5.5	7.0
24	5.5	4.5	5.0	4.0	3.0	3.5	6.0	4.0	5.0	8.0	7.0	7.5
25	6.0	5.0	5.5	3.5	2.5	3.0	4.5	3.5	4.0	7.0	6.5	7.0
26	6.0	5.0	5.5	4.5	3.0	3.5	4.5	3.5	4.0	7.0	6.5	6.5
27	6.0	4.5	5.5	5.0	3.0	3.5	4.5	3.5	4.0	7.0	6.5	6.5
28	6.0	4.5	5.5	4.0	3.5	4.0	4.5	4.0	4.0	7.5	6.5	7.0
29	---	---	---	4.5	3.5	4.0	5.5	4.0	4.5	7.0	6.5	7.0
30	---	---	---	6.5	2.5	4.5	7.0	5.0	6.0	7.0	6.0	6.5
31	---	---	---	6.5	4.5	5.0	---	---	---	8.0	6.5	7.0
MONTH	6.5	3.0	5.0	6.5	1.5	4.0	8.0	2.0	5.0	8.5	4.0	6.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	10.0	6.5	8.0	12.0	9.0	10.5	12.0	10.0	11.0	11.5	9.5	10.0
2	10.0	7.5	8.5	13.0	10.0	11.5	12.5	9.5	11.0	11.0	9.0	10.0
3	8.0	7.0	7.5	13.5	11.0	12.0	12.5	10.0	11.0	11.5	9.5	10.5
4	7.5	6.0	7.0	13.0	10.5	11.5	12.5	10.5	11.0	12.0	10.0	10

SANDY RIVER BASIN

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

TURBIDITY (NTU), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER		NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH		
1	.23	.15	.17	.08	.51	.37	---	---	.84	.61	.63	.39
2	.15	.15	.46	.08	.51	.37	---	---	1.3	.69	1.1	.63
3	3.2	.23	.46	.17	.45	.37	---	---	1.4	.92	.70	.48
4	1.4	.23	1.9	.24	.89	.29	---	---	1.9	.92	.92	.54
5	1.1	.30	---	.24	.53	.44	---	---	2.1	.99	.69	.54
6	.30	.22	---	.09	.45	.37	---	---	.99	.76	.80	.61
7	.23	.22	.53	.16	.45	.37	---	---	.77	.69	.79	.65
8	.23	.15	.53	.46	.37	.29	---	---	.77	.62	.79	.58
9	.23	.15	.46	.31	1.4	.37	---	---	.69	.54	.73	.51
10	.23	.15	.53	.38	.90	.60	---	---	.69	.54	.79	.65
11	.23	.15	.46	.39	.67	.45	2.6	---	.85	.54	.73	.58
12	1.8	.30	.46	.39	.45	.22	6.5	2.2	2.2	.70	.79	.44
13	.60	.30	1.4	.39	---	---	5.0	1.7	3.3	1.4	.59	.51
14	.44	.30	.68	.46	---	---	17	1.4	1.5	.85	.58	.51
15	1.5	.37	.59	.38	.45	.22	16	2.3	.77	.61	.58	.51
16	.52	.37	.46	.38	.37	.07	2.4	1.5	.70	.62	.58	.51
17	.44	.23	.61	.39	---	---	1.5	1.2	.77	.62	.59	.51
18	2.0	.44	.46	.39	---	---	1.3	1.1	1.1	.61	.58	.51
19	.44	.30	.45	.37	---	---	1.2	.99	1.4	.77	.51	.44
20	.30	.30	.45	.38	---	---	1.2	.98	5.9	1.0	.50	.44
21	---	.30	1.6	.45	---	---	1.2	1.1	1.3	.77	.58	.37
22	---	---	5.1	.91	---	---	1.2	.98	.85	.62	.57	.50
23	---	---	.91	.68	---	---	1.1	.91	.77	.61	.57	.43
24	---	.30	25	.46	---	---	1.1	.98	.69	.54	.57	.44
25	2.6	.14	20	1.6	---	---	.98	.91	.62	.54	.50	.43
26	.96	.38	1.6	.90	---	---	.98	.92	.55	.48	.50	.43
27	.46	.38	.97	.67	---	---	1.1	.84	.48	.40	.50	.44
28	.61	.46	.74	.52	---	---	.98	.91	.39	.32	.58	.50
29	.53	.38	1.1	.52	---	---	.98	.91	---	---	.58	.50
30	.82	.53	.60	.44	---	---	.91	.83	---	---	.58	.44
31	1.2	.24	---	---	---	---	.98	.84	---	---	.58	.44
MONTH	---	---	---	.08	---	---	---	---	5.9	.32	1.1	.37

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER		
1	.51	.44	.30	.22	.23	.22	.17	.16	.17	.16	---	---
2	.65	.50	.23	.22	.23	.22	.17	.16	.17	.16	---	---
3	.99	.50	.23	.22	.22	.22	.17	.16	.17	.16	---	---
4	1.5	.92	.23	.22	.22	.15	.17	.16	.17	.16	---	---
5	5.7	1.1	---	---	.23	.15	.17	.16	.17	.16	---	---
6	1.3	.92	---	---	.23	.16	.17	.16	.17	.16	---	---
7	.99	.78	---	---	.16	.16	.17	.16	.18	.16	---	---
8	1.8	.71	---	---	.17	.16	.17	.16	.18	.16	---	---
9	2.9	.92	---	---	.24	.16	.16	.16	.24	.16	---	---
10	.92	.77	---	---	.31	.24	.17	.16	.17	.16	---	---
11	.78	.57	---	---	.17	.17	.17	.16	.18	.16	---	---
12	---	---	---	---	.23	.16	.17	.16	.18	.17	---	.16
13	---	---	---	---	.30	.23	.16	.16	.18	.17	.16	.15
14	---	---	---	---	.23	.16	.17	.16	.18	.17	.16	.15
15	---	---	---	---	.17	.16	.16	.16	.18	.17	.16	.15
16	---	---	---	.28	.24	.16	.16	.16	.18	.17	.16	.15
17	---	.29	.76	.29	.17	.16	.16	.16	.18	.17	.16	.15
18	.30	.29	.69	.28	.17	.16	.16	.16	.25	.17	.16	.16
19	.30	.22	.28	.22	.30	.16	.16	.16	.18	.16	.16	.15
20	.30	.22	.23	.22	1.3	.30	.17	.16	.16	.16	.16	.15
21	.23	.22	.29	.22	.30	.23	.17	.16	.16	.16	.16	.15
22	.23	.22	.23	.22	.24	.23	.17	.16	.17	.16	.16	.08
23	.36	.22	.23	.22	.24	.16	.17	.16	.16	.15	.16	.15
24	.42	.22	.23	.22	.16	.16	.17	.16	.16	.08	.16	.16
25	.29	.22	.22	.22	.16	.16	.16	.16	.16	.15	.16	.15
26	.64	.22	.22	.22	.16	.16	.17	.16	.16	.08	.16	.15
27	.42	.29	.22	.22	.16	.16	.17	.16	.22	.08	.16	.15
28	.29	.22	.22	.22	.16	.16	.17	.16	---	.51	.16	.16
29	.30	.22	.55	.22	.23	.16	.17	.16	---	---	.16	.15
30	.23	.22	.28	.22	.16	.16	.17	.16	---	---	.16	.15
31	---	---	.23	.22	---	---	.17	.16	---	---	---	---
MONTH	---	---	---	---	1.3	.15	.17	.16	---	---	---	---

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

REMARKS.--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, 30,510 acre-ft June 20, elevation, 1,044.86 ft; minimum contents, 12,350 acre-ft Sept. 25, elevation, 989.93 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	996.44	1034.06	1034.55	1034.69	1034.78	1034.58	1034.70	1034.71	1043.65	1043.77	1028.91	1008.36
2	995.31	1033.93	1034.22	1034.59	1034.74	1034.50	1034.38	1035.13	1043.97	1043.63	1029.63	1006.33
3	997.33	1034.70	1034.29	1034.18	1034.69	1034.56	1035.09	1037.55	1043.53	1043.62	1027.37	1005.85
4	998.78	1035.60	1034.80	1034.01	1035.09	1034.57	1035.33	1037.71	1043.65	1043.50	1028.03	1002.79
5	999.40	1035.50	1034.90	1033.96	1035.86	1034.77	1037.79	1039.83	1043.75	1043.45	1025.88	1002.05
6	1000.99	1034.80	1033.75	1033.98	1035.44	1034.09	1035.96	1041.09	1043.75	1043.50	1026.52	1000.56
7	1000.40	1034.19	1034.89	1034.83	1033.97	1034.59	1035.77	1043.17	1043.42	1043.43	1024.42	1001.10
8	1001.51	1034.54	1034.12	1034.12	1034.79	1034.49	1035.65	1043.99	1043.54	1043.40	1024.93	1001.71
9	1002.55	1033.91	1034.32	1035.06	1034.39	1034.39	1036.36	1043.50	1043.40	1043.32	1022.07	1002.27
10	1001.22	1034.83	1035.76	1036.30	1034.97	1034.72	1035.62	1044.00	1043.55	1042.05	1022.59	1002.84
11	1002.22	1034.12	1035.75	1036.64	1034.44	1034.64	1035.10	1043.74	1043.48	1042.62	1020.57	1003.44
12	1004.05	1034.34	1035.32	1039.08	1034.47	1034.34	1034.71	1043.39	1043.56	1040.94	1021.02	1003.99
13	1007.88	1034.75	1034.57	1037.81	1037.74	1034.63	1034.71	1043.51	1043.79	1041.27	1018.38	1001.72
14	1009.13	1034.78	1034.50	1040.87	1035.54	1034.37	1035.47	1043.46	1043.63	1040.20	1018.83	1002.30
15	1011.63	1034.38	1034.60	1038.36	1035.54	1034.89	1034.65	1043.49	1043.89	1040.82	1015.87	1000.99
16	1017.42	1033.88	1034.56	1035.56	1034.85	1034.66	1034.94	1043.23	1044.15	1039.64	1016.32	999.09
17	1019.78	1033.74	1035.72	1035.60	1034.93	1034.77	1034.28	1043.74	1044.39	1040.38	1013.41	997.79
18	1024.58	1034.64	1035.72	1035.08	1034.75	1034.85	1035.02	1043.92	1044.20	1039.03	1013.86	998.34
19	1028.93	1033.88	1034.12	1034.65	1035.38	1034.59	1034.82	1043.92	1044.24	1039.60	1011.07	995.05
20	1031.78	1034.75	1033.07	1034.30	1037.99	1034.93	1034.77	1043.53	1044.35	1037.96	1011.52	995.72
21	1035.58	1035.10	1034.60	1034.76	1035.85	1034.76	1034.64	1043.48	1043.38	1038.50	1011.95	993.14
22	1034.96	1036.19	1035.23	1034.12	1035.22	1034.84	1034.60	1043.67	1043.90	1036.38	1012.35	993.86
23	1034.09	1034.69	1034.98	1034.58	1034.13	1034.73	1034.50	1043.57	1044.04	1035.40	1008.83	990.08
24	1034.48	1036.77	1034.97	1034.73	1034.52	1034.84	1034.20	1043.83	1043.94	1034.68	1008.99	990.76
25	1034.79	1038.14	1035.00	1034.50	1034.62	1034.54	1035.13	1043.57	1043.45	1035.24	1009.38	990.38
26	1033.95	1035.67	1035.00	1034.74	1034.60	1034.64	1034.32	1043.91	1043.72	1033.21	1009.82	991.17
27	1034.60	1035.65	1034.63	1034.60	1034.59	1034.68	1035.17	1043.71	1043.91	1033.90	1010.19	992.01
28	1035.25	1034.90	1034.60	1034.45	1034.67	1034.82	1035.15	1043.58	1043.93	1032.00	1010.25	992.84
29	1033.61	1033.96	1034.71	1034.44	---	1034.62	1034.68	1043.99	1044.00	1032.72	1010.08	992.26
30	1034.83	1034.45	1034.71	1034.60	---	1034.81	1035.43	1043.57	1043.44	1030.43	1007.96	990.63
31	1034.58	---	1034.72	1034.81	---	1034.87	---	1044.05	---	1031.14	1007.78	---
MAX	1035.58	1038.14	1035.76	1040.87	1037.99	1034.93	1037.79	1044.05	1044.39	1043.77	1029.63	1008.36
MIN	995.31	1033.74	1033.07	1033.96	1033.97	1034.09	1034.20	1043.71	1043.38	1030.43	1007.78	990.08
(†)	26390	26340	26440	26480	26420	26500	26710	30160	29900	25100	17270	12530
(‡)	+12620	-50	+100	+40	-60	+80	+210	+3450	-260	-4800	-7830	-4740

CAL YR 1990 MAX 1045.30 MIN 995.31 AC-FT‡ +250
WTR YR 1991 MAX 1044.39 MIN 990.08 AC-FT‡ -1240

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

SANDY RIVER BASIN

211

14139700 CEDAR CREEK NEAR BRIGHTWOOD, OR

LOCATION.--Lat 45°27'30", long 122°01'50", in NE 1/4 sec.26, T.1 S., R.6 E., Clackamas County, Hydrologic Unit 17080001, in Mount Hood National Forest, on right bank 5.8 mi north of Brightwood and at mile 2.5.

DRAINAGE AREA.--7.93 mi².

PERIOD OF RECORD.--July to November 1964, June 1965 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 1,960 ft, from topographic map.

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

AVERAGE DISCHARGE.--26 years, 66.7 ft³/s, 114.22 in/yr, 48,320 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,990 ft³/s Dec. 22, 1964, gage height, 7.20 ft, from rating curve extended above 320 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 4.7 ft³/s Oct. 28, 29, 1987.

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)
Nov. 25	0730	806	4.09	Jan. 15	0300	*1,530	*4.85

Minimum discharge, 7.2 ft³/s Sept. 27-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.7	112	83	64	36	40	60	63	42	33	15	14
2	9.3	77	68	49	62	76	67	57	39	30	15	12
3	34	89	65	43	140	79	63	52	36	28	15	11
4	23	226	104	40	146	119	159	47	34	27	14	9.8
5	54	182	103	36	213	85	289	44	33	26	14	9.5
6	28	110	82	34	123	70	196	63	33	24	14	9.5
7	22	118	66	51	86	65	144	87	31	24	14	9.5
8	18	105	59	64	69	70	125	166	30	23	14	9.5
9	16	124	113	62	59	67	301	131	28	22	14	9.3
10	18	121	244	224	51	61	164	103	26	21	15	9.1
11	16	89	178	258	48	55	114	83	25	21	14	9.0
12	63	68	110	365	77	74	95	77	27	21	14	8.7
13	78	161	79	305	323	67	85	73	37	20	13	8.8
14	58	153	63	428	227	61	98	65	44	20	13	9.1
15	110	112	53	704	133	56	91	56	34	20	12	8.7
16	126	82	46	229	131	51	76	51	35	20	12	8.7
17	79	83	99	140	128	49	68	98	35	e25	12	8.6
18	137	73	255	102	115	50	61	134	31	e22	12	8.3
19	98	59	119	80	162	49	56	108	30	19	12	8.3
20	67	61	e65	66	330	47	53	87	84	19	11	8.3
21	173	123	e34	55	230	50	52	71	71	18	11	8.3
22	149	256	e38	49	132	56	48	60	60	17	11	8.2
23	84	220	e45	44	89	59	45	52	51	17	11	7.9
24	59	179	e43	40	69	66	64	48	45	16	11	7.8
25	65	521	e53	36	56	59	62	52	44	17	11	7.6
26	112	202	61	34	48	51	74	49	42	17	11	7.6
27	64	161	72	32	43	46	127	44	38	16	11	7.5
28	83	99	54	31	40	46	93	40	35	16	19	7.2
29	75	106	e42	29	---	45	80	42	34	15	14	7.2
30	142	99	e42	28	---	43	69	57	36	15	12	7.2
31	173	---	45	31	---	51	---	47	---	15	12	---
TOTAL	2242.0	4171	2583	3753	3366	1863	3079	2207	1170	644	403	266.2
MEAN	72.3	139	83.3	121	120	60.1	103	71.2	39.0	20.8	13.0	8.87
MAX	173	521	255	704	330	119	301	166	84	33	19	14
MIN	8.7	59	34	28	36	40	45	40	25	15	11	7.2
AC-FT	4450	8270	5120	7440	6680	3700	6110	4380	2320	1280	799	528
CFSM	9.12	17.5	10.5	15.3	15.2	7.58	12.9	8.98	4.92	2.62	1.64	1.12
IN.	10.52	19.57	12.12	17.61	15.79	8.74	14.44	10.35	5.49	3.02	1.89	1.25

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1991, BY WATER YEAR (WY)

	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
MEAN	38.5	92.3	110	118	99.6	85.2	86.1	66.9	44.3	21.8	16.6	23.0																
MAX	86.5	166	232	218	196	181	130	136	115	53.9	38.1	51.4																
(WY)	1968	1978	1978	1975	1982	1972	1974	1969	1981	1983	1968	1977																
MIN	5.43	24.2	29.4	31.8	31.6	39.1	46.5	34.6	18.4	12.5	8.68	7.86																
(WY)	1988	1977	1977	1981	1977	1978	1967	1987	1986	1970	1970	1987																

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1964 - 1991

	1990	1991	1964-1991
ANNUAL TOTAL	27747.2	25747.2	
ANNUAL MEAN	76.0	70.5	66.7
HIGHEST ANNUAL MEAN			105
LOWEST ANNUAL MEAN			41.8
HIGHEST DAILY MEAN	564	704	1020
LOWEST DAILY MEAN	8.3	7.2	4.8
ANNUAL SEVEN-DAY MINIMUM	8.8	7.4	4.9
ANNUAL RUNOFF (AC-FT)	55040	51070	48320
ANNUAL RUNOFF (CFSM)	9.59	8.90	8.41
ANNUAL RUNOFF (INCHES)	130.16	120.78	114.27
10 PERCENT EXCEEDS	151	145	138
50 PERCENT EXCEEDS	62	51	41
90 PERCENT EXCEEDS	14	11	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.

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

REMARKS.--Records good except those above 650 ft³/s, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--17 years, 109 ft³/s, 96.12 in/yr, 78,970 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,480 ft³/s Jan. 9, 1989, gage height, 8.85 ft, from rating curve extended above 1,200 ft³/s; minimum discharge, 6.7 ft³/s Oct. 12, 13, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 1,600 ft³/s and maximum (*), from rating curve extended above 650 ft³/s:

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 15	0230	*2,390	*7.78	No other peak greater than base discharge.			
Minimum discharge, 9.6 ft ³ /s Sept. 30.							

REVISIONS.--Revised daily discharges, in cubic feet per second, for periods in November 1988 and January 1989 are given below. These figures supersede those published in the report for 1989.

Nov. 20...	268	Nov. 23...	421	Nov. 26...	452	Nov. 29...	338	Jan. 3...	405	Jan. 6...	335
21...	438	24...	388	27...	513	Jan. 1...	202	4...	417	7...	306
22...	492	25...	418	28...	597	2...	253	5...	371		
		TOTAL		MEAN		MAX		MIN		CFSM	
		November 1988		253		597		15		16.5	
		January 1989		296		1390		77		19.3	
		WTR YR 1989		116		1390		12		7.55	
		CAL YR 1988		112		965		13		7.27	
										IN	
										18.36	
										22.20	
										102.45	
										99.03	

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	14	225	167	126	60	72	98	120	74	58	19	21
2	15	167	143	108	80	110	116	108	71	53	18	16
3	49	148	137	96	189	118	111	96	66	49	18	14
4	37	315	172	87	206	170	211	86	62	46	18	14
5	92	300	184	81	321	145	434	81	58	44	17	13
6	56	211	159	76	215	123	327	108	59	41	17	13
7	44	200	133	98	157	115	236	135	54	39	17	12
8	37	189	116	121	126	127	212	256	51	37	17	12
9	32	200	162	120	106	125	477	231	48	35	17	12
10	33	193	377	347	92	117	283	193	45	34	19	12
11	30	157	316	465	84	105	208	160	44	32	17	12
12	102	124	211	668	109	125	176	145	45	31	16	12
13	135	223	162	586	540	124	155	136	57	30	16	13
14	115	258	130	778	431	116	165	123	69	30	16	13
15	169	203	109	1330	248	106	161	107	56	29	16	12
16	207	160	94	453	230	95	141	97	58	29	15	12
17	161	154	144	267	218	89	125	170	58	37	15	11
18	235	143	404	199	196	89	112	258	53	30	14	11
19	198	123	220	156	252	88	102	222	51	27	14	11
20	148	121	156	127	487	84	96	181	130	26	14	11
21	273	186	124	108	390	86	93	147	136	25	14	11
22	274	354	108	92	235	95	86	123	117	24	14	10
23	177	340	91	82	170	103	81	103	99	23	13	10
24	128	260	84	74	132	118	107	91	86	23	13	10
25	114	855	77	68	108	115	105	90	82	24	13	10
26	190	356	88	62	92	101	124	86	76	23	13	10
27	132	271	140	58	82	89	216	78	70	22	13	9.9
28	147	193	119	56	75	83	182	72	64	21	25	10
29	147	185	96	52	---	81	155	72	63	20	18	9.9
30	215	184	89	50	---	77	134	92	63	20	15	9.7
31	288	---	85	52	---	84	---	80	---	19	15	---
TOTAL	3994	6998	4797	7043	5631	3275	5229	4047	2065	981	496	357.5
MEAN	129	233	155	227	201	106	174	131	68.8	31.6	16.0	11.9
MAX	288	855	404	1330	540	170	477	258	136	58	25	21
MIN	14	121	77	50	60	72	81	72	44	19	13	9.7
AC-FT	7920	13880	9510	13970	11170	6500	10370	8030	4100	1950	984	709
CFSM	8.37	15.1	10.0	14.8	13.1	6.86	11.3	8.48	4.47	2.05	1.04	.77
IN.	9.65	16.90	11.59	17.01	13.60	7.91	12.63	9.78	4.99	2.37	1.20	.86

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1991, BY WATER YEAR (WY)

	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	56.5	156	183	183	176	145	146	104	73.7	32.6	23.3	35.3					
MAX	136	253	379	315	302	235	215	162	180	91.2	53.2	93.4					
(WY)	1976	1989	1978	1975	1982	1989	1976	1977	1981	1983	1978	1977					
MIN	8.31	40.1	50.4	58.3	54.7	63.2	89.6	47.2	28.3	18.7	13.9	10.3					
(WY)	1988	1977	1977	1979	1977	1981	1983	1987	1986	1977	1987	1987					

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1975 - 1991

	1990	1991	1975-1991
ANNUAL TOTAL	47518	44913.5	
ANNUAL MEAN	130	123	
HIGHEST ANNUAL MEAN			109
LOWEST ANNUAL MEAN			150
HIGHEST DAILY MEAN	925	1330	75.4
LOWEST DAILY MEAN	13	9.7	1610
ANNUAL SEVEN-DAY MINIMUM	13	9.9	7.4
ANNUAL RUNOFF (AC-FT)	94250	89090	79090
ANNUAL RUNOFF (CFSM)	8.45	7.99	7.09
ANNUAL RUNOFF (INCHES)	114.78	108.49	96.32
10 PERCENT EXCEEDS	256	241	224
50 PERCENT EXCEEDS	114	96	74
90 PERCENT EXCEEDS	17	14	17

SANDY RIVER BASIN

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

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1978 to current year.
 pH: November 1980 to September 1981, June 1990 to current year.
 WATER TEMPERATURE: October 1978 to current year.
 TURBIDITY: June 1990 to September 1991.
 SUSPENDED SEDIMENT DISCHARGE: October 1978 to September 1986.

INSTRUMENTATION.--Water-quality monitor, turbidimeter with data recording interval dependent upon river stage.

REMARKS.--Turbidity values herein are recorded values and may not reflect 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 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 during period of missing record; minimum recorded, 6.7 units Dec. 25, 26, 1980, Feb. 13, 14, 1991.
 WATER TEMPERATURE: Maximum, 17.0°C July 18-20, 1979, Aug. 9-12, 1981, July 19, 20, 1985, July 14, 1987; minimum, 0.0°C on many days during winter periods.
 SEDIMENT CONCENTRATION: Maximum daily, 212 mg/L Nov. 7, 1985; minimum, 0 mg/L on many days.
 SEDIMENT DISCHARGE: Maximum daily, 794 tons Nov. 7, 1985; minimum, 0 tons on many days.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum recorded, 43 microsiemens Sept. 25-30; minimum recorded, 11 microsiemens Nov. 25, Jan. 14.
 pH: Maximum, 8.0 units Oct. 2; minimum, 6.7 units Feb. 13, 14.
 WATER TEMPERATURE: Maximum, 16.0°C Aug. 19, 20; minimum, 0.0°C Dec. 20, 24, 29, 30.
 TURBIDITY: Maximum recorded, 13 NTU Nov. 25; minimum recorded, 0.16 NTU Sept. 9, 12, 14-16.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	42	40	41	21	20	21	18	17	17	21	19	20
2	41	40	40	22	21	22	18	17	18	20	19	20
3	41	34	37	23	21	22	18	18	18	21	20	20
4	36	33	35	22	18	20	18	17	18	21	20	21
5	33	28	29	20	19	19	18	17	17	22	21	21
6	29	28	29	21	20	20	18	17	18	22	21	22
7	30	29	29	22	20	21	18	17	18	22	20	21
8	30	30	30	22	21	21	19	18	18	21	20	20
9	31	30	31	21	20	21	19	16	18	20	19	20
10	31	30	31	23	21	21	16	14	15	19	16	17
11	32	31	31	23	21	22	16	15	16	17	16	17
12	31	26	28	23	22	23	17	16	16	17	13	15
13	26	24	25	23	19	21	18	17	17	14	13	14
14	25	24	24	21	19	20	18	17	18	14	11	14
15	25	22	24	22	20	21	19	18	18	17	12	14
16	23	21	22	22	21	22	20	18	19	20	17	18
17	22	21	22	23	21	22	20	16	19	21	19	20
18	22	21	21	23	22	22	17	14	15	22	21	22
19	22	21	21	23	22	23	18	16	17	23	22	22
20	23	22	22	23	22	23	19	17	18	24	23	23
21	23	19	21	23	21	22	19	18	19	25	23	24
22	21	19	20	21	19	20	20	19	19	26	24	25
23	22	21	22	21	19	20	20	19	20	26	25	26
24	23	22	23	21	19	21	21	20	20	27	26	26
25	24	22	23	19	11	14	21	20	21	27	27	27
26	23	21	22	16	14	15	21	19	21	28	27	28
27	23	22	23	16	15	16	20	19	19	29	28	28
28	23	22	23	17	16	16	20	19	19	29	28	29
29	23	22	23	17	16	17	22	20	21	29	29	29
30	23	21	22	17	16	17	21	20	20	30	29	30
31	21	20	20	---	---	---	21	20	21	33	29	30
MONTH	42	19	26	23	11	20	22	14	18	33	11	22

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

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

SANDY RIVER BASIN

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

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	7.9	7.8	7.8	7.5	7.3	7.4	7.5	7.4	7.5	7.2	7.2	7.2
2	8.0	7.8	7.9	7.6	7.4	7.5	7.6	7.5	7.5	7.3	7.2	7.2
3	7.9	7.6	7.8	7.5	7.3	7.5	7.6	7.5	7.5	7.3	7.2	7.3
4	7.8	7.6	7.7	7.3	7.2	7.3	7.5	7.3	7.4	7.3	7.2	7.3
5	7.8	7.6	7.7	7.5	7.2	7.3	7.4	7.3	7.4	7.3	7.2	7.3
6	7.8	7.6	7.7	7.6	7.4	7.5	7.5	7.4	7.4	7.4	7.3	7.3
7	7.7	7.6	7.7	7.6	7.4	7.5	7.5	7.4	7.5	7.4	7.2	7.3
8	7.7	7.6	7.7	7.6	7.5	7.5	7.5	7.4	7.5	7.4	7.2	7.3
9	7.7	7.5	7.6	7.6	7.5	7.6	7.5	7.1	7.4	7.3	7.2	7.3
10	7.8	7.6	7.7	7.6	7.5	7.6	7.2	7.0	7.1	7.2	6.9	7.0
11	7.7	7.6	7.6	7.7	7.6	7.6	7.2	7.0	7.1	7.0	6.8	6.9
12	7.7	7.5	7.6	7.7	7.6	7.7	7.4	7.1	7.3	7.0	6.9	6.9
13	7.6	7.5	7.6	7.7	7.3	7.5	7.4	7.3	7.4	7.1	6.9	7.0
14	7.6	7.5	7.5	7.5	7.4	7.4	7.5	7.3	7.4	7.1	6.9	7.0
15	7.5	7.4	7.5	7.6	7.4	7.5	7.4	7.3	7.3	7.3	6.8	7.1
16	7.5	7.4	7.4	7.6	7.5	7.6	7.4	7.3	7.4	7.3	7.1	7.2
17	7.6	7.4	7.5	7.6	7.5	7.6	7.4	6.9	7.3	7.5	7.2	7.4
18	7.5	7.3	7.4	7.7	7.6	7.6	7.0	6.8	6.9	7.6	7.4	7.5
19	7.5	7.4	7.5	7.7	7.6	7.7	7.1	6.9	7.0	7.6	7.5	7.6
20	7.6	7.5	7.5	7.7	7.6	7.7	7.1	7.0	7.1	7.6	7.6	7.6
21	7.6	7.2	7.4	7.7	7.4	7.6	7.2	7.1	7.1	7.6	7.6	7.6
22	7.4	7.2	7.3	7.4	7.2	7.3	7.2	7.1	7.2	7.7	7.6	7.7
23	7.6	7.4	7.5	7.4	7.2	7.3	7.2	7.1	7.2	7.7	7.6	7.7
24	7.6	7.5	7.5	7.4	7.3	7.4	7.3	7.2	7.2	7.8	7.7	7.7
25	7.6	7.4	7.5	7.3	6.9	7.1	7.3	7.2	7.2	7.8	7.7	7.8
26	7.5	7.3	7.5	7.3	7.1	7.2	7.3	7.1	7.2	7.8	7.7	7.7
27	7.6	7.5	7.5	7.4	7.3	7.3	7.2	7.1	7.2	7.7	7.7	7.7
28	7.6	7.5	7.5	7.5	7.4	7.5	7.2	7.1	7.2	7.7	7.6	7.7
29	7.6	7.5	7.5	7.5	7.4	7.5	7.2	7.1	7.2	7.7	7.6	7.7
30	7.5	7.3	7.4	7.5	7.5	7.5	7.3	7.2	7.2	7.7	7.6	7.7
31	7.4	7.3	7.3	---	---	---	7.3	7.2	7.3	7.7	7.5	7.6
MONTH	8.0	7.2	7.6	7.7	6.9	7.5	7.6	6.8	7.3	7.8	6.8	7.4
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	7.6	7.5	7.6	7.5	7.4	7.4	7.6	7.5	7.6	7.3	7.2	7.3
2	7.6	7.3	7.5	7.4	7.1	7.3	7.6	7.5	7.6	7.3	7.2	7.3
3	7.4	7.1	7.3	7.2	7.1	7.2	7.6	7.5	7.5	7.3	7.2	7.3
4	7.3	6.9	7.2	7.2	7.0	7.1	7.5	7.4	7.5	7.4	7.2	7.3
5	7.0	6.8	6.9	7.4	7.0	7.2	7.5	7.2	7.4	7.4	7.2	7.3
6	7.2	6.9	7.1	7.4	7.3	7.4	7.5	7.3	7.3	7.3	7.2	7.3
7	7.3	7.1	7.2	7.4	7.3	7.4	7.4	7.3	7.3	7.3	7.2	7.3
8	7.3	7.2	7.2	7.4	7.3	7.4	7.5	7.3	7.4	7.3	7.1	7.2
9	7.3	7.2	7.3	7.4	7.3	7.4	7.3	7.2	7.2	7.3	7.1	7.2
10	7.4	7.2	7.3	7.5	7.4	7.4	7.4	7.3	7.3	7.3	7.2	7.2
11	7.4	7.2	7.3	7.5	7.4	7.4	7.5	7.3	7.4	7.3	7.1	7.2
12	7.3	7.1	7.3	7.5	7.4	7.4	7.5	7.3	7.4	7.3	7.1	7.2
13	7.1	6.7	6.8	7.5	7.4	7.4	7.5	7.3	7.4	7.3	7.1	7.2
14	7.0	6.7	6.9	7.5	7.4	7.5	7.5	7.3	7.4	7.3	7.2	7.2
15	7.1	6.9	7.0	7.6	7.4	7.5	7.5	7.3	7.4	7.5	7.2	7.3
16	7.2	7.0	7.1	7.6	7.4	7.5	7.5	7.3	7.4	7.5	7.2	7.4
17	7.2	7.0	7.1	7.6	7.5	7.5	7.5	7.4	7.4	7.4	7.2	7.3
18	7.3	7.0	7.2	7.6	7.5	7.6	7.5	7.4	7.5	7.3	7.2	7.2
19	7.1	7.0	7.1	7.6	7.4	7.6	7.5	7.4	7.4	7.3	7.2	7.3
20	7.1	6.8	6.9	7.6	7.4	7.5	7.5	7.4	7.4	7.4	7.2	7.3
21	7.1	6.8	7.0	7.6	7.4	7.5	7.5	7.4	7.5	7.4	7.2	7.3
22	7.2	7.0	7.1	7.6	7.5	7.5	7.5	7.4	7.5	7.3	7.2	7.3
23	7.3	7.2	7.3	7.6	7.5	7.5	7.5	7.4	7.5	7.4	7.2	7.3
24	7.3	7.2	7.3	7.6	7.5	7.5	7.5	7.2	7.3	7.4	7.2	7.3
25	7.4	7.2	7.3	7.6	7.5	7.5	7.3	7.2	7.3	7.4	7.2	7.3
26	7.4	7.3	7.4	7.6	7.5	7.5	7.3	7.2	7.3	7.4	7.2	7.3
27	7.4	7.3	7.4	7.6	7.5	7.5	7.3	7.2	7.2	7.4	7.2	7.3
28	7.5	7.3	7.4	7.6	7.5	7.6	7.2	7.1	7.2	7.4	7.2	7.3
29	---	---	---	7.6	7.5	7.6	7.3	7.1	7.3	7.4	7.3	7.3
30	---	---	---	7.6	7.5	7.6	7.3	7.2	7.2	7.3	7.2	7.3
31	---	---	---	7.7	7.5	7.6	---	---	---	7.3	7.2	7.3
MONTH	7.6	6.7	7.2	7.7	7.0	7.5	7.6	7.1	7.4	7.5	7.1	7.3

SANDY RIVER BASIN

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

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	7.4	7.2	7.3	7.4	7.1	7.3	7.5	7.3	7.4	7.6	7.4	7.5
2	7.4	7.2	7.3	7.4	7.1	7.3	7.5	7.3	7.4	7.5	7.3	7.4
3	7.4	7.3	7.3	7.4	7.1	7.3	7.5	7.3	7.4	7.5	7.4	7.4
4	7.4	7.2	7.3	7.4	7.3	7.4	7.5	7.3	7.4	7.5	7.3	7.4
5	7.4	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4	7.5	7.3	7.4
6	7.4	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4	7.5	7.3	7.4
7	7.4	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.5
8	7.4	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.5
9	7.4	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.5
10	7.4	7.2	7.3	7.5	7.3	7.4	7.6	7.4	7.5	7.6	7.4	7.5
11	7.5	7.3	7.4	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.5
12	7.5	7.3	7.4	7.5	7.3	7.4	7.5	7.3	7.4	7.5	7.4	7.5
13	7.4	7.2	7.4	7.5	7.2	7.4	7.5	7.3	7.4	7.6	7.4	7.5
14	7.4	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.4	7.5
15	7.4	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.5	7.6
16	7.4	7.2	7.3	7.5	7.3	7.4	7.6	7.3	7.4	7.6	7.4	7.5
17	7.4	7.2	7.3	7.5	7.3	7.4	7.5	7.3	7.4	7.6	7.5	7.5
18	7.4	7.2	7.3	7.5	7.3	7.4	7.6	7.3	7.4	7.6	7.5	7.5
19	7.4	7.2	7.3	7.6	7.3	7.5	7.6	7.3	7.4	7.6	7.5	7.5
20	7.3	7.1	7.2	7.5	7.3	7.5	7.5	7.3	7.4	7.7	7.5	7.6
21	7.3	7.1	7.2	7.5	7.3	7.4	7.5	7.3	7.4	7.7	7.5	7.6
22	7.3	7.1	7.2	7.5	7.3	7.4	7.5	7.3	7.4	7.7	7.4	7.6
23	7.3	7.1	7.2	7.6	7.3	7.4	7.6	7.4	7.4	7.6	7.5	7.5
24	7.3	7.1	7.2	7.6	7.3	7.4	7.6	7.3	7.5	7.6	7.4	7.5
25	7.3	7.1	7.2	7.6	7.3	7.5	7.6	7.4	7.5	7.6	7.4	7.5
26	7.3	7.1	7.3	7.5	7.3	7.4	7.6	7.4	7.5	7.6	7.4	7.5
27	7.4	7.1	7.3	7.5	7.3	7.4	7.6	7.3	7.5	7.7	7.4	7.5
28	7.3	7.1	7.2	7.5	7.3	7.4	7.5	7.3	7.4	7.7	7.4	7.5
29	7.4	7.1	7.3	7.5	7.3	7.4	7.5	7.2	7.4	7.6	7.4	7.5
30	7.4	7.2	7.3	7.5	7.3	7.4	7.6	7.3	7.4	7.5	7.4	7.5
31	---	---	---	7.5	7.3	7.4	7.5	7.3	7.5	---	---	---
MONTH	7.5	7.1	7.3	7.6	7.1	7.4	7.6	7.2	7.4	7.7	7.3	7.5
YEAR	8.0	6.7	7.4									

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.0	10.0	10.5	7.5	6.5	7.5	5.5	3.0	4.5	2.5	2.0	2.5
2	10.5	9.5	10.0	7.0	6.0	6.5	5.0	3.5	4.5	3.0	2.0	2.5
3	10.0	9.5	10.0	8.0	6.5	7.0	5.5	4.5	5.0	2.5	2.0	2.5
4	11.0	10.0	10.5	8.5	7.5	8.0	5.5	4.5	5.0	2.0	1.5	1.5
5	10.5	9.0	10.0	8.0	7.0	7.5	5.5	5.0	5.5	2.0	1.0	1.5
6	9.5	8.0	9.0	7.0	6.0	6.5	5.0	4.5	5.0	2.5	1.5	2.0
7	8.0	7.0	7.5	7.5	6.5	7.0	5.0	4.0	4.5	3.0	2.5	3.0
8	7.0	6.5	7.0	8.0	7.5	8.0	5.5	4.5	5.0	3.5	3.0	3.0
9	8.0	6.5	7.5	8.5	8.0	8.5	6.0	5.0	5.5	3.5	3.0	3.0
10	8.0	7.5	8.0	8.5	8.0	8.5	6.0	4.5	5.5	3.5	2.5	3.0
11	7.5	6.5	7.0	8.0	7.0	7.5	5.5	4.5	5.0	4.0	3.0	3.5
12	8.5	7.0	8.0	8.0	7.0	7.5	5.0	4.5	4.5	---	---	---
13	9.0	8.5	8.5	8.0	6.5	7.5	4.5	4.5	4.5	---	---	---
14	8.5	8.0	8.5	7.0	6.5	7.0	5.0	4.0	4.5	---	---	---
15	9.5	8.5	9.0	7.0	6.5	7.0	4.5	4.0	4.5	---	---	---
16	9.0	7.5	8.5	6.5	6.0	6.5	4.5	4.0	4.5	5.0	4.5	5.0
17	8.5	7.0	7.5	7.0	6.0	6.5	5.0	4.0	4.5	5.0	4.5	5.0
18	8.5	8.0	8.0	7.0	6.5	7.0	4.5	2.0	3.0	5.0	4.5	4.5
19	8.0	7.5	8.0	6.5	5.5	6.0	2.5	.5	1.5	5.0	3.5	4.5
20	8.0	6.5	7.5	5.5	5.0	5.0	1.0	.0	.5	3.5	3.0	3.5
21	8.5	7.5	8.0	6.0	5.0	5.5	1.0	.5	.5	3.5	3.0	3.0
22	8.5	7.0	7.5	6.5	6.0	6.5	1.0	.5	.5	3.0	2.5	3.0
23	8.5	7.5	8.0	7.0	6.5	6.5	1.0	.5	.5	3.5	2.5	3.0
24	8.0	7.0	7.5	8.0	7.0	7.5	.5	.0	.5	4.0	3.0	3.5
25	8.5	7.0	7.5	8.0	5.0	6.5	1.5	.5	1.0	3.0	2.5	3.0
26	8.5	8.0	8.5	6.0	5.5	6.0	2.5	1.0	2.0	2.5	2.0	2.0
27	8.5	7.5	8.0	6.0	5.5	6.0	2.5	1.0	2.0	2.0	1.5	2.0
28	8.5	8.0	8.5	6.0	5.5	6.0	2.0	.5	1.5	2.5	2.0	2.5
29	8.5	7.5	8.0	6.0	5.0	5.5	1.0	.0	.5	2.0	1.0	1.5
30	8.5	8.0	8.5	5.5	5.0	5.0	1.0	.0	1.5	2.0	1.0	1.5
31	8.0	7.5	8.0	---	---	---	2.0	1.0	1.5	3.0	2.0	2.5
MONTH	11.0	6.5	8.5	8.5	5.0	7.0	6.0	.0	3.0	---	---	---

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 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	3.0	3.5	6.5	5.5	6.0	6.5	5.5	6.0	8.0	6.0	7.0
2	4.5	3.5	4.0	6.0	5.5	6.0	5.5	5.0	5.5	7.5	6.0	7.0
3	4.5	3.5	4.0	6.0	5.5	6.0	5.5	5.0	5.0	7.5	6.0	7.0
4	5.0	4.0	4.5	6.0	4.0	5.0	5.5	5.0	5.5	8.5	6.0	7.5
5	5.0	4.0	4.5	4.0	3.5	4.0	5.5	4.5	5.0	8.0	7.0	7.5
6	5.0	3.5	4.0	4.0	2.5	3.5	5.0	4.0	4.5	8.0	7.0	7.5
7	5.0	4.0	4.5	4.0	3.5	4.0	4.5	3.5	4.0	7.5	6.5	7.0
8	5.0	4.0	4.5	5.0	4.0	4.5	5.0	4.0	4.5	7.0	5.0	6.0
9	5.0	4.0	4.5	5.0	3.5	4.5	5.0	4.0	4.0	6.0	5.0	5.5
10	5.0	4.0	4.5	4.0	3.0	3.5	4.0	3.0	3.5	6.0	5.5	5.5
11	5.5	4.5	5.0	4.0	3.5	4.0	6.0	4.0	4.5	6.5	5.5	6.0
12	5.5	5.0	5.5	4.5	3.5	4.0	6.5	4.0	5.0	6.5	6.0	6.5
13	5.5	5.0	5.0	4.5	3.5	4.0	6.5	4.5	5.5	7.0	6.0	6.5
14	6.0	5.0	5.5	4.5	4.0	4.0	6.0	5.0	5.5	7.5	6.0	6.5
15	6.0	5.5	6.0	4.5	4.0	4.5	5.5	5.0	5.5	8.0	6.0	7.0
16	6.0	5.5	5.5	5.0	3.5	4.0	6.5	5.0	5.5	8.5	7.0	8.0
17	5.5	5.0	5.0	5.0	4.0	4.5	6.5	5.0	6.0	8.0	6.5	7.0
18	5.5	4.5	5.0	5.0	4.0	4.5	7.0	5.5	6.0	6.5	6.0	6.5
19	6.0	5.5	6.0	5.0	3.5	4.5	7.5	5.0	6.5	7.0	6.0	6.5
20	6.0	5.5	6.0	5.0	4.0	4.5	8.0	6.0	7.0	8.0	6.5	7.0
21	6.5	5.5	6.0	5.0	4.5	5.0	7.5	6.5	7.0	7.5	7.0	7.5
22	6.0	5.5	5.5	4.5	3.5	4.0	8.0	6.5	7.0	9.0	6.5	7.5
23	5.5	4.5	5.0	5.0	4.0	4.5	7.0	6.0	6.5	9.0	6.5	8.0
24	5.5	4.5	5.0	5.0	4.0	4.5	6.5	4.5	5.5	8.5	7.5	8.0
25	6.0	5.0	5.5	4.5	3.5	4.0	5.5	4.0	4.5	7.5	7.0	7.0
26	6.0	5.0	5.5	5.0	3.5	4.5	5.0	4.0	4.5	7.5	6.5	7.0
27	6.0	4.5	5.5	5.0	3.5	4.5	5.5	4.0	5.0	7.5	6.5	7.0
28	6.0	4.5	5.0	5.0	4.5	5.0	5.5	4.5	5.0	8.0	7.0	7.5
29	---	---	---	5.5	4.0	5.0	6.5	4.5	5.5	7.5	7.0	7.5
30	---	---	---	6.0	4.0	5.0	7.5	5.0	6.0	7.5	6.5	7.0
31	---	---	---	6.5	5.0	6.0	---	---	---	9.0	7.0	8.0
MONTH	6.5	3.0	5.0	6.5	2.5	4.5	8.0	3.0	5.5	9.0	5.0	7.0

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

SANDY RIVER BASIN

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

TURBIDITY (NTU), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	.26	.18	---	---	1.0	.79	---	---	.58	.50	.74	.56
2	.19	.18	---	---	.80	.71	---	---	2.1	.58	1.1	.74
3	3.7	.25	---	---	.79	.70	---	---	2.1	.93	.92	.65
4	1.1	.34	---	---	1.3	.71	---	---	1.4	.84	1.4	.83
5	2.5	.57	---	---	.96	.78	---	---	2.5	.93	.83	.63
6	.42	.18	---	---	.78	.69	---	---	1.0	.83	.82	.74
7	.25	.18	.87	---	.70	.60	---	---	.93	.75	.88	.67
8	---	---	.80	.64	.70	.70	---	---	.75	.65	.74	.73
9	---	---	.89	.72	1.5	.70	---	---	.65	.57	.80	.65
10	---	---	.81	.64	1.7	.70	---	---	.66	.58	.72	.65
11	---	---	.72	.63	1.1	.78	---	---	.66	.58	.72	.57
12	---	---	.64	.47	.86	.78	---	---	2.0	.66	.85	.64
13	---	---	1.8	.63	.78	.70	---	---	4.4	2.1	.71	.62
14	---	---	.87	.70	.70	.61	---	---	2.3	1.1	.63	.62
15	---	---	.79	.70	.70	.61	---	3.1	1.1	.84	.70	.62
16	---	---	.70	.46	.61	.61	2.9	1.4	.92	.84	.63	.55
17	---	---	.87	.62	3.7	.61	1.4	1.1	.92	.76	.63	.56
18	---	---	.71	.54	3.9	.69	1.1	.92	1.0	.83	.69	.62
19	---	---	.71	.54	.77	.26	1.0	.75	1.2	.74	.61	.54
20	---	---	.80	.63	.35	.18	.84	.75	3.2	.74	.61	.54
21	---	---	1.3	.69	---	---	.67	.67	1.6	.92	.68	.54
22	---	---	1.5	.88	---	---	.76	.67	1.0	.83	.68	.59
23	---	---	1.2	.72	---	---	.67	.58	.92	.82	.67	.46
24	---	---	5.0	.72	---	---	.67	.58	.92	.75	.72	.59
25	---	---	13	1.7	---	---	.67	.58	.75	.65	.59	.51
26	---	---	1.6	.87	---	---	.59	.50	.75	.65	.58	.51
27	---	---	1.2	.71	---	---	.50	.48	.65	.57	.65	.51
28	---	---	1.0	.87	---	---	.58	.48	.57	.47	.64	.58
29	---	---	1.3	.71	---	---	.48	.40	---	---	.58	.57
30	---	---	.88	.79	---	---	.49	.40	---	---	.58	.50
31	---	---	---	---	---	---	.58	.49	---	---	.56	.50
MONTH	---	---	---	---	---	---	---	---	4.4	.47	1.4	.46
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	.77	.56	.50	.42	.46	.38	.40	.32	.32	.32	.38	.24
2	.74	.61	.49	.42	.47	.38	.40	.32	.32	.25	.24	.23
3	.68	.55	.42	.42	.47	.38	.46	.39	.33	.25	.24	.23
4	2.5	.81	.42	.41	.39	.38	.46	.39	.33	.25	.24	.23
5	5.0	.93	.46	.40	.38	.37	.39	.31	.33	.25	.24	.24
6	1.2	.79	.65	.46	.46	.37	.39	.32	.25	.25	.25	.24
7	.79	.66	1.3	.45	.46	.38	.40	.32	.25	.25	.24	.24
8	1.2	.72	1.2	.56	.39	.30	.39	.32	.33	.25	.24	.24
9	2.9	.85	.56	.44	.39	.30	.39	.32	.40	.25	.25	.16
10	.84	.64	.56	.44	.39	.31	.39	.32	.33	.25	.25	.24
11	.76	.64	.50	.45	.39	.38	.39	.32	.25	.24	.25	.17
12	.76	.63	.50	.43	.39	.32	.39	.32	.25	.25	.25	.16
13	.70	.57	.49	.43	.67	.31	.39	.39	.25	.25	.25	.25
14	.69	.62	.43	.31	.67	.39	.39	.32	.25	.25	.25	.16
15	.62	.55	.46	.36	.32	.32	.39	.32	.26	.25	.25	.16
16	.67	.55	1.0	.39	.39	.32	.54	.32	.25	.25	.25	.16
17	.61	.54	.89	.54	.39	.31	.47	.32	.26	.25	.25	.17
18	.60	.54	1.0	.54	.32	.32	.32	.31	.25	.25	.25	.17
19	.55	.48	.68	.54	.46	.32	.32	.32	.26	.25	.25	.18
20	.55	.48	.54	.47	2.7	.58	.32	.32	.25	.24	.25	.18
21	.53	.53	.54	.46	.53	.46	.33	.32	.25	.24	.25	.18
22	.53	.47	.47	.46	.46	.39	.33	.32	.25	.24	---	---
23	.64	.46	.47	.40	.39	.32	.33	.32	.24	.24	.25	.17
24	.77	.57	.47	.46	.39	.32	.32	.32	.24	.24	.25	.17
25	.69	.51	.46	.39	.32	.32	.32	.32	.24	.24	.25	.17
26	1.5	.49	.46	.45	.32	.32	.32	.25	.24	.17	.25	.18
27	1.4	.62	.46	.38	.39	.31	.33	.32	.38	.17	.25	.18
28	.62	.50	.46	.38	.39	.32	.33	.32	.68	.38	.25	.18
29	.55	.49	.68	.38	.39	.32	.33	.32	.31	.24	.25	.18
30	.50	.43	.61	.45	.61	.32	.33	.32	.24	.24	.25	.17
31	---	---	.46	.38	---	---	.33	.32	.53	.24	---	---
MONTH	5.0	.43	1.3	.31	2.7	.30	.54	.25	.68	.17	---	---

SANDY RIVER BASIN

219

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 National Geodetic Vertical Datum of 1929 (levels by Portland Water Bureau). Prior to Dec. 31, 1975, nonrecording gage at same site and datum.

REMARKS.--Elevations for Oct. 13-17, Dec. 19 provided by Portland Water Bureau. 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, 22,350 acre-ft Jan. 15, elevation, 863.06 ft; minimum contents, 14,560 acre-ft Sept. 29, elevation, 843.72 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	849.04	859.62	858.74	859.12	858.43	858.52	859.08	859.43	859.27	859.12	859.51	852.91
2	849.59	859.52	858.76	859.16	858.67	858.81	859.54	859.69	858.90	859.37	858.34	853.82
3	849.17	859.48	858.87	858.98	858.52	858.72	858.71	858.83	859.19	859.33	859.43	853.45
4	848.63	860.05	858.62	858.77	858.74	858.70	859.63	859.66	859.02	859.39	858.32	854.80
5	849.82	859.92	859.02	859.05	860.21	858.95	861.15	858.76	859.06	859.48	859.53	854.54
6	849.28	858.86	859.42	858.91	858.73	859.05	860.01	859.63	859.13	859.37	858.50	854.74
7	850.00	858.59	858.75	858.99	859.54	858.80	858.89	859.45	859.35	859.18	859.31	853.68
8	849.35	858.65	858.94	859.17	858.87	859.17	858.89	859.08	859.14	858.87	858.11	852.89
9	848.65	858.97	858.79	858.72	859.30	858.62	860.80	859.35	859.09	858.60	859.30	851.75
10	849.75	858.82	860.45	860.38	859.26	859.03	859.85	859.07	858.54	859.65	858.50	850.56
11	849.08	859.20	859.99	860.63	858.96	858.88	859.37	858.29	858.24	858.61	859.39	849.42
12	849.91	859.45	859.35	861.56	858.97	859.63	859.46	858.36	858.39	859.74	858.23	848.30
13	849.90	859.74	858.90	861.05	861.19	859.21	859.67	859.42	858.76	858.74	859.24	849.47
14	851.00	858.82	859.30	862.19	860.59	859.37	858.82	859.11	859.39	859.66	858.02	848.56
15	853.80	858.87	859.07	861.44	859.40	858.83	858.99	859.30	859.33	858.79	859.16	848.78
16	854.00	859.03	858.94	860.58	858.79	859.05	858.71	859.48	859.36	859.64	857.93	849.31
17	854.70	858.83	859.87	859.51	858.94	858.90	859.18	858.32	859.34	858.77	859.34	849.45
18	857.77	859.11	860.44	858.74	859.15	858.68	859.02	858.95	859.37	859.64	858.19	848.02
19	858.29	859.01	859.40	858.70	859.47	858.77	859.35	858.76	859.41	858.67	859.15	849.48
20	858.36	858.88	859.30	859.72	861.29	858.76	859.12	859.45	859.37	859.56	857.95	848.36
21	860.09	858.35	859.18	858.63	860.34	858.99	859.28	859.20	859.02	858.54	856.64	849.54
22	859.41	860.71	859.49	859.85	859.25	858.99	858.96	859.31	859.05	859.59	855.40	848.45
23	859.45	860.49	859.10	859.43	859.60	859.18	859.11	859.25	859.42	859.59	856.96	850.14
24	859.21	860.27	858.83	859.16	859.29	859.11	859.39	858.78	859.09	859.42	856.29	848.93
25	859.21	861.43	858.48	859.12	859.24	859.17	859.21	859.16	859.25	858.47	855.22	848.17
26	859.24	860.40	858.12	858.89	859.14	859.06	859.52	858.83	859.09	859.68	854.00	846.87
27	858.97	859.60	859.24	859.06	858.60	859.06	858.55	859.17	859.20	858.48	853.04	845.70
28	858.50	858.21	859.11	859.26	858.87	859.18	858.68	859.10	859.35	859.50	852.87	844.61
29	859.28	858.61	858.84	858.65	---	859.31	859.67	858.72	859.52	858.28	852.65	844.43
30	858.40	858.86	858.68	858.32	---	859.17	858.89	859.37	859.28	859.47	853.86	845.02
31	859.15	---	859.24	858.21	---	859.26	---	858.90	---	858.21	853.65	---
MAX	860.09	861.43	860.45	862.19	861.29	859.63	861.15	859.69	859.52	859.74	859.53	854.80
MIN	848.63	858.21	858.12	858.21	858.43	858.52	858.55	858.29	858.24	858.21	852.65	844.43
(†)	20630	20500	20670	20210	20500	20670	20510	20520	20680	20210	18260	15010
(‡)	+3870	-130	+170	-460	+290	+170	-160	+10	+160	-470	-1950	-3250

CAL YR 1990 MAX 862.35 MIN 848.52 AC-FT† +370

WTR YR 1991 MAX 862.19 MIN 844.43 AC-FT† -1750

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

‡ Change in contents, in acre-feet.

SANDY RIVER BASIN

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 National Geodetic Vertical Datum of 1929 (levels by Portland Water Bureau). Prior to July 27, 1909, nonrecording gage at site 1.5 mi upstream at different datum. July 27, 1909, to Sept. 30, 1959, water-stage recorder at site 2.5 mi upstream at different datums.

REMARKS.--Records good except those below 10 ft³/s, which are fair. 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, 206,500 acre-ft of which 69,960 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.--84 years, 776 ft³/s, 98.49 in/yr, 562,200 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, 11,500 ft³/s Jan. 15, gage height, 13.00 ft; minimum discharge, 2.3 ft³/s Oct. 11, 12.

Combined flow, maximum discharge, 11,800 ft³/s Jan. 15; minimum daily, 156 ft³/s Oct. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	192	1450	1180	779	350	634	711	765	515	335	276	188
2	188	1110	e1100	417	649	863	668	642	466	294	291	184
3	170	913	e1020	530	1490	1090	756	329	468	304	313	247
4	170	2050	e1130	438	1520	1460	1450	353	418	266	279	269
5	180	2100	e1150	361	1970	1020	2850	350	350	246	274	254
6	176	1780	e1120	386	1850	1030	2790	347	361	255	268	258
7	175	1530	e957	371	1140	834	1820	535	358	272	315	237
8	175	1180	e893	762	844	845	1410	1830	345	301	323	182
9	175	1360	e1120	608	696	1020	2590	1640	350	285	287	242
10	175	1120	e1950	1510	539	654	2240	1230	363	283	216	256
11	174	1090	e1960	2810	759	790	1560	1250	366	289	247	240
12	172	690	e1560	4430	919	765	1220	1020	255	325	292	231
13	169	1500	1270	4580	2570	877	1000	645	265	281	319	212
14	168	1990	755	4360	3360	782	1210	822	308	245	305	195
15	169	1490	743	8360	1960	705	1250	651	299	249	325	227
16	177	1110	671	3690	1730	602	981	683	294	224	280	280
17	169	1130	890	2060	1380	597	845	1420	295	257	249	249
18	156	690	2650	1670	1340	606	671	1650	320	258	285	287
19	169	986	1560	1230	1780	579	674	1560	314	256	316	256
20	195	686	1150	739	3080	468	742	1140	935	282	299	232
21	662	1370	747	921	3310	510	674	1020	1120	267	309	216
22	2070	2210	583	506	1960	578	662	780	610	319	296	222
23	1230	2810	581	588	1290	580	581	750	476	330	279	268
24	712	2030	583	563	909	671	739	715	640	327	224	250
25	736	5900	580	522	756	679	658	652	579	253	263	286
26	1570	3220	561	432	675	559	892	646	445	266	280	264
27	816	2130	548	366	696	497	1330	537	346	310	266	232
28	965	1810	694	366	446	442	1130	547	336	280	230	214
29	1040	1520	570	489	---	475	793	549	334	313	221	206
30	1740	1170	474	355	---	466	886	580	563	321	196	241
31	1950	---	319	357	---	496	---	566	---	318	209	---
TOTAL	16985	50125	31069	45556	39968	22174	35783	26204	13094	8811	8532	7125
MEAN	548	1671	1002	1470	1427	715	1193	845	436	284	275	237
MAX	2070	5900	2650	8360	3360	1460	2850	1830	1120	335	325	287
MIN	156	686	319	355	350	442	581	329	255	224	196	182
AC-FT	33690	99420	61630	90360	79280	43980	70980	51980	25970	17480	16920	14130
MEAN†	816	1668	1007	1463	1432	719	1194	902	435	199	116	103
CFSM†	7.63	15.6	9.41	13.7	13.4	6.72	11.2	8.43	4.07	1.86	1.08	0.96
IN.†	8.80	17.40	10.85	15.77	13.94	7.75	12.45	9.72	4.53	2.14	1.25	1.08
AC-FT†	50180	99240	61900	89940	79510	44230	71030	55440	25870	12210	7140	6140

CAL YR 1990 TOTAL 327353 MEAN 897 MAX 6340 MIN 156 AC-FT 649300 MEAN† 898 CFSM† 8.39 IN.† 113.92 AC-FT† 649900
WTR YR 1991 TOTAL 305426 MEAN 837 MAX 8360 MIN 156 AC-FT 605800 MEAN† 833 CFSM† 7.79 IN.† 105.67 AC-FT† 602800

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

e Estimated

SANDY RIVER BASIN

221

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, 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, 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 National Geodetic Vertical Datum of 1929. Nov. 4, 1967, to Aug. 8, 1971, water-stage recorder at site 0.1 mi downstream at datum 697.44 ft above National Geodetic Vertical Datum of 1929 (Portland General Electric Co. bench mark).

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

AVERAGE DISCHARGE.--72 years (water years 1920-91), 145 ft³/s, 88.30 in/yr, 105,100 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 ft³/s Aug. 20, Sept. 16, 17, 1940.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 15	0400	*1,970	*5.44	No other peak greater than base discharge.			
Minimum discharge, 11 ft ³ /s Oct. 1.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	269	216	130	97	109	148	173	106	81	24	27
2	13	190	195	109	128	148	161	161	96	72	23	20
3	69	178	179	96	277	152	140	140	88	66	23	18
4	48	507	208	88	272	204	233	126	81	61	23	17
5	117	435	218	82	427	165	491	120	77	57	23	16
6	57	268	189	76	263	149	338	168	79	53	23	15
7	39	259	159	98	196	139	243	204	71	51	22	16
8	31	246	142	114	161	159	217	387	69	48	21	17
9	29	263	199	105	140	168	510	295	63	46	22	16
10	34	232	468	364	125	158	319	253	59	45	23	15
11	28	181	366	455	118	143	244	212	59	43	21	15
12	149	140	252	633	152	148	218	202	65	41	20	14
13	165	264	199	537	811	148	203	197	88	40	20	17
14	120	310	164	758	577	144	243	175	103	39	19	17
15	180	256	142	1290	335	134	232	147	81	37	19	15
16	273	199	126	550	333	124	192	138	78	39	19	14
17	172	191	203	359	309	119	175	324	77	59	19	14
18	256	179	514	278	280	119	163	491	67	44	19	13
19	213	154	252	220	365	115	151	353	64	39	18	13
20	146	151	e104	180	602	110	150	268	193	36	17	13
21	371	196	e65	152	491	113	147	214	189	34	17	13
22	325	373	e77	132	298	121	134	180	160	32	16	13
23	187	375	e90	118	224	122	124	152	132	30	16	12
24	129	311	e85	108	183	143	154	138	113	29	16	12
25	119	888	99	98	153	136	140	142	118	33	16	12
26	229	389	121	89	133	121	150	135	108	30	16	12
27	140	294	193	83	120	110	257	118	96	28	16	12
28	157	228	142	82	110	107	228	108	88	27	29	12
29	153	241	e100	74	---	105	208	107	93	26	24	12
30	249	234	e100	71	---	103	184	144	97	25	20	13
31	354	---	103	79	---	121	---	118	---	24	20	---
TOTAL	4564	8401	5670	7608	7680	4157	6497	6090	2858	1315	624	445
MEAN	147	280	183	245	274	134	217	196	95.3	42.4	20.1	14.8
MAX	371	888	514	1290	811	204	510	491	193	81	29	27
MIN	12	140	65	71	97	103	124	107	59	24	16	12
AC-FT	9050	16660	11250	15090	15230	8250	12890	12080	5670	2610	1240	883
CFSM	6.60	12.6	8.20	11.0	12.3	6.01	9.71	8.81	4.27	1.90	.90	.67
IN.	7.61	14.01	9.46	12.69	12.81	6.93	10.84	10.16	4.77	2.19	1.04	.74

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1991, BY WATER YEAR (WY)

	MEAN	271	588	585	589	452	407	325	328	268	121	96.1	184
MAX	271	588	585	589	452	407	325	328	268	121	96.1	184	184
(WY)	1960	1956	1965	1953	1961	1932	1920	1945	1933	1983	1968	1927	1927
MIN	10.6	14.3	57.5	45.9	59.2	49.9	54.0	55.8	20.7	13.8	10.1	12.4	12.4
(WY)	1988	1930	1977	1937	1977	1941	1941	1947	1940	1940	1940	1938	1938

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1911 - 1991
ANNUAL TOTAL	59284	55909	145
ANNUAL MEAN	162	153	223
HIGHEST ANNUAL MEAN			87.6
LOWEST ANNUAL MEAN			1974
HIGHEST DAILY MEAN	1200	1290	3500
LOWEST DAILY MEAN	11	12	8.0
ANNUAL SEVEN-DAY MINIMUM	11	12	9.0
ANNUAL RUNOFF (AC-FT)	117600	110900	105000
ANNUAL RUNOFF (CFSM)	7.28	6.87	6.50
ANNUAL RUNOFF (INCHES)	98.90	93.27	88.32
10 PERCENT EXCEEDS	310	314	301
50 PERCENT EXCEEDS	143	124	98
90 PERCENT EXCEEDS	21	17	19

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, published in WSP 1318.

GAGE.--Water-stage recorder. Elevation of gage is 240 ft, 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.--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. Portland Water Bureau diverted 206,500 acre-ft from Bull Run River during the 1991 water year, of which 69,960 acre-ft were used for power generation by Portland General Electric Company and returned to Bull Run River.

AVERAGE DISCHARGE.--48 years (water years 1911-14, 1930-66, 1985-91) 2,306 ft³/s, 1,671,000 acre-ft/yr.

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

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 26,300 ft³/s Jan. 15, gage height, 17.20 ft; minimum discharge, 183 ft³/s Sept. 23, 27, 28, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	276	3490	3510	1630	1280	2000	2000	2290	1780	1200	557	436
2	286	2590	3080	1280	1630	2380	2060	2140	1680	1040	525	388
3	450	2140	2690	1260	3410	2910	1990	1780	1600	1030	537	366
4	532	4610	3210	1170	3510	4160	3370	1680	1480	1030	521	361
5	763	4960	3340	1060	5340	3350	6890	1650	1340	959	559	368
6	427	3990	2940	1120	4630	2960	6260	1830	1310	909	548	359
7	210	3420	2400	1170	3310	2610	4380	2140	1270	853	540	359
8	194	3280	2290	1520	2610	2530	3620	4890	1210	822	551	359
9	190	3490	2910	1360	2260	2750	6260	4490	1210	807	614	337
10	195	3040	5380	3070	2020	2370	5450	3780	1200	764	535	340
11	350	2690	5260	5730	2070	2340	4030	3540	1250	725	460	340
12	677	2020	4020	9050	2230	2400	3350	3130	1090	720	444	339
13	842	3080	3240	9350	7830	2520	3040	2710	1320	783	436	340
14	819	4130	2390	9440	9250	2340	3290	2650	1520	781	439	367
15	870	3190	2210	19400	5700	2120	3520	2330	1340	690	440	329
16	1550	2560	2010	9140	5110	1940	2930	2240	1240	703	434	314
17	1210	2420	2190	5700	4320	1850	2580	4030	1210	793	455	302
18	1430	2080	5780	4510	3930	1860	2400	5400	1130	749	451	303
19	1360	2080	3810	3670	4950	1830	2210	4740	1040	660	466	330
20	1020	1890	e1800	2720	8230	1660	2280	3700	2240	646	456	327
21	2230	2570	e920	2640	9000	1610	2230	3300	2630	619	420	294
22	4390	4200	e1000	2080	5690	1720	2210	2740	2110	653	397	281
23	2600	5230	e1200	1940	4100	1730	2040	2460	1760	626	384	268
24	1620	4230	e1150	1810	3160	1960	2260	2290	1750	639	382	293
25	1400	14700	e1400	1670	2680	1970	2150	2210	1700	681	376	314
26	2880	7850	e1600	1510	2390	1740	2270	2160	1550	615	364	327
27	1800	5220	e2000	1340	2250	1580	3290	1930	1370	568	388	282
28	1930	4120	1770	1300	1870	1440	2960	1810	1300	597	484	294
29	2020	3810	1460	1340	---	1420	2480	1760	1270	586	484	291
30	3250	3610	1340	1160	---	1390	2470	1970	1480	572	457	258
31	4260	---	1180	1200	---	1540	---	1910	---	547	419	---
TOTAL	42031	116690	79480	111340	114760	66980	96270	85680	44380	23367	14523	9866
MEAN	1356	3890	2564	3592	4099	2161	3209	2764	1479	754	468	329
MAX	4390	14700	5780	19400	9250	4160	6890	5400	2630	1200	614	436
MIN	190	1890	920	1060	1280	1390	1990	1650	1040	547	364	258
AC-FT	83370	231500	157600	220800	227600	132900	191000	169900	88030	46350	28810	19570

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1985 - 1991, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991
MEAN	792	3134	2431	3019	3489	2881	3291
MAX	1378	4611	3171	4265	6207	3918	4010
(WY)	1986	1985	1988	1989	1986	1989	1988
MIN	242	412	1568	1204	1848	1835	2155
(WY)	1988	1988	1987	1985	1985	1985	1986

SUMMARY STATISTICS FOR 1990 CALENDAR YEAR FOR 1991 WATER YEAR WATER YEARS 1985 - 1991

	1990	1991	1985-1991
ANNUAL TOTAL	869362	805367	2014
ANNUAL MEAN	2382	2206	2206
HIGHEST ANNUAL MEAN			1645
LOWEST ANNUAL MEAN			1991
HIGHEST DAILY MEAN	16100	19400	39900
LOWEST DAILY MEAN	190	190	190
ANNUAL SEVEN-DAY MINIMUM	290	294	232
ANNUAL RUNOFF (AC-FT)	1724000	1597000	1459000
10 PERCENT EXCEEDS	4380	4380	4080
50 PERCENT EXCEEDS	2180	1780	1500
90 PERCENT EXCEEDS	382	373	351

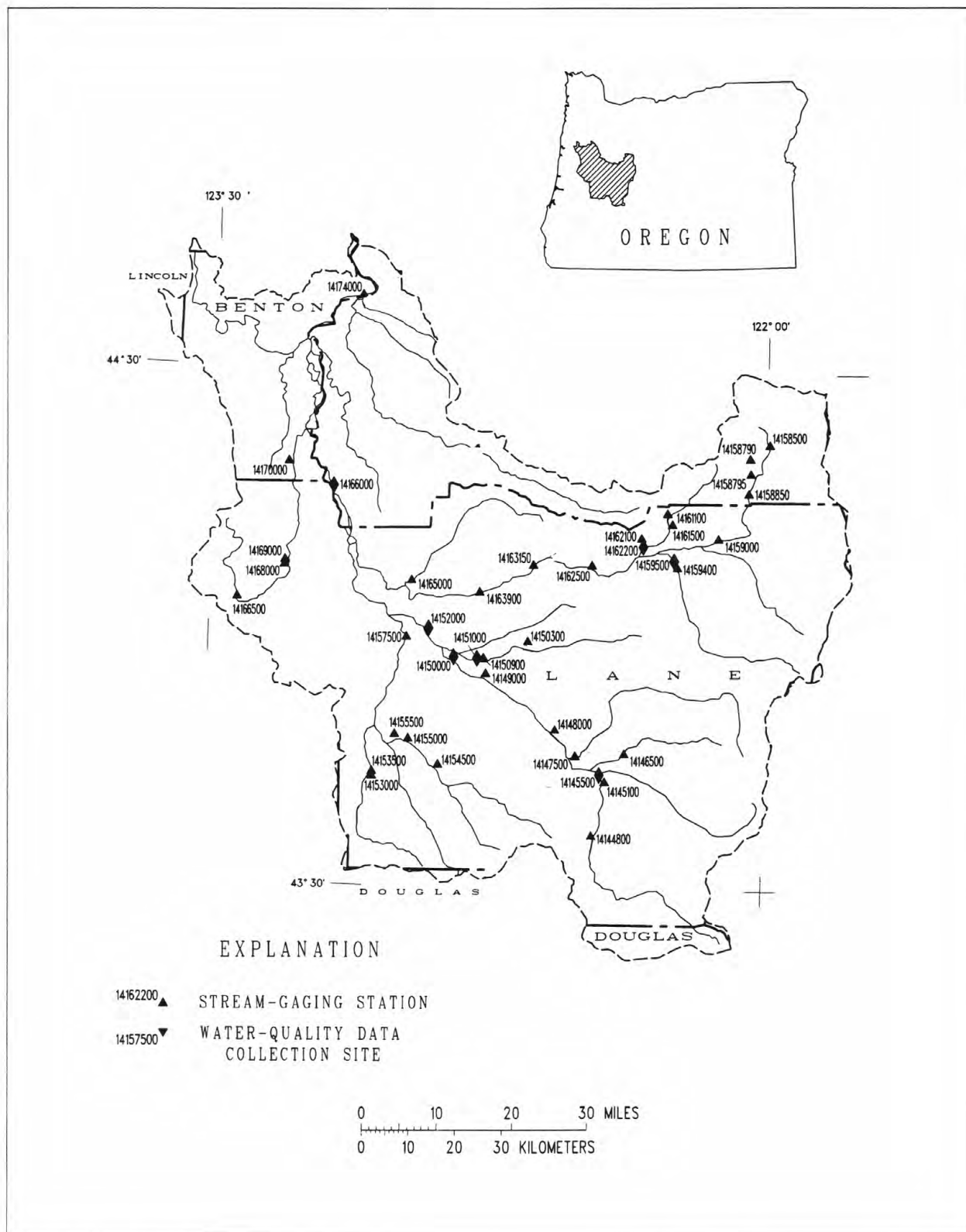


Figure 13.--Location of surface-water and water-quality stations in the Willamette River basin, upstream from the Luckiamute River.

WILLAMETTE RIVER BASIN

14144800 MIDDLE FORK WILLAMETTE RIVER NEAR OAKRIDGE, OR

LOCATION.--Lat 43°35'50", long 122°27'20", in NW 1/4 NE 1/4 sec.9, T.23 S., R.3 E., Lane County, Hydrologic Unit 17090001, in Willamette National Forest, on right bank 0.2 mi upstream from Windfall Creek, 8.3 mi upstream from Hills Creek Dam, 10.2 mi south of Oakridge, and at mile 240.8.

DRAINAGE AREA.--258 mi².

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

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,556.83 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to June 21, 1967, at site 0.5 mi upstream at different datums. June 22, 1967, to June 23, 1971, water-stage recorder at same site at datum 5.00 ft higher.

REMARKS.--Records good. No regulation or diversion upstream from station. Continuous water-quality records for the period October 1956 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--33 years, 800 ft³/s, 42.11 in/yr, 579,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 39,800 ft³/s Dec. 22, 1964, gage height, 16.96 ft, from floodmark, site and datum then in use, from rating curve extended above 5,100 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 187 ft³/s Sept. 15, 16, 1977.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 14	2230	3,820	8.17	Mar. 4	1900	*4,810	8.81
Jan. 14	2230	(a)	8.51	Mar. 4	1900	(a)	*9.09

Minimum discharge, 203 ft³/s Sept. 17-19, 25, 30.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	224	616	650	355	453	605	795	852	809	461	272	231
2	224	469	607	349	532	736	806	915	845	448	273	229
3	226	407	557	348	652	1570	780	934	865	446	272	224
4	227	584	622	343	840	3240	802	910	822	436	270	223
5	229	704	700	338	1340	2810	1070	921	760	413	269	220
6	232	571	604	338	1180	1780	1270	969	712	396	271	220
7	226	499	546	426	976	1400	1200	1040	675	383	275	222
8	226	597	525	485	858	1190	1090	1850	659	369	262	223
9	223	643	549	452	774	1070	1610	1570	657	362	268	222
10	223	541	1250	726	711	997	1440	1320	688	351	271	220
11	226	478	1260	1010	667	916	1190	1160	721	342	263	218
12	228	433	967	2840	678	943	1080	1060	694	335	258	218
13	235	447	812	2880	1350	955	1050	1070	639	334	254	217
14	229	531	702	2950	1300	895	1020	1080	583	332	251	217
15	242	462	637	3220	1130	832	968	1030	543	328	249	213
16	250	425	581	2150	1050	784	913	1040	521	357	248	211
17	242	407	542	1570	973	748	851	1360	496	392	247	211
18	285	434	637	1280	938	764	819	1430	483	343	267	211
19	296	425	622	1090	999	752	794	1350	585	327	248	212
20	257	433	532	947	950	712	810	1280	675	317	242	214
21	290	547	488	844	885	678	891	1310	567	310	239	214
22	443	582	e465	765	821	652	937	1300	527	304	236	214
23	310	581	e450	702	757	685	968	1220	503	315	236	213
24	279	532	e435	650	701	728	1090	1150	510	328	236	211
25	266	982	e425	608	658	727	1060	1070	482	305	234	210
26	261	952	e415	576	627	693	1030	988	467	297	233	211
27	256	761	407	544	602	657	999	927	484	291	233	211
28	269	660	412	518	589	632	934	886	546	286	245	211
29	262	633	382	492	---	607	888	863	529	282	243	210
30	501	708	383	479	---	626	859	923	485	278	233	208
31	950	---	365	466	---	731	---	840	---	274	230	---
TOTAL	8837	17044	18529	30741	23991	31115	30014	34618	18532	10742	7828	6489
MEAN	285	568	598	992	857	1004	1000	1117	618	347	253	216
MAX	950	982	1260	3220	1350	3240	1610	1850	865	461	275	231
MIN	223	407	365	338	453	605	780	840	467	274	230	208
AC-FT	17530	33810	36750	60970	47590	61720	59530	68660	36760	21310	15530	12870
CFSM	1.10	2.20	2.32	3.84	3.32	3.89	3.88	4.33	2.39	1.34	.98	.84
IN.	1.27	2.46	2.67	4.43	3.46	4.49	4.33	4.99	2.67	1.55	1.13	.94

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1991, BY WATER YEAR (WY)

	1959	1960	1961	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	
MEAN	337	790	1174	1214	1141	1047	1038	1101	788	406	298	282																						
MAX	636	1805	3922	2730	2509	2842	1486	1754	1538	740	415	377																						
(WY)	1963	1974	1965	1970	1986	1972	1989	1971	1974	1971	1976	1971																						
MIN	210	268	271	273	271	432	518	557	371	253	215	216																						
(WY)	1988	1988	1977	1977	1977	1977	1968	1968	1987	1977	1977	1991																						

SUMMARY STATISTICS

	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1959 - 1991
ANNUAL TOTAL	234245	238480	
ANNUAL MEAN	642	653	800
HIGHEST ANNUAL MEAN			1197
LOWEST ANNUAL MEAN			360
HIGHEST DAILY MEAN	5190	3240	23700
LOWEST DAILY MEAN	213	208	187
ANNUAL SEVEN-DAY MINIMUM	218	210	190
ANNUAL RUNOFF (AC-FT)	464600	473000	579300
ANNUAL RUNOFF (CFSM)	2.49	2.53	3.10
ANNUAL RUNOFF (INCHES)	33.77	34.39	42.11
10 PERCENT EXCEEDS	1120	1140	1490
50 PERCENT EXCEEDS	546	549	600
90 PERCENT EXCEEDS	237	227	258

WILLAMETTE RIVER BASIN

225

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 National Geodetic Vertical Datum of 1929 (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, 352,500 acre-ft May 20 elevation, 1,541.91 ft; minimum contents, 149,600 acre-ft Dec. 24, elevation, 1,444.28 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1516.86	1493.41	1458.08	1446.57	1457.16	1485.11	1513.56	1533.87	1541.05	1541.19	1541.05	1539.08
2	1515.90	1492.66	1455.98	1446.62	1457.52	1485.82	1514.24	1534.42	1541.09	1541.19	1541.01	1538.99
3	1514.97	1491.84	1454.57	1446.54	1458.18	1488.13	1514.72	1534.98	1541.16	1541.19	1540.94	1538.54
4	1514.01	1491.39	1453.79	1446.44	1459.24	1493.53	1515.00	1535.49	1541.26	1541.17	1540.88	1537.77
5	1513.08	1490.96	1453.15	1446.33	1461.35	1497.61	1515.74	1536.01	1541.32	1541.14	1540.83	1537.01
6	1512.14	1490.18	1452.30	1446.22	1463.07	1499.88	1516.75	1536.57	1541.33	1541.13	1540.78	1536.14
7	1511.17	1489.27	1451.30	1446.26	1464.34	1501.51	1517.61	1537.24	1541.32	1541.11	1540.76	1535.21
8	1510.20	1488.59	1450.28	1446.45	1465.37	1502.78	1518.39	1538.56	1541.28	1541.06	1540.70	1534.26
9	1509.22	1487.34	1449.31	1446.59	1466.22	1503.89	1519.94	1539.17	1541.25	1541.08	1540.66	1533.32
10	1508.24	1485.51	1449.88	1447.27	1466.96	1504.88	1521.01	1539.41	1541.24	1541.08	1540.62	1532.37
11	1507.25	1483.68	1450.49	1447.98	1467.61	1505.69	1521.27	1539.63	1541.24	1541.09	1540.56	1531.44
12	1506.26	1481.86	1450.46	1452.64	1468.32	1506.54	1521.36	1539.82	1541.23	1541.08	1540.50	1530.49
13	1505.26	1480.69	1450.03	1456.95	1470.16	1507.27	1521.39	1540.07	1541.15	1541.08	1540.44	1529.55
14	1504.27	1479.64	1449.35	1459.51	1471.88	1507.82	1521.73	1540.30	1541.08	1541.08	1540.38	1528.60
15	1503.35	1478.58	1448.51	1460.51	1473.27	1508.48	1522.51	1540.49	1541.08	1541.08	1540.30	1527.65
16	1502.48	1477.53	1447.56	1459.68	1474.52	1509.23	1523.31	1540.79	1541.07	1541.12	1540.22	1526.69
17	1501.63	1476.46	1447.23	1458.45	1475.66	1509.91	1524.02	1541.25	1541.09	1541.18	1540.16	1525.73
18	1500.93	1475.41	1447.53	1457.40	1476.79	1510.64	1524.70	1541.70	1541.21	1541.18	1540.11	1524.76
19	1500.19	1474.34	1447.75	1456.82	1478.10	1511.35	1525.32	1541.89	1541.56	1541.18	1540.06	1523.77
20	1499.39	1473.28	1447.78	1456.31	1479.26	1511.99	1525.99	1541.71	1541.78	1541.18	1539.98	1522.77
21	1498.71	1472.40	1447.01	1455.60	1480.27	1512.58	1526.72	1541.39	1541.79	1541.18	1539.93	1521.77
22	1498.17	1471.60	1445.90	1455.18	1481.13	1513.16	1527.49	1541.20	1541.77	1541.17	1539.85	1520.76
23	1497.53	1470.45	1444.78	1455.16	1481.88	1513.78	1528.29	1541.22	1541.69	1541.18	1539.76	1519.76
24	1497.01	1468.91	1444.45	1455.11	1482.54	1514.45	1529.24	1541.31	1541.63	1541.20	1539.67	1518.76
25	1496.48	1468.30	1444.78	1455.10	1483.12	1515.11	1530.09	1541.31	1541.54	1541.20	1539.58	1517.75
26	1495.94	1467.27	1445.09	1455.29	1483.65	1515.17	1530.85	1541.23	1541.43	1541.19	1539.49	1516.74
27	1495.31	1465.60	1445.42	1455.68	1484.14	1514.75	1531.59	1541.15	1541.37	1541.18	1539.40	1515.73
28	1494.64	1463.70	1445.72	1456.11	1484.59	1514.28	1532.25	1541.15	1541.35	1541.16	1539.34	1514.70
29	1494.19	1461.76	1445.97	1456.39	---	1513.79	1532.82	1541.19	1541.29	1541.14	1539.34	1513.68
30	1493.83	1459.96	1446.18	1456.65	---	1513.33	1533.34	1541.15	1541.21	1541.11	1539.26	1512.65
31	1493.90	---	1446.38	1456.96	---	1513.15	---	1541.08	---	1541.08	1539.17	---
MAX	1516.86	1493.41	1458.08	1460.51	1484.59	1515.17	1533.34	1541.89	1541.79	1541.20	1541.05	1539.08
MIN	1493.83	1459.96	1444.45	1446.22	1457.16	1485.11	1513.56	1533.87	1541.05	1541.06	1539.17	1512.65
(†)	238900	174800	152800	169800	219900	281200	330000	350200	350600	350200	345100	280100
(†)	-53200	-64100	-22000	+17000	+50100	+61300	+48800	+20200	+400	-400	-5100	-65000

CAL YR 1990 MAX 1541.52 MIN 1444.45 AC-FT† -3600

WTR YR 1991 MAX 1541.89 MIN 1444.45 AC-FT† -12000

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

† Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

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.

WATER-DISCHARGE RECORDS

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 National Geodetic Vertical Datum of 1929 (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.--No estimated daily discharges. Water-discharge records good. Flow regulated since 1961 by Hills Creek Lake (station 14145100). No diversions upstream from station.

AVERAGE DISCHARGE.--57 years, 1,144 ft³/s, 39.63 in/yr, 828,800 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, 4,290 ft³/s Jan. 16, gage height, 6.35 ft; minimum discharge, 198 ft³/s Jan. 29, 30, Feb. 13.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1530	1490	2640	313	397	291	593	492	1100	613	384	407
2	1490	1490	2670	435	403	291	299	494	1030	601	390	407
3	1480	1480	2020	512	294	295	533	492	992	563	414	894
4	1480	1480	1570	516	294	305	764	491	903	591	412	1300
5	1470	1670	1570	517	289	287	768	492	903	552	406	1300
6	1480	1760	1570	517	288	305	775	497	898	510	397	1430
7	1480	1750	1570	520	287	302	780	483	899	512	401	1510
8	1480	1750	1560	517	280	300	765	778	900	474	403	1530
9	1470	2330	1560	517	276	298	770	1300	899	419	401	1530
10	1470	2730	1560	516	276	298	1020	1470	897	424	403	1510
11	1500	2560	1560	1060	280	397	1520	1300	897	426	400	1510
12	1490	2450	1550	1340	283	474	1520	1200	898	428	400	1500
13	1490	1910	1540	1090	265	655	1520	1200	911	414	404	1500
14	1490	1910	1540	2120	279	772	1100	1200	821	419	407	1500
15	1410	1760	1540	3930	277	492	466	1200	687	422	409	1500
16	1350	1640	1530	3990	281	281	287	1130	689	425	410	1500
17	1290	1640	1020	3380	284	280	286	1660	571	427	410	1500
18	1240	1630	742	2710	282	279	288	1950	445	429	394	1510
19	1240	1640	752	2030	280	279	288	2030	401	399	392	1520
20	1250	1650	754	1720	277	271	289	2310	604	399	407	1520
21	1250	1650	1200	1710	281	276	291	2500	735	399	382	1530
22	1250	1650	1480	1350	284	271	292	2220	735	394	399	1520
23	1130	1900	1470	917	283	272	293	1700	737	387	401	1520
24	978	2180	841	886	283	275	293	1470	738	386	403	1510
25	939	2210	311	766	288	273	383	1470	736	385	405	1510
26	946	2470	313	554	287	923	481	1450	734	386	406	1510
27	1020	2640	314	355	287	1400	479	1340	734	387	406	1510
28	1090	2650	314	293	290	1400	479	1130	735	388	407	1510
29	828	2650	312	370	---	1390	485	1100	735	390	322	1510
30	1210	2650	313	381	---	1390	492	1310	735	392	406	1500
31	1490	---	314	304	---	1220	---	1210	---	388	407	---
TOTAL	40711	59370	38000	36136	8155	16242	18599	39069	23699	13729	12388	42008
MEAN	1313	1979	1226	1166	291	524	620	1260	790	443	400	1400
MAX	1530	2730	2670	3990	403	1400	1520	2500	1100	613	414	1530
MIN	828	1480	311	293	265	271	286	483	401	385	322	407
AC-FT	80750	117800	75370	71680	16180	32220	36890	77490	47010	27230	24570	83320

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1991, 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
MEAN	1273	1714	2040	1715	909	708	779	1010	932	567	756	1241																		
MAX	1956	3492	4580	5308	4391	2044	1597	1985	1983	1165	1430	2283																		
(WY)	1963	1985	1965	1965	1972	1986	1989	1963	1974	1979	1981	1966																		
MIN	1.14	9.44	513	370	10.7	139	92.9	91.5	108	371	293	793																		
(WY)	1962	1962	1966	1977	1962	1977	1977	1977	1977	1968	1966	1965																		

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1962 - 1991

	1990	1991	1962-1991
ANNUAL TOTAL	351894	348106	
ANNUAL MEAN	964	954	1138
HIGHEST ANNUAL MEAN			1821
LOWEST ANNUAL MEAN			578
HIGHEST DAILY MEAN	2820	3990	11700
LOWEST DAILY MEAN	311	265	80
ANNUAL SEVEN-DAY MINIMUM	313	274	80
ANNUAL RUNOFF (AC-FT)	698000	690500	824700
10 PERCENT EXCEEDS	1660	1660	1910
50 PERCENT EXCEEDS	816	752	960
90 PERCENT EXCEEDS	345	288	298

WILLAMETTE RIVER BASIN

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14145500 MIDDLE FORK WILLAMETTE RIVER ABOVE SALT CREEK, NEAR OAKRIDGE, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1960 to current year.

INSTRUMENTATION.--Temperature recorder since October 1960.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 25.0°C Sept. 4, 1960; minimum, 1.5°C Jan. 4, 1961.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum observed, 14.5°C Oct. 17, but may have been higher during period of missing record;
minimum recorded, 4.0°C Jan. 27-31, Feb. 1, but may have been lower during period of missing record.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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										6.0	5.5	5.5
18										5.5	5.5	5.5
19										5.5	5.0	5.5
20										5.5	5.0	5.0
21										5.5	5.0	5.0
22										5.5	5.0	5.0
23										5.0	4.5	5.0
24										5.0	4.5	5.0
25										5.0	4.5	4.5
26										5.0	4.5	4.5
27										4.5	4.0	4.5
28										4.5	4.0	4.5
29										4.5	4.0	4.0
30										4.5	4.0	4.0
31										4.5	4.0	4.5
MONTH										---	---	---

WILLAMETTE RIVER BASIN

14145500 MIDDLE FORK WILLAMETTE RIVER ABOVE SALT CREEK, NEAR OAKRIDGE, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

LOCATION.--Lat 43°45'45", long 122°22'18", in NE 1/4 sec.7, T.21 S., R.4 E., Lane County, Hydrologic Unit 17090001, in Willamette National Forest, on right bank 190 ft upstream from Salmon Creek Falls, 0.1 mi upstream from Needle Creek, 4.6 mi east of Oakridge, and at mile 5.84.

PERIOD OF RECORD.--October to November 1909 (gage heights and one discharge measurement only), February 1913 to October 1919, October 1933 to September 1985, October 1986 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as Kelsey River near Hazeldell and Salmon Creek near Hazeldell, 1909.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,462.36 ft above National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1914, nonrecording gage at several sites within 4 mi of present site at various datums. Oct. 1, 1914, to Oct. 14, 1919, water-stage recorder at site 1.8 mi downstream at different datum. Nov. 5, 1933, to Oct. 27, 1964, water-stage recorder at site 0.8 mi downstream at datum 40.53 ft lower. Oct. 28, 1964, to Aug. 27, 1965, nonrecording gage at site 0.6 mi downstream at different datum.

AVERAGE DISCHARGE.--63 years (water years 1914-19, 1934-85, 1987-91), 423 ft³/s, 49.10 in/yr, 306,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 11,600 ft³/s Dec. 22, 1964, gage height, 9.15 ft, from floodmark, site and datum then in use, from rating curve extended above 2,100 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 63 ft³/s Jan. 8, 1937.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,700 ft³/s and maximum (*):

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1991, BY WATER YEAR (WY)

MEAN	186	412	607	596	586	543	610	598	437	231	162	149
MAX	477	955	1886	1297	1282	1531	1090	1068	1070	636	240	201
(WY)	1951	1978	1965	1971	1982	1972	1919	1917	1917	1917	1917	1978
MIN	99.9	101	139	111	138	180	202	215	138	112	96.1	108
(WY)	1988	1937	1977	1937	1977	1941	1941	1934	1940	1940	1940	1962

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1913 - 1991	
ANNUAL TOTAL	145974		132858			
ANNUAL MEAN	400		364		423	
HIGHEST ANNUAL MEAN					681	1974
LOWEST ANNUAL MEAN					217	1941
HIGHEST DAILY MEAN	4720	Apr 28	1810	Jan 15	9000	Dec 23 1964
LOWEST DAILY MEAN	116	Oct 10	114	Sep 24	78	Jan 21 1937
ANNUAL SEVEN-DAY MINIMUM	119	Oct 5	114	Sep 24	91	Aug 26 1940
ANNUAL RUNOFF (AC-FT)	289500		263500		306800	
ANNUAL RUNOFF (CFSM)	3.42		3.11		3.62	
ANNUAL RUNOFF (INCHES)	46.41		42.24		49.18	
10 PERCENT EXCEEDS	678		661		820	
50 PERCENT EXCEEDS	330		325		320	
90 PERCENT EXCEEDS	131		124		137	

WILLAMETTE RIVER BASIN

14147500 NORTH FORK OF MIDDLE FORK WILLAMETTE RIVER NEAR OAKRIDGE, OR

LOCATION.--Lat 43°45'25", long 122°30'15", in SW 1/4 sec.7, T.21 S., R.3 E., Lane County, Hydrologic Unit 17090001, on left bank 2.5 mi northwest of Oakridge, and at mile 1.0.

DRAINAGE AREA.--246 mi², at measuring section 0.5 mi downstream.

PERIOD OF RECORD.--October 1909 to March 1916, September 1935 to September 1985, October 1986 to current year. Monthly discharge only for some periods, published in WSP 1318. Prior to October 1912, published as "near Hazeldell."

REVISED RECORDS.--WSP 1248: 1914-16.

GAGE. --Water-stage recorder. Datum of gage is 1,029.6 ft above National Geodetic Vertical Datum of 1929 (river profile survey, Oct. 1, 1909, to Mar. 31, 1916, water-stage recorder or nonrecording gage at several sites within 0.8 mi of present site at various datums. Sept. 10, 1935, to Oct. 3, 1938, nonrecording gage at present site and dam.)

REMARKS.--Records good except for estimated daily discharges, which are fair. Slight regulation by Waldo Lake; occasional fluctuations during low-water periods caused by log-ponds upstream from station. No diversions upstream from station. All records given herein are for measuring site.

AVERAGE DISCHARGE.--61 years (water years 1910-15, 1936-85, 1987-91), 786 ft³/s, 43.39 in/yr, 569,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,400 ft³/s Dec. 22, 1964, gage height, 19.14 ft, from floodmark, from rating curve extended above 7,100 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 22 ft³/s Aug. 20, 1966.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 15	unknown	*4,510	*a6.90	No other peak greater than base discharge.			
Minimum daily discharge, 112 ft ³ /s Sept. 30.							
a From maximum stage indicator.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	116	599	e770	424	517	688	772	953	886	395	199	142
2	117	435	e700	409	561	772	829	969	858	376	198	140
3	121	358	e660	401	622	1140	819	952	835	362	194	138
4	124	637	e720	391	699	2010	1000	902	788	349	191	135
5	125	858	e800	381	1290	2210	1230	870	734	337	203	132
6	127	687	e710	373	1200	1700	1400	881	691	326	193	131
7	119	e600	e650	426	1010	1430	1310	938	650	318	190	130
8	118	e700	e600	459	892	1250	1210	1480	621	309	186	132
9	117	e750	e630	437	814	1150	1930	1430	604	301	190	131
10	117	e650	e1980	e790	748	1080	1810	1320	595	294	198	129
11	117	e570	e2000	e1300	703	985	1500	1210	593	288	183	128
12	126	e520	e1250	e3700	735	996	1340	1110	578	282	176	127
13	140	e530	e1100	e3800	2170	1030	1250	1110	555	278	171	126
14	135	e610	989	e3900	2050	989	1200	1130	527	276	167	126
15	141	e550	874	e4300	1590	915	1150	1060	494	272	164	124
16	169	e500	775	e3000	1390	857	1080	1020	478	288	162	122
17	159	e470	705	e2100	1310	811	998	1580	459	296	163	120
18	162	e510	1090	1760	1280	840	962	1960	441	276	176	119
19	197	e500	993	1480	1500	847	916	1760	455	264	166	119
20	154	e500	817	1270	1370	808	933	1580	546	256	160	118
21	290	e630	701	1110	1230	769	1040	1490	487	249	156	117
22	524	e670	e630	986	1100	746	1020	1390	456	246	153	117
23	276	e670	e590	891	981	765	998	1280	432	241	151	116
24	215	e630	e560	814	886	808	1080	1170	414	244	150	115
25	187	e1200	e540	746	810	796	1100	1060	401	235	148	113
26	201	e1150	532	695	748	752	1100	962	392	229	146	113
27	183	e900	521	650	705	706	1180	884	388	223	145	113
28	206	e780	525	614	675	673	1080	849	469	217	153	113
29	200	e750	479	578	---	642	1000	829	445	213	156	113
30	368	e810	451	552	---	634	967	1030	413	208	146	112
31	856	---	443	534	---	691	---	967	---	204	142	---
TOTAL	6207	19724	24785	39271	29586	30490	34204	36116	16685	8652	5276	3711
MEAN	200	657	800	1267	1057	984	1140	1165	556	279	170	124
MAX	856	1200	2000	4300	2170	2210	1930	1960	886	395	203	142
MIN	116	358	443	373	517	634	772	829	388	204	142	112
AC-FT	12310	39120	49160	77890	58680	60480	67840	71640	33090	17160	10460	7360
CFSM	.81	2.67	3.25	5.15	4.30	4.00	4.63	4.74	2.26	1.13	.69	.50
IN.	.94	2.98	3.75	5.94	4.47	4.61	5.17	5.46	2.52	1.31	.80	.55

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1910 - 1991, BY WATER YEAR (WY)

MEAN	260	846	1247	1253	1221	1132	1165	1038	666	295	182	165
MAX	904	2287	4242	2708	2543	2970	2072	1895	1394	650	298	307
(WY)	1951	1910	1965	1912	1982	1972	1937	1949	1950	1913	1976	1978
MIN	103	119	163	182	163	330	373	431	201	124	97.5	116
(WY)	1988	1937	1977	1977	1977	1941	1941	1968	1940	1940	1940	1939

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1910 - 1991
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ANNUAL TOTAL	256564		254707			
ANNUAL MEAN	703		698		786	
HIGHEST ANNUAL MEAN					1201	1972
LOWEST ANNUAL MEAN					350	1977
HIGHEST DAILY MEAN	7900	Apr 28	4300	Jan 15	19300	Dec 23 1964
LOWEST DAILY MEAN	116	Sep 30	112	Sep 30	84	Oct 14 1937
ANNUAL SEVEN-DAY MINIMUM	119	Sep 27	113	Sep 24	93	Aug 19 1940
ANNUAL RUNOFF (AC-FT)	508900		505200		569300	
ANNUAL RUNOFF (CFSM)	2.86		2.84		3.19	
ANNUAL RUNOFF (INCHES)	38.80		38.52		43.40	
10 PERCENT EXCEEDS	1300		1300		1620	
50 PERCENT EXCEEDS	600		614		570	
90 PERCENT EXCEEDS	138		132		150	

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 National Geodetic Vertical Datum of 1929. 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.--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.--69 years (water years 1912, 1924-91), 2,767 ft³/s, 2,005,000 acre-ft/yr.

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, 13,200 ft³/s Jan. 15, gage height, 6.23 ft; minimum discharge, 493 ft³/s Aug. 29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1910	2840	4760	1220	1480	1820	2370	2580	3090	1520	823	752
2	1850	2490	4640	1300	1630	1960	2070	2620	2990	1470	823	749
3	1850	2320	3900	1400	1590	2760	2230	2590	2980	1430	849	1150
4	1850	2870	3360	1380	1730	4930	2810	2490	2770	1420	842	1710
5	1850	3630	3420	1370	2770	5390	3250	2440	2630	1350	848	1710
6	1860	3350	3230	1350	2660	4120	3700	2480	2500	1260	830	1810
7	1850	3080	3100	1460	2340	3510	3570	2570	2400	1230	830	1920
8	1830	4030	3030	1550	2120	3100	3400	3890	2350	1180	825	1950
9	1830	4840	3100	1510	1960	2860	4680	4320	2330	1090	831	1950
10	1830	4660	4840	2000	1850	2710	4770	4320	2360	1070	850	1920
11	1850	4120	5350	3410	1760	2590	4700	3990	2410	1060	817	1910
12	1860	3810	4520	6820	1790	2720	4360	3690	2340	1040	805	1900
13	1900	3220	4010	7050	e4600	3000	4190	3670	2260	1020	799	1900
14	1880	3500	3660	8310	e4500	3070	3730	3760	2100	1020	796	1900
15	1840	3130	3420	12500	3640	2690	2980	3650	1860	1020	791	1900
16	1810	2850	3230	10200	3280	2280	2580	3530	1810	1060	789	1890
17	1740	2760	2650	7940	3130	2160	2410	5360	1660	1110	788	1890
18	1710	2800	2990	6360	3030	2210	2320	6630	1480	1050	794	1890
19	1780	2760	2920	5130	3540	2220	2240	6220	1480	978	772	1900
20	1690	2820	2560	4310	3260	2110	2250	5970	1900	955	778	1900
21	1860	3120	2670	3990	2960	2030	2450	5990	1910	938	743	1910
22	2380	3260	2970	3470	2690	1960	2440	5510	1820	920	758	1900
23	1810	3520	2900	2800	2440	1980	2420	4710	1750	900	760	1900
24	1540	3690	2290	2610	2240	2070	2590	4170	1710	912	759	1890
25	1420	5350	1510	2380	2080	2060	2740	3920	1680	892	757	1880
26	1450	5690	1460	2070	1950	2530	2890	3690	1650	882	754	1880
27	1490	5180	1430	1760	1860	3040	3080	3440	1640	868	753	1880
28	1620	4810	1460	1590	1800	2960	2870	3140	1870	860	770	1880
29	1360	4680	1350	1550	---	2880	2710	3010	1800	854	671	1870
30	1910	4980	1280	1590	---	2850	2620	3620	1710	847	760	1860
31	3330	---	1260	1440	---	2820	---	3380	---	837	750	---
TOTAL	56740	110160	93270	111820	70680	85390	91420	121350	63240	33043	24515	53451
MEAN	1830	3672	3009	3607	2524	2755	3047	3915	2108	1066	791	1782
MAX	3330	5690	5350	12500	4600	5390	4770	6630	3090	1520	850	1950
MIN	1360	2320	1260	1220	1480	1820	2070	2440	1480	837	671	749
AC-FT	112500	218500	185000	221800	140200	169400	181300	240700	125400	65540	48630	106000

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1991, 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
MEAN	1886	3386	4806	4530	3361	2967	3083	3217	2426	1288	1243	1694																		
MAX	2929	7306	13540	10120	8093	7802	4890	5036	4969	1901	1753	2639																		
(WY)	1963	1985	1965	1965	1972	1972	1989	1963	1974	1971	1982	1966																		
MIN	625	1466	1073	874	710	1292	1464	1378	1006	766	700	1262																		
(WY)	1962	1979	1977	1977	1977	1977	1968	1968	1987	1968	1966	1965																		

SUMMARY STATISTICS

	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1962 - 1991
ANNUAL TOTAL	907664	915079	
ANNUAL MEAN	2487	2507	
HIGHEST ANNUAL MEAN			2822
LOWEST ANNUAL MEAN			4301
HIGHEST DAILY MEAN	19900	12500	43500
LOWEST DAILY MEAN	718	671	334
ANNUAL SEVEN-DAY MINIMUM	727	744	349
ANNUAL RUNOFF (AC-FT)	1800000	1815000	2044000
10 PERCENT EXCEEDS	3940	4340	5330
50 PERCENT EXCEEDS	2250	2120	2100
90 PERCENT EXCEEDS	882	858	1060

WILLAMETTE RIVER BASIN

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 National Geodetic Vertical Datum of 1929 (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, 449,000 acre-ft May 11, elevation, 927.40 ft; minimum contents, 108,600 acre-ft Dec. 23, elevation, 820.00 ft.

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

820	108,600	860	205,500	900	338,900
830	129,500	870	235,500	910	377,400
840	152,500	880	267,800	920	417,800
850	177,700	890	302,300	930	460,200

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	891.04	873.45	829.37	820.78	828.42	860.23	890.66	919.79	926.44	926.48	916.36	888.95
2	890.84	872.30	827.24	820.69	827.93	859.73	891.08	920.48	926.37	926.38	915.63	887.96
3	890.67	871.00	826.08	820.72	828.08	860.43	891.70	921.10	926.33	926.27	914.84	887.17
4	890.49	870.26	825.32	820.69	828.68	863.50	892.57	921.69	926.18	926.24	914.05	886.75
5	890.34	869.98	824.96	820.43	830.36	866.68	893.82	922.24	925.97	926.21	913.23	886.25
6	890.08	868.59	824.93	820.36	831.81	868.80	895.29	922.83	926.03	926.05	912.39	885.83
7	889.82	866.97	824.76	820.45	832.87	870.30	896.57	923.52	926.09	926.04	911.61	885.54
8	889.59	865.68	824.51	820.67	833.67	871.54	897.79	924.98	926.19	925.91	910.82	885.27
9	889.43	864.85	824.32	820.77	834.30	872.63	899.81	926.22	926.27	925.73	909.88	884.96
10	889.20	863.01	825.66	821.37	834.84	873.64	901.83	926.96	926.34	925.57	908.99	884.59
11	888.97	860.83	827.00	823.09	835.28	874.58	903.74	926.92	926.39	925.33	908.14	884.30
12	888.78	858.39	827.20	826.37	835.90	875.69	905.44	926.68	926.41	925.05	907.27	883.92
13	888.58	856.08	827.01	829.31	838.89	876.95	906.98	926.44	926.39	924.79	906.39	883.54
14	888.39	853.36	826.53	832.19	841.97	878.25	908.29	926.47	926.26	924.49	905.52	883.24
15	888.17	851.21	825.68	838.67	844.19	879.24	909.17	926.47	926.09	924.17	904.60	882.94
16	887.93	849.89	824.65	841.84	846.06	879.92	909.84	926.46	925.92	923.91	903.71	882.59
17	887.69	848.75	824.48	841.94	847.77	880.52	910.41	926.64	925.89	923.65	902.82	882.20
18	887.47	847.59	825.52	840.64	849.45	881.14	910.93	926.76	925.91	923.36	901.91	881.81
19	887.23	846.50	825.52	838.38	851.54	881.72	911.42	926.50	926.01	923.04	901.03	881.47
20	886.88	845.29	825.38	835.50	853.34	882.24	911.92	926.06	926.04	922.70	900.11	881.12
21	886.77	844.57	823.50	832.58	854.85	882.73	912.52	926.28	925.94	922.35	899.18	880.76
22	886.57	843.82	821.94	830.97	856.09	883.17	913.09	926.10	926.02	922.04	898.25	880.39
23	885.47	842.41	820.33	829.81	857.02	883.65	913.61	925.62	926.06	921.59	897.35	880.06
24	884.01	839.74	820.92	829.02	857.86	884.17	914.35	925.56	926.09	921.10	896.40	879.62
25	882.58	838.83	821.12	828.27	858.54	884.67	915.16	925.42	926.21	920.61	895.41	879.26
26	880.86	838.02	821.18	828.22	859.16	885.39	916.02	925.26	926.31	920.05	894.50	878.89
27	879.15	836.64	821.32	827.88	859.70	886.40	916.97	925.16	926.36	919.44	893.60	878.56
28	877.55	834.80	821.54	827.98	860.18	887.31	917.78	925.40	926.48	918.87	892.72	878.20
29	875.84	832.92	821.33	828.26	---	888.23	918.50	925.68	926.53	918.30	891.74	877.82
30	874.60	831.26	821.22	828.55	---	889.15	919.17	926.30	926.55	917.68	890.88	877.48
31	874.28	---	820.93	828.72	---	890.01	---	926.42	---	917.06	889.93	---
MAX	891.04	873.45	829.37	841.94	860.18	890.01	919.17	926.96	926.55	926.48	916.36	888.95
MIN	874.28	831.26	820.33	820.36	827.93	859.73	890.66	919.79	925.89	917.06	889.93	877.48
(†)	249100	132200	110400	126700	206000	302400	414400	444800	445300	405800	302100	259500
(‡)	-57500	-116900	-21800	+16300	+79300	+96400	+112000	+30400	+500	-39500	-103700	-42600

CAL YR 1990 MAX 928.41 MIN 820.33 AC-FT† -9400
WTR YR 1991 MAX 926.96 MIN 820.33 AC-FT† -47100

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

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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.

WATER-DISCHARGE RECORDS

REVISÉD RECORDS.--WSP 1638: 1948(P).

REMARKS.--No estimated daily discharges. Water-discharge records good. Flow regulated since 1953 by Lookout Point Lake (station 14149000), since 1955 by Dexter Lake (re-regulating), and since 1961 by Hills Creek Lake (station 14145100).

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, 8,670 ft³/s Nov. 14, gage height, 8.33 ft; maximum gage height, 8.42 ft Nov. 14; minimum discharge, 1,030 ft³/s Feb. 19-22.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2260	4240	7010	1450	1810	1930	1230	1240	3100	1680	2290	2540
2	2260	4230	7010	1460	2290	2560	1220	1250	3070	1670	2300	2560
3	2260	4220	5490	1450	1320	2130	1220	1240	3060	1660	2460	2540
4	2260	4210	4210	1460	1260	1300	1220	1240	3020	1510	2490	2520
5	2310	4210	3880	1460	1260	1350	1230	1230	3020	1470	2490	2520
6	2320	5670	3270	1460	1260	1310	1240	1230	2410	1470	2490	2520
7	2280	5680	3310	1460	1260	1280	1230	1230	2160	1470	2450	2430
8	2270	5980	3270	1450	1270	1240	1230	1240	2160	1470	2430	2420
9	2270	6320	3280	1450	1270	1210	1230	2030	2160	1470	2450	2430
10	2260	7560	3760	1450	1270	1210	1230	2750	2160	1470	2460	2510
11	2260	7600	4300	1930	1270	1200	1220	4210	2250	1580	2460	2510
12	2260	7600	4300	3800	1240	1220	1210	4320	2280	1680	2580	2530
13	2240	6970	4330	4390	1100	1210	1260	4250	2300	1690	2560	2500
14	2230	7370	4330	4800	1100	1220	1270	3680	2310	1690	2540	2460
15	2230	6280	4300	6020	1070	1220	1270	3670	2130	1680	2570	2450
16	2210	5060	4310	6360	1070	1240	1270	3650	2100	1690	2580	2450
17	2210	4420	3000	7930	1070	1250	1270	5440	1760	1690	2560	2500
18	2200	4390	2180	8010	1080	1250	1270	7370	1460	1690	2540	2510
19	2220	4370	2810	8010	1070	1250	1270	7160	1460	1690	2560	2430
20	2230	4340	2850	7690	1040	1260	1270	7180	1800	1680	2520	2460
21	2230	4340	4300	7400	1050	1260	1260	6350	2040	1690	2510	2500
22	2730	4330	4360	5660	1050	1260	1270	6160	1680	1680	2530	2480
23	3790	5280	4340	3860	1080	1250	1270	5910	1650	1780	2540	2460
24	4010	6930	2020	3650	1080	1240	1240	4430	1650	1880	2550	2560
25	4130	7000	1420	3090	1070	1240	1240	4210	1490	1990	2560	2440
26	4280	7000	1400	2130	1080	1230	1250	4220	1480	2000	2570	2430
27	4280	7000	1400	2060	1070	1230	1250	3790	1620	2080	2580	2450
28	4260	6990	1440	1630	1220	1220	1250	2590	1650	2090	2580	2450
29	4260	7010	1450	1260	---	1250	1250	2420	1670	2090	2570	2450
30	4270	7000	1450	1290	---	1250	1250	2420	1680	2090	2530	2460
31	4260	---	1450	1340	---	1240	---	3070	---	2090	2550	---
TOTAL	87540	173600	106230	106860	34080	41510	37390	111180	62780	53560	77860	74470
MEAN	2824	5787	3427	3447	1217	1339	1246	3586	2093	1728	2512	2482
MAX	4280	7600	7010	8010	2290	2560	1270	7370	3100	2090	2590	2560
MIN	2200	4210	1400	1260	1040	1200	1210	1230	1460	1470	2290	2420
AC-FT	173600	344300	210700	212000	67600	82340	74160	220500	124500	106200	154400	147700

[illegible]

ANNUAL TOTAL	967701		967060			
ANNUAL MEAN	2651		2649		3013	
HIGHEST ANNUAL MEAN					4586	1972
LOWEST ANNUAL MEAN					1392	1977
HIGHEST DAILY MEAN	11100	Apr 30	8010	Jan 18	28900	Dec 27 1964
LOWEST DAILY MEAN	943	Jan 2	1040	Feb 20	150	Jan 20 1964
ANNUAL SEVEN-DAY MINIMUM	1120	Mar 10	1060	Feb 16	344	May 4 1977
ANNUAL RUNOFF (AC-FT)	1919000		1918000		2183000	
10 PERCENT EXCEEDS	4360		5150		5970	
50 PERCENT EXCEEDS	2230		2250		2180	
90 PERCENT EXCEEDS	1130		1230		1160	

WILLAMETTE RIVER BASIN

14150000 MIDDLE FORK WILLAMETTE RIVER NEAR DEXTER, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1955 to current year.

INSTRUMENTATION.--Temperature recorder since August 1955.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 19.0°C Sept. 6-9, 1987; minimum recorded, 2.5°C Feb. 6-8, 1989, but may have been lower during period of missing record Feb. 9 to Mar. 30, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 17.0°C Oct. 4, Sept. 18-26, 28-30; minimum, 3.0°C Jan. 1-9.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	16.5	16.0	16.0	14.5	14.0	14.5	9.5	9.0	9.5	4.0	3.0	3.5
2	16.5	16.0	16.0	14.5	14.0	14.0	9.0	9.0	9.0	3.5	3.0	3.5
3	16.5	16.0	16.0	14.0	14.0	14.0	9.0	8.5	9.0	3.5	3.0	3.5
4	17.0	16.0	16.0	14.0	14.0	14.0	8.5	8.5	8.5	3.5	3.0	3.0
5	16.5	15.5	16.0	14.0	14.0	14.0	8.5	8.5	8.5	3.5	3.0	3.0
6	16.5	15.5	16.0	14.0	13.5	13.5	8.5	8.0	8.0	3.5	3.0	3.0
7	16.0	15.0	15.5	13.5	13.5	13.5	8.0	8.0	8.0	4.0	3.0	3.5
8	16.0	15.0	15.5	13.5	13.5	13.5	8.5	8.0	8.0	4.0	3.0	3.5
9	16.0	15.0	15.5	13.5	13.5	13.5	8.0	8.0	8.0	3.5	3.0	3.5
10	16.0	15.0	15.5	13.5	13.0	13.0	8.0	8.0	8.0	4.0	3.5	3.5
11	16.0	15.0	15.5	13.0	13.0	13.0	8.0	7.5	8.0	4.0	3.5	4.0
12	16.0	15.0	15.5	13.0	13.0	13.0	7.5	7.5	7.5	4.5	4.0	4.0
13	15.5	15.0	15.5	13.0	12.5	13.0	7.5	7.0	7.5	4.0	4.0	4.0
14	15.5	15.0	15.0	12.5	12.5	12.5	7.5	7.0	7.0	4.0	4.0	4.0
15	15.5	15.0	15.5	12.5	12.0	12.5	7.0	7.0	7.0	4.0	4.0	4.0
16	16.0	15.0	15.5	12.5	12.0	12.0	7.0	7.0	7.0	4.0	4.0	4.0
17	15.5	15.0	15.0	12.0	12.0	12.0	7.0	7.0	7.0	5.0	4.0	4.5
18	15.5	15.0	15.0	12.0	11.5	11.5	7.0	6.5	7.0	5.0	5.0	5.0
19	15.5	14.5	15.0	11.5	11.5	11.5	6.5	6.0	6.5	5.5	5.0	5.0
20	15.0	14.5	14.5	11.5	11.0	11.0	6.0	5.5	5.5	5.0	5.0	5.0
21	14.5	14.5	14.5	11.0	11.0	11.0	5.5	5.0	5.0	5.0	5.0	5.0
22	15.0	14.5	15.0	11.5	11.0	11.0	5.0	4.5	4.5	5.5	5.0	5.0
23	15.0	15.0	15.0	11.0	11.0	11.0	5.0	4.5	4.5	5.0	5.0	5.0
24	15.5	14.5	15.0	11.0	11.0	11.0	5.0	4.0	4.5	5.5	5.0	5.0
25	15.5	15.0	15.0	11.0	10.5	11.0	5.0	4.0	4.5	5.0	4.5	5.0
26	15.5	15.0	15.0	10.5	10.5	10.5	5.0	4.5	4.5	5.5	4.5	5.0
27	15.0	15.0	15.0	10.5	10.0	10.5	5.5	4.5	4.5	5.5	4.5	4.5
28	15.0	15.0	15.0	10.0	10.0	10.0	4.5	4.0	4.5	5.5	4.5	4.5
29	15.0	14.5	15.0	10.0	9.5	10.0	4.5	3.5	4.0	5.5	4.0	4.5
30	15.0	14.5	15.0	9.5	9.5	9.5	4.5	3.5	4.0	5.0	4.0	4.5
31	14.5	14.5	14.5	---	---	---	4.5	3.5	4.0	5.0	4.5	4.5
MONTH	17.0	14.5	15.5	14.5	9.5	12.0	9.5	3.5	6.5	5.5	3.0	4.0

WILLAMETTE RIVER BASIN

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14150000 MIDDLE FORK WILLAMETTE RIVER NEAR DEXTER, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

WILLAMETTE RIVER BASIN

14150300 FALL CREEK NEAR LOWELL, OR

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.

DRAINAGE AREA.--118 mi².

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

GAGE.--Water-stage recorder. Datum of gage is 844.42 ft above National Geodetic Vertical Datum of 1929.

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 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--28 years, 408 ft³/s, 46.95 in/yr, 295,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,400 ft³/s Apr. 27, 1990, gage height, 12.28 ft; minimum discharge, 16 ft³/s Oct. 3, 4, 1965, Oct. 21, 28, 29, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 14	2000	3,360	6.27	No other peak greater than base discharge.			
Minimum discharge, 21 ft ³ /s Sept. 25-28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	725	878	149	173	243	326	415	374	107	46	33
2	28	374	772	141	177	303	319	370	320	100	46	32
3	28	250	625	e136	210	672	296	327	280	95	45	31
4	30	714	615	e133	235	1310	330	289	250	90	45	30
5	42	825	664	e131	732	1270	596	264	232	86	44	29
6	41	584	502	130	496	809	747	263	217	83	43	28
7	31	426	396	203	366	697	778	285	202	80	43	28
8	29	1060	342	312	299	605	777	1200	190	77	43	30
9	28	951	355	274	258	545	1850	1300	180	75	62	29
10	28	550	1270	606	232	505	1440	964	170	73	72	28
11	28	375	1300	1000	213	448	985	737	166	71	50	27
12	35	284	820	2300	257	594	776	585	157	69	45	26
13	45	428	569	1800	1500	770	649	559	150	68	42	26
14	42	710	434	2210	1130	688	572	642	145	69	40	26
15	66	460	356	2670	711	601	520	537	136	67	39	26
16	93	344	293	1610	627	533	486	474	136	77	38	25
17	68	302	254	1070	921	473	425	1930	128	94	38	24
18	92	337	851	766	953	506	385	2780	122	75	37	24
19	110	302	719	589	1170	487	352	1750	132	67	37	24
20	67	381	481	478	885	421	341	1150	213	63	36	23
21	390	960	360	403	663	393	348	851	155	60	34	23
22	474	884	e290	351	521	398	314	655	134	59	33	23
23	165	694	e250	312	426	457	289	524	123	57	33	22
24	105	508	e220	281	362	544	385	440	116	55	33	22
25	83	1890	e195	258	315	541	564	380	113	54	33	21
26	135	1510	e180	238	282	459	720	335	110	53	32	21
27	98	1050	211	220	258	384	941	300	107	52	32	21
28	131	876	247	208	243	334	710	281	160	51	41	22
29	119	828	194	195	---	299	561	294	135	50	43	22
30	646	1150	172	185	---	286	479	553	117	49	36	22
31	1390	---	159	180	---	316	---	468	---	47	33	---
TOTAL	4694	20732	14974	19539	14635	16891	18261	21902	5170	2173	1274	768
MEAN	151	691	483	630	523	545	609	707	172	70.1	41.1	25.6
MAX	1390	1890	1300	2670	1500	1310	1850	2780	374	107	72	33
MIN	27	250	159	130	173	243	289	263	107	47	32	21
AC-FT	9310	41120	29700	38760	29030	33500	36220	43440	10250	4310	2530	1520
CFSM	1.28	5.86	4.09	5.34	4.43	4.62	5.16	5.99	1.46	.59	.35	.22
IN.	1.48	6.54	4.72	6.16	4.61	5.32	5.76	6.90	1.63	.69	.40	.24

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1991, BY WATER YEAR (WY)

	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
MEAN	123	549	797	897	684	622	527	334	196	72.1	47.2	58.5																
MAX	312	1389	2282	1849	1691	1326	862	707	662	163	99.8	188																
(WY)	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
MIN	18.8	82.8	60.6	102	91.8	194	220	98.6	53.8	45.7	25.1	24.3																
(WY)	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

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1964 - 1991

	1990	1991	1964-1991
ANNUAL TOTAL	143831	141013	
ANNUAL MEAN	394	386	
HIGHEST ANNUAL MEAN			408
LOWEST ANNUAL MEAN			644
HIGHEST DAILY MEAN			183
LOWEST DAILY MEAN			1972
ANNUAL SEVEN-DAY MINIMUM	5570	2780	9900
ANNUAL RUNOFF (AC-FT)	27	21	16
ANNUAL RUNOFF (CFSM)	28	22	17
ANNUAL RUNOFF (INCHES)	3.34	3.27	3.45
10 PERCENT EXCEEDS	878	884	952
50 PERCENT EXCEEDS	245	263	213
90 PERCENT EXCEEDS	35	31	35

WILLAMETTE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

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 Corps of Engineers.

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, 123,200 acre-ft May 19, elevation, 832.97 ft; minimum contents, 1,040 acre-ft Dec. 4, elevation, 691.99.

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	97,750
705	2,850	765	33,770	825	109,200
715	5,200	775	42,580	833	123,200

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	763.91	697.40	695.70	736.31	786.31	811.18	826.78	830.04	830.92	830.24	829.19
2	---	762.23	694.28	695.34	736.64	787.02	811.60	826.89	830.07	830.91	830.21	829.14
3	---	759.95	693.42	695.33	737.55	788.54	811.78	827.12	830.07	830.89	830.17	828.64
4	---	759.12	694.45	696.43	738.63	791.24	811.78	827.42	830.04	830.84	830.15	827.27
5	---	757.49	698.16	697.61	741.75	793.42	812.29	827.68	830.10	830.78	830.12	825.52
6	---	754.02	698.80	---	743.92	794.49	813.05	827.91	830.27	830.73	830.09	823.75
7	---	749.88	696.12	---	745.49	795.48	813.66	828.30	830.39	830.66	830.06	821.94
8	---	748.06	693.40	707.21	746.74	796.36	814.22	829.46	830.49	830.60	830.02	820.07
9	---	745.83	694.50	710.14	747.74	797.10	815.78	829.74	830.59	830.51	830.07	818.21
10	---	742.02	702.45	714.95	748.62	797.90	816.27	829.69	830.65	830.48	830.10	816.33
11	---	737.38	704.25	720.75	749.43	798.67	816.14	829.65	830.64	830.46	830.07	814.39
12	---	731.98	700.41	726.69	750.53	799.61	816.36	829.54	830.62	830.43	830.04	812.45
13	---	729.27	696.75	727.29	756.58	800.39	816.96	829.51	830.58	830.39	829.99	810.53
14	---	729.52	695.04	730.08	760.90	800.81	817.51	829.65	830.55	830.37	829.96	808.60
15	---	728.12	694.30	732.82	763.52	801.39	817.93	829.67	830.50	830.35	829.91	806.61
16	---	725.96	694.43	732.83	765.86	802.06	818.27	829.65	830.45	830.40	829.87	804.59
17	---	724.76	695.16	731.87	768.80	802.70	818.73	831.28	830.44	830.45	829.84	802.49
18	---	726.18	699.39	731.58	771.90	803.51	819.18	832.96	830.45	830.47	829.79	800.38
19	---	727.31	697.95	731.21	775.44	804.30	819.64	832.33	830.48	830.48	829.76	798.24
20	---	728.32	695.95	731.13	777.88	804.91	820.06	830.97	830.67	830.48	829.72	796.04
21	---	731.52	696.79	730.96	779.64	805.48	820.52	830.36	830.74	830.47	829.67	793.76
22	---	734.18	695.74	730.73	781.08	806.07	820.89	830.11	830.77	830.48	829.62	791.49
23	773.54	733.16	695.41	730.74	782.19	806.77	821.25	830.13	830.78	830.45	829.57	789.17
24	771.86	727.53	696.01	730.97	783.11	807.60	821.77	830.12	830.78	830.42	829.52	786.71
25	770.07	728.87	695.63	731.77	783.89	808.25	822.58	830.09	830.78	830.41	829.47	783.87
26	768.30	727.33	695.68	732.69	784.56	808.64	823.51	830.10	830.78	830.40	829.42	781.02
27	766.41	721.86	696.21	733.49	785.16	809.08	824.77	830.11	830.78	830.37	829.38	778.10
28	764.58	713.95	695.87	734.24	785.74	809.56	825.71	830.11	830.88	830.35	829.36	774.96
29	762.73	705.65	695.00	734.89	---	809.92	826.28	830.20	830.91	830.33	829.32	771.69
30	762.57	703.50	695.40	735.47	---	810.29	826.58	830.36	830.92	830.31	829.28	768.26
31	764.37	---	695.72	736.15	---	810.71	---	830.22	---	830.27	829.24	---
MAX	---	763.91	704.25	---	785.74	810.71	826.58	832.96	830.92	830.92	830.24	829.19
MIN	---	703.50	693.40	---	736.31	786.31	811.18	826.78	830.04	830.27	829.24	768.26
(†)	33260	2590	1490	13940	53940	86180	111900	118200	119500	118300	116500	36490
(‡)	-41990	-30670	-1100	+12450	+40000	+32240	+25720	+6300	+1300	-1200	-1800	-80010

CAL YR 1990 AC-FT† -3710

WTR YR 1991 AC-FT‡ -38760

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

WILLAMETTE RIVER BASIN

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.

WATER-DISCHARGE RECORDS

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. Datum of gage is 637.81 ft above National Geodetic Vertical Datum of 1929 (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.--Water-discharge records good. Flow regulated since 1966 by Fall Creek Lake (station 14150900). No diversion upstream from station. Negative adjusted runoff for September 1991 was a result of evaporation from the reservoir exceeding natural flow.

AVERAGE DISCHARGE.--56 years, 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, 3,030 ft³/s Jan. 15, gage height, 6.55 ft; minimum discharge, 24 ft³/s Jan. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	933	1240	1730	320	193	47	142	441	694	149	72	72
2	952	1220	1320	305	209	49	142	444	439	150	72	72
3	953	1260	1010	256	51	58	312	269	401	152	72	492
4	949	1290	867	171	52	256	489	152	402	152	72	1240
5	1030	1740	736	75	59	479	491	152	243	152	73	1530
6	1100	2040	734	49	57	590	492	152	155	152	73	1520
7	1090	2000	823	50	57	457	613	153	155	152	73	1540
8	1090	1960	731	52	57	385	684	155	155	152	73	1540
9	897	1940	555	53	57	386	869	1540	155	151	74	1530
10	764	1900	1300	56	58	267	1380	1410	197	123	73	1530
11	770	1840	1830	254	48	204	1430	1130	225	105	73	1520
12	786	1780	1730	1470	42	288	928	972	222	105	74	1510
13	783	1360	1280	2090	57	660	483	869	221	105	73	1460
14	777	1070	885	1890	51	825	438	820	221	105	74	1450
15	774	1060	706	2400	49	574	440	802	221	93	74	1440
16	770	1030	555	2550	50	395	440	761	221	73	73	1430
17	766	758	456	1600	50	285	259	1620	179	74	72	1420
18	764	245	1090	1110	53	206	144	2620	149	72	72	1410
19	759	244	1360	918	53	206	144	2940	149	72	72	1400
20	754	388	1030	701	125	206	144	2740	152	72	72	1390
21	753	528	626	625	104	209	145	1760	152	72	72	1420
22	865	540	663	572	49	209	147	1180	151	72	73	1380
23	930	1220	537	449	48	209	147	778	152	72	72	1370
24	927	1990	411	341	47	213	148	685	152	72	72	1430
25	947	1940	444	167	47	343	149	600	152	72	72	1530
26	958	2280	399	95	47	414	149	482	149	72	72	1500
27	950	2470	386	95	47	242	148	456	149	72	72	1480
28	946	2480	529	95	47	142	148	404	149	72	72	1530
29	937	2160	462	96	---	142	319	360	149	72	72	1520
30	944	1730	338	97	---	142	441	633	150	72	e72	1500
31	1120	---	319	68	---	142	---	803	---	72	72	---
TOTAL	27738	43703	25842	19070	1864	9230	12405	28784	6461	3153	2249	40156
MEAN	895	1457	834	615	66.6	298	413	929	215	102	72.5	1339
MAX	1120	2480	1830	2550	209	825	1430	2940	694	152	74	1540
MIN	753	244	319	49	42	47	142	152	149	72	72	72
AC-FT	55020	86680	51260	37830	3700	18310	24610	57090	12820	6250	4460	79650
MEAN†	212	941	816	818	787	822	846	1031	237	82.1	43.3	-6.05
CFSM†	1.14	5.06	4.39	4.40	4.23	4.42	4.55	5.54	1.28	.44	.23	-.03
IN.†	1.31	5.65	5.06	5.07	4.41	5.10	5.07	6.39	1.42	.51	.27	-.04
AC-FT†	13030	56010	50160	50280	43700	50550	50330	63390	14120	5050	2660	-360

CAL YR 1990 TOTAL 209626 MEAN 574 MAX 3510 MIN 19 AC-FT 415800 MEAN† 569 CFSM† 3.06 IN.† 41.55 AC-FT† 412100
WTR YR 1991 TOTAL 220655 MEAN 605 MAX 2940 MIN 42 AC-FT 437700 MEAN† 551 CFSM† 2.96 IN.† 40.22 AC-FT† 398900

e Estimated

† Adjusted for change in contents in Fall Creek Lake.

WILLAMETTE RIVER BASIN

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14151000 FALL CREEK BELOW WINBERRY CREEK, NEAR FALL CREEK, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1950 to current year.

INSTRUMENTATION.--Temperature recorder since August 1950.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 26.0°C July 28, 1958; minimum, 0.0°C Dec. 23, 24, 1990.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 19.0°C Aug. 29, 30, Sept. 2; minimum, 0.0°C Dec. 23, 24.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	11.0	11.0	11.0	12.5	12.0	12.5	7.0	6.5	6.5	2.0	1.5	1.5
2	11.5	11.0	11.5	12.0	12.0	12.0	7.0	6.5	6.5	2.0	1.0	1.5
3	11.5	11.5	11.5	12.0	11.5	12.0	6.5	6.0	6.5	2.0	1.5	1.5
4	11.5	11.5	11.5	12.0	12.0	12.0	7.5	6.5	7.0	2.0	1.5	1.5
5	12.0	11.5	11.5	12.0	12.0	12.0	7.0	6.5	7.0	2.0	1.5	1.5
6	12.0	11.5	12.0	12.0	11.5	12.0	6.5	5.5	6.0	2.0	1.5	2.0
7	12.5	12.0	12.0	12.0	11.5	11.5	5.5	5.0	5.5	3.0	2.0	2.5
8	12.5	12.0	12.5	11.5	11.5	11.5	7.5	5.5	6.5	3.5	2.5	3.0
9	13.0	12.5	13.0	11.5	11.5	11.5	8.0	7.0	7.5	3.0	2.5	3.0
10	13.0	13.0	13.0	12.0	11.5	11.5	8.5	8.0	8.0	3.5	3.0	3.0
11	13.5	13.0	13.5	12.0	11.5	11.5	8.0	7.0	7.5	3.5	3.0	3.5
12	14.5	13.5	14.0	11.5	11.0	11.5	7.0	6.0	6.5	5.0	3.5	4.0
13	15.0	14.5	14.5	11.5	10.5	11.0	6.0	6.0	6.0	6.5	5.0	6.0
14	15.5	15.0	15.0	11.0	10.0	10.5	6.0	5.5	5.5	6.5	6.5	6.5
15	16.0	15.5	15.5	10.5	10.0	10.0	6.0	5.5	5.5	7.5	6.5	7.0
16	16.0	16.0	16.0	10.0	9.5	10.0	6.0	5.5	6.0	7.5	7.5	7.5
17	16.5	16.0	16.0	10.0	8.0	9.5	6.0	6.0	6.0	7.5	7.0	7.0
18	16.0	16.0	16.0	8.5	8.0	8.5	6.5	6.0	6.5	7.0	7.0	7.0
19	16.0	15.5	16.0	8.5	8.5	8.5	5.5	3.5	4.5	7.0	7.0	7.0
20	15.5	15.5	15.5	8.5	8.5	8.5	3.0	1.0	2.0	7.0	7.0	7.0
21	15.5	15.5	15.5	9.0	8.0	8.5	.5	.5	.5	7.0	6.5	6.5
22	15.5	14.0	14.5	8.5	8.0	8.0	.5	.5	.5	6.5	6.0	6.0
23	14.0	14.0	14.0	8.5	8.0	8.5	.5	.0	.5	6.0	5.5	5.5
24	14.0	14.0	14.0	8.5	8.5	8.5	.5	.0	.5	5.5	5.0	5.5
25	14.5	14.0	14.5	8.5	8.5	8.5	.5	.5	.5	5.5	4.5	5.0
26	14.5	14.5	14.5	8.5	8.0	8.5	2.0	.5	1.0	5.5	4.5	5.0
27	14.5	14.5	14.5	8.0	8.0	8.0	3.0	2.0	2.5	5.5	4.5	5.0
28	14.5	14.5	14.5	8.0	7.5	7.5	3.0	3.0	3.0	5.5	4.5	5.0
29	14.5	14.5	14.5	7.5	7.0	7.0	3.0	1.5	2.0	5.5	4.5	4.5
30	14.5	14.5	14.5	7.5	7.0	7.0	1.5	1.0	1.5	5.0	4.0	4.5
31	14.5	13.0	13.5	---	---	---	2.0	.5	1.0	5.0	4.0	4.5
MONTH	16.5	11.0	14.0	12.5	7.0	10.0	8.5	.0	4.5	7.5	1.0	4.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.5	4.5	4.5	8.0	6.5	7.0	8.0	7.5	7.5	9.5	8.5	8.5
2	5.0	4.5	5.0	8.0	6.5	7.0	8.0	7.0	7.5	9.5	8.0	9.0
3	5.5	5.0	5.0	8.0	6.5	7.5	8.5	7.0	7.5	11.5	9.0	10.0
4	5.5	5.0	5.5	8.5	7.0	7.5	7.5	7.0	7.0	11.5	9.5	10.5
5	6.0	5.0	5.5	7.5	7.0	7.5	7.5	7.0	7.5	11.5	9.5	10.5
6	6.5	4.5	5.5	7.5	7.0	7.0	7.5	7.0	7.0	11.5	10.0	10.5
7	7.5	5.5	6.5	7.5	7.0	7.5	7.5	7.0	7.0	11.0	9.5	10.5
8	7.0	5.5	6.0	8.0	7.0	7.5	7.5	7.0	7.0	10.0	7.5	8.5
9	7.5	5.5	6.0	7.5	7.0	7.5	7.5	7.0	7.0	7.5	7.5	7.5
10	7.0	5.5	6.0	8.5	7.0	7.5	7.5	7.0	7.0	8.0	7.5	7.5
11	7.5	6.0	6.5	8.0	7.5	8.0	7.5	7.0	7.0	8.0	7.5	8.0
12	7.0	5.5	6.0	8.5	7.0	7.5	7.5	7.0	7.5	8.0	8.0	8.0
13	7.5	7.0	7.5	7.5	6.5	7.0	8.0	7.0	7.5	8.0	8.0	8.0
14	8.5	6.5	7.5	7.0	7.0	7.0	8.0	7.5	7.5	8.5	8.0	8.0
15	8.0	6.5	7.0	7.5	7.0	7.0	7.5	7.5	7.5	8.5	8.0	8.5
16	7.5	6.5	7.0	7.5	7.0	7.5	7.5	7.5	7.5	8.5	8.5	8.5
17	7.5	6.5	7.0	9.0	7.0	7.5	8.5	7.5	8.0	8.5	8.0	8.0
18	7.0	6.5	7.0	8.5	7.0	8.0	9.0	7.5	8.0	8.0	8.0	8.0
19	7.5	6.5	7.0	8.0	7.0	7.5	9.0	7.5	8.0	8.0	8.0	8.0
20	7.5	6.5	7.0	8.5	7.0	8.0	9.0	8.0	8.0	8.5	8.0	8.5
21	8.0	6.5	7.0	7.5	7.0	7.5	8.5	7.5	8.0	8.5	8.5	8.5
22	8.5	6.0	7.0	8.0	7.0	7.5	9.5	7.5	8.0	9.0	8.5	8.5
23	8.5	6.0	7.0	8.0	7.0	7.5	8.5	7.5	8.0	9.0	8.5	9.0
24	8.5	6.0	6.5	8.0	7.0	7.5	10.5	7.5	9.0	9.5	9.0	9.0
25	8.5	6.0	7.0	7.5	7.0	7.0	12.0	10.0	10.5	9.5	9.0	9.0
26	8.5	6.0	7.0	7.5	7.0	7.0	11.5	8.5	10.0	10.0	9.0	9.5
27	8.5	6.0	7.0	9.0	7.0	7.5	11.5	9.5	10.0	10.0	9.5	9.5
28	8.0	6.0	7.0	8.5	7.0	7.5	11.5	9.5	10.5	10.5	9.5	10.0
29	---	---	---	9.0	7.0	7.5	10.0	8.0	9.0	10.0	9.5	10.0
30	---	---	---	8.5	7.0	8.0	9.5	8.0	8.5	10.0	9.0	9.5
31	---	---	---	8.5	7.0	7.5	---	---	---	9.5	9.0	9.0
MONTH	8.5	4.5	6.5	9.0	6.5	7.5	12.0	7.0	8.0	11.5	7.5	9.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	10.0	9.0	9.5	14.0	12.5	13.0	17.0	14.5	15.5	18.5	16.5	17.5
2	10.5	9.5	10.0	14.5	12.5	13.5	16.5	15.0	15.5	19.0	16.5	17.5
3	10.5	10.0	10.0	14.5	12.5	13.5	16.5	15.0	15.5	17.5	11.0	14.0
4	10.5	10.0	10.5	14.0	12.5	13.5	17.0	15.0	15.5	11.5	10.0	11.0
5	12.5	10.5	11.5	14.0	12.5	13.5	17.0	15.0	15.5	10.5	10.5	10.5
6	12.5	11.0	12.0	14.0	12.5	13.5	16.5	15.0	15.5	10.5	10.5	10.5
7	12.0	11.5	12.0	14.0	13.0	13.5	16.5	15.0	15.5	11.0	10.5	11.0
8	12.5	11.5	12.0	14.5	13.0	13.5	17.0	14.5	16.0	11.0	11.0	11.0
9	12.5	11.5	12.0	14.5	12.5	13.5	16.0	15.5	15.5	11.0	11.0	11.0
10	12.5	11.0	11.5	15.0	13.0	14.0	17.0	15.0	16.0	11.0	11.0	11.0
11	13.0	10.5	11.5	15.0	13.5	14.0	17.0	15.0	16.0	11.0	11.0	11.0
12	12.5	11.5	12.0	15.5	13.5	14.0	17.0	15.0	16.0	11.5	11.0	11.0
13	12.5	11.5	12.0	15.0	13.5	14.0	17.5	15.5	16.0	11.5	11.0	11.0
14	13.0	11.5	12.5	15.5	13.5	14.0	17.5	15.5	16.0	11.5	11.0	11.5
15	13.0	11.5	12.0	14.5	13.5	14.0	17.5	15.5	16.5	11.5	11.0	11.5
16	13.0	12.0	12.5	14.5	13.5	14.0	17.5	15.5	16.0	11.5	11.5	11.5
17	13.0	12.0	12.5	16.0	13.5	14.5	17.5	16.0	16.5	11.5	11.0	11.0
18	13.0	12.5	12.5	16.0	13.5	14.5	17.5	16.0	16.5	11.5	11.0	11.5
19	12.5	12.0	12.5	16.0	14.0	14.5	18.0	16.0	16.5	11.5	11.5	11.5
20	13.0	12.0	12.5	16.0	13.5	14.5	18.0	16.0	17.0	11.5	11.5	11.5
21	12.5	12.0	12.0	16.0	14.0	15.0	18.0	16.0	17.0	12.0	11.5	11.5
22	13.5	12.0	12.5	16.5	14.0	15.0	18.0	16.0	16.5	12.0	11.5	12.0
23	13.5	12.0	12.5	16.5	14.0	15.0	17.5	16.0	16.5	12.0	12.0	12.0
24	13.0	12.0	12.5	16.0	14.0	15.0	18.0	16.0	16.5	12.5	12.0	12.0
25	13.0	12.5	12.5	15.5	14.5	15.0	17.5	16.0	17.0	12.5	11.5	12.5
26	13.5	12.5	13.0	16.5	14.0	15.0	18.0	16.0	17.0	13.5	12.5	13.0
27	13.5	12.5	13.0	16.5	14.0	15.0	17.5	16.5	17.0	14.0	13.0	13.5
28	13.5	12.5	13.0	17.0	14.5	15.5	18.0	17.0	17.0	15.0	14.0	14.5
29	13.5	12.5	12.5	16.5	14.5	15.5	19.0	15.5	17.5	16.5	15.0	16.0
30	13.5	12.5	13.0	17.0	14.5	15.5	19.0	15.5	17.5	17.5	16.5	17.0
31	---	---	---	17.0	14.0	15.5	18.5	15.0	17.0	---	---	---
MONTH	13.5	9.0	12.0	17.0	12.5	14.5	19.0	14.5	16.5	19.0	10.0	12.5
YEAR	19.0	.0	10.0									

WILLAMETTE RIVER BASIN

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14152000 MIDDLE FORK WILLAMETTE RIVER AT JASPER, OR

LOCATION.--Lat 43°59'55", long 122°54'20", 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 National Geodetic Vertical Datum of 1929. 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.--Records excellent except for estimated daily discharges, which are fair. 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.--48 years (water years 1906-11, 1914-16, 1953-91), 4,064 ft³/s, 2,944,000 acre-ft/yr.

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, 13,700 ft³/s May 18, gage height, 7.79 ft; minimum discharge, 1,380 ft³/s Feb. 27, 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	3070	6240	10000	2140	2100	2230	1670	1980	4090	1920	2380	2590
2	3100	5900	9580	2120	2850	3040	1650	1950	3800	1900	2400	2620
3	3110	5820	7480	2070	1780	3080	1750	1810	3690	1880	2550	2900
4	3100	6200	5700	1980	1640	3090	1950	1630	3640	1730	2580	3660
5	3240	6780	5230	1870	2100	3180	2170	1600	3500	1670	2590	4050
6	3380	8290	4570	1810	1900	2880	2370	1590	2810	1670	2590	4060
7	3340	8250	4580	1860	1770	2580	2550	1630	2520	1660	2550	4000
8	3330	8590	4480	1950	1690	2310	2620	2830	2490	1660	2530	3990
9	3150	8890	4250	1920	1640	2210	3110	4670	2480	1650	2550	3990
10	2960	9880	6270	2060	1600	2180	3620	5080	2500	1640	2580	4050
11	2970	9840	7350	3030	1570	2050	3570	5900	2620	1710	2570	4050
12	3010	9690	6980	e6050	1560	2300	2950	5780	2650	1840	2660	4060
13	3010	9100	6320	e7300	2050	2700	2340	5620	2670	1840	2650	3990
14	3010	9580	5760	e7600	1970	2850	2240	5000	2670	1840	2620	3940
15	3020	7900	5430	e9500	1740	2600	2230	4890	2490	1830	2650	3920
16	3020	6480	5280	e10100	1680	2320	2160	4810	2450	1820	2660	3900
17	3020	5570	4020	10800	1750	2130	1980	9000	2100	1830	2640	3940
18	3050	5050	3990	10200	1860	2020	1800	13300	1700	1810	2620	3960
19	3080	4940	5070	9780	2000	1990	1760	12500	1710	1800	2620	3860
20	3060	5030	4590	9110	1900	1940	1730	11700	2080	1800	2600	3870
21	3150	5530	5160	8580	1790	1940	1710	9250	2330	1800	2580	3960
22	3850	5440	5450	6900	1630	1950	1680	8000	1970	1790	2590	3900
23	4770	6780	5240	4730	1570	2000	1660	7130	1900	1880	2600	3850
24	5030	9590	e3050	4360	1520	2120	1680	5590	1890	1980	2610	3990
25	5160	10800	e2300	3710	1470	2180	1810	5150	1740	2090	2620	4000
26	5350	11000	2230	2650	1430	2160	1890	4990	1700	2110	2620	3960
27	5350	11000	2210	2460	1400	1950	1940	4570	1830	2190	2630	3960
28	5380	10800	2420	2060	1510	1770	1870	3380	1920	2200	2640	4010
29	5370	10500	2360	1590	---	1740	1930	3120	1920	2200	2640	4020
30	5720	10100	2200	1590	---	1710	2030	3430	1920	2200	2590	4010
31	6540	---	2150	1620	---	1690	---	4160	---	2200	2610	---
TOTAL	117700	239560	151700	143500	49470	70890	64420	162040	73780	58140	80320	115060
MEAN	3797	7985	4894	4629	1767	2287	2147	5227	2459	1875	2591	3835
MAX	6540	11000	10000	10800	2850	3180	3620	13300	4090	2200	2660	4060
MIN	2960	4940	2150	1590	1400	1690	1650	1590	1700	1640	2380	2590
AC-FT	233500	475200	300900	284600	98120	140600	127800	321400	146300	115300	159300	228200

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1991, 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
MEAN	4101	6389	7548	6538	3917	3448	2927	3113	2857	1910	2364	3606													
MAX	5392	12730	14630	11480	9460	10550	5603	5737	6746	2562	3340	4823													
(WY)	1985	1985	1978	1976	1972	1972	1974	1984	1984	1969	1971	1984													
MIN	2201	2618	1517	1327	787	1111	729	844	1187	1248	1766	1830													
(WY)	1988	1988	1977	1977	1977	1977	1977	1973	1977	1978	1984	1968													

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1967 - 1991

ANNUAL TOTAL	1296940	1326580	
ANNUAL MEAN	3553	3634	
HIGHEST ANNUAL MEAN			4062
LOWEST ANNUAL MEAN			6215
HIGHEST DAILY MEAN			1877
LOWEST DAILY MEAN	16500	13300	20900
ANNUAL SEVEN-DAY MINIMUM	1100	1400	536
ANNUAL RUNOFF (AC-FT)	1320	1500	555
10 PERCENT EXCEEDS	6380	7200	8020
50 PERCENT EXCEEDS	2610	2620	3070
90 PERCENT EXCEEDS	1490	1710	1530

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 National Geodetic Vertical Datum of 1929 (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.

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, 32,580 acre-ft May 18, elevation, 790.70 ft; minimum contents, 3,180 acre-ft Nov. 12, elevation, 750.13 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	774.83	755.36	753.09	750.28	753.19	765.65	778.28	785.84	790.10	790.07	789.11	786.91
2	773.92	754.76	752.65	750.55	753.24	766.41	778.54	786.04	790.09	790.08	789.05	786.83
3	772.98	753.91	751.74	751.05	753.83	768.42	778.59	786.20	790.16	790.07	788.99	786.68
4	772.01	753.52	750.71	751.24	754.83	770.29	778.63	786.34	790.24	790.06	788.93	786.49
5	771.04	753.75	750.91	751.27	757.74	769.78	779.14	786.45	790.28	790.03	788.87	786.29
6	770.04	753.37	750.97	751.31	759.10	769.35	779.49	786.58	790.28	790.01	788.81	786.09
7	769.00	752.15	750.53	751.61	759.64	769.50	779.62	786.76	790.28	789.99	788.75	785.90
8	767.95	751.57	750.74	752.01	759.90	769.71	779.55	787.32	790.26	789.96	788.69	785.70
9	767.08	751.35	750.99	752.18	760.11	769.88	779.81	787.68	790.24	789.94	788.65	785.44
10	766.23	750.96	751.14	752.88	760.29	770.42	779.98	788.12	790.20	789.91	788.59	785.14
11	765.39	750.38	751.37	753.47	760.39	771.06	780.10	788.50	790.19	789.88	788.53	784.84
12	764.64	750.26	751.19	754.79	760.66	772.20	780.34	788.78	790.21	789.84	788.47	784.53
13	763.87	751.34	751.26	752.06	760.89	772.75	780.81	789.07	790.22	789.81	788.40	784.23
14	763.07	751.47	751.35	752.28	760.86	772.67	781.44	789.33	790.23	789.78	788.34	783.93
15	762.23	750.90	751.05	752.59	761.05	772.78	781.98	789.54	790.23	789.76	788.26	783.62
16	761.39	750.83	750.52	751.47	761.47	773.17	782.35	789.82	790.23	789.78	788.18	783.19
17	760.52	750.61	750.42	751.22	762.02	773.48	782.64	790.67	790.22	789.79	788.10	782.68
18	759.84	750.69	751.78	751.08	762.82	773.88	782.91	790.61	790.21	789.77	788.02	782.15
19	759.06	750.61	751.89	751.13	763.34	774.23	783.10	790.06	790.29	789.74	787.94	781.62
20	758.17	750.75	751.28	751.63	763.37	774.51	783.26	789.92	790.36	789.70	787.86	781.07
21	757.37	751.27	750.94	752.12	763.54	774.78	783.39	789.89	790.33	789.66	787.77	780.53
22	756.78	750.64	750.43	752.43	763.85	775.04	783.56	789.93	790.27	789.62	787.69	779.99
23	755.94	750.87	750.48	752.62	764.24	775.54	783.80	789.91	790.19	789.58	787.60	779.40
24	755.14	750.88	750.77	752.70	764.56	776.57	784.15	789.94	790.15	789.53	787.51	778.85
25	754.46	751.39	750.71	752.71	764.82	776.99	784.53	789.96	790.15	789.49	787.42	778.30
26	753.84	750.98	750.50	752.66	765.04	776.88	784.82	790.00	790.14	789.44	787.33	777.74
27	753.17	751.15	750.34	752.54	765.23	776.79	785.06	790.09	790.12	789.39	787.25	777.17
28	752.56	750.71	750.55	752.63	765.41	776.75	785.25	790.14	790.12	789.34	787.19	776.61
29	752.07	751.23	750.48	752.90	---	777.03	785.41	790.23	790.10	789.29	787.13	776.04
30	752.90	752.91	750.42	753.14	---	777.47	785.61	790.27	790.08	789.23	787.05	775.46
31	755.06	---	750.38	753.37	---	777.89	---	790.20	---	789.17	786.99	---
MAX	774.83	755.36	753.09	754.79	765.41	777.89	785.61	790.67	790.36	790.08	789.11	786.91
MIN	752.07	750.26	750.34	750.28	753.19	765.65	778.28	785.84	790.08	789.17	786.99	775.46
(†)	4890	4080	3250	4240	10220	19540	27000	32010	31880	30850	28460	17460
(‡)	-12770	-810	-830	+990	+5980	+9320	+7460	+5010	-130	-1030	-2390	-11000

CAL YR 1990 MAX 790.13 MIN 748.94 AC-FT† -20
WTR YR 1991 MAX 790.67 MIN 750.26 AC-FT‡ -200

† 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 National Geodetic Vertical Datum of 1929 (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.--52 years, 268 ft³/s, 34.99 in/yr, 194,200 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, 2,140 ft³/s May 18, gage height, 7.54 ft; minimum discharge, 45 ft³/s Aug. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	379	227	424	147	154	85	82	83	216	60	48	56
2	382	284	525	91	175	86	137	83	153	48	48	55
3	382	281	519	52	91	161	219	85	96	48	48	92
4	389	279	510	86	83	878	258	85	80	48	48	121
5	386	281	297	105	95	1420	338	85	104	48	48	121
6	382	376	263	105	167	944	561	83	119	48	48	121
7	382	422	299	111	220	592	632	83	119	48	48	121
8	375	279	178	131	219	453	632	163	119	48	48	120
9	309	204	179	156	185	411	632	290	119	48	48	148
10	256	202	699	156	158	285	632	163	121	49	47	170
11	256	201	675	321	158	213	511	145	100	49	46	168
12	254	115	504	940	113	300	353	143	80	49	46	168
13	252	168	357	1460	150	583	156	143	80	49	46	168
14	257	524	279	835	212	703	87	143	80	49	46	168
15	258	380	303	824	139	577	123	143	80	49	52	168
16	255	214	300	845	81	408	149	151	80	49	57	227
17	252	213	210	549	81	346	149	1580	81	49	57	271
18	251	213	151	435	83	309	149	2070	81	48	57	269
19	249	213	370	333	214	312	151	1220	81	48	57	268
20	245	213	402	209	311	312	151	745	81	48	57	267
21	242	406	287	166	221	312	151	556	106	48	57	266
22	240	486	285	164	140	312	111	414	118	48	57	264
23	237	257	187	166	91	314	83	379	119	48	57	263
24	203	224	127	166	85	322	83	281	93	48	57	260
25	171	669	164	166	85	436	129	268	74	48	57	260
26	170	784	184	166	85	547	153	184	76	48	57	257
27	168	461	182	166	85	441	153	168	78	48	57	257
28	167	442	184	123	85	355	153	168	78	48	56	255
29	132	292	184	82	---	173	151	171	78	48	56	254
30	112	204	159	82	---	83	102	211	78	48	56	252
31	117	---	148	81	---	82	---	219	---	48	56	---
TOTAL	8110	9514	9535	9419	3966	12755	7371	10705	2968	1508	1623	5855
MEAN	262	317	308	304	142	411	246	345	98.9	48.6	52.4	195
MAX	389	784	699	1460	311	1420	632	2070	216	60	57	271
MIN	112	115	127	52	81	82	82	83	74	48	46	55
AC-FT	16090	18870	18910	18680	7870	25300	14620	21230	5890	2990	3220	11610
MEAN†	54.0	304	294	320	249	563	371	427	96.8	31.9	13.5	10.3
CFSM†	0.52	2.92	2.83	3.08	2.39	5.41	3.57	4.11	0.93	0.31	0.13	0.10
IN.†	0.60	3.26	3.26	3.55	2.50	6.24	3.98	4.73	1.04	0.35	0.15	0.11
AC-FT†	3320	18060	18080	19670	13850	34620	22080	26240	5760	1960	830	610

CAL YR 1990 TOTAL 72503 MEAN 199 MAX 1920 MIN 29 AC-FT 143800 MEAN† 199 CFSM† 1.91 IN.† 25.93 AC-FT† 143800
WTR YR 1991 TOTAL 83329 MEAN 228 MAX 2070 MIN 46 AC-FT 165300 MEAN† 228 CFSM† 2.19 IN.† 29.77 AC-FT† 165100

† Adjusted for change in contents in Cottage Grove Lake.

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 National Geodetic Vertical Datum of 1929.
Sept. 16, 1935, to Oct. 17, 1938, nonrecording gage at site 450 ft upstream at datum 1.00 ft higher.

REMARKS.--Records good. Slight regulation caused by upstream logponds. No diversion upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--56 years, 594 ft³/s, 38.23 in/yr, 430,400 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)
Mar. 4	1830	*5,730	*8.48				
Minimum discharge, 15 ft ³ /s Sept. 26-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	21	834	1020	210	180	288	715	665	439	93	35	24
2	21	408	911	202	274	463	720	597	397	86	35	24
3	22	262	722	207	402	2010	632	555	354	79	34	23
4	22	710	679	240	531	3920	684	483	310	73	33	22
5	25	1160	793	237	1900	3100	1120	436	279	68	33	21
6	30	890	601	223	1250	1660	1570	414	255	65	32	21
7	26	540	499	353	796	1260	1440	400	234	63	32	20
8	24	1280	461	526	590	1020	1280	1030	204	60	32	20
9	23	1120	497	444	476	897	2570	1110	207	58	31	20
10	22	650	1900	703	402	820	2130	1130	194	56	60	20
11	22	439	2170	1300	349	729	1460	1030	185	54	45	20
12	24	323	1270	3850	349	1070	1230	851	173	52	36	20
13	31	473	873	2660	1750	1310	1130	796	159	51	34	19
14	32	1110	659	2200	1560	1130	1040	965	149	50	31	19
15	30	652	537	2800	1000	1010	912	841	137	50	29	19
16	41	460	448	1930	846	938	771	699	129	55	28	19
17	52	367	382	1250	923	825	652	2800	123	90	27	18
18	51	422	966	929	1140	890	592	4380	116	72	27	18
19	109	394	1050	727	1790	839	620	2900	134	57	26	17
20	61	425	726	587	1240	702	602	2030	216	53	26	17
21	84	1130	e530	490	901	626	635	1710	159	51	25	16
22	516	1040	e420	422	698	604	587	1330	134	49	24	16
23	161	848	e370	370	560	685	538	991	120	47	23	16
24	89	633	e340	329	467	855	619	779	112	45	23	16
25	64	2010	310	299	402	839	841	634	109	43	23	16
26	79	1740	293	274	352	701	992	529	106	42	23	15
27	71	1110	289	249	317	575	1220	458	100	41	23	15
28	76	921	324	229	295	502	985	405	135	40	23	15
29	78	813	279	210	---	448	843	382	118	39	26	15
30	427	1360	e230	196	---	452	743	501	103	37	28	15
31	1570	---	e220	190	---	687	---	513	---	36	26	---
TOTAL	3904	24524	20769	24836	21740	31855	29873	32344	5595	1755	933	556
MEAN	126	817	670	801	776	1028	996	1043	186	56.6	30.1	18.5
MAX	1570	2010	2170	3850	1900	3920	2570	4380	439	93	60	24
MIN	21	262	220	190	180	288	538	382	100	36	23	15
AC-FT	7740	48640	41200	49260	43120	63180	59250	64150	11100	3480	1850	11000
CFSM	.60	3.87	3.18	3.80	3.68	4.87	4.72	4.94	.88	.27	.14	.09
IN.	.69	4.32	3.66	4.38	3.83	5.62	5.27	5.70	.99	.31	.16	.10

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1991, BY WATER YEAR (WY)

MEAN	162	754	1143	1167	1109	1017	822	556	271	75.7	38.0	47.0
MAX	1152	2569	4114	2606	2321	2168	2161	1333	839	236	107	259
(WY)	1951	1974	1965	1971	1986	1972	1937	1963	1984	1983	1976	1978
MIN	12.8	19.2	58.0	86.0	81.1	189	290	116	52.1	26.3	15.0	15.7
(WY)	1988	1937	1977	1977	1977	1941	1941	1987	1987	1940	1940	1951

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1936 - 1991

ANNUAL TOTAL	181882		198684			
ANNUAL MEAN	498		544		594	
HIGHEST ANNUAL MEAN					1008	1974
LOWEST ANNUAL MEAN					233	1977
HIGHEST DAILY MEAN	6780	Jan 7	4380	May 18	23800	Dec 22 1964
LOWEST DAILY MEAN	20	Sep 23	15	Sep 26	11	Sep 24 1951
ANNUAL SEVEN-DAY MINIMUM	22	Sep 20	15	Sep 24	11	Oct 21 1987
ANNUAL RUNOFF (AC-FT)	360800		394100		430500	
ANNUAL RUNOFF (CFSM)	2.36		2.58		2.82	
ANNUAL RUNOFF (INCHES)	32.07		35.03		38.27	
10 PERCENT EXCEEDS	1140		1250		1420	
50 PERCENT EXCEEDS	319		370		279	
90 PERCENT EXCEEDS	27		23		28	

WILLAMETTE RIVER BASIN

245

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 National Geodetic Vertical Datum of 1929 (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.

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 contents, 78,490 acre-ft May 19, elevation, 835.47 ft; minimum contents, 6,620 acre-ft Nov. 11, elevation, 769.57 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	803.90	779.00	771.67	771.63	771.84	796.58	814.35	826.32	832.23	831.46	830.50	827.77
2	802.38	777.42	771.09	771.77	771.96	797.34	815.03	826.49	832.03	831.45	830.42	827.65
3	800.86	775.90	771.00	772.08	773.16	801.08	815.13	826.82	831.97	831.46	830.35	827.48
4	799.26	776.24	771.33	772.26	774.85	806.73	815.14	827.13	832.05	831.46	830.29	827.24
5	797.67	776.96	772.01	772.26	780.37	807.51	815.81	827.43	832.17	831.47	830.21	827.01
6	796.04	775.52	771.75	772.18	782.43	804.74	816.65	827.79	832.29	831.47	830.13	826.76
7	794.34	774.51	771.71	772.31	782.89	802.69	816.98	828.17	832.32	831.47	830.07	826.52
8	792.62	773.74	771.97	773.20	782.91	801.71	817.05	829.17	832.29	831.45	829.99	826.28
9	791.32	773.96	771.86	773.33	783.14	800.87	818.68	829.37	832.23	831.42	829.95	825.96
10	790.47	771.16	773.70	773.65	783.41	801.13	818.75	829.56	832.14	831.40	829.94	825.57
11	789.57	769.92	772.29	773.22	783.86	802.14	817.79	829.79	832.05	831.37	829.88	825.19
12	788.72	770.39	770.99	777.19	784.52	803.73	817.82	829.91	832.03	831.33	829.81	824.94
13	787.85	771.64	770.69	774.16	788.42	804.98	818.46	830.03	832.03	831.29	829.74	824.54
14	786.97	772.85	774.11	770.52	790.15	805.44	819.09	830.31	832.02	831.25	829.65	824.13
15	786.05	772.26	770.59	776.76	789.88	805.92	819.48	830.50	831.99	831.22	829.55	823.72
16	785.15	771.58	770.68	774.26	790.01	806.39	819.66	830.86	831.96	831.21	829.44	823.09
17	784.27	771.16	770.74	772.31	790.84	806.76	819.88	833.66	831.91	831.21	829.34	822.33
18	783.51	771.33	771.77	771.95	792.27	807.37	820.33	835.43	831.85	831.22	829.24	821.55
19	782.83	771.04	771.62	771.42	793.92	807.83	820.91	834.86	831.83	831.22	829.14	820.77
20	781.95	770.94	771.89	771.46	793.37	808.03	821.44	833.42	831.91	831.20	829.04	819.97
21	781.30	772.68	772.01	771.43	793.23	808.14	822.01	832.63	831.93	831.15	828.92	819.18
22	781.74	772.31	771.70	771.26	793.58	808.20	822.50	832.28	831.93	831.10	828.81	818.37
23	780.89	771.99	771.00	771.39	793.85	808.48	822.91	831.92	831.91	831.06	828.70	817.52
24	779.77	771.32	771.13	771.58	794.24	808.95	823.47	831.76	831.83	831.01	828.59	816.53
25	778.56	774.08	771.47	771.70	794.84	809.60	824.27	831.89	831.76	830.96	828.47	815.52
26	777.35	772.83	771.48	771.73	795.38	810.06	824.88	831.96	831.72	830.90	828.35	814.49
27	776.11	772.37	771.46	771.64	795.81	810.56	825.58	831.98	831.64	830.83	828.26	813.47
28	774.87	772.49	771.68	771.68	796.19	811.17	825.93	831.98	831.62	830.77	828.17	812.44
29	773.91	772.42	771.63	771.93	---	811.64	826.06	832.01	831.58	830.71	828.07	811.37
30	774.82	773.45	771.55	772.09	---	812.40	826.19	832.20	831.51	830.64	827.97	810.33
31	779.28	---	771.62	772.23	---	813.36	---	832.29	---	830.58	827.87	---
MAX	803.90	779.00	773.70	777.19	796.19	813.36	826.19	835.43	832.32	831.47	830.50	827.77
MIN	773.91	769.92	770.52	771.26	771.84	796.58	814.35	826.32	831.51	830.58	827.87	810.33
(+)	12080	8680	7680	8010	24860	43500	61990	72580	71170	69500	64780	39770
(+)	-22060	-3400	-1000	+330	+16850	+18640	+18490	+10590	-1410	-1670	-4720	-25010

CAL YR 1990 MAX 832.43 MIN 768.95 AC-FT+ +280
WTR YR 1991 MAX 835.43 MIN 769.92 AC-FT+ +5630

† 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 National Geodetic Vertical Datum of 1929 (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.--No estimated daily discharges. Records good. Flow regulated since October 1949 by Dorena Lake (station 14155000). No diversion upstream from station.

AVERAGE DISCHARGE.--52 years, 744 ft³/s, 37.42 in/yr, 539,000 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, 4,970 ft³/s May 18, gage height, 8.17 ft; minimum discharge, 91 ft³/s Aug. 13, 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	883	1150	1790	286	320	204	199	705	633	144	101	109
2	840	1020	1330	236	325	210	397	599	658	104	101	109
3	836	794	970	197	214	315	702	395	463	104	101	156
4	841	774	809	258	200	1340	780	324	274	104	101	203
5	827	1260	809	295	501	3330	891	255	216	104	101	203
6	811	1570	801	297	813	3790	1340	207	197	104	101	203
7	798	1520	628	376	821	2780	1540	203	258	104	101	203
8	786	1180	512	424	734	1870	1550	647	309	104	101	203
9	576	1330	653	528	527	1650	1670	1340	309	104	101	261
10	399	1520	1890	741	414	1010	2470	1290	309	104	101	314
11	395	830	3040	1680	286	502	2500	1050	296	104	101	314
12	395	316	1940	3290	203	606	1500	947	231	104	101	200
13	395	468	1190	4070	464	1060	923	898	205	104	96	324
14	395	1250	910	2730	1160	1300	823	892	203	104	102	324
15	404	1030	710	2710	1370	1140	827	850	203	104	109	324
16	410	785	584	3170	1010	1000	827	608	203	104	109	475
17	405	611	506	2100	792	893	660	1750	203	104	109	597
18	403	556	1040	1320	795	823	406	4440	203	104	109	597
19	400	603	1420	1070	1430	829	314	4320	205	104	109	597
20	394	603	915	768	1830	828	314	3830	201	104	109	597
21	391	995	690	669	1230	833	314	2700	195	104	109	597
22	458	1400	687	597	769	832	314	1910	195	104	109	597
23	513	1130	683	460	619	835	314	1540	195	104	109	627
24	505	946	435	392	438	838	314	1020	195	104	109	717
25	495	1750	329	366	249	840	420	699	195	104	109	711
26	487	2590	389	358	203	713	738	619	195	104	109	705
27	479	1630	389	358	203	497	917	586	195	104	109	705
28	472	1240	389	286	203	301	919	532	195	104	109	700
29	380	1140	389	226	---	199	923	482	195	103	109	695
30	314	1480	325	217	---	199	795	482	195	101	109	690
31	617	---	282	212	---	199	---	552	---	101	109	---
TOTAL	16704	33471	27434	30687	18123	31766	26601	36672	7729	3257	3263	13057
MEAN	539	1116	885	990	647	1025	887	1183	258	105	105	435
MAX	883	2590	3040	4070	1830	3790	2500	4440	658	144	109	717
MIN	314	316	282	197	200	199	199	203	195	101	96	109
AC-FT	33130	66390	54420	60870	35950	63010	52760	72740	15330	6460	6470	25900
MEAN†	180	1059	869	995	951	1328	1197	1355	234	77.9	28.5	15.0
CFSM†	0.67	3.92	3.22	3.69	3.52	4.92	4.43	5.02	0.87	0.29	0.11	0.06
IN.†	0.77	4.37	3.71	4.25	3.67	5.67	4.95	5.78	0.97	0.33	0.12	0.06
AC-FT†	11070	62990	53420	61200	52800	81650	71250	83330	13920	4790	1750	890

CAL YR 1990 TOTAL 228272 MEAN 625 MAX 3770 MIN 77 AC-FT 452800 MEAN† 626 CFSM† 2.32 IN.† 31.45 AC-FT† 453080
WTR YR 1991 TOTAL 248764 MEAN 682 MAX 4440 MIN 96 AC-FT 493400 MEAN† 689 CFSM† 2.55 IN.† 34.64 AC-FT† 499030

† Adjusted for change in contents in Dorena Lake.

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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.

PERIOD OF RECORD.--August 1905 to February 1912, October 1950 to current year. Monthly discharge only for some periods, published in WSP 1318.

GAGE.--Water-stage recorder. Datum of gage is 473.80 ft above National Geodetic Vertical Datum of 1929.
Aug. 23, 1905, to Feb. 7, 1912, nonrecording gage at site 600 ft upstream at different datum.

AVERAGE DISCHARGE.--47 years (water years 1906-11, 1951-91), 1,608 ft³/s, 1,165,000 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 12,500 ft³/s May 18, gage height, 11.94 ft; minimum discharge, 132 ft³/s several days in July and August.

ANNUAL TOTAL	447287		516295					
ANNUAL MEAN	1225		1415			1601		
HIGHEST ANNUAL MEAN						2701		1956
LOWEST ANNUAL MEAN						512		1977
HIGHEST DAILY MEAN	7020	Jan 9	11400	May 18	31500		Dec 24	1964
LOWEST DAILY MEAN	132	Aug 10	134	Jul 31	86		Nov 28	1952
ANNUAL SEVEN-DAY MINIMUM	135	Aug 8	135	Jul 31	90		Nov 24	1952
ANNUAL RUNOFF (AC-FT)	887200		1024000		1160000			
10 PERCENT EXCEEDS	2930		3000		4320			
50 PERCENT EXCEEDS	845		1010		736			
90 PERCENT EXCEEDS	158		161		205			

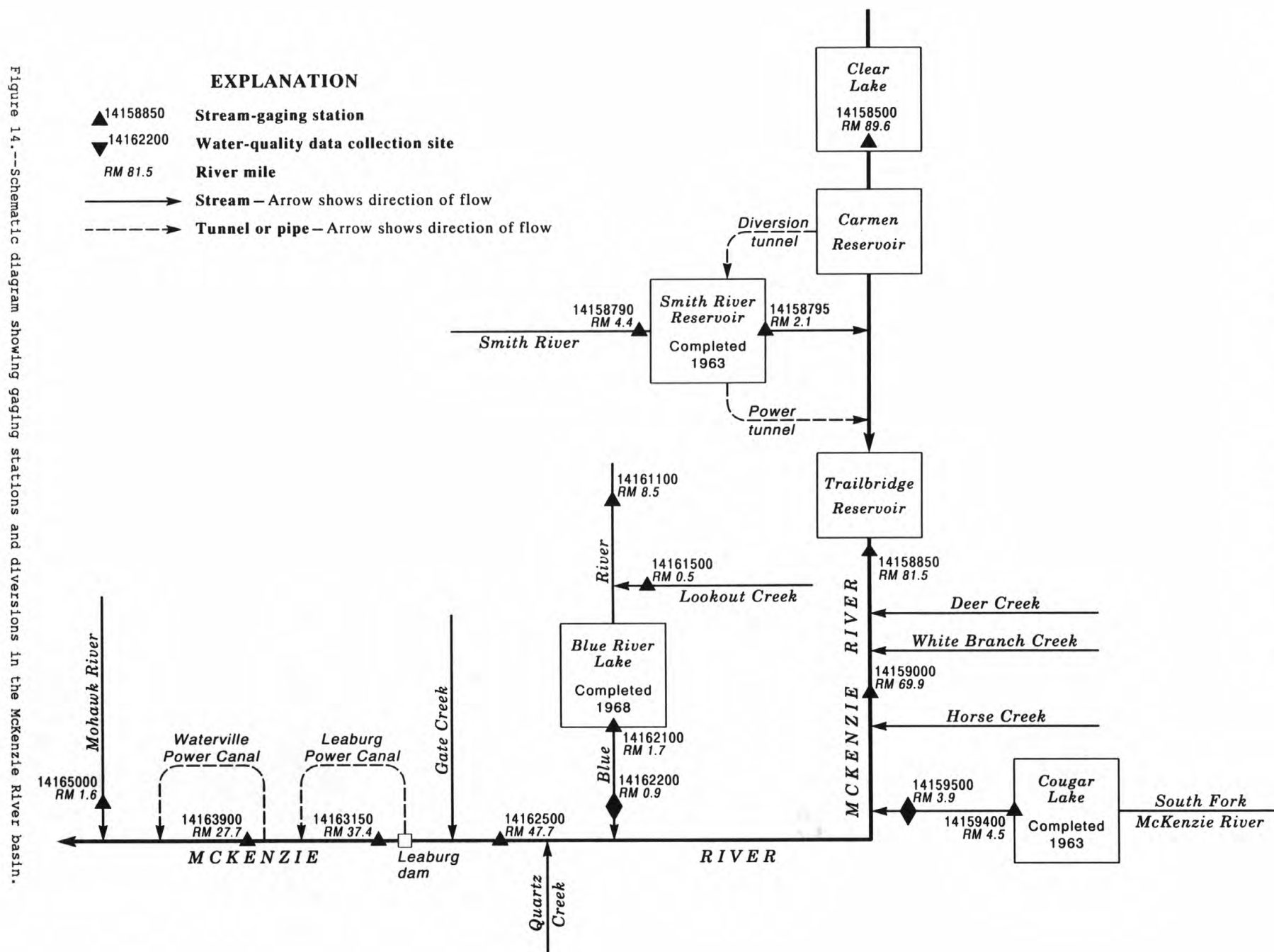


Figure 14.--Schematic diagram showing gaging stations and diversions in the McKenzie River basin.

WILLAMETTE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929 (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.--47 years, 458 ft³/s, 67.31 in/yr, 331,800 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,300 ft³/s Dec. 23, 1964, gage height, 8.15 ft; minimum discharge, 136 ft³/s Nov. 9-11, 1987.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 703 ft³/s Jan. 15, gage height, 3.29 ft; minimum discharge, 170 ft³/s Oct. 12-14, 17, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	179	201	383	285	385	460	364	447	407	303	237	204
2	178	215	385	274	387	468	364	444	402	299	235	203
3	179	227	383	264	387	485	365	444	398	297	234	202
4	177	241	390	255	387	575	365	442	395	293	232	202
5	177	246	391	246	413	607	380	441	392	290	230	201
6	175	262	386	239	410	577	387	441	388	287	229	200
7	175	281	382	239	428	545	391	446	384	283	228	199
8	174	293	378	233	440	528	397	488	380	281	227	199
9	173	299	375	227	444	519	426	525	377	277	227	197
10	173	303	384	231	444	515	438	503	373	274	226	197
11	172	309	380	235	443	504	453	484	369	271	224	196
12	173	313	375	284	454	498	473	476	366	267	224	194
13	172	317	375	323	515	481	482	474	364	265	223	194
14	171	316	375	383	603	468	490	472	362	261	222	193
15	172	311	375	610	595	460	495	470	357	259	220	191
16	172	307	373	679	569	448	497	472	355	258	220	191
17	170	303	371	615	555	434	495	492	350	255	220	190
18	173	299	382	588	542	423	491	510	344	251	220	189
19	174	294	374	586	548	414	484	500	344	249	218	188
20	172	292	365	593	563	405	481	489	347	247	217	188
21	177	287	359	596	581	400	482	479	339	245	215	186
22	180	282	355	591	566	395	484	476	333	243	213	185
23	178	275	351	576	543	393	486	472	329	242	213	184
24	181	273	346	553	522	391	494	466	327	241	211	184
25	184	311	341	526	508	385	493	460	324	239	210	183
26	186	311	336	497	494	381	486	452	322	236	209	183
27	185	330	332	472	481	377	478	444	318	234	208	182
28	185	346	327	454	467	373	468	434	317	232	211	182
29	184	363	315	434	---	369	460	426	312	230	208	181
30	191	376	305	410	---	366	453	421	308	231	206	180
31	196	---	296	396	---	364	---	412	---	237	205	---
TOTAL	5508	8783	11245	12894	13674	14008	13502	14402	10683	8077	6822	5748
MEAN	178	293	363	416	488	452	450	465	356	261	220	192
MAX	196	376	391	679	603	607	497	525	407	303	237	204
MIN	170	201	296	227	385	364	364	412	308	230	205	180
AC-FT	10930	17420	22300	25580	27120	27780	26780	28570	21190	16020	13530	11400
CFSM	1.92	3.17	3.93	4.50	5.29	4.89	4.87	5.03	3.85	2.82	2.38	2.07
IN.	2.22	3.54	4.53	5.19	5.51	5.64	5.44	5.80	4.30	3.25	2.75	2.31

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1913 - 1991, BY WATER YEAR (WY)

	MEAN	254	376	538	515	521	495	581	688	578	394	305	256
MAX	428	828	1209	999	986	1205	815	1178	1202	737	499	392	
(WY)	1951	1951	1965	1974	1961	1972	1972	1949	1974	1950	1974	1974	
MIN	145	141	209	191	180	224	341	370	290	173	149	143	
(WY)	1981	1988	1977	1977	1977	1977	1955	1980	1987	1977	1977	1977	

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1913 - 1991
ANNUAL TOTAL	135348	125346	
ANNUAL MEAN	371	343	458
HIGHEST ANNUAL MEAN			683
LOWEST ANNUAL MEAN			241
HIGHEST DAILY MEAN	1480	679	3100
LOWEST DAILY MEAN	170	170	136
ANNUAL SEVEN-DAY MINIMUM	172	172	137
ANNUAL RUNOFF (AC-FT)	268500	248600	331800
ANNUAL RUNOFF (CFSM)	4.01	3.72	4.96
ANNUAL RUNOFF (INCHES)	54.49	50.46	67.34
10 PERCENT EXCEEDS	646	499	788
50 PERCENT EXCEEDS	340	346	396
90 PERCENT EXCEEDS	186	185	215

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 and crest-stage gage. Datum of gage is 2,610.00 ft above National Geodetic Vertical Datum of 1929 (levels by Eugene Water and Electric Board). Prior to Sept. 10, 1964, at datum 1.56 ft higher.

REMARKS.--Records fair. No regulation or diversion upstream from station. Discharge records for Feb. 27 to June 5 based on gage height record furnished by Eugene Water and Electric Board.

AVERAGE DISCHARGE.--31 years, 89.2 ft³/s, 74.77 in/yr, 64,630 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 ft³/s, on basis of slope-area measurement of peak flow; minimum discharge, 2.5 ft³/s Sept. 15-18, 1981.

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)
Nov. 25	0730	*860	*7.58	Jan. 15	0500	860	7.58
Jan. 12	1200	843	7.56				

Minimum discharge, 3.7 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.1	63	98	25	37	67	94	105	77	22	6.9	5.0
2	4.3	41	81	23	76	126	112	110	77	21	6.8	5.0
3	5.0	36	70	22	124	272	115	108	72	20	6.8	4.8
4	4.8	148	81	21	177	405	124	106	64	19	6.7	4.7
5	7.6	133	78	20	394	271	239	105	58	17	6.6	4.6
6	5.5	96	67	20	246	189	213	112	53	16	6.5	4.6
7	4.8	86	60	31	176	145	164	158	49	15	6.3	4.5
8	4.6	120	60	28	141	122	137	307	48	14	6.2	4.6
9	4.4	122	83	27	121	109	183	206	47	13	7.1	4.5
10	4.6	89	212	48	106	98	146	165	48	13	6.7	4.4
11	4.4	66	185	116	102	86	121	141	47	12	6.3	4.4
12	6.3	51	138	669	142	80	118	126	43	11	6.1	4.4
13	6.3	57	110	607	309	72	122	117	40	11	5.9	4.3
14	7.8	56	92	631	267	67	129	109	38	11	5.8	4.4
15	10	48	77	677	211	61	126	100	35	11	5.7	4.2
16	11	44	65	348	176	58	119	107	35	11	5.6	4.2
17	8.0	42	61	234	147	57	113	173	32	11	6.3	4.1
18	11	44	97	187	133	59	108	158	30	10	6.7	4.0
19	12	40	73	155	163	58	107	155	31	9.9	5.8	4.0
20	9.1	38	e55	127	188	55	116	146	44	9.5	5.6	4.0
21	25	38	e46	106	179	55	129	139	41	9.4	5.4	4.0
22	25	73	e41	92	146	54	132	126	36	9.1	5.3	4.0
23	15	94	e38	79	122	56	129	112	33	8.8	5.2	3.9
24	12	125	e34	68	103	59	143	102	31	8.8	5.2	3.9
25	11	584	e32	60	90	57	125	91	29	8.5	5.2	3.9
26	16	278	e35	53	78	52	115	80	28	8.2	5.1	3.9
27	12	181	e34	48	70	50	109	72	27	8.0	5.1	3.9
28	13	133	32	44	63	49	102	67	28	7.6	8.3	3.9
29	12	124	29	40	---	47	99	71	26	7.3	5.9	3.9
30	70	113	e27	37	---	51	100	90	24	7.2	5.3	3.8
31	111	---	26	38	---	70	---	83	---	7.1	5.1	---
TOTAL	457.6	3163	2217	4681	4287	3057	3889	3847	1271	367.4	187.5	127.8
MEAN	14.8	105	71.5	151	153	98.6	130	124	42.4	11.9	6.05	4.26
MAX	111	584	212	677	394	405	239	307	77	22	8.3	5.0
MIN	4.1	36	26	20	37	47	94	67	24	7.1	5.1	3.8
AC-FT	908	6270	4400	9280	8500	6060	7710	7630	2520	729	372	253
CFSM	.91	6.51	4.41	9.32	9.45	6.09	8.00	7.66	2.62	.73	.37	.26
IN.	1.05	7.26	5.09	10.75	9.84	7.02	8.93	8.83	2.92	.84	.43	.29

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1991, BY WATER YEAR (WY)

	23.6	114	151	135	134	112	141	156	77.7	17.3	6.86	7.75
MEAN	23.6	114	151	135	134	112	141	156	77.7	17.3	6.86	7.75
MAX	75.9	218	404	293	309	321	260	318	260	51.5	11.7	23.5
(WY)	1969	1985	1965	1970	1961	1972	1989	1971	1974	1971	1968	1978
MIN	3.33	7.57	9.88	13.5	12.8	47.5	50.3	49.8	15.4	7.10	3.94	3.75
(WY)	1988	1988	1977	1977	1977	1981	1967	1987	1986	1986	1986	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1961 - 1991

ANNUAL TOTAL	28836.5	27552.3	89.2	
ANNUAL MEAN	79.0	75.5	136	1974
HIGHEST ANNUAL MEAN			38.5	1977
LOWEST ANNUAL MEAN			2590	Dec 22 1964
HIGHEST DAILY MEAN	976	Jan 8		
LOWEST DAILY MEAN	4.0	Sep 30		
ANNUAL SEVEN-DAY MINIMUM	4.2	Sep 26		
ANNUAL RUNOFF (AC-FT)	57200		64660	
ANNUAL RUNOFF (CFSM)	4.88		5.51	
ANNUAL RUNOFF (INCHES)	66.22		74.85	
10 PERCENT EXCEEDS	178		211	
50 PERCENT EXCEEDS	44		53	
90 PERCENT EXCEEDS	5.4		5.1	

WILLAMETTE RIVER BASIN

251

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 National Geodetic Vertical Datum of 1929 (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.

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, 14,420 acre-ft Sept. 21, elevation, 2,601.88 ft; minimum contents, 13,130 acre-ft Mar. 8, elevation, 2,593.92 ft.

MONTHEND ELEVATION AND CONTENTS AT 2400, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	2,601.88	14,400	--
Oct. 31.....	2,598.34	13,830	-570
Nov. 30.....	2,595.05	13,310	-520
Dec. 31.....	2,596.73	13,580	+270
CAL YR 1990.....	--	--	+220
Jan. 31.....	2,595.63	13,400	-180
Feb. 28.....	2,595.02	13,300	-100
Mar. 31.....	2,596.64	13,560	+260
Apr. 30.....	2,599.21	13,970	+410
May 31.....	2,598.68	13,890	-80
June 30.....	2,598.87	13,920	+30
July 31.....	2,599.94	14,090	+170
Aug. 31.....	2,599.85	14,080	-10
Sept. 30.....	2,600.05	14,110	+30
WTR YR 1991.....	--	--	-290

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 National Geodetic Vertical Datum of 1929 (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 have been collected at this location.

AVERAGE DISCHARGE.--32 years, 1,010 ft³/s, 74.54 in/yr, 731,700 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, 425 ft³/s Nov. 23, 1964.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,140 ft³/s Jan. 15, gage height, 8.06 ft; minimum discharge, 491 ft³/s Sept. 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	561	716	927	733	865	974	920	1000	933	798	673	573
2	570	710	905	700	943	1050	901	994	930	786	654	576
3	589	705	901	684	976	1200	903	983	908	786	651	604
4	589	867	897	672	991	1450	893	970	907	787	658	608
5	578	825	917	661	1280	1370	1050	959	907	778	657	589
6	571	764	875	658	1090	1240	1060	990	906	761	655	575
7	571	752	882	680	1080	1190	1000	1050	878	766	652	570
8	559	815	875	713	1030	1150	973	1220	858	769	646	568
9	549	853	889	677	1020	1120	1090	1110	883	766	634	562
10	558	790	1060	669	1010	1080	1080	1120	884	763	633	562
11	565	763	1030	781	967	1060	1040	1070	867	748	640	561
12	584	767	967	1530	1080	1080	1030	1030	861	749	637	563
13	566	788	952	1520	1290	1030	1070	1040	835	741	636	564
14	569	790	903	1610	1260	989	1080	1010	835	735	633	563
15	584	752	907	1870	1260	984	1070	997	849	725	630	564
16	610	746	881	1500	1190	987	1030	1020	848	727	631	564
17	593	745	864	1340	1200	946	1050	1130	842	744	626	558
18	623	745	941	1310	1190	968	1070	1120	838	728	623	553
19	617	727	909	1280	1140	938	1040	1120	834	702	615	534
20	602	731	831	1210	1190	911	1040	1090	834	701	616	538
21	632	751	824	1180	1260	906	1060	1080	852	690	610	549
22	653	780	836	1150	1160	914	1030	1060	843	692	607	555
23	602	794	847	1130	1130	912	1030	1040	804	698	626	573
24	580	794	841	1110	1090	922	1090	1020	798	701	624	577
25	580	1430	835	1110	1050	922	1070	997	804	699	615	576
26	607	1060	783	1020	1000	894	1030	981	812	690	571	544
27	633	966	750	994	1010	878	1030	942	820	681	593	534
28	612	940	760	966	1000	869	1030	951	820	664	626	537
29	581	952	772	943	---	850	1000	952	815	660	599	537
30	679	953	748	929	---	851	978	986	796	672	595	539
31	776	---	738	880	---	902	---	962	---	683	571	---
TOTAL	18543	24771	27047	32210	30752	31537	30738	31994	25601	22590	19437	16870
MEAN	598	826	872	1039	1098	1017	1025	1032	853	729	627	562
MAX	776	1430	1060	1870	1290	1450	1090	1220	933	798	673	608
MIN	549	705	738	658	865	850	893	942	796	660	571	534
AC-FT	36780	49130	53650	63890	61000	62550	60970	63460	50780	44810	38550	33460
MEAN†	589	817	877	1036	1097	1021	1032	1031	854	732	627	563
CFSM†	3.20	4.44	4.77	5.63	5.96	5.55	5.61	5.60	4.64	3.98	3.41	3.06
IN.†	3.69	4.95	5.49	6.49	6.20	6.40	6.25	6.45	5.17	4.58	3.92	3.41
AC-FT†	36190	48610	53920	63710	60900	62810	61380	63380	50810	44980	38540	33490
CAL YR 1990	TOTAL 326298	MEAN 894	MAX 2460	MIN 549	AC-FT 647200	MEAN† 894	CFSM† 4.86	IN.† 65.93	AC-FT† 647400			
WTR YR 1991	TOTAL 312090	MEAN 855	MAX 1870	MIN 534	AC-FT 619000	MEAN† 855	CFSM† 4.65	IN.† 63.01	AC-FT† 618700			

† Adjusted for change in contents in Smith River Reservoir.

WILLAMETTE RIVER BASIN

253

14159000 MCKENZIE RIVER AT MCKENZIE BRIDGE, OR

LOCATION.--Lat 44°10'45", long 122°07'45", on line between NE 1/4 and NW 1/4 sec.18, T.16 S., R.6 E., Lane County, Hydrologic Unit 17090004, Willamette National Forest, on left bank 1.0 mi upstream from Glen Creek, 1.7 mi east of town of McKenzie Bridge, and at mile 69.9.

DRAINAGE AREA.--348 mi² at cableway 1.2 mi upstream, where all discharge measurements are made.

PERIOD OF RECORD.--August 1910 to current year. Monthly discharge only for some periods, published in WSP 1318. Published as "near McKenzie Bridge" August 1910 to September 1911 and October 1914 to September 1916.

REVISED RECORDS.--WSP 1248: 1911-16, 1920-25. WSP 1448: 1919. WSP 1638: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,419.04 ft above National Geodetic Vertical Datum of 1929. Prior to June 2, 1932, nonrecording gage at several sites within 2 mi of present site at various datums.

REMARKS.--No estimated daily discharges. Records good. Flow regulated since March 1963 by Smith River Reservoir (Carmen-Smith Project) 12 mi upstream (station 14158795). No diversion upstream from station. All records given herein are for measuring site. Continuous water-quality records for the period November 1976 to September 1985 have been collected at this location.

AVERAGE DISCHARGE.--81 years (water years 1911-91), 1,678 ft³/s, 1,216,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,100 ft³/s Dec. 22, 1964, gage height, 10.36 ft, from rating curve extended above 7,100 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 805 ft³/s Oct. 20, 1931.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,930 ft³/s Jan. 15, gage height, 3.77 ft; minimum discharge, 885 ft³/s Oct. 9.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	932	1220	1690	1280	1480	1650	1600	1700	1560	1310	1140	992
2	932	1160	1660	1260	1550	1780	1610	1710	1550	1300	1130	991
3	946	1130	1650	1230	1640	2110	1610	1680	1520	1300	1120	989
4	944	1490	1660	1210	1700	2780	1610	1660	1510	1300	1120	1000
5	947	1460	1690	1190	2340	2550	1860	1640	1500	1280	1120	991
6	935	1310	1630	1180	2000	2240	1920	1660	1490	1260	1120	980
7	933	1260	1620	1220	1880	2100	1800	1740	1460	1260	1120	976
8	922	1390	1610	1260	1780	2000	1740	2220	1430	1260	1110	968
9	912	1480	1630	1220	1740	1930	2140	1960	1430	1250	1100	961
10	922	1350	2000	1280	1710	1890	2070	1910	1430	1250	1100	952
11	929	1280	1950	1480	1650	1830	1940	1830	1430	1240	1080	953
12	952	1250	1780	3360	1800	1870	1880	1760	1410	1230	1080	963
13	938	1280	1710	3460	2410	1820	1890	1740	1380	1230	1080	960
14	943	1310	1650	3710	2330	1770	1900	1710	1380	1220	1080	954
15	968	1240	1630	4370	2200	1730	1890	1680	1380	1220	1080	956
16	990	1230	1570	3150	2080	1730	1820	1700	1380	1220	1080	953
17	961	1220	1540	2610	2040	1680	1810	2000	1380	1220	1090	953
18	994	1220	1690	2410	2010	1690	1820	1980	1370	1220	1100	950
19	992	1200	1630	2270	2040	1670	1780	1960	1370	1190	1060	935
20	965	1220	1530	2110	2080	1640	1770	1900	1390	1180	1050	930
21	1040	1260	1490	2010	2140	1630	1820	1870	1390	1180	1050	939
22	1090	1380	1470	1940	2000	1630	1780	1810	1380	1180	1040	939
23	995	1460	1470	1870	1910	1630	1760	1760	1340	1180	1040	953
24	956	1480	1440	1840	1830	1640	1830	1720	1330	1180	1050	960
25	956	3000	1420	1800	1770	1640	1830	1670	1330	1180	1050	962
26	996	2130	1370	1680	1690	1610	1780	1650	1330	1170	1020	932
27	1010	1830	1330	1650	1690	1570	1780	1590	1340	1170	1010	924
28	992	1710	1330	1600	1670	1560	1770	1580	1360	1150	1040	928
29	954	1720	1340	1560	---	1520	1720	1590	1350	1150	1030	925
30	1120	1730	1310	1540	---	1500	1690	1620	1330	1150	1020	919
31	1370	---	1290	1470	---	1560	---	1610	---	1140	998	---
TOTAL	30436	43400	48780	60220	53160	55950	54220	54610	42230	37770	33308	28688
MEAN	982	1447	1574	1943	1899	1805	1807	1762	1408	1218	1074	956
MAX	1370	3000	2000	4370	2410	2780	2140	2220	1560	1310	1140	1000
MIN	912	1130	1290	1180	1480	1500	1600	1580	1330	1140	998	919
AC-FT	60370	86080	96760	119400	105400	111000	107500	108300	83760	74920	66070	56900

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1991, BY WATER YEAR (WY)

	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
MEAN	1127	1600	2147	2185	2075	1966	1954	2034	1739	1397	1212	1121																
MAX	1395	2720	4367	3370	3382	3973	2630	3041	3033	2053	1670	1449																
(WY)	1983	1985	1965	1970	1982	1972	1972	1974	1974	1974	1972	1972																
MIN	928	1015	1082	1052	1027	1331	1403	1406	1269	1058	988	954																
(WY)	1981	1988	1977	1977	1977	1977	1967	1968	1968	1977	1977	1980																

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1964 - 1991

	1990	1991	1964-1991
ANNUAL TOTAL	560192	542772	
ANNUAL MEAN	1535	1487	1712
HIGHEST ANNUAL MEAN			2377
LOWEST ANNUAL MEAN			1203
HIGHEST DAILY MEAN	4920	4370	13800
LOWEST DAILY MEAN	912	912	870
ANNUAL SEVEN-DAY MINIMUM	929	929	908
ANNUAL RUNOFF (AC-FT)	1111000	1077000	1240000
10 PERCENT EXCEEDS	2010	1970	2550
50 PERCENT EXCEEDS	1570	1440	1530
90 PERCENT EXCEEDS	991	961	1040

WILLAMETTE RIVER BASIN

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 gage is National Geodetic Vertical Datum of 1929 (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, 209,100 acre-ft May 13, elevation, 1,691.12 ft; minimum contents, 59,900 acre-ft Dec. 24, elevation, 1,525.55 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1588.02	1544.46	1535.86	1530.77	1543.07	1603.37	1645.41	1681.04	1690.15	1690.74	1687.02	1661.33
2	1585.88	1543.99	1535.25	1531.14	1543.37	1604.68	1646.59	1682.01	1690.18	1690.66	1686.46	1660.00
3	1583.79	1543.89	1534.29	1531.49	1544.40	1607.12	1647.20	1682.94	1690.42	1690.59	1685.90	1659.09
4	1581.67	1545.82	1533.78	1531.81	1545.85	1611.43	1647.58	1683.79	1690.86	1690.59	1685.32	1658.42
5	1579.54	1546.66	1533.64	1532.10	1549.59	1615.34	1649.17	1684.61	1690.79	1690.55	1684.75	1657.87
6	1577.30	1546.26	1533.20	1532.45	1552.47	1618.09	1651.34	1685.50	1691.06	1690.51	1684.16	1657.19
7	1575.03	1545.54	1532.46	1533.06	1554.68	1620.18	1653.17	1686.71	1690.69	1690.45	1683.60	1656.50
8	1572.72	1546.42	1531.67	1532.99	1556.50	1621.89	1654.90	1688.37	1690.28	1690.37	1682.99	1655.81
9	1570.35	1546.88	1531.32	1532.56	1558.07	1623.48	1658.09	1689.35	1690.05	1690.33	1682.44	1654.62
10	1567.95	1546.17	1533.61	1533.04	1559.43	1624.90	1659.75	1690.03	1690.08	1690.34	1681.83	1653.20
11	1565.47	1544.85	1534.62	1533.71	1560.70	1626.32	1660.56	1690.55	1690.33	1690.33	1681.20	1651.84
12	1563.01	1543.16	1535.24	1540.23	1562.42	1627.69	1661.83	1690.95	1690.29	1690.31	1680.59	1650.41
13	1560.49	1541.65	1535.15	1546.30	1567.46	1629.03	1663.24	1691.00	1690.43	1690.31	1679.97	1648.97
14	1557.92	1540.12	1534.52	1551.12	1571.92	1630.25	1664.64	1690.62	1690.28	1690.33	1679.36	1647.51
15	1555.35	1538.31	1533.58	1555.45	1575.33	1631.31	1665.93	1690.13	1690.07	1690.33	1678.75	1646.02
16	1552.89	1536.29	1532.36	1554.68	1578.46	1632.26	1667.09	1690.32	1689.85	1690.40	1678.00	1644.53
17	1550.90	1534.29	1531.45	1551.58	1581.33	1633.15	1668.18	1690.87	1689.73	1690.45	1677.14	1643.02
18	1549.53	1533.58	1531.91	1549.18	1584.08	1634.11	1669.22	1690.64	1689.86	1690.47	1676.29	1641.48
19	1548.56	1533.59	1531.83	1547.04	1587.23	1635.05	1670.17	1690.42	1690.19	1690.47	1675.44	1639.93
20	1547.78	1533.73	1531.27	1544.31	1590.03	1635.90	1671.25	1690.32	1690.37	1690.46	1674.57	1638.34
21	1547.80	1532.94	1529.89	1542.76	1592.41	1636.73	1672.42	1690.27	1689.74	1690.35	1673.70	1636.73
22	1547.84	1532.13	1528.18	1542.06	1594.42	1637.53	1673.59	1690.02	1689.71	1690.14	1672.81	1635.52
23	1547.34	1531.49	1526.37	1541.65	1596.11	1638.38	1674.82	1690.01	1689.92	1689.95	1671.92	1635.11
24	1546.71	1530.33	1525.97	1541.45	1597.58	1639.28	1676.09	1690.07	1690.11	1689.76	1671.02	1634.92
25	1546.08	1534.65	1526.72	1541.29	1598.87	1640.14	1676.90	1689.89	1690.27	1689.54	1670.11	1633.95
26	1545.51	1536.60	1527.42	1541.09	1600.23	1640.92	1677.60	1689.85	1690.42	1689.32	1668.98	1632.28
27	1544.85	1537.02	1528.18	1540.81	1601.32	1641.61	1678.30	1689.87	1690.62	1689.09	1667.73	1630.93
28	1544.35	1536.62	1528.90	1541.15	1602.29	1642.27	1678.86	1690.18	1690.83	1688.86	1666.47	1629.24
29	1543.75	1536.27	1529.47	1541.84	---	1642.86	1679.34	1690.21	1690.87	1688.62	1665.22	1627.53
30	1544.19	1536.11	1529.93	1542.48	---	1643.46	1680.10	1690.69	1690.87	1688.15	1663.95	1625.79
31	1545.23	---	1530.37	1543.07	---	1644.28	---	1690.27	---	1687.58	1662.64	---
MAX	1588.02	1546.88	1535.86	1555.45	1602.29	1644.28	1680.10	1691.00	1691.06	1690.74	1687.02	1661.33
MIN	1543.75	1530.33	1525.97	1530.77	1543.07	1603.37	1645.41	1681.04	1689.71	1687.58	1662.64	1625.79
(†)	72650	66550	62880	71180	116700	156400	195800	208100	208800	204800	175900	138100
(‡)	-33750	-6100	-3670	+8300	+45520	+39700	+39400	+12300	+700	-4000	-28900	-37800

CAL YR 1990 MAX 1696.49 MIN 1525.97 AC-FT† -1310
WTR YR 1991 MAX 1691.06 MIN 1525.97 AC-FT† +31700

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

WILLAMETTE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929 (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. Water-discharge records good. Flow regulated since 1963 by Cougar Lake (station 14159400), usable capacity, 165,000 acre-ft. No diversion upstream from station.

AVERAGE DISCHARGE.--44 years, 850 ft³/s, 55.50 in/yr, 615,800 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, 3,020 ft³/s Jan. 15, gage height, 3.81 ft; minimum discharge, 254 ft³/s July 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1000	922	947	277	504	307	302	461	959	409	578	934
2	1020	713	907	279	459	315	303	464	881	411	575	934
3	1030	490	909	285	321	315	541	460	689	390	575	691
4	1020	489	916	290	332	319	808	455	510	358	581	577
5	1040	697	865	290	339	320	543	455	719	356	581	516
6	1050	914	824	294	336	327	305	459	502	354	580	581
7	1050	906	827	281	332	330	309	451	838	356	577	584
8	1050	904	828	472	337	333	313	763	836	361	586	583
9	1070	978	828	527	335	319	329	881	716	322	591	828
10	1080	1070	1030	528	347	309	722	880	573	297	593	942
11	1090	1070	1320	867	352	313	820	880	443	297	600	944
12	1090	1060	966	986	332	315	449	881	579	290	590	945
13	1110	1050	959	1010	346	313	319	1190	441	286	583	946
14	1130	1060	959	2390	353	316	320	1430	579	286	588	951
15	1140	1050	950	3000	345	315	316	1420	577	286	586	954
16	1140	1060	939	3010	346	315	316	1160	578	291	665	956
17	888	1050	844	2970	306	308	321	1680	489	286	717	960
18	726	777	733	2290	316	312	324	2030	329	285	721	966
19	591	478	736	2000	326	304	332	1860	291	287	722	970
20	504	479	740	1970	322	310	327	1620	451	292	722	976
21	498	726	876	1430	323	312	340	1540	841	344	722	984
22	499	936	964	1100	331	315	348	1540	437	395	721	788
23	500	863	959	908	320	314	340	1270	284	391	726	386
24	493	999	620	789	323	308	413	1150	286	391	726	322
25	496	1010	280	716	325	310	599	1160	286	395	728	665
26	503	1010	278	689	318	309	678	967	290	394	852	989
27	500	1010	279	683	302	303	680	883	290	395	918	837
28	493	1010	279	453	291	300	677	671	370	396	919	988
29	494	1010	274	334	---	299	678	882	408	399	921	994
30	493	1010	275	337	---	298	516	766	410	526	922	1000
31	694	---	278	343	---	299	---	1190	---	578	929	---
TOTAL	25482	26801	23389	31798	9519	9682	13588	31899	15882	11104	21395	24691
MEAN	822	893	754	1026	340	312	453	1029	529	358	690	823
MAX	1140	1070	1320	3010	504	333	820	2030	959	578	929	1000
MIN	493	478	274	277	291	298	302	451	284	285	575	322
AC-FT	50540	53160	46390	63070	18880	19200	26950	63270	31500	22020	42440	48970
MEAN†	273	791	695	1161	1160	958	1115	1229	541	293	220	188
CFSM†	1.31	3.80	3.34	5.58	5.58	4.61	5.36	5.91	2.60	1.41	1.06	0.90
IN.†	1.51	4.24	3.85	6.43	5.81	5.31	5.98	6.81	2.90	1.62	1.22	1.01
AC-FT†	16790	47060	42720	71370	64400	58900	66350	75570	32200	18020	13540	11170

CAL YR 1990 TOTAL 269401 MEAN 738 MAX 5010 MIN 263 AC-FT 534400 MEAN† 736 CFSM† 3.54 IN.† 48.06 AC-FT† 533100
WTR YR 1991 TOTAL 245230 MEAN 672 MAX 3010 MIN 274 AC-FT 486400 MEAN† 716 CFSM† 3.44 IN.† 46.70 AC-FT† 518100

† Adjusted for change in contents in Cougar Lake.

WILLAMETTE RIVER BASIN

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, 16.0°C Oct. 11; minimum, 2.0°C Jan. 4-6.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.5	15.0	15.0	11.5	11.0	11.0	6.0	6.0	6.0	3.0	2.5	2.5
2	15.5	14.5	15.0	11.0	10.5	11.0	6.0	6.0	6.0	2.5	2.5	2.5
3	15.5	14.5	15.0	11.0	10.0	10.5	6.0	6.0	6.0	2.5	2.5	2.5
4	15.5	15.0	15.0	10.5	10.0	10.0	6.0	6.0	6.0	2.5	2.0	2.5
5	15.5	15.0	15.0	10.5	10.0	10.0	6.0	5.5	5.5	2.5	2.0	2.0
6	15.5	15.0	15.0	10.0	10.0	10.0	5.5	5.5	5.5	2.5	2.0	2.5
7	15.5	15.0	15.0	10.0	9.5	10.0	5.5	5.5	5.5	2.5	2.5	2.5
8	15.5	15.0	15.0	9.5	9.5	9.5	5.5	5.5	5.5	2.5	2.5	2.5
9	15.5	15.0	15.5	10.0	9.5	10.0	5.5	5.5	5.5	2.5	2.5	2.5
10	15.5	15.0	15.5	10.0	9.5	10.0	6.0	5.5	5.5	3.0	2.5	3.0
11	16.0	15.0	15.5	9.5	9.5	9.5	5.5	5.5	5.5	3.0	3.0	3.0
12	15.5	15.0	15.0	9.5	9.0	9.5	5.5	5.5	5.5	3.5	3.0	3.5
13	15.5	15.0	15.0	9.0	9.0	9.0	5.5	5.0	5.0	3.5	3.5	3.5
14	15.5	14.5	15.0	9.0	8.5	8.5	5.0	5.0	5.0	4.0	3.5	3.5
15	15.0	14.5	15.0	8.5	8.5	8.5	5.0	5.0	5.0	4.0	4.0	4.0
16	15.0	14.5	15.0	8.5	8.5	8.5	5.0	5.0	5.0	4.5	4.0	4.0
17	15.0	14.0	14.5	8.5	8.0	8.0	5.0	5.0	5.0	5.0	4.5	4.5
18	14.5	13.5	14.0	8.0	7.5	8.0	5.0	4.5	5.0	5.0	4.5	5.0
19	14.0	13.0	14.0	7.5	7.5	7.5	5.0	4.5	4.5	5.0	4.5	5.0
20	14.0	13.0	13.5	7.5	7.5	7.5	4.5	4.5	4.5	5.0	4.5	4.5
21	13.5	12.5	13.0	7.5	7.5	7.5	4.5	4.0	4.5	4.5	4.5	4.5
22	13.0	12.0	12.5	7.5	7.5	7.5	4.5	4.0	4.5	4.5	4.5	4.5
23	13.0	12.5	13.0	7.5	7.0	7.5	4.0	3.5	4.0	4.5	4.5	4.5
24	13.0	12.0	12.5	7.5	7.0	7.5	3.5	3.5	3.5	4.5	4.0	4.5
25	12.5	12.0	12.0	7.5	7.0	7.0	3.5	3.5	3.5	4.0	4.0	4.0
26	12.5	12.0	12.0	7.0	6.5	7.0	3.5	3.5	3.5	4.0	4.0	4.0
27	12.5	12.0	12.5	7.0	6.5	6.5	3.5	3.0	3.5	4.0	4.0	4.0
28	12.0	11.0	11.5	6.5	6.5	6.5	3.5	3.0	3.0	4.0	4.0	4.0
29	12.5	12.0	12.0	6.5	6.0	6.5	3.5	3.0	3.5	4.0	3.5	4.0
30	12.0	11.0	11.5	6.0	6.0	6.0	3.5	3.0	3.0	4.0	3.5	3.5
31	12.0	11.5	11.5	---	---	---	3.0	2.5	3.0	4.0	3.5	3.5
MONTH	16.0	11.0	14.0	11.5	6.0	8.5	6.0	2.5	4.5	5.0	2.0	3.5

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TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
February				March			April			May		
1	3.5	3.5	3.5	6.0	4.5	5.0	5.5	5.5	5.5	6.5	5.0	5.5
2	4.0	3.5	4.0	5.5	4.5	5.0	5.5	5.5	5.5	6.0	5.0	5.5
3	4.0	4.0	4.0	6.0	5.0	5.5	5.5	5.5	5.0	6.5	5.0	5.5
4	4.0	4.0	4.0	5.5	5.0	5.0	5.5	5.0	5.5	6.5	5.0	5.5
5	4.5	4.0	4.0	5.5	4.5	5.0	5.5	5.0	5.0	6.5	5.0	5.5
6	4.5	4.0	4.0	6.0	5.0	5.5	5.5	5.0	5.5	6.0	5.0	5.5
7	4.5	4.0	4.0	5.0	4.5	5.0	5.5	5.0	5.5	6.0	5.5	5.5
8	4.5	4.0	4.0	6.5	5.0	5.5	5.5	5.0	5.5	6.0	5.5	5.5
9	4.5	4.0	4.0	5.5	4.5	5.0	6.0	5.5	5.5	6.0	5.5	6.0
10	4.5	4.0	4.5	5.5	4.5	5.0	5.5	5.0	5.5	6.0	5.5	5.5
11	4.5	4.0	4.5	5.0	4.5	5.0	6.0	5.5	5.5	6.0	5.5	6.0
12	4.5	4.5	4.5	5.5	5.0	5.0	6.5	5.5	5.5	6.0	5.5	6.0
13	5.0	4.5	5.0	6.0	5.0	5.5	6.0	4.5	5.5	6.0	5.5	6.0
14	5.5	4.5	5.0	5.5	5.0	5.5	6.0	5.0	5.5	6.5	5.5	6.0
15	5.5	5.0	5.5	6.0	4.5	5.0	6.0	5.0	5.5	6.0	5.5	6.0
16	5.0	4.5	5.0	6.5	4.5	5.0	6.0	5.5	5.5	6.5	5.5	6.0
17	5.5	5.0	5.5	6.0	5.0	5.0	6.0	5.0	5.5	6.5	5.5	6.0
18	5.0	4.5	5.0	5.5	5.0	5.0	6.5	5.0	5.5	6.5	5.5	6.0
19	5.5	4.5	5.0	5.5	5.0	5.0	6.0	5.0	5.5	6.0	5.5	6.0
20	5.0	4.5	5.0	5.5	5.0	5.0	6.0	5.5	5.5	6.5	5.5	6.0
21	5.5	4.5	5.0	5.5	5.0	5.0	6.0	5.0	5.5	6.5	5.5	6.0
22	6.0	4.5	5.0	6.0	5.0	5.5	6.5	5.5	5.5	6.5	5.5	6.0
23	5.5	4.5	5.0	5.5	5.0	5.0	5.5	5.0	5.5	6.5	6.0	6.0
24	6.0	4.5	5.5	6.5	5.0	5.5	6.0	5.0	5.5	6.5	5.5	6.0
25	5.5	4.5	5.0	5.5	4.5	5.0	6.0	5.0	5.5	6.5	6.0	6.0
26	5.5	4.5	5.0	6.5	5.0	5.0	5.5	5.5	5.5	7.0	5.5	6.0
27	6.0	4.5	5.0	6.5	5.0	5.5	6.0	5.5	5.5	6.5	5.5	6.0
28	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.5	5.5	7.0	6.0	6.5
29	---	---	---	6.5	5.0	5.5	6.0	5.5	5.5	6.5	5.5	6.0
30	---	---	---	6.5	5.0	5.5	6.0	5.0	5.5	6.5	6.0	6.0
31	---	---	---	6.0	5.0	5.5	---	---	---	7.0	6.0	6.5
MONTH	6.0	3.5	4.5	6.5	4.5	5.0	6.5	4.5	5.5	7.0	5.0	6.0
Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
June				July			August			September		
1	7.0	6.0	6.5	7.5	6.0	7.0	8.5	7.0	7.5	9.0	8.0	8.5
2	7.0	6.0	6.5	7.5	6.5	7.0	8.5	7.0	7.5	9.0	8.0	9.0
3	7.0	5.5	6.5	7.5	6.5	7.0	8.5	7.0	8.0	9.5	8.0	9.0
4	7.5	6.0	6.5	8.0	6.5	7.0	8.5	7.0	7.5	9.5	7.5	8.5
5	7.0	5.5	6.5	8.0	6.5	7.0	8.5	7.0	7.5	10.5	8.0	9.0
6	7.0	6.0	6.5	8.0	6.5	7.0	8.5	7.0	8.0	9.5	8.0	9.0
7	7.0	6.0	6.5	8.0	6.0	7.0	8.5	7.0	8.0	9.5	8.0	9.0
8	7.0	6.0	6.5	8.0	6.0	7.0	8.5	7.0	8.0	9.5	8.5	9.0
9	7.0	6.0	6.5	8.0	6.5	7.0	8.0	7.0	7.5	10.0	8.5	9.5
10	7.0	6.0	6.5	8.5	6.5	7.0	8.5	7.5	8.0	10.0	8.0	9.0
11	7.0	6.0	6.5	8.5	6.0	7.0	8.5	7.0	8.0	10.0	8.5	9.5
12	7.0	6.5	6.5	8.5	6.0	7.0	9.0	7.0	8.0	10.0	9.0	9.5
13	7.0	6.0	6.5	8.0	6.5	7.0	9.0	7.0	8.0	10.0	8.5	9.5
14	7.0	6.5	6.5	8.5	6.5	7.5	9.0	7.5	8.0	10.0	9.5	10.0
15	7.0	6.5	7.0	8.0	6.5	7.0	9.0	7.0	8.0	10.5	9.5	10.0
16	7.0	6.0	6.5	8.0	6.0	7.0	8.5	7.5	8.0	10.5	9.5	10.0
17	7.0	6.5	6.5	8.5	6.5	7.5	8.5	7.5	8.0	10.5	9.5	10.0
18	7.0	6.5	6.5	9.0	6.5	7.5	8.5	7.5	8.0	10.5	9.5	10.0
19	7.0	6.0	6.5	8.5	6.5	7.0	8.5	7.5	8.0	10.5	10.0	10.5
20	7.0	6.0	6.5	9.0	6.5	7.5	9.0	7.5	8.0	11.0	10.0	10.5
21	7.0	6.5	7.0	8.5	6.5	7.5	9.0	7.5	8.0	11.5	10.0	10.5
22	7.0	6.0	6.5	8.5	6.5	7.5	9.0	7.5	8.0	11.5	9.5	10.5
23	7.5	6.5	7.0	8.5	6.0	7.5	9.0	7.5	8.0	10.5	9.5	10.0
24	7.0	6.0	7.0	8.5	6.5	7.5	8.5	7.5	8.0	11.0	9.5	10.0
25	7.5	6.5	7.0	8.5	6.5	7.5	9.0	7.5	8.5	11.5	9.5	10.5
26	8.0	6.0	7.0	8.5	6.5	7.5	9.0	7.5	8.5	12.0	11.0	11.5
27	7.5	6.0	6.5	8.5	6.5	7.5	9.0	8.0	8.5	12.0	10.0	11.5
28	7.5	6.0	6.5	8.5	6.5	7.5	9.0	8.0	8.5	12.5	11.0	11.5
29	7.5	6.5	7.0	8.5	6.5	7.5	9.0	7.5	8.5	12.5	11.0	12.0
30	7.5	6.5	7.0	8.5	6.5	7.5	9.0	8.5	8.5	12.5	12.0	12.0
31	---	---	---	8.5	7.0	7.5	9.0	7.5	8.5	---	---	---
MONTH	8.0	5.5	6.5	9.0	6.0	7.0	9.0	7.0	8.0	12.5	7.5	10.0
YEAR	16.0	2.0	7.0									

WILLAMETTE RIVER BASIN

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 National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

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

AVERAGE DISCHARGE.--28 years, 251 ft³/s, 74.42 in/yr, 181,800 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)
Nov. 25	0730	2,570	7.51	Jan. 15	0530	2,200	7.13
Jan. 12	1330	*3,060	*7.95				

Minimum discharge, 11 ft³/s Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	259	338	e83	111	151	287	239	147	57	e22	16
2	12	162	282	e81	165	296	276	229	134	54	e22	16
3	13	130	238	88	252	752	257	210	123	51	e21	16
4	16	517	314	85	338	1170	250	191	114	47	e20	15
5	19	431	363	82	910	781	463	177	108	45	e20	14
6	19	292	282	80	509	489	477	171	102	44	e19	15
7	15	226	240	150	342	363	402	226	96	42	e19	15
8	14	277	233	180	274	306	367	631	91	40	e19	15
9	13	330	330	161	233	281	839	476	86	38	21	15
10	13	243	826	377	205	260	578	379	81	37	21	14
11	13	185	674	689	186	234	402	319	77	36	20	14
12	20	151	454	2530	236	248	346	276	75	33	19	14
13	24	161	338	1790	864	265	346	250	75	34	18	14
14	25	198	271	1640	678	244	344	231	73	34	17	14
15	45	164	228	1800	445	219	324	207	67	34	17	13
16	57	144	195	938	352	202	295	213	66	35	17	13
17	42	135	180	580	325	196	264	478	64	37	17	13
18	48	150	387	428	320	216	244	519	60	34	21	12
19	55	141	294	341	468	228	231	463	60	31	18	12
20	39	142	220	283	444	210	235	384	85	30	17	12
21	123	176	e160	241	376	197	252	332	90	30	16	12
22	160	347	e140	212	311	194	233	282	76	28	16	12
23	80	391	e130	189	263	203	216	238	68	e30	16	12
24	57	361	e120	172	225	234	238	209	64	e34	16	12
25	46	1810	e110	157	198	232	257	183	61	e28	15	12
26	59	823	e100	145	178	206	269	163	58	e26	15	12
27	49	510	e98	136	164	184	301	149	57	e26	15	12
28	47	378	120	127	152	172	278	139	74	e25	16	12
29	47	375	106	120	---	161	252	138	67	e24	22	12
30	271	428	e90	113	---	164	247	177	61	e24	18	11
31	451	---	e87	111	---	220	---	165	---	e23	17	---
TOTAL	1904	10037	7948	14109	9524	9278	9770	8444	2460	1091	577	401
MEAN	61.4	335	256	455	340	299	326	272	82.0	35.2	18.6	13.4
MAX	451	1810	826	2530	910	1170	839	631	147	57	26	16
MIN	12	130	87	80	111	151	216	138	57	23	15	11
AC-FT	3780	19910	15760	27990	18890	18400	19380	16750	4880	2160	1140	795
CFSM	1.34	7.30	5.60	9.94	7.43	6.53	7.11	5.95	1.79	.77	.41	.29
IN.	1.55	8.15	6.46	11.46	7.74	7.54	7.94	6.86	2.00	.89	.47	.33

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1964 - 1991, BY WATER YEAR (WY)

	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
MEAN	69.0	332	501	502	427	376	344	259	127	39.6	21.7	27.1																
MAX	180	731	1471	1033	934	995	592	521	320	90.9	51.9	82.2																
(WY)	1969	1974	1965	1970	1986	1972	1966	1971	1974	1983	1968	1978																
MIN	6.42	43.1	33.0	48.3	65.0	128	147	74.1	38.7	22.8	13.3	8.62																
(WY)	1988	1988	1977	1977	1977	1978	1968	1987	1987	1970	1970	1987																

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1964 - 1991

ANNUAL TOTAL	85864	75543	
ANNUAL MEAN	235	207	
HIGHEST ANNUAL MEAN			251
LOWEST ANNUAL MEAN			404
HIGHEST DAILY MEAN			106
LOWEST DAILY MEAN			106
HIGHEST SEVEN-DAY MEAN	2820	2530	10000
LOWEST SEVEN-DAY MEAN	12	11	6.0
ANNUAL SEVEN-DAY MINIMUM	12	12	6.1
ANNUAL RUNOFF (AC-FT)	170300	149800	182000
ANNUAL RUNOFF (CFSM)	5.14	4.52	5.49
ANNUAL RUNOFF (INCHES)	69.74	61.36	74.53
10 PERCENT EXCEEDS	497	429	568
50 PERCENT EXCEEDS	160	150	143
90 PERCENT EXCEEDS	16	15	16

WILLAMETTE RIVER BASIN

259

14161500 LOOKOUT CREEK NEAR BLUE RIVER, OR

LOCATION.--Lat 44°12'35", long 122°15'20", in T.15 or 16 S., 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 National Geodetic Vertical Datum of 1929 (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.

AVERAGE DISCHARGE.--34 years (water years 1950-55, 1964-91), 123 ft³/s, 69.31 in/yr, 89,110 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,660 ft³/s Dec. 22, 1964, gage height, 8.88 ft, from rating curve extended above 1,300 ft³/s, 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)
Jan. 12	2000	*1,010	*5.06	No other peak greater than base discharge.			
Minimum discharge, 9.5 ft ³ /s Sept. 28-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10	93	e160	48	58	e89	102	120	80	31	17	13
2	10	60	e140	46	e65	e180	116	121	76	30	16	13
3	12	50	e120	46	e85	e460	115	114	70	28	15	13
4	11	196	e140	44	e150	e710	119	108	64	27	15	12
5	14	173	e160	42	e340	e480	180	104	61	26	15	12
6	12	124	e130	41	e230	e290	192	107	57	25	15	12
7	11	e100	e110	56	e170	e220	181	135	54	24	15	12
8	10	e130	e110	62	e140	178	184	265	52	23	15	12
9	10	e150	e140	59	e120	158	396	217	50	23	18	12
10	10	e110	e370	114	e110	142	297	186	49	22	18	12
11	10	e90	e260	234	e100	130	231	164	47	22	16	12
12	12	e75	e200	679	e120	146	196	148	45	21	15	12
13	13	e80	163	759	e330	157	177	143	44	21	14	12
14	14	e95	142	668	e300	141	170	131	43	21	14	11
15	22	e80	122	774	e240	124	163	119	41	21	14	11
16	20	e70	106	527	e190	112	152	133	40	22	14	11
17	15	e65	96	356	e170	104	141	244	38	23	14	11
18	20	e70	146	279	e160	105	133	248	37	21	20	11
19	20	e60	128	216	e240	104	127	233	38	20	15	11
20	15	e65	107	179	e220	98	137	210	50	20	14	11
21	47	e90	e89	149	e190	93	145	190	45	19	14	10
22	47	e160	e78	127	e170	90	139	166	40	19	13	10
23	26	e200	e72	111	e150	95	132	144	38	20	13	10
24	20	e180	e68	100	e120	104	139	127	36	23	13	10
25	18	e840	e65	89	e110	101	135	112	35	19	13	10
26	21	e410	63	83	e100	94	133	101	33	18	13	9.9
27	18	e250	62	76	e90	87	137	92	33	18	13	9.9
28	19	e180	61	71	e85	81	131	86	42	18	17	9.8
29	19	e170	56	65	---	76	121	89	36	17	15	9.7
30	70	e180	58	62	---	75	118	101	33	17	14	9.6
31	157	---	50	60	---	88	---	88	---	17	13	---
TOTAL	733	4596	3772	6222	4553	5112	4839	4546	1407	676	460	334.9
MEAN	23.6	153	122	201	163	165	161	147	46.9	21.8	14.8	11.2
MAX	157	840	370	774	340	710	396	265	80	31	20	13
MIN	10	50	50	41	58	75	102	86	33	17	13	9.6
AC-FT	1450	9120	7480	12340	9030	10140	9600	9020	2790	1340	912	664
CFSM	.98	6.36	5.05	8.33	6.75	6.84	6.69	6.08	1.95	.90	.62	.46
IN.	1.13	7.09	5.82	9.60	7.03	7.89	7.47	7.02	2.17	1.04	.71	.52

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1950 - 1991, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1950	38.3	179	1951	5.46	1988
1951	147	322	1952	10.0	1953
1952	229	794	1953	19.9	1977
1953	244	591	1954	25.1	1977
1954	214	449	1955	27.0	1977
1955	169	420	1956	60.9	1965
1956	166	282	1957	69.8	1968
1957	137	255	1958	40.8	1987
1958	76.1	212	1959	22.3	1987
1959	26.3	46.6	1960	15.6	1985
1960	15.3	22.2	1961	9.63	1970
1961	15.9	40.5	1962	6.81	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1950 - 1991

ANNUAL TOTAL	41384	37250.9	123
ANNUAL MEAN	113	102	182
HIGHEST ANNUAL MEAN			49.2
LOWEST ANNUAL MEAN			1972
HIGHEST DAILY MEAN	1150	840	4890
LOWEST DAILY MEAN	10	9.6	5.1
ANNUAL SEVEN-DAY MINIMUM	10	9.8	5.2
ANNUAL RUNOFF (AC-FT)	82090	73890	88890
ANNUAL RUNOFF (CFSM)	4.70	4.23	5.09
ANNUAL RUNOFF (INCHES)	63.88	57.50	69.18
10 PERCENT EXCEEDS	230	200	272
50 PERCENT EXCEEDS	81	75	76
90 PERCENT EXCEEDS	13	12	12

WILLAMETTE RIVER BASIN

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.

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (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, 83,660 acre-ft May 19, elevation, 1,350.89 ft; minimum contents recorded, 3,820 acre-ft Nov. 14, elevation, 1,178.86 ft.

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

1,120	136	1,160	1,880	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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1266.85	1239.95	1188.72	1181.99	1209.37	1282.53	1322.47	1344.98	1350.14	1350.20	1347.90	1322.36
2	1266.56	1237.34	1186.39	1181.04	1209.87	1284.40	1323.21	1345.74	1350.05	1350.31	1347.54	1321.43
3	1266.33	1234.13	1186.24	1181.49	1212.42	1288.77	1323.26	1346.36	1350.09	1350.41	1347.18	1320.48
4	1266.08	1236.91	1188.02	1182.62	1216.32	1294.81	1322.97	1346.95	1350.27	1350.49	1346.82	1319.53
5	1265.89	1235.47	1190.79	1183.51	1228.21	1297.44	1323.73	1347.44	1350.24	1350.56	1346.46	1318.59
6	1265.65	1229.39	1190.88	1184.36	1233.26	1298.14	1324.63	1347.99	1350.35	1350.63	1346.09	1317.63
7	1265.38	1221.99	1189.63	1186.95	1235.88	1298.83	1325.30	1348.71	1350.29	1350.65	1345.73	1316.66
8	1265.09	1215.41	1188.18	1187.48	1238.00	1299.47	1326.19	1349.74	1350.22	1350.63	1345.55	1315.69
9	1264.80	1211.02	1189.21	1185.72	1239.96	1299.95	1328.63	1349.28	1350.12	1350.59	1345.04	1314.73
10	1264.53	1205.10	1194.58	1193.01	1241.49	1301.00	1328.65	1349.25	1350.07	1350.56	1344.68	1313.74
11	1264.24	1197.46	1188.32	1193.98	1243.05	1302.30	1328.44	1349.52	1350.11	1350.52	1344.31	1312.76
12	1264.05	1187.42	1186.36	1216.07	1245.56	1303.92	1329.65	1349.69	1350.01	1350.48	1343.94	1311.77
13	1263.87	1179.66	1188.35	1217.50	1255.04	1305.30	1331.23	1349.82	1350.06	1350.46	1343.28	1310.78
14	1263.73	1181.10	1188.05	1221.06	1259.18	1306.27	1332.79	1349.82	1350.03	1350.44	1342.39	1309.79
15	1263.76	1183.37	1186.39	1231.03	1260.02	1307.18	1333.78	1349.79	1349.99	1350.44	1341.44	1308.79
16	1263.83	1184.58	1183.64	1224.18	1261.67	1308.07	1334.33	1349.98	1349.99	1350.49	1340.38	1307.76
17	1262.67	1185.52	1182.99	1207.72	1263.45	1308.96	1334.74	1350.65	1350.01	1350.53	1339.22	1306.76
18	1260.68	1186.27	1190.33	1202.70	1265.27	1310.03	1335.05	1350.88	1350.13	1350.49	1338.07	1305.74
19	1258.63	1186.29	1192.71	1203.79	1267.19	1311.09	1335.47	1350.70	1350.32	1350.42	1336.93	1304.70
20	1256.44	1186.52	1190.85	1203.11	1268.50	1312.01	1336.07	1350.46	1350.53	1350.38	1335.76	1303.67
21	1255.33	1187.75	1187.25	1201.96	1270.66	1312.87	1336.68	1350.21	1350.41	1350.38	1334.57	1302.63
22	1254.33	1192.50	1184.50	1200.91	1273.11	1313.76	1337.20	1349.89	1350.32	1350.39	1333.38	1301.57
23	1252.47	1194.50	1183.50	1200.63	1275.10	1314.69	1337.67	1349.91	1350.24	1350.38	1332.00	1300.47
24	1250.36	1187.20	1182.81	1200.43	1276.72	1315.76	1338.29	1350.04	1350.15	1350.33	1330.49	1299.34
25	1248.16	1214.18	1181.66	1201.16	1278.08	1316.79	1338.95	1350.14	1350.14	1350.25	1328.95	1298.21
26	1246.07	1209.97	1181.78	1202.26	1279.25	1317.64	1340.00	1349.95	1350.05	1349.99	1327.79	1297.06
27	1243.81	1198.31	1182.78	1203.04	1280.57	1318.40	1341.32	1349.95	1350.07	1349.66	1326.87	1295.92
28	1241.48	1188.07	1183.63	1204.85	1281.51	1319.08	1342.45	1350.19	1350.14	1349.32	1326.02	1294.77
29	1239.12	1184.76	1183.61	1207.08	---	1319.72	1343.37	1350.22	1350.11	1348.97	1325.13	1293.61
30	1239.26	1189.97	1183.26	1208.99	---	1320.37	1344.19	1350.58	1350.12	1348.62	1324.22	1292.89
31	1241.19	---	1182.74	1210.19	---	1321.30	---	1350.40	---	1348.26	1323.28	---
MAX	1266.85	1239.95	1194.58	1231.03	1281.51	1321.30	1344.19	1350.88	1350.53	1350.65	1347.90	1322.36
MIN	1239.12	1179.66	1181.66	1181.04	1209.37	1282.53	1322.47	1344.98	1349.99	1348.26	1323.28	1292.89
(†)	16520	5390	4340	8940	32320	58240	77460	83200	82930	81190	59780	38660
(‡)	-9080	-11130	-1050	+4600	+23380	+25920	+19220	+5740	-270	-1740	-21410	-21120

CAL YR 1990 MAX -- MIN -- AC-FT† -1040
WTR YR 1991 MAX 1350.88 MIN 1179.66 AC-FT† +13060

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

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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.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 1,056.53 ft above National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark). Prior to Aug. 25, 1966, nonrecording gage at datum 0.80 ft higher.

REMARKS.--No estimated daily discharges. Water-discharge 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.

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 FOR CURRENT YEAR.--Maximum discharge, 3,250 ft³/s Jan. 12, gage height, 7.81 ft; minimum discharge, 3.5 ft³/s Nov. 19, from minimum gage-height indicator.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	634	724	198	252	46	50	103	378	64	192	355
2	89	630	688	196	234	47	199	103	268	47	192	355
3	89	624	485	143	203	49	411	103	209	47	192	354
4	88	641	484	109	208	303	521	103	135	47	192	352
5	88	942	496	110	251	589	528	103	204	47	191	352
6	88	1220	497	111	277	695	506	103	139	47	190	350
7	88	1170	494	164	280	497	500	176	197	72	190	349
8	88	1120	487	320	199	393	427	722	197	84	190	348
9	87	974	484	378	126	393	764	1030	197	84	190	346
10	87	855	1060	395	126	179	1080	682	168	84	190	346
11	87	811	1500	1180	82	53	860	470	125	84	190	345
12	87	800	886	2590	53	54	231	420	178	82	190	343
13	87	612	495	3050	68	137	56	420	111	74	302	342
14	87	330	497	2670	492	190	56	420	149	68	390	342
15	88	198	491	2130	673	138	214	386	136	60	404	341
16	88	199	479	2570	371	105	317	365	131	59	456	339
17	289	201	383	2660	288	69	317	760	100	57	490	339
18	466	241	333	1250	290	51	317	947	58	85	490	339
19	462	250	419	609	446	51	259	940	45	85	486	336
20	455	288	501	608	567	50	227	818	86	63	486	336
21	459	378	523	557	254	50	227	727	201	49	486	335
22	455	492	443	482	46	50	227	654	169	49	484	333
23	451	668	327	382	46	51	227	421	151	75	548	345
24	448	1020	285	339	46	51	229	330	151	93	589	349
25	444	1370	281	249	46	51	232	350	106	93	586	349
26	439	1970	223	199	46	51	112	338	145	161	440	347
27	433	1860	199	200	46	50	49	264	95	192	362	346
28	427	1320	203	103	46	50	48	161	134	192	358	345
29	420	851	202	45	---	50	86	273	123	192	358	342
30	426	527	200	50	---	50	103	202	103	192	358	341
31	540	---	199	105	---	50	---	378	---	192	357	---
TOTAL	8020	23196	14968	24152	6062	4643	9380	13272	4589	2820	10719	10341
MEAN	259	773	483	779	216	150	313	428	153	91.0	346	345
MAX	540	1970	1500	3050	673	695	1080	1030	378	192	589	355
MIN	87	198	199	45	46	46	48	103	45	47	190	333
AC-FT	15910	46010	29690	47910	12020	9210	18610	26330	9100	5590	21260	20510

MEAN	249	653	979	835	426	387	321	343	248	350	480	233
MAX	611	1459	2189	1371	1166	1766	620	676	549	626	765	536
(WY)	1985	1974	1978	1972	1982	1972	1985	1971	1984	1979	1971	1972
MIN	47.7	39.4	63.1	68.1	32.6	12.0	12.0	35.0	63.9	89.1	302	82.8
(WY)	1988	1988	1977	1977	1977	1977	1977	1973	1973	1984	1987	1979

ANNUAL TOTAL	159833		132162						
ANNUAL MEAN	438		362			460			
HIGHEST ANNUAL MEAN						727			1972
LOWEST ANNUAL MEAN						192			1977
HIGHEST DAILY MEAN	3000	Jan 11	3050	Jan 13	3900		Jan 22		1971
LOWEST DAILY MEAN	39	Feb 4	45	Jan 29		3.7	Oct 8		1968
ANNUAL SEVEN-DAY MINIMUM	45	Feb 15	46	Feb 22		7.0	Oct 5		1968
ANNUAL RUNOFF (AC-FT)	31700.0		26210.0			33320.0			
10 PERCENT EXCEEDS	853		706			988			
50 PERCENT EXCEEDS	368		259			296			
90 PERCENT EXCEEDS	.87		51			51			

WILLAMETTE RIVER BASIN
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, 19.0°C Oct. 4; minimum, 4.5°C Dec. 16, but may have been lower during period of missing record, Dec. 18 to Feb. 28.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	18.5	18.5	18.5	12.5	11.5	12.0	6.0	6.0	6.0			
2	18.5	18.5	18.5	11.5	11.0	11.5	6.0	5.5	5.5			
3	18.5	18.5	18.5	11.0	11.0	11.0	6.0	5.5	5.5			
4	19.0	18.5	18.5	11.5	11.0	11.0	6.0	5.5	6.0			
5	18.5	18.0	18.5	11.0	11.0	11.0	6.5	5.5	6.0			
6	18.5	18.0	18.0	11.0	10.5	11.0	6.5	5.5	6.0			
7	18.5	18.0	18.0	10.5	10.5	10.5	6.5	5.5	6.0			
8	18.5	17.5	18.0	10.5	10.5	10.5	6.5	5.5	5.5			
9	18.0	17.5	17.5	10.5	10.5	10.5	6.0	5.5	5.5			
10	18.0	17.0	17.5	11.0	10.5	10.5	6.5	5.5	6.0			
11	17.5	17.0	17.0	11.0	10.0	10.5	7.5	6.5	6.5			
12	17.5	17.0	17.0	10.5	10.0	10.0	6.5	5.5	6.0			
13	17.0	16.5	17.0	10.0	9.5	10.0	5.5	5.0	5.5			
14	16.5	16.5	16.5	9.5	8.5	9.0	5.5	5.0	5.5			
15	17.0	16.5	16.5	9.0	8.0	8.5	5.5	5.0	5.0			
16	16.5	16.0	16.0	8.0	7.5	8.0	5.0	4.5	5.0			
17	16.5	15.5	16.0	7.0	7.0	7.0	5.5	5.0	5.5			
18	16.0	16.0	16.0	7.0	7.0	7.0	---	---	---			
19	16.0	15.5	16.0	8.5	7.0	7.0	---	---	---			
20	15.5	15.5	15.5	7.0	7.0	7.0	---	---	---			
21	15.5	15.5	15.5	7.0	6.5	7.0	---	---	---			
22	15.5	14.0	15.0	7.0	6.5	6.5	---	---	---			
23	14.0	13.5	14.0	7.0	7.0	7.0	---	---	---			
24	14.0	13.5	14.0	7.5	7.0	7.0	---	---	---			
25	14.5	14.0	14.0	8.0	7.5	7.5	---	---	---			
26	14.5	14.0	14.0	8.0	7.0	7.5	---	---	---			
27	14.5	14.0	14.5	7.0	6.5	7.0	---	---	---			
28	14.5	14.0	14.5	7.5	6.5	6.5	---	---	---			
29	14.5	14.0	14.5	6.5	6.0	6.5	---	---	---			
30	14.5	14.0	14.0	6.5	6.0	6.0	---	---	---			
31	14.0	12.5	13.0	---	---	---	---	---	---			
MONTH	19.0	12.5	16.0	12.5	6.0	8.5	---	---	---			

WILLAMETTE RIVER BASIN

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14162200 BLUE RIVER AT BLUE RIVER, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1				6.5	6.0	6.5	7.0	6.0	6.5	7.0	6.5	6.5
2				6.5	6.0	6.5	6.0	6.0	6.0	7.0	6.5	6.5
3				7.0	6.0	6.5	6.0	6.0	6.0	7.5	6.5	6.5
4				6.5	6.5	6.5	6.0	6.0	6.0	7.5	6.5	6.5
5				7.0	6.5	6.5	6.0	6.0	6.0	7.0	6.5	6.5
6				6.5	6.5	6.5	6.0	6.0	6.0	7.0	6.0	6.5
7				7.0	6.5	6.5	6.0	6.0	6.0	6.5	6.5	6.5
8				7.5	6.5	6.5	6.0	6.0	6.0	6.5	6.5	6.5
9				7.0	6.0	6.5	6.0	6.0	6.0	6.5	6.5	6.5
10				6.5	6.0	6.0	6.0	6.0	6.0	6.5	6.5	6.5
11				6.5	6.0	6.0	6.5	6.0	6.5	6.5	6.5	6.5
12				7.0	6.0	6.5	7.5	6.0	6.5	6.5	6.5	6.5
13				7.0	6.0	6.5	7.5	6.5	6.5	6.5	6.5	6.5
14				6.5	6.0	6.0	7.0	6.0	6.5	7.0	6.5	6.5
15				7.0	6.0	6.5	6.5	6.0	6.0	6.5	6.5	6.5
16				7.0	6.0	6.5	6.5	6.0	6.5	7.0	6.5	6.5
17				8.0	6.0	6.5	6.5	6.0	6.5	6.5	6.5	6.5
18				7.0	6.5	6.5	6.5	6.0	6.5	6.5	6.5	6.5
19				7.5	6.0	6.5	6.5	6.5	6.5	7.0	7.0	7.0
20				7.0	6.0	6.5	6.5	6.0	6.5	7.0	7.0	7.0
21				7.0	6.5	6.5	6.5	6.5	6.5	7.0	7.0	7.0
22				7.0	6.0	6.5	7.0	6.5	6.5	7.0	7.0	7.0
23				7.5	6.0	6.5	6.5	6.0	6.5	7.5	7.0	7.0
24				8.0	6.0	6.5	6.5	6.5	6.5	7.0	7.0	7.0
25				7.0	6.0	6.5	6.5	6.5	6.5	7.0	7.0	7.0
26				7.5	6.0	6.5	7.0	6.5	6.5	7.5	7.0	7.0
27				7.5	6.0	6.5	8.0	6.5	7.0	7.5	7.0	7.0
28				6.5	6.0	6.5	7.0	6.5	6.5	8.5	7.0	7.5
29				7.5	6.0	6.5	7.5	6.5	6.5	7.0	7.0	7.0
30				8.0	6.0	6.5	7.0	6.5	6.5	8.5	7.0	7.5
31				7.5	6.0	6.5	---	---	---	7.5	7.0	7.5
MONTH				8.0	6.0	6.5	8.0	5.5	6.5	8.5	---	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	10.5	8.0	8.5	8.5	8.0	8.5	9.5	9.5	9.5
2	8.0	7.0	7.5	10.5	8.0	8.5	8.5	8.0	8.5	9.5	9.5	9.5
3	7.5	7.5	7.5	10.5	8.0	9.0	8.5	8.0	8.5	9.5	9.5	9.5
4	9.0	7.5	8.0	10.5	8.0	8.5	8.5	8.5	8.5	9.5	9.5	9.5
5	7.5	7.5	7.5	10.5	8.0	8.5	8.5	8.5	8.5	10.0	9.5	9.5
6	9.0	7.5	8.0	10.5	8.0	8.5	8.5	8.5	8.5	10.0	9.5	9.5
7	8.0	7.5	7.5	9.0	8.0	8.5	8.5	8.5	8.5	10.0	9.5	10.0
8	8.0	7.5	7.5	9.5	8.0	8.5	8.5	8.5	8.5	10.0	9.5	10.0
9	8.0	7.5	7.5	9.0	8.0	8.5	8.5	8.5	8.5	10.0	10.0	10.0
10	8.0	7.5	7.5	9.0	8.0	8.5	9.0	8.5	8.5	10.0	10.0	10.0
11	8.5	7.5	8.0	9.0	8.0	8.5	8.5	8.5	8.5	10.0	10.0	10.0
12	8.0	7.5	7.5	9.5	8.0	8.5	9.0	8.5	8.5	10.5	10.0	10.0
13	8.5	7.5	8.0	9.0	8.0	8.5	8.5	8.5	8.5	10.5	10.0	10.5
14	8.0	7.5	7.5	9.5	8.0	8.5	8.5	8.5	8.5	10.5	10.5	10.5
15	8.0	7.5	7.5	9.0	8.0	8.5	8.5	8.5	8.5	10.5	10.5	10.5
16	8.0	7.5	7.5	9.0	8.0	8.5	8.5	8.5	8.5	11.0	10.5	10.5
17	8.5	7.5	8.0	15.5	8.0	9.5	8.5	8.5	8.5	11.0	10.5	11.0
18	9.5	7.5	8.0	9.0	8.0	8.5	8.5	8.5	8.5	11.0	11.0	11.0
19	8.0	7.5	8.0	9.0	8.0	8.5	8.5	8.5	8.5	11.0	11.0	11.0
20	8.0	7.5	7.5	10.5	8.0	8.5	8.5	8.5	8.5	11.5	11.0	11.0
21	8.0	7.5	7.5	10.5	8.0	9.0	9.0	8.5	8.5	11.5	11.0	11.5
22	8.0	7.5	7.5	10.5	8.0	9.0	9.0	8.5	8.5	11.5	11.5	11.5
23	8.0	7.5	8.0	9.5	8.0	8.5	9.0	8.5	9.0	12.0	11.5	12.0
24	8.5	7.5	8.0	9.5	8.0	8.5	9.0	9.0	9.0	12.0	12.0	12.0
25	9.5	7.5	8.0	9.0	8.0	8.5	9.0	9.0	9.0	12.5	12.0	12.5
26	8.5	8.0	8.0	8.5	8.0	8.5	9.0	9.0	9.0	12.5	12.5	12.5
27	9.0	8.0	8.0	8.5	8.0	8.5	9.0	9.0	9.0	13.0	12.5	13.0
28	8.0	8.0	8.0	8.5	8.0	8.5	9.0	9.0	9.0	13.0	13.0	13.0
29	8.5	8.0	8.0	8.5	8.0	8.5	9.5	9.0	9.0	13.5	13.0	13.5
30	8.0	8.0	8.0	8.5	8.0	8.5	9.5	9.0	9.5	14.0	13.5	13.5
31	---	---	---	8.5	8.0	8.5	9.5	9.0	9.5	---	---	---
MONTH	9.5	7.0	8.0	15.5	8.0	8.5	9.5	8.0	8.5	14.0	9.5	11.0

WILLAMETTE RIVER BASIN

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, published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 855.71 ft above National Geodetic Vertical Datum of 1929 (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 excellent 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.

AVERAGE DISCHARGE.--67 years (water years 1925-91), 4,027 ft³/s, 2,918,000 acre-ft/yr.

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, 16,100 ft³/s Jan. 15, gage height, 6.40 ft, from crest-stage gage; minimum discharge, 1,850 ft³/s Sept. 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2350	4030	5000	2310	2860	2920	2930	3490	4120	2430	2280	2680
2	2360	3370	4810	2270	3100	3210	3130	3470	3880	2380	2260	2680
3	2410	2960	4330	2170	3030	4020	3510	3390	3620	2370	2240	2500
4	2410	4110	4410	2090	3210	6150	4100	3300	3200	2310	2250	2310
5	2440	4800	4580	2060	4790	6170	4510	3230	3510	2280	2250	2210
6	2430	4800	4220	2040	4170	5320	4480	3280	3070	2230	2250	2260
7	2420	4470	4060	2260	3750	4720	4290	3480	3450	2210	2240	2260
8	2410	5100	3990	2750	3430	4280	4040	5970	3390	2230	2230	2250
9	2400	5210	4060	2910	3200	4110	5910	6090	3330	2190	2250	2430
10	2410	4590	6170	3370	3110	3800	6180	5330	3140	2140	2260	2630
11	2440	4240	7160	5100	2950	3490	5660	4810	2950	2100	2230	2630
12	2490	4060	5520	10400	3120	3760	4330	4520	3130	2080	2220	2640
13	2510	3990	4670	e11000	5310	3870	3740	4740	2800	2080	2310	2630
14	2530	3920	4400	e12000	5490	3720	3700	5110	2940	2050	2420	2640
15	2600	3460	4240	e13000	5100	3490	3780	4920	2890	2030	2430	2640
16	2680	3350	4090	e11500	4460	3340	3800	4730	2890	2050	2530	2620
17	2600	3310	3830	e10500	4340	3180	3710	7150	2740	2090	2660	2600
18	2670	3080	4180	8300	4290	3190	3670	8200	2490	2050	2710	2610
19	2570	2700	4080	6670	4770	3160	3550	7410	2400	2010	2660	2590
20	2340	2830	3860	6270	4750	3030	3460	6570	2690	1960	2640	2590
21	2630	3490	3820	5560	4330	2980	3640	6090	3280	1960	2630	2620
22	3000	4120	e3800	4820	3720	2970	3540	5820	2880	2020	2620	2490
23	2470	4300	e3560	4380	3480	3030	3490	5210	2470	2040	2700	2010
24	2330	4670	e3190	4050	3310	3100	3770	4750	2430	2070	2790	1910
25	2280	8410	2710	3810	3150	3050	4120	4590	2360	2050	2780	2160
26	2360	7610	2600	3520	2990	2950	4140	4310	2390	2090	2700	2630
27	2340	6610	2500	3420	2930	2810	4170	3940	2360	2120	2670	2440
28	2370	5650	2540	3050	2900	2750	3990	3580	2610	2100	2750	2610
29	2310	5160	2460	2700	---	2660	3840	3890	2640	2080	2730	2620
30	2910	5110	2390	2650	---	2630	3620	3920	2520	2180	2700	2620
31	4340	---	2340	2610	---	2770	---	4470	---	2290	2680	---
TOTAL	78810	133510	123570	159540	106040	110630	120800	149760	88570	66270	77070	74510
MEAN	2542	4450	3986	5146	3787	3569	4027	4831	2952	2138	2486	2484
MAX	4340	8410	7160	13000	5490	6170	6180	8200	4120	2430	2790	2680
MIN	2280	2700	2340	2040	2860	2630	2930	3230	2360	1960	2220	1910
AC-FT	156300	264800	245100	316400	210300	219400	239600	297000	175700	131400	152900	147800

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1991, 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
MEAN	2804	4650	6240	6025	4776	4467	4173	4446	3652	2732	2844	2633											
MAX	3696	8718	12370	9295	8772	11210	5855	6567	6604	3529	3510	3358											
(WY)	1985	1985	1978	1971	1982	1972	1989	1969	1974	1974	1971	1972											
MIN	2179	1925	1865	1752	1542	2414	2671	2421	2180	2128	2127	2038											
(WY)	1981	1988	1977	1977	1977	1977	1977	1973	1973	1991	1987	1987											

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1969 - 1991
ANNUAL TOTAL	1378690	1289080	
ANNUAL MEAN	3777	3532	4119
HIGHEST ANNUAL MEAN			5823
LOWEST ANNUAL MEAN			2447
HIGHEST DAILY MEAN	18700	13000	23600
LOWEST DAILY MEAN	1810	1910	1330
ANNUAL SEVEN-DAY MINIMUM	2330	2020	1370
ANNUAL RUNOFF (AC-FT)	2735000	2557000	2984000
10 PERCENT EXCEEDS	5020	5180	7020
50 PERCENT EXCEEDS	3370	3070	3250
90 PERCENT EXCEEDS	2360	2240	2320

WILLAMETTE RIVER BASIN

265

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. (revised), 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, from topographic map.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 29,300 ft³/s Apr. 27, 1990, gage height, 14.40 ft; minimum discharge, 457 ft³/s Aug. 29, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,800 ft³/s Jan. 15, gage height, 10.73 ft; minimum discharge, 479 ft³/s Oct. 6, 7, 19.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	515	2260	3580	496	1260	1430	1050	1570	4440	e990	995	795
2	512	1430	3390	500	1560	1690	1170	1540	4200	e980	987	798
3	512	886	2710	518	1530	2700	1590	1430	3950	e1030	1000	793
4	512	2500	2740	524	1730	5150	2220	1300	3510	e1080	1010	802
5	522	3190	3010	523	3630	5050	2810	1220	3800	e1060	1010	809
6	494	2970	2530	523	2980	3930	2810	1250	3390	e1050	1010	880
7	479	2490	2310	555	2410	3290	2800	1480	3690	e1040	1020	904
8	497	3250	2830	883	1970	2810	2470	4480	3620	e1030	1020	897
9	497	3430	3240	1010	1800	2770	4690	4600	3610	e1020	1030	864
10	500	2680	6340	1720	1790	2440	4900	3700	3440	e990	1030	824
11	508	2220	7990	3810	1530	1870	4250	3090	3180	e960	1030	819
12	505	1980	6230	10500	1680	2100	2810	2720	3230	e950	1020	816
13	504	2030	5220	11600	4360	2540	2100	2910	2900	e940	1050	820
14	511	2170	4870	11900	4810	2260	2110	3260	2570	e940	1050	824
15	525	1480	4650	14400	e4250	1980	2150	3030	1890	e940	899	819
16	544	1300	4440	11300	e3350	1960	2110	2850	1790	951	818	812
17	511	1230	4200	9430	e3200	1780	1990	5810	1700	968	830	809
18	543	1090	4800	7070	e3150	1740	1950	7190	1490	985	831	812
19	551	686	4080	5460	e3850	1530	1700	6140	1410	1040	808	809
20	485	843	2110	5010	e3800	1180	1630	5130	1630	1010	806	814
21	714	1670	1840	4290	3230	1250	1870	4530	1650	1010	802	837
22	1050	2460	1880	3450	2430	1240	1750	4150	1110	1010	802	831
23	504	2510	1710	2960	2170	1340	1560	3510	1050	1030	804	836
24	502	2770	1310	2610	1950	1650	1870	2950	1040	1030	809	829
25	524	7920	702	2320	1730	1400	2440	2780	e1020	974	813	927
26	587	6690	607	2030	1560	1170	2480	2490	e1030	980	805	1020
27	534	5380	524	1880	1470	1090	2610	2070	e1030	970	802	824
28	543	4240	598	1510	1470	1000	2360	2330	e1040	968	810	824
29	540	3690	492	1150	---	917	2030	3070	e1020	967	803	824
30	1150	3790	491	1100	---	877	1740	3880	e990	1010	814	824
31	2980	---	500	1060	---	979	---	4840	---	1010	802	---
TOTAL	19855	81235	91924	122092	70650	63113	70020	101300	70420	30913	28120	25096
MEAN	640	2708	2965	3938	2523	2036	2334	3268	2347	997	907	837
MAX	2980	7920	7990	14400	4810	5150	4900	7190	4440	1080	1050	1020
MIN	479	686	491	496	1260	877	1050	1220	990	940	802	793
AC-FT	39380	161100	182300	242200	140100	125200	138900	200900	139700	61320	55780	49780

CAL YR 1990 TOTAL 784561 MEAN 2149 MAX 21600 MIN 479 AC-FT 1556000
WTR YR 1991 TOTAL 774738 MEAN 2123 MAX 14400 MIN 479 AC-FT 1537000

e Estimated

WILLAMETTE RIVER BASIN

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 and crest-stage gage. Elevation of gage is 600 ft, from topographic map.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,600 ft³/s Apr. 28, 1990, gage height, 11.68 ft; minimum discharge, 420 ft³/s Nov. 8, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 15,200 ft³/s Jan. 15, gage height, 9.14 ft; minimum discharge, 493 ft³/s Jan. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	588	2830	3670	594	833	930	1630	3660	2000	1110	1110	881
2	552	1750	3570	579	1070	1170	1760	3460	1710	1090	1110	879
3	576	1490	2950	546	998	2070	1730	e2200	1470	1080	1090	882
4	566	2370	2810	505	1110	4470	1960	1560	1190	1110	1100	906
5	576	3000	3010	517	2710	4930	2380	1540	1380	1090	1100	912
6	540	2870	2600	539	2380	4260	2650	1570	1150	1080	1100	933
7	524	2390	2340	644	1770	4730	2570	1640	1390	1110	1090	902
8	536	2880	2210	857	1430	4680	2340	4010	1120	1090	1090	909
9	551	3220	2240	964	1200	4470	4310	4390	1160	1110	1110	1000
10	557	2560	4180	1410	1090	3910	4570	3590	1120	1100	1100	1010
11	565	2120	5960	3190	954	2240	4020	2960	1170	1070	1090	913
12	594	1880	4230	e8000	1010	2070	2800	2570	1270	1060	1100	903
13	604	2020	3040	e10000	3620	2280	2050	2620	1130	1090	1140	918
14	e1100	2370	2620	e12000	3990	2080	2560	2950	1350	1100	1180	896
15	1550	2190	2320	14500	3400	1800	3880	2750	1160	1090	998	1070
16	1550	3020	2150	11700	2700	1600	4020	2590	1090	1130	929	1170
17	1490	3350	1880	9790	2560	1550	3910	5330	1110	1110	943	892
18	1540	2920	2400	7450	2520	1580	3910	7040	1140	1120	890	922
19	1540	1710	2290	5210	3060	1560	3800	6240	1180	1070	879	902
20	1480	1690	2000	4620	3020	1580	3550	5100	1230	1060	899	899
21	1540	1920	1830	3940	2630	1530	3680	4360	1320	1100	893	917
22	1600	2350	1810	3030	1940	1540	3610	3960	1150	1120	888	911
23	1490	2420	1660	2530	1580	1600	3560	3380	1070	1090	923	876
24	1500	2600	1390	2090	1340	1620	3760	2780	1080	1120	957	870
25	1500	6790	850	1840	1140	1530	4180	2570	1160	1110	892	977
26	1520	6860	787	1550	1010	1510	4280	2320	1170	1120	900	1140
27	1490	5720	718	1400	940	1480	4360	1940	1100	1120	943	992
28	1510	4510	776	1110	917	1480	4240	1670	1170	1090	930	1070
29	1480	3910	687	790	---	1490	4080	1890	1100	1100	867	911
30	1890	3940	641	750	---	1520	3850	1990	1070	1130	888	913
31	3530	---	615	731	---	1590	---	2460	---	1120	888	---
TOTAL	36629	89650	70234	113376	52922	70850	100000	97090	36910	34090	31017	28276
MEAN	1182	2988	2266	3657	1890	2285	3333	3132	1230	1100	1001	943
MAX	3530	6860	5960	14500	3990	4930	4570	7040	2000	1130	1180	1170
MIN	524	1490	615	505	833	930	1630	1540	1070	1060	867	870
AC-FT	72650	177800	139300	224900	105000	140500	198300	192600	73210	67620	61520	56090

CAL YR 1990 TOTAL 809965 MEAN 2219 MAX 20200 MIN 504 AC-FT 1607000
WTR YR 1991 TOTAL 761044 MEAN 2085 MAX 14500 MIN 505 AC-FT 1510000

e Estimated

LOCATION.--Lat 44°05'34", long 122°57'20", in SE 1/4 NW 1/4 sec.17, T.17 S., R.2 W., Lane County, Hydrologic Unit 17090004, on left bank 50 ft downstream from bridge, 1.3 mi northeast of Springfield, and at mile 1.59.

PERIOD OF RECORD.--September 1935 to September 1952, October 1963 to current year. Prior to October 1935 monthly discharge only, published in WSP 1318.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 442.47 ft above National Geodetic Vertical Datum of 1929. Oct. 1, 1935, to Sept. 30, 1952, nonrecording gage at same site and datum.

AVERAGE DISCHARGE.--45 years (water years 1936-52, 1963-91), 526 ft³/s, 40.36 in/yr, 381,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 13,000 ft³/s Dec. 22, 1964, gage height, 22.60 ft; minimum discharge, 8.2 ft³/s Sept. 9, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1955, reached at stage of 22.9 ft, from floodmark, probably affected by backwater from McKenzie River, discharge, 9,200 ft³/s.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and maximum (*):

Minimum discharge, 17 ft³/s Sept. 26, 27.

a May have been higher during period of estimated record May 17, 18.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	611	1040	347	333	421	463	396	389	141	50	41
2	28	344	1000	324	399	565	440	364	356	128	50	41
3	31	240	862	307	523	1230	417	341	323	124	50	35
4	31	621	792	292	514	2290	396	317	298	117	50	31
5	41	733	720	272	881	2180	606	295	281	113	48	28
6	51	516	629	258	721	1570	686	299	273	109	48	27
7	36	409	572	352	596	1340	856	341	260	106	48	26
8	33	393	521	378	521	1130	820	e1100	247	101	48	30
9	32	332	578	359	468	1000	1010	e1050	232	98	44	32
10	30	276	1450	547	422	1030	965	862	219	97	62	29
11	29	237	1410	737	391	931	904	732	209	93	51	26
12	43	207	1080	1950	397	1040	789	651	205	90	47	26
13	61	465	900	2510	926	1090	702	622	201	88	42	26
14	46	1040	772	2090	880	1020	645	587	194	92	40	26
15	51	638	677	2430	742	1010	602	525	184	89	38	26
16	61	483	616	1900	689	913	551	489	184	92	37	25
17	58	444	565	1500	702	812	509	e1000	180	103	37	22
18	129	626	758	1200	784	752	476	e2600	169	98	36	21
19	122	519	785	1938	945	738	448	e2000	167	86	34	19
20	73	585	661	803	860	665	418	e1500	218	83	34	20
21	74	726	e550	699	760	664	398	e1200	203	77	31	20
22	189	722	e500	619	676	655	366	e980	182	73	29	20
23	99	642	e460	563	604	756	345	e840	168	70	28	21
24	76	561	e430	516	552	949	441	e740	157	65	30	20
25	66	1460	e410	479	507	886	531	647	154	64	32	19
26	118	1430	412	442	470	785	518	583	152	64	31	18
27	97	1230	443	406	441	682	523	531	147	62	31	19
28	104	1040	526	380	416	610	490	492	180	58	55	22
29	106	953	442	351	---	559	465	489	164	57	57	23
30	372	1160	390	332	---	521	430	527	151	54	43	24
31	1030	---	366	333	---	492	---	441	---	52	38	---
TOTAL	3343	19643	21317	24614	17120	29286	17210	23541	6447	2744	1299	763
MEAN	108	655	688	794	611	945	574	759	215	88.5	41.9	25.4
MAX	1030	1460	1450	2510	945	2290	1010	2600	389	141	62	41
MIN	26	207	366	258	333	421	345	295	147	52	28	18
AC-FT	6630	38960	42280	48820	33960	58090	34140	46690	12790	5440	2580	1510
CFM	.61	3.70	3.89	4.49	3.45	5.34	3.24	4.29	1.21	.50	.24	.14
IN.	.70	4.13	4.48	5.17	3.60	6.16	3.62	4.95	1.35	.58	.27	.

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1991, BY WATER YEAR (WY)

MEAN	117	612	1105	1231	1123	881	576	347	198	76.7	38.8	41.6
MAX	719	1653	3197	2464	2379	1975	1545	759	752	190	91.4	111
(WY)	1951	1951	1965	1965	1986	1972	1937	1991	1984	1983	1968	1968
MIN	19.2	26.5	52.6	84.0	126	281	242	118	54.3	34.3	14.7	18.9
(WY)	1988	1937	1977	1977	1977	1965	1942	1966	1966	1940	1966	1967

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1936 - 1991	
ANNUAL TOTAL	167890		167327			
ANNUAL MEAN	460		458		527	
HIGHEST ANNUAL MEAN					847	1972
LOWEST ANNUAL MEAN					164	1977
HIGHEST DAILY MEAN	3690	Jan 8	2600	May 18	11500	Dec 22 1964
LOWEST DAILY MEAN	25	Sep 24	18	Sep 26	9.6	Aug 18 1966
ANNUAL SEVEN-DAY MINIMUM	29	Sep 26	20	Sep 21	11	Aug 15 1966
ANNUAL RUNOFF (AC-FT)	333000		331900		381400	
ANNUAL RUNOFF (CFSM)	2.60		2.59		2.97	
ANNUAL RUNOFF (INCHES)	35.29		35.17		40.42	
10 PERCENT EXCEEDS	1120		1000		1350	
50 PERCENT EXCEEDS	263		391		253	
90 PERCENT EXCEEDS	36		31		30	

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 National Geodetic Vertical Datum of 1929. 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.--Records good except those for January to September, which are fair. 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.--47 years, 11,940 ft³/s, 8,651,000 acre-ft/yr.

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, 43,600 ft³/s May 19, gage height, 10.52 ft; minimum daily discharge, 4,080 ft³/s July 11, 12, but may have been less during period of no gage-height record, July 10 to Aug. 26.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6140	14300	21500	5620	5930	6570	6510	7740	10700	5000	e4600	e5370
2	6080	12400	22000	5460	7780	7740	6490	7480	10000	4720	e4720	e5360
3	6170	10600	18300	5220	7940	11200	7070	7050	9300	4480	e4800	e5350
4	6140	11400	14400	4950	6990	16700	8190	6540	8610	e4350	e4880	e5600
5	6380	14600	14100	4870	9260	25200	9180	6250	8130	e4300	e4920	6010
6	6500	16400	12300	4750	10500	21000	11800	6110	7640	4240	e4920	6080
7	6460	16100	11600	4940	9260	17900	13000	6250	6940	4210	e4900	6120
8	6400	16100	10900	5610	8740	14200	13100	9650	7010	4180	e4900	6200
9	6330	16800	10300	5970	7820	12400	14100	15900	6910	4120	e4890	6180
10	5710	17300	15900	6450	7240	12500	17300	16200	6700	e4100	e4970	6340
11	5580	16800	25300	9290	6880	10400	17900	15200	6630	e4080	e4980	6560
12	5670	15200	22100	20500	6470	10400	14700	14500	6480	e4080	e4960	6690
13	5770	15000	17000	36100	8910	12500	10900	13900	6430	e4190	e4950	6800
14	5670	19100	14900	33800	12200	13100	9670	13800	6150	e4230	e4940	6680
15	5780	16600	13300	37100	11900	13200	9430	13100	6170	e4270	e5030	6650
16	5960	12700	12600	38500	10100	11300	9330	12600	6030	e4260	e5100	6630
17	5930	11400	11200	34000	9590	10500	8830	18300	5900	e4270	e5180	6910
18	6140	11000	10100	28900	10100	9400	8020	38800	5070	e4320	e5280	6990
19	6330	10100	13700	23800	11500	9880	7680	41300	4840	e4200	e5320	6920
20	5840	9830	e14800	21400	12700	9200	7170	34400	5230	e4160	e5310	6870
21	5810	11300	e12500	19300	11800	8990	7120	28100	6100	e4140	e5270	6960
22	7370	13600	e11300	16900	9770	8850	7070	22600	6090	e4120	e5250	6970
23	7630	13800	e11100	13000	8510	9070	6830	19600	5280	e4100	e5200	6630
24	7770	16700	e9600	11500	7960	10700	6940	16400	5060	e4090	e5150	6420
25	7590	22300	e7900	10500	7280	10300	7850	14000	4880	e4210	e5250	6600
26	8000	31200	e6400	9060	6760	10000	8630	13100	4710	e4390	e5200	6950
27	8070	27500	6230	8140	6450	8920	9120	11900	4760	e4410	5150	7090
28	8020	23400	6610	7810	6220	7860	8960	10200	5050	e4570	5270	7020
29	8060	22000	6560	6350	---	7190	8670	9200	5230	e4560	e5250	7200
30	8760	21700	6040	5970	---	6670	8460	9870	5110	e4480	e5240	7170
31	13800	---	5770	5880	---	6480	---	10600	---	e4500	e5200	---
TOTAL	211860	487230	396310	451640	246560	350320	290020	470640	193140	133330	156980	195320
MEAN	6834	16240	12780	14570	8806	11300	9667	15180	6438	4301	5064	6511
MAX	13800	31200	25300	38500	12700	25200	17900	41300	10700	5000	5320	7200
MIN	5580	9830	5770	4750	5930	6480	6490	6110	4710	4080	4600	5350
AC-FT	420200	966400	786100	895800	489100	694900	575300	933500	383100	264500	311400	387400

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1991, BY WATER YEAR (WY)

	MEAN	8096	14860	21500	20690	14820	13280	10740	9706	7635	4852	5315	7020
MAX	10970	30850	42980	36750	26870	36070	17520	15180	16150	6283	7117	8986	
(WY)	1985	1985	1978	1971	1986	1972	1974	1991	1984	1969	1971	1972	
MIN	4882	4924	3848	3695	2859	5897	4823	4009	3658	3883	4249	4875	
(WY)	1988	1988	1977	1977	1977	1977	1977	1987	1987	1978	1987	1987	

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1969 - 1991
ANNUAL TOTAL	3456400	3583350	11530
ANNUAL MEAN	9470	9817	17800
HIGHEST ANNUAL MEAN			5233
LOWEST ANNUAL MEAN			71800
HIGHEST DAILY MEAN	44100	41300	2340
LOWEST DAILY MEAN	3310	4080	2410
ANNUAL SEVEN-DAY MINIMUM	3860	4140	2410
ANNUAL RUNOFF (AC-FT)	6856000	7108000	8356000
10 PERCENT EXCEEDS	16700	16900	24800
50 PERCENT EXCEEDS	7290	7370	8090
90 PERCENT EXCEEDS	4340	4820	4610

WILLAMETTE RIVER BASIN

269

14166500 LONG TOM RIVER NEAR NOTI, OR

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.

DRAINAGE AREA.--89.3 mi².

PERIOD OF RECORD.--October 1935 to current year.

REVISED RECORDS.--WSP 1318: 1936(M). WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 389.05 ft above National Geodetic Vertical Datum of 1929 (levels by National Weather Service). Prior to Nov. 6, 1940, nonrecording gage at same site and datum.

REMARKS.--Records fair except those for Oct. 1-18, which are poor. Slight regulation caused by logpond upstream from Noti. No diversion upstream from station.

AVERAGE DISCHARGE.--56 years, 228 ft³/s, 34.67 in/yr, 165,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,990 ft³/s Dec. 22, 1955, gage height, 20.17 ft; minimum discharge, 0.04 ft³/s Aug. 13, 1977.

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. 5	0030	*1,860	*12.57	No other peak greater than base discharge.			
Minimum discharge, 4.2 ft ³ /s Sept. 26.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	142	292	112	140	156	175	142	112	57	19	21
2	18	74	320	105	205	279	169	136	104	52	18	21
3	17	54	277	100	395	807	165	132	96	51	19	14
4	14	57	246	95	366	1530	162	125	92	46	19	17
5	19	68	253	87	671	1510	274	121	88	44	18	14
6	15	60	209	85	525	876	358	117	87	42	18	11
7	14	52	181	109	383	667	428	126	87	41	20	8.3
8	13	51	160	135	308	526	410	245	83	41	20	8.2
9	14	48	170	126	265	457	481	223	83	40	19	12
10	15	45	351	185	235	430	457	186	78	39	20	10
11	13	42	366	310	216	373	395	167	73	38	19	8.6
12	14	39	281	894	223	567	339	154	70	37	19	9.0
13	15	52	233	1100	319	569	301	154	70	35	17	8.9
14	16	132	201	625	340	458	271	153	69	36	17	8.7
15	18	101	176	587	297	392	252	136	67	37	16	11
16	25	72	153	483	266	342	233	128	68	41	16	11
17	20	65	134	387	253	310	215	180	66	45	16	9.4
18	31	88	145	324	241	287	202	282	63	42	16	8.5
19	47	83	191	278	244	310	191	307	65	38	15	9.0
20	28	105	179	242	247	279	181	269	76	35	15	8.5
21	26	186	e140	213	248	262	173	223	73	33	14	6.8
22	57	214	e120	192	230	240	165	191	72	30	14	6.9
23	38	199	e110	178	212	248	159	170	69	27	14	9.9
24	29	152	e120	164	196	273	182	153	64	25	14	7.6
25	25	609	106	153	182	267	200	143	62	25	13	8.2
26	32	529	104	144	172	258	181	135	62	26	14	5.7
27	36	330	115	135	163	231	170	128	60	25	15	7.2
28	37	256	169	129	157	211	159	121	60	24	19	8.5
29	39	219	157	124	---	197	155	123	62	22	29	8.8
30	127	308	124	116	---	188	148	144	59	22	28	9.0
31	286	---	121	126	---	182	---	124	---	20	23	---
TOTAL	1110	4432	5904	8043	7699	13682	7351	5138	2240	1116	553	307.7
MEAN	35.8	148	190	259	275	441	245	166	74.7	36.0	17.8	10.3
MAX	286	609	366	1100	671	1530	481	307	112	57	29	21
MIN	12	39	104	85	140	156	148	117	59	20	13	5.7
AC-FT	2200	8790	11710	15950	15270	27140	14580	10190	4440	2210	1100	610
CFSM	.40	1.65	2.13	2.91	3.08	4.94	2.74	1.86	.84	.40	.20	.11
IN.	.46	1.85	2.46	3.35	3.21	5.70	3.06	2.14	.93	.46	.23	.13

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1991, BY WATER YEAR (WY)

	MEAN	40.9	205	457	575	554	417	250	126	64.7	30.0	16.8	17.5
MAX	300	708	1425	1260	1093	923	684	340	164	65.2	33.4	31.4	
(WY)	1948	1974	1956	1956	1949	1938	1937	1963	1937	1937	1937	1978	
MIN	8.00	16.6	23.8	25.2	62.5	137	57.2	54.6	24.7	6.20	3.61	7.42	
(WY)	1988	1937	1977	1977	1977	1941	1977	1977	1977	1977	1977	1967	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1936 - 1991

ANNUAL TOTAL	63481.0	57575.7	
ANNUAL MEAN	174	158	228
HIGHEST ANNUAL MEAN			424
LOWEST ANNUAL MEAN			45.5
HIGHEST DAILY MEAN	2120	1530	5850
LOWEST DAILY MEAN	8.0	5.7	.04
ANNUAL SEVEN-DAY MINIMUM	11	7.5	.06
ANNUAL RUNOFF (AC-FT)	125900	114200	165200
ANNUAL RUNOFF (CFSM)	1.95	1.77	2.55
ANNUAL RUNOFF (INCHES)	26.44	23.98	34.70
10 PERCENT EXCEEDS	422	339	580
50 PERCENT EXCEEDS	84	120	92
90 PERCENT EXCEEDS	14	14	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 National Geodetic Vertical Datum of 1929 (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, 116,800 acre-ft at elevation 375.1 ft, maximum pool elevation. Usable capacity, 101,100 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, 101,900 acre-ft June 29, elevation, 373.59 ft; minimum contents, 7,320 acre-ft Nov. 24, elevation, 353.10 ft.

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

349	2,270	356	12,440	364	37,490	372	87,720
350	3,250	358	17,020	366	46,940	374	105,800
352	5,730	360	22,670	368	58,320	376	126,300
354	8,760	362	29,460	370	71,900		

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	369.59	362.53	354.48	354.57	358.25	364.64	371.22	373.41	373.49	373.58	373.01	372.25
2	369.56	362.03	354.91	354.53	358.72	365.00	371.29	373.42	373.45	373.57	372.98	372.23
3	369.52	361.50	355.05	354.66	359.38	366.11	371.38	373.43	373.43	373.56	372.96	372.21
4	369.49	361.02	355.23	354.74	359.99	367.41	371.43	373.44	373.44	373.55	372.93	372.19
5	369.47	360.42	355.34	354.79	360.60	368.06	371.62	373.46	373.45	373.52	372.90	372.17
6	369.43	359.78	355.29	354.83	360.89	368.12	371.87	373.47	373.47	373.51	372.87	372.15
7	369.40	359.08	355.17	355.04	361.03	367.91	372.11	373.54	373.48	373.49	372.85	372.12
8	369.37	358.32	354.98	355.18	361.17	367.59	372.36	373.54	373.49	373.48	372.82	372.10
9	369.28	357.67	355.13	355.27	361.29	367.36	372.58	373.48	373.50	373.46	372.80	372.07
10	369.06	357.12	355.69	355.49	361.36	367.43	372.80	373.46	373.50	373.44	372.76	372.00
11	368.79	356.55	355.35	355.79	361.46	367.72	372.97	373.45	373.50	373.43	372.74	372.00
12	368.54	355.95	354.72	356.67	361.68	368.12	373.12	373.43	373.50	373.41	372.72	372.00
13	368.28	355.63	354.16	357.46	361.99	368.34	373.23	373.48	373.51	373.38	372.69	371.98
14	368.05	355.24	354.06	357.66	362.25	368.50	373.34	373.48	373.52	373.37	372.67	371.96
15	367.79	354.67	354.29	357.43	362.48	368.72	373.42	373.46	373.51	373.36	372.64	371.93
16	367.53	354.18	354.43	357.09	362.69	368.91	373.44	373.46	373.50	373.38	372.62	371.91
17	367.28	354.20	354.51	356.94	362.88	369.10	373.44	373.50	373.49	373.36	372.59	371.90
18	367.10	354.21	354.73	356.95	363.11	369.27	373.45	373.46	373.51	373.35	372.57	371.88
19	366.78	354.13	354.96	356.87	363.27	369.48	373.46	373.46	373.54	373.32	372.54	371.85
20	366.43	354.09	355.08	356.79	363.33	369.64	373.45	373.42	373.54	373.30	372.52	371.82
21	366.15	354.07	355.09	356.83	363.54	369.79	373.44	373.37	373.55	373.28	372.49	371.77
22	365.81	353.82	355.02	356.80	363.73	369.93	373.44	373.37	373.56	373.26	372.45	371.76
23	365.45	353.49	354.98	356.77	363.89	370.11	373.47	373.38	373.56	373.24	372.42	371.71
24	365.08	353.11	354.86	356.85	364.04	370.30	373.49	373.37	373.56	373.21	372.39	371.71
25	364.71	353.80	354.78	357.02	364.17	370.52	373.48	373.41	373.56	373.19	372.36	371.70
26	364.32	353.81	354.71	357.22	364.29	370.68	373.46	373.45	373.56	373.17	372.34	371.67
27	363.95	353.56	354.85	357.41	364.39	370.79	373.41	373.49	373.57	373.15	372.33	371.64
28	363.55	353.32	355.05	357.57	364.50	370.90	373.39	373.52	373.58	373.12	372.31	371.60
29	363.17	353.44	355.04	357.73	---	370.99	373.38	373.54	373.58	373.10	372.30	371.59
30	363.17	354.02	354.90	357.87	---	371.07	373.40	373.53	373.58	373.08	372.28	371.56
31	362.95	---	354.74	358.05	---	371.15	---	373.51	---	373.04	372.27	---
MAX	369.59	362.53	355.69	358.05	364.50	371.15	373.49	373.54	373.58	373.58	373.01	372.25
MIN	362.95	353.11	354.06	354.53	358.25	364.64	371.22	373.37	373.43	373.04	372.27	371.56
(†)	33120	8790	10030	17150	39710	80730	100100	101200	101800	96840	90030	84050
(‡)	-35950	-24330	+1240	+7120	+22560	+41020	+19370	+1100	+600	-4960	-6810	-5980

CAL YR 1990 MAX 371.70 MIN 353.11 AC-FT† +870
WTR YR 1991 MAX 373.58 MIN 353.11 AC-FT† +14980

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

WILLAMETTE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929 (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.--Records good except for estimated daily discharges, which are 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.--48 years (water years 1944-91), 517 ft³/s, 374,600 acre-ft/yr (river only).

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, 3,760 ft³/s May 17, gage height, 6.85 ft; minimum discharge, 21 ft³/s Apr. 3, 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	1110	484	352	50	55	24	44	296	41	58	45
2	103	1080	489	238	50	43	23	44	296	41	58	45
3	101	1050	492	152	51	42	22	40	140	41	58	45
4	97	1030	492	154	199	782	22	37	42	41	58	45
5	94	1080	491	154	613	2350	27	36	42	41	58	45
6	92	1090	488	157	856	3050	26	39	42	41	58	45
7	79	1100	485	209	697	2910	25	51	42	41	58	45
8	63	1090	480	246	474	2410	31	134	42	41	58	44
9	323	848	479	246	403	1880	32	80	42	41	58	42
10	721	664	1040	248	401	880	32	73	42	51	58	42
11	856	647	1460	413	336	203	31	60	42	55	58	42
12	825	623	1270	1080	121	269	31	50	42	55	52	42
13	806	612	973	1530	120	659	31	49	42	55	48	42
14	790	596	550	1900	169	592	29	43	41	55	51	42
15	777	642	275	2080	170	310	145	39	41	55	53	42
16	762	466	275	1830	172	159	319	197	41	55	53	42
17	791	280	272	1190	173	62	360	1730	41	55	53	42
18	812	275	274	836	174	62	299	2280	41	55	52	42
19	948	271	272	792	319	62	298	1580	41	55	51	44
20	1010	268	271	616	367	45	300	1350	41	55	51	44
21	975	387	e270	477	51	31	300	978	41	55	52	44
22	953	478	e270	476	52	31	242	565	41	55	53	44
23	934	467	271	414	53	32	207	415	41	55	53	36
24	930	455	271	256	53	33	354	336	41	55	53	43
25	925	746	270	129	53	32	519	128	41	55	53	54
26	899	1260	275	50	53	33	515	53	41	55	53	55
27	873	991	266	50	55	33	515	53	41	55	52	54
28	850	696	320	50	55	33	437	103	41	53	53	52
29	825	563	359	51	---	33	261	218	41	53	48	50
30	826	479	359	50	---	32	143	298	41	53	45	111
31	1000	---	358	50	---	31	---	295	---	55	45	---
TOTAL	20121	21344	14601	16476	6340	17179	5600	11398	1849	1569	1662	1410
MEAN	649	711	471	531	226	554	187	368	61.6	50.6	53.6	47.0
MAX	1010	1260	1460	2080	856	3050	519	2280	296	55	58	111
MIN	63	268	266	50	50	31	22	36	41	41	45	36
AC-FT	39910	42340	28960	32680	12580	34070	11110	22610	3670	3110	3300	2800

CAL YR 1990 TOTAL 132113 MEAN 362 MAX 3030 MIN 16 AC-FT 262000
WTR YR 1991 TOTAL 119549 MEAN 328 MAX 3050 MIN 22 AC-FT 237100

e Estimated

WILLAMETTE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929. 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 excellent. Flow regulated by nine reservoirs upstream from station (see elsewhere in this report). 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.--97 years (water years 1894, 1896-91), 14,360 ft³/s, 40.29 in/yr, 10,400,000 acre-ft/yr.

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, 47,900 ft³/s May 20, gage height, 16.79 ft; minimum discharge, 4,400 ft³/s July 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6610	17200	25500	7940	7660	7740	8450	9970	12600	5940	4950	5940
2	6640	15900	25900	7710	8770	8970	8440	9330	12000	5720	5110	5900
3	6700	14000	24200	7370	13300	15800	8470	8930	11300	5450	5150	5860
4	6730	12700	20100	6940	12100	26700	9090	8500	10400	5340	5250	5990
5	6780	15500	18300	6650	14100	37300	10900	8000	9510	5120	5310	6510
6	6990	17300	17100	6500	16300	36600	14300	7720	9350	4950	5320	6720
7	7040	18300	15300	6490	14400	29500	16400	7580	8370	4870	5300	6790
8	6960	17700	14300	7580	12700	23900	17200	8670	8260	4780	5320	6800
9	6900	18100	13600	8680	11300	19500	17400	15700	8130	4730	5280	6830
10	6840	18100	17100	9400	10100	18800	19800	18400	7950	4670	5390	6910
11	6770	18200	27200	11500	9470	16400	20600	17000	7690	4590	5430	7270
12	6890	17200	29300	17900	9060	15200	19100	16300	7580	4590	5400	7330
13	7030	16600	24000	33700	11100	16900	15800	15400	7550	4650	5370	7270
14	7040	19100	20300	39900	15200	17100	13400	15100	7240	4680	5380	7260
15	7010	21200	17600	39000	15000	16800	12500	14700	7220	4740	5460	7290
16	7140	17700	15900	41900	13800	15600	12200	14200	7040	4700	5540	7240
17	7230	14500	14900	40100	12900	13900	11800	15400	6980	4730	5600	7320
18	7440	13600	13100	34900	12600	12600	11000	31800	6480	4810	5710	7530
19	7750	13200	15500	29000	13500	12100	10200	45600	5910	4720	5760	7540
20	7730	12400	16600	24900	14500	12500	9720	45300	5970	4610	5690	7440
21	7500	12800	14600	22100	14400	12000	9200	36600	6630	4520	5620	7460
22	8000	14900	13900	20000	12900	12000	9140	28300	7230	4470	5590	7550
23	9240	16100	13800	17000	11200	12000	8840	23200	6680	4450	5600	7460
24	9310	17000	13000	14600	10100	13500	8650	20100	6150	4450	5640	7050
25	9210	20300	10400	13300	9350	14700	9270	16900	5940	4640	5780	7100
26	9280	30700	8710	12000	8620	13600	10500	15300	5660	4750	5800	7180
27	9590	32900	8610	10300	8120	12500	11100	14200	5600	4770	5770	7640
28	9540	29000	9070	9790	7810	11100	11300	13000	5730	4930	5990	7510
29	9580	25300	9660	8800	---	9940	11000	11400	6040	4910	5970	7720
30	9920	25200	8810	7760	---	9150	10400	11500	6110	4820	5960	7770
31	12800	---	8260	7580	---	8620	---	12000	---	4830	5890	---
TOTAL	244190	552700	504620	531290	330360	503020	366170	536100	229300	149930	171330	212180
MEAN	7877	18420	16280	17140	11800	16230	12210	17290	7643	4836	5527	7073
MAX	12800	32900	29300	41900	16300	37300	20600	45600	12600	5940	5990	7770
MIN	6610	12400	8260	6490	7660	7740	8440	7580	5600	4450	4950	5860
AC-FT	484400	1096000	1001000	1054000	655300	997700	726300	1063000	454800	297400	339800	420900
CFSM	1.63	3.81	3.36	3.54	2.44	3.35	2.52	3.57	1.58	1.00	1.14	1.46
IN.	1.88	4.25	3.88	4.08	2.54	3.87	2.81	4.12	1.76	1.15	1.32	1.63

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1991, BY WATER YEAR (WY)

MEAN	9072	17500	28250	27470	20930	17700	13530	11000	8456	5268	5557	7240
MAX	11780	40850	55390	45070	38630	43270	23520	17450	18310	7333	7313	8985
(WY)	1985	1985	1982	1971	1986	1972	1974	1984	1984	1969	1971	1972
MIN	5342	5425	4150	3901	3208	6808	5630	4733	4091	4084	4516	5149
(WY)	1988	1988	1977	1977	1977	1978	1977	1973	1987	1978	1987	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1969 - 1991

ANNUAL TOTAL	4317430	4331190	14310
ANNUAL MEAN	11830	11870	22550
HIGHEST ANNUAL MEAN			5831
LOWEST ANNUAL MEAN			1974
HIGHEST DAILY MEAN	45500	Jan 9	114000
LOWEST DAILY MEAN	4020	Jan 1	2570
ANNUAL SEVEN-DAY MINIMUM	4470	Jul 11	2680
ANNUAL RUNOFF (AC-FT)	8564000	8591000	10370000
ANNUAL RUNOFF (CFSM)	2.44	2.45	2.96
ANNUAL RUNOFF (INCHES)	33.18	33.29	40.17
10 PERCENT EXCEEDS	23900	20100	33100
50 PERCENT EXCEEDS	8770	9280	9230
90 PERCENT EXCEEDS	5010	5330	5000



Figure 15.--Location of surface-water and water-quality stations in the Willamette River basin, downstream from the Luckiamute River.

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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.

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."

GAGE.--Water-stage recorder. Datum of gage is 1,590.07 ft above National Geodetic Vertical Datum of 1929. See WSP 1738 for history of changes prior to Oct. 1, 1952.

AVERAGE DISCHARGE.--65 years, 1,000 ft³/s, 62.87 in/vr, 724,500 acre-ft/vr.

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)
Nov. 25	0930	4,720	6.72	Jan. 15	0530	*4,960	*6.83
Minimum discharge, 331 ft ³ /s several days in October and September.							

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	335	860	1120	583	705	945	866	934	855	624	446	391
2	338	707	1020	573	850	1180	917	949	868	637	436	379
3	368	647	942	565	1160	1730	943	928	862	658	437	376
4	362	1110	1030	552	1280	2600	1020	902	821	649	443	377
5	403	1100	1030	542	2120	2040	1530	892	786	614	445	374
6	361	912	942	537	1740	1690	1520	951	759	585	432	369
7	346	839	880	593	1440	1450	1340	1100	738	568	435	373
8	339	867	848	589	1280	1300	1230	1790	737	562	429	365
9	335	1030	970	569	1170	1220	1550	1480	743	553	447	356
10	337	901	1490	657	1090	1150	1420	1310	768	537	440	353
11	333	795	1510	849	1050	1080	1260	1200	823	526	417	353
12	372	724	1290	2530	1240	1030	1200	1120	774	526	412	354
13	373	756	1250	2880	2070	1090	1170	1070	736	544	408	356
14	385	799	1040	3150	2000	986	1110	1040	707	525	407	354
15	429	727	957	4160	1740	934	1130	990	671	516	405	349
16	455	689	884	2740	1610	894	1090	1020	662	544	407	349
17	402	672	860	2080	1460	865	1070	1370	638	561	413	350
18	454	681	1080	1740	1340	873	1030	1340	622	519	427	351
19	445	653	953	1500	1460	855	997	1300	649	500	420	349
20	399	654	836	1310	1690	824	1010	1240	853	490	412	346
21	516	673	e800	1180	1800	810	1030	1200	817	483	406	339
22	668	825	e750	1080	1530	801	1050	1170	724	483	402	336
23	512	929	e630	997	1340	812	1040	1100	684	485	400	334
24	465	1010	e540	927	1210	838	1110	1070	673	500	388	340
25	447	3430	e510	869	1110	807	1060	1020	669	486	372	344
26	533	2170	e500	818	1030	777	1040	955	649	466	371	341
27	478	1590	e660	778	976	751	1030	902	640	460	379	340
28	483	1270	672	747	932	738	984	881	681	462	420	338
29	477	1250	634	714	---	719	948	864	678	459	420	334
30	780	1240	644	691	---	715	936	958	646	453	404	334
31	1100	---	599	703	---	763	---	884	---	449	395	---
TOTAL	14030	30510	27771	38203	38363	33267	33681	33930	21933	16424	12875	10604
MEAN	453	1017	896	1232	1370	1073	1123	1095	731	530	415	353
MAX	1100	3430	1510	4160	2120	2600	1550	1790	868	658	447	391
MIN	333	647	500	537	705	715	866	864	622	449	371	334
AC-FT	27830	60520	55080	75780	76090	65990	66810	67300	43500	32580	25540	21030
CFSM	2.10											

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1907 - 1991, BY WATER YEAR (WY)

MEAN	512	973	1365	1301	1287	1168	1349	1427	1106	630	474	438
MAX	1215	2167	3840	2991	2816	2865	2137	2762	2759	1101	663	595
(WY)	1951	1951	1965	1953	1961	1972	1943	1949	1933	1950	1974	1971
MIN	312	336	432	383	404	616	610	701	441	375	326	309
(WY)	1981	1937	1977	1937	1977	1941	1941	1940	1940	1940	1931	1909

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1907 - 1991	
ANNUAL TOTAL	338993		311591			
ANNUAL MEAN	929		854		1001	
HIGHEST ANNUAL MEAN					1506	1974
LOWEST ANNUAL MEAN					569	1977
HIGHEST DAILY MEAN	6150	Jan 8	4160	Jan 15	19400	Dec 22 1964
LOWEST DAILY MEAN	333	Oct 11	333	Oct 11	250	Sep 13 1909
ANNUAL SEVEN-DAY MINIMUM	339	Sep 26	339	Sep 23	273	Sep 7 1909
ANNUAL RUNOFF (AC-FT)	672400		618000		725100	
ANNUAL RUNOFF (CFSM)	4.30		3.95		4.63	
ANNUAL RUNOFF (INCHES)	58.38		53.66		62.96	
10 PERCENT EXCEEDS	1510		1390		1790	
50 PERCENT EXCEEDS	822		768		785	
90 PERCENT EXCEEDS	379		372		405	

WILLAMETTE RIVER BASIN

14178700 EAST HUMBURG CREEK NEAR DETROIT, OR

LOCATION.--Lat 44°47'57", long 122°03'28", in NW 1/4 NE 1/4 sec.15, T.9 S., R.6 E., Marion County, Hydrologic Unit 17090005, in Willamette National Forest, on left bank 1.6 mi upstream from confluence with Humburg Creek, and 6.3 mi northeast of Detroit.

DRAINAGE AREA.--7.32 mi².

PERIOD OF RECORD.--August 1978 to current year.

GAGE.--Water-stage recorder. Elevation of gage is 2,050 ft, from topographic map.

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

AVERAGE DISCHARGE.--13 years, 37.2 ft³/s, 69.01 in/yr, 26,950 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,310 ft³/s Dec. 25, 1980, from rating curve extended above 450 ft³/s, gage height, 4.42 ft; minimum discharge, 1.6 ft³/s Sept. 30, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 280 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0430	*520	*3.80	Jan. 15	0600	414	3.66
Jan. 12	1430	512	3.79	Feb. 5	0530	296	3.46

Minimum discharge, 1.8 ft³/s several days in September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.2	39	45	e15	31	29	51	33	20	9.4	4.0	2.8
2	2.3	24	36	e15	77	58	43	30	18	8.9	4.0	2.7
3	3.7	19	32	e15	169	154	41	28	17	8.5	3.9	2.6
4	3.0	43	40	e15	124	198	56	26	16	8.1	3.8	2.5
5	5.5	40	43	e15	233	106	138	25	15	7.8	3.8	2.4
6	3.1	29	35	e16	114	69	100	26	14	7.5	3.7	2.4
7	2.7	23	31	e18	71	53	67	47	14	7.3	3.6	2.4
8	2.6	24	32	e21	55	47	57	98	13	7.1	3.5	2.4
9	2.5	37	88	e24	46	47	80	71	13	7.0	4.2	2.4
10	2.6	28	148	33	41	44	68	56	12	6.9	4.1	2.3
11	2.4	22	90	86	38	39	53	47	11	6.7	3.5	2.3
12	4.6	19	58	328	45	37	56	40	11	6.5	3.4	2.3
13	5.2	22	44	224	100	36	62	36	11	6.5	3.2	2.3
14	5.5	27	37	259	94	35	62	32	11	6.3	3.1	2.3
15	13	23	32	306	68	32	55	29	9.9	6.3	3.1	2.2
16	11	21	28	137	55	30	48	29	10	6.5	3.1	2.1
17	6.9	20	28	83	50	31	46	46	9.5	6.5	3.2	2.1
18	15	21	56	71	48	35	43	54	9.0	6.0	3.7	2.1
19	11	20	40	59	67	33	41	51	10	5.7	3.1	2.0
20	7.6	19	e27	48	177	30	40	43	16	5.5	2.9	2.0
21	23	25	e14	41	144	29	38	37	18	5.3	2.8	2.0
22	25	100	e16	36	86	29	37	32	15	5.1	2.8	2.0
23	12	91	e17	32	61	29	35	29	13	4.9	2.8	2.0
24	8.3	110	e18	29	49	36	36	26	12	4.9	2.8	1.9
25	7.7	359	e19	26	41	35	35	24	11	4.8	2.7	1.9
26	13	125	e19	24	36	30	36	22	10	4.6	2.7	1.9
27	9.6	69	e19	22	32	27	38	20	10	4.5	3.0	1.9
28	8.9	50	e17	21	29	25	36	19	11	4.4	4.3	2.0
29	8.0	54	e16	19	---	23	35	20	10	4.3	3.2	2.0
30	43	57	e15	18	---	25	35	25	9.8	4.2	2.9	1.9
31	69	---	e15	23	---	39	---	22	---	4.1	2.8	---
TOTAL	339.9	1560	1155	2079	2181	1470	1568	1123	380.2	192.1	103.7	66.1
MEAN	11.0	52.0	37.3	67.1	77.9	47.4	52.3	36.2	12.7	6.20	3.35	2.20
MAX	69	359	148	328	233	198	138	98	20	9.4	4.3	2.8
MIN	2.2	19	14	15	29	23	35	19	9.0	4.1	2.7	1.9
AC-FT	674	3090	2290	4120	4330	2920	3110	2230	754	381	206	131
CFSM	1.50	7.10	5.09	9.16	10.6	6.48	7.14	4.95	1.73	.85	.46	.30
IN.	1.73	7.93	5.87	10.57	11.08	7.47	7.97	5.71	1.93	.98	.53	.34

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1991, BY WATER YEAR (WY)

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000
MEAN	9.85	47.0	66.9	59.2	77.7	61.2	58.4	35.1	19.4	7.29	3.84	4.05				
MAX	25.4	102	140	107	175	93.5	101	62.6	37.0	16.4	7.51	7.78				
(WY)	1983	1985	1981	1983	1982	1989	1985	1984	1981	1983	1983	1978				
MIN	1.92	7.40	32.6	18.2	29.4	20.5	26.8	16.9	8.09	4.35	2.74	2.20				
(WY)	1988	1988	1986	1981	1985	1981	1986	1981	1987	1979	1986	1991				

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1978 - 1991

ANNUAL TOTAL	12549.9		12218.0			
ANNUAL MEAN	34.4		33.5			
HIGHEST ANNUAL MEAN					37.2	
LOWEST ANNUAL MEAN					50.5	1982
HIGHEST DAILY MEAN	359	Nov 25	359	Nov 25	31.0	1979
LOWEST DAILY MEAN	2.1	Sep 30	1.9	Sep 24	1080	Dec 25 1980
ANNUAL SEVEN-DAY MINIMUM	2.2	Sep 25	1.9	Sep 24	1.8	Oct 29 1987
ANNUAL RUNOFF (AC-FT)	24890		24230		1.9	Oct 23 1987
ANNUAL RUNOFF (CFSM)	4.70		4.57		26970	
ANNUAL RUNOFF (INCHES)	63.78		62.09		5.09	
10 PERCENT EXCEEDS	79		69		69.09	
50 PERCENT EXCEEDS	22		22		80	
90 PERCENT EXCEEDS	3.1		2.7		21	
					3.0	

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 National Geodetic Vertical Datum of 1929 (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, 439,800 acre-ft June 13, elevation, 1,564.61 ft; minimum contents, 141,600 acre-ft Dec. 24, elevation, 1,442.41 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1533.76	1491.46	1463.06	1445.63	1460.44	1511.64	1532.78	1560.02	1563.88	1564.16	1562.93	1558.75
2	1532.09	1490.19	1460.13	1445.69	1461.01	1513.13	1533.71	1560.42	1563.96	1564.18	1562.84	1558.61
3	1530.50	1488.70	1456.72	1445.76	1463.63	1516.39	1534.58	1560.73	1564.00	1564.22	1562.73	1558.44
4	1528.84	1488.90	1453.58	1445.86	1466.45	1521.05	1535.56	1561.01	1563.89	1564.20	1562.64	1558.13
5	1527.30	1488.84	1451.92	1445.85	1471.83	1522.83	1538.02	1561.31	1563.74	1564.19	1562.51	1557.91
6	1525.60	1487.93	1450.93	1445.84	1475.30	1523.74	1540.15	1561.70	1563.70	1564.18	1562.36	1557.67
7	1523.78	1486.85	1449.78	1446.08	1477.72	1524.18	1541.59	1562.43	1563.74	1564.17	1562.28	1557.30
8	1521.94	1485.82	1448.50	1446.48	1479.51	1523.18	1542.96	1563.58	1563.88	1564.17	1562.12	1556.95
9	1520.10	1485.42	1448.37	1446.70	1480.92	1521.98	1545.16	1563.96	1563.99	1564.14	1562.01	1556.58
10	1518.31	1484.40	1450.41	1447.69	1482.09	1520.63	1546.57	1564.03	1564.14	1564.13	1561.92	1556.11
11	1516.40	1483.32	1448.88	1449.77	1483.25	1520.40	1547.32	1563.84	1564.37	1564.07	1561.80	1555.63
12	1514.52	1481.92	1448.58	1457.40	1484.93	1521.09	1547.92	1563.53	1564.40	1564.02	1561.68	1555.16
13	1512.57	1480.75	1448.55	1462.91	1489.04	1521.93	1548.69	1563.13	1564.37	1564.03	1561.51	1554.70
14	1510.70	1479.66	1448.04	1468.35	1492.43	1522.82	1549.75	1563.12	1564.30	1564.03	1561.38	1554.23
15	1508.94	1478.22	1447.21	1476.67	1494.18	1523.59	1550.85	1563.07	1564.25	1564.02	1561.29	1553.73
16	1507.80	1476.51	1446.16	1478.17	1495.57	1524.28	1551.73	1563.14	1564.21	1564.03	1561.15	1552.87
17	1506.32	1474.75	1445.76	1477.55	1496.64	1524.92	1552.56	1563.65	1564.02	1564.06	1561.07	1551.95
18	1505.12	1473.05	1447.62	1476.05	1497.95	1525.59	1553.33	1563.94	1563.98	1564.07	1560.95	1550.95
19	1503.92	1471.30	1448.04	1473.93	1499.49	1526.16	1554.03	1563.95	1564.11	1564.02	1560.85	1549.97
20	1502.50	1469.50	1448.05	1471.27	1501.27	1526.73	1554.74	1563.82	1564.33	1563.96	1560.68	1548.95
21	1501.72	1468.13	1446.60	1468.52	1503.31	1527.27	1555.46	1563.55	1564.33	1563.89	1560.53	1547.89
22	1501.17	1467.40	1444.95	1465.65	1504.82	1527.82	1556.18	1563.47	1564.22	1563.84	1560.33	1546.72
23	1500.00	1466.26	1443.37	1462.44	1506.12	1528.31	1556.56	1563.43	1564.05	1563.80	1560.20	1545.56
24	1498.67	1464.14	1442.59	1461.00	1507.25	1528.97	1557.21	1563.51	1563.89	1563.71	1560.00	1544.38
25	1497.18	1471.82	1443.14	1459.63	1508.34	1529.55	1557.65	1563.64	1563.96	1563.63	1559.83	1543.19
26	1495.94	1472.46	1443.70	1459.14	1509.25	1530.04	1558.11	1563.66	1563.98	1563.53	1559.62	1541.98
27	1494.41	1471.37	1444.35	1458.68	1510.11	1530.47	1558.59	1563.62	1564.03	1563.46	1559.44	1540.75
28	1493.04	1469.38	1444.80	1458.92	1510.83	1530.78	1558.94	1563.58	1564.09	1563.36	1559.32	1539.54
29	1491.58	1467.45	1445.19	1459.35	---	1531.15	1559.26	1563.69	1564.12	1563.26	1559.18	1538.31
30	1491.36	1465.44	1445.36	1459.72	---	1531.46	1559.66	1563.85	1564.16	1563.15	1559.03	1537.05
31	1492.11	---	1445.51	1460.23	---	1531.98	---	1563.83	---	1563.00	1558.89	---
MAX	1533.76	1491.46	1463.06	1478.17	1510.83	1531.98	1559.66	1564.03	1564.40	1564.22	1562.93	1558.75
MIN	1491.36	1464.14	1442.59	1445.63	1460.44	1511.64	1532.78	1560.02	1563.70	1563.00	1558.89	1537.05
(†)	236600	182400	146700	172600	280800	337100	422800	437100	438300	434300	420200	351600
(‡)	-110200	-54200	-35700	+25900	+108200	+56300	+85700	+14300	+1200	-4000	-14100	-68600

CAL YR 1990 MAX 1568.99 MIN 1442.59 AC-FT† -8200

WTR YR 1991 MAX 1564.40 MIN 1442.59 AC-FT† +4800

† 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.

WATER-DISCHARGE RECORDS

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 National Geodetic Vertical Datum of 1929 (Federal Highway Administration bench mark). See WSP 1738 for history of changes prior to Oct. 1, 1952.

REMARKS.--No estimated daily discharges. Water-discharge records excellent. 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.--63 years (water years 1910-19, 1939-91), 2,313 ft³/s, 69.34 in/yr, 1,676,000 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, 5,950 ft³/s Dec. 11, gage height, 6.01 ft; minimum discharge, 823 ft³/s Aug. 18; minimum daily, 876 ft³/s Aug. 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2980	3300	5240	986	1310	991	1010	1410	1760	1230	917	905
2	3010	3230	5250	980	1540	996	992	1410	1740	1220	913	901
3	3000	3240	5310	979	1010	996	989	1410	1750	1220	912	914
4	3030	3230	5390	971	988	1550	1010	1420	1900	1210	905	1030
5	3020	3350	4090	965	1000	2970	1040	1450	1910	1200	907	993
6	3080	3390	3050	970	978	2840	1030	1460	1520	1040	914	991
7	3040	3320	3080	972	993	2800	1020	1480	1380	1030	911	1160
8	3090	3280	3010	972	992	4350	1030	2640	1240	1040	895	1180
9	3110	3130	3000	971	984	4420	1050	3090	1240	1050	888	1180
10	3170	3090	3370	981	994	4430	1510	2970	1240	1040	881	1330
11	3080	3090	5470	1380	1020	2770	2000	3030	1230	1020	882	1370
12	3220	3070	3610	3000	993	1580	2000	3180	1350	1010	885	1410
13	3200	3170	3010	3170	984	1220	1510	3070	1440	927	884	1390
14	3170	3310	2890	4030	1350	1030	1030	2310	1440	925	893	1380
15	3130	3290	2760	4090	2030	1000	1010	2210	1420	922	892	1370
16	2620	3330	2820	5590	1990	1000	1150	2230	1400	930	891	1940
17	2570	3330	2170	5730	1900	1000	1110	2630	1400	934	894	2170
18	2580	3310	1870	5590	1720	993	1110	3190	1230	934	895	2180
19	2600	3340	1970	5600	1910	996	1120	3210	1050	931	883	2160
20	2580	3240	2000	5600	2870	999	1120	3230	1370	931	892	2170
21	2620	3230	2960	5300	2860	996	1120	3100	1630	929	894	2380
22	2640	3260	2970	5060	2030	988	1130	2720	1640	913	896	2400
23	2570	3800	2930	5130	1510	990	1610	2530	1670	985	896	2400
24	2610	5200	1900	3310	1220	992	1620	1990	1630	928	887	2390
25	2600	3760	1030	3020	1010	988	1610	1850	1240	960	889	2370
26	2740	5180	1000	2160	1010	992	1600	1900	1220	918	907	2450
27	2690	5210	965	1930	1010	983	1630	1920	1220	922	909	2410
28	2590	5080	976	1400	1000	999	1610	1930	1250	920	876	2550
29	2660	5100	975	985	---	996	1620	1670	1230	914	877	2480
30	2730	5250	973	984	---	988	1390	1880	1220	911	892	2350
31	2930	---	979	982	---	995	---	2050	---	915	886	---
TOTAL	88660	110110	87018	83788	39206	49838	38781	70570	42960	30959	27743	52304
MEAN	2860	3670	2807	2703	1400	1608	1293	2276	1432	999	895	1743
MAX	3220	5250	5470	5730	2870	4430	2000	3230	1910	1230	917	2550
MIN	2570	3070	965	965	978	983	989	1410	1050	911	876	901
AC-FT	175900	218400	172600	166200	77770	98850	76920	140000	85210	61410	55030	103700
MEAN†	1068	2759	2226	3124	3349	2524	2733	2509	1452	934	666	590
CFSM†	2.36	6.09	4.91	6.90	7.39	5.57	6.03	5.54	3.21	2.06	1.47	1.30
IN.†	2.72	6.80	5.67	7.95	7.70	6.43	6.73	6.39	3.58	2.38	1.69	1.45
AC-FT†	65700	164200	136900	192100	186000	155200	162600	154300	86410	57410	40930	35100

CAL YR 1990 TOTAL 797622 MEAN 2185 MAX 10400 MIN 860 AC-FT 1582000 MEAN† 2174 CFSM† 4.80 IN.† 65.17 AC-FT† 1574000
WTR YR 1991 TOTAL 721937 MEAN 1978 MAX 5730 MIN 876 AC-FT 1432000 MEAN† 1985 CFSM† 4.38 IN.† 59.49 AC-FT† 1437000

† Adjusted for change in contents in Detroit Lake.

WILLAMETTE RIVER BASIN

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14181500 NORTH SANTIAM RIVER AT NIAGARA, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: January 1953 to current year.

INSTRUMENTATION.--Temperature recorder since January 1953.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 16.5°C July 28, 29, 1958; minimum, 1.0°C Jan. 30 to Feb. 4, 1979.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.0°C Oct. 14, 17, 18; minimum, 2.0°C Jan. 5.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	12.5	11.5	12.0	12.0	11.5	11.5	7.5	7.5	7.5	3.5	3.5	3.5
2	12.5	12.0	12.5	12.0	11.5	11.5	7.5	7.0	7.0	3.5	3.0	3.0
3	12.5	12.5	12.5	11.5	11.5	11.5	7.5	7.0	7.0	3.0	2.5	2.5
4	13.0	12.5	12.5	11.5	11.0	11.5	7.0	7.0	7.0	2.5	2.5	2.5
5	13.0	12.5	13.0	11.0	10.5	11.0	7.0	7.0	7.0	2.5	2.0	2.5
6	13.0	12.5	13.0	11.0	10.5	11.0	7.0	7.0	7.0	2.5	2.5	2.5
7	13.0	12.5	13.0	11.0	10.5	11.0	7.0	7.0	7.0	2.5	2.5	2.5
8	13.0	12.5	13.0	10.5	10.5	10.5	7.0	7.0	7.0	3.0	2.5	2.5
9	13.0	12.5	13.0	10.5	10.5	10.5	7.0	7.0	7.0	3.0	3.0	3.0
10	13.5	13.0	13.0	10.5	10.0	10.5	7.0	6.5	7.0	3.0	3.0	3.0
11	13.5	13.0	13.5	10.5	10.0	10.5	6.5	6.5	6.5	3.5	3.0	3.0
12	13.5	13.0	13.5	10.5	10.0	10.5	6.5	6.5	6.5	3.5	3.5	3.5
13	13.5	13.5	13.5	10.5	10.0	10.0	6.5	6.5	6.5	4.0	3.5	4.0
14	14.0	13.5	13.5	10.0	9.5	10.0	6.5	6.0	6.0	4.0	4.0	4.0
15	13.5	13.5	13.5	10.5	10.0	10.0	6.0	6.0	6.0	4.0	4.0	4.0
16	13.5	13.0	13.5	10.0	9.5	10.0	6.0	6.0	6.0	4.0	4.0	4.0
17	14.0	13.0	13.5	10.0	9.5	10.0	6.0	6.0	6.0	4.0	4.0	4.0
18	14.0	13.0	13.5	10.0	9.5	9.5	6.0	5.5	6.0	4.0	4.0	4.0
19	13.5	13.0	13.0	9.5	9.0	9.5	5.5	5.0	5.0	4.0	4.0	4.0
20	13.5	13.0	13.0	9.5	9.0	9.0	5.0	4.5	5.0	4.0	3.5	4.0
21	13.0	13.0	13.0	9.0	9.0	9.0	4.5	4.5	4.5	4.0	4.0	4.0
22	13.0	12.5	12.5	9.0	9.0	9.0	4.5	4.5	4.5	4.0	4.0	4.0
23	13.0	12.5	12.5	9.0	9.0	9.0	4.5	4.0	4.5	4.0	4.0	4.0
24	13.0	12.5	12.5	9.0	9.0	9.0	4.5	4.0	4.0	4.0	4.0	4.0
25	12.5	12.5	12.5	9.0	8.0	8.5	4.0	4.0	4.0	4.0	4.0	4.0
26	12.5	12.5	12.5	8.5	8.0	8.5	4.5	4.0	4.5	4.0	3.5	4.0
27	13.0	12.5	12.5	8.5	8.0	8.0	4.5	4.5	4.5	4.0	3.5	4.0
28	12.5	12.0	12.5	8.0	8.0	8.0	4.5	4.0	4.0	4.0	3.5	4.0
29	12.5	12.0	12.5	8.0	8.0	8.0	4.0	3.5	3.5	3.5	3.5	3.5
30	12.5	12.0	12.5	8.0	7.5	7.5	3.5	3.0	3.0	3.5	3.5	3.5
31	12.0	11.5	12.0	---	---	---	3.5	3.0	3.5	3.5	3.5	3.5
MONTH	14.0	11.5	13.0	12.0	7.5	10.0	7.5	3.0	5.5	4.0	2.0	3.5

14181500 NORTH SANTIAM RIVER AT NIAGARA, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.0	3.5	4.0	5.5	5.5	5.5	6.0	6.0	6.0	6.5	6.0	6.0
2	4.0	4.0	4.0	5.5	5.0	5.5	6.0	5.5	6.0	6.5	6.0	6.5
3	4.0	4.0	4.0	5.5	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.5
4	4.5	4.0	4.5	5.0	5.0	5.0	5.5	5.5	5.5	6.5	6.5	6.5
5	4.5	4.0	4.0	5.0	4.5	5.0	5.5	5.5	5.5	6.5	6.5	6.5
6	4.5	4.5	4.5	4.5	4.5	4.5	5.5	5.5	5.5	6.5	6.0	6.5
7	4.5	4.0	4.5	5.0	4.5	5.0	5.5	5.5	5.5	6.5	6.0	6.0
8	4.0	4.0	4.0	5.0	5.0	5.0	5.5	5.5	5.5	6.0	6.0	6.0
9	4.0	4.0	4.0	5.5	5.0	5.5	5.5	5.5	5.5	6.5	6.0	6.0
10	4.0	4.0	4.0	5.5	5.0	5.0	5.5	5.5	5.5	6.5	6.0	6.0
11	4.0	4.0	4.0	5.0	4.5	4.5	5.5	5.0	5.5	6.0	6.0	6.0
12	4.0	4.0	4.0	5.0	4.5	5.0	6.0	5.5	5.5	6.0	6.0	6.0
13	4.5	4.0	4.5	5.5	5.0	5.0	6.0	6.0	6.0	6.0	6.0	6.0
14	5.0	5.0	5.0	5.5	5.0	5.5	6.5	6.0	6.0	6.5	6.0	6.0
15	5.0	4.5	4.5	5.5	5.0	5.0	6.0	5.5	6.0	6.5	6.0	6.5
16	4.5	4.5	4.5	5.0	5.0	5.0	6.0	5.5	6.0	6.5	6.5	6.5
17	4.5	4.5	4.5	5.0	5.0	5.0	6.0	6.0	6.0	6.5	6.0	6.5
18	4.5	4.5	4.5	5.5	5.0	5.5	6.0	6.0	6.0	7.0	6.0	6.5
19	4.5	4.5	4.5	5.5	5.5	5.5	6.5	6.0	6.5	7.0	6.0	6.5
20	5.0	4.5	4.5	5.5	5.5	5.5	6.5	6.0	6.0	7.0	6.0	6.5
21	5.0	4.5	4.5	5.5	5.0	5.5	6.0	6.0	6.0	7.0	6.0	6.5
22	5.0	4.5	5.0	5.5	5.0	5.5	6.5	6.0	6.0	7.0	6.5	7.0
23	5.5	5.0	5.5	5.0	5.0	5.0	6.5	6.0	6.0	7.0	6.5	6.5
24	5.5	5.5	5.5	5.5	5.0	5.0	6.0	5.5	6.0	7.0	6.5	6.5
25	5.5	5.5	5.5	5.5	5.0	5.5	6.0	5.5	6.0	6.5	6.5	6.5
26	6.0	5.5	6.0	5.5	5.0	5.5	6.0	5.5	6.0	7.0	6.5	6.5
27	6.0	5.5	6.0	5.5	5.0	5.5	5.5	5.5	5.5	6.5	6.5	6.5
28	6.0	5.5	6.0	5.5	5.5	5.5	6.0	5.5	5.5	7.0	6.5	7.0
29	---	---	---	5.5	5.0	5.5	6.5	6.0	6.0	7.0	6.5	7.0
30	---	---	---	5.5	5.0	5.5	6.5	6.0	6.0	7.0	6.5	7.0
31	---	---	---	6.0	5.5	6.0	---	---	---	7.0	6.5	7.0
MONTH	6.0	3.5	4.5	6.0	4.5	5.0	6.5	5.0	6.0	7.0	6.0	6.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	7.5	7.0	7.0	8.0	7.0	7.5	8.0	8.0	8.0	9.0	8.5	8.5
2	7.5	7.5	7.5	8.5	7.5	8.0	8.5	8.0	8.0	9.0	8.5	8.5
3	7.5	7.5	7.5	8.0	7.5	8.0	8.5	8.0	8.5	9.5	8.5	9.0
4	7.5	7.0	7.5	8.0	7.5	8.0	8.5	8.0	8.5	9.5	8.5	9.0
5	7.5	7.0	7.0	8.0	7.5	7.5	8.5	8.0	8.5	9.0	8.5	9.0
6	7.5	7.0	7.5	8.0	7.5	8.0	8.5	8.0	8.5	9.0	8.5	9.0
7	7.5	7.0	7.5	8.5	7.5	8.0	8.5	8.0	8.0	9.0	8.5	9.0
8	7.5	7.0	7.5	8.0	7.5	8.0	8.5	7.5	8.0	9.0	8.5	9.0
9	8.0	7.5	7.5	8.0	7.5	8.0	8.0	8.0	8.0	9.5	9.0	9.0
10	8.0	7.5	7.5	8.5	8.0	8.0	8.0	8.0	8.0	9.0	9.0	9.0
11	8.0	7.5	7.5	8.5	7.5	8.5	9.0	8.0	8.5	9.5	9.0	9.0
12	8.0	7.5	7.5	8.5	7.5	8.0	9.0	8.0	8.5	9.0	9.0	9.0
13	7.5	7.0	7.5	8.0	8.0	8.0	9.0	8.0	8.5	9.0	9.0	9.0
14	7.5	7.0	7.0	8.0	7.5	8.0	9.0	8.0	8.5	9.0	9.0	9.0
15	7.5	7.0	7.5	8.0	8.0	8.0	8.5	8.0	8.5	9.0	9.0	9.0
16	7.5	7.0	7.5	8.0	7.5	7.5	8.5	8.5	8.5	9.5	9.0	9.0
17	7.5	7.0	7.0	8.0	7.5	7.5	9.0	8.5	9.0	9.5	9.0	9.5
18	7.5	7.0	7.5	8.5	7.5	8.0	9.5	8.5	9.0	9.5	9.0	9.5
19	7.5	7.5	7.5	8.5	8.0	8.0	9.0	8.5	8.5	9.5	9.5	9.5
20	7.5	7.0	7.5	8.5	8.0	8.5	9.5	8.5	9.0	9.5	9.5	9.5
21	7.0	7.0	7.0	8.5	7.5	8.0	9.0	8.5	9.0	9.5	9.0	9.5
22	7.5	7.0	7.0	9.0	8.0	8.5	9.0	8.0	8.5	10.0	9.0	9.5
23	7.5	7.0	7.0	9.0	8.0	8.5	8.5	8.5	8.5	10.0	9.5	10.0
24	7.0	7.0	7.0	8.5	8.0	8.0	9.0	8.5	9.0	10.5	10.0	10.0
25	7.5	7.0	7.5	8.5	8.0	8.0	9.0	8.5	9.0	11.0	10.5	10.5
26	7.0	7.0	7.0	8.5	8.0	8.0	9.0	8.5	9.0	10.5	10.5	10.5
27	7.5	7.0	7.5	8.5	8.0	8.0	9.0	8.5	8.5	11.0	10.5	10.5
28	7.5	7.0	7.0	8.5	7.5	8.0	8.5	8.0	8.0	11.0	10.5	10.5
29	7.5	7.0	7.0	8.5	7.5	8.0	9.0	8.0	8.5	11.0	10.5	10.5
30	7.5	7.0	7.0	8.5	8.0	8.0	9.0	8.5	8.5	11.5	10.5	11.0
31	---	---	---	8.5	8.0	8.5	9.0	8.5	8.5	---	---	---
MONTH	8.0	7.0	7.5	9.0	7.0	8.0	9.5	7.5	8.5	11.5	8.5	9.5
YEAR	14.0	2.0	7.5									

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LOCATION.--Lat 44°47'30", long 122°34'40", in NW 1/4 sec.16, T.9 S., R.2 E., Marion County, Hydrologic Unit 17090005, on left bank 2.0 mi east of Mehama and at mile 2.0.

PERIOD OF RECORD.--October 1931 to current year. Records for July to September 1924 and July to September 1931 at site 4 mi upstream not equivalent owing to difference in drainage areas.

REVISED RECORDS.--WSP 754: 1932. WSP 1218: 1934, 1936, 1949-50. WSP 1935: Maximum only, 1932-34, 1936, 1938, 1943, 1945-49, 1950 (M,P), 1951-53 (M), 1954 (M,P), 1955 (M), 1956 (M,P), 1957 (M), 1958-59 (M,P). WSP 2135: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 655.41 ft above National Geodetic Vertical Datum of 1929. Prior to June 12, 1948, nonrecording gage at about same site and datum.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Records herein are for measuring site. Continuous water-quality records for the period May 1985 to September 1986 have been collected at this location.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,000 ft³/s Dec. 22, 1964, gage height, 16.73 ft, from rating curve extended above 17,000 ft³/s; minimum discharge, 13 ft³/s Aug. 30, 1961.

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0700	*10,400	*10.19	No other peak greater than base discharge.			
Minimum discharge, 24 ft ³ /s Sept. 27.							

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	27	1540	1200	358	363	448	829	648	589	343	62	49
2	29	935	1060	333	545	727	827	642	521	304	61	47
3	34	731	933	311	1500	1490	773	591	462	269	60	43
4	49	2040	1070	291	1160	2740	1230	543	402	239	58	40
5	96	1720	1190	274	2010	1610	2500	510	357	215	57	38
6	81	1200	919	259	1330	1160	1910	576	326	196	56	36
7	54	919	773	325	914	950	1390	925	300	182	55	36
8	46	864	723	585	720	835	1170	2250	284	169	54	37
9	42	969	1350	506	615	806	2300	1530	266	157	56	36
10	42	836	2460	1220	534	780	1680	1210	255	149	77	34
11	41	674	1910	2050	478	708	1230	1010	253	140	59	33
12	62	548	1300	4280	526	802	1020	876	244	131	54	33
13	105	1010	987	2850	1990	839	957	800	234	125	51	33
14	119	1420	799	3780	1830	731	981	773	229	121	49	34
15	250	989	677	4390	1230	646	981	688	206	114	48	33
16	443	806	581	2230	1030	571	832	642	206	115	47	31
17	282	739	592	1520	1050	528	761	1460	208	129	46	30
18	550	851	1990	1220	1040	566	716	1820	190	114	46	29
19	529	730	1280	997	1660	565	701	1430	181	102	49	28
20	317	719	911	808	2740	506	707	1120	424	96	44	28
21	832	917	766	675	2430	497	734	930	621	90	42	27
22	1270	2030	672	579	1480	524	686	795	521	87	41	27
23	581	1790	547	503	1060	565	630	679	424	84	40	27
24	365	1700	483	447	824	717	772	604	365	82	40	26
25	280	6260	435	399	675	698	779	563	329	83	39	26
26	714	2320	421	358	573	598	731	507	311	80	38	25
27	485	1610	542	327	499	518	767	453	289	75	39	25
28	534	1210	571	303	446	470	715	435	432	72	63	25
29	505	1190	466	279	---	431	680	434	431	69	69	25
30	1330	1450	420	259	---	422	653	824	391	66	51	25
31	2400	---	380	291	---	636	---	714	---	65	46	---
TOTAL	12494	40717	28408	33007	31252	24084	30642	26982	10251	4263	1597	966
MEAN	403	1357	916	1065	1116	777	1021	870	342	138	51.5	32.2
MAX	2400	6260	2460	4390	2740	2740	2500	2250	621	343	77	49
MIN	27	548	380	259	363	422	630	434	181	65	38	25
AC-FT	24780	80760	56350	65470	61990	47770	60780	53520	20330	8460	3170	1920
CFM	3.60	12.1	8.18	9.51	9.97	6.94	9.12	7.77	3.05	1.23	.46	.29
IN.	4.15	13.52	9.44									

MEAN	398	1138	1440	1341	1194	1035	981	807	467	134	65.2	110
MAX	1594	3121	3680	3615	2581	2645	1712	1439	1684	547	432	490
(WY)	1948	1943	1965	1953	1961	1932	1937	1949	1933	1983	1968	1959
MIN	17.3	25.7	193	218	260	302	268	241	80.3	45.1	19.2	24.3
(WY)	1988	1937	1977	1937	1977	1941	1941	1947	1940	1940	1961	1987

ANNUAL TOTAL	269072		244663			
ANNUAL MEAN	737		670		757	
HIGHEST ANNUAL MEAN					1146	1974
LOWEST ANNUAL MEAN					400	1977
HIGHEST DAILY MEAN	6260	Nov 25	6260	Nov 25	21900	Dec 22 1964
LOWEST DAILY MEAN	27	Oct 1	25	Sep 26	13	Aug 30 1961
ANNUAL SEVEN-DAY MINIMUM	29	Sep 26	25	Sep 24	15	Aug 24 1961
ANNUAL RUNOFF (AC-FT)	533700		485300		548300	
ANNUAL RUNOFF (CFSM)	6.58		5.98		6.76	
ANNUAL RUNOFF (INCHES)	89.37		81.26		91.81	
10 PERCENT EXCEEDS	1530		1490		1690	
50 PERCENT EXCEEDS	613		526		471	
90 PERCENT EXCEEDS	42		41		43	

LOCATION (REVISED).--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. Elevation of gage is 775 ft above National Geodetic Vertical Datum of 1929, from topographic map. Prior to Sept. 26, 1989, at site 0.7 mi downstream at datum 759.88 above National Geodetic Vertical Datum of 1929. Prior to Nov. 1, 1935, nonrecording gage at site 0.7 mi downstream at different datum.

REMARKS.--Records good except those for Nov. 22-27, which are fair. 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.--56 years, 815 ft³/s, 63.61 in/vr, 590,500 acre-ft/vr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 27,600 ft³/s Dec. 22, 1964, gage height, 19.68 ft, site and datum then in use; 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)
Nov. 25	1100	*7,280	*a8.69	Jan. 12	1630	6,300	8.17

Minimum discharge, 41 ft³/s Sept. 26.

(a) Maximum recorded gage height.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	44	1450	1400	359	374	556	819	846	663	272	91	65
2	45	849	1190	342	499	935	885	816	607	252	89	61
3	54	647	1020	332	736	2010	862	762	550	234	87	63
4	61	2190	1070	322	821	3340	827	701	499	222	86	58
5	107	2290	1100	310	1610	2380	1520	658	455	210	85	57
6	92	1610	913	305	1210	1670	1660	677	425	199	84	55
7	68	1260	798	501	921	1370	1440	803	400	190	82	55
8	58	1300	756	575	761	1170	1400	2370	379	181	81	58
9	54	1350	987	515	656	1080	2740	1970	358	173	96	56
10	54	1100	2570	930	584	998	2130	1630	340	168	115	54
11	53	889	2220	1570	540	897	1610	1390	331	165	91	52
12	83	732	1570	4860	714	1080	1390	1200	313	156	82	51
13	97	944	1210	4170	2910	1130	1320	1120	309	152	78	51
14	95	1270	993	3860	2300	996	1250	1060	308	152	75	52
15	153	973	848	4580	1550	857	e1200	925	277	150	73	51
16	213	801	731	2780	1330	761	e1100	930	273	163	71	49
17	161	747	672	1890	1290	692	e1000	2820	261	179	70	48
18	270	812	1280	1450	1290	712	915	3090	243	154	95	46
19	278	739	1060	1170	1650	700	884	2270	244	139	76	46
20	187	792	816	975	1560	640	884	1730	429	132	70	45
21	506	1150	e740	836	1440	615	940	1420	446	126	66	45
22	827	e3000	e660	734	1180	613	885	1200	350	122	64	44
23	387	e2400	598	652	983	652	820	1020	310	119	63	44
24	276	e2500	533	586	841	769	966	885	285	124	63	43
25	228	e6000	493	534	735	750	1050	784	272	119	62	42
26	422	e3400	481	490	651	670	1110	712	262	114	61	42
27	306	e2100	498	450	588	595	1230	643	250	109	63	42
28	350	1510	505	421	542	547	1040	601	369	104	86	43
29	316	1470	427	392	---	510	927	589	333	100	91	43
30	1090	1740	400	372	---	502	879	872	297	96	73	42
31	2370	---	376	378	---	605	---	772	---	94	66	---
TOTAL	9305	48015	28915	37641	30266	30802	35683	37266	10838	4870	2435	1503
MEAN	300	1600	933	1214	1081	994	1189	1202	361	157	78.5	50.1
MAX	2370	6000	2570	4860	2910	3340	2740	3090	663	272	115	65
MIN	44	647	376	305	374	502	819	589	243	94	61	42
AC-FIN	18460	95240	57350	74660	60030	61100	70780	73920	21500	9660	4830	2980
CSFM	1.73	9.20	5.36	6.98	6.21	5.71	6.84	6.91	2.08	.90	.45	.29
IN.	1.99	10.27	6.18	8.05	6.47	6.59	7.63	7.97	2.32	1.04	.52	.32

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 1991, BY WATER YEAR (WY)

MEAN	305	1092	1498	1443	1379	1167	1131	932	525	171	81.9	98.0
MAX	1296	2441	4319	3278	3260	2913	2052	1639	1261	466	222	318
(WY)	1951	1943	1965	1953	1961	1972	1937	1960	1937	1983	1968	1959
MIN	31.6	27.6	82.3	107	130	324	356	282	104	54.2	39.3	40.9
(WY)	1988	1937	1977	1977	1977	1941	1941	1987	1940	1940	1940	1987

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1935 - 1991
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ANNUAL TOTAL	312605		277539			
ANNUAL MEAN	856		760		815	
HIGHEST ANNUAL MEAN					1280	1972
LOWEST ANNUAL MEAN					359	1977
HIGHEST DAILY MEAN	10300	Apr 27	6000	Nov 25	23000	Dec 22 1964
LOWEST DAILY MEAN	44	Sep 29	42	Sep 25	23	Dec 1 1936
ANNUAL SEVEN-DAY MINIMUM	46	Sep 26	42	Sep 24	24	Nov 25 1936
ANNUAL RUNOFF (AC-FT)	620100		550500		590700	
ANNUAL RUNOFF (CFSM)	4.92		4.37		4.69	
ANNUAL RUNOFF (INCHES)	66.83		59.34		63.67	
10 PERCENT EXCEEDS	1670		1610		1800	
50 PERCENT EXCEEDS	672		588		506	
90 PERCENT EXCEEDS	63		61		63	

WILLAMETTE RIVER BASIN

14185700 MIDDLE SANTIAM RIVER NEAR UPPER SODA, OR

LOCATION.--Lat 44°30'45", long 122°15'52", in SE 1/4 NE 1/4 sec.24, T.12 S., R.4 E., Linn County, Hydrologic Unit 17090006, on right bank 0.8 mi upstream from Bear Creek, 7.5 mi north of Upper Soda, and at mile 23.9.

DRAINAGE AREA.--74.6 mi².

PERIOD OF RECORD.--October 1980 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 1,500 ft above National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records good except flows for Dec. 20 to Jan. 24, and estimated daily discharges, which are fair.

AVERAGE DISCHARGE.--11 years, 408 ft³/s, 74.27 in/yr, 295,600 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,400 ft³/s Feb. 23, 1986, gage height, 11.05 ft, from rating curve extended above 3,600 ft³/s on basis of slope-area measurement of December 1980; minimum discharge, 18 ft³/s Oct. 30, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0830	*4,050	---	No other peak greater than base discharge.			
Minimum discharge, 23 ft ³ /s Sept. 26, 28-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	26	558	604	e200	260	358	402	386	325	160	57	37
2	26	397	525	e190	333	445	440	390	304	152	59	36
3	32	334	467	e180	428	713	452	378	282	137	58	35
4	35	725	504	e175	469	1210	462	362	256	134	58	34
5	51	754	509	e170	827	958	736	353	239	129	56	33
6	41	580	452	e165	669	756	742	365	233	121	55	32
7	33	490	412	e280	540	617	645	464	223	114	52	31
8	31	488	393	e320	467	536	592	917	217	113	49	31
9	29	565	552	e290	417	490	1040	728	218	108	54	31
10	29	487	1120	e500	382	452	869	626	212	110	64	30
11	28	421	1020	e850	363	414	696	551	206	102	53	29
12	38	371	785	e2600	450	417	614	494	199	102	49	29
13	45	415	635	e2200	959	407	577	459	193	99	47	28
14	50	420	534	e2100	891	390	566	430	190	105	45	28
15	94	382	464	e2500	719	362	538	396	173	98	44	28
16	111	354	411	e1500	632	341	505	394	178	108	43	27
17	82	332	399	e1000	592	329	480	649	173	117	50	27
18	127	335	673	e800	545	340	458	673	169	101	62	26
19	131	320	532	e650	635	335	437	643	156	94	48	26
20	95	320	e450	e550	754	320	439	586	226	91	44	25
21	213	394	e410	e480	802	310	450	532	233	85	41	25
22	319	617	e360	e440	672	307	445	479	191	82	39	25
23	190	675	e320	e400	569	315	427	432	177	78	38	24
24	140	731	e290	e365	489	345	458	396	166	79	37	24
25	119	2950	e270	336	432	336	433	366	161	76	36	24
26	184	1630	e260	318	389	314	424	346	155	74	36	23
27	139	1070	e270	307	358	297	435	326	156	72	36	24
28	142	797	e280	290	353	284	411	317	190	67	57	23
29	141	726	e240	272	---	273	393	323	171	67	51	23
30	428	692	e220	257	---	271	387	377	166	65	42	23
31	792	---	e210	265	---	313	---	367	---	60	38	---
TOTAL	3941	19330	14571	20950	15396	13555	15953	14505	6138	3100	1498	841
MEAN	127	644	470	676	550	437	532	468	205	100	48.3	28.0
MAX	792	2950	1120	2600	959	1210	1040	917	325	160	64	37
MIN	26	320	210	165	260	271	387	317	155	60	36	23
AC-FT	7820	38340	28900	41550	30540	26890	31640	28770	12170	6150	2970	1670
CFSM	1.70	8.64	6.30	9.06	7.37	5.86	7.13	6.27	2.74	1.34	.65	.38
IN.	1.97	9.64	7.27	10.45	7.68	6.76	7.96	7.23	3.06	1.55	.75	.42

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 1991, BY WATER YEAR (WY)

	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	
MEAN	120	542	708	631	790	587	598	438	305	107	48.8	45.6
MAX	312	1072	1513	931	1680	945	915	727	555	197	83.3	89.1
(WY)	1983	1985	1982	1983	1986	1989	1990	1984	1984	1983	1983	1986
MIN	19.5	53.7	347	247	312	259	301	190	95.9	61.4	31.2	24.4
(WY)	1988	1988	1987	1981	1985	1981	1986	1987	1987	1986	1986	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1981 - 1991

ANNUAL TOTAL	153495	129778	
ANNUAL MEAN	421	356	
HIGHEST ANNUAL MEAN			407
LOWEST ANNUAL MEAN			535
HIGHEST DAILY MEAN			297
LOWEST DAILY MEAN	3860	Jan 8	2950
ANNUAL SEVEN-DAY MINIMUM	26	Sep 30	23
ANNUAL RUNOFF (AC-FT)	27	Sep 26	23
ANNUAL RUNOFF (CFSM)	304500		257400
ANNUAL RUNOFF (INCHES)	5.64		4.77
10 PERCENT EXCEEDS	791		64.72
50 PERCENT EXCEEDS	340		847
90 PERCENT EXCEEDS	39		295
			36

WILLAMETTE RIVER BASIN

285

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, from topographic map. Aug. 13, 1963, to Dec. 22, 1964, water-stage recorder on left bank at present datum.

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 1963 to September 1987 have been collected at this location.

AVERAGE DISCHARGE.--27 years (water years 1964, 1966-91), 658 ft³/s, 90.08 in/yr, 476,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 22,400 ft³/s Jan. 20, 1972, gage height, 16.38 ft; 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)
Nov. 25	0530	7,990	11.77	Jan. 14	1730	5,180	10.32
Jan. 12	1400	*8,550	*12.02				

Minimum discharge, 24 ft³/s Oct. 1, Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	25	1090	933	234	277	369	766	600	435	179	54	46
2	25	629	765	222	498	969	725	577	380	164	53	43
3	33	504	657	214	997	2300	670	522	330	151	53	40
4	39	1600	1040	204	1020	3410	795	472	291	140	52	39
5	78	1310	1100	197	2260	1800	2320	442	264	131	51	37
6	61	870	767	193	1220	1160	1740	497	243	123	50	36
7	42	671	630	485	800	874	1220	807	224	117	49	35
8	37	614	620	692	619	737	1040	e2100	210	110	48	36
9	34	760	1470	527	517	705	2250	1360	198	105	55	35
10	33	625	2810	1450	450	647	1460	1060	185	101	64	34
11	32	489	1820	2260	409	585	1020	869	178	97	52	33
12	77	397	1150	6120	562	738	880	736	170	95	48	33
13	79	679	833	3430	2170	743	874	651	167	91	46	32
14	84	910	658	3420	1610	635	870	583	160	89	45	32
15	233	642	551	3920	1020	546	815	512	148	86	43	31
16	271	522	473	1990	791	489	726	480	150	90	43	30
17	169	483	473	1280	756	469	834	1040	142	95	42	30
18	324	528	1370	973	748	532	723	1370	134	86	65	29
19	319	465	843	778	1160	530	652	1100	132	80	49	28
20	189	470	608	635	1620	468	648	869	278	76	44	28
21	689	714	530	535	1590	444	655	718	355	73	41	27
22	807	1910	470	465	1030	464	608	604	248	71	39	27
23	350	1570	389	411	748	502	547	513	207	69	39	26
24	231	1590	353	370	598	641	744	452	187	68	38	26
25	194	5630	322	336	502	596	771	406	173	67	37	25
26	486	2220	308	307	436	497	733	360	165	64	37	25
27	289	1420	350	283	387	434	795	322	158	63	38	25
28	357	1030	338	265	354	402	693	316	204	61	86	25
29	297	1100	279	246	---	384	623	329	212	60	69	25
30	1420	1240	260	231	---	397	608	579	194	58	52	25
31	2170	---	245	259	---	588	---	e520	---	56	46	---
TOTAL	9474	32682	23415	32932	25149	24055	27805	21766	6522	2916	1528	943
MEAN	306	1089	755	1062	898	776	927	702	217	94.1	49.3	31.4
MAX	2170	5630	2810	6120	2260	3410	2320	2100	435	179	86	46
MIN	25	397	245	193	277	369	547	316	132	56	37	25
AC-FT	18790	64820	46440	65320	49880	47710	55150	43170	12940	5780	3030	1870
CFSM	3.08	11.0	7.61	10.7	9.05	7.82	9.34	7.08	2.19	.95	.50	.32
IN.	3.55	12.26	8.78	12.35	9.43	9.02	10.43	8.16	2.45	1.09	.57	.35

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1963 - 1991, BY WATER YEAR (WY)

	MEAN	260	1011	1257	1295	1098	948	828	625	334	103	62.0	93.3
MAX	753	2224	2897	2450	2441	2018	1245	1114	817	336	240	268	
(WY)	1968	1974	1974	1970	1982	1971	1969	1971	1984	1983	1968	1971	
MIN	20.8	126	110	157	208	329	382	228	97.3	53.9	25.6	28.0	
(WY)	1988	1988	1977	1977	1977	1978	1968	1987	1979	1970	1973	1987	

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1963 - 1991
ANNUAL TOTAL	237226	209187	
ANNUAL MEAN	650	573	658
HIGHEST ANNUAL MEAN			1113
LOWEST ANNUAL MEAN			311
HIGHEST DAILY MEAN	6910	6120	14900
LOWEST DAILY MEAN	25	25	14
ANNUAL SEVEN-DAY MINIMUM	26	25	14
ANNUAL RUNOFF (AC-FT)	470500	414900	476900
ANNUAL RUNOFF (CFSM)	6.55	5.78	6.64
ANNUAL RUNOFF (INCHES)	88.96	78.45	90.16
10 PERCENT EXCEEDS	1440	1290	1490
50 PERCENT EXCEEDS	467	406	368
90 PERCENT EXCEEDS	40	38	41

WILLAMETTE RIVER BASIN

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 National Geodetic Vertical Datum of 1929 (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.--Midnight elevations furnished by Corps of Engineers and reviewed by Geological Survey. 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, 414,500 acre-ft May 11, 17, elevation, 1,011.29 ft; minimum contents, 159,900 acre-ft Jan. 2, elevation, 922.03 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	981.53	964.70	947.85	922.40	929.98	970.52	992.45	1007.10	1010.49	1010.50	1004.61	996.67
2	980.76	963.00	946.33	922.07	929.69	971.85	993.29	1007.45	1010.34	1010.48	1004.38	996.41
3	980.04	961.82	944.46	922.22	931.20	974.58	993.17	1007.90	1010.08	1010.44	1004.13	995.69
4	979.30	962.41	942.94	922.31	932.73	978.82	992.06	1008.30	1009.96	1010.39	1003.90	994.92
5	978.64	962.56	941.38	922.37	935.93	980.80	993.63	1008.65	1010.00	1010.32	1003.66	994.14
6	977.89	961.33	939.37	922.47	937.85	980.90	994.42	1009.10	1010.14	1010.27	1003.42	993.36
7	977.15	959.77	937.11	923.01	939.33	980.00	993.96	1009.49	1010.33	1010.17	1003.16	992.57
8	976.33	958.19	936.06	923.46	940.52	978.85	994.18	1010.93	1010.52	1010.09	1002.94	991.77
9	975.54	956.72	936.36	923.61	941.54	977.67	995.99	1010.83	1010.62	1009.86	1002.77	991.33
10	974.80	955.48	938.45	925.16	942.36	977.14	997.06	1011.02	1010.66	1009.71	1002.53	990.53
11	974.05	953.92	938.37	927.51	942.97	977.30	997.57	1010.88	1010.69	1009.55	1002.29	989.72
12	973.43	952.20	937.17	935.68	943.94	977.60	997.89	1011.04	1010.70	1009.40	1002.02	988.91
13	972.76	951.04	935.34	939.81	947.72	978.44	998.09	1011.05	1010.74	1009.19	1001.77	988.08
14	972.11	949.95	933.16	942.75	950.61	979.17	998.33	1011.07	1010.74	1009.01	1001.51	987.35
15	971.64	949.13	931.95	946.51	952.57	979.73	998.47	1010.98	1010.75	1008.76	1001.24	986.62
16	971.18	948.43	930.52	947.00	954.18	980.56	998.52	1010.94	1010.79	1008.56	1000.99	985.88
17	970.61	947.71	929.81	946.17	955.68	981.35	998.83	1011.17	1010.75	1008.44	1000.70	985.14
18	970.40	946.97	930.78	944.73	957.23	982.20	999.03	1011.13	1010.76	1008.25	1000.42	984.36
19	970.08	946.13	930.86	942.90	958.74	983.04	999.52	1010.74	1010.74	1008.10	1000.11	983.59
20	969.37	945.44	930.50	940.77	960.97	983.77	1000.20	1010.46	1010.82	1007.92	999.87	982.83
21	969.51	945.13	929.20	938.47	962.96	984.50	1000.86	1010.41	1010.98	1007.77	999.60	982.07
22	969.94	946.37	927.81	935.98	964.35	985.26	1001.47	1010.45	1010.84	1007.62	999.32	981.29
23	969.47	946.61	926.29	933.24	965.65	986.07	1002.14	1010.42	1010.64	1007.39	999.04	980.52
24	968.59	945.80	925.49	932.06	966.71	987.05	1003.08	1010.30	1010.41	1007.04	998.75	979.75
25	967.61	952.54	925.16	930.83	967.62	987.91	1003.93	1010.12	1010.19	1006.72	998.44	978.93
26	966.80	952.75	924.73	930.29	968.42	988.42	1004.81	1010.02	1010.19	1006.39	998.15	978.14
27	965.78	951.81	924.50	929.70	969.15	988.96	1005.41	1010.04	1010.28	1006.07	997.91	977.34
28	964.79	950.84	924.23	929.70	969.83	989.58	1005.91	1010.19	1010.41	1005.73	997.71	976.60
29	963.68	949.90	923.77	930.09	---	990.16	1006.31	1010.37	1010.45	1005.39	997.47	975.85
30	964.46	949.03	923.24	930.44	---	990.75	1006.71	1010.71	1010.48	1005.13	997.21	975.09
31	965.74	---	922.66	930.84	---	991.52	---	1010.69	---	1004.84	996.94	---
MAX	981.53	964.70	947.85	947.00	969.83	991.52	1006.71	1011.17	1010.98	1010.50	1004.61	996.67
MIN	963.68	945.13	922.66	922.07	929.69	970.52	992.06	1007.10	1009.96	1004.84	996.94	975.09
(†)	267200	222100	161200	178800	279100	346400	398100	412300	411600	391500	364400	294700
(+)	-49800	-45100	-60900	+17600	+100300	+67300	+51700	+14200	-700	-20100	-27100	-69700

CAL YR 1990 MAX 1014.45 MIN 922.66 AC-FT† +900
WTR YR 1991 MAX 1011.17 MIN 922.07 AC-FT† -22300

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

WILLAMETTE RIVER BASIN

287

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 National Geodetic Vertical Datum of 1929 (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.--Midnight elevations furnished by Corps of Engineers and reviewed by Geological Survey. 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, 58,090 acre-ft Sept. 9, elevation, 638.83 ft; minimum contents, 29,450 acre-ft Dec. 17, elevation, 611.17 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	637.57	620.90	613.21	613.54	614.52	620.63	620.46	614.31	637.58	637.69	637.23	637.17
2	637.45	619.70	613.20	613.49	614.15	621.30	619.13	614.77	637.72	637.67	637.24	637.13
3	637.35	619.18	613.25	613.45	614.35	623.32	618.09	615.30	637.81	637.60	637.26	637.43
4	637.35	619.08	613.50	613.48	614.27	623.60	614.82	614.63	637.60	637.12	637.25	637.68
5	637.35	617.72	613.43	613.45	614.41	622.73	614.54	614.62	637.50	637.41	637.26	637.90
6	637.35	617.47	613.46	613.42	614.21	622.82	614.51	614.57	637.37	637.26	637.25	638.12
7	637.35	616.97	613.47	613.74	614.79	623.01	614.51	614.82	637.25	637.11	637.28	638.36
8	637.30	616.44	613.47	613.28	615.20	623.04	614.52	616.04	637.13	636.95	637.28	638.58
9	637.28	615.90	613.91	613.51	615.37	623.08	614.55	620.84	637.20	637.12	637.33	637.62
10	637.08	615.40	613.70	613.80	615.56	622.96	614.35	622.36	637.36	637.12	637.42	637.63
11	636.93	615.17	613.53	614.09	616.00	623.28	614.26	621.80	637.50	637.05	637.40	637.68
12	636.92	614.75	613.28	614.50	616.95	624.16	614.67	621.50	637.61	636.93	637.41	637.75
13	636.86	614.12	613.42	613.62	618.77	623.68	614.53	622.06	637.61	636.93	637.38	637.79
14	636.80	613.55	613.44	613.36	618.34	623.81	614.60	622.06	637.71	636.80	637.32	637.62
15	636.84	613.50	613.38	613.42	618.39	624.12	614.57	621.68	637.59	636.93	637.24	637.51
16	636.30	613.63	613.00	613.25	618.46	624.47	614.53	624.36	637.52	637.04	637.22	637.49
17	635.38	613.63	613.00	613.25	618.49	624.85	614.61	631.13	637.59	636.97	637.30	637.54
18	634.37	613.77	614.10	613.20	618.56	625.25	614.75	635.88	637.40	636.95	637.42	637.65
19	633.21	613.67	614.12	613.25	618.72	625.60	614.65	637.01	637.52	636.78	637.50	637.70
20	632.00	613.62	613.35	613.25	618.66	625.82	614.51	636.84	637.74	636.55	637.48	637.73
21	630.84	614.32	614.01	613.27	619.02	626.00	614.63	637.58	637.41	636.38	637.40	637.70
22	628.88	615.17	613.81	613.41	619.36	626.18	614.50	637.83	637.86	636.19	637.35	637.51
23	627.15	614.26	614.06	613.96	619.61	626.42	614.49	637.57	638.00	636.21	637.26	637.51
24	625.63	613.45	613.11	613.72	619.88	626.97	614.57	637.31	638.09	636.47	637.20	637.51
25	624.75	613.77	613.96	613.54	620.07	627.47	614.71	637.65	637.98	636.64	637.26	637.62
26	624.04	613.27	614.13	613.43	620.35	627.56	615.14	637.44	637.46	636.84	637.21	637.67
27	623.18	613.51	614.35	613.88	620.55	626.74	614.63	637.35	637.34	637.02	637.28	637.89
28	622.54	613.32	614.23	613.64	620.68	625.54	614.51	637.67	637.51	637.19	637.25	637.60
29	622.12	613.44	613.49	613.71	---	624.25	614.60	637.72	637.69	637.40	637.28	637.51
30	622.29	613.22	613.12	613.68	---	622.90	614.48	637.70	637.78	637.32	637.27	637.44
31	621.88	---	613.58	613.63	---	621.70	---	637.80	---	637.24	637.22	---
MAX	637.57	620.90	614.35	614.50	620.68	627.56	620.46	637.83	638.09	637.69	637.50	638.58
MIN	621.88	613.22	613.00	613.20	614.15	620.63	614.26	614.31	637.13	636.19	637.20	637.13
(†)	39400	31260	31590	31630	38230	39220	32400	56840	56810	56160	56140	56400
(‡)	-17180	-8140	+330	+40	+6600	+990	-6820	+24440	-30	-650	-20	+260

CAL YR 1990 MAX 640.45 MIN 612.92 AC-FT† -50

WTR YR 1991 MAX 638.58 MIN 613.00 AC-FT† -180

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

‡ Change in contents, in acre-feet.

WILLAMETTE RIVER BASIN

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).

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 920 ft, from topographic map. Prior to April 6, 1965, water-stage recorder at present site at datum of 718.08 ft above National Geodetic Vertical Datum (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. Record for Jan. 15-25 from U.S. Army Corps of Engineers Columbia River Operational Hydromet Management System (CROHMS) data base. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--28 years (water years 1948-72, 1989-91), 219 ft³/s, 57.41 in/yr, 158,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,640 ft³/s Jan. 21, 1972, gage height, 9.28 ft, from rating curve extended above 3,700 ft³/s; maximum gage height, 11.80 ft, Dec. 21, 1964 (backwater from debris), datum then in use; minimum discharge, 4.4 ft³/s Sept. 13-16, 1988.

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. 12	1400	*1,300	*4.50				
Minimum discharge, 6.1 ft ³ /s Sept. 24-27.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	8.2	304	410	101	84	140	165	175	118	54	14	13
2	9.2	190	341	96	119	301	168	160	108	48	14	11
3	9.2	151	284	95	156	673	159	147	98	43	14	11
4	10	478	304	87	166	1070	153	130	89	40	13	9.6
5	29	438	294	85	301	713	332	120	84	37	13	9.1
6	18	315	249	83	239	478	348	120	80	35	13	8.8
7	13	253	221	158	189	376	334	151	75	33	13	9.2
8	11	223	199	184	158	314	323	624	71	31	13	10
9	11	193	241	167	137	287	561	512	66	30	24	9.6
10	11	164	625	281	122	275	501	398	62	30	25	8.8
11	11	140	520	404	114	251	402	324	61	27	16	8.4
12	22	121	378	1100	165	339	338	273	59	27	15	8.3
13	22	226	315	906	759	326	299	247	60	26	13	8.3
14	23	308	280	748	551	286	276	231	61	27	13	8.7
15	33	215	243	783	375	255	254	200	53	26	12	8.5
16	42	172	207	599	379	228	226	195	52	30	11	8.0
17	29	167	189	432	362	207	203	893	49	34	12	7.3
18	81	194	353	339	378	210	185	926	46	29	11	7.2
19	58	176	290	274	425	207	170	635	48	25	11	6.9
20	35	195	230	217	375	189	163	449	93	23	11	6.7
21	97	266	201	187	315	181	164	349	88	22	9.7	6.7
22	140	288	e190	164	267	184	149	280	69	21	9.0	6.9
23	67	279	e170	154	230	202	137	235	60	20	9.1	6.8
24	46	245	e150	140	198	237	200	203	55	18	9.8	6.6
25	39	936	143	120	173	225	248	178	52	20	9.6	6.1
26	97	649	136	111	155	199	250	157	50	19	9.4	6.1
27	61	465	146	102	141	174	263	141	48	18	10	6.2
28	78	363	148	95	131	156	238	131	81	16	19	6.7
29	65	399	120	88	---	143	214	134	69	16	15	7.0
30	337	498	120	83	---	139	194	161	60	15	12	7.2
31	562	---	107	87	---	149	---	134	---	15	11	---
TOTAL	2074.6	9011	7804	8470	7164	9114	7617	9013	2065	855	404.6	244.7
MEAN	66.9	300	252	273	256	294	254	291	68.8	27.6	13.1	8.16
MAX	562	936	625	1100	759	1070	561	926	118	54	25	13
MIN	8.2	121	107	83	84	139	137	120	46	15	9.0	6.1
AC-FT	4110	17870	15480	16800	14210	18080	15110	17880	4100	1700	803	485
CFSM	1.29	5.80	4.86	5.27	4.94	5.68	4.90	5.61	1.33	.53	.25	.16
IN.	1.49	6.47	5.60	6.08	5.14	6.55	5.47	6.47	1.48	.61	.29	.18

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1948 - 1991, BY WATER YEAR (WY)

MEAN	92.4	276	403	464	394	354	267	189	85.6	33.1	18.1	20.3
MAX	397	620	1107	842	944	625	490	353	171	75.9	53.4	67.8
(WY)	1951	1951	1965	1953	1961	1972	1955	1963	1990	1969	1968	1968
MIN	8.08	15.7	109	82.1	112	116	133	62.8	27.9	16.5	9.25	8.16
(WY)	1989	1953	1960	1963	1973	1965	1968	1973	1966	1951	1967	1991

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1948 - 1991
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ANNUAL TOTAL	70397.1		63836.9						
ANNUAL MEAN	193		175			219			
HIGHEST ANNUAL MEAN						318			1956
LOWEST ANNUAL MEAN						163			1990
HIGHEST DAILY MEAN	1710	Apr 27	1100	Jan 12	6410			Dec 22	1964
LOWEST DAILY MEAN	7.7	Sep 23	6.1	Sep 25		4.4		Sep 14	1988
ANNUAL SEVEN-DAY MINIMUM	8.5	Sep 22	6.5	Sep 21		4.7		Sep 10	1988
ANNUAL RUNOFF (AC-FT)	139600		126600		158800				
ANNUAL RUNOFF (CFSM)	3.72		3.38			4.23			
ANNUAL RUNOFF (INCHES)	50.56		45.84			57.49			
10 PERCENT EXCEEDS	416		378			495			
50 PERCENT EXCEEDS	143		140			121			
90 PERCENT EXCEEDS	11		10			14			

WILLAMETTE RIVER BASIN

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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.

WATER-DISCHARGE RECORDS

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, from topographic map.

REMARKS.--No estimated daily discharges. Water-discharge records excellent. 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.

AVERAGE DISCHARGE.--18 years, 2,840 ft³/s, 69.24 in/yr, 2,058,000 acre-ft/yr, adjusted for storage.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 18,900 ft³/s Apr. 28, 1990, gage height, 16.75 ft; minimum discharge, 416 ft³/s July 13, 1989.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,400 ft³/s Nov. 25, gage height, 14.88 ft; minimum discharge, 466 ft³/s June 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1500	6620	6720	1610	1940	865	1830	2100	2490	847	673	685
2	1500	6000	6410	1610	2400	1040	2170	1740	2160	847	668	683
3	1490	4530	6090	1060	1170	2020	3520	1310	2140	839	662	1290
4	1500	6200	6040	995	1400	5230	6580	1790	1910	834	660	1430
5	1520	6930	6250	995	2380	5300	4050	1430	1440	830	661	1430
6	1520	6500	5960	985	2080	5460	4560	1470	1040	821	660	1440
7	1510	6110	5830	1100	1050	6070	5910	2200	874	824	660	1440
8	1510	6110	4220	2000	889	5830	4470	4750	855	824	661	1440
9	1500	6180	4180	1910	864	5690	5710	4120	850	823	675	1520
10	1500	5130	7260	2430	857	4530	5230	3800	845	823	689	1550
11	1500	4780	8120	3940	846	2830	4410	4860	844	816	686	1550
12	1510	4710	7160	9180	861	2860	3820	3550	849	818	681	1540
13	1510	5290	6480	9510	3670	2760	3870	3050	846	818	677	1550
14	1510	5990	6210	9840	3820	2230	3660	3060	858	818	683	1530
15	1520	4320	4720	10700	2420	1930	3600	3080	850	818	685	1500
16	2010	3450	4460	8890	2100	1080	3470	1420	838	820	679	1460
17	2010	3420	3420	7620	2060	948	2880	3380	826	823	683	1390
18	2310	3450	3640	6980	2090	945	2710	5950	828	802	684	1390
19	2290	3500	3950	6500	2960	946	2070	6680	837	788	686	1410
20	2550	3610	3880	6170	2860	923	1790	5930	1300	785	681	1400
21	2800	3710	3790	5900	2420	917	1670	3850	1360	768	682	1490
22	3270	3830	4040	5620	2050	919	1710	3410	1200	764	688	1540
23	3090	5330	3770	5360	1360	942	1410	3250	1300	792	681	1440
24	3100	6530	3330	3780	1150	974	1640	3070	1310	815	684	1430
25	3140	9770	1850	3460	1010	965	1810	2540	1420	825	678	1440
26	3190	10100	2120	2470	830	1590	1720	2440	1110	806	677	1440
27	3160	8370	2150	2080	769	1660	2870	1930	706	792	678	1440
28	3150	6840	2310	1570	759	1630	2460	1350	860	803	683	1440
29	3140	6640	2470	849	---	1610	2180	1530	846	799	683	1440
30	3400	7330	2290	864	---	1590	2150	2160	845	799	682	1440
31	6140	---	1830	886	---	1590	---	2450	---	791	682	---
TOTAL	71350	171280	140950	126864	49065	73874	95930	93650	34437	25172	20992	42168
MEAN	2302	5709	4547	4092	1752	2383	3198	3021	1148	812	677	1406
MAX	6140	10100	8120	10700	3820	6070	6580	6680	2490	847	689	1550
MIN	1490	3420	1830	849	759	865	1410	1310	706	764	660	683
AC-FT	141500	339700	279600	251600	97320	146500	190300	185800	68310	49930	41640	83640
MEAN†	1212	4815	3562	4378	3677	3493	3953	3649	1136	475	236	239
CFSM†	2.18	8.64	6.39	7.86	6.60	6.27	7.10	6.55	2.04	0.85	0.42	0.43
IN.†	2.51	9.65	7.37	9.06	6.88	7.23	7.92	7.56	2.28	0.98	0.49	0.48
AC-FT†	74520	286500	219000	269200	204200	214800	235200	224400	67580	29180	14520	14200

CAL YR 1990 TOTAL 1059819 MEAN 2904 MAX 17000 MIN 534 AC-FT 2102000 MEAN† 2905 CFSM† 5.22 IN.† 70.81 AC-FT† 2103000
WTR YR 1991 TOTAL 945732 MEAN 2591 MAX 10700 MIN 660 AC-FT 1876000 MEAN† 2561 CFSM† 4.60 IN.† 62.43 AC-FT† 1854000

† Adjusted for change in contents in Green Peter Lake and Foster Lake.

WILLAMETTE RIVER BASIN
14187200 SOUTH SANTIAM RIVER NEAR FOSTER, OR--Continued
WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: July 1973 to current year.

INSTRUMENTATION.--Temperature recorder since July 1973.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 15.5°C at times in 1975, 1978, 1981, 1987, 1990; minimum recorded, 2.5°C Dec. 30, 31, 1978, Feb. 1, 1980, Feb. 7, 1985.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 14.0°C Aug. 10-12, 17, but may have been higher during period of missing record June 27 to Aug. 8; minimum, 3.0°C Dec. 30, Jan. 3-7.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	12.0	11.5	11.5	10.5	10.0	10.0	8.0	7.5	7.5	4.0	3.5	3.5
2	12.0	11.5	12.0	10.0	9.5	10.0	8.0	7.5	8.0	3.5	3.5	3.5
3	12.0	11.5	11.5	10.5	10.0	10.0	8.0	7.5	8.0	3.5	3.0	3.5
4	12.0	11.0	11.5	10.5	10.0	10.5	8.0	7.5	8.0	3.0	3.0	3.0
5	12.0	11.5	12.0	10.5	10.0	10.0	8.0	7.5	7.5	3.0	3.0	3.0
6	11.5	11.5	11.5	10.0	9.5	9.5	7.5	7.5	7.5	3.5	3.0	3.5
7	11.5	11.0	11.5	10.5	10.0	10.0	7.5	7.5	7.5	4.0	3.0	3.5
8	12.0	11.5	11.5	10.5	10.0	10.5	8.0	7.5	8.0	4.0	3.5	4.0
9	11.5	11.5	11.5	11.0	10.5	11.0	8.5	8.0	8.0	4.0	3.5	3.5
10	12.0	11.5	11.5	11.0	10.5	11.0	8.5	8.0	8.5	5.0	4.0	4.5
11	12.0	11.0	11.5	11.0	10.5	10.5	8.0	7.5	7.5	5.5	4.5	5.0
12	12.0	11.0	11.5	10.5	10.5	10.5	7.5	7.0	7.0	6.5	5.5	6.0
13	12.0	11.5	11.5	11.0	10.0	10.5	7.0	7.0	7.0	6.5	6.0	6.5
14	12.0	11.5	11.5	10.0	10.0	10.0	7.0	7.0	7.0	7.0	6.0	6.5
15	11.5	11.5	11.5	10.5	10.0	10.0	7.0	6.5	7.0	6.5	6.0	6.5
16	12.0	11.5	11.5	10.0	9.5	9.5	7.0	6.5	7.0	6.0	5.5	6.0
17	12.0	11.5	12.0	10.0	9.5	10.0	7.0	7.0	7.0	6.0	5.5	6.0
18	11.5	11.5	11.5	9.5	9.5	9.5	7.5	6.0	6.5	6.0	5.5	6.0
19	11.5	11.5	11.5	9.5	9.0	9.5	6.0	4.5	5.5	6.0	5.5	6.0
20	11.5	11.0	11.5	9.0	9.0	9.0	4.5	4.0	4.0	5.5	5.0	5.5
21	12.0	11.0	11.5	9.5	9.0	9.0	4.0	3.5	4.0	5.0	5.0	5.0
22	11.5	10.5	11.0	9.5	9.0	9.5	4.0	3.5	4.0	5.0	4.5	5.0
23	11.0	10.5	11.0	10.0	9.0	9.5	4.0	3.5	3.5	5.0	4.5	5.0
24	11.5	11.0	11.0	10.5	9.5	10.0	3.5	3.5	3.5	5.0	5.0	5.0
25	11.5	10.5	11.0	10.0	8.5	9.5	4.0	3.5	3.5	4.5	4.5	4.5
26	11.5	10.5	11.0	9.0	8.5	8.5	4.5	4.0	4.5	4.5	4.0	4.5
27	11.0	10.5	11.0	8.5	8.5	8.5	4.5	4.5	4.5	4.5	4.0	4.0
28	11.0	10.5	11.0	8.5	8.0	8.0	4.5	4.0	4.0	4.5	4.0	4.5
29	11.5	11.0	11.0	8.5	8.0	8.0	4.0	3.5	3.5	4.0	3.5	4.0
30	11.0	10.5	11.0	8.0	8.0	8.0	3.5	3.0	3.5	4.0	3.5	3.5
31	10.5	10.0	10.5	---	---	---	3.5	3.5	3.5	4.5	4.0	4.0
MONTH	12.0	10.0	11.5	11.0	8.0	9.5	8.5	3.0	6.0	7.0	3.0	4.5

WILLAMETTE RIVER BASIN

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14187200 SOUTH SANTIAM RIVER NEAR FOSTER, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	4.5	4.5	8.5	7.5	8.0	8.5	7.5	8.0	10.5	8.5	9.5
2	6.0	5.0	5.5	8.0	7.0	7.5	8.0	7.5	8.0	11.0	9.0	10.0
3	6.0	5.5	6.0	8.0	7.0	7.5	8.5	7.5	8.0	10.5	9.5	10.0
4	6.5	6.0	6.0	7.5	6.5	7.5	8.0	7.0	8.0	10.5	9.5	10.0
5	6.5	6.0	6.5	6.5	6.5	6.5	8.0	7.0	7.5	11.0	10.0	10.5
6	6.0	5.5	6.0	7.0	6.5	6.5	7.5	6.5	7.0	11.0	10.0	10.5
7	6.5	5.5	6.0	6.5	6.5	6.5	7.0	6.5	7.0	11.0	9.5	10.5
8	6.5	5.5	6.0	7.5	6.0	6.5	7.0	6.5	7.0	10.0	8.5	9.0
9	6.0	5.5	6.0	6.5	6.0	6.5	7.0	6.5	7.0	9.0	8.0	8.5
10	6.0	5.5	6.0	6.0	5.5	6.0	6.5	6.0	6.0	8.5	8.0	8.0
11	6.5	6.0	6.0	6.0	5.5	5.5	7.5	6.0	6.5	8.5	8.0	8.5
12	6.5	6.0	6.5	6.5	5.5	6.0	8.5	6.0	7.0	8.5	8.5	8.5
13	7.5	7.0	7.0	6.5	5.5	6.0	8.5	6.5	7.5	9.0	8.5	8.5
14	7.5	7.0	7.5	6.0	5.5	6.0	8.0	7.0	7.5	10.0	8.0	9.0
15	8.0	7.0	7.5	6.5	5.5	6.0	8.0	7.0	7.5	9.5	8.5	9.0
16	7.5	7.5	7.5	7.0	5.0	6.0	8.0	7.0	7.5	10.5	9.0	9.5
17	7.5	7.0	7.0	7.5	5.5	6.5	8.0	7.5	8.0	9.5	8.5	9.0
18	7.5	7.0	7.0	7.5	6.5	7.0	9.0	7.5	8.0	8.5	8.0	8.5
19	8.0	7.5	7.5	7.0	6.0	6.5	9.5	7.5	8.5	8.5	8.5	8.5
20	8.0	7.5	7.5	7.0	5.5	6.5	9.5	8.5	9.0	9.5	8.5	8.5
21	8.0	7.5	7.5	7.0	6.0	6.5	8.5	8.5	8.5	10.0	8.5	9.5
22	7.5	7.0	7.5	7.0	6.0	6.5	10.0	8.5	9.0	10.5	8.5	9.5
23	7.5	6.5	7.0	7.5	6.0	6.5	9.0	8.5	9.0	10.5	9.0	9.5
24	7.0	6.5	7.0	8.0	6.5	7.0	9.0	8.0	8.5	9.5	9.0	9.5
25	7.0	6.0	6.5	7.0	5.5	6.5	9.0	8.0	8.0	10.0	8.5	9.5
26	7.5	6.5	7.0	7.5	6.0	6.5	8.5	7.5	8.0	10.0	9.0	9.5
27	8.0	6.5	7.0	7.5	6.0	6.5	9.0	7.5	8.0	9.5	9.5	9.5
28	7.5	6.5	7.0	7.0	6.5	6.5	8.5	8.0	8.0	10.0	9.0	9.5
29	---	---	---	8.0	6.5	7.0	9.5	7.5	8.5	9.5	9.0	9.5
30	---	---	---	8.5	6.5	7.5	9.5	7.5	8.5	10.5	9.0	9.5
31	---	---	---	9.5	7.5	8.5	---	---	---	10.5	9.5	10.0
MONTH	8.0	4.5	6.5	9.5	5.0	6.5	10.0	6.0	8.0	11.0	8.0	9.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	10.5	10.0	10.5	---	---	---	---	---	---	13.0	12.0	13.0
2	10.5	9.5	10.5	---	---	---	---	---	---	13.0	12.0	12.5
3	10.5	9.5	10.0	---	---	---	---	---	---	13.5	12.5	13.0
4	10.5	9.5	10.0	---	---	---	---	---	---	13.0	12.5	13.0
5	10.0	9.5	10.0	---	---	---	---	---	---	13.0	12.5	12.5
6	11.0	9.5	10.0	---	---	---	---	---	---	13.0	12.0	12.5
7	10.5	9.5	10.0	---	---	---	---	---	---	12.5	12.0	12.5
8	11.5	10.0	10.5	---	---	---	---	---	---	12.5	12.0	12.0
9	11.5	10.0	11.0	---	---	---	13.5	12.5	13.0	12.5	12.0	12.0
10	12.0	10.5	11.0	---	---	---	14.0	12.5	13.0	12.5	12.0	12.0
11	12.0	10.5	11.0	---	---	---	14.0	12.0	13.0	12.5	12.0	12.0
12	11.0	10.5	10.5	---	---	---	14.0	12.0	13.0	12.5	12.0	12.0
13	11.0	10.0	10.5	---	---	---	13.5	12.0	13.0	12.0	11.5	12.0
14	11.5	10.0	11.0	---	---	---	13.5	12.0	12.5	12.0	11.5	12.0
15	11.0	10.5	10.5	---	---	---	13.5	12.0	13.0	12.0	11.5	11.5
16	11.0	10.0	10.5	---	---	---	13.5	12.0	12.5	12.0	11.0	11.5
17	12.0	10.5	11.0	---	---	---	14.0	12.0	13.0	12.0	11.5	11.5
18	11.5	10.5	11.0	---	---	---	13.5	12.0	13.0	12.0	11.5	11.5
19	11.5	10.5	11.0	---	---	---	13.5	12.0	13.0	12.0	11.0	11.5
20	11.0	10.5	11.0	---	---	---	13.5	12.0	13.0	12.0	11.5	11.5
21	11.0	10.5	11.0	---	---	---	13.5	12.0	13.0	12.0	11.0	11.5
22	12.0	10.5	11.0	---	---	---	13.5	12.0	12.5	12.0	11.0	11.5
23	12.0	11.0	11.5	---	---	---	13.5	12.0	13.0	12.0	11.0	11.5
24	12.0	11.0	11.5	---	---	---	13.5	12.5	13.0	12.5	10.5	11.5
25	11.5	11.0	11.0	---	---	---	13.5	12.0	13.0	11.5	11.0	11.5
26	11.5	11.0	11.5	---	---	---	13.5	12.0	13.0	11.5	11.0	11.0
27	---	---	---	---	---	---	13.0	12.0	12.5	11.5	11.0	11.0
28	---	---	---	---	---	---	13.0	12.5	13.0	11.5	11.0	11.0
29	---	---	---	---	---	---	13.5	12.5	13.0	11.5	11.0	11.0
30	---	---	---	---	---	---	13.5	12.5	13.0	11.5	11.0	11.0
31	---	---	---	---	---	---	13.0	12.5	12.5	---	---	---
MONTH	12.0	9.5	10.5	---	---	---	14.0	12.0	13.0	13.5	10.5	12.0

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.

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.

GAGE.--Water-stage recorder. Datum of gage is 370.39 ft above National Geodetic Vertical Datum of 1929. 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.

AVERAGE DISCHARGE.--69 years (water years 1906, 1924-91), 2,927 ft³/s, 2,121,000 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 11,700 ft³/s Nov. 25, gage height, 8.00 ft; minimum discharge, 497 ft³/s June 27.

ANNUAL TOTAL	1101745		991598						
ANNUAL MEAN	3018		2717			2927			
HIGHEST ANNUAL MEAN						4666			1974
LOWEST ANNUAL MEAN						1407			1977
HIGHEST DAILY MEAN	16500	Apr 28	10900	Jan 15	77000			Dec 22	1964
LOWEST DAILY MEAN	563	Sep 3	657	Aug 8	67			Oct 8	1966
ANNUAL SEVEN-DAY MINIMUM	576	Aug 5	663	Aug 2	75			Oct 7	1966
ANNUAL RUNOFF (AC-FT)	2185000		1967000		2121000				
10 PERCENT EXCEEDS	6360		6250		6740				
50 PERCENT EXCEEDS	2210		1780		1790				
90 PERCENT EXCEEDS	730		805		255				

WILLAMETTE RIVER BASIN

293

14189000 SANTIAM RIVER AT JEFFERSON, OR

LOCATION.--Lat 44°42'55", long 122°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.

GAGE.--Water-stage recorder. Datum of gage is 199.63 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 22, 1940, nonrecording gages at sites within 350 ft downstream at datum 3.00 ft higher.

REMARKS.--No estimated daily discharges. Records excellent. 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.

AVERAGE DISCHARGE.--61 years (water years 1908-16, 1940-91), 7,724 ft³/s, 5,596,000 acre-ft/yr.

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, 34,100 ft³/s Nov. 25, gage height, 12.33 ft; minimum discharge, 1,080 ft³/s Aug. 21, 22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4360	15400	17700	4480	3900	4040	5240	5900	6770	3190	1310	1390
2	4400	12600	17000	4360	6530	4860	5620	5520	5990	3010	1210	1380
3	4380	10900	15800	4050	8130	8060	5900	5000	5650	2820	1190	1490
4	4450	13000	15500	3640	6900	18600	9840	4790	5470	2690	1200	2070
5	4670	16000	15600	3520	9910	19000	12600	4730	4950	2600	1180	2130
6	4770	14200	12900	3440	9080	15300	11900	4660	4310	2450	1150	2130
7	4620	12800	12100	3640	6880	15000	12500	5120	3680	2290	1150	2190
8	4640	12300	11000	4600	5530	14500	11400	13000	3350	2230	1140	2310
9	4630	11900	10600	5080	4950	14500	13100	13600	3150	2170	1170	2360
10	4690	11100	18200	6860	4570	15000	13600	11800	3050	2140	1340	2470
11	4680	10000	21700	10300	4320	11300	12000	11300	2940	2040	1330	2590
12	4810	9590	17700	19600	4220	9680	10700	11200	2940	1940	1260	2650
13	4920	11400	14500	24700	9720	9000	9650	9460	3080	1870	1160	2670
14	4920	17200	13400	21600	12700	8000	9020	8820	3040	1850	1170	2690
15	4920	13000	11600	26800	9960	7360	8900	8050	2970	1830	1160	2660
16	5280	10600	10400	22500	9090	6240	8200	6970	2940	1840	1150	2800
17	5180	10100	9650	19200	8570	5380	7670	13300	2920	1920	1180	3200
18	5700	10900	10300	17200	8250	5150	6910	21300	2760	1870	1200	3290
19	6280	10200	11100	16000	9690	5070	6510	19500	2580	1730	1200	3300
20	5770	10300	9720	15000	11600	4820	5680	16600	3090	1700	1150	3310
21	6030	10500	9280	14200	12500	4730	5530	12900	5190	1670	1120	3460
22	9340	11800	9680	13200	9850	4980	5390	10800	4430	1600	1120	3650
23	7440	12800	9150	12800	7670	5250	5310	9760	4280	1520	1130	3680
24	6700	15400	8540	10700	6290	5940	5890	8550	4130	1540	1160	3590
25	6520	26900	5770	8830	5240	5780	6640	7720	3820	1530	1170	3560
26	7480	26100	5220	7480	4710	5620	6430	6890	3670	1580	1160	3570
27	7210	21700	5520	6100	4280	5550	6970	6860	2990	1460	1160	3680
28	7130	17500	6140	5720	4050	5220	7240	5610	3280	1460	1330	3700
29	7200	16300	5710	3780	---	4970	6620	5410	3530	1440	1430	3750
30	8510	18700	5430	3490	---	4770	6170	6520	3350	1380	1360	3640
31	15100	---	5010	3580	---	4870	---	7080	---	1360	1340	---
TOTAL	186730	421190	351920	326450	209090	258540	249130	288720	114300	60720	37480	85360
MEAN	6024	14040	11350	10530	7467	8340	8304	9314	3810	1959	1209	2845
MAX	15100	26900	21700	26800	12700	19000	13600	21300	6770	3190	1430	3750
MIN	4360	9590	5010	3440	3900	4040	5240	4660	2580	1360	1120	1380
AC-FT	370400	835400	698000	647500	414700	512800	494100	572700	226700	120400	74340	169300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1967 - 1991, BY WATER YEAR (WY)

MEAN	5036	11370	15640	14670	10730	8938	7347	6551	4502	1943	1711	3246
MAX	11890	23740	31700	24520	21250	25700	11930	11270	11150	4825	2883	5325
(WY)	1969	1985	1978	1974	1982	1972	1974	1984	1984	1983	1968	1968
MIN	2490	2882	2420	2178	1897	3474	3874	2115	1733	1197	1100	1553
(WY)	1988	1988	1977	1977	1977	1978	1968	1973	1973	1967	1967	1967

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1967 - 1991
ANNUAL TOTAL	2780417	2589630	7628
ANNUAL MEAN	7618	7095	11690
HIGHEST ANNUAL MEAN			3512
LOWEST ANNUAL MEAN			78800
HIGHEST DAILY MEAN	41100	26900	Jan 21 1972
LOWEST DAILY MEAN	959	1120	Aug 12 1990
ANNUAL SEVEN-DAY MINIMUM	977	1140	Aug 9 1990
ANNUAL RUNOFF (AC-FT)	5515000	5137000	5526000
10 PERCENT EXCEEDS	15400	14700	16900
50 PERCENT EXCEEDS	6570	5520	5020
90 PERCENT EXCEEDS	1390	1450	1590

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 National Geodetic Vertical Datum of 1929. 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 good except for estimated daily discharges, which are fair. 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.--57 years, 678 ft³/s, 50.30 in/yr, 644,100 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)
Apr. 6	0630	*5,080	*24.76				
Minimum discharge, 20 ft ³ /s Sept. 28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	34	484	1400	549	625	727	503	462	331	155	50	63
2	34	352	1810	521	731	919	484	433	311	140	50	65
3	40	284	1580	490	1440	1840	494	412	293	129	50	52
4	41	311	1480	463	1740	2740	1040	389	280	120	51	47
5	51	398	1710	434	2440	2980	3200	372	268	121	50	54
6	53	351	1370	412	2040	2340	4770	386	263	111	47	48
7	49	306	1150	525	1570	1980	3670	379	267	111	46	38
8	43	336	989	1000	1570	1630	2850	667	256	109	48	37
9	41	320	904	937	1090	1410	3110	707	245	100	49	38
10	41	342	1370	1510	955	1370	3180	616	229	97	48	35
11	39	347	1330	2550	863	1210	2540	553	215	93	49	35
12	38	311	1130	3290	989	2060	1970	508	207	90	50	35
13	41	394	1010	4260	1710	2130	1620	474	204	88	41	34
14	51	957	938	3330	1850	1710	1390	444	201	88	42	32
15	64	788	836	3510	1500	1450	1250	408	195	92	41	34
16	168	599	747	3500	1260	1250	1090	385	199	93	40	34
17	109	494	685	2550	1130	1100	967	558	218	94	41	32
18	103	488	802	1910	1010	988	872	906	188	87	39	28
19	176	424	958	1530	979	927	795	841	175	83	40	26
20	124	433	823	1280	1460	877	730	703	182	78	37	24
21	108	559	e760	1100	2410	796	673	610	220	74	36	23
22	372	974	e690	967	1910	742	625	549	212	76	32	27
23	245	1300	e640	867	1490	758	586	496	195	64	32	30
24	168	1250	e600	784	1250	796	608	454	181	60	34	26
25	136	2680	e570	715	1080	758	671	432	171	71	38	24
26	195	3260	e550	654	957	727	604	411	167	71	37	22
27	216	2160	539	601	860	663	579	384	164	69	33	22
28	191	1500	740	565	785	616	544	364	166	67	45	21
29	224	1210	660	529	---	581	519	352	179	68	79	26
30	286	1450	569	494	---	551	488	413	164	57	99	31
31	548	---	546	509	---	527	---	366	---	53	71	---
TOTAL	4029	25082	29886	42336	37394	39153	42422	15434	6546	2809	1445	1039
MEAN	130	836	964	1366	1335	1263	1414	498	218	90.6	46.6	34.6
MAX	548	3260	1810	4260	2440	2980	4770	906	331	155	99	65
MIN	34	284	539	412	625	527	484	352	164	53	32	21
AC-FT	7990	49750	59280	83970	74170	77660	84140	30610	12980	5570	2870	2060
CFSM	.54	3.48	4.02	5.69	5.56	5.26	5.89	2.07	.91	.38	.19	.14
IN.	.62	3.89	4.63	6.56	5.80	6.07	6.58	2.39	1.01	.44	.22	.18

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1991, BY WATER YEAR (WY)

MEAN	181	1087	2053	2266	2050	1447	848	418	199	79.7	43.2	54.1
MAX	1241	4574	5112	4727	4769	3002	1847	1026	512	184	85.0	190
(WY)	1948	1910	1965	1956	1949	1961	1955	1963	1984	1906	1906	1959
MIN	20.2	56.9	106	151	253	391	312	190	79.0	30.0	9.45	17.0
(WY)	1953	1953	1977	1977	1977	1941	1977	1966	1966	1967	1967	1967

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1905 - 1991
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ANNUAL TOTAL	284277		247575			
ANNUAL MEAN	779		678		889	
HIGHEST ANNUAL MEAN					1464	1974
LOWEST ANNUAL MEAN					230	1977
HIGHEST DAILY MEAN	8290	Jan 8	4770	Apr 6	25200	Dec 23 1964
LOWEST DAILY MEAN	28	Aug 14	21	Sep 28	2.6	Aug 20 1967
ANNUAL SEVEN-DAY MINIMUM	30	Aug 10	24	Sep 23	4.3	Aug 17 1967
ANNUAL RUNOFF (AC-FT)	563900		491100		643900	
ANNUAL RUNOFF (CFSM)	3.25		2.83		3.70	
ANNUAL RUNOFF (INCHES)	44.06		38.37		50.32	
10 PERCENT EXCEEDS	1960		1660		2350	
50 PERCENT EXCEEDS	311		434		343	
90 PERCENT EXCEEDS	39		39		37	

WILLAMETTE RIVER BASIN

295

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 National Geodetic Vertical Datum of 1929.

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.--Records excellent. 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.--75 years, 23,400 ft³/s, 43.65 in/yr, 16,950,000 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, 69,600 ft³/s Jan. 16, gage height, 18.17 ft; minimum discharge, 5,880 ft³/s July 24, gage height, 4.72 ft.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	10600	33800	46700	13400	12100	12600	13900	16300	18800	9030	6060	7060
2	10700	31200	47300	12900	14100	13900	14100	15300	18600	8720	6060	7070
3	10700	27300	45200	12500	22600	23500	14400	14400	17400	8250	6070	7030
4	10800	24700	40600	11500	24000	44500	17400	13400	16300	7950	6090	7200
5	10900	31100	38400	10900	26800	60900	26200	13000	15000	7680	6120	e7700
6	11200	32900	34900	10600	30800	60300	33000	12500	14100	7390	6120	e7950
7	11300	32500	31000	10600	26700	52800	35200	12500	12800	7100	6120	e8050
8	11300	31300	28700	12300	21900	45700	35300	14000	11900	6950	6120	e8150
9	11200	30900	26200	14700	19100	40200	34900	27900	11600	6740	6200	e8250
10	11200	30700	33800	16500	17000	38800	39100	32000	11200	6650	6330	e8450
11	11100	29400	47600	23200	15600	34900	38300	30200	10800	6530	6540	8910
12	11100	28200	51900	34700	14900	29900	35400	29300	10600	6360	6520	9180
13	11400	27700	44200	58100	18800	30900	30200	26600	10500	6350	6400	9250
14	11600	36100	38200	64500	30700	30100	25600	25200	10500	6350	6330	9230
15	11500	38000	33600	67700	29300	28500	23800	23900	10100	6390	6340	9250
16	11900	32100	29200	69000	26400	26400	22400	22600	10000	6400	6380	9240
17	12200	27000	27300	65600	23900	22600	21400	25600	9920	6400	6460	9520
18	12500	25900	25000	58200	22800	20400	19600	48400	9610	6420	6610	9960
19	13700	25100	27900	50900	23800	19200	18100	63700	8710	6390	6710	10100
20	13500	23900	29000	44700	27300	18900	16600	64900	8520	6240	6670	10100
21	13200	24000	26100	40500	31700	18000	15600	55800	10500	6150	6580	10000
22	16000	26600	24700	37000	27900	17900	15200	44700	11600	6100	6510	10300
23	17100	30700	24700	33600	22700	18000	14700	36900	11200	5960	6480	10500
24	16100	33100	23300	28900	19100	20000	14600	32100	10400	5890	6490	10100
25	15700	43400	19300	24000	17000	22300	15800	27600	9830	5930	6620	9820
26	16100	58100	15100	21600	15300	20800	16900	24000	9310	5980	6730	9890
27	16900	59600	14800	18000	14000	19600	17700	22400	8800	6040	6710	10300
28	16600	52500	15800	16400	13100	17600	18900	20100	8490	6050	6920	10500
29	16800	45800	16600	14500	---	15900	18200	17900	8780	6100	7100	10600
30	17600	46400	15500	12100	---	14800	17200	17000	8920	6100	7120	10700
31	24600	---	14300	11600	---	14000	---	17100	---	6060	7070	---
TOTAL	417100	1020000	936900	920700	609400	853900	679700	847300	344790	206650	200580	274360
MEAN	13450	34000	30220	29700	21760	27550	22660	27330	11490	6666	6470	9145
MAX	24600	59600	51900	69000	31700	60900	39100	64900	18800	9030	7120	10700
MIN	10600	23900	14300	10600	12100	12600	13900	12500	8490	5890	6060	7030
AC-FT	827300	2023000	1858000	1826000	1209000	1694000	1348000	1681000	683900	409900	397900	544200
CFSM	1.85	4.67	4.15	4.08	2.99	3.78	3.11	3.75	1.58	.92	.89	1.26
IN.	2.13	5.21	4.79	4.70	3.11	4.36	3.47	4.33	1.76	1.06	1.02	1.40

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1991, 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
MEAN	14230	30690	48260	46540	35160	29750	22920	18550	13670	7582	7340	10420											
MAX	24390	70400	91780	78420	62870	73670	38740	29810	30910	12410	9540	13340											
(WY)	1969	1974	1978	1974	1986	1972	1974	1984	1984	1983	1971	1978											
MIN	7935	8444	6780	6377	5313	11550	10260	7701	6379	6017	6178	7629											
(WY)	1988	1988	1977	1977	1977	1978	1977	1973	1987	1978	1987	1987											

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1969 - 1991
ANNUAL TOTAL	7619320	7311380	23720
ANNUAL MEAN	20870	20030	37960
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	80500	69000	199000
LOWEST DAILY MEAN	6100	5890	4140
ANNUAL SEVEN-DAY MINIMUM	6150	5990	4340
ANNUAL RUNOFF (AC-FT)	15110000	14500000	17180000
ANNUAL RUNOFF (CFSM)	2.87	2.75	3.26
ANNUAL RUNOFF (INCHES)	38.93	37.36	44.27
10 PERCENT EXCEEDS	44400	38300	55500
50 PERCENT EXCEEDS	15800	15800	15200
90 PERCENT EXCEEDS	6490	6490	6820

WILLAMETTE RIVER BASIN

14192500 SOUTH YAMHILL RIVER NEAR WILLAMINA, OR

LOCATION.--Lat 45°02'50", long 123°30'10", in NE 1/4 SE 1/4 sec.14, T.6 S., R.7 W., Polk County, Hydrologic Unit 17090008, on left bank 2.3 mi southwest of Willamina, 2.8 mi upstream from Willamina Creek, and at mile 45.5.

DRAINAGE AREA.--133 mi².

PERIOD OF RECORD.--May 1934 to current year.

REVISED RECORDS.--WSP 814: Drainage area. WSP 1318: 1934.

GAGE.--Water-stage recorder. Datum of gage is 235.55 ft above National Geodetic Vertical Datum of 1929.

REMARKS.-Records good except for estimated daily discharges, which are fair. Slight regulation occasionally at low flows by millpond upstream. No diversion upstream from station. U.S. Geological Survey satellite telemeter at station.

AVERAGE DISCHARGE.--57 years, 610 ft³/s, 62.28 in/yr, 441,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 19,600 ft³/s Dec. 22, 1964, gage height, 17.07 ft; minimum discharge, 2.6 ft³/s Oct. 11, 1952.

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)
Apr. 5	0900	*9,410	*11.04	No other peak greater than base discharge.			
Minimum discharge, 8.9 ft ³ /s Aug. 12, Sept. 21-24, 28, 29.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	16	266	1420	423	314	417	267	278	191	91	27	38
2	16	206	1460	384	1250	959	263	259	178	82	26	30
3	18	182	1190	354	1390	1990	396	242	167	76	26	24
4	37	303	1690	328	1670	2120	3120	230	161	70	26	21
5	52	277	1480	305	2080	1540	7660	221	153	67	26	19
6	46	245	1140	293	1430	1340	3510	219	150	64	25	17
7	31	247	920	687	1080	1120	2380	288	148	62	25	15
8	26	262	760	865	862	961	1780	548	142	60	25	14
9	24	261	666	784	716	875	2680	434	136	58	25	15
10	22	276	711	1480	612	815	2080	388	125	58	24	15
11	21	258	663	2130	583	847	1580	352	120	56	23	14
12	23	229	621	3180	871	2000	1220	327	118	51	20	14
13	40	661	581	2470	1430	1410	978	306	123	51	19	14
14	43	773	545	2240	1150	1140	827	281	121	51	18	14
15	91	625	500	3170	949	940	706	261	113	51	18	14
16	106	500	458	2210	814	795	603	244	128	51	16	13
17	75	451	442	1550	755	679	528	289	127	51	17	12
18	112	401	686	1160	676	597	469	339	109	51	17	12
19	106	361	670	902	790	537	421	322	101	47	16	11
20	76	485	562	733	1740	486	375	294	116	45	14	11
21	181	692	e440	615	1620	465	346	270	143	42	13	9.7
22	220	1220	e410	529	1210	459	319	248	132	40	12	8.9
23	131	1150	e400	465	962	447	296	232	115	37	12	9.2
24	102	1290	e390	412	793	441	386	219	104	37	13	9.1
25	89	2760	366	370	668	415	414	231	103	44	13	9.3
26	149	1690	354	332	574	391	368	224	101	41	13	9.3
27	109	1300	485	303	504	356	386	204	97	38	13	9.4
28	181	969	578	291	448	332	349	192	101	34	22	9.1
29	197	990	482	272	---	316	324	192	102	31	55	9.6
30	408	1070	439	250	---	296	301	252	95	28	61	9.7
31	370	---	408	298	---	281	---	213	---	27	35	---
TOTAL	3118	20430	21917	29785	27941	25767	35332	8599	3820	1592	695	430.3
MEAN	101	681	707	961	998	831	1178	277	127	51.4	22.4	14.3
MAX	408	2760	1690	3180	2080	2120	7660	548	191	91	61	38
MIN	16	182	354	250	314	281	263	192	95	27	12	8.9
AC=FT	6180	40520	43470	59080	55420	51110	70080	17060	7580	3160	1380	853
CFSM	.76	5.12	5.32	7.22	7.50	6.25	8.86	2.09	.96	.39	.17	.11
IN.	.87	5.71	6.13	8.33	7.82	7.21	9.88	2.41	1.07	.45	.19	.12

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1935 - 1991, BY WATER YEAR (WY)

MEAN	175	871	1426	1466	1321	996	579	278	133	50.2	24.9	39.9
MAX	846	2650	2917	3172	2869	1981	1364	613	405	163	82.3	282
(WY)	1948	1974	1965	1953	1949	1961	1937	1948	1981	1983	1968	1959
MIN	9.62	22.0	104	132	278	270	180	68.6	55.0	18.9	6.67	8.93
(WY)	1988	1937	1977	1977	1977	1941	1939	1939	1966	1967	1967	1989

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1935 - 1991
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ANNUAL TOTAL	192928		179426.3				
ANNUAL MEAN	529		492			610	
HIGHEST ANNUAL MEAN						1028	1974
LOWEST ANNUAL MEAN						215	1977
HIGHEST DAILY MEAN	6790	Jan 9	7660	Apr 5	16400		Dec 22 1964
LOWEST DAILY MEAN	12	Aug 11	8.9	Sep 22		4.4	Aug 19 1967
ANNUAL SEVEN-DAY MINIMUM	13	Aug 10	9.2	Sep 22		4.7	Aug 19 1967
ANNUAL RUNOFF (AC-FT)	382700		355900		442100		
ANNUAL RUNOFF (CFSM)	3.97		3.70			4.59	
ANNUAL RUNOFF (INCHES)	53.96		50.19			62.35	
10 PERCENT EXCEEDS	1270		1290		1640		
50 PERCENT EXCEEDS	236		276		250		
90 PERCENT EXCEEDS	18		17		20		

14193000 WILLAMINA CREEK NEAR WILLAMINA, OR

LOCATION.--Lat 45°08'35", long 123°29'35", in NE 1/4 NW 1/4 sec.13, T.5 S., R.7 W., Yamhill County, Hydrologic Unit 17090008, on right bank 4.5 mi north of Willamina and at mile 6.2.

DRAINAGE AREA.--64.7 mi².

PERIOD OF RECORD.--June 1934 to September 1991 (discontinued). See REMARKS.

REVISED RECORDS.--WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 315 ft above National Geodetic Vertical Datum of 1929 (plane-table survey). Prior to Oct. 1, 1939, water-stage recorder at site on left bank at datum 1.00 ft higher. Oct. 1, 1939, to Aug. 5, 1968, water-stage recorder at site on left bank at present datum.

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 October 1963 to September 1968 have been collected at this location. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--57 years, 256 ft³/s, 53.73 in/yr, 185,500 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,800 ft³/s Dec. 22, 1964, gage height, 13.54 ft, from rating curve extended above 3,400 ft³/s on basis of slope-area measurement at gage height 11.65 ft; minimum discharge, 5.4 ft³/s July 15, 1967.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Mar. 31, 1931, reached a stage of about 12 ft, from information by local resident, discharge, 8,200 ft³/s, from rating curve extended above 3,400 ft³/s on basis of slope-area measurement at gage height 11.65 ft.

EXTREMES FOR CURRENT YEAR.--Peak discharge 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)
Apr. 5	0500	*4,330	*9.13	No other peak greater than base discharge.			
Minimum discharge, 11 ft ³ /s Sept. 24-26.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	15	100	663	180	148	213	138	149	95	55	25	25
2	15	76	640	168	302	316	136	140	90	51	25	22
3	24	73	526	160	402	533	236	132	86	48	25	19
4	26	87	617	152	538	587	1670	127	83	46	24	17
5	25	81	567	144	673	496	3220	123	81	44	23	16
6	21	74	464	140	518	520	1490	122	82	43	24	15
7	18	95	387	247	415	458	1100	162	80	42	25	15
8	18	105	327	293	346	405	925	204	77	40	25	16
9	17	105	290	292	297	375	1210	174	74	40	23	16
10	17	107	301	517	263	351	978	158	70	41	23	15
11	16	100	286	862	258	369	770	148	67	39	22	14
12	20	90	268	1230	354	618	624	142	68	37	21	15
13	24	231	254	972	620	514	515	136	68	37	20	15
14	24	232	238	907	513	456	442	128	67	37	20	15
15	60	245	222	1330	435	402	385	121	65	39	19	14
16	45	194	205	939	379	358	339	116	73	41	19	14
17	34	176	212	700	337	321	299	149	67	39	19	13
18	51	157	278	542	310	296	269	153	61	37	18	13
19	42	148	269	430	328	275	244	146	60	36	18	12
20	33	176	234	357	597	254	225	136	79	34	17	12
21	84	257	e195	305	567	234	208	127	95	33	17	12
22	75	614	e180	267	472	225	192	120	80	32	16	12
23	48	530	e170	240	401	219	184	113	71	30	16	12
24	38	523	e165	218	346	214	220	109	66	32	17	11
25	38	888	e160	199	302	203	213	110	64	34	16	11
26	44	632	163	182	269	193	201	105	62	32	16	11
27	38	539	216	169	244	177	198	99	60	30	17	12
28	51	419	233	161	224	168	185	97	60	28	23	13
29	61	456	195	149	---	159	170	109	59	27	31	13
30	177	477	183	140	---	151	160	120	57	26	27	12
31	157	---	177	158	---	145	---	103	---	26	24	---
TOTAL	1356	8007	9285	12750	10858	10205	17146	4078	2167	1156	655	432
MEAN	43.7	267	300	411	388	329	572	132	72.2	37.3	21.1	14.4
MAX	177	888	663	1330	673	618	3220	204	95	55	31	25
MIN	15	73	160	140	148	145	136	97	57	26	16	11
AC-FT	2690	15880	18420	25290	21540	20240	34010	8090	4300	2290	1300	857
CFSM	.68	4.13	4.63	6.36	5.99	5.09	8.83	2.03	1.12	.58	.33	.22
IN.	.78	4.60	5.34	7.33	6.24	5.87	9.86	2.34	1.25	.66	.38	.25

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1934 - 1991, BY WATER YEAR (WY)

	MEAN	60.3	312	566	600	558	447	269	134	67.6	32.5	19.5	21.5
MAX	276	1084	1220	1216	1121	929	572	296	160	66.2	38.0	69.2	69.2
(WY)	1948	1974	1965	1953	1949	1956	1991	1948	1981	1968	1968	1959	1959
MIN	10.1	14.8	35.4	42.8	85.9	105	95.3	53.8	34.2	18.2	12.0	11.4	11.4
(WY)	1988	1937	1977	1977	1977	1941	1941	1939	1934	1934	1940	1939	1939

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1934 - 1991

ANNUAL TOTAL	88641	78095	256
ANNUAL MEAN	243	214	461
HIGHEST ANNUAL MEAN			83.4
LOWEST ANNUAL MEAN			1974
HIGHEST DAILY MEAN	2920	3220	7980
LOWEST DAILY MEAN	15	11	8.3
ANNUAL SEVEN-DAY MINIMUM	16	12	8.9
ANNUAL RUNOFF (AC-FT)	175800	154900	185500
ANNUAL RUNOFF (CFSM)	3.75	3.31	3.96
ANNUAL RUNOFF (INCHES)	50.97	44.90	53.76
10 PERCENT EXCEEDS	617	521	646
50 PERCENT EXCEEDS	102	136	112
90 PERCENT EXCEEDS	19	17	16

WILLAMETTE RIVER BASIN

14194000 SOUTH YAMHILL RIVER NEAR WHITESON, OR

LOCATION.--Lat 45°10'08", long 123°12'25", in NE 1/4 NW 1/4 sec.5, T.5 S., R.4 W., Yamhill County, Hydrologic Unit 17090008, near left bank on downstream side of Whiteson Bridge on State Highway 99W, 1.3 mi northwest of Whiteson, 1.4 mi downstream from Salt Creek, and at mile 16.71.

DRAINAGE AREA.--502 mi².

PERIOD OF RECORD.--July 1940 to September 1991 (discontinued). See REMARKS.

GAGE.--Water-stage recorder. Datum of gage is 82.30 ft above National Geodetic Vertical Datum of 1929. Prior to Sept. 20, 1940, nonrecording gage at present site and datum.

REMARKS.--Records fair except for estimated daily discharges, which are poor. Slight regulation during low-water periods by logpond upstream. Many small diversions for irrigation upstream from station. U.S. Geological Survey satellite telemeter at station. Continuous water-quality records for the period November 1963 to September 1968 have been collected at this location. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--51 years, 1,716 ft³/s, 46.42 in/yr, 1,243,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 47,200 ft³/s Dec. 23, 1964, gage height, 47.20 ft; minimum discharge, 2.7 ft³/s Sept. 14, 1989.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1937 reached a stage of 46.9 ft, from Oregon State Highway Department bridge plans.

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)
Apr. 6	0700	*20,700	*41.18	No other peak greater than base discharge.			
Minimum daily discharge recorded, 13 ft ³ /s Sept. 23, 28, but may have been less during periods of no record, Aug. 13-27, Sept. 9-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e38	638	2600	1040	942	1120	786	877	e700	178	e42	63
2	e38	445	3830	1010	1480	1410	745	815	e600	e160	e42	62
3	e38	359	3300	945	3330	3450	746	772	e500	e150	e40	55
4	40	398	2920	891	3750	5810	2440	748	e400	e140	e40	58
5	68	504	3900	837	5220	5960	8950	722	e350	e130	e40	35
6	85	469	3120	804	4890	4820	19000	716	e350	e125	e40	28
7	86	410	2420	975	3500	3990	14300	737	344	e120	e38	27
8	49	492	1960	2030	2570	3130	9450	1100	342	e115	37	25
9	e44	493	1650	2080	2060	2600	7050	1150	e325	e110	36	e24
10	e42	502	1710	2570	1740	2420	6810	1040	e300	e110	34	e30
11	e40	547	1790	3710	1530	2130	5480	965	e275	e105	32	e28
12	e38	493	1810	5530	1840	3820	4030	e900	e260	e100	32	e23
13	e42	551	1610	6740	3320	4600	3130	e850	e250	e90	e32	e23
14	e70	1610	1510	5840	3550	3800	2570	e800	e275	e85	e30	e23
15	83	1300	1390	6060	2860	3000	2230	e775	e270	e85	e28	e23
16	163	1060	1260	6490	2330	2410	1900	766	e250	e80	e28	e23
17	197	883	1170	4950	2060	2040	1640	796	325	e80	e24	e20
18	199	853	1290	3460	1820	1770	1450	1060	301	e75	e26	e18
19	280	742	1670	2620	1760	1600	1320	1230	274	e75	e26	e18
20	391	795	1460	2100	2500	1470	1190	1090	295	e70	e23	e15
21	370	1040	1250	1750	4080	1350	1090	960	407	e65	e20	e15
22	548	1840	e1140	1510	3310	1280	998	865	413	e60	e18	e14
23	566	2660	e1050	1340	2590	1240	936	e750	351	e60	e16	e13
24	359	2340	e1010	1220	2120	1250	979	e700	324	e55	e16	e14
25	328	3690	e980	1120	1780	1230	1200	e650	224	e55	e20	e14
26	380	4510	953	1040	1540	1230	1150	e700	e210	e80	e21	e14
27	504	3140	941	965	1350	1110	1110	e725	e200	e75	e22	e14
28	516	2390	1450	917	1210	1010	1050	e575	e180	e65	23	e13
29	485	1880	1290	897	---	942	984	e550	e200	e55	34	e14
30	403	2470	1080	873	---	895	931	e550	e225	e50	72	e15
31	806	---	1070	861	---	854	---	e800	---	e45	83	---
TOTAL	7296	39504	54584	73175	71032	73741	105645	25734	9720	2848	1015	761
MEAN	235	1317	1761	2360	2537	2379	3521	830	324	91.9	32.7	25.4
MAX	806	4510	3900	6740	5220	5960	19000	1230	700	178	83	63
MIN	38	359	941	804	942	854	745	550	180	45	16	13
AC-FT	14470	78360	108300	145100	140900	146300	209500	51040	19280	5650	2010	1510
CFSM	.47	2.62	3.51	4.70	5.05	4.74	7.01	1.65	.65	.18	.07	.05
IN.	.54	2.93	4.04	5.42	5.26	5.46	7.83	1.91	.72	.21	.08	.06

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1991, BY WATER YEAR (WY)

	MEAN	350	2064	4075	4429	3975	2905	1653	715	306	106	48.7	79.1
MAX	1819	8085	8493	8884	8890	6238	3623	1736	910	309	153	450	
(WY)	1948	1974	1956	1971	1949	1961	1982	1948	1981	1983	1968	1959	
MIN	17.8	105	188	242	423	699	545	269	121	37.7	9.70	18.2	
(WY)	1988	1953	1977	1977	1977	1941	1942	1966	1966	1967	1967	1967	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1940 - 1991

ANNUAL TOTAL	520796	465055	1716
ANNUAL MEAN	1427	1274	3119
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			461
HIGHEST DAILY MEAN	16900	19000	44100
LOWEST DAILY MEAN	20	13	3.5
ANNUAL SEVEN-DAY MINIMUM	22	14	4.9
ANNUAL RUNOFF (AC-FT)	1033000	922400	1243000
ANNUAL RUNOFF (CFSM)	2.84	2.54	3.42
ANNUAL RUNOFF (INCHES)	38.59	34.46	46.45
10 PERCENT EXCEEDS	3700	3310	4750
50 PERCENT EXCEEDS	493	775	597
90 PERCENT EXCEEDS	45	28	40

WILLAMETTE RIVER BASIN

299

14194300 NORTH YAMHILL RIVER NEAR FAIRDALE, OR

LOCATION.--Lat 45°21'55", long 123°22'40", in SW 1/4 sec.25, T.2 S., R.6 W., Yamhill County, Hydrologic Unit 17090008, on right bank 0.4 mi downstream from small tributary, 1.3 mi upstream from Kutch Creek, 2.1 mi west of Fairdale, 9.5 mi west of Yamhill and at mile 28.4.

DRAINAGE AREA.--9.03 mi².

PERIOD OF RECORD.--October 1958 to March 1966, October 1967 to September 1991 (discontinued). See REMARKS.

GAGE.--Water-stage recorder. Elevation of gage is 560 ft, from topographic map.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation or diversion upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--31 years (water years 1959-65, 1968-91), 45.6 ft³/s, 68.58 in/yr, 33,040 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,330 ft³/s Dec. 22, 1964, gage height, 6.88 ft, from rating curve extended above 1,000 ft³/s; maximum gage height, 9.7 ft Dec. 23, 1964 (backwater from debris); minimum discharge, 1.9 ft³/s Oct. 1, 2, 1987, Sept. 23, 24, 1989.

EXTREMES FOR CURRENT YEAR.--Peak discharge 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)
Apr. 5	0430	*680	*5.07	No other peak greater than base discharge.			
Minimum discharge, 2.7 ft ³ /s Oct. 1, Sept. 26, 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.9	20	128	39	32	40	32	31	19	12	6.1	5.5
2	3.0	16	115	37	58	61	32	29	19	12	6.1	4.9
3	5.7	16	97	36	66	100	47	27	18	11	5.9	4.4
4	4.9	16	122	35	95	110	285	26	17	11	5.8	4.1
5	5.4	16	120	34	113	91	506	25	17	10	5.9	4.0
6	3.9	15	100	33	91	80	249	25	17	10	6.1	3.9
7	3.5	19	81	58	70	68	175	34	16	9.7	6.1	4.1
8	3.5	19	67	70	60	61	147	40	16	9.4	5.9	4.2
9	3.3	22	62	69	53	58	159	37	15	9.2	5.7	4.1
10	3.2	31	60	95	48	55	142	34	15	9.1	5.7	3.9
11	3.1	30	57	147	48	53	119	32	14	8.8	5.5	3.7
12	4.4	25	54	232	60	61	100	30	14	8.5	5.3	3.8
13	5.8	49	52	182	81	60	e84	29	15	8.5	5.2	3.9
14	7.1	50	48	152	70	57	e76	27	14	8.4	5.1	3.8
15	14	48	46	203	62	54	e68	26	14	9.1	4.9	3.7
16	8.9	40	43	149	57	50	e61	24	17	8.9	5.0	3.5
17	6.8	36	46	116	53	48	e55	29	14	8.7	4.9	3.4
18	9.2	31	56	94	50	46	e51	28	13	8.4	4.8	3.3
19	7.2	29	54	76	57	45	47	26	13	8.1	4.6	3.1
20	6.0	32	49	64	114	43	44	26	17	7.8	4.4	3.2
21	21	45	e45	58	102	45	40	24	19	7.6	4.3	3.3
22	13	85	e42	54	80	44	38	23	17	7.4	4.2	3.2
23	8.8	83	e40	49	65	44	36	22	16	7.0	4.3	3.1
24	7.2	145	e37	45	58	44	41	22	16	7.4	4.3	3.1
25	8.5	197	e35	42	52	43	39	22	15	7.5	4.2	3.0
26	8.7	122	e33	38	48	41	38	21	14	7.1	4.2	3.0
27	8.0	100	47	36	44	39	39	20	14	6.9	4.8	3.1
28	15	75	e46	34	41	37	37	19	14	6.6	5.8	3.2
29	17	80	e41	32	---	35	34	22	13	6.4	7.1	3.1
30	31	81	e37	30	---	33	33	23	13	6.3	5.5	2.9
31	29	---	e38	33	---	33	---	20	---	6.1	5.8	---
TOTAL	279.0	1573	1898	2372	1828	1679	2854	823	465	264.9	163.5	109.5
MEAN	9.00	52.4	61.2	76.5	65.3	54.2	95.1	26.5	15.5	8.55	5.27	3.65
MAX	31	197	128	232	114	110	506	40	19	12	7.1	5.5
MIN	2.9	15	33	30	32	33	32	19	13	6.1	4.2	2.9
AC-FT	553	3120	3760	4700	3630	3330	5660	1630	922	525	324	217
CFSM	1.00	5.81	6.78	8.47	7.23	6.00	10.5	2.94	1.72	.95	.58	.40
IN.	1.15	6.48	7.82	9.77	7.53	6.92	11.76	3.39	1.92	1.09	.67	.45

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1991, BY WATER YEAR (WY)

	1959	1960	1961	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
MEAN	11.5	58.8	94.8	103	89.4	78.2	52.2	28.2	15.5	7.58	4.83	5.32																					
MAX	31.6	177	202	228	179	151	95.1	50.5	35.1	13.1	7.58	16.3																					
(WY)	1960	1974	1965	1972	1961	1961	1991	1984	1981	1983	1983	1959																					
MIN	2.34	5.67	7.76	10.4	20.1	35.7	24.5	13.7	7.83	5.25	3.45	2.53																					
(WY)	1988	1977	1977	1977	1977	1981	1965	1989	1989	1989	1970	1989																					

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1959 - 1991

ANNUAL TOTAL	16040.1	14308.9	
ANNUAL MEAN	43.9	39.2	
HIGHEST ANNUAL MEAN			45.6
LOWEST ANNUAL MEAN			80.7
HIGHEST DAILY MEAN	368	506	17.1
LOWEST DAILY MEAN	2.8	2.9	1500
ANNUAL SEVEN-DAY MINIMUM	3.1	3.1	2.1
ANNUAL RUNOFF (AC-FT)	31820	28380	2.1
ANNUAL RUNOFF (CFSM)	4.87	4.34	2.1
ANNUAL RUNOFF (INCHES)	66.08	58.95	5.05
10 PERCENT EXCEEDS	107	87	68.62
50 PERCENT EXCEEDS	25	29	113
90 PERCENT EXCEEDS	3.9	4.2	25
			4.1

WILLAMETTE RIVER BASIN

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 National Geodetic Vertical Datum of 1929 (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 815.5 ft elevation. Capacity of reservoir is 733 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.--Elevations and capacity table furnished by city of McMinnville, Water and Light Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 748 acre-ft Nov. 17, 1954, elevation, 815.65 ft, present datum; no contents at times during winter months.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 733 acre-ft many days during the year, elevation, 815.0 ft, present datum; no contents Apr. 30, May 1.

MONTHEND ELEVATIONS AND CONTENTS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30.....	801.9	470	-
Oct. 31.....	814.4	719	+249
Nov. 30.....	815.0	733	+14
Dec. 31.....	815.0	733	0
CAL YR 1990.....	-	-	0
Jan. 31.....	815.0	733	0
Feb. 28.....	810.0	624	-109
Mar. 31.....	790.9	307	-317
Apr. 30.....	750.0	0	-307
May 31.....	812.2	670	+670
June 30.....	815.0	733	+63
July 31.....	802.6	482	-251
Aug. 31.....	799.6	433	-49
Sept.30.....	806.6	555	+122
WTR YR 1991.....	-	-	+85

WILLAMETTE RIVER BASIN

301

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 National Geodetic Vertical Datum of 1929, 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.--40 years, 31.2 ft³/s, 61.41 in/yr, 22,600 acre-ft/yr, adjusted for storage and diversion.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,030 ft³/s Dec. 23, 1964, gage height, 5.98 ft, from floodmark, from rating curve extended above 400 ft³/s on basis of slope-area measurement of peak flow; maximum daily discharge, 515 ft³/s Jan. 21, 1972; minimum daily, 0.10 ft³/s Oct. 27, 28, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 227 ft³/s Apr. 5; minimum daily, 5.1 ft³/s Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.2	7.9	67	21	25	46	34	16	6.8	7.5	16	9.3
2	5.1	12	60	21	47	46	33	6.6	6.9	11	16	7.9
3	6.4	12	55	20	50	49	33	6.4	6.9	13	15	9.5
4	6.9	14	72	19	76	40	41	6.2	7.2	14	15	11
5	7.4	13	65	19	76	55	227	6.1	7.9	11	15	14
6	6.0	12	50	19	63	62	162	6.0	8.8	12	13	13
7	5.8	15	47	28	49	54	119	5.4	8.8	11	12	14
8	6.0	15	37	34	45	48	109	5.3	11	11	13	11
9	6.2	17	37	33	39	46	109	5.3	10	13	14	9.4
10	6.8	19	36	46	37	43	97	5.3	10	13	13	11
11	6.8	17	33	78	39	42	83	5.3	10	12	12	12
12	6.8	15	30	126	49	49	69	7.5	10	13	12	12
13	6.3	29	28	96	57	46	67	8.1	10	15	14	10
14	6.1	27	26	87	49	47	69	7.1	10	12	15	11
15	6.1	24	25	111	43	49	65	7.0	9.9	10	15	11
16	5.9	19	24	90	44	51	58	7.2	12	10	14	11
17	6.3	18	24	70	38	52	57	7.3	11	10	14	12
18	6.3	16	28	54	37	52	56	7.4	8.9	11	13	12
19	6.4	15	26	46	42	48	55	7.4	10	14	12	12
20	6.2	19	25	46	71	45	54	7.1	12	14	14	12
21	6.8	32	24	37	65	45	54	6.2	15	13	16	12
22	6.3	43	23	36	52	45	51	5.9	12	13	16	10
23	5.6	43	21	33	49	45	50	5.8	11	16	15	9.7
24	5.7	61	21	31	44	44	48	6.2	10	18	13	10
25	5.6	90	20	30	45	43	46	6.2	10	11	11	12
26	5.7	59	20	28	52	43	43	6.3	9.4	11	11	13
27	6.0	45	25	26	54	44	41	6.4	8.8	13	12	13
28	5.9	40	24	25	48	45	38	6.4	9.0	12	10	11
29	5.8	42	21	24	---	41	42	6.9	8.8	13	10	8.9
30	6.0	47	20	22	---	38	22	7.4	8.6	15	10	10
31	5.7	---	21	25	---	35	---	7.0	---	16	11	---
TOTAL	192.1	837.9	1035	1381	1385	1438	2032	210.7	290.7	388.5	412	334.7
MEAN	6.20	27.9	33.4	44.5	49.5	46.4	67.7	6.80	9.69	12.5	13.3	11.2
MAX	7.4	90	72	126	76	62	227	16	15	18	16	14
MIN	5.1	7.9	20	19	25	35	22	5.3	6.8	7.5	10	7.9
AC-FT	381	1660	2050	2740	2750	2850	4030	418	577	771	817	664
MEAN†	6.02	28.1	33.3	44.6	47.5	41.1	62.5	17.7	10.8	6.60	5.29	3.66
CFSM†	0.87	4.07	4.83	6.46	6.88	5.96	9.06	2.57	1.57	0.96	0.77	0.53
IN.†	1.01	4.54	5.57	7.45	7.18	6.88	10.11	2.96	1.74	1.10	0.88	0.59
AC-FT†	370	1670	2050	2740	2640	2530	3720	1090	640	406	325	218

CAL YR 1990 TOTAL 10377.9 MEAN 28.4 MAX 245 MIN 4.9 AC-FT 20580 MEAN† 26.9 CFSM† 3.90 IN.† 52.87 AC-FT† 19450
WTR YR 1991 TOTAL 9937.6 MEAN 27.2 MAX 227 MIN 5.1 AC-FT 19710 MEAN† 25.4 CFSM† 3.68 IN.† 50.07 AC-FT† 18420

† Adjusted for change in contents in Haskins Creek Reservoir and diversion from McGuire Lake.

WILLAMETTE RIVER BASIN

14198500 MOLALLA RIVER ABOVE PINE CREEK, NEAR WILHOIT, OR

LOCATION.--Lat 45°00'35", long 122°28'45", in NE 1/4 NE 1/4 sec.31, T.6 S., R.3 E., Clackamas County, Hydrologic Unit 17090009, on right bank 0.5 mi upstream from Pine Creek, 5 mi southeast of Wilhoit, and at mile 32.5.

DRAINAGE AREA.--97.0 mi², at cableway 0.2 mi downstream.

PERIOD OF RECORD.--October 1935 to current year.

REVISED RECORDS.--WSP 1738: Drainage area. WDR OR-75-1: 1967 (M).

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 791.35 ft above National Geodetic Vertical Datum of 1929 (Bureau of Public Roads bench mark). Oct. 1, 1935, to Sept. 30, 1945, and Oct. 1, 1945, to Feb. 9, 1961, water-stage recorder at site 0.3 mi downstream at datums 8.42 ft and 10.44 ft lower, respectively. Feb. 10, 1961, to July 21, 1966, water-stage recorder at site 0.2 mi downstream at datum 5.99 ft lower.

REMARKS.--Records good except for the periods Dec. 21-30, April 24 to July 3, which are fair. No regulation or diversion upstream from station. Continuous water-quality records for the period January 1964 to September 1969 have been collected at this location.

AVERAGE DISCHARGE.--56 years, 534 ft³/s, 74.76 in/yr, 386,900 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 24,300 ft³/s Dec. 22, 1964, gage height, 16.3 ft, from floodmark, site and datum then in use, from rating curve extended above 5,200 ft³/s; minimum discharge, 17 ft³/s Oct. 10-14, 21, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 3,600 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Nov. 25	0600	*4,490	*7.88	Jan. 12	1400	4,340	7.77
Minimum discharge, 23 ft ³ /s Oct. 1, Sept. 25-28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	23	955	740	217	240	328	542	492	345	226	56	51
2	24	608	625	203	497	764	564	475	311	204	55	45
3	29	470	548	193	1520	1510	547	432	286	187	54	40
4	41	882	770	184	1260	2640	1140	394	261	172	53	37
5	88	838	814	177	1980	1670	2590	365	243	160	52	35
6	58	655	644	172	1270	1090	1950	e410	229	149	53	33
7	43	524	538	253	857	809	1270	e590	224	139	52	33
8	37	467	487	372	639	677	952	e1900	202	130	50	35
9	34	441	736	347	513	632	1630	e1400	190	124	59	34
10	35	409	1390	711	435	584	1280	e1100	177	119	80	32
11	36	354	1200	1280	387	525	953	e860	169	112	58	31
12	67	305	866	3420	418	689	790	e750	167	107	53	31
13	82	629	670	2320	1530	664	716	e640	165	103	49	31
14	77	849	548	2050	1480	587	704	e600	160	102	47	34
15	96	612	465	2770	940	508	677	e530	152	97	45	32
16	150	490	401	1660	779	447	592	e480	151	99	44	30
17	115	449	393	1120	694	415	539	e1300	150	110	43	28
18	257	499	872	858	671	432	507	e1700	137	98	42	27
19	223	440	662	683	1020	425	482	e1300	131	90	42	26
20	151	411	496	554	1580	389	477	937	245	85	39	25
21	304	466	e410	466	1580	383	483	746	355	81	37	25
22	464	1030	e380	409	1060	398	462	609	355	78	36	25
23	256	1080	e320	364	772	407	427	507	297	73	36	25
24	181	1300	e280	327	602	477	e570	442	261	78	37	24
25	158	3540	e250	299	492	466	e560	404	240	78	36	23
26	389	1710	e220	273	421	416	e560	377	224	73	35	23
27	254	1100	e290	252	374	372	e580	340	210	68	35	23
28	322	792	288	237	339	341	533	322	260	65	66	24
29	349	814	e230	221	---	312	518	e320	254	62	62	24
30	1030	861	e220	208	---	307	499	e440	244	60	49	24
31	1470	---	223	230	---	420	---	389	---	58	42	---
TOTAL	6843	23980	16976	22830	24350	20084	24094	21551	6785	3387	1497	910
MEAN	221	799	548	736	870	648	803	695	226	109	48.3	30.3
MAX	1470	3540	1390	3420	1980	2640	2590	1900	355	226	80	51
MIN	23	305	220	172	240	307	427	320	131	58	35	23
AC-FT	13570	47560	33670	45280	48300	39840	47790	42750	13460	6720	2970	1800
IN.	2.28	8.24	5.65	7.59	8.97	6.68	8.28	7.17	2.33	1.13	.50	.31
	2.62	9.20	6.51	8.76	9.34	7.70	9.24	8.26	2.60	1.30	.57	.35

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1936 - 1991, BY WATER YEAR (WY)

MEAN	228	742	1003	1002	917	752	709	552	293	102	53.2	72.5
MAX	1020	1799	2604	2574	2411	1705	1366	1062	726	325	193	240
(WY)	1948	1794	1965	1953	1961	1972	1937	1945	1937	1983	1968	1978
MIN	18.3	24.1	106	119	131	258	198	147	73.6	37.1	22.8	24.3
(WY)	1988	1937	1977	1977	1977	1941	1941	1947	1940	1940	1940	1987

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1936 - 1991
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ANNUAL TOTAL	171740		173287				
ANNUAL MEAN	471		475			534	
HIGHEST ANNUAL MEAN						921	1974
LOWEST ANNUAL MEAN						241	1977
HIGHEST DAILY MEAN	4180	Jan 7	3540	Nov 25	15000		Dec 22 1964
LOWEST DAILY MEAN	23	Sep 30	23	Oct 1	17		Oct 11 1987
ANNUAL SEVEN-DAY MINIMUM	24	Sep 25	24	Sep 24	17		Oct 8 1987
ANNUAL RUNOFF (AC-FT)	340600		343700		386500		
ANNUAL RUNOFF (CFSM)	4.85		4.89		5.50		
ANNUAL RUNOFF (INCHES)	65.86		66.46		74.74		
10 PERCENT EXCEEDS	941		1100		1200		
50 PERCENT EXCEEDS	397		354		320		
90 PERCENT EXCEEDS	36		36		41		

WILLAMETTE RIVER BASIN

303

14202965 HENRY HAGG LAKE NEAR GASTON, OR

LOCATION.--Lat 45°28'25", long 123°11'51", in SE 1/4 NE 1/4 sec.20, T.1 S., R.4 W., Washington County, Hydrologic Unit 17090010, at left end of Scoggins Dam on Scoggins Creek, 3.8 mi northwest of Gaston, and at mile 4.9.

DRAINAGE AREA.--38.7 mi².

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

GAGE.--Water-stage recorder. Datum of gage is National Geodetic Vertical Datum of 1929 (levels by Bureau of Reclamation).

REMARKS.--Reservoir is formed by earthfill dam with gated concrete spillway and a gated outlet tunnel. Storage began in January 1975. Total capacity at elevation 305.7 ft, maximum water-surface elevation, is 63,360 acre-ft, of which 56,160 acre-ft is active storage above elevation 239.3 ft, proposed minimum pool. Reservoir is used for irrigation, flood control, and recreation. Figures given herein represent active storage.

COOPERATION.--Monthend elevations and contents furnished by Bureau of Reclamation.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 53,730 acre-ft Apr. 30, 1988, elevation, 303.58 ft; minimum contents observed since first filling, 808 acre-ft Oct. 31, 1975, elevation, 237.21 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents observed, 53,680 acre-ft May 5, 6, elevation, 303.54 ft; minimum contents observed, 16,980 acre-ft Nov. 11, 13, elevation, 264.53 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	274.26	24,770	-
Oct. 31.....	269.78	21,060	-3,710
Nov. 30.....	273.90	24,470	+3,410
Dec. 31.....	281.08	30,790	+6,320
CAL YR 1990.....	-	-	+14,130
Jan. 31.....	286.53	35,920	+5,130
Feb. 28.....	297.40	46,930	+11,010
Mar. 31.....	301.73	51,650	+4,720
Apr. 30.....	303.31	53,420	+1,770
May 31.....	303.43	53,560	+140
June 30.....	303.49	53,630	+70
July 31.....	295.73	45,160	-8,470
Aug. 31.....	283.80	33,320	-11,840
Sept. 30.....	273.69	24,290	-9,030
WTR YR 1991.....	-	-	-480

WILLAMETTE RIVER BASIN

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 National Geodetic Vertical Datum of 1929.

REMARKS.--No estimated daily discharges. Records good. Data for Aug. 12 to Sept. 30 from U.S. Army Corps of Engineers Columbia River Operational Hydromet Management System (CROHMS) data base. 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.--16 years, 103 ft³/s, 74,620 acre-ft.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,050 ft³/s Apr. 5, 1991, gage height, 18.01 ft; minimum discharge, 1.4 ft³/s Nov. 16, 1978.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 2,050 ft³/s Apr. 5, gage height, 18.01 ft; minimum discharge, 9.4 ft³/s Dec. 4-6, Mar. 15.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	112	25	19	9.9	9.7	10	21	34	29	29	199	137
2	106	20	19	9.9	10	11	21	29	29	65	224	137
3	102	20	19	9.9	9.9	11	98	30	20	97	223	137
4	101	20	13	9.9	10	178	382	34	17	89	223	128
5	101	19	9.4	9.9	9.9	275	1610	44	21	89	222	134
6	101	19	9.6	9.9	9.9	273	915	72	25	88	205	158
7	100	19	9.6	10	9.9	133	538	165	22	88	186	161
8	105	19	9.9	10	9.9	84	444	134	17	100	185	161
9	103	19	9.9	10	10	102	491	60	17	112	195	161
10	99	19	9.9	10	9.9	102	649	51	18	115	195	150
11	99	19	9.9	11	10	181	612	51	18	121	194	137
12	99	19	9.9	11	10	322	331	51	21	157	174	134
13	99	19	9.9	11	10	275	218	33	24	189	169	128
14	99	19	9.9	126	10	170	196	27	27	189	190	124
15	99	19	9.9	152	10	51	169	27	30	180	202	124
16	98	19	9.9	208	10	33	111	20	28	172	206	132
17	75	19	9.9	334	10	54	67	61	24	156	206	148
18	70	19	10	381	10	54	61	50	33	148	205	166
19	68	19	9.9	399	10	54	65	50	47	141	197	173
20	68	19	9.9	395	10	69	67	50	47	135	189	173
21	68	19	9.9	391	10	82	67	50	36	135	192	172
22	68	19	9.9	290	10	82	118	36	18	148	197	172
23	43	19	9.9	213	10	82	122	25	17	169	188	166
24	30	19	9.9	87	10	82	102	32	19	191	188	162
25	30	19	9.9	9.9	10	64	94	37	20	187	187	162
26	30	19	9.9	9.7	10	51	60	37	17	181	187	162
27	30	19	10	9.6	10	51	50	37	17	183	177	156
28	31	19	10	9.8	10	51	50	37	25	182	161	152
29	31	19	9.9	9.8	---	32	50	72	29	182	148	151
30	31	19	9.9	9.9	---	21	42	61	29	182	138	136
31	31	---	9.9	9.8	---	21	---	34	---	182	137	---
TOTAL	2327	579	336.5	3176.9	279.1	3061	7821	1531	741	4382	5889	4494
MEAN	75.1	19.3	10.9	102	9.97	98.7	261	49.4	24.7	141	190	150
MAX	112	25	19	399	10	322	1610	165	47	191	224	173
MIN	30	19	9.4	9.6	9.7	10	21	20	17	29	137	124
AC-FT	4620	1150	667	6300	554	6070	15510	3040	1470	8690	11680	8910

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1975 - 1991, BY WATER YEAR (WY)

	MEAN	98.5	78.2	142	126	87.2	133	76.1	57.1	56.3	119	145	133
MAX	155	233	433	337	303	326	261	98.7	99.6	176	251	334	334
(WY)	1980	1985	1978	1983	1982	1983	1991	1984	1985	1985	1975	1975	1975
MIN	26.2	16.7	10.9	12.0	9.50	10.8	12.0	19.9	14.3	53.3	83.4	72.9	72.9
(WY)	1978	1988	1991	1977	1977	1977	1985	1977	1977	1983	1977	1977	1977

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1975 - 1991

ANNUAL TOTAL	33091.5	34617.5	102	
ANNUAL MEAN	90.7	94.8	172	1983
HIGHEST ANNUAL MEAN			40.4	1977
LOWEST ANNUAL MEAN			1610	Apr 5 1991
HIGHEST DAILY MEAN	950	1610	5.3	May 27 1977
LOWEST DAILY MEAN	9.4	9.4	5.8	May 27 1977
ANNUAL SEVEN-DAY MINIMUM	9.7	9.7		
ANNUAL RUNOFF (AC-FT)	65640	68660	74240	
10 PERCENT EXCEEDS	209	195	215	
50 PERCENT EXCEEDS	52	50	77	
90 PERCENT EXCEEDS	12	9.9	14	

WILLAMETTE RIVER BASIN

305

14203500 TUALATIN RIVER NEAR DILLEY, OR

LOCATION.--Lat 45°28'30", long 123°07'23", in NE 1/4 NW 1/4 sec.24, T.1 S., R.4 W., Washington County, Hydrologic Unit 17090010, on left bank 5 ft upstream from highway bridge, 1.0 mi south of Dilley, 1.2 mi downstream from Scoggins Creek, and at mile 58.81.

DRAINAGE AREA.--125 mi².

PERIOD OF RECORD.--October 1939 to current year. Prior to October 1940 monthly discharge only, published in WSP 1318.

REVISED RECORDS.--WSP 1935: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 147.57 ft above National Geodetic Vertical Datum of 1929. Prior to June 16, 1950, nonrecording gage at several sites within 200 ft of present site at datum 4.00 ft higher. June 16, 1950, to Aug. 10, 1966, water-stage recorder at present site at datum 4.00 ft higher.

REMARKS.--Records fair. Diurnal fluctuation caused by operation of millpond on Scoggins Creek upstream from station and regulation by Henry Hagg Lake since January 1975. Diversions upstream from station of approximately 3,000 acre-ft from J. W. Barney Reservoir on the Middle Fork of North Fork Trask River for municipal water supply and irrigation in Wapato Lake area. Continuous water-quality records for the period November 1963 to September 1968 have been collected at this location.

AVERAGE DISCHARGE.--52 years, 387 ft³/s, 280,400 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 17,100 ft³/s Dec. 22, 1964, gage height, 19.34 ft, from rating curve extended above 6,000 ft³/s; minimum discharge, 0.08 ft³/s Sept. 3, 1967.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 6,230 ft³/s Apr. 5, gage height, 18.47 ft; minimum discharge, 56 ft³/s June 28.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	126	116	393	150	194	213	210	172	105	64	188	161
2	125	85	475	148	301	286	202	159	98	76	221	157
3	123	76	423	151	448	492	259	148	89	126	219	153
4	134	85	424	148	524	779	740	149	77	116	221	144
5	135	86	507	139	643	874	4260	150	78	116	223	136
6	134	81	441	132	630	804	4190	179	79	112	208	157
7	130	77	356	171	544	706	2900	245	80	107	194	171
8	128	89	293	320	466	568	2170	344	68	113	186	175
9	127	95	256	327	389	529	2150	218	66	124	198	174
10	120	125	257	389	328	503	1890	186	62	128	197	164
11	121	148	253	510	296	488	1880	176	59	137	197	150
12	121	117	240	721	336	633	1220	170	59	153	184	143
13	126	137	227	947	457	679	866	153	63	196	165	140
14	128	208	217	821	460	626	718	133	64	198	181	135
15	159	185	203	1050	407	521	650	126	68	196	196	136
16	150	152	187	990	356	414	569	118	70	189	200	139
17	121	133	180	897	322	385	488	144	68	178	203	156
18	115	123	200	822	295	354	420	170	62	165	207	170
19	114	112	214	757	301	335	368	163	76	159	203	181
20	101	114	184	703	469	335	339	154	92	148	187	182
21	145	131	e135	663	588	343	312	149	120	146	189	184
22	175	262	e120	619	525	332	325	134	85	148	197	185
23	110	287	e115	535	452	331	341	113	74	167	192	180
24	70	375	e120	436	383	346	311	110	68	181	190	173
25	61	527	e125	261	328	330	308	119	67	197	190	172
26	69	526	145	229	277	333	258	118	64	189	191	170
27	60	408	156	209	251	315	241	114	60	187	189	168
28	66	306	187	198	230	291	226	109	59	188	178	163
29	77	281	156	185	---	264	214	132	68	188	178	163
30	120	345	e140	176	---	232	197	166	67	183	165	154
31	146	---	e145	185	---	219	---	119	---	180	157	---
TOTAL	3637	5792	7474	13989	11200	13860	29222	4840	2215	4755	5994	4836
MEAN	117	193	241	451	400	447	974	156	73.8	153	193	161
MAX	175	527	507	1050	643	874	4260	344	120	198	223	185
MIN	60	76	115	132	194	213	197	109	59	64	157	135
AC-FT	7210	11490	14820	27750	22220	27490	57960	9600	4390	9430	11890	9590

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1976 - 1991, BY WATER YEAR (WY)

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	150	315	628	647	629	543	344	159	106	132	151	144				
MAX	230	881	1596	1184	1215	1086	974	338	183	195	199	229				
(WY)	1983	1985	1978	1980	1983	1983	1991	1984	1984	1985	1981	1978				
MIN	71.8	47.2	41.1	31.8	62.0	236	99.8	80.8	65.9	91.0	93.0	82.6				
(WY)	1978	1988	1977	1977	1977	1978	1977	1977	1979	1977	1977	1985				

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1976 - 1991	
ANNUAL TOTAL	108397		107814		328	
ANNUAL MEAN	297		295		529	
HIGHEST ANNUAL MEAN					104	
LOWEST ANNUAL MEAN					5170	
HIGHEST DAILY MEAN	2610		4260		Dec 14 1977	
LOWEST DAILY MEAN	60		59		Jan 26 1977	
ANNUAL SEVEN-DAY MINIMUM	73		63		Jan 26 1977	
ANNUAL RUNOFF (AC-FT)	215000		213800		237500	
10 PERCENT EXCEEDS	629		539		801	
50 PERCENT EXCEEDS	148		184		170	
90 PERCENT EXCEEDS	93		85		78	

WILLAMETTE RIVER BASIN

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.

DRAINAGE AREA.--2.37 mi².

PERIOD OF RECORD.--Annual maximums, 1975-77. October 1990 to September 1991.

GAGE.--Water-stage recorder. Elevation of gage is 250 ft, from topographic map.

REMARKS.--Water-discharge records fair except for estimated daily discharges, which are poor. No regulation or diversion upstream from station.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 237 ft³/s Feb. 12, 1975, gage height, 15.32 ft, at different datum; minimum discharge, 0.17 ft³/s Oct. 2, 3, 8, 9, 1990.

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)
Feb. 20	0730	*197	*11.34	No other peak greater than base discharge.			
Minimum discharge, 0.17 ft ³ /s Oct. 2, 3, 8, 9.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.34	1.2	21	1.4	1.6	2.5	1.3	1.1	.90	.94	.49	.58
2	.18	.94	3.5	1.4	13	9.4	1.5	1.0	.86	.84	.47	.43
3	.35	1.1	2.3	1.3	8.5	23	1.6	1.0	.92	.80	.46	.43
4	.29	1.4	7.3	1.2	15	18	12	1.0	.96	.80	.45	.43
5	.57	.99	2.3	1.2	6.1	5.1	36	1.1	.92	.80	.43	.43
6	.34	.92	1.7	1.1	3.7	5.4	6.1	1.4	1.3	.79	.42	.43
7	.23	1.8	1.6	7.8	2.7	3.7	4.7	5.7	.92	.74	.39	.49
8	.19	1.0	1.6	2.7	2.6	3.3	6.3	2.8	.92	.70	.39	.41
9	.19	.93	8.3	3.0	2.6	4.8	4.1	1.9	.92	.70	2.2	.39
10	.33	.93	8.8	9.0	2.4	4.2	2.9	1.3	.89	.70	.62	.39
11	.19	.93	3.2	9.8	5.4	5.5	2.4	1.1	.80	.69	.47	.39
12	.46	.93	2.2	10	6.8	5.2	2.2	1.1	.83	.65	.47	.39
13	.38	21	3.5	3.9	6.6	3.1	2.1	1.6	.92	.65	.46	.39
14	e.30	2.5	2.2	14	3.9	2.6	5.9	.99	.85	.65	.43	.39
15	.51	1.5	2.0	21	5.5	2.3	2.3	.86	.80	.71	.43	.39
16	.31	1.1	2.2	4.1	3.9	2.1	2.0	.80	.80	.60	.43	.39
17	.31	4.2	2.1	3.4	2.8	1.8	1.8	33	.70	.66	.43	e.34
18	2.1	1.5	2.0	3.0	3.3	2.3	1.7	11	.70	.66	.43	.29
19	.46	2.0	1.8	2.5	2.9	1.8	1.4	3.4	1.5	.51	.43	.29
20	.36	1.5	1.6	2.3	62	1.7	1.3	2.4	17	.58	.34	.29
21	.55	2.0	e1.5	2.2	5.4	1.9	1.3	2.0	3.3	.58	.29	.29
22	.75	4.9	e1.4	2.0	3.6	2.6	1.3	1.7	2.4	.57	.29	.29
23	.55	1.8	e1.3	2.0	3.1	2.8	1.4	1.5	1.7	.51	.29	.29
24	.50	12	e1.3	1.8	2.7	4.0	2.1	1.3	1.6	.51	.37	.29
25	1.7	6.4	e1.7	1.8	2.5	2.2	1.9	2.2	1.3	.51	.39	.29
26	.88	1.9	2.2	1.8	2.4	1.8	2.2	1.3	1.3	.51	.38	.29
27	1.0	3.3	4.6	1.8	2.3	1.7	1.9	1.2	1.2	.49	.37	.29
28	7.0	1.5	2.4	1.7	2.2	1.6	1.7	1.3	1.0	.43	.73	.29
29	2.4	13	1.7	1.7	---	1.5	1.2	2.0	1.5	.43	.82	.29
30	9.7	2.8	1.7	1.7	---	1.5	1.2	1.2	1.0	.43	.43	.29
31	3.7	---	1.6	3.3	---	1.4	---	.98	---	.43	1.3	---
TOTAL	37.12	77.97	102.6	125.9	185.5	130.8	115.8	91.23	50.71	19.57	16.30	10.86
MEAN	1.20	3.27	3.31	4.06	6.62	4.22	3.86	2.94	1.69	.63	.53	.36
MAX	9.7	21	21	21	62	23	36	33	17	.94	2.2	.58
MIN	.18	.92	1.3	1.1	1.6	1.4	1.2	.80	.70	.43	.29	.29
AC-FT	74	194	204	250	368	259	230	181	101	39	32	22

WTR YR 1991 TOTAL 984.36 MEAN 2.70 MAX 62 MIN .18 AC-FT 1950

e Estimated

WILLAMETTE RIVER BASIN

307

14207000 OSWEGO CANAL NEAR LAKE OSWEGO, OR

LOCATION.--Lat 45°23'18", long 122°43'11", in NW 1/4 NW 1/4 sec.20, T.2 S., R.1 E., Clackamas County, Hydrologic Unit 17090010, on left bank 0.4 mi downstream from point of diversion on Tualatin River, 1.0 mi upstream from Lake Oswego, and 3.5 mi southwest of town of Lake Oswego.

PERIOD OF RECORD.--October 1928 to September 1991 (discontinued). October 1951 to September 1970, Oswego Canal records were not published separately, but were combined with records for Tualatin River at West Linn. See REMARKS.

GAGE.--Water-stage recorder. Datum of gage is 96.50 ft above National Geodetic Vertical Datum of 1929. Prior to Nov. 15, 1928, nonrecording gage 800 ft upstream at different datum. Nov. 15, 1928, to June 29, 1939, nonrecording gage 900 ft downstream at datum about 1.0 ft higher.

REMARKS.--Records good Oct. 1-4, Nov. 7 to Dec. 6, Jan. 4 to Feb. 6, May 31 to Aug. 7, Sept. 17-30; fair Oct. 5 to Nov. 6, Dec. 7 to Jan. 3, Sept. 13-16; and poor Feb. 7 to May 30, Aug. 8 to Sept. 12. Oswego Canal diverts water from Tualatin River in NW 1/4 sec.20, but diversion dam is in NE 1/4 sec.33, about 3 mi downstream. Water used for recreational facilities and development of power downstream from Lake Oswego and returned to Willamette River at that point. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--63 years, 67.7 ft³/s, 49,050 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 6,000 ft³/s Dec. 23, 1933; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 131 ft³/s Feb. 6, 7, gage height, 5.47 ft; minimum discharge, no flow Aug. 19-22.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	81	64	59	50	5.4	38	51	51	47	53	67	e57
2	82	50	58	49	8.0	56	53	54	42	53	64	e60
3	83	46	48	48	7.4	93	27	51	39	51	63	e62
4	85	49	50	46	8.0	118	9.6	50	37	48	68	e58
5	93	46	51	44	8.1	86	16	51	34	49	71	e55
6	100	45	51	23	57	70	15	52	37	49	73	e52
7	102	44	49	7.2	130	53	16	54	44	47	e48	e48
8	86	44	46	7.2	105	52	16	64	45	45	e48	e44
9	82	43	51	7.5	77	56	16	71	45	45	e63	e52
10	83	43	60	8.3	71	60	16	67	43	44	e63	e61
11	86	43	58	8.6	66	57	13	59	44	45	e62	e70
12	68	47	54	9.5	48	56	11	55	55	45	e62	e59
13	49	57	52	9.3	19	55	9.7	54	57	45	e70	59
14	50	47	49	9.8	19	56	9.4	55	59	46	e60	61
15	48	48	54	11	20	56	9.2	54	59	52	e57	61
16	40	47	57	9.6	19	55	9.2	52	59	57	e54	62
17	42	47	55	9.3	23	52	9.0	78	59	58	e54	61
18	56	49	52	9.1	32	48	9.2	88	59	57	e54	59
19	54	46	52	8.8	40	45	27	73	55	55	e27	59
20	50	43	54	8.4	74	55	47	57	76	53	e.00	59
21	55	39	51	8.2	86	59	59	57	109	49	e.00	59
22	56	43	42	7.8	79	53	66	59	112	49	e18	60
23	55	48	41	7.4	55	52	69	55	97	41	e35	63
24	51	60	42	6.9	52	52	67	51	75	55	e36	65
25	42	63	42	6.6	50	57	61	48	67	64	e36	65
26	36	57	44	6.3	45	60	61	49	64	76	e46	62
27	33	57	49	5.8	42	59	58	48	37	81	e43	61
28	38	50	52	5.6	39	56	56	46	20	82	e46	60
29	43	46	56	5.5	---	53	58	45	20	81	e49	61
30	56	47	55	5.4	---	51	60	46	36	77	e51	63
31	68	---	47	5.5	---	48	---	48	---	71	e54	---
TOTAL	1953	1458	1581	454.6	1284.9	1817	1004.3	1742	1632	1723	1552.00	1778
MEAN	63.0	48.6	51.0	14.7	45.9	58.6	33.5	56.2	54.4	55.6	50.1	59.3
MAX	102	64	60	50	130	118	69	88	112	82	73	70
MIN	33	39	41	5.4	5.4	38	9.0	45	20	41	.00	44
AC-FT	3870	2890	3140	902	2550	3600	1990	3460	3240	3420	3080	3530

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1929 - 1991, BY WATER YEAR (WY)

	MEAN	58.5	61.5	109	86.6	66.2	78.0	72.0	57.3	60.1	57.4	48.4	56.2
MAX	110	142	616	247	246	211	177	110	117	105	79.9	90.3	
(WY)	1956	1955	1934	1953	1950	1950	1955	1962	1964	1955	1975	1954	
MIN	15.4	.39	.000	.000	.000	.000	.80	10.5	12.1	26.3	14.5	12.3	
(WY)	1962	1962	1963	1963	1963	1963	1933	1933	1987	1929	1958	1965	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1929 - 1991

ANNUAL TOTAL	17022.9	17979.80	
ANNUAL MEAN	46.6	49.3	67.7
HIGHEST ANNUAL MEAN			111
LOWEST ANNUAL MEAN			34.9
HIGHEST DAILY MEAN	119	130	5000
LOWEST DAILY MEAN	7.9	.00	.00
ANNUAL SEVEN-DAY MINIMUM	12	5.6	.00
ANNUAL RUNOFF (AC-FT)	33760	35660	49050
10 PERCENT EXCEEDS	68	71	121
50 PERCENT EXCEEDS	48	52	59
90 PERCENT EXCEEDS	23	9.7	12

WILLAMETTE RIVER BASIN

14207500 TUALATIN RIVER AT WEST LINN, OR
(National stream quality accounting network station)

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.

WATER-DISCHARGE RECORDS

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 National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Prior to June 12, 1941, nonrecording gage at datum 1.02 ft higher.

REMARKS.--Water-discharge records good, except for estimated daily discharges, which are fair. 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. 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.

AVERAGE DISCHARGE.--63 years, 1,507 ft³/s, 28.99 in/yr, 1,092,000 acre-ft/yr, adjusted for diversion in Oswego Canal.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 23,300 ft³/s Dec. 23, 1933, gage height, 17.72 ft; minimum daily discharge, 0.20 ft³/s July 30 to Aug. 2, 1966.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 8,560 ft³/s Apr. 10, gage height, 10.93 ft; minimum daily discharge, 97 ft³/s Sept. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	113	479	1620	871	820	1390	973	889	520	314	146	198
2	113	455	2020	872	1080	1450	928	818	453	302	134	199
3	112	376	2320	860	1650	1970	921	753	405	268	131	202
4	116	296	2390	848	2520	3380	1070	695	374	247	138	193
5	133	246	2290	819	3180	4100	3420	650	346	266	144	170
6	147	225	2300	807	3310	4070	4990	638	309	274	153	149
7	150	222	2190	913	3220	3950	5720	660	299	262	162	135
8	148	217	1930	1030	3140	3810	6800	834	311	254	164	111
9	147	212	1680	1320	2950	3660	7920	964	309	248	161	117
10	141	211	1710	1620	2600	3460	8450	890	293	237	168	97
11	134	213	1640	1810	2180	3140	8430	752	245	236	173	120
12	130	230	1540	2570	1990	3040	8000	676	214	239	174	134
13	136	442	1430	3140	1970	2960	7430	650	227	232	170	127
14	145	661	1350	3350	2100	3060	6850	651	240	228	147	127
15	325	682	1290	3940	2160	3090	6260	628	240	257	126	123
16	331	657	1220	3990	2120	2980	5580	594	242	297	119	119
17	263	584	1160	3970	1950	2720	4980	1020	242	307	115	117
18	329	531	1100	3910	1780	2380	4250	1320	248	298	115	113
19	331	464	1080	3810	1630	2080	3480	1330	250	276	126	110
20	298	416	1100	3620	2250	1840	2690	1120	384	269	159	123
21	347	376	1060	3340	3130	1670	2070	923	690	244	214	137
22	411	417	864	2970	3340	1570	1690	786	726	237	209	138
23	473	473	e760	2550	3150	1510	1480	694	613	202	156	137
24	439	636	e720	2100	2830	1530	1410	623	491	116	139	139
25	328	1120	e700	1730	2440	1530	1350	561	440	135	137	135
26	257	1540	878	1390	2050	1490	1300	543	400	161	136	131
27	203	1790	933	1140	1750	1420	1220	534	374	186	140	127
28	195	1590	993	998	1540	1330	1110	508	372	185	145	126
29	217	1350	1060	902	---	1230	1030	488	351	179	160	131
30	309	1320	1020	844	---	1120	951	503	331	171	175	139
31	439	---	873	818	---	1040	---	542	---	159	187	---
TOTAL	7360	18431	43221	62852	64830	73970	112753	23237	10939	7286	4723	4124
MEAN	237	614	1394	2027	2315	2386	3758	750	365	235	152	137
MAX	473	1790	2390	3990	3340	4100	8450	1330	726	314	214	202
MIN	112	211	700	807	820	1040	921	488	214	116	115	97
AC-FT	14600	36560	85730	124700	128600	146700	223600	46090	21700	14450	9370	8180
MEAN†	300	663	1445	2043	2361	2444	3791	806	419	291	202	197
CFSM†	0.42	0.94	2.05	2.89	3.34	3.46	5.37	1.14	0.59	0.41	0.29	0.28
IN.†	0.49	1.05	2.36	3.34	3.48	3.99	5.99	1.32	0.66	0.47	0.33	0.31
AC-FT†	18470	39450	88870	125602	131150	150300	225590	49550	24940	17870	12450	11710

CAL YR 1990 TOTAL 461539 MEAN 1264 MAX 6920 MIN 77 AC-FT 915500 MEAN† 1311 CFSM† 1.86 IN.† 25.22 AC-FT† 949260
WTR YR 1991 TOTAL 433726 MEAN 1188 MAX 8450 MIN 97 AC-FT 860300 MEAN† 1238 CFSM† 1.75 IN.† 23.80 AC-FT† 895960

e Estimated

† Adjusted for diversion in Oswego Canal.

WILLAMETTE RIVER BASIN

309

14207500 TUALATIN RIVER AT WEST LINN, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1975 to September 1981.

WATER TEMPERATURE: October 1975 to September 1981.

REMARKS.--Some samples were analyzed by different methods and may have data with different levels of detection.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CaCO3)	CALCIUM, DIS-SOLVED (MG/L AS Ca)
NOV 1990	1200	1590	93	7.2	9.0	1.5	9.8	84	K160	K510	31	8.2
MAR 1991	1205	4090	100	7.4	8.5	4.5	9.9	84	>1200	3300	36	9.4
JUN	1130	248	205	8.4	18.0	5.1	11.5	123	K26	K48	63	17
AUG	1030	172	257	7.5	21.5	4.0	5.0	57	K36	500	83	25
DATE	MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY, DIS IT FIELD (MG/L AS CaCO3)	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3)	CAR-BONATE, DIS IT FIELD (MG/L AS CO3)	SULFATE, DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
NOV 1990	2.5	6.4	30	0.5	1.5	26	32	0	5.1	5.2	0.1	18
MAR 1991	3.0	5.7	25	0.4	1.4	30	37	0	4.6	5.4	<0.1	17
JUN	4.9	13	30	0.7	2.6	57	70	0	13	14	0.1	21
AUG	5.0	18	31	0.9	3.5	62	76	0	25	13	0.2	20
DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN,AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)
NOV 1990	72	70	0.10	309	0.06	1.4	0.19	0.4	0.23	0.14	0.12	30
MAR 1991	57	74	0.08	629	0.03	1.8	0.19	0.9	0.23	0.13	0.09	120
JUN	128	129	0.17	85.7	0.05	1.9	0.14	1.0	0.08	0.04	0.01	10
AUG	157	160	0.21	72.9	0.08	2.8	0.18	0.4	0.13	0.08	0.06	<10
DATE	ARSENIC, DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM, DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM, DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	
NOV 1990	<1	9	<0.5	<1	<1	<3	3	100	1	<4	38	
MAR 1991	<1	17	0.5	<1	<1	<3	2	190	<1	<4	30	
JUN	<1	17	<0.5	<1	<1	<3	2	72	<1	<4	33	
AUG	<1	23	<0.5	<1	<1	<3	4	24	<1	<4	120	
DATE	MERCURY, DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDE (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	
NOV 1990	<0.1	<10	2	<2	<1	41	<6	6	19	82	--	
MAR 1991	<0.1	<10	2	<1	<1	54	<6	6	65	721	94	
JUN	<0.1	<10	3	<1	<1	79	<6	5	22	14	71	
AUG	<0.1	<10	<1	<1	<1	90	<6	7	11	5.1	--	

K - Results based on colony count outside acceptable range (non-ideal colony count).

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, 0.6 mi downstream from Tualatin River, and at mile 26.8.

PERIOD OF RECORD.--October 1976 to current year (gage heights only).

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR CURRENT YEAR.--Maximum gage height recorded, 59.79 ft Jan. 16; minimum recorded, 54.11 ft Aug. 26, but may have been less during period of missing record, Apr. 23 to Aug. 20.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	55.34	57.40	58.11	55.11	54.53	54.92	54.94	---	---	---	---	54.73
2	55.33	57.52	58.20	54.98	54.69	54.94	54.95	---	---	---	---	54.73
3	55.36	57.17	58.19	54.87	55.66	55.69	54.99	---	---	---	---	54.74
4	55.37	56.90	57.92	54.75	56.56	57.45	55.22	---	---	---	---	54.74
5	55.40	57.03	57.71	54.59	56.78	58.92	56.87	---	---	---	---	54.83
6	55.45	57.32	57.69	54.49	57.21	59.23	58.12	---	---	---	---	54.93
7	55.46	57.29	57.45	54.51	57.01	58.94	58.35	---	---	---	---	54.97
8	55.45	57.22	57.19	54.79	56.48	58.36	58.24	---	---	---	---	54.98
9	55.46	57.16	56.98	55.28	56.07	57.83	58.12	---	---	---	---	55.01
10	55.42	57.14	57.17	55.58	55.74	57.51	58.23	---	---	---	---	55.03
11	55.44	57.07	57.88	56.17	55.48	57.39	58.19	---	---	---	---	55.05
12	55.45	56.98	58.33	57.17	55.35	57.18	57.87	---	---	---	---	55.11
13	55.46	56.94	58.12	58.57	55.58	57.36	57.42	---	---	---	---	55.15
14	55.49	57.34	57.57	59.27	56.60	57.32	56.93	---	---	---	---	55.13
15	55.57	57.81	57.18	59.59	56.92	57.15	56.82	---	---	---	---	55.13
16	55.59	57.52	56.79	59.76	56.62	56.95	56.75	---	---	---	---	55.15
17	55.66	57.08	56.56	59.61	56.35	56.65	56.57	---	---	---	---	55.17
18	55.73	56.82	56.40	59.17	56.15	56.36	56.37	---	---	---	---	55.24
19	55.84	56.76	56.44	58.60	56.10	56.17	56.15	---	---	---	---	55.27
20	55.90	56.64	56.62	58.03	56.44	56.08	55.95	---	---	---	---	55.27
21	55.87	56.61	56.45	57.61	57.13	55.99	55.76	---	---	---	54.73	55.25
22	55.99	56.74	56.17	57.26	57.16	55.93	55.63	---	---	---	54.77	55.28
23	56.25	57.17	56.15	56.97	56.66	55.94	---	---	---	---	54.66	55.32
24	56.17	57.37	56.03	56.62	56.17	56.04	---	---	---	---	54.40	55.32
25	56.08	57.91	55.87	56.18	55.81	56.09	---	---	---	---	54.20	55.27
26	56.13	58.80	55.40	55.85	55.52	55.94	---	---	---	---	54.15	55.27
27	56.16	59.14	55.19	55.52	55.27	55.77	---	---	---	---	54.23	55.25
28	56.16	58.78	55.31	55.22	55.06	55.57	---	---	---	---	54.34	55.28
29	56.17	58.21	55.48	55.05	---	55.34	---	---	---	---	54.61	55.28
30	56.27	57.98	55.39	54.71	---	55.16	---	---	---	---	54.72	55.37
31	56.69	---	55.25	54.52	---	55.01	---	---	---	---	54.74	---
MEAN	55.75	57.39	56.81	56.46	56.11	56.62	---	---	---	---	---	55.11
MAX	56.69	59.14	58.33	59.76	57.21	59.23	---	---	---	---	---	55.37
MIN	55.33	56.61	55.19	54.49	54.53	54.92	---	---	---	---	---	54.73

CAL YR 1990 MEAN 55.82 MAX 60.99 MIN 53.27

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 National Geodetic Vertical Datum of 1929 (Oregon State Highway Division bench mark).

REMARKS.--Flow regulated by many reservoirs upstream.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 32.18 ft Feb. 21, 1982; minimum, 1.80 ft Aug. 11, 1985.

EXTREMES FOR CURRENT YEAR.--Maximum gage height, 18.96 ft Jan. 15; minimum, 2.86 ft Sept. 16.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	6.33	3.45	4.98	10.79	8.37	9.45	14.72	13.95	14.23	9.65	7.41	8.39
2	6.38	3.34	4.87	10.80	9.25	9.83	14.53	13.73	14.05	9.60	6.82	7.90
3	7.14	3.78	5.26	10.12	8.20	8.99	14.66	13.88	14.23	8.75	6.50	7.55
4	7.62	4.18	5.65	10.22	7.80	8.65	14.41	13.34	13.76	8.66	6.20	7.31
5	7.55	4.14	5.67	10.81	8.02	9.09	13.83	13.12	13.35	8.48	6.98	7.62
6	7.72	4.33	5.65	10.59	9.19	9.67	13.05	12.33	12.62	8.00	6.37	7.02
7	7.59	4.27	5.60	10.23	9.00	9.49	12.49	11.53	11.86	8.82	6.20	7.31
8	7.13	3.95	5.23	9.71	8.77	9.20	11.81	10.71	11.16	8.47	6.77	7.53
9	6.85	3.74	4.93	9.54	8.67	9.13	10.94	10.08	10.50	8.66	7.50	7.94
10	6.68	3.78	4.83	9.38	8.21	8.77	12.08	10.34	11.23	9.12	7.70	8.37
11	6.17	3.75	4.65	9.31	8.06	8.61	13.52	12.13	12.86	10.34	8.19	9.40
12	6.19	3.07	4.40	9.56	7.95	8.61	14.41	13.34	13.86	13.80	10.30	12.04
13	6.24	3.55	4.81	10.01	8.14	8.93	13.94	12.76	13.52	16.26	13.82	15.19
14	6.22	3.52	4.85	10.90	8.98	10.05	12.84	12.17	12.54	17.50	16.22	16.67
15	7.34	3.99	5.52	11.94	10.58	11.26	12.27	11.33	11.94	18.96	17.64	18.42
16	7.29	4.27	5.56	11.06	10.24	10.69	11.23	10.25	10.73	18.80	18.43	18.59
17	7.67	4.49	5.75	10.58	9.36	9.92	11.08	9.81	10.41	18.59	17.58	18.05
18	7.77	4.85	6.09	10.13	8.88	9.42	10.66	9.56	10.10	17.53	16.15	16.78
19	7.31	4.60	5.72	10.00	8.68	9.11	10.85	9.15	9.86	16.10	15.06	15.55
20	6.95	4.33	5.40	9.69	8.28	8.91	11.59	10.42	10.90	15.02	13.84	14.34
21	7.60	4.29	5.67	9.64	8.38	8.93	11.36	10.48	10.83	13.79	13.07	13.45
22	7.79	4.98	6.04	9.88	8.51	9.10	10.87	9.64	10.16	13.00	12.18	12.53
23	7.57	5.79	6.50	10.88	9.58	10.16	9.99	9.36	9.69	12.26	11.31	11.76
24	7.18	5.08	5.82	11.43	10.27	10.69	9.45	8.71	9.05	11.61	10.78	11.23
25	7.04	5.01	5.85	15.11	11.48	13.22	9.46	8.46	8.93	11.15	9.92	10.65
26	6.45	5.00	5.66	16.23	15.21	15.82	8.71	6.96	7.99	10.27	8.96	9.70
27	6.35	4.61	5.44	16.69	16.05	16.28	9.12	6.30	7.60	10.10	8.52	9.18
28	6.55	4.76	5.63	16.51	15.25	16.02	9.40	7.22	8.23	10.27	8.35	9.10
29	6.80	4.68	5.70	15.22	14.37	14.86	9.60	8.08	8.76	10.71	8.84	9.54
30	8.24	5.58	6.78	14.34	13.81	14.16	9.58	7.57	8.42	10.05	8.12	9.09
31	9.55	6.70	8.15	---	---	---	10.27	7.67	8.59	10.10	7.98	8.90
MONTH	9.55	3.07	5.57	16.69	7.80	10.57	14.72	6.30	11.03	18.96	6.20	11.20

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	10.26	8.21	9.03	10.72	8.91	9.69	9.20	7.30	8.24	10.28	9.03	9.72
2	10.25	8.64	9.33	11.16	9.09	10.25	9.56	7.57	8.43	10.28	9.13	9.64
3	10.97	8.89	10.00	12.32	9.88	10.94	9.12	7.73	8.38	9.73	8.05	9.12
4	11.57	10.60	10.99	15.79	12.32	14.19	9.83	8.31	8.86	9.36	8.49	8.89
5	12.28	10.98	11.68	17.08	15.80	16.64	14.43	9.85	12.08	9.08	8.17	8.67
6	12.85	12.24	12.46	17.50	17.01	17.24	15.23	14.47	14.94	8.62	7.67	8.16
7	12.35	11.13	11.85	17.14	15.85	16.51	15.54	15.20	15.39	8.44	7.79	8.09
8	11.13	10.04	10.67	15.87	14.57	15.23	15.23	14.49	14.91	9.62	8.35	9.12
9	10.16	8.77	9.71	14.56	13.32	13.90	15.17	14.49	14.88	11.34	9.65	10.90
10	9.53	8.39	8.97	13.41	12.33	12.89	15.27	14.92	15.16	12.41	11.32	12.00
11	9.78	8.28	8.96	12.55	11.92	12.31	14.98	14.14	14.62	13.22	12.13	12.61
12	9.79	8.53	9.16	12.14	11.29	11.79	14.36	13.66	14.04	12.48	11.09	11.80
13	11.19	8.99	10.19	12.58	11.56	12.11	13.86	12.75	13.34	11.72	10.83	11.16
14	13.18	11.11	12.25	12.55	12.02	12.29	13.02	12.08	12.49	11.66	10.49	10.96
15	13.01	12.36	12.71	12.28	11.71	11.99	12.42	11.55	11.94	11.39	10.18	10.76
16	12.55	11.75	12.19	12.11	11.48	11.79	12.16	11.17	11.68	11.80	10.52	11.12
17	11.97	11.11	11.54	12.05	10.92	11.47	11.96	10.69	11.24	13.00	11.46	12.34
18	11.43	10.42	10.91	11.22	10.32	10.71	11.62	10.55	10.97	15.44	13.00	14.05
19	11.19	10.14	10.64	11.05	9.75	10.26	10.83	9.73	10.28	17.78	15.52	16.75
20	12.78	10.81	11.81	11.08	9.62	10.24	10.21	8.80	9.59	18.36	17.84	18.18
21	13.67	12.82	13.27	10.86	9.03	9.87	9.39	8.10	8.86	18.35	17.41	18.05
22	13.44	11.76	12.77	9.61	8.44	8.96	9.06	8.32	8.64	17.41	15.89	16.67
23	12.01	10.48	11.55	9.05	8.23	8.67	9.09	8.06	8.53	15.88	14.82	15.42
24	10.75	9.00	10.28	10.01	8.78	9.37	9.63	8.12	9.00	14.94	14.24	14.60
25	10.36	8.96	9.49	10.88	9.44	10.29	10.52	8.77	9.93	14.51	14.01	14.23
26	10.24	8.87	9.43	10.37	9.16	9.96	11.32	10.22	10.79	14.20	13.60	13.91
27	10.54	9.00	9.59	10.26	9.10	9.77	11.07	10.20	10.59	13.67	12.76	13.26
28	10.72	8.69	9.42	10.01	8.92	9.42	11.24	10.33	10.81	12.83	12.02	12.41
29	---	---	---	9.91	8.46	9.20	11.14	10.16	10.61	12.17	11.43	11.82
30	---	---	---	9.37	7.38	8.23	11.32	10.24	10.68	12.21	11.56	11.82
31	---	---	---	9.16	6.92	8.02	---	---	---	12.05	11.54	11.75
MONTH	13.67	8.21	10.74	17.50	6.92	11.43	15.54	7.30	11.33	18.36	7.67	12.19
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	11.82	11.36	11.60	9.24	8.05	8.72	7.71	5.01	5.97	6.63	3.43	4.89
2	11.70	11.36	11.55	9.64	8.60	9.02	7.18	4.00	5.62	6.58	3.47	4.44
3	11.64	11.16	11.35	9.60	8.36	9.01	7.21	3.92	5.08	6.14	3.17	4.32
4	11.40	10.84	11.10	9.11	7.47	8.25	7.19	3.80	5.03	6.41	3.84	4.85
5	11.19	10.72	10.96	8.64	7.37	7.89	6.90	3.50	4.77	6.84	3.64	5.14
6	11.11	10.58	10.83	8.82	7.73	8.19	7.40	4.27	5.69	7.02	3.93	5.67
7	11.03	10.35	10.65	9.08	8.09	8.51	7.89	4.59	6.59	7.67	3.89	5.69
8	10.90	10.38	10.60	9.57	8.11	8.70	8.81	5.19	7.02	7.04	3.64	5.20
9	11.27	10.52	10.94	9.52	7.33	8.56	9.01	5.80	7.13	7.86	4.32	5.90
10	11.25	10.63	10.84	9.21	7.18	7.88	9.05	6.13	7.52	7.63	4.57	5.95
11	11.31	10.76	10.97	9.52	6.90	7.89	8.82	6.33	7.55	7.46	3.96	5.54
12	11.43	10.32	10.82	9.53	7.13	8.07	8.54	6.35	7.27	7.68	4.40	5.77
13	11.82	10.63	11.24	9.56	7.12	8.14	8.51	5.87	6.96	7.60	4.23	5.72
14	11.96	11.00	11.39	9.19	7.23	8.13	8.73	5.41	6.75	6.19	3.48	4.70
15	11.69	10.59	11.14	8.60	6.37	7.71	8.38	5.86	6.89	5.64	3.62	4.26
16	11.09	9.94	10.53	8.56	5.91	7.16	8.09	4.98	6.24	5.65	2.86	3.89
17	10.42	9.54	9.99	7.93	5.20	7.20	7.18	4.41	5.47	5.74	3.41	4.35
18	10.25	8.64	9.40	7.54	5.43	6.24	6.93	3.85	5.05	5.94	3.45	4.65
19	9.63	7.74	8.59	7.24	4.13	5.15	6.26	3.67	4.66	6.28	3.66	4.88
20	8.98	7.35	7.99	6.90	4.26	5.08	6.37	3.85	4.92	6.41	3.84	5.06
21	8.80	7.78	8.19	6.88	4.29	5.30	6.69	3.98	5.34	6.08	3.00	4.59
22	9.26	7.57	8.32	6.64	4.04	5.05	6.63	3.18	5.05	5.98	3.16	4.58
23	8.71	6.76	7.56	6.77	3.94	5.23	6.83	4.32	5.85	6.63	3.20	4.77
24	8.58	6.55	7.43	7.48	4.55	5.94	7.43	4.59	6.09	7.04	3.62	5.19
25	8.82	7.02	7.74	7.53	5.09	5.98	7.46	4.33	5.95	7.78	4.27	5.84
26	8.73	7.31	7.94	7.39	4.56	5.80	7.47	4.33	5.87	8.02	4.54	5.99
27	9.23	8.01	8.52	7.37	4.54	5.68	7.29	3.83	5.77	7.74	4.31	5.82
28	9.52	8.26	8.91	7.16	4.16	5.59	7.66	4.90	5.88	6.91	4.49	5.64
29	9.78	8.91	9.23	7.04	4.10	5.44	7.77	5.30	6.37	6.53	3.47	4.80
30	9.42	8.48	8.97	7.49	4.90	5.93	7.58	4.89	5.83	6.79	3.80	4.77
31	---	---	---	7.57	4.74	5.89	6.91	3.91	5.24	---	---	---
MONTH	11.96	6.55	9.84	9.64	3.94	7.01	9.05	3.18	5.98	8.02	2.86	5.10
YEAR	18.96	2.86	9.32									

WILLAMETTE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929 (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, 65,500 acre-ft June 21, elevation, 3,189.85 ft; minimum contents observed, 41,610 acre-ft Jan. 3, elevation, 3,170.77 ft.

MONTHEND ELEVATION AND CONTENTS AT 0800, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept. 30.....	3,186.53	61,040	-
Oct. 31.....	3,185.15	59,230	-1,810
Nov. 30.....	3,180.18	52,900	-6,330
Dec. 31.....	3,171.73	42,720	-10,180
CAL YR 1990.....	-	-	-1,870
Jan. 31.....	3,175.84	47,580	+4,860
Feb. 28.....	3,183.36	56,910	+9,330
Mar. 31.....	3,186.58	61,110	+4,200
Apr. 30.....	3,188.34	63,450	+2,340
May 31.....	3,189.49	65,010	+1,560
June 30.....	3,189.83	65,480	+470
July 31.....	3,189.51	65,040	-440
Aug. 31.....	3,189.73	65,340	+300
Sept. 30.....	3,187.96	62,940	-2,400
WTR YR 1991.....	-	-	+1,900

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 National Geodetic Vertical Datum of 1929 (Portland General Electric Co. bench mark).

REMARKS.--Records excellent except for estimated daily discharges, which are good. Flow regulated since 1956 by Timothy Lake (station 14208600). No diversion upstream from station.

AVERAGE DISCHARGE.--35 years, 130 ft³/s, 32.45 in/yr, 94,180 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, 654 ft³/s July 2, gage height, 2.94 ft; minimum discharge, 31 ft³/s Feb. 8-11.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	38	102	275	382	36	39	39	122	109	164	52	83
2	37	103	304	326	37	39	39	122	100	254	53	82
3	34	110	319	38	38	41	39	121	73	73	54	87
4	34	46	268	38	38	42	39	121	52	63	51	97
5	34	39	300	38	40	40	40	122	52	59	53	96
6	34	39	313	38	39	40	40	124	51	59	61	96
7	34	39	327	44	39	40	40	136	50	59	64	78
8	34	39	341	45	35	40	39	152	50	61	50	97
9	34	95	285	36	31	40	40	149	58	62	33	97
10	74	315	208	36	31	40	40	149	80	62	33	97
11	177	341	236	36	34	129	79	149	92	62	33	97
12	127	351	268	37	39	170	169	148	92	62	32	97
13	148	314	286	39	43	175	168	117	92	63	33	76
14	169	316	296	41	41	174	160	81	92	63	33	91
15	159	337	310	44	41	163	173	50	92	63	33	92
16	144	349	326	41	40	145	179	39	92	64	44	92
17	166	343	302	40	40	115	190	39	90	64	53	92
18	132	350	231	39	40	120	197	40	80	64	53	90
19	139	348	285	39	41	124	185	39	82	64	52	88
20	161	351	e300	38	42	129	145	39	106	64	52	90
21	109	324	e320	38	41	131	140	39	132	64	53	94
22	107	313	e340	38	40	133	143	77	125	63	50	93
23	142	306	e340	38	40	144	140	104	93	62	48	92
24	152	294	e350	38	39	147	154	108	79	64	46	92
25	158	83	351	38	39	152	167	113	79	64	44	92
26	133	38	352	38	39	142	168	114	79	64	44	92
27	158	38	340	37	39	117	168	112	82	64	45	92
28	154	123	359	36	39	112	146	104	86	56	45	92
29	157	225	374	36	---	82	146	108	86	53	45	92
30	88	250	372	36	---	39	132	125	86	53	74	92
31	77	---	381	36	---	39	---	118	---	53	96	---
TOTAL	3344	6321	9659	1824	1081	3083	3544	3181	2512	2209	1512	2738
MEAN	108	211	312	58.8	38.6	99.5	118	103	83.7	71.3	48.8	91.3
MAX	177	351	381	382	43	175	197	152	132	254	96	97
MIN	34	38	208	36	31	39	39	39	50	53	32	76
AC-FT	6630	12540	19160	3620	2140	6120	7030	6310	4980	4380	3000	5430
MEAN†	78.4	104	146	138	207	168	157	128	91.6	64.1	53.7	50.9
CFSM†	1.44	1.91	2.68	2.54	3.81	3.09	2.89	2.35	1.68	1.18	0.99	0.94
IN.†	1.66	2.14	3.10	2.92	3.95	3.56	3.23	2.71	1.88	1.36	1.14	1.04
AC-FT†	4820	6210	8980	8480	11470	10340	9370	7870	5450	3940	3300	3030

CAL YR 1990 TOTAL 47510 MEAN 130 MAX 381 MIN 34 AC-FT 94240 MEAN† 128 CFSM† 2.35 IN.† 31.89 AC-FT† 92370
WTR YR 1991 TOTAL 41008 MEAN 112 MAX 382 MIN 31 AC-FT 81340 MEAN† 115 CFSM† 2.11 IN.† 28.75 AC-FT† 83240

e Estimated

† Adjusted for change in contents in Timothy Lake.

WILLAMETTE RIVER BASIN

315

14209000 OAK GROVE FORK ABOVE POWERPLANT INTAKE, OR

LOCATION.--Lat 45°04'20", long 121°57'00", on line between secs.3 and 4, T.6 S., R.7 E., Clackamas County, Hydrologic Unit 17090011, Mount Hood National Forest, on right bank 0.2 mi upstream from Spring Creek, 0.7 mi upstream from Kink Creek, 1.0 mi upstream from Portland General Electric Co. diversion dam, 24 mi southeast of Estacada, and at mile 6.1.

DRAINAGE AREA.--126 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. Datum of gage is 2,052.31 ft above National Geodetic Vertical Datum of 1929. 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.

REMARKS.--Records good except for estimated daily discharges, which are fair. Flow regulated since 1956 by Timothy Lake (station 14208600). No diversion upstream from station.

AVERAGE DISCHARGE.--82 years, 496 ft³/s, 359,400 acre-ft/yr.

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, 207 ft³/s Sept. 25, 26, 1988.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,100 ft³/s Feb. 13, gage height, 3.26 ft; minimum discharge, 236 ft³/s Sept. 13, 14.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	245	385	601	e620	341	463	389	492	439	399	282	292
2	245	365	605	e550	388	519	392	489	428	551	285	290
3	269	365	603	e310	530	620	387	485	394	344	286	290
4	249	383	600	e310	498	709	402	480	371	329	281	307
5	267	370	602	e310	696	595	518	477	363	322	278	307
6	251	344	599	e310	583	549	494	495	360	319	287	307
7	245	335	602	e310	526	518	462	513	352	318	290	284
8	245	335	604	e340	488	500	448	582	348	317	279	307
9	245	358	602	e300	458	490	524	552	348	314	257	307
10	265	586	596	e270	439	471	492	548	369	311	254	304
11	371	609	599	327	434	519	490	534	383	309	253	302
12	371	609	598	475	488	577	587	528	381	308	250	299
13	373	611	601	516	943	565	583	499	387	307	250	290
14	383	607	600	629	870	553	585	450	394	307	250	289
15	386	611	594	930	726	533	586	412	382	307	250	296
16	378	616	597	717	676	512	582	410	380	309	258	296
17	378	615	600	612	622	477	587	515	374	310	271	295
18	377	615	600	558	594	477	588	525	358	307	267	293
19	379	611	592	514	638	475	579	488	362	306	265	288
20	377	611	594	477	747	471	540	463	415	305	266	289
21	398	601	587	449	726	471	534	447	450	303	266	294
22	358	616	e600	431	645	467	536	463	437	299	263	292
23	382	608	e590	413	589	479	532	488	393	296	260	291
24	374	609	e600	397	549	497	558	486	373	297	258	292
25	380	684	e640	387	521	493	559	489	372	296	255	291
26	378	502	e620	376	497	474	557	482	367	295	255	292
27	380	449	e610	364	480	443	559	468	367	294	256	292
28	380	452	e650	357	464	432	532	450	374	287	259	292
29	380	597	e620	346	---	407	526	453	367	281	256	291
30	381	591	e610	338	---	354	509	483	361	281	277	291
31	375	---	e640	341	---	366	---	459	---	281	311	---
TOTAL	10465	15650	18756	13584	16156	15476	15617	15105	11449	9809	8275	8850
MEAN	338	522	605	438	577	499	521	487	382	316	267	295
MAX	398	684	650	930	943	709	588	582	450	551	311	307
MIN	245	335	587	270	341	354	387	410	348	281	250	284
AC-FT	20760	31040	37200	26940	32050	30700	30980	29960	22710	19460	16410	17550

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1991, BY WATER YEAR (WY)

MEAN	391	497	569	576	572	563	561	585	445	325	304	345
MAX	517	613	1047	1036	959	1377	825	1104	1126	517	429	516
(WY)	1975	1969	1965	1974	1982	1972	1974	1971	1974	1974	1974	1960
MIN	236	288	325	255	250	327	311	292	265	241	225	247
(WY)	1982	1988	1977	1977	1977	1977	1978	1978	1978	1978	1979	1957

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1957 - 1991

	1990	1991	1957-1991
ANNUAL TOTAL	158419	159192	
ANNUAL MEAN	434	436	477
HIGHEST ANNUAL MEAN			709
LOWEST ANNUAL MEAN			335
HIGHEST DAILY MEAN	1160	943	3640
LOWEST DAILY MEAN	240	245	208
ANNUAL SEVEN-DAY MINIMUM	252	252	221
ANNUAL RUNOFF (AC-FT)	314200	315800	345700
10 PERCENT EXCEEDS	602	608	664
50 PERCENT EXCEEDS	421	410	473
90 PERCENT EXCEEDS	281	281	274

WILLAMETTE RIVER BASIN

317

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 National Geodetic Vertical Datum of 1929, from topographic map.

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

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 3,740 ft³/s Dec. 5, 1989, gage height, 9.29 ft, from crest-stage gage; minimum discharge, 9.6 ft³/s Sept. 25-30, 1991.

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)
Nov. 25	0830	2,140	8.25	Feb. 13	unknown	1,470	a7.63
Jan. 15	0600	*2,290	*a8.37				

Minimum discharge, 9.6 ft³/s Sept. 25-30.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e11	458	301	73	87	134	200	223	189	94	25	16
2	e12	280	252	69	177	243	219	223	169	84	24	15
3	e17	215	217	65	586	512	201	212	151	77	23	15
4	e26	429	290	61	493	883	284	197	134	71	23	14
5	e50	467	318	59	771	563	760	187	121	66	22	13
6	33	374	240	e75	519	388	627	203	112	63	21	13
7	24	297	196	e100	344	309	436	252	102	58	21	12
8	20	286	180	81	259	268	338	e580	96	54	21	12
9	18	261	275	82	211	258	776	474	92	51	24	12
10	17	217	582	179	180	236	558	413	85	50	32	12
11	17	177	502	e460	162	211	392	359	84	47	23	12
12	70	146	353	1090	239	234	e310	319	81	45	22	12
13	71	227	264	851	e1070	244	e280	287	82	41	20	12
14	60	314	211	945	823	213	e290	267	88	41	20	12
15	57	230	178	1540	513	189	e270	234	77	40	18	12
16	84	184	152	764	386	167	e250	215	72	40	18	12
17	69	171	157	524	e370	156	e240	376	72	40	18	11
18	e160	193	437	374	e360	153	227	e540	67	38	18	11
19	e130	174	301	294	e440	147	220	438	64	36	17	11
20	89	167	e200	243	e650	135	216	348	102	36	17	10
21	272	213	e160	200	787	132	225	284	158	33	16	10
22	343	315	e140	176	515	133	223	243	176	33	15	10
23	178	350	e110	153	367	131	207	210	149	31	15	10
24	118	366	e90	138	269	161	236	189	130	36	15	10
25	99	1480	e80	119	215	152	229	177	118	34	15	9.9
26	203	714	e80	107	181	137	229	170	108	30	15	9.6
27	139	473	e110	98	155	124	257	156	99	28	14	9.6
28	147	329	101	92	139	116	246	145	121	27	e22	9.6
29	166	320	e75	84	---	105	235	141	114	26	e28	9.6
30	408	352	e70	78	---	104	227	e230	104	26	17	9.6
31	652	---	e70	84	---	145	---	212	---	25	16	---
TOTAL	3760	10179	6692	9258	11268	7083	9408	8504	3317	1401	615	346.9
MEAN	121	339	216	299	402	228	314	274	111	45.2	19.8	11.6
MAX	652	1480	582	1540	1070	883	776	580	189	94	32	16
MIN	11	146	70	59	87	104	200	141	64	25	14	9.6
AC-FT	7460	20190	13270	18360	22350	14050	18660	16870	6580	2780	1220	688
CFSM	2.68	7.51	4.78	6.61	8.90	5.05	6.94	6.07	2.45	1.00	.44	.26
IN.	3.09	8.38	5.51	7.62	9.27	5.83	7.74	7.00	2.73	1.15	.51	.29

CAL YR 1990 TOTAL 75016 MEAN 206 MAX 2280 MIN 11 AC-FT 148800 CFSM 4.55 IN. 61.74
WTR YR 1991 TOTAL 71831.9 MEAN 197 MAX 1540 MIN 9.6 AC-FT 142500 CFSM 4.35 IN. 59.12

e Estimated

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 296.93 ft above National Geodetic Vertical Datum of 1929 (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 2.00 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.--83 years, 2,739 ft³/s, 55.43 in/yr, 1,984,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 86,900 ft³/s Dec. 22, 1964, gage height, 18.36 ft; 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 discharge 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)
Nov. 25	1230	16,200	7.67	Jan. 15	0900	*16,800	*7.83

Minimum daily discharge, 605 ft³/s Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	648	3610	3660	1730	1810	2490	2620	2700	2420	1610	855	782
2	605	2680	3230	1690	2120	3190	2810	2690	2340	1840	832	746
3	662	2170	2820	1360	4890	4780	2910	2670	2220	1460	812	709
4	739	3070	3150	1240	4530	9010	3310	2560	2070	1380	812	734
5	872	3570	3510	1180	7930	6680	6520	2510	1930	1320	818	744
6	812	3100	2890	1180	6250	5070	6680	2670	1920	1320	823	724
7	709	2660	2750	1230	4590	4200	4910	2960	1810	1250	812	725
8	680	2600	2590	1400	3620	3690	4020	5000	1750	1210	804	707
9	626	2580	2930	1290	3160	3500	6040	4650	1680	1190	792	721
10	651	2680	5010	1730	2880	3320	5570	4210	1660	1150	874	706
11	700	2400	5160	2790	2690	3040	4380	3850	1730	1080	794	712
12	1110	2200	4050	7640	2840	3310	3200	3530	1680	1110	779	748
13	1120	2610	3390	8470	7150	3280	3700	3290	1700	1080	738	770
14	1040	2990	3000	8090	8100	3070	3660	3220	1810	1070	755	735
15	1020	2640	2740	13600	5960	2920	3600	2820	1680	1060	749	694
16	1240	2400	2530	8490	5230	2720	3330	2720	1600	1050	746	693
17	1240	2300	2450	6020	4550	2540	3180	5290	1580	1110	767	690
18	1610	2420	3550	4820	3980	2520	3060	6280	1440	1060	772	683
19	1760	2280	3160	3960	4430	2490	3000	5310	1450	1000	765	649
20	1320	2260	2600	3360	5870	2410	2910	4050	1970	983	736	662
21	1770	2370	2340	2860	7290	2360	2940	3600	2350	972	721	671
22	2820	2890	2280	2730	5620	2350	2970	3330	2450	952	728	678
23	1880	3400	2210	2520	4400	2350	2910	3040	2140	938	710	668
24	1450	3420	2120	2350	3670	2630	3110	2870	1890	951	726	672
25	1370	11200	2190	2210	3220	2590	3120	2780	1890	968	685	677
26	1830	7450	2080	2030	2890	2430	3000	2700	1820	935	701	667
27	1560	5000	2120	1900	2700	2260	3070	2530	1750	905	712	673
28	1550	3750	2070	1850	2560	2160	2900	2460	1930	901	723	675
29	1630	3660	1800	1700	---	2070	2860	2340	1800	854	750	666
30	2640	3980	1760	1690	---	1900	2750	2730	1730	817	710	678
31	4360	---	1840	1710	---	2090	---	2600	---	873	803	---
TOTAL	42024	100340	87980	104820	124930	99420	109820	103960	56190	34399	23804	21059
MEAN	1356	3345	2838	3381	4462	3207	3661	3354	1873	1110	768	702
MAX	4360	11200	5160	13600	8100	9010	6680	6280	2450	1840	874	782
MIN	605	2170	1760	1180	1810	1900	2620	2340	1440	817	685	649
AC-FT	83350	199000	174500	207900	247800	197200	217800	206200	111500	68230	47220	41770
CFSM	2.02	4.98	4.23	5.04	6.65	4.78	5.46	5.00	2.79	1.65	1.14	1.05
IN.	2.33	5.56	4.88	5.81	6.93	5.51	6.09	5.76	3.12	1.91	1.32	1.17

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1959 - 1991, BY WATER YEAR (WY)

	1959	1960	1961	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
MEAN	1339	3240	4482	4554	4212	3659	3608	3494	2241	1152	884	961																					
MAX	2712	6263	11170	8821	8938	8921	5177	6396	5143	2018	1208	1602																					
(WY)	1969	1974	1965	1974	1982	1972	1962	1969	1974	1974	1974	1959																					
MIN	725	806	1030	1036	977	2210	1867	1796	1143	801	660	664																					
(WY)	1989	1988	1977	1977	1977	1973	1967	1973	1987	1987	1987	1987																					

SUMMARY STATISTICS

	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1959 - 1991
ANNUAL TOTAL	955223	908746	
ANNUAL MEAN	2617	2490	
HIGHEST ANNUAL MEAN			2812
LOWEST ANNUAL MEAN			4407
HIGHEST DAILY MEAN	18500	Jan 8	1454
LOWEST DAILY MEAN	605	Oct 2	57200
ANNUAL SEVEN-DAY MINIMUM	690	Sep 28	285
ANNUAL RUNOFF (AC-FT)	1895000	1802000	507
ANNUAL RUNOFF (CFSM)	3.90	3.71	2037000
ANNUAL RUNOFF (INCHES)	52.96	50.38	4.19
10 PERCENT EXCEEDS	4240	4610	56.93
50 PERCENT EXCEEDS	2460	2280	5280
90 PERCENT EXCEEDS	761	724	2210
			795

WILLAMETTE RIVER BASIN

319

14211000 CLACKAMAS RIVER NEAR CLACKAMAS, OR

LOCATION.--Lat 45°23'36", long 122°31'54", in NE 1/4 SW 1/4 sec.14, T.2 S., R.2 E., Clackamas County, Hydrologic Unit 17090011, on right bank 0.8 mi upstream from Johnson Creek, 2.1 mi southeast of Clackamas, and at mile 4.8.

DRAINAGE.--930 mi² at gage, 936 mi² at Gladstone Bridge 3.6 mi downstream, where high-flow discharge measurements were made.

PERIOD OF RECORD.--September 1911 to April 1912 published as "at Park Place" (daily discharge), October 1962 to September 1983 (daily discharge), May 1988 to September 1991 (gage height) (discontinued).

GAGE.--Water-stage recorder. Datum of gage is 50.62 ft above National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers). Sept. 15, 1911, to Apr. 22, 1912, nonrecording gage at site 3.6 mi downstream at different datum. Oct. 1, 1962, to Sept. 10, 1969, water-stage recorder on left bank at site 300 ft downstream at 50.68 datum. Sept. 11, 1969, to Sept. 30, 1983, on left bank site 10 ft upstream at 50.68 ft datum.

REMARKS.--Diurnal fluctuations and some regulation by powerplants and several storage dams upstream, operated by Portland General Electric Co. Small diversions upstream from station for Estacada municipal water supply. All records given herein are for gage site. Continuous water-quality records for the period May 1963 to July 1976 have been collected at this location.

EXTREMES FOR PERIOD OF RECORD.--Maximum gage height, 27.0 ft Dec. 22, 1964, from floodmarks; minimum gage height recorded since May 1988, 1.48 ft Oct. 11, 1990.

EXTREMES FOR CURRENT PERIOD.--Maximum gage height, 9.92 ft Jan. 15; minimum, 1.48 ft Oct. 11.

GAGE HEIGHT, FEET, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.71	4.98	5.08	3.23	3.22	3.84	3.83	3.81	3.68	3.03	1.98	1.97
2	1.58	4.21	4.85	3.19	3.32	4.18	4.06	3.77	3.59	3.06	1.95	1.85
3	1.62	3.73	4.45	2.99	5.10	5.18	4.06	3.75	3.49	2.83	1.91	1.85
4	1.93	4.13	4.52	---	5.19	6.93	4.15	3.62	3.38	2.71	1.89	1.81
5	2.12	4.73	4.82	---	6.55	6.37	5.84	3.56	3.21	2.64	1.91	1.89
6	2.11	4.46	4.38	2.72	6.10	5.59	6.34	3.68	3.18	2.60	1.93	1.80
7	1.87	4.04	4.17	2.83	5.30	5.19	5.56	3.90	3.09	2.55	1.92	1.78
8	1.79	3.97	4.06	3.00	4.75	4.89	5.11	5.40	3.01	2.48	1.90	1.76
9	1.69	3.88	4.24	2.91	4.39	4.75	6.06	5.42	2.96	2.46	1.88	1.77
10	1.61	3.93	5.74	3.48	4.15	4.75	5.95	5.12	2.91	2.42	2.04	1.76
11	1.73	3.69	5.96	4.35	3.97	4.52	5.33	4.86	2.97	2.36	1.92	1.75
12	2.21	3.52	5.31	6.34	4.02	4.62	5.04	4.62	2.94	2.30	1.86	1.77
13	2.46	3.88	4.83	7.09	6.18	4.63	4.85	4.45	2.93	2.30	1.83	1.87
14	2.41	4.77	4.47	6.67	7.24	4.47	4.77	4.36	3.10	2.27	1.86	1.80
15	2.32	4.26	4.20	9.12	6.18	4.36	4.75	4.10	2.98	2.27	1.85	1.75
16	2.56	3.94	4.01	7.43	5.94	4.17	4.55	3.93	2.85	2.27	1.86	1.73
17	2.66	3.83	3.89	6.22	5.60	4.00	4.40	6.00	2.86	2.37	1.87	1.74
18	3.06	3.92	4.64	5.60	5.20	3.95	4.27	7.01	2.69	2.30	1.92	1.73
19	3.24	3.76	---	5.12	5.33	3.90	4.18	6.26	2.67	2.21	1.91	1.68
20	2.77	3.78	---	4.63	6.30	3.83	4.11	5.45	3.26	2.20	1.92	1.64
21	2.94	3.85	---	4.27	7.07	3.75	4.09	4.97	3.70	2.15	1.87	1.64
22	4.25	4.18	---	---	6.17	3.76	4.09	4.67	3.81	2.12	1.90	1.66
23	3.39	4.70	---	3.92	5.45	3.74	4.04	4.39	3.61	2.08	1.82	1.67
24	2.92	4.64	---	3.72	4.95	4.20	4.20	4.19	3.38	2.08	1.84	1.66
25	2.76	7.91	---	3.61	4.58	4.09	4.26	4.12	3.36	2.14	1.77	1.66
26	3.31	7.05	3.49	3.43	4.29	3.92	4.18	4.02	3.32	2.13	1.82	1.67
27	3.07	5.79	3.58	---	4.09	3.72	4.33	3.87	3.23	2.04	1.80	1.66
28	3.03	5.04	---	3.24	3.93	3.61	4.20	3.82	3.29	2.04	1.89	1.68
29	3.10	4.93	---	---	---	3.48	4.04	3.66	3.20	1.99	1.98	1.70
30	3.77	5.20	---	---	---	3.32	3.92	3.92	3.16	1.98	1.83	1.70
31	5.37	---	---	3.06	---	3.43	---	3.87	---	1.92	1.85	---
MEAN	2.62	4.49	---	---	5.16	4.36	4.62	4.47	3.19	2.33	1.89	1.75
MAX	5.37	7.91	---	---	7.24	6.93	6.34	7.01	3.81	3.06	2.04	1.97
MIN	1.58	3.52	---	---	3.22	3.32	3.83	3.56	2.67	1.92	1.77	1.64

14211500 JOHNSON CREEK AT SYCAMORE, OR

LOCATION.--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 right bank 0.3 mi southwest of Sycamore station, 2.5 mi east of city limits of Portland, and at mile 10.2.

DRAINAGE AREA.--26.5 mi².

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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for Oct. 1-23 and estimated daily discharges, which are fair. Data for Oct. 1-23 furnished by National Weather Service. Since January 1980, flow from the Powell Butte Reservoir overflow 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.--51 years, 53.7 ft³/s, 27.52 in/yr, 38,910 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)
Jan. 15	0830	929	10.31	May 17	1700	592	8.26
Feb. 20	1430	*1,130	*11.23				

Minimum discharge, 0.47 ft³/s Oct. 1, Sept. 5, 25, 27, but may have been less Oct. 1-23 during period of furnished record.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.7	61	188	38	27	35	28	27	16	9.0	13	6.2
2	1.8	37	129	29	58	70	27	23	15	8.1	1.9	2.7
3	2.6	27	87	27	72	133	27	19	13	6.5	1.8	1.6
4	14	27	116	25	134	270	43	17	12	5.3	1.4	1.1
5	16	25	85	22	168	180	300	15	11	4.9	1.4	.80
6	3.9	19	62	19	104	150	174	23	11	4.9	1.5	1.3
7	2.2	19	50	89	73	106	217	38	10	4.4	1.6	1.4
8	1.6	17	42	85	56	86	171	112	9.3	3.9	2.0	1.4
9	1.4	14	99	76	45	83	185	83	8.2	3.8	5.7	1.6
10	2.2	12	279	266	38	110	141	61	7.6	4.4	5.8	1.9
11	1.3	11	183	236	36	88	106	49	7.8	3.7	2.2	2.1
12	4.5	11	109	332	68	113	81	47	7.6	3.1	1.5	1.5
13	3.4	148	89	202	218	85	63	41	11	2.9	1.5	4.4
14	5.5	147	69	210	179	75	54	44	11	2.7	1.4	2.3
15	4.9	72	56	635	122	63	51	32	7.8	2.6	1.3	1.6
16	5.3	49	49	255	117	54	44	28	8.1	2.9	1.4	1.5
17	3.4	67	61	150	82	46	37	373	6.5	3.1	1.2	1.3
18	82	64	95	108	72	45	35	425	5.9	2.8	1.5	2.1
19	14	50	87	80	68	43	30	198	5.8	2.6	1.4	1.5
20	7.1	57	57	61	695	39	27	116	99	2.5	1.4	1.1
21	62	58	e44	48	309	37	25	77	58	2.2	1.3	1.3
22	32	75	e36	42	158	43	22	56	36	2.0	1.5	1.0
23	15	56	e30	39	101	62	22	43	28	2.1	1.3	1.0
24	9.9	68	e28	36	74	172	53	36	22	2.2	1.2	.92
25	20	323	e28	33	58	96	44	33	19	2.3	1.2	.70
26	46	120	33	29	48	69	47	34	16	2.3	1.2	1.6
27	21	106	67	24	41	52	61	25	14	1.9	1.3	.88
28	35	68	e70	23	36	42	49	22	12	1.7	7.4	1.1
29	34	135	e38	21	---	37	46	23	13	1.4	5.6	1.4
30	113	135	e36	20	---	34	33	24	11	1.7	3.2	1.4
31	138	---	e34	27	---	31	---	19	---	5.3	2.7	---
TOTAL	704.7	2078	2436	3287	3257	2549	2243	2163	512.6	109.2	78.8	50.70
MEAN	22.7	69.3	78.6	106	116	82.2	74.8	69.8	17.1	3.52	2.54	1.69
MAX	138	323	279	635	695	270	300	425	99	9.0	13	6.2
MIN	1.3	11	28	19	27	31	22	15	5.8	1.4	1.2	.70
AC-FT	1400	4120	4830	6520	6460	5060	4450	4290	1020	217	156	101
CFSM	.86	2.61	2.97	4.00	4.39	3.10	2.82	2.63	.64	.13	.10	.06
IN.	.99	2.92	3.42	4.61	4.57	3.58	3.15	3.04	.72	.15	.11	.07

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1941 - 1991, BY WATER YEAR (WY)

MEAN	10.2	70.6	126	142	119	87.0	48.3	25.4	11.2	3.04	1.88	2.81
MAX	65.4	239	302	308	320	196	130	90.1	63.5	30.0	8.04	11.4
(WY)	1969	1951	1965	1970	1949	1957	1955	1963	1984	1983	1968	1972
MIN	1.29	1.56	4.34	9.01	16.0	20.2	9.46	3.32	1.46	.64	.44	.55
(WY)	1966	1953	1977	1977	1977	1941	1942	1966	1966	1973	1970	1967

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1941 - 1991

ANNUAL TOTAL	18229.26		19469.00				
ANNUAL MEAN	49.9		53.3			53.7	
HIGHEST ANNUAL MEAN						91.3	1974
LOWEST ANNUAL MEAN						15.6	1977
HIGHEST DAILY MEAN	540	Jan 10	695	Feb 20	2150		Dec 22 1964
LOWEST DAILY MEAN	.62	Sep 7	.70	Sep 25	.10		Aug 7 1973
ANNUAL SEVEN-DAY MINIMUM	.87	Sep 3	1.0	Sep 22	.11		Aug 5 1973
ANNUAL RUNOFF (AC-FT)	36160		38620		38890		
ANNUAL RUNOFF (CFSM)	1.88		2.01		2.03		
ANNUAL RUNOFF (INCHES)	25.59		27.33		27.53		
10 PERCENT EXCEEDS	144		134		147		
50 PERCENT EXCEEDS	18		28		14		
90 PERCENT EXCEEDS	1.4		1.5		1.1		

WILLAMETTE RIVER BASIN

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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.

PERIOD OF RECORD.--April 1989 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is National Geodetic Vertical Datum of 1929, from State of Oregon.

REMARKS.--No estimated daily discharges. Record good. 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,030 ft³/s Feb. 20, 1991, gage height 29.28 ft; minimum discharge, 12 ft³/s Aug. 11, 1990.

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. 15	1200	884	28.77	Feb. 20	1630	*1,030	*29.28

Minimum discharge, 16 ft³/s several days in October and September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	18	81	193	56	43	43	36	46	34	29	31	22
2	18	56	153	48	102	81	34	41	32	26	20	20
3	18	45	102	44	114	146	35	37	30	25	19	19
4	23	44	127	40	169	292	52	35	29	24	19	19
5	47	42	106	37	205	210	342	34	28	23	18	17
6	23	38	76	34	131	157	190	40	28	23	19	17
7	19	36	64	98	97	115	226	49	27	22	19	17
8	17	35	56	105	76	92	175	122	26	22	19	17
9	17	30	95	95	65	85	195	98	25	23	23	17
10	17	28	290	280	56	114	146	76	24	21	26	17
11	17	28	212	265	55	93	111	64	24	22	22	17
12	22	28	131	369	80	118	88	62	24	20	20	18
13	19	134	107	241	220	93	75	57	26	20	19	18
14	21	185	89	228	205	80	70	61	29	20	19	18
15	23	90	74	671	141	71	62	50	27	20	19	18
16	21	64	66	313	143	60	57	47	24	20	18	18
17	23	74	78	181	104	52	49	406	25	20	20	17
18	100	84	104	131	89	51	46	510	23	20	21	17
19	35	63	110	100	86	49	43	245	23	20	20	17
20	24	70	76	82	669	44	40	142	129	21	20	17
21	89	68	55	66	380	41	37	99	89	21	20	17
22	64	88	50	58	174	46	35	76	60	20	20	17
23	32	72	40	54	113	58	34	63	50	20	20	18
24	26	74	42	49	86	186	63	56	44	20	19	16
25	28	327	42	46	69	107	61	51	41	20	18	16
26	62	143	49	44	58	81	57	55	37	20	17	16
27	39	119	84	39	51	63	72	44	34	20	18	16
28	47	84	96	38	45	52	60	42	32	20	22	17
29	54	129	61	38	---	45	62	40	34	20	23	17
30	126	166	52	36	---	41	51	45	32	19	21	17
31	162	---	57	43	---	39	---	37	---	19	20	---
TOTAL	1251	2525	2937	3929	3826	2805	2604	2830	1090	660	629	524
MEAN	40.4	84.2	94.7	127	137	90.5	86.8	91.3	36.3	21.3	20.3	17.5
MAX	162	327	290	671	669	292	342	510	129	29	31	22
MIN	17	28	40	34	43	39	34	34	23	19	17	16
AC-FT	2480	5010	5830	7790	7590	5560	5170	5610	2160	1310	1250	1040
CFSM	.78	1.62	1.83	2.45	2.64	1.75	1.68	1.76	.70	.41	.39	.34
IN.	.90	1.81	2.11	2.82	2.75	2.01	1.87	2.03	.78	.47	.45	.38

CAL YR 1990	TOTAL 24520	MEAN 67.2	MAX 648	MIN 13	AC-FT 48640	CFSM 1.30	IN. 17.61
WTR YR 1991	TOTAL 25610	MEAN 70.2	MAX 671	MIN 16	AC-FT 50800	CFSM 1.35	IN. 18.39

WILLAMETTE RIVER BASIN

14211720 WILLAMETTE RIVER AT PORTLAND, OR
(National stream quality accounting network station)

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.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1972 to current year. Gage-height records collected in this vicinity since 1879 are in reports of the National Weather Service.

GAGE.--Acoustic velocity meter (AVM) with water-stage and velocity-index recorder. Datum of gage is 1.55 ft above National Geodetic Vertical Datum of 1929 (levels by National Weather Service).

REMARKS.--Water-discharge records fair except for estimated daily discharges below 50,000 ft³/s, which are poor. Flow regulated by many reservoirs upstream. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--19 years, 32,180 ft³/s, 23,310,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 283,000 ft³/s Jan. 18, 1974; maximum gage height, 23.84 ft Jan. 18, 1974; minimum daily discharge, 4,200 ft³/s July 10, 1978.

EXTREMES OUTSIDE PERIOD OF RECORD.--Floods of June 7, 1894, and June 1, 1948, reached stages of 33.0 ft and 30.0 ft, respectively, from information by National Weather Service.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 102,000 ft³/s Jan. 15, 16; maximum gage height, 12.62 ft May 21; minimum daily discharge, 7,350 ft³/s Aug. 3, 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e11300	39500	e59900	22100	e17600	22300	21000	e24600	e23400	e12100	e7460	e8480
2	e11600	40200	e61800	19800	e19400	23000	22400	e23300	e23700	e12100	e7390	e8470
3	e11600	35100	60900	20100	e29200	31700	21600	e22100	e23100	e11600	e7350	e8420
4	12000	31400	57000	17300	e39300	59200	24400	e20800	e21800	e11000	e7350	e8400
5	12700	35000	55600	17100	e49500	81700	45800	e19700	20200	e10600	e7370	e8510
6	e12300	39700	51200	17100	e53800	85200	65900	e19200	14300	e10200	e7410	e8750
7	e12400	38400	45300	16400	e50800	79700	68500	18100	18000	e9840	e7440	e8980
8	e12500	37200	41800	18900	e44000	70000	66400	22700	17100	e9490	e7440	e9090
9	e12400	36300	38600	22800	35900	61500	64800	32000	15300	e9200	e7440	e9190
10	e12300	36500	43900	25800	30800	57100	68000	37800	13800	e8960	e7550	e9280
11	e12300	35200	58100	32200	26900	53400	66400	39800	15600	e8740	e7690	e9520
12	e12400	33200	64600	e51000	26300	48100	60100	38500	14400	e8580	e7770	e9890
13	e12700	33400	61600	e74600	32100	e49500	53500	35300	12700	e8430	e7760	e10200
14	e13000	40800	51700	e89700	47500	e49200	46400	33500	14100	e8310	e7660	e10300
15	e13400	47300	47000	e102000	49800	e47000	41700	30800	13800	e8310	e7550	e10300
16	e13800	43300	41200	e102000	45600	e43500	39500	e30300	13600	e8370	e7490	e10300
17	e14100	37400	36100	e95900	41400	e39200	37000	e33700	12800	e8450	e7510	e10300
18	e14900	34400	37700	e86100	38200	e34900	33800	e47600	13700	e8450	e7590	e10500
19	e15900	33400	35900	e75600	36900	30300	31200	e65400	12500	e8360	e7710	e10800
20	17100	31100	e37100	e66200	44800	28700	28900	e73300	13300	e8250	e7830	e11000
21	16800	31000	e36000	e58700	56000	28600	26600	e69600	14400	e8090	e7920	e11100
22	19900	33500	e33500	e52900	55100	27400	24800	e60000	18000	e7940	e7880	e11100
23	21900	39300	e31800	e47800	45600	27600	24000	e50300	16800	e7770	e7720	e11300
24	20100	42400	31100	e42400	38900	28600	22800	e43000	14700	e7520	e7620	e11400
25	19200	58800	29100	e36800	31900	32100	23100	e37500	13600	e7430	e7600	e11200
26	20700	75400	25800	e32000	28500	32700	25800	e33200	13000	e7460	e7660	e11000
27	20100	77400	22100	e28000	26100	29500	26500	e30000	11800	e7520	e7760	e11000
28	21400	72400	23000	e24800	23500	27200	26900	e27600	11800	e7570	e7870	e11200
29	21200	63600	e22900	e22300	---	25100	e26500	e25200	12900	e7560	e8070	e11400
30	23300	60500	e22800	e20000	---	24100	e25700	e23700	13700	e7520	e8250	e11600
31	31000	---	21400	e18300	---	21400	---	e23100	---	e7490	e8380	---
TOTAL	496300	1293100	1286500	1356700	1065400	1299500	1160000	1091700	467900	273210	237490	302980
MEAN	16010	43100	41500	43760	38050	41920	38670	35220	15600	8813	7661	10100
MAX	31000	77400	64600	102000	56000	85200	68500	73300	23700	12100	8380	11600
MIN	11300	31000	21400	16400	17600	21400	21000	18100	11800	7430	7350	8400
AC-FT	984400	2565000	2552000	2691000	2113000	2578000	2301000	2165000	928100	541900	471100	601000

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1991, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1973	16050	22150	1976	8915	1988
1974	40630	98410	1974	10300	1988
1975	66030	129200	1978	8894	1977
1976	62110	119200	1974	8795	1977
1977	52230	94040	1982	8050	1977
1978	43880	77790	1974	17980	1978
1979	34300	58760	1974	17630	1977
1980	25020	41520	1984	11150	1973
1981	17780	38730	1984	8351	1973
1982	9283	15870	1983	6541	1973
1983	8241	10870	1983	6136	1973
1984	11670	17350	1978	8580	1973

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1973 - 1991

	1990 CALENDAR YEAR	1991 WATER YEAR	WATER YEARS 1973 - 1991
ANNUAL TOTAL	11030880	10330780	32180
ANNUAL MEAN	30220	28300	54490
HIGHEST ANNUAL MEAN			13710
LOWEST ANNUAL MEAN			13710
HIGHEST DAILY MEAN	142000	102000	276000
LOWEST DAILY MEAN	7180	7350	4200
ANNUAL SEVEN-DAY MINIMUM	7230	7390	5260
ANNUAL RUNOFF (AC-FT)	218800000	204900000	233200000
10 PERCENT EXCEEDS	62500	58700	74100
50 PERCENT EXCEEDS	23000	23100	20500
90 PERCENT EXCEEDS	7970	7900	8050

WILLAMETTE RIVER BASIN

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14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: December 1975 to September 1981.

WATER TEMPERATURE: November 1975 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED (PER- CENT SATUR- ATION)	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCHI KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	
NOV 1990												
07...	1120	42100	54	7.2	11.0	8.2	11.4	103	--	--	19	
JAN 1991												
23...	1210	E47800	64	7.4	5.0	10	13.5	105	33	53	21	
MAR												
28...	1120	29700	85	7.5	9.0	10	11.5	98	K60	95	29	
MAY												
23...	1000	E50300	63	7.5	12.0	9.2	--	--	K100	K34	23	
JUL												
16...	0950	E8370	95	7.8	22.0	4.5	7.2	82	M0	46	30	
AUG												
28...	1041	E7870	89	7.6	21.5	4.0	7.0	79	100	22	25	
DATE		CALCIUM, DIS- SOLVED (MG/L AS CA)	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, DIS IT FIELD (MG/L AS CACO3)	BICAR- BONATE, DIS IT FIELD (MG/L AS HCO3)	CAR- BONATE, DIS IT FIELD (MG/L AS CO3)	SULFATE, DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)
NOV 1990												
07...	5.1	1.5	3.9	30	0.4	0.7	19	24	0	2.1	3.4	
JAN 1991												
23...	5.6	1.8	4.0	28	0.4	0.7	20	25	0	2.4	3.1	
MAR												
28...	7.6	2.5	5.6	29	0.5	0.8	26	32	0	4.5	4.5	
MAY												
23...	5.9	1.9	4.0	27	0.4	0.6	22	27	0	2.2	2.4	
JUL												
16...	7.7	2.5	7.2	34	0.6	1.1	29	36	0	3.7	6.2	
AUG												
28...	6.4	2.2	7.1	37	0.6	1.1	29	36	0	4.3	5.5	
DATE		FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)
NOV 1990												
07...	<0.1	14	47	45	0.06	5340	<0.01	0.40	0.04	0.3	0.04	
JAN 1991												
23...	<0.1	16	43	49	0.06	--	<0.01	0.70	0.05	<0.2	0.04	
MAR												
28...	<0.1	16	57	62	0.08	4570	0.02	1.00	0.04	0.6	0.08	
MAY												
23...	0.1	16	57	49	0.08	--	0.01	0.52	0.04	0.3	0.04	
JUL												
16...	0.1	15	63	63	0.09	--	0.02	0.39	0.09	0.6	0.12	
AUG												
28...	0.1	17	53	63	0.07	--	<0.01	0.33	0.08	0.3	0.11	
DATE		PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC, DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM, DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)
NOV 1990												
07...	0.03	0.03	40	<1	4	<0.5	<1	<1	<3	5	70	
JAN 1991												
23...	0.02	0.03	--	--	--	--	--	--	--	--	--	
MAR												
28...	0.05	0.03	140	<1	8	<0.5	<1	<1	<3	2	100	
MAY												
23...	<0.04	0.02	80	<1	4	<0.5	<1	<1	<3	2	99	
JUL												
16...	0.07	0.06	--	--	--	--	--	--	--	--	--	
AUG												
28...	0.09	0.07	20	<1	6	<0.5	<1	<1	<3	3	50	

K - Results based on colony count outside acceptable range (non-ideal colony count).

14211720 WILLAMETTE RIVER AT PORTLAND, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

COLUMBIA RIVER MAIN STEM

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14211820 COLUMBIA SLOUGH AT PORTLAND, OR

LOCATION.--Lat 45°32'38", long 122°45'49", 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Record of daily net flows are fair because of large positive and negative flows.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 424 ft³/s June 20, 1991, maximum gage height, 12.67 ft May 21, 1991; minimum daily discharge, -231 ft³/s Mar. 26, 1990.

EXTREMES FOR CURRENT YEAR.--Maximum daily discharge, 424 ft³/s June 20; maximum gage height, 12.67 ft May 21; minimum daily discharge, -163 ft³/s Nov. 25.

CORRECTIONS.--The minimum daily discharge for the 1990 water year is -231 ft³/s Mar. 26, 1990, superseding that published in the 1990 report.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	153	293	247	92	89	25	225	137	65	61	126
2	95	118	101	61	290	150	141	-8.9	141	-45	156	151
3	86	133	92	246	247	226	-17	180	178	163	96	133
4	140	16	166	97	321	205	188	48	197	e112	146	91
5	158	95	293	160	216	158	211	155	151	67	118	50
6	97	164	140	271	227	148	134	168	123	110	77	-13
7	81	165	243	173	270	195	260	182	70	30	e25	76
8	125	138	252	200	250	194	315	17	63	127	-30	24
9	130	151	235	213	330	203	123	18	98	190	39	-42
10	135	229	135	234	196	299	275	-55	108	43	-6.1	90
11	195	107	228	99	65	62	234	87	24	22	25	43
12	194	57	58	35	189	87	54	304	62	24	e21	-6.9
13	157	178	223	235	111	-64	193	51	-62	47	e18	123
14	106	124	53	165	163	109	140	127	-10	-15	16	155
15	43	49	257	217	258	97	79	55	10	166	129	e120
16	138	107	262	190	270	54	184	-13	129	116	159	88
17	76	133	37	303	203	135	107	204	129	211	154	97
18	282	108	348	282	225	141	74	234	204	217	174	83
19	255	126	47	215	116	98	173	-140	236	182	117	66
20	139	47	-60	255	348	50	246	-67	424	78	e85	69
21	147	47	e206	235	177	230	263	-75	166	106	54	76
22	139	127	e312	255	362	229	93	3.2	231	99	60	63
23	198	-5.1	e232	275	232	244	132	-5.4	240	47	31	-89
24	160	109	e120	140	324	95	-12	-29	81	7.0	-67	17
25	126	-163	e81	204	34	50	-77	-3.2	41	81	119	-22
26	255	184	e296	301	49	236	147	75	-5.9	73	64	16
27	97	82	e108	166	133	76	149	119	26	e75	-4.0	44
28	177	219	e60	90	67	105	62	162	-59	87	30	137
29	130	265	e118	11	---	147	100	183	78	4.2	54	82
30	154	252	e151	254	---	264	127	114	53	36	46	103
31	150	---	e29	177	---	41	---	140	---	56	119	---
TOTAL	4389	3514.9	5116	6006	5765	4353	4123	2454.7	3263.1	2581.2	2085.9	2038.21
MEAN	142	117	165	194	206	140	137	79.2	109	83.3	67.3	67.9
MAX	282	265	348	303	362	299	315	304	424	217	174	155
MIN	24	-163	-60	11	34	-64	-77	-140	-62	-45	-67	-42
AC-FT	8710	6970	10150	11910	11430	8630	8180	4870	6470	5120	4140	4040

CAL YR 1990 TOTAL 35143.37 MEAN 96.3 MAX 381 MIN -231 AC-FT 69710
WTR YR 1991 TOTAL 45690.01 MEAN 125 MAX 424 MIN -163 AC-FT 90630

e Estimated

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 to September 1991.

GAGE.--Acoustic velocity meter with water-stage and velocity index recorder. Datum of gage is National Geodetic Vertical Datum of 1929. 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 good except for estimated daily discharges, which are fair. Flow regulated by many reservoirs on Columbia River and in tributary basins. Flow frequently reversed by tide effect except during periods of high runoff.

EXTREMES FOR PERIOD OF RECORD.--Maximum daily discharge, 581,000 ft³/s Jan. 28, 1970; minimum daily discharge, 89,900 ft³/s Sept. 21, 1969.

EXTREMES FOR PERIOD JUNE 28 TO SEPTEMBER 30.--Maximum daily discharge, 330,000 ft³/s July 8; maximum elevation, 7.47 ft July 12; minimum daily discharge, 121,000 ft³/s Sept. 16.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	---	---	---	---	---	---	---	---	---	302000	199000	143000
2	---	---	---	---	---	---	---	---	---	313000	183000	141000
3	---	---	---	---	---	---	---	---	---	318000	166000	142000
4	---	---	---	---	---	---	---	---	---	e288000	163000	e150000
5	---	---	---	---	---	---	---	---	---	e264000	155000	152000
6	---	---	---	---	---	---	---	---	---	e300000	180000	150000
7	---	---	---	---	---	---	---	---	---	e305000	187000	e155000
8	---	---	---	---	---	---	---	---	---	e330000	e176000	e130000
9	---	---	---	---	---	---	---	---	---	290000	e208000	137000
10	---	---	---	---	---	---	---	---	---	267000	e200000	154000
11	---	---	---	---	---	---	---	---	---	258000	e218000	139000
12	---	---	---	---	---	---	---	---	---	246000	e215000	148000
13	---	---	---	---	---	---	---	---	---	249000	e213000	160000
14	---	---	---	---	---	---	---	---	---	254000	e210000	145000
15	---	---	---	---	---	---	---	---	---	246000	e240000	129000
16	---	---	---	---	---	---	---	---	---	220000	e220000	121000
17	---	---	---	---	---	---	---	---	---	225000	e195000	153000
18	---	---	---	---	---	---	---	---	---	193000	e175000	157000
19	---	---	---	---	---	---	---	---	---	179000	e163000	154000
20	---	---	---	---	---	---	---	---	---	187000	e167000	166000
21	---	---	---	---	---	---	---	---	---	195000	e180000	e160000
22	---	---	---	---	---	---	---	---	---	186000	e167000	e125000
23	---	---	---	---	---	---	---	---	---	177000	e165000	e130000
24	---	---	---	---	---	---	---	---	---	198000	e185000	e140000
25	---	---	---	---	---	---	---	---	---	208000	e215000	e150000
26	---	---	---	---	---	---	---	---	---	196000	e190000	e152000
27	---	---	---	---	---	---	---	---	---	182000	e173000	e164000
28	---	---	---	---	---	---	---	---	---	297000	166000	e165000
29	---	---	---	---	---	---	---	---	---	313000	166000	147000
30	---	---	---	---	---	---	---	---	---	310000	190000	150000
31	---	---	---	---	---	---	---	---	---	---	189000	149000
TOTAL	---	---	---	---	---	---	---	---	---	7287000	5719000	4382000
MEAN	---	---	---	---	---	---	---	---	---	235100	184500	146100
MAX	---	---	---	---	---	---	---	---	---	330000	240000	166000
MIN	---	---	---	---	---	---	---	---	---	166000	147000	121000
AC-FT	---	---	---	---	---	---	---	---	---	14450000	11340000	8692000

e Estimated

COLUMBIA RIVER MAIN STEM

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14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--August 1968 to September 1970, October 1990 to September 1991.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: August 1968 to September 1970.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCCI, FECAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CaCO3)	CALCIUM, DIS-SOLVED (MG/L AS Ca)	
NOV 1990													
20...	1135	332000	134	7.7	10.5	3.5	10.6	95	--	--	54	15	
MAR 1991													
13...	1220	255000	139	7.9	6.0	7.5	12.6	101	11	26	54	15	
MAY													
15...	1310	302000	133	8.4	12.0	5.5	12.0	110	K11	K3	57	16	
29...	1200	434000	131	8.1	13.0	10	11.4	109	M0	K6	56	15	
JUN													
06...	1250	308000	121	8.2	14.0	10	10.9	105	M0	K5	53	15	
19...	1415	313000	117	8.1	16.0	3.2	10.7	109	K26	K10	51	14	
26...	1435	360000	115	8.1	15.5	3.5	10.9	109	K29	0	46	13	
AUG													
29...	1259	303000	138	8.1	20.0	2.0	8.7	96	M3	K9	59	17	
DATE		MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORB-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY, DIS IT FIELD (MG/L AS CaCO3)	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3)	CAR-BONATE, DIS IT FIELD (MG/L AS CO3)	SULFATE, DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
NOV 1990													
20...	4.1	6.8	21	0.4	1.2	51	62	0	10	6.1	0.2	10	
MAR 1991													
13...	4.1	5.9	19	0.3	1.1	51	62	0	9.9	3.9	<0.1	11	
MAY													
15...	4.2	6.0	18	0.3	1.1	53	60	2	9.1	4.1	0.1	9.2	
29...	4.5	6.4	19	0.4	1.3	51	62	0	8.7	3.8	0.2	11	
JUN													
06...	3.8	4.8	--	0.3	<0.1	44	54	0	10	3.3	<0.1	11	
19...	3.8	4.6	16	0.3	0.9	45	55	0	7.0	3.2	0.1	10	
26...	3.3	4.5	17	0.3	0.8	45	55	0	8.3	3.3	0.2	9.7	
AUG													
29...	4.1	3.3	11	0.2	0.8	54	66	0	8.2	1.3	0.2	5.8	
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)
NOV 1990													
20...	93	86	0.13	83400	<0.01	0.30	0.07	0.2	0.03	<0.01	0.02		30
MAR 1991													
13...	79	83	0.11	54400	<0.01	0.37	0.02	0.2	0.04	0.02	0.01		30
MAY													
15...	81	82	0.11	66000	<0.01	0.14	<0.01	0.9	0.05	0.01	<0.01		--
29...	75	82	0.10	87900	0.01	0.23	0.02	0.4	0.03	<0.01	<0.01		--
JUN													
06...	65	--	--	--	<0.01	0.20	<0.01	0.3	0.05	0.02	<0.01		--
19...	88	71	0.12	74400	<0.01	0.10	0.01	0.4	0.04	0.02	<0.01		--
26...	69	71	0.09	67100	<0.01	0.11	0.03	0.2	0.03	0.01	<0.01		<10
AUG													
29...	76	73	0.10	62200	<0.01	0.06	0.02	0.4	0.04	0.02	0.01		<10

K - Results based on colony count outside acceptable range (non-ideal colony count).

COLUMBIA RIVER MAIN STEM

14246900 COLUMBIA RIVER AT BEAVER ARMY TERMINAL, NEAR QUINCY, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ARSENIC, DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM, DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM, DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)
NOV 1990											
20...	1	18	<0.5	<1	<1	<3	3	30	1	6	3
MAR 1991											
13...	<1	18	<0.5	<1	<1	<3	3	31	<1	<4	4
MAY											
15...	--	--	--	--	--	--	--	--	--	--	--
29...	--	--	--	--	--	--	--	--	--	--	--
JUN											
06...	--	--	--	--	--	--	--	--	--	--	--
19...	--	--	--	--	--	--	--	--	--	--	--
26...	<1	18	0.5	<1	2	<3	4	17	<1	<4	2
AUG											
29...	<1	28	<0.5	<1	<1	<3	3	6	<1	<4	2
DATE	MERCURY, DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM
NOV 1990											
20...	<0.1	<10	1	<1	<1	79	<6	<3	12	10800	--
MAR 1991											
13...	<0.1	<10	<1	<1	<1	80	<6	5	--	--	--
MAY											
15...	--	--	--	--	--	--	--	--	35	28500	--
29...	--	--	--	--	--	--	--	--	40	46900	65
JUN											
06...	--	--	--	--	--	--	--	--	31	25800	73
19...	--	--	--	--	--	--	--	--	18	15200	78
26...	<0.1	<10	<1	<1	<1	72	<6	5	14	13600	--
AUG											
29...	<0.1	<10	1	<1	<1	81	<6	4	10	8180	--

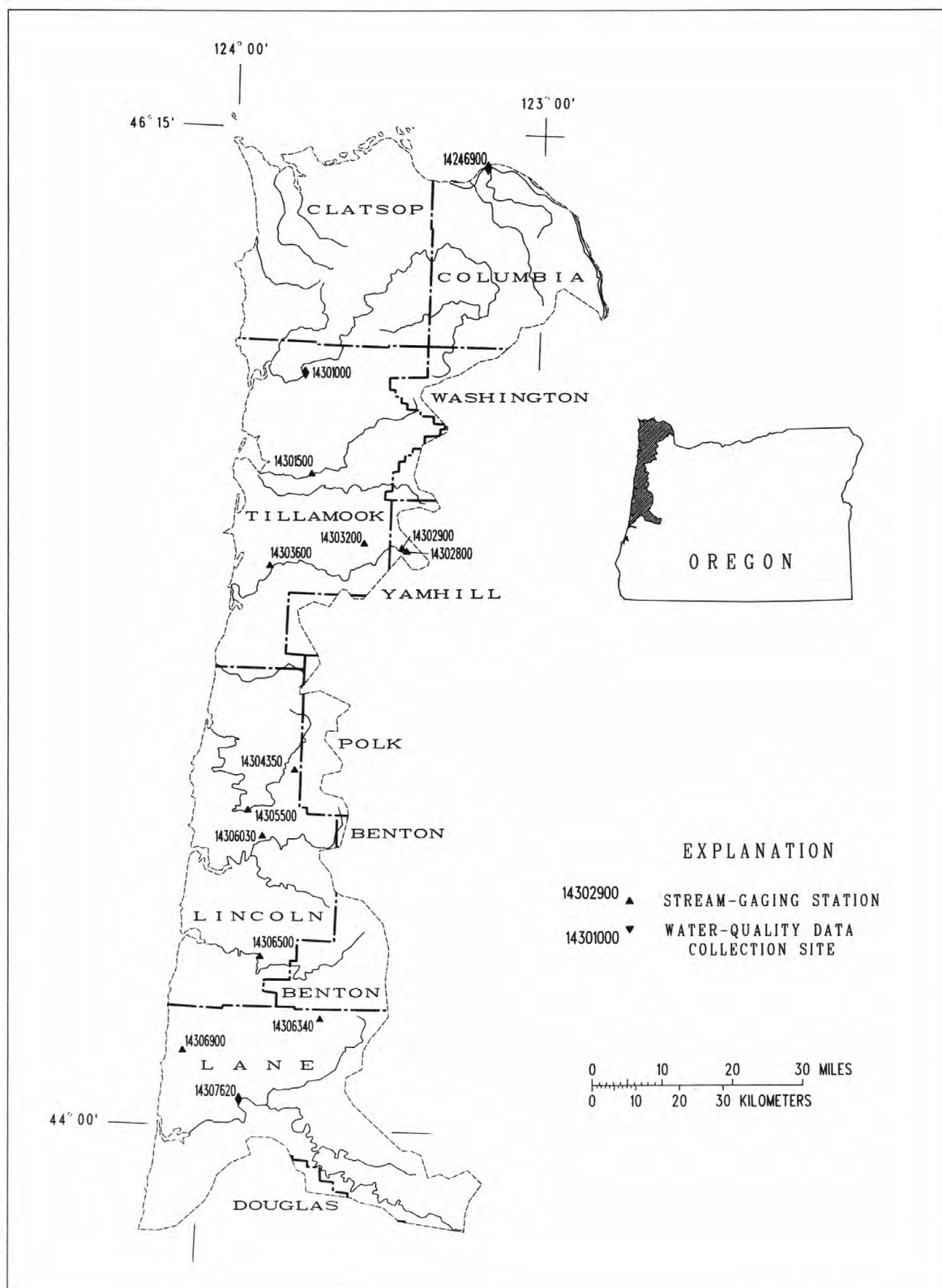


Figure 16.--Location of surface-water and water-quality stations in the Oregon Coastal Drainages north of the Siuslaw River basin.

PACIFIC SLOPE BASINS IN OREGON

NEHALEM RIVER BASIN

14301000 NEHALEM RIVER NEAR FOSS, OR
(National stream quality accounting network station)

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.

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1939 to current year.

GAGE.--Water-stage recorder. Datum of gage is 32.60 ft above National Geodetic Vertical Datum of 1929 (State Highway Department bench mark). Prior to Nov. 11, 1939, nonrecording gage.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Several small diversions for irrigation and domestic use upstream from station.

AVERAGE DISCHARGE.--52 years, 2,670 ft³/s, 54.36 in/yr, 1,934,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 53,400 ft³/s Jan. 9, 1990, gage height, 25.07 ft; 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)
Apr. 5	0930	*34,300	*19.17	No other peak greater than base discharge.			
Minimum discharge, 73 ft ³ /s Oct. 1, Sept. 25, 26.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	76	1820	7840	2220	1450	1920	1330	1320	1010	558	220	220
2	85	1420	8510	2070	4190	2970	1300	1240	930	530	214	223
3	144	1220	7690	1920	5760	5310	2290	1150	869	501	210	200
4	223	1340	9300	1780	8100	7810	14800	1080	825	471	206	180
5	297	1370	9300	1640	9770	8070	31000	1020	789	449	202	162
6	264	1380	7700	1520	8330	6780	24800	981	759	432	202	145
7	232	1350	6020	2330	6360	5650	18000	1070	747	422	202	133
8	208	1490	4820	3420	4950	4770	10600	1460	729	406	198	126
9	184	1580	4060	4030	4010	4180	10300	1490	693	395	195	122
10	166	1860	3530	5070	3320	3810	9860	1440	663	392	194	118
11	153	1870	3340	7530	2910	3610	8620	1350	635	380	188	114
12	164	1590	3170	14100	3280	5120	7150	1270	625	366	179	113
13	192	3450	2990	13300	5010	5410	5780	1200	643	356	171	120
14	230	4970	2770	10200	4870	4820	4730	1140	648	350	169	115
15	469	4380	2570	12300	4260	4180	3970	1080	625	342	164	111
16	574	3480	2370	10300	3750	3640	3370	1000	691	345	157	108
17	494	2880	2320	7830	3340	3180	2890	1120	727	347	152	104
18	616	2380	3160	6060	3000	2780	2530	1290	663	342	149	101
19	662	2070	3160	4800	3500	2490	2260	1320	624	333	145	98
20	534	2180	2920	3900	8090	2270	2030	1280	635	320	140	93
21	1300	2840	2550	3240	7780	2240	1830	1200	871	308	135	88
22	1830	4790	2260	2720	6030	2170	1640	1110	963	295	129	84
23	1280	5690	e2100	2360	4730	2030	1520	1020	879	284	124	81
24	836	10800	e1920	2080	3860	1960	1620	972	791	286	123	77
25	655	15100	e1750	1850	3210	1930	1630	1050	738	288	121	75
26	641	9860	1760	1640	2710	1890	1550	1080	695	285	120	73
27	574	7460	2200	1460	2350	1800	1670	1020	662	272	122	75
28	772	5910	2630	1350	2080	1690	1670	962	637	265	142	78
29	1100	5600	2500	1260	---	1580	1550	938	607	256	204	80
30	2320	6450	2160	1170	---	1470	1430	1070	580	242	225	78
31	2150	---	2080	1260	---	1390	---	1090	---	230	218	---
TOTAL	19425	118580	121450	136710	131000	108920	183720	35813	21953	11048	5320	3495
MEAN	627	3953	3918	4410	4679	3514	6124	1155	732	356	172	116
MAX	2320	15100	9300	14100	9770	8070	31000	1490	1010	558	225	223
MIN	76	1220	1750	1170	1450	1390	1300	938	580	230	120	73
AC-FT	38530	235200	240900	271200	259800	216000	364400	71040	43540	21910	10550	6930
CFSM	.94	5.93	5.87	6.61	7.01	5.27	9.18	1.73	1.10	.53	.26	.17
IN.	1.08	6.61	6.77	7.62	7.31	6.07	10.25	2.00	1.22	.62	.30	.19

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1940 - 1991, BY WATER YEAR (WY)

	MEAN	806	3707	6070	6270	5826	4356	2698	1240	605	271	148	213
MAX	2948	9256	11390	12450	12490	8696	6124	3028	1591	747	314	877	
(WY)	1948	1974	1956	1971	1949	1956	1991	1948	1983	1968	1968	1959	
MIN	69.9	197	599	596	1066	1518	1149	520	284	137	62.5	63.6	
(WY)	1953	1953	1977	1977	1977	1941	1941	1989	1989	1967	1967	1967	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1940 - 1991

ANNUAL TOTAL	1074561	897434	2670
ANNUAL MEAN	2944	2459	4235
HIGHEST ANNUAL MEAN			1063
LOWEST ANNUAL MEAN			42400
HIGHEST DAILY MEAN	42400	31000	Jan 9 1990
LOWEST DAILY MEAN	73	73	Sep 26 1967
ANNUAL SEVEN-DAY MINIMUM	75	77	38
ANNUAL RUNOFF (AC-FT)	2131000	1780000	1934000
ANNUAL RUNOFF (CFSM)	4.41	3.69	4.00
ANNUAL RUNOFF (INCHES)	59.93	50.05	54.39
10 PERCENT EXCEEDS	7690	6180	7260
50 PERCENT EXCEEDS	1110	1330	1130
90 PERCENT EXCEEDS	125	145	128

PACIFIC SLOPE BASINS IN OREGON

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NEHALEM RIVER BASIN

14301000 NEHALEM RIVER NEAR FOSS, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.-- Water years 1975 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1980 to September 1981.

WATER TEMPERATURE: December 1974 to September 1981.

REMARKS.--Some samples were analyzed by different methods and may have data with different levels of detection.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FE-CAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOC-CI FE-CAL, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CaCO3)	CALCIUM, DIS-SOLVED (MG/L AS Ca)
		MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS Na)	SODIUM PERCENT	SODIUM, AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY, DIS IT FIELD (MG/L AS CaCO3)	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3)	CAR-BONATE, DIS IT FIELD (MG/L AS CO3)	SULFATE, DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SiO2)
NOV 1990 19...	1345	2050	58	7.1	7.0	2.0	12.2	102	--	--	17	4.7
MAR 1991 12...	1150	5250	50	7.4	6.0	5.6	12.6	102	28	28	14	4.0
JUN 25...	1330	745	65	7.8	13.5	1.5	10.7	102	20	K18	19	5.3
AUG 15...	1105	163	83	8.1	20.5	1.9	8.6	96	K5	K810	25	7.0
DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS, TOTAL (MG/L AS P)	PHOS-PHORUS, DIS-SOLVED (MG/L AS P)	PHOS-PHORUS, ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)
NOV 1990 19...	32	46	0.04	177	<0.01	0.90	0.04	<0.2	0.02	<0.01	<0.01	40
MAR 1991 12...	43	40	0.06	610	<0.01	0.68	0.01	0.3	0.02	0.01	<0.01	40
JUN 25...	45	49	0.06	90.5	<0.01	0.35	0.02	<0.2	0.01	<0.01	<0.01	20
AUG 15...	43	57	0.06	18.9	<0.01	0.22	<0.01	0.9	0.03	<0.01	<0.01	<10
DATE	ARSENIC, DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS Ba)	BERYL-LIUM, DIS-SOLVED (UG/L AS Be)	CADMIUM, DIS-SOLVED (UG/L AS Cd)	CHRO-MIUM, DIS-SOLVED (UG/L AS Cr)	COBAL-T, DIS-SOLVED (UG/L AS Co)	COPPER, DIS-SOLVED (UG/L AS Cu)	IRON, DIS-SOLVED (UG/L AS Fe)	LEAD, DIS-SOLVED (UG/L AS Pb)	LITHIUM, DIS-SOLVED (UG/L AS Li)	MANGA-NESE, DIS-SOLVED (UG/L AS Mn)	
NOV 1990 19...	<1	4	<0.5	<1	<1	<3	2	110	<1	<4	4	
MAR 1991 12...	<1	3	<0.5	<1	<1	<3	1	71	<1	<4	4	
JUN 25...	<1	4	0.5	1	1	3	1	150	<1	<4	2	
AUG 15...	<1	4	<0.5	<1	<1	<3	<1	120	<1	<4	1	
DATE	MERCURY, DIS-SOLVED (UG/L AS Hg)	MOLYB-DENUM, DIS-SOLVED (UG/L AS Mo)	NICKEL, DIS-SOLVED (UG/L AS Ni)	SELE-NIUM, DIS-SOLVED (UG/L AS Se)	SILVER, DIS-SOLVED (UG/L AS Ag)	STRON-TIUM, DIS-SOLVED (UG/L AS Sr)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS Zn)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	
NOV 1990 19...	<0.1	<10	2	<2	<1	30	<6	<3	5	28	83	
MAR 1991 12...	<0.1	<10	<1	1	<1	27	<6	7	15	213	68	
JUN 25...	<0.1	<10	<1	<1	<1	35	<6	4	3	6.0	--	
AUG 15...	<0.1	<10	<1	<1	<1	47	<6	17	6	2.6	--	

K - Results based on colony count outside acceptable range (non-ideal colony count).

WILSON RIVER BASIN

14301500 WILSON RIVER NEAR TILLAMOOK, OR

LOCATION.--Lat 45°29'05", long 123°41'20", 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 11.4.

DRAINAGE AREA.--161 mi², at cableway, 2.0 mi downstream, where all discharge measurements are made.

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 National Geodetic Vertical Datum of 1929. 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.

REMARKS.--Records good except those for July 3 to Sept. 30, and estimated daily discharges, which are fair. No regulation. Small diversions for domestic use upstream from station.

AVERAGE DISCHARGE.--61 years (water years 1915, 1932-91), 1,176 ft³/s, 99.19 in/yr, 852,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 36,000 ft³/s Jan. 20, 1972, gage height, 16.91 ft; maximum gage height, 20.26 ft Dec. 22, 1964 (site and datum then in use); 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)
Nov. 24	2300	13,700	12.89	Apr. 5	0500	*25,800	*15.73
Minimum discharge, 50 ft ³ /s Sept. 25, 26.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	67	954	3140	858	794	781	612	570	449	256	105	106
2	68	755	3010	837	1920	1830	647	523	417	241	104	95
3	117	751	2600	784	2690	3330	1330	486	388	232	103	85
4	124	906	4110	721	3820	3900	12600	456	365	220	100	79
5	146	864	3470	659	4580	2780	19300	439	346	212	98	75
6	120	763	2410	637	2790	2210	7250	424	336	204	99	71
7	99	775	1870	1390	1920	1830	4470	653	327	199	98	69
8	89	803	1520	2380	1490	1570	3450	1080	311	191	100	69
9	83	1060	1420	2250	1230	1410	4550	933	e300	187	97	68
10	84	1870	1420	3380	1050	1320	3640	839	e290	181	95	65
11	78	1680	1370	5350	1010	1300	2650	755	276	172	93	65
12	111	1270	1260	9280	1590	1950	2090	684	279	166	90	64
13	128	2400	1170	6370	2770	1840	1730	632	277	164	87	64
14	177	2810	1060	4810	2270	1620	1510	577	270	161	85	63
15	766	2200	976	6820	1790	1410	1320	531	265	168	83	63
16	457	1680	896	4230	1480	1260	1150	492	347	169	82	61
17	310	1430	933	2840	1290	1130	1020	516	347	163	80	60
18	555	1210	1300	2060	1190	1060	910	521	296	156	79	57
19	458	1090	1200	1610	2130	997	818	519	275	148	78	57
20	328	1100	e1060	1330	5840	923	737	495	316	143	76	56
21	e630	1460	e940	1130	3730	922	675	469	456	138	73	56
22	e870	3330	e840	986	2410	917	619	439	437	134	72	56
23	670	4080	738	870	1800	892	588	413	398	130	71	54
24	468	8900	677	774	1450	863	717	414	364	130	71	53
25	427	9690	645	696	1210	820	745	451	340	136	69	52
26	481	4650	635	632	1040	788	700	428	319	131	69	52
27	423	3110	893	581	908	730	776	403	300	123	77	53
28	663	2250	973	550	806	686	744	388	295	119	101	55
29	897	2370	801	503	---	646	681	417	282	115	119	54
30	1420	2470	730	470	---	609	621	518	268	112	116	54
31	1220	---	760	686	---	609	---	481	---	108	113	---
TOTAL	12534	68681	44827	66474	56998	42933	78650	16946	9936	5109	2783	1932
MEAN	404	2289	1446	2144	2036	1385	2622	547	331	165	89.8	64.4
MAX	1420	9690	4110	9280	5840	3900	19300	1080	456	256	119	106
MIN	67	751	635	470	794	609	588	388	265	108	69	52
AC-FT	24860	136200	88910	131900	113100	85160	156000	33610	19710	10130	5520	3830
CFSM	2.51	14.2	8.98	13.3	12.6	8.60	16.3	3.40	2.06	1.02	.56	.40
IN.	2.90	15.87	10.36	15.36	13.17	9.92	18.17	3.92	2.30	1.18	.64	.45

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1915 - 1991, BY WATER YEAR (WY)

MEAN	578	1872	2624	2513	2210	1797	1175	617	338	171	107	158
MAX	2230	3975	7988	5776	4619	3637	2622	1391	876	514	240	780
(WY)	1948	1935	1934	1953	1961	1956	1991	1933	1933	1983	1968	1959
MIN	43.5	87.2	378	344	641	595	426	202	162	78.9	44.3	40.1
(WY)	1988	1937	1977	1977	1973	1941	1939	1939	1989	1967	1967	1967

SUMMARY STATISTICS

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1915 - 1991	
ANNUAL TOTAL	448768		407803			
ANNUAL MEAN	1230		1117		1176	
HIGHEST ANNUAL MEAN					1698	1974
LOWEST ANNUAL MEAN					524	1977
HIGHEST DAILY MEAN	21900	Jan 9	19300	Apr 5	27500	Dec 22 1933
LOWEST DAILY MEAN	65	Sep 30	52	Sep 25	34	Sep 1 1967
ANNUAL SEVEN-DAY MINIMUM	68	Sep 26	53	Sep 23	35	Aug 30 1967
ANNUAL RUNOFF (AC-FT)	890100		808900		852100	
ANNUAL RUNOFF (CFSM)	7.64		6.94		7.31	
ANNUAL RUNOFF (INCHES)	103.69		94.23		99.26	
10 PERCENT EXCEEDS	2850		2670		2890	
50 PERCENT EXCEEDS	630		635		570	
90 PERCENT EXCEEDS	85		78		90	

NESTUCCA RIVER BASIN

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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 National Geodetic Vertical Datum of 1929.

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.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents observed, 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 contents observed, 3,770 acre-ft Apr. 9 to July 24, elevation, 1,865.0 ft; no contents observed many days in December to January.

MONTHEND ELEVATION AND CONTENTS, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30.....	1,858.5	2,910	-
Oct. 31.....	1,856.7	2,700	-210
Nov. 30.....	1,837.0	1,000	-1,700
Dec. 31.....	1,810.0	0	-1,000
CAL YR 1990.....	-	-	0
Jan. 31.....	1,811.0	20	+20
Feb. 28.....	1,842.7	1,400	+1,380
Mar. 31.....	1,855.5	2,560	+1,160
Apr. 30.....	1,865.0	3,770	+1,210
May 31.....	1,865.0	3,770	0
June 30.....	1,865.0	3,770	0
July 31.....	1,864.2	3,660	-110
Aug. 31.....	1,861.0	3,220	-440
Sept.30.....	1,855.0	2,510	-710
WTR YR 1991.....	-	-	-400

NESTUCCA RIVER BASIN

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.

GAGE.--Water-stage recorder. Datum of gage is 1,778.99 ft above National Geodetic Vertical Datum of 1929 (levels by city of McMinnville).

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

AVERAGE DISCHARGE.--31 years (water years 1961-91), 31.3 ft³/s, 68.78 in/yr, 22,680 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, 376 ft³/s Apr. 5, gage height, 5.84 ft; minimum discharge, 0.94 ft³/s Oct. 1.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.0	59	101	20	7.7	11	8.3	16	9.8	6.0	1.7	1.8
2	1.2	56	89	16	32	37	8.5	14	9.1	5.5	2.0	1.6
3	2.1	56	79	15	36	69	22	13	8.3	5.3	1.8	1.5
4	1.8	56	105	13	69	63	161	13	7.9	4.7	1.6	1.3
5	2.0	54	92	13	66	43	256	13	7.6	4.5	1.6	1.3
6	1.6	53	76	12	44	38	99	13	8.5	4.2	1.7	2.2
7	1.4	56	65	39	31	30	67	23	8.3	4.0	1.7	3.3
8	1.4	54	58	42	23	25	59	28	7.7	3.8	1.7	3.4
9	1.4	55	54	39	19	22	92	24	7.4	3.6	1.7	3.4
10	1.4	55	53	74	16	21	98	20	6.8	3.6	1.6	3.4
11	1.4	53	51	130	19	19	81	18	6.3	3.6	1.7	3.6
12	1.9	52	48	186	31	24	66	17	6.4	3.5	1.6	3.8
13	2.3	69	46	150	41	22	53	16	6.5	3.4	1.5	3.1
14	2.6	64	44	138	34	21	44	15	6.4	3.4	1.4	1.1
15	5.7	62	42	172	27	20	38	13	6.5	3.8	1.4	1.1
16	3.8	57	41	126	23	18	33	12	8.1	4.0	1.4	1.1
17	2.7	56	43	84	20	17	29	17	6.9	3.9	1.5	1.1
18	5.2	53	46	54	18	17	26	18	6.2	3.7	1.5	1.8
19	3.3	53	43	41	20	16	23	16	5.8	3.4	1.3	3.6
20	2.5	56	e40	33	48	15	21	14	11	3.3	1.3	3.6
21	11	72	e38	29	38	15	19	13	14	3.0	1.2	3.6
22	5.8	87	e36	25	30	16	18	12	11	2.8	1.2	3.6
23	4.0	85	e35	22	24	17	18	11	9.1	2.5	1.3	3.6
24	3.2	98	34	20	20	16	27	11	8.2	2.1	1.3	3.6
25	6.6	126	32	18	16	15	25	12	7.7	2.2	1.3	3.6
26	9.9	91	30	16	14	14	23	11	7.0	2.1	1.3	3.6
27	9.4	79	35	15	12	12	24	9.8	6.6	2.0	1.3	3.6
28	13	67	e30	15	11	11	21	9.6	6.8	1.9	1.6	3.7
29	14	77	e26	13	---	10	19	13	6.6	1.9	2.4	3.7
30	49	73	22	9.0	---	9.4	17	14	6.4	2.0	1.8	3.6
31	65	---	18	8.7	---	8.8	---	11	---	1.7	1.8	---
TOTAL	237.6	1984	1552	1587.7	789.7	692.2	1495.8	460.4	234.9	105.4	48.2	83.3
MEAN	7.66	66.1	50.1	51.2	28.2	22.3	49.9	14.9	7.83	3.40	1.55	2.78
MAX	65	126	105	186	69	69	256	28	14	6.0	2.4	3.8
MIN	1.0	52	18	8.7	7.7	8.8	8.3	9.6	5.8	1.7	1.2	1.1
AC-FT	471	3940	3080	3150	1570	1370	2970	913	466	209	96	165
MEAN†	8.47	37.6	33.8	51.6	53.1	41.1	70.2	14.8	7.83	3.46	1.61	0.39
CFSM†	1.37	6.08	5.47	8.35	8.59	6.65	11.4	2.39	1.27	0.56	0.26	0.06
IN.†	1.58	6.80	6.31	9.62	8.95	7.68	12.69	2.77	1.41	0.65	0.30	0.07
AC-FT†	521	2240	2080	3170	2950	2530	4180	913	466	213	99	23

CAL YR 1990 TOTAL 10415.69 MEAN 28.5 MAX 313 MIN .99 AC-FT 20660 MEAN† 30.1 CFSM† 4.87 IN.† 66.13 AC-FT† 21790
WTR YR 1991 TOTAL 9271.2 MEAN 25.4 MAX 256 MIN 1.0 AC-FT 18390 MEAN† 26.8 CFSM† 4.34 IN.† 58.78 AC-FT† 19370

e Estimated

† Adjusted for storage and diversion from McGuire Lake.

NESTUCCA RIVER BASIN

335

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 mouth, 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 National Geodetic Vertical Datum of 1929, from topographic map.

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

AVERAGE DISCHARGE.--8 years (water years 1984-91), 15.3 ft³/s, 67.24 in/yr, 11,080 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 266 ft³/s Dec. 9, 1987, gage height, 3.66 ft; 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)
Apr. 5	0915	*186	*3.10	No other peak greater than base discharge.			
Minimum discharge, 1.1 ft ³ /s several days in September.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.4	12	46	9.3	5.4	11	6.1	9.6	8.4	4.8	2.0	1.7
2	1.4	10	51	8.6	14	19	6.1	9.1	8.0	4.5	2.0	1.6
3	2.4	11	42	8.2	18	29	9.7	8.6	7.7	4.4	2.0	1.5
4	2.0	14	46	7.8	30	43	50	8.2	7.4	4.1	2.0	1.4
5	2.2	14	45	7.3	46	40	160	8.0	7.1	4.1	2.0	1.4
6	1.6	13	37	7.0	39	34	105	7.7	7.0	3.8	2.0	1.3
7	1.5	15	28	16	28	28	70	12	6.7	3.7	2.0	1.4
8	1.4	15	22	27	22	24	60	14	6.3	3.5	1.9	1.3
9	1.4	17	18	31	17	22	76	14	6.0	3.6	1.9	1.3
10	1.4	23	16	41	14	20	71	14	5.7	3.5	1.8	1.2
11	1.3	23	14	69	14	19	56	14	5.5	3.3	1.8	1.2
12	1.8	21	12	109	18	31	44	13	5.6	3.2	1.8	1.2
13	1.9	31	11	95	38	34	35	12	5.5	3.2	1.7	1.3
14	2.3	35	10	82	40	29	29	11	5.5	3.2	1.7	1.2
15	5.4	35	9.6	133	32	24	25	11	5.4	3.3	1.7	1.2
16	3.7	31	8.9	86	26	20	22	9.9	6.4	3.2	1.6	1.2
17	3.0	27	10	51	22	17	19	13	5.5	3.0	1.6	1.2
18	4.6	23	14	34	19	15	17	13	5.1	2.9	1.6	1.2
19	3.6	20	13	24	26	13	15	12	4.9	2.8	1.6	1.2
20	3.1	20	e12	19	91	12	14	12	6.0	2.7	1.5	1.1
21	12	31	e11	16	79	11	12	12	6.7	2.7	1.5	1.2
22	8.8	69	e10	13	49	11	11	11	6.2	2.6	1.5	1.1
23	6.3	65	9.4	11	33	10	11	11	5.9	2.4	1.5	1.1
24	5.0	83	8.4	9.5	24	10	13	10	5.7	2.5	1.5	1.1
25	5.2	134	7.6	8.3	19	9.6	11	11	5.5	2.6	1.4	1.1
26	4.8	80	7.1	7.3	15	8.8	11	9.6	5.5	2.4	1.4	1.1
27	4.4	53	11	6.5	13	8.1	12	8.9	5.3	2.4	1.6	1.1
28	6.1	37	10	6.0	11	7.7	11	8.5	5.3	2.2	1.9	1.1
29	7.0	33	9.4	5.3	---	7.3	10	9.6	5.3	2.2	2.0	1.1
30	12	29	9.0	4.9	---	6.8	10	9.7	5.0	2.2	1.6	1.1
31	14	---	9.3	6.3	---	6.5	---	8.8	---	2.1	2.0	---
TOTAL	133.0	1024	567.7	959.3	802.4	580.8	1001.9	336.2	182.1	97.1	54.1	37.2
MEAN	4.29	34.1	18.3	30.9	28.7	18.7	33.4	10.8	6.07	3.13	1.75	1.24
MAX	14	134	51	133	91	43	160	14	8.4	4.8	2.0	1.7
MIN	1.3	10	7.1	4.9	5.4	6.5	6.1	7.7	4.9	2.1	1.4	1.1
AC-FT	264	2030	1130	1900	1590	1150	1990	667	361	193	107	74
CFSM	1.39	11.0	5.93	10.0	9.27	6.06	10.8	3.51	1.96	1.01	.56	.40
IN.	1.60	12.33	6.83	11.55	9.66	6.99	12.06	4.05	2.19	1.17	.65	.45

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1991, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	4.00	30.6	23.0	31.4	29.7	25.5	16.5	9.99	7.06
MAX	8.96	50.1	37.2	48.0	53.5	39.9	33.4	18.7	12.0
(WY)	1985	1985	1988	1990	1990	1987	1991	1984	1988
MIN	.95	3.36	15.9	12.2	15.7	18.7	9.28	4.02	2.85
(WY)	1988	1988	1987	1985	1985	1991	1990	1989	1989

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1983 - 1991

ANNUAL TOTAL	6730.2	5775.8	15.2
ANNUAL MEAN	18.4	15.8	17.9
HIGHEST ANNUAL MEAN			13.4
LOWEST ANNUAL MEAN			1984
HIGHEST DAILY MEAN	218	160	218
LOWEST DAILY MEAN	1.3	1.1	.55
ANNUAL SEVEN-DAY MINIMUM	1.4	1.1	.63
ANNUAL RUNOFF (AC-FT)	13350	11460	11050
ANNUAL RUNOFF (CFSM)	5.97	5.12	4.93
ANNUAL RUNOFF (INCHES)	81.02	69.53	67.05
10 PERCENT EXCEEDS	43	38	35
50 PERCENT EXCEEDS	9.0	9.0	8.1
90 PERCENT EXCEEDS	1.7	1.5	1.5

SILETZ RIVER BASIN

337

14304350 SUNSHINE CREEK NEAR VALSETZ, OR

LOCATION.--Lat 44°48'34", long 123°44'34", in NW 1/4 NW 1/4 sec.12, T.9 S., R.9 W., Lincoln County, Hydrologic Unit 17100204, on right bank about 50 ft upstream from Deer Creek, and about 5 mi southwest of Valsetz.

DRAINAGE AREA.--6.7 mi².

PERIOD OF RECORD.--October 1972 to September 1991 (discontinued). Prior to October 1985, in reports of Oregon Water Resources Department. See REMARKS.

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

REMARKS.--Records poor. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--19 years, 54.7 ft³/s, 110.87 in/yr, 39,630 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,760 ft³/s Nov. 25, 1977, gage height, 4.32 ft; minimum daily discharge, 0.45 ft³/s Oct. 26, 1987.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 560 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Jan. 12	1100	797	3.31	Apr. 5	0430	*1,600	*4.22
Feb. 20	1230	687	3.14				

Minimum discharge, 1.1 ft³/s Aug. 26, 27.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.6	e89	125	38	39	45	25	28	22	9.5	e3.0	9.3
2	2.8	e71	126	35	85	94	25	26	20	8.9	2.9	7.2
3	7.7	e70	103	34	113	124	52	25	18	8.8	2.8	6.1
4	7.4	e102	116	32	148	146	401	24	18	8.8	2.6	5.6
5	9.0	e84	101	31	203	124	1160	24	17	8.3	3.0	5.5
6	6.7	e70	86	30	135	123	362	29	16	8.3	3.0	5.8
7	5.8	e78	71	79	94	103	189	69	16	7.9	3.1	5.3
8	5.5	e74	62	86	72	87	166	111	15	7.2	3.2	5.0
9	5.3	e96	71	95	60	81	292	85	14	e7.0	2.7	4.4
10	5.7	e98	87	546	53	74	196	70	13	e6.8	2.4	3.9
11	5.4	e76	81	559	52	104	132	58	12	e6.5	1.9	3.5
12	10	e60	72	656	90	246	100	50	13	e6.2	1.7	3.3
13	11	e180	67	378	265	145	80	43	13	e6.0	1.6	4.1
14	17	e175	61	345	160	106	68	38	12	e5.9	1.9	4.8
15	71	123	56	552	96	82	57	35	11	e5.8	2.1	5.1
16	30	90	51	243	72	68	48	31	15	e6.0	2.2	4.9
17	25	77	56	141	60	59	42	33	12	e6.4	2.2	4.4
18	63	64	75	100	61	52	37	33	11	e6.0	1.8	4.0
19	34	61	72	77	110	46	35	31	10	e5.6	1.9	3.5
20	25	68	64	65	499	41	32	29	12	e5.2	1.8	3.2
21	106	99	59	57	313	38	29	27	12	e5.0	1.7	3.1
22	73	147	55	49	159	37	27	24	11	e4.8	1.4	2.9
23	46	143	49	43	109	37	27	23	9.1	e4.5	1.4	2.5
24	34	177	41	39	83	36	43	22	8.7	e4.4	1.5	2.2
25	e60	434	37	35	68	34	39	23	8.9	e4.6	1.4	1.9
26	e72	203	35	33	59	32	38	21	8.8	e4.2	1.3	1.8
27	e50	140	50	30	52	31	37	20	7.8	e3.9	1.6	1.9
28	e77	100	49	29	45	29	36	18	12	e3.7	1.3	2.1
29	e66	102	43	27	---	28	33	24	11	e3.5	1.7	1.9
30	e130	98	38	26	---	27	31	29	11	e3.3	1.0	1.9
31	e131	---	38	41	---	26	---	24	---	e3.1	1.1	---
TOTAL	1194.9	3449	2097	4531	3355	2305	3839	1127	390.3	186.1	112.1	121.1
MEAN	38.5	115	67.6	146	120	74.4	128	36.4	13.0	6.00	3.62	4.04
MAX	131	434	126	656	499	246	1160	111	22	9.5	1.7	9.3
MIN	2.6	60	35	26	39	26	25	18	7.8	3.1	1.3	1.8
AC-FT	2370	6840	4160	8990	6650	4570	7610	2240	774	369	222	240
CFSM	5.75	17.2	10.1	21.8	17.9	11.1	19.1	5.43	1.94	.90	.54	.60
IN.	6.63	19.15	11.64	25.16	18.63	12.80	21.32	6.26	2.17	1.03	.62	.67

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1991, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991
MEAN	15.8	89.3	68.5	133	125	83.0
MAX	38.5	156	106	193	211	141
(WY)	1991	1989	1988	1990	1990	1989
MIN	.70	9.94	40.8	79.0	53.0	53.7
(WY)	1988	1988	1987	1986	1988	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1986 - 1991

	1990	1991	1986-1991
ANNUAL TOTAL	23664.9	22707.5	
ANNUAL MEAN	64.8	62.2	
HIGHEST ANNUAL MEAN			51.1
LOWEST ANNUAL MEAN			62.2
HIGHEST DAILY MEAN	975	1160	39.8
LOWEST DAILY MEAN	2.5	1.3	1160
ANNUAL SEVEN-DAY MINIMUM	2.8	1.5	.45
ANNUAL RUNOFF (AC-FT)	46940	45040	.48
ANNUAL RUNOFF (CFSM)	9.68	9.29	36990
ANNUAL RUNOFF (INCHES)	131.39	126.08	7.62
10 PERCENT EXCEEDS	145	130	103.54
50 PERCENT EXCEEDS	27	33	116
90 PERCENT EXCEEDS	3.6	3.1	21
			2.5

SILETZ RIVER BASIN

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 November 1911, January to May 1912, January to June 1924, November 1924 to current year. Prior to December 1905 monthly discharge only, 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 National Geodetic Vertical Datum of 1929. 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.--72 years (water years 1906-11, 1926-91), 1,534 ft³/s, 103.13 in/yr, 1,111,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD (1905-12, 1924-38).--Maximum discharge, 34,600 ft³/s Nov. 22, 1909, gage height, 24.6 ft, site and datum then in use; minimum observed discharge, 51 ft³/s Dec. 6, 7, 1929.

EXTREMES FOR PERIOD OF RECORD (1938-91).--Maximum discharge, 32,200 ft³/s Jan. 28, 1965, gage height, 27.32 ft, present site and datum; 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)
Apr. 5	0930	*20,500	*19.21	No other peak greater than base discharge.			
Minimum discharge, 58 ft ³ /s Sept. 25-28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	80	1500	3060	996	902	1140	733	824	622	277	114	192
2	83	1160	3120	928	1890	1930	743	771	588	260	113	145
3	137	1160	2730	876	2780	3030	990	728	551	245	112	122
4	170	2070	3280	830	3170	3940	6480	690	526	235	109	109
5	183	1870	3130	782	4610	3280	16500	671	504	224	107	101
6	152	1550	2520	754	3240	2900	8060	740	489	218	106	94
7	121	1490	2070	1540	2350	2490	5020	1030	474	211	106	88
8	109	1440	1730	2030	1850	2140	3920	2150	451	205	108	86
9	102	1540	1700	1930	1530	1930	5910	1760	433	201	108	84
10	100	1610	2030	5530	1330	1860	4720	1490	413	200	107	81
11	98	1480	1900	7760	1240	1800	3480	1300	397	194	102	79
12	122	1300	1720	10100	1930	4250	2720	1180	386	182	98	77
13	164	3280	1620	7580	5790	3410	2220	1080	390	179	95	77
14	166	3740	1490	6240	4730	2730	1930	982	376	178	94	77
15	688	2730	1350	8570	3270	2210	1660	899	359	183	92	76
16	575	2070	1240	5690	2520	1850	1460	830	424	199	91	73
17	399	1780	1260	3780	2180	1610	1300	900	392	192	91	71
18	769	1500	1890	2790	1980	1450	1190	968	350	180	91	69
19	627	1370	1830	2180	2580	1310	1090	945	334	168	89	67
20	463	1510	1560	1770	6310	1200	996	883	357	160	86	65
21	1210	1930	1370	1490	6200	1120	927	823	380	155	82	63
22	1500	3350	1250	1300	3980	1090	866	767	362	151	80	63
23	888	3340	1120	1160	2880	1090	825	719	336	145	78	63
24	645	3890	1020	1040	2250	1070	1070	692	319	139	77	61
25	585	8500	957	948	1830	1020	1060	706	315	144	76	58
26	841	5340	921	869	1550	977	1010	667	308	144	74	58
27	659	3850	1110	805	1350	913	1030	624	296	138	79	58
28	913	2850	1220	768	1210	865	984	596	305	132	168	59
29	917	2730	1060	717	---	823	936	629	307	127	269	59
30	1620	2690	984	670	---	782	880	770	291	122	247	59
31	1850	---	952	806	---	754	---	665	---	118	176	---
TOTAL	16936	74620	53194	83229	77432	56964	80710	28479	12035	5606	3425	2434
MEAN	546	2487	1716	2685	2765	1838	2690	919	401	181	110	81.1
MAX	1850	8500	3280	10100	6310	4250	16500	2150	622	277	269	192
MIN	80	1160	921	670	902	754	733	596	291	118	74	58
AC-FT	33590	148000	105500	165100	153600	113000	160100	56490	23870	11120	6790	4830
CFSM	2.70	12.3	8.49	13.3	13.7	9.10	13.3	4.55	1.99	.90	.55	.40
IN.	3.12	13.74	9.80	15.33	14.26	10.49	14.86	5.24	2.22	1.03	.63	.45

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1991, BY WATER YEAR (WY)

	731	2454	3303	3287	2952	2259	1490	837	496	226	132	201
MEAN	731	2454	3303	3287	2952	2259	1490	837	496	226	132	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	105	64.8	58.6
(WY)	1988	1930	1977	1977	1973	1941	1926	1939	1928	1967	1967	1965

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1906 - 1991

ANNUAL TOTAL	520497	495064	1519
ANNUAL MEAN	1426	1356	2337
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			660
HIGHEST DAILY MEAN	13200	Feb 10	30700
LOWEST DAILY MEAN	80	Oct 1	47
ANNUAL SEVEN-DAY MINIMUM	84	Sep 26	48
ANNUAL RUNOFF (AC-FT)	1032000	982000	1100000
ANNUAL RUNOFF (CFSM)	7.06	6.71	7.52
ANNUAL RUNOFF (INCHES)	95.85	91.17	102.15
10 PERCENT EXCEEDS	3340	3250	3850
50 PERCENT EXCEEDS	773	880	759
90 PERCENT EXCEEDS	105	91	106

YAQUINA RIVER BASIN

339

14306030 YAQUINA RIVER NEAR CHITWOOD, OR

LOCATION.--Lat 44°39'29", long 123°50'15", in NE 1/4 SW 1/4 sec.31, T.10 S., R.9 W., Lincoln County, Hydrologic Unit 17100204, on left bank 200 ft below Thornton Creek and 1.1 mi west of Chitwood, and at mile 29.3.

DRAINAGE AREA.--71.0 mi².

PERIOD OF RECORD.--October 1972 to September 1991 (discontinued). See REMARKS.

GAGE.--Water-stage recorder. Datum of gage is 28.43 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good except those for Sept. 1-30, which are fair. No regulation or diversion upstream from station. Continuous water-quality records for the period October 1972 to September 1974 have been collected at this location. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--19 years, 248 ft³/s, 47.43 in/yr, 179,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 6,150 ft³/s Nov. 16, 1973, gage height, 14.43 ft; minimum discharge, 2.8 ft³/s Sept. 27, 1974.

EXTREMES FOR CURRENT YEAR.--Peak discharge greater than base discharge of 3,000 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Apr. 5	1630	*1,860	*7.69				
Minimum discharge, 5.3 ft ³ /s Sept. 26.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.1	154	525	223	129	227	163	135	107	49	18	22
2	11	115	587	200	211	272	158	127	101	46	18	18
3	16	106	544	183	311	385	163	120	95	43	18	15
4	26	215	531	169	391	638	241	114	91	41	18	13
5	27	232	520	156	528	750	1380	112	88	40	17	12
6	23	180	461	148	521	661	1250	121	85	38	17	11
7	17	174	390	210	414	607	989	141	84	38	17	10
8	15	217	335	296	339	528	894	304	80	37	18	10
9	14	211	307	290	292	456	1060	305	76	35	18	10
10	14	186	358	465	259	433	978	272	74	35	18	9.7
11	14	158	390	825	236	414	756	240	71	34	16	9.1
12	17	138	386	1070	259	888	608	212	70	33	15	9.4
13	22	430	384	1190	833	862	494	191	70	32	14	9.5
14	27	624	370	875	955	679	425	171	67	32	14	9.6
15	40	421	353	1170	710	535	360	155	64	32	14	9.6
16	51	311	316	1030	543	442	311	144	73	34	14	9.2
17	34	269	296	751	465	372	278	157	68	33	14	8.9
18	58	244	358	575	424	325	253	168	61	30	15	8.1
19	54	228	432	450	444	290	228	175	60	28	15	7.7
20	35	288	397	366	623	263	206	169	66	27	14	6.9
21	76	384	340	312	849	248	188	161	68	26	13	6.9
22	136	456	301	274	686	241	172	151	62	25	12	7.2
23	65	473	267	244	530	242	162	141	57	24	11	7.0
24	46	414	238	215	426	249	169	134	54	23	11	7.5
25	41	1150	217	193	355	254	165	129	54	26	11	6.7
26	64	1050	203	174	309	254	157	121	52	25	10	5.8
27	54	754	223	158	274	235	157	113	52	24	11	6.4
28	64	581	268	150	249	216	152	107	58	22	20	7.5
29	69	508	268	137	---	200	148	110	56	21	34	7.7
30	135	504	256	128	---	187	142	134	51	20	27	7.5
31	207	---	242	135	---	175	---	115	---	19	22	---
TOTAL	1481.1	11175	11063	12762	12565	12528	12807	4949	2115	972	504	288.9
MEAN	47.8	372	357	412	449	404	427	160	70.5	31.4	16.3	9.63
MAX	207	1150	587	1190	955	888	1380	305	107	49	34	22
MIN	9.1	106	203	128	129	175	142	107	51	19	10	5.8
AC-FT	2940	22170	21940	25310	24920	24850	25400	9820	4200	1930	1000	573
CFSM	.67	5.25	5.03	5.80	6.32	5.69	6.01	2.25	.99	.44	.23	.14
IN.	.78	5.86	5.80	6.69	6.58	6.56	6.71	2.59	1.11	.51	.26	.15

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1991, BY WATER YEAR (WY)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	33.8	331	580	565	527	411	264	139	83.2	29.7	14.1	14.7							
MAX	83.3	1140	1089	979	1010	807	515	349	242	66.3	26.5	30.7							
(WY)	1976	1974	1982	1974	1986	1974	1982	1984	1981	1983	1983	1977							
MIN	6.23	19.5	23.0	34.2	90.2	102	112	55.4	31.0	14.4	7.30	6.05							
(WY)	1988	1977	1977	1977	1977	1977	1977	1989	1989	1973	1986	1974							

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1973 - 1991

ANNUAL TOTAL	95537.1	83210.0	248
ANNUAL MEAN	262	228	445
HIGHEST ANNUAL MEAN			84.9
LOWEST ANNUAL MEAN			4420
HIGHEST DAILY MEAN	2490	1380	4420
LOWEST DAILY MEAN	8.8	5.8	3.4
ANNUAL SEVEN-DAY MINIMUM	9.9	6.8	3.7
ANNUAL RUNOFF (AC-FT)	189500	165000	179800
ANNUAL RUNOFF (CFSM)	3.69	3.21	3.49
ANNUAL RUNOFF (INCHES)	50.06	43.60	47.48
10 PERCENT EXCEEDS	742	543	684
50 PERCENT EXCEEDS	93	154	100
90 PERCENT EXCEEDS	13	14	11

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 mouth, 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, from topographic map.

REMARKS.--Records fair except those below 10 ft³/s, and estimated daily discharges, which are poor. No regulation or diversion upstream from station.

AVERAGE DISCHARGE.--8 years, 22.0 ft³/s, 52.41 in/yr, 15,940 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 652 ft³/s Nov. 2, 1984, gage height, 3.81 ft, from rating curve extended above 260 ft³/s; maximum gage height, 3.86 ft, Dec. 9, 1987, from crest-stage gage; 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)
Nov. 25	0630	*290	*3.14				
Minimum discharge, 0.47 ft ³ /s Sept 26-28.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.3	13	48	16	13	e17	15	13	12	4.7	1.9	2.2
2	1.3	7.5	49	14	39	e22	15	12	11	4.2	1.9	1.8
3	1.5	6.2	37	13	58	e75	15	12	10	3.9	1.8	1.5
4	1.5	11	38	13	51	e65	18	11	10	3.9	1.7	1.4
5	2.2	15	37	12	e57	e75	106	11	9.5	3.6	1.7	1.2
6	2.2	14	29	12	e48	e56	76	11	9.3	3.5	1.7	1.1
7	2.0	12	22	24	e37	e47	75	20	9.1	3.4	1.7	1.0
8	1.7	14	17	39	e30	e39	63	46	8.7	3.3	1.9	1.1
9	1.6	13	31	31	e26	e34	76	35	7.9	3.1	1.9	1.1
10	1.5	11	35	47	e23	e32	61	29	7.5	3.1	1.9	1.1
11	1.5	9.0	28	70	e21	e28	49	25	7.1	3.1	1.9	1.0
12	1.4	7.4	21	180	e23	e65	40	22	7.1	3.1	1.8	1.0
13	1.6	39	19	110	e50	e55	33	20	7.1	2.9	1.6	.90
14	1.7	36	17	76	e44	e40	30	18	6.6	3.0	1.5	.95
15	3.0	18	15	90	e36	e34	26	16	6.3	2.9	1.5	1.0
16	3.6	13	13	69	e30	e30	23	15	7.7	3.2	1.5	.90
17	2.6	11	12	53	e27	e26	20	40	6.8	3.6	1.5	.85
18	9.5	12	35	42	e24	e23	18	58	6.2	3.3	1.5	.76
19	4.1	11	37	35	e23	e22	17	52	6.1	3.1	1.5	.75
20	2.3	16	26	30	e35	e21	16	38	6.3	2.9	1.5	.70
21	9.2	27	20	25	e70	21	14	31	6.3	2.6	1.4	.70
22	8.7	58	17	21	e46	20	13	26	6.3	2.6	1.3	.70
23	3.6	47	16	19	e35	24	13	21	6.1	2.4	1.3	.58
24	2.4	49	13	17	e30	33	16	19	5.5	2.3	1.4	.54
25	2.5	202	13	16	e26	30	17	17	5.5	2.4	1.3	.54
26	6.7	87	12	15	e23	26	16	15	5.4	2.4	1.1	.48
27	3.6	49	19	14	e21	22	17	14	5.1	2.4	1.4	.49
28	5.1	34	29	13	e19	20	17	13	4.8	2.2	4.2	.47
29	4.3	41	22	12	---	18	16	14	4.8	2.0	3.6	.55
30	30	51	19	12	---	17	14	15	4.8	2.0	2.5	.62
31	26	---	17	14	---	16	---	13	---	1.9	2.0	---
TOTAL	150.2	934.1	749	1154	965	1053	945	702	216.9	93.0	55.4	27.98
MEAN	4.85	31.1	24.2	37.2	34.5	34.0	31.5	22.6	7.23	3.00	1.79	.93
MAX	30	202	49	180	70	75	106	58	12	4.7	4.2	2.2
MIN	1.3	6.2	12	12	13	16	13	11	4.8	1.9	1.1	.47
AC-FT	298	1850	1490	2290	1910	2090	1870	1390	430	184	110	.55
CFSM	.85	5.46	4.24	6.53	6.05	5.96	5.53	3.97	1.27	.53	.31	.16
IN.	.98	6.10	4.89	7.53	6.30	6.87	6.17	4.58	1.42	.61	.36	.18

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1984 - 1991, BY WATER YEAR (WY)

	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	3.60	45.2	36.6	47.5	49.3	35.2	19.4	14.3
MAX	9.39	115	65.1	64.7	96.5	62.1	31.5	27.8
(WY)	1985	1986	1987	1988	1989	1990	1991	1984
MIN	.39	7.62	17.6	16.0	18.0	23.1	10.4	6.67
(WY)	1988	1990	1990	1985	1988	1988	1987	1986

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1984 - 1991

ANNUAL TOTAL	7734.0	7045.58	22.0
ANNUAL MEAN	21.2	19.3	29.1
HIGHEST ANNUAL MEAN			18.5
LOWEST ANNUAL MEAN			546
HIGHEST DAILY MEAN	302	202	Nov 2 1984
LOWEST DAILY MEAN	1.2	.47	Sep 28
ANNUAL SEVEN-DAY MINIMUM	1.3	.52	Sep 23
ANNUAL RUNOFF (AC-FT)	15340	13970	15960
ANNUAL RUNOFF (CFSM)	3.72	3.39	3.87
ANNUAL RUNOFF (INCHES)	50.47	45.98	52.52
10 PERCENT EXCEEDS	50	47	54
50 PERCENT EXCEEDS	9.8	13	11
90 PERCENT EXCEEDS	1.5	1.4	1.0

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.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 13,000 ft³/s and maximum (*):

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR		FOR 1991 WATER YEAR		WATER YEARS 1940 - 1991	
ANNUAL TOTAL	473835		402335			
ANNUAL MEAN	1298		1102		1487	
HIGHEST ANNUAL MEAN					2541	1974
LOWEST ANNUAL MEAN					431	1977
HIGHEST DAILY MEAN	13900	Jan 7	7470	Mar 4	36100	Dec 22 1964
LOWEST DAILY MEAN	82	Oct 10	65	Sep 26	47	Sep 26 1965
ANNUAL SEVEN-DAY MINIMUM	86	Sep 26	66	Sep 24	51	Sep 25 1965
ANNUAL RUNOFF (AC-FT)	939900		798000		1077000	
ANNUAL RUNOFF (CFSM)	3.89		3.30		4.45	
ANNUAL RUNOFF (INCHES)	52.77		44.81		60.49	
10 PERCENT EXCEEDS	2990		2600		3860	
50 PERCENT EXCEEDS	640		818		644	
90 PERCENT EXCEEDS	106		94		99	

BIG CREEK BASIN

14306900 BIG CREEK NEAR ROOSEVELT BEACH, OR

LOCATION.--Lat 44°10'05", long 124°03'55", in SE 1/4 SE 1/4 sec.13, T.16 S., R.12 W., Lane County, Hydrologic Unit 17100205, on right bank 1.0 mi downstream from Frying Pan Creek, 2.5 mi east of Roosevelt Beach.

DRAINAGE AREA.--11.9 mi².

PERIOD OF RECORD.--October 1972 to September 1991 (discontinued). See REMARKS.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 141 ft, by barometer.

REMARKS.--No estimated daily discharges. Records good. No regulation or diversion upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--19 years, 90.0 ft³/s, 102.71 in/yr, 65,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,150 ft³/s Nov. 30, 1975, gage height, 6.90 ft; minimum discharge, 3.8 ft³/s Oct. 15, 1979.

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)
Jan. 12	1200	*755	*5.66				
Minimum discharge, 4.7 ft ³ /s Sept. 23-27, 30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.9	96	163	57	52	83	49	46	37	17	8.8	17
2	6.9	71	155	55	109	157	51	44	35	17	8.8	13
3	8.3	73	141	51	131	174	59	41	34	15	8.7	12
4	8.2	102	152	49	145	216	123	40	33	14	8.8	11
5	11	90	133	47	176	206	490	41	32	14	9.2	9.8
6	7.5	78	120	46	162	185	347	45	31	13	9.6	9.0
7	7.0	80	108	65	138	154	262	110	31	13	10	8.9
8	6.7	77	98	59	119	135	238	143	29	13	11	8.1
9	6.4	76	104	71	105	131	286	119	28	13	12	7.8
10	6.9	70	111	345	95	124	257	104	27	13	12	7.4
11	6.5	64	95	430	88	160	207	92	26	12	11	7.4
12	11	59	88	626	117	251	169	85	26	12	11	7.4
13	8.2	207	90	504	343	211	143	79	25	12	12	7.1
14	10	192	82	464	276	187	123	72	24	12	12	6.9
15	35	154	77	478	213	160	106	66	25	14	12	6.4
16	16	124	72	366	178	138	92	61	27	14	12	6.0
17	12	118	72	275	157	121	83	67	24	13	12	6.0
18	36	98	88	212	166	107	75	65	23	12	12	5.8
19	19	94	85	167	166	95	68	61	22	11	13	5.5
20	14	100	78	139	181	86	63	56	22	11	13	5.2
21	70	104	73	117	182	80	58	53	22	11	14	5.2
22	38	153	70	100	165	78	53	49	21	11	15	5.2
23	24	163	66	90	145	78	56	47	20	10	16	5.0
24	18	209	62	80	126	78	65	45	19	9.8	16	4.8
25	37	549	60	73	111	73	61	44	19	10	16	4.7
26	40	356	61	67	100	69	59	41	19	10	16	4.7
27	36	271	75	62	89	64	56	40	19	9.8	36	4.8
28	48	200	69	58	82	61	53	38	19	9.3	43	5.0
29	50	191	63	53	---	58	50	47	18	8.9	63	5.0
30	133	171	60	49	---	55	48	46	18	8.8	23	4.9
31	133	---	59	60	---	51	---	40	---	8.7	24	---
TOTAL	870.5	4390	2830	5315	4117	3826	3850	1927	755	372.3	500.9	217.0
MEAN	28.1	146	91.3	171	147	123	128	62.2	25.2	12.0	16.2	7.23
MAX	133	549	163	626	343	251	490	143	37	17	63	17
MIN	6.4	59	59	46	52	51	48	38	18	8.7	8.7	4.7
AC-FT	1730	8710	5610	10540	8170	7590	7640	3820	1500	738	994	430
CFSM	2.36	12.3	7.67	14.4	12.4	10.4	10.8	5.22	2.11	1.01	1.36	.61
IN.	2.72	13.72	8.85	16.61	12.87	11.96	12.04	6.02	2.36	1.16	1.57	.68

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1991, BY WATER YEAR (WY)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	27.8	140	197	182	179	142	86.8	52.0	37.9	18.3	10.7	12.0							
MAX	66.8	386	398	287	322	269	153	99.8	97.6	45.7	18.1	29.4							
(WY)	1976	1974	1974	1976	1986	1974	1982	1984	1984	1974	1974	1977							
MIN	5.10	20.2	19.9	26.7	55.8	48.9	39.8	27.2	13.0	8.56	6.01	6.10							
(WY)	1988	1977	1977	1977	1973	1978	1986	1982	1982	1982	1982	1987							

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1973 - 1991

ANNUAL TOTAL	34241.6	28970.7	90.0
ANNUAL MEAN	93.8	79.4	158
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			40.4
HIGHEST DAILY MEAN	764	Feb 10	1290
LOWEST DAILY MEAN	6.1	Sep 22	4.5
ANNUAL SEVEN-DAY MINIMUM	6.2	Sep 21	4.7
ANNUAL RUNOFF (AC-FT)	67920	57460	65210
ANNUAL RUNOFF (CFSM)	7.88	6.67	7.56
ANNUAL RUNOFF (INCHES)	107.04	90.56	102.77
10 PERCENT EXCEEDS	213	177	230
50 PERCENT EXCEEDS	54	56	44
90 PERCENT EXCEEDS	8.2	8.8	8.1

SIUSLAW RIVER BASIN

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14307620 SIUSLAW RIVER NEAR MAPLETON, OR
(National stream quality accounting network station)

LOCATION.--Lat 44°03'45", long 123°52'55", in SW 1/4 NW 1/4 sec.27, T.17 S., R.10 W., Lane County, Hydrologic Unit 17100206, on right bank 250 ft above Shoemaker Creek, 2.5 mi northwest of Mapleton, and at mile 23.7.

DRAINAGE AREA.--588 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1967 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 41 ft, from topographic map.

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

AVERAGE DISCHARGE.--24 years, 2,060 ft³/s, 47.58 in/yr, 1,492,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 49,400 ft³/s Jan. 21, 1972, gage height, 28.45 ft; minimum discharge, 45 ft³/s Aug. 18, 19, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of December 1964 reached a stage of about 28 ft, from information by local residents (discharge not determined).

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)
Jan. 12	1800	*16,400	*15.32	No other peak greater than base discharge.			
Minimum discharge, 68 ft ³ /s Sept. 23.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	172	1880	3320	1240	1330	1530	1480	1270	1070	442	193	191
2	157	1230	3360	1190	2260	2600	1440	1200	979	418	188	178
3	149	911	3070	1130	4090	6590	1420	1140	913	402	187	160
4	144	973	2920	1070	3880	12500	1480	1070	865	381	182	150
5	157	1180	2850	1020	6130	10600	4190	1030	826	363	179	143
6	177	1070	2510	988	4950	7320	4490	1010	800	348	178	134
7	200	951	2190	1190	3670	5610	4390	1200	776	335	181	123
8	176	904	1930	1460	2910	4550	4350	2690	755	326	186	116
9	160	854	1880	1500	2450	3870	5210	2800	726	318	190	117
10	151	794	2820	3170	2160	3530	4730	2310	692	312	188	116
11	140	712	3240	5180	1990	3310	4010	1920	660	304	177	116
12	139	640	2730	12100	2010	5230	3420	1680	635	298	169	122
13	143	1320	2290	10900	4250	5040	2920	1560	622	288	165	136
14	143	2230	2020	7820	4110	4140	2570	1470	613	285	161	116
15	212	1760	1820	8280	3250	3510	2310	1360	597	288	160	109
16	259	1410	1650	6440	2750	3070	2100	1270	632	307	158	102
17	209	1180	1530	4800	2510	2720	1910	1420	597	324	157	96
18	322	1150	1710	3790	2400	2460	1770	2190	565	320	156	90
19	440	1140	2070	3130	2460	2290	1650	3060	562	293	153	86
20	363	1340	2020	2640	2700	2190	1560	2790	615	278	153	78
21	525	1990	1780	2300	2840	2100	1470	2250	581	263	148	73
22	843	2770	e1500	2040	2570	2010	1390	1890	589	253	143	71
23	510	2890	e1380	1860	2290	2150	1340	1650	555	244	140	77
24	373	2540	e1260	1710	2070	2430	1490	1470	525	235	138	89
25	336	9660	1290	1590	1890	2550	1580	1360	512	236	138	82
26	440	6430	1230	1490	1760	2410	1600	1270	502	236	134	79
27	e375	4430	1280	1390	1660	2150	1580	1180	483	231	142	82
28	e350	3250	1540	1320	1570	1920	1490	1110	475	221	237	82
29	e425	2880	1560	1250	---	1760	1420	1130	467	213	266	82
30	e1450	3510	1430	1190	---	1640	1350	1290	459	206	248	80
31	2730	---	1340	1290	---	1550	---	1170	---	200	201	---
TOTAL	12370	63979	63520	96468	78910	115330	72110	50210	19648	9168	5396	3276
MEAN	399	2133	2049	3112	2818	3720	2404	1620	655	296	174	109
MAX	2730	9660	3360	12100	6130	12500	5210	3060	1070	442	266	191
MIN	139	640	1230	988	1330	1530	1340	1010	459	200	134	71
AC-FT	24540	126900	126000	191300	156500	228800	143000	99590	38970	18180	10700	6500
CFSM	.68	3.63	3.48	5.29	4.79	6.33	4.09	2.75	1.11	.50	.30	.19
IN.	.78	4.05	4.02	6.10	4.99	7.30	4.56	3.18	1.24	.58	.34	.21

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1991, BY WATER YEAR (WY)

	1968	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
MEAN	408	2376	4811	4956	4463	3487	2065	1067	586	271	161	182			
MAX	1219	7819	9787	10060	9084	6819	4445	2101	1239	628	321	356			
(WY)	1969	1974	1982	1970	1986	1974	1982	1984	1984	1983	1968	1971			
MIN	64.3	281	261	300	876	1287	686	541	320	127	77.9	86.8			
(WY)	1988	1977	1977	1977	1977	1978	1977	1985	1973	1977	1973	1987			

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1968 - 1991

ANNUAL TOTAL	645666	590385	
ANNUAL MEAN	1769	1617	
HIGHEST ANNUAL MEAN			2060
LOWEST ANNUAL MEAN			3711
HIGHEST DAILY MEAN	18900	Jan 7	45900
LOWEST DAILY MEAN	116	Sep 29	45
ANNUAL SEVEN-DAY MINIMUM	118	Sep 23	47
ANNUAL RUNOFF (AC-FT)	1281000	1171000	1492000
ANNUAL RUNOFF (CFSM)	3.01	2.75	3.50
ANNUAL RUNOFF (INCHES)	40.85	37.35	47.59
10 PERCENT EXCEEDS	4010	3520	5450
50 PERCENT EXCEEDS	919	1230	885
90 PERCENT EXCEEDS	157	144	134

SIUSLAW RIVER BASIN
14307620 SIUSLAW RIVER NEAR MAPLETON, OR--continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--June 1967 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: June 1978 to September 1981.

WATER TEMPERATURE: November 1967 to September 1975. October 1977 to September 1981.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

		DIS-CHARGE, INST. CUBIC FEET PER SECOND	SPE-CIFIC CON-DUCT-ANCE (US/CM)	PH (STAND-ARD UNITS)	TEMPER-ATURE WATER (DEG C)	TUR-BID-ITY (NTU)	OXYGEN, DIS-SOLVED (MG/L)	OXYGEN, DIS-SOLVED (PER-CENT SATUR-ATION)	COLI-FORM, FECAL, 0.7 UM-MF (COLS./100 ML)	STREP-TOCOCOCCI, KF AGAR (COLS. PER 100 ML)	HARD-NESS (MG/L AS CACO3)	CALCIUM, DIS-SOLVED (MG/L AS CA)	
NOV 1990 29...	1120	2630	45	6.9	8.5	4.0	11.6	99	K44	K55	12	3.1	
MAR 1991 06...	1110	7420	38	6.9	8.0	20	11.9	100	70	58	10	2.6	
JUN 05...	1300	823	44	7.8	15.0	2.1	10.9	107	K12	25	12	3.1	
AUG 14...	1205	160	53	7.8	23.0	1.5	9.0	105	K7	81	14	3.4	
DATE		MAGNE-SIUM, DIS-SOLVED (MG/L AS MG)	SODIUM, DIS-SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM AD-SORP-TION RATIO	POTAS-SIUM, DIS-SOLVED (MG/L AS K)	ALKA-LINITY, DIS IT FIELD (MG/L AS CACO3	BICAR-BONATE, DIS IT FIELD (MG/L AS HCO3	CAR-BONATE, DIS IT FIELD (MG/L AS CO3	SULFATE, DIS-SOLVED (MG/L AS SO4)	CHLO-RIDE, DIS-SOLVED (MG/L AS CL)	FLUO-RIDE, DIS-SOLVED (MG/L AS F)	SILICA, DIS-SOLVED (MG/L AS SIO2)
NOV 1990 29...	1.0	3.9	40	0.5	0.7	11	14	0	1.4	3.8	<0.1	12	
MAR 1991 06...	0.93	3.5	40	0.5	0.7	9	11	0	1.1	3.3	<0.1	11	
JUN 05...	1.1	4.0	40	0.5	0.7	13	16	0	0.7	3.7	<0.1	12	
AUG 14...	1.3	4.9	42	0.6	0.9	17	21	0	0.8	4.7	<0.1	11	
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS-SOLVED (MG/L)	SOLIDS, SUM OF CONSTI-TUENTS, DIS-SOLVED (MG/L)	SOLIDS, DIS-SOLVED (TONS PER AC-FT)	SOLIDS, DIS-SOLVED (TONS PER DAY)	NITRO-GEN, NITRITE DIS-SOLVED (MG/L AS N)	NITRO-GEN, NO2+NO3 DIS-SOLVED (MG/L AS N)	NITRO-GEN, AMMONIA DIS-SOLVED (MG/L AS N)	NITRO-GEN, AM-MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS-PHORUS TOTAL (MG/L AS P)	PHOS-PHORUS DIS-SOLVED (MG/L AS P)	PHOS-PHORUS ORTHO, DIS-SOLVED (MG/L AS P)	ALUM-INUM, DIS-SOLVED (UG/L AS AL)
NOV 1990 29...	33	37	0.05	234	<0.01	0.80	0.04	<0.2	0.03	<0.01	<0.01	<0.01	60
MAR 1991 06...	52	32	0.07	1040	<0.01	0.66	<0.01	0.6	0.05	0.02	<0.01	<0.01	70
JUN 05...	29	34	0.04	64	<0.01	0.24	<0.01	0.3	0.02	<0.01	<0.01	<0.01	20
AUG 14...	22	38	0.03	9.5	<0.01	0.05	<0.01	0.9	0.02	<0.01	<0.01	<0.01	<10
DATE		ARSENIC, DIS-SOLVED (UG/L AS AS)	BARIUM, DIS-SOLVED (UG/L AS BA)	BERYL-LIUM, DIS-SOLVED (UG/L AS BE)	CADMIUM, DIS-SOLVED (UG/L AS CD)	CHRO-MIUM, DIS-SOLVED (UG/L AS CR)	COBALT, DIS-SOLVED (UG/L AS CO)	COPPER, DIS-SOLVED (UG/L AS CU)	IRON, DIS-SOLVED (UG/L AS FE)	LEAD, DIS-SOLVED (UG/L AS PB)	LITHIUM, DIS-SOLVED (UG/L AS LI)	MANGA-NESE, DIS-SOLVED (UG/L AS MN)	
NOV 1990 29...	<1	11	<0.5	<1.0	<1	<3	2	110	<1	<4	4		
MAR 1991 06...	<1	11	<0.5	<1.0	<1	<3	1	97	<1	<4	5		
JUN 05...	<1	9	<0.5	<1.0	<1	<3	1	130	<1	<4	4		
AUG 14...	<1	11	<0.5	<1.0	<1	<3	<1	130	<1	<4	6		
DATE		MERCURY, DIS-SOLVED (UG/L AS HG)	MOLYB-DENUM, DIS-SOLVED (UG/L AS MO)	NICKEL, DIS-SOLVED (UG/L AS NI)	SELE-NIUM, DIS-SOLVED (UG/L AS SE)	SILVER, DIS-SOLVED (UG/L AS AG)	STRON-TIUM, DIS-SOLVED (UG/L AS SR)	VANA-DIUM, DIS-SOLVED (UG/L AS V)	ZINC, DIS-SOLVED (UG/L AS ZN)	SEDI-MENT, SUS-PENDED (MG/L)	SEDI-MENT, DIS-CHARGE, SUS-PENDED (T/DAY)	SED. SUSP. SIEVE DIAM. % FINER THAN .062 MM	
NOV 1990 29...	<0.1	<10	1	<2	<1.0	38	<6	6	5	35	74		
MAR 1991 06...	<0.1	<10	1	<1	<1.0	32	<6	3	31	621	68		
JUN 05...	<0.1	<10	<1	<1	<1.0	38	<6	5	45	100	76		
AUG 14...	<0.1	<10	<1	<1	<1.0	46	<6	<3	3	1.3	--		

K - Results based on colony count outside acceptable range (non-ideal colony count).

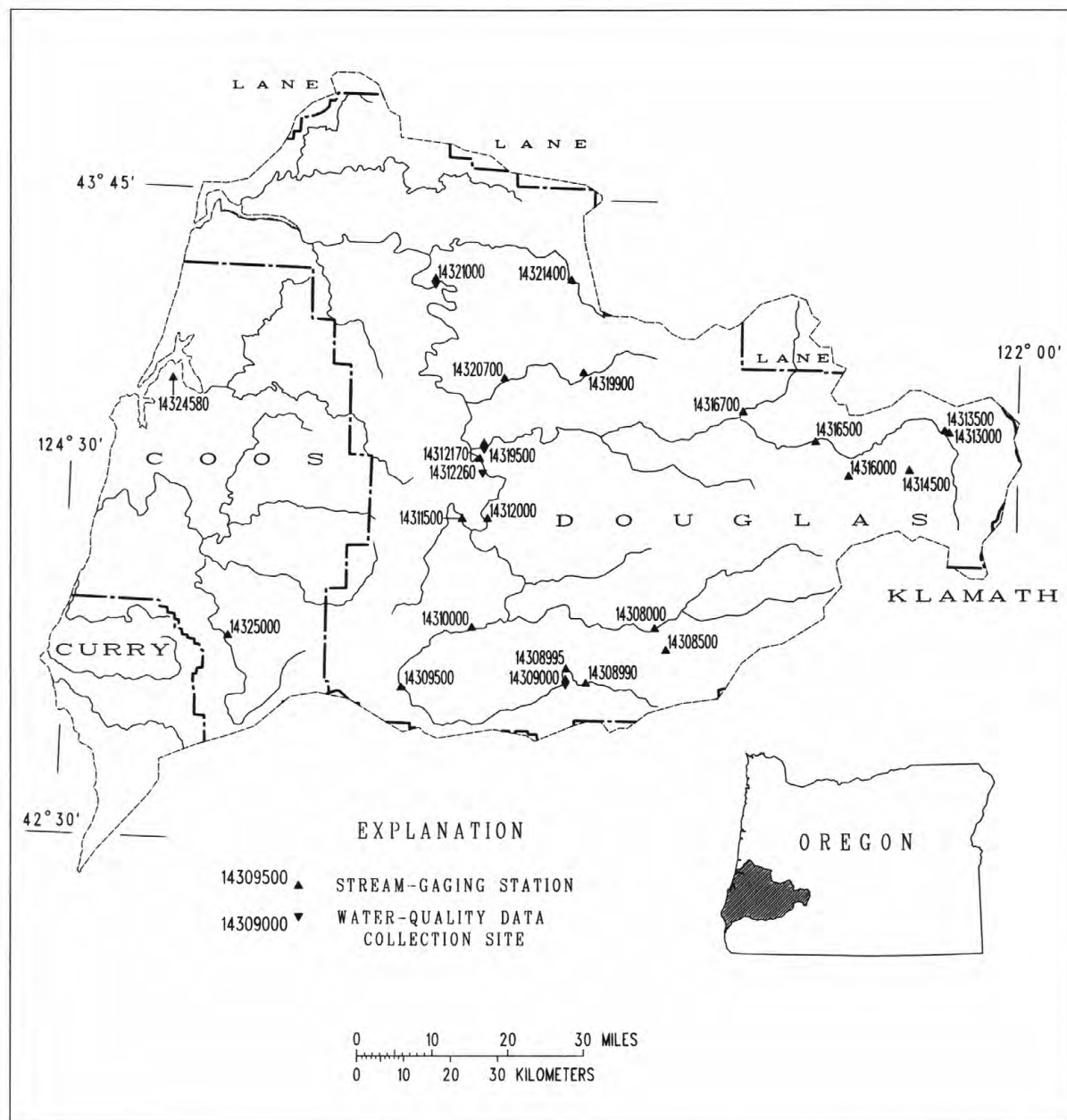


Figure 17.--Location of surface-water and water-quality stations in the Umpqua River, Coos River, and Coquille River basins.

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 National Geodetic Vertical Datum of 1929 (river-profile survey). Prior to Oct. 1, 1939, nonrecording gage at site 0.2 mi downstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are fair. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--53 years, 1,025 ft³/s, 31.00 in/yr, 742,600 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. 14	2330	7,950	9.27	Mar. 4	2030	*13,000	11.90
Jan. 14	2330	(a)	9.52	Mar. 4	2030	(a)	*12.31
Mar. 3	1230	8,190	9.42				

Minimum discharge, 42 ft³/s Sept. 28-30.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	57	755	1040	e330	413	620	1260	1030	837	247	99	63
2	55	377	928	e310	533	1050	1190	986	801	235	97	61
3	53	246	799	e300	1100	5340	1080	953	773	221	96	61
4	53	264	742	e290	1740	7280	1000	885	715	210	94	59
5	54	810	1010	e330	2860	7070	1230	851	652	200	92	57
6	55	561	825	e330	2290	3750	1950	845	604	193	90	55
7	55	391	688	e380	1640	2700	2120	850	555	186	90	54
8	53	743	623	623	1290	2140	1850	1410	518	179	90	53
9	53	997	638	586	1080	1840	3670	1500	498	173	85	53
10	52	616	2690	2580	931	1650	3340	1330	494	167	86	53
11	51	428	3300	3230	821	1450	2360	1180	497	163	85	53
12	52	320	1880	6580	762	1370	1890	1060	468	159	81	52
13	53	334	1330	7030	2140	1520	1660	1060	432	155	79	51
14	54	1060	1040	6990	2110	1480	1520	1130	398	155	75	51
15	59	689	864	6640	1610	1360	1360	1070	364	152	74	51
16	70	493	728	4240	1360	1260	1250	1000	340	168	72	50
17	67	385	624	2750	1320	1150	1110	2480	321	298	71	49
18	74	393	1180	2090	1390	1140	1040	3840	311	211	70	48
19	150	380	1550	1700	1890	1120	960	3120	358	171	69	48
20	98	488	1120	1390	1660	1020	934	2490	491	157	68	47
21	80	1070	e800	1170	1400	918	1060	2270	387	147	73	45
22	208	1300	e730	1010	1200	849	1050	1940	335	141	70	45
23	155	1030	e700	882	1040	938	1060	1630	311	158	65	45
24	106	796	e640	786	901	1220	1120	1400	305	150	64	45
25	88	1800	e580	706	797	1250	1190	1230	288	132	63	45
26	81	2030	484	644	714	1260	1300	1080	276	124	62	44
27	77	1330	441	584	653	1240	1600	969	273	120	62	44
28	82	1110	469	533	614	1130	1380	878	272	115	63	43
29	97	937	422	488	---	1010	1210	818	282	111	75	42
30	120	1200	e330	458	---	1000	1100	1010	265	107	76	43
31	1160	---	e320	435	---	1210	---	936	---	104	66	---
TOTAL	3522	23333	29515	56395	36259	58335	44844	43231	13421	5209	2402	1510
MEAN	114	778	952	1819	1295	1882	1495	1395	447	168	77.5	50.3
MAX	1160	2030	3300	7030	2860	7280	3670	3840	837	298	99	63
MIN	51	246	320	290	413	620	934	818	265	104	62	42
AC-FT	6990	46280	58540	111900	71920	115700	88950	85750	26620	10330	4760	3000
CFSM	.25	1.73	2.12	4.05	2.88	4.19	3.33	3.11	1.00	.37	.17	.11
IN.	.29	1.93	2.45	4.67	3.00	4.83	3.72	3.58	1.11	.43	.20	.13

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1991, BY WATER YEAR (WY)

	204	1069	1963	2063	2018	1750	1381	1067	515	155	77.6	77.1
MEAN	204	1069	1963	2063	2018	1750	1381	1067	515	155	77.6	77.1
MAX	1791	3976	7480	4513	4907	4776	2314	2093	1643	301	206	364
(WY)	1951	1974	1965	1972	1986	1972	1952	1963	1953	1953	1976	1986
MIN	34.5	48.2	66.6	89.6	95.1	442	433	309	111	49.5	29.9	39.7
(WY)	1988	1940	1977	1977	1977	1941	1968	1968	1987	1940	1940	1951

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1911 - 1991

ANNUAL TOTAL	264886		317976		1025	
ANNUAL MEAN	726		871		1762	1974
HIGHEST ANNUAL MEAN					268	1977
LOWEST ANNUAL MEAN					36500	Dec 22 1964
HIGHEST DAILY MEAN	7430	Jan 8	7280	Mar 4	20	Sep 3 1911
LOWEST DAILY MEAN	51	Oct 11	42	Sep 29	26	Aug 27 1940
ANNUAL SEVEN-DAY MINIMUM	53	Oct 8	44	Sep 24	26	
ANNUAL RUNOFF (AC-FT)	525400		630700		742900	
ANNUAL RUNOFF (CFSM)	1.62		1.94		2.28	
ANNUAL RUNOFF (INCHES)	21.95		26.34		31.03	
10 PERCENT EXCEEDS	1750		1860		2410	
50 PERCENT EXCEEDS	476		614		519	
90 PERCENT EXCEEDS	65		55		59	

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SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR			FOR 1991 WATER YEAR			WATER YEARS 1955 - 1991	
ANNUAL TOTAL	13381.59			22468.97				
ANNUAL MEAN	36.7			61.6			79.3	
HIGHEST ANNUAL MEAN							180	
LOWEST ANNUAL MEAN							16.0	
HIGHEST DAILY MEAN	396	Jan	8	1290	Mar	3	6670	Jan 15
LOWEST DAILY MEAN	.00	Aug	9	.06	Sep	27	.00	Sep 4
ANNUAL SEVEN-DAY MINIMUM	.00	Aug	9	.22	Sep	21	.00	Sep 16
ANNUAL RUNOFF (AC-FT)	26540			44570			57430	
ANNUAL RUNOFF (CFSM)	.67			1.13			1.46	
ANNUAL RUNOFF (INCHES)	9.15			15.36			19.80	
10 PERCENT EXCEEDS	104			144			195	
50 PERCENT EXCEEDS	17			34			19	
90 PERCENT EXCEEDS	.51			.63			1.0	

UMPOUA RIVER BASIN

14308600 SOUTH UMPOUA RIVER AT DAYS CREEK

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: August 1991 to October 1991.

pH: August 1991 to October 1991.

WATER TEMPERATURE: October 1970 to September 1982, August 1991 to October 1991.

DISSOLVED OXYGEN: August 1991 to October 1991.

INSTRUMENTATION.--Temperature recorder from October 1970 to September 1982. Water-quality monitor from August 1991 to October 1991.

EXTREMES FOR AUGUST 1 TO OCTOBER 31, 1991.--

SPECIFIC CONDUCTANCE: Maximum, 170 microsiemens Oct. 25; minimum, 96 microsiemens Oct. 28.

pH: Maximum, 8.9 units Aug. 19; minimum, 7.8 units several days August to October.

WATER TEMPERATURE: Maximum, 27.0°C Aug. 20; minimum, 7.0°C Oct. 28, 29.

DISSOLVED OXYGEN: Maximum, 11.7 mg/L Oct. 28, 29; minimum 7.1 mg/L Aug. 21.

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, AUGUST TO OCTOBER 1991

[illegible]

PH (STANDARD UNITS), AUGUST TO OCTOBER 1991

[illegible]

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TEMPERATURE, WATER (DEG. C), AUGUST TO OCTOBER 1991

[illegible][illegible]

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, from topographic map.

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 November 1985 to September 1989 have been collected at this location.

AVERAGE DISCHARGE.--6 years, 60.5 ft³/s, 12.70 in/yr, 43,830 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge 2,860 ft³/s Mar. 3, 1991, gage height 6.99 ft; 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)
Mar. 3	1000	*2,860	*6.99	Mar. 4	1730	2,000	5.93

Minimum discharge, 6.3 ft³/s Sept. 26-28, 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	7.0	36	40	e27	25	37	115	65	67	32	13	9.1
2	6.7	21	38	e26	98	259	110	61	63	30	13	9.3
3	6.7	16	33	e25	162	1240	99	58	59	27	13	9.0
4	7.2	15	30	e24	286	1120	92	55	56	26	13	8.4
5	7.3	16	31	e23	e350	669	114	53	55	25	12	8.1
6	7.4	19	28	e24	e200	345	131	51	52	25	12	7.8
7	7.4	16	26	35	e135	257	122	51	50	24	12	7.6
8	7.4	16	25	40	104	206	109	60	48	20	12	7.9
9	7.6	15	23	37	84	175	126	69	46	20	12	8.9
10	7.6	14	56	e170	72	157	135	67	44	19	14	8.9
11	7.7	13	85	166	63	138	131	63	44	19	12	8.3
12	8.0	12	56	459	58	167	128	60	42	19	11	8.2
13	8.2	19	43	261	74	165	119	61	41	18	11	7.9
14	8.2	50	36	174	67	152	110	64	40	18	10	7.9
15	8.2	27	32	137	59	142	106	59	39	19	10	7.9
16	8.2	21	30	105	55	137	100	59	38	25	10	7.5
17	8.2	18	27	84	53	127	92	236	36	39	10	7.3
18	14	19	32	73	60	124	85	374	36	25	9.8	7.0
19	18	21	41	65	72	134	81	274	40	22	9.6	6.9
20	10	24	33	56	64	128	77	219	48	20	9.6	6.9
21	10	31	e30	49	59	118	80	194	40	19	9.6	6.7
22	15	37	e28	44	54	113	73	157	37	18	9.3	7.1
23	12	28	e26	41	49	138	68	129	34	19	9.3	7.1
24	10	23	e25	38	45	153	71	111	32	17	9.3	6.9
25	9.3	74	e24	37	42	139	71	98	32	16	9.3	6.7
26	9.5	71	e24	37	39	132	79	88	32	16	9.3	6.6
27	9.6	45	e30	35	38	118	85	81	33	15	9.3	6.3
28	11	40	32	38	37	108	76	75	37	14	10	6.5
29	11	35	28	38	---	100	72	72	37	14	13	6.6
30	23	46	24	36	---	98	67	83	34	13	10	6.6
31	73	---	27	29	---	111	---	74	---	13	9.4	---
TOTAL	364.4	838	1043	2433	2504	7207	2924	3221	1292	646	336.8	227.9
MEAN	11.8	27.9	33.6	78.5	89.4	232	97.5	104	43.1	20.8	10.9	7.60
MAX	73	74	85	459	350	1240	135	374	67	39	14	9.3
MIN	6.7	12	23	23	25	37	67	51	32	13	9.3	6.3
AC-FT	723	1660	2070	4830	4970	14300	5800	6390	2560	1280	668	452
CFSM	.18	.43	.52	1.21	1.38	3.59	1.51	1.61	.67	.32	.17	.12
IN.	.21	.48	.60	1.40	1.44	4.14	1.68	1.85	.74	.37	.19	.13

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1991, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991
MEAN	12.1	40.3	50.3	122	167	161
MAX	17.1	102	112	158	408	315
(WY)	1987	1988	1989	1990	1991	1992
MIN	6.41	12.2	18.2	66.1	55.1	39.5
(WY)	1988	1989	1990	1991	1992	1993

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1986 - 1991

ANNUAL TOTAL	14012.8	23037.1	60.5
ANNUAL MEAN	38.4	63.1	80.5
HIGHEST ANNUAL MEAN			36.2
LOWEST ANNUAL MEAN			1989
HIGHEST DAILY MEAN	514	1240	1710
LOWEST DAILY MEAN	5.1	6.3	5.1
ANNUAL SEVEN-DAY MINIMUM	5.6	6.6	5.4
ANNUAL RUNOFF (AC-FT)	27790	45690	43840
ANNUAL RUNOFF (CFSM)	.59	.98	.94
ANNUAL RUNOFF (INCHES)	8.06	13.25	12.71
10 PERCENT EXCEEDS	95	134	135
50 PERCENT EXCEEDS	24	36	27
90 PERCENT EXCEEDS	6.9	8.2	7.8

UMPQUA RIVER BASIN

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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 National Geodetic Vertical Datum of 1929 (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 Water Resources Department.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents recorded, 40,760 acre-ft May 7, 1989, elevation, 1,879.72 ft; minimum contents, 7,240 acre-ft Jan. 9, 10, 1991, elevation, 1,805.03 ft.

EXTREMES FOR CURRENT YEAR.--Maximum contents, 32,010 acre-ft June 7, 8, elevation, 1,864.70 ft; minimum contents, 7,240 acre-ft Jan. 9, 10, elevation, 1,805.03 ft.

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

1,780	1,800	1,820	11,954	1,860	29,476
1,790	3,589	1,830	15,656	1,870	34,969
1,800	5,889	1,840	19,819	1,880	40,932
1,810	8,696	1,850	24,422	1,885	44,127

ELEVATION (FEET NGVD), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1818.41	1811.93	1809.05	1806.13	1813.24	1821.17	1850.87	1856.23	1864.55	1863.52	1856.22	1848.07
2	1818.14	1811.72	1809.04	1805.95	1813.69	1822.36	1851.11	1856.27	1864.61	1863.40	1855.92	1847.85
3	1817.89	1811.55	1808.89	1805.78	1814.56	1828.70	1851.30	1856.32	1864.64	1863.24	1855.61	1847.63
4	1817.62	1811.41	1808.79	1805.61	1816.06	1834.13	1851.46	1856.36	1864.66	1863.07	1855.31	1847.37
5	1817.36	1811.26	1808.67	1805.43	1818.18	1837.32	1851.78	1856.39	1864.68	1862.89	1854.99	1847.08
6	1817.10	1811.11	1808.58	1805.27	1819.19	1838.86	1852.14	1856.41	1864.69	1862.71	1854.70	1846.80
7	1816.83	1810.94	1808.38	1805.18	1819.80	1839.96	1852.44	1856.44	1864.69	1862.53	1854.43	1846.52
8	1816.57	1810.74	1808.17	1805.12	1820.17	1840.77	1852.70	1856.55	1864.68	1862.34	1854.18	1846.31
9	1816.31	1810.52	1807.97	1805.04	1820.41	1841.43	1853.05	1856.68	1864.66	1862.12	1853.93	1846.12
10	1816.04	1810.31	1808.04	1805.85	1820.57	1841.99	1853.47	1856.77	1864.63	1861.89	1853.68	1845.95
11	1815.78	1810.09	1808.23	1806.81	1820.67	1842.45	1853.83	1856.86	1864.59	1861.66	1853.43	1845.77
12	1815.53	1809.87	1808.24	1809.59	1820.74	1843.02	1854.17	1856.93	1864.55	1861.43	1853.17	1845.57
13	1815.27	1809.81	1808.20	1811.04	1820.90	1843.59	1854.46	1857.04	1864.50	1861.19	1852.92	1845.36
14	1815.03	1809.88	1808.13	1811.91	1821.00	1844.14	1854.71	1857.12	1864.45	1860.94	1852.65	1845.15
15	1814.77	1809.75	1808.05	1812.48	1821.06	1844.59	1854.94	1857.19	1864.40	1860.71	1852.39	1844.95
16	1814.51	1809.66	1807.94	1812.83	1821.09	1845.03	1855.11	1857.31	1864.34	1860.57	1852.13	1844.76
17	1814.26	1809.55	1807.81	1813.04	1821.10	1845.42	1855.27	1858.33	1864.28	1860.42	1851.87	1844.59
18	1814.15	1809.31	1807.78	1813.20	1821.18	1845.84	1855.39	1859.88	1864.22	1860.20	1851.61	1844.39
19	1813.97	1809.14	1807.82	1813.32	1821.32	1846.27	1855.48	1860.95	1864.22	1859.95	1851.35	1844.17
20	1813.74	1809.08	1807.76	1813.41	1821.40	1846.69	1855.58	1861.73	1864.22	1859.70	1851.08	1843.94
21	1813.56	1809.06	1807.59	1813.44	1821.46	1847.05	1855.68	1862.35	1864.18	1859.43	1850.83	1843.71
22	1813.46	1808.98	1807.45	1813.47	1821.48	1847.39	1855.73	1862.79	1864.12	1859.18	1850.55	1843.52
23	1813.24	1808.83	1807.34	1813.51	1821.49	1847.86	1855.77	1863.15	1864.05	1858.91	1850.27	1843.35
24	1813.00	1808.73	1807.23	1813.52	1821.46	1848.38	1855.82	1863.42	1863.98	1858.61	1849.99	1843.18
25	1812.76	1809.08	1807.12	1813.51	1821.42	1848.86	1855.88	1863.64	1863.91	1858.32	1849.74	1843.02
26	1812.52	1809.24	1807.02	1813.49	1821.36	1849.26	1855.97	1863.81	1863.85	1858.03	1849.50	1842.85
27	1812.27	1809.20	1806.91	1813.44	1821.28	1849.59	1856.08	1863.94	1863.80	1857.74	1849.25	1842.71
28	1812.04	1809.11	1806.80	1813.41	1821.23	1849.85	1856.15	1864.06	1863.77	1857.44	1849.04	1842.57
29	1811.81	1809.08	1806.65	1813.36	---	1850.08	1856.20	1864.20	1863.72	1857.15	1848.83	1842.43
30	1811.84	1809.07	1806.46	1813.31	---	1850.31	1856.22	1864.36	1863.64	1856.84	1848.56	1842.29
31	1812.04	---	1806.30	1813.28	---	1850.58	---	1864.47	---	1856.53	1848.31	---
MAX	1818.41	1811.93	1809.05	1813.52	1821.49	1850.58	1856.22	1864.47	1864.69	1863.52	1856.22	1848.07
MIN	1811.81	1808.73	1806.30	1805.04	1813.24	1821.17	1850.87	1856.23	1863.64	1856.53	1848.31	1842.29
(†)	9330	8410	7600	9720	12380	24700	27510	31880	31430	27670	23610	20840
(‡)	-2160	-920	-810	+2120	+2660	+12320	+2810	+4370	-450	-3760	-4060	-2770

CAL YR 1990 MAX 1846.36 MIN 1806.30 AC-FT† -8150
WTR YR 1991 MAX 1864.69 MIN 1805.04 AC-FT‡ +9350

† 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 National Geodetic Vertical Datum of 1929 (Douglas County Road Department bench mark). Prior to July 19, 1949, nonrecording gage at same site and datum.

REMARKS.--Records excellent. Flow regulated since Oct. 7, 1985 by Galesville Reservoir (station 14308995). Diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--61 years (water years 1930-31, 1933-91), 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, 153 ft³/s Mar. 4, gage height, 2.08 ft; minimum discharge, 23 ft³/s May 24.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	66	60	45	40	60	61	64	47	58	90	64
2	50	60	51	45	51	67	64	53	46	58	90	60
3	50	46	61	45	59	86	64	44	46	62	90	60
4	50	47	56	45	70	108	64	44	46	65	90	68
5	50	46	54	44	73	93	66	44	46	65	90	75
6	50	46	48	44	66	77	66	44	46	65	88	75
7	50	48	60	44	60	70	66	45	46	64	80	71
8	50	51	60	45	60	66	66	46	46	68	74	57
9	49	51	60	45	61	65	68	46	46	76	75	53
10	50	48	63	58	61	65	69	45	46	76	75	50
11	49	48	68	e69	60	64	68	45	48	76	75	50
12	49	48	68	e70	61	65	68	45	46	77	74	57
13	49	51	61	e72	63	65	67	46	46	81	74	58
14	49	54	53	e73	62	65	66	46	46	81	74	57
15	49	56	53	73	62	65	65	45	46	81	74	57
16	49	41	53	71	62	64	70	46	46	81	74	52
17	49	41	51	70	62	63	64	71	46	78	74	49
18	50	61	49	68	63	63	64	80	46	81	74	55
19	50	56	53	59	63	64	64	65	47	82	73	61
20	49	44	46	56	63	64	64	56	46	85	74	61
21	50	45	46	56	63	64	63	58	46	86	71	61
22	49	56	46	49	61	63	64	57	46	86	74	53
23	49	55	46	45	59	65	64	47	46	85	75	49
24	49	42	46	45	59	65	64	47	46	92	74	47
25	50	46	45	45	59	66	67	48	46	91	65	47
26	50	61	46	44	59	65	65	48	46	91	64	46
27	50	68	46	44	59	64	65	47	46	91	66	41
28	50	65	46	41	54	64	64	47	46	91	61	41
29	50	56	45	40	---	63	64	48	46	91	61	41
30	54	61	45	40	---	62	64	47	49	90	73	41
31	60	---	45	40	---	62	---	47	---	89	67	---
TOTAL	1552	1564	1630	1630	1695	2102	1958	1561	1387	2443	2333	1657
MEAN	50.1	52.1	52.6	52.6	60.5	67.8	65.3	50.4	46.2	78.8	75.3	55.2
MAX	60	68	68	73	73	108	70	80	49	92	90	75
MIN	49	41	45	40	40	60	61	44	46	58	61	41
AC-FT	3080	3100	3230	3230	3360	4170	3880	3100	2750	4850	4630	3290
MEAN†	15.0	36.6	39.4	87.0	108	268	112	121	38.7	17.7	9.27	8.74
CFSM†	0.19	0.47	0.51	1.12	1.38	3.44	1.44	1.55	0.50	0.23	0.12	0.11
IN.†	0.22	0.52	0.58	1.29	1.45	3.96	1.61	1.80	0.55	0.26	0.14	0.13
AC-FT†	920	2180	2420	5350	6020	16490	6690	7470	2300	1090	570	520

CAL YR 1990 TOTAL 19471 MEAN 53.3 MAX 76 MIN 29 AC-FT 38620 MEAN† 42.1 CFSM† 0.54 IN.† 7.33 AC-FT† 30470
WTR YR 1991 TOTAL 21512 MEAN 58.9 MAX 108 MIN 40 AC-FT 42670 MEAN† 71.9 CFSM† 0.92 IN.† 12.5 AC-FT† 52020

e Estimated

† Adjusted for change in contents in Galesville Reservoir.

UMPQUA RIVER BASIN
14309000 COW CREEK NEAR AZALEA, OR--Continued
WATER-QUALITY RECORDS

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PERIOD OF DAILY RECORD.--
DISSOLVED OXYGEN: November 1985 to current year.

INSTRUMENTATION.--Water-quality monitor since November 1985.

EXTREMES FOR PERIOD OF DAILY RECORD.--
DISSOLVED OXYGEN: Maximum recorded, 15.1 mg/L Feb. 7, 1989, caused by operation of bypass valve at dam; minimum, 0.9 mg/L July 30, 1988.

EXTREMES FOR CURRENT YEAR.--
DISSOLVED OXYGEN: Maximum recorded, 13.5 mg/L Dec. 21, may have been caused by operation of bypass valve at dam, and extreme cold weather; minimum recorded, 2.9 mg/L Sept. 7.

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991												
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	---	---	---	11.3	10.9	11.1	12.5	11.9	12.1
2	---	---	---	---	---	---	11.4	11.0	11.3	12.5	11.8	12.1
3	---	---	---	---	---	---	11.6	11.2	11.3	12.4	11.8	12.1
4	---	---	---	---	---	---	11.6	11.2	11.4	12.4	11.9	12.1
5	---	---	---	---	---	---	11.5	10.1	11.2	12.4	12.0	12.1
6	---	---	---	---	---	---	11.7	8.6	11.1	12.2	11.9	12.0
7	---	---	---	---	---	---	11.7	10.1	11.3	12.2	11.9	12.0
8	---	---	---	---	---	---	11.6	10.9	11.2	12.3	11.9	12.0
9	---	---	---	---	---	---	11.3	10.9	11.2	12.2	11.8	11.9
10	---	---	---	8.3	7.6	8.0	11.3	11.1	11.2	12.1	10.4	11.8
11	---	---	---	8.3	7.8	8.0	11.6	11.0	11.3	12.1	11.8	11.9
12	---	---	---	8.3	7.8	8.1	11.4	11.2	11.3	12.1	11.7	11.9
13	---	---	---	8.1	7.6	7.9	11.7	11.1	11.4	12.1	10.5	11.8
14	---	---	---	---	---	---	11.6	11.1	11.4	12.1	11.7	11.9
15	---	---	---	---	---	---	11.5	11.1	11.3	12.2	10.5	11.8
16	---	---	---	---	---	---	11.7	11.1	11.4	12.4	12.0	12.1
17	---	---	---	---	---	---	11.8	11.4	11.6	12.5	10.6	12.0
18	---	---	---	---	---	---	11.5	11.0	11.3	12.1	10.7	11.8
19	---	---	---	---	---	---	11.3	11.0	11.2	12.3	11.8	11.9
20	---	---	---	---	---	---	11.8	11.4	11.6	12.2	11.8	12.0
21	---	---	---	---	---	---	13.5	11.5	11.8	12.3	11.8	12.0
22	---	---	---	---	---	---	12.2	11.6	11.9	12.2	8.9	11.0
23	---	---	---	---	---	---	12.1	11.9	11.9	11.0	8.8	10.2
24	---	---	---	---	---	---	12.4	11.9	12.1	11.0	10.1	10.6
25	---	---	---	---	---	---	12.3	11.9	12.1	11.2	10.4	10.9
26	---	---	---	---	---	---	12.1	11.8	12.0	11.5	10.6	11.0
27	6.6	5.3	6.2	---	---	---	12.0	11.6	11.8	11.5	9.2	10.9
28	6.7	6.0	6.3	---	---	---	12.0	11.6	11.8	11.4	8.9	10.6
29	6.3	5.5	6.2	---	---	---	12.5	11.7	12.1	11.1	9.2	10.7
30	6.4	6.0	6.2	---	---	---	12.4	11.9	12.2	11.5	10.8	11.1
31	6.3	5.3	5.8	---	---	---	12.4	12.0	12.2	11.2	10.5	10.8
MONTH	---	---	---	---	---	---	13.5	8.6	11.5	12.5	8.8	11.6

UMPQUA RIVER BASIN

14309000 COW CREEK NEAR AZALEA, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	11.2	10.5	10.8	----	----	----	11.2	10.7	11.1	10.0	9.7	9.9
2	10.9	10.4	10.7	----	----	----	11.4	10.5	10.9	10.2	9.8	10.0
3	10.8	10.4	10.6	----	----	----	11.0	10.5	10.8	10.2	9.9	10.0
4	11.9	10.4	11.2	----	----	----	11.1	10.3	10.7	10.4	9.9	10.1
5	12.1	10.6	11.6	----	----	----	10.8	10.3	10.6	10.3	9.9	10.1
6	11.0	10.4	10.7	----	----	----	11.0	10.5	10.7	----	----	----
7	10.9	10.4	10.6	9.9	8.9	9.5	11.0	10.4	10.7	----	----	----
8	10.9	10.3	10.6	10.1	9.2	9.6	10.9	10.4	10.7	----	----	----
9	10.9	10.1	10.5	9.8	9.1	9.5	10.8	10.1	10.5	----	----	----
10	11.0	10.0	10.4	9.9	8.8	9.5	10.9	10.2	10.6	----	----	----
11	10.8	9.9	10.3	10.1	9.1	9.7	10.8	10.2	10.5	----	----	----
12	10.7	10.2	10.4	9.8	9.3	9.5	10.8	10.0	10.5	----	----	----
13	10.6	10.1	10.3	9.9	9.1	9.6	10.7	10.0	10.4	----	----	----
14	10.7	10.0	10.3	9.8	9.2	9.5	10.6	10.0	10.3	----	----	----
15	10.6	9.9	10.2	9.9	9.2	9.5	10.5	10.0	10.2	----	----	----
16	10.6	9.7	10.2	9.8	9.2	9.5	11.3	10.0	10.5	----	----	----
17	10.5	9.8	10.2	9.7	9.0	9.4	10.5	9.9	10.3	----	----	----
18	10.5	10.0	10.2	9.8	8.9	9.4	10.4	9.9	10.2	----	----	----
19	10.7	10.0	10.3	10.1	9.0	9.5	10.4	9.9	10.2	----	----	----
20	10.6	9.7	10.1	9.8	8.9	9.3	10.4	10.0	10.2	----	----	----
21	10.7	9.9	10.2	9.8	9.1	9.4	10.5	10.0	10.3	----	----	----
22	----	----	----	10.1	8.9	9.5	10.5	10.0	10.2	----	----	----
23	----	----	----	9.7	9.0	9.4	10.3	9.8	10.1	11.2	8.8	9.9
24	----	----	----	9.8	8.9	9.3	10.3	9.7	10.0	11.4	8.9	10.1
25	----	----	----	10.0	8.7	9.3	10.3	9.9	10.1	9.3	9.0	9.1
26	----	----	----	10.1	8.6	9.3	10.2	9.8	10.0	9.3	8.7	9.1
27	----	----	----	10.1	9.0	9.5	10.2	9.8	10.0	9.3	8.9	9.1
28	----	----	----	9.9	9.0	9.6	10.2	9.8	10.0	9.3	8.9	9.1
29	----	----	----	11.5	9.3	10.3	10.4	10.0	10.1	9.1	8.8	9.0
30	----	----	----	11.6	10.6	11.2	10.1	9.8	10.0	9.3	8.9	9.0
31	----	----	----	11.2	10.7	11.0	----	----	----	9.2	8.9	9.1
MONTH	----	----	----	----	----	----	11.4	9.7	10.4	----	----	----

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	9.3	8.7	9.0	8.3	7.6	8.0	5.2	3.6	4.4	10.7	4.5	6.2
2	9.1	8.7	8.9	8.4	7.4	7.9	4.9	3.6	4.2	5.5	4.3	5.0
3	9.1	8.6	8.9	8.2	5.7	6.9	4.7	3.6	4.2	----	----	----
4	9.0	8.5	8.8	6.6	5.8	6.1	4.6	3.4	4.2	----	----	----
5	9.1	8.5	8.8	6.5	5.5	6.1	5.1	3.6	4.2	----	----	----
6	9.1	8.7	8.8	6.5	5.7	6.1	4.6	3.4	4.2	----	----	----
7	9.0	8.6	8.8	6.4	5.6	6.0	4.8	3.8	4.3	4.9	2.9	3.7
8	9.1	8.6	8.8	6.3	5.5	5.9	5.0	4.2	4.6	4.9	3.8	4.4
9	9.0	8.5	8.8	6.2	5.3	5.8	5.8	3.6	4.5	5.3	4.0	4.7
10	9.4	8.6	8.9	6.2	5.3	5.9	5.1	4.0	4.5	5.3	4.4	4.9
11	11.1	8.6	9.5	6.3	5.4	5.8	4.8	3.6	4.3	5.5	4.4	5.0
12	9.1	8.7	8.9	6.1	5.3	5.7	4.9	3.4	4.3	9.5	4.1	5.1
13	9.1	8.7	8.9	5.8	4.9	5.5	4.6	3.5	4.2	10.5	4.2	6.7
14	9.1	8.6	8.9	6.1	5.0	5.4	4.8	3.7	4.2	5.2	4.1	4.8
15	9.1	8.7	8.9	5.9	4.9	5.3	4.8	3.8	4.3	5.4	4.2	4.8
16	9.1	8.7	8.9	5.9	5.0	5.4	4.9	3.4	4.3	5.7	4.4	5.0
17	9.1	8.7	8.9	5.8	5.0	5.4	5.0	3.5	4.4	5.6	4.6	5.1
18	9.0	8.5	8.8	10.8	4.8	6.4	5.1	3.9	4.5	5.4	4.2	4.8
19	8.9	8.5	8.7	5.9	4.9	5.5	5.2	3.6	4.5	5.1	4.1	4.6
20	8.9	8.6	8.7	6.0	4.6	5.3	10.7	3.6	4.9	5.1	3.8	4.6
21	8.9	8.4	8.7	5.9	4.8	5.3	5.4	3.8	4.7	5.0	3.7	4.6
22	8.9	8.4	8.6	10.4	4.8	6.2	5.3	3.8	4.6	5.3	4.2	4.8
23	8.9	8.4	8.6	11.0	4.5	7.7	5.1	4.1	4.6	5.3	3.8	4.6
24	8.9	8.3	8.6	11.1	4.1	5.1	5.4	4.1	4.7	5.2	4.0	4.5
25	8.8	8.4	8.6	5.2	4.2	4.7	5.9	4.5	5.0	5.1	4.0	4.6
26	8.7	8.2	8.5	5.4	4.3	4.8	5.7	4.6	5.2	5.1	4.1	4.6
27	8.5	8.2	8.3	5.3	4.1	4.7	11.0	4.7	6.0	----	----	----
28	8.5	8.2	8.3	5.1	3.8	4.5	6.8	4.8	5.4	----	----	----
29	8.4	8.1	8.3	5.1	3.8	4.5	5.7	4.2	5.0	----	----	----
30	8.4	7.7	8.1	5.1	3.7	4.4	10.6	4.0	5.2	----	----	----
31	----	----	----	11.1	3.7	4.9	5.2	4.2	4.7	----	----	----
MONTH	11.1	7.7	8.7	11.1	3.7	5.7	11.0	3.4	4.6	----	----	----

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LOCATION.--Lat 42°48'15", long 123°36'35", in SW 1/4 NE 1/4 sec.11, T.32 S., R.8 W., Douglas County, Hydrologic Unit 17100302, on left bank 1.6 mi downstream from Bear Creek, 11 mi northwest of Glendale, and at mile 0.8.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 1,018.48 ft above National Geodetic Vertical Datum of 1929. Prior to June 8, 1964, at site 0.6 mi upstream at different datum.

AVERAGE DISCHARGE.--36 years, 261 ft³/s, 40.79 in/yr, 189,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,700 ft³/s Dec. 22, 1964, gage height, 18.59 ft, from floodmark, from rating curve extended above 2,600 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 3.7 ft³/s Aug. 17, 19, 1977.

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)
Jan. 12	0130	2,500	7.04	Mar. 4	1630	*3,410	*8.01
Mar. 3	1100	2,580	7.13				

Minimum discharge, 4.9 ft³/s Sept. 17, 21-29.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.7	119	209	106	61	73	174	111	77	29	11	6.9
2	5.7	65	255	89	377	576	158	101	72	27	11	6.9
3	5.7	46	190	73	502	1920	141	92	67	25	11	6.8
4	5.7	38	166	66	802	2530	127	84	63	24	11	6.5
5	5.7	41	178	67	1140	1580	221	78	60	23	10	6.2
6	5.7	41	152	65	655	818	396	74	59	22	10	5.9
7	5.7	36	126	138	406	635	583	74	56	21	10	5.7
8	5.7	52	105	208	286	497	483	90	53	21	10	5.8
9	5.8	65	89	183	222	404	602	95	51	20	9.8	6.0
10	6.0	50	171	646	183	375	605	90	49	19	10	6.0
11	6.0	41	215	928	157	353	518	84	46	19	10	6.0
12	6.4	35	173	1890	137	754	415	79	44	18	9.3	5.9
13	7.6	47	139	923	149	801	331	84	43	18	8.4	5.7
14	8.2	183	115	591	136	576	266	84	43	18	7.9	5.7
15	7.9	101	101	472	124	451	236	78	41	18	7.9	5.7
16	7.9	70	89	377	114	395	205	75	41	20	7.8	5.6
17	7.8	55	78	295	107	338	179	198	39	26	7.6	5.2
18	15	59	134	239	106	317	159	650	38	22	7.6	5.1
19	26	56	260	196	117	309	145	626	44	19	7.6	5.1
20	14	110	188	162	112	273	133	394	46	18	7.5	5.0
21	12	182	145	139	107	247	127	282	39	17	7.0	4.9
22	23	174	e130	120	101	218	113	220	37	16	6.6	4.9
23	20	118	e120	107	93	235	105	180	35	16	6.3	4.9
24	15	90	e115	97	86	308	121	152	34	15	6.5	4.9
25	12	277	e110	90	81	291	162	133	32	14	6.6	4.9
26	12	349	e100	84	77	256	153	118	32	14	6.6	4.9
27	11	215	85	78	74	213	152	106	32	13	6.6	4.9
28	12	171	108	73	73	184	143	96	33	12	7.2	4.9
29	12	149	103	69	---	166	132	91	34	12	8.2	5.0
30	103	230	90	65	---	157	119	95	31	12	8.0	5.1
31	300	---	92	63	---	167	---	85	---	12	7.2	---
TOTAL	696.2	3265	4331	8699	6585	16417	7404	4808	1371	580	262.2	167.0
MEAN	22.5	109	140	281	235	530	247	155	45.7	18.7	8.46	5.57
MAX	300	349	260	1890	1140	2530	605	650	77	29	11	6.9
MIN	5.7	35	78	63	61	73	105	74	31	12	6.3	4.9
AC-FT	1380	6480	8590	17250	13060	32560	14690	9540	2720	1150	520	331
CFSM	.26	1.25	1.61	3.23	2.71	6.09	2.84	1.78	.53	.22	.10	.06
IN.	.30	1.40	1.85	3.72	2.82	7.03	3.17	2.06	.59	.25	.11	.07

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1991, BY WATER YEAR (WY)

MEAN	45.5	310	592	653	580	500	264	115	40.5	17.9	10.4	13.6
MAX	254	1470	1669	1496	1660	934	840	476	90.1	29.5	16.0	56.9
(WY)	1963	1974	1956	1970	1958	1983	1982	1963	1988	1983	1983	1986
MIN	5.19	14.4	13.3	24.2	66.0	92.9	56.2	38.3	19.6	10.6	5.95	4.95
(WY)	1988	1977	1977	1977	1977	1988	1990	1987	1987	1987	1987	1987

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1956 - 1991
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ANNUAL TOTAL	48812.5		54585.4				
ANNUAL MEAN	134		150			261	
HIGHEST ANNUAL MEAN						499	1974
LOWEST ANNUAL MEAN						60.2	1977
HIGHEST DAILY MEAN	2680	Jan 7	2530	Mar 4	11000		Dec 22 1964
LOWEST DAILY MEAN	5.7	Aug 13	4.9	Sep 21	4.0		Aug 16 1977
ANNUAL SEVEN-DAY MINIMUM	5.7	Oct 1	4.9	Sep 21	4.1		Aug 14 1977
ANNUAL RUNOFF (AC-FT)	96820		108300		188800		
ANNUAL RUNOFF (CFSM)	1.54		1.72		3.00		
ANNUAL RUNOFF (INCHES)	20.90		23.37		40.75		
10 PERCENT EXCEEDS	345		376		683		
50 PERCENT EXCEEDS	50		77		67		
90 PERCENT EXCEEDS	6.6		6.1		8.9		

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.

REVISÉD RECORDS.--WSP 1935: 1956 (M) .

GAGE.--Water-stage recorder. Datum of gage is 682.60 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records excellent. Regulated since Oct. 7, 1985 by Galesville Reservoir (station 14308995). Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--37 years, 841 ft³/s, 609,300 acre-ft/yr.

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, 9,060 ft³/s Mar. 4, gage height, 10.93 ft; minimum discharge, 47 ft³/s Sept. 28-30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	58	417	511	235	194	248	515	365	283	129	102	80
2	58	248	577	220	797	1130	497	344	259	127	102	74
3	60	180	471	205	1800	6130	458	318	242	122	103	72
4	61	144	398	199	2040	6950	426	287	229	118	102	69
5	62	132	406	185	3980		497	267	218	116	102	66
6	62	134	360	191	2480	2990	876	250	213	115	100	71
7	62	125	310	248	1530	2140	1380	247	205	113	100	74
8	62	123	277	431	1040	1640	1200	284	193	112	97	76
9	64	154	250	432	775	1330	1260	302	184	108	92	73
10	64	144	342	1130	632	1200	1410	302	177	112	90	67
11	64	127	625	2050	541	1090	1440	290	171	112	91	61
12	66	118	537	3780	481	1730	1270	277	168	111	89	58
13	68	126	438	2540	466	2300	1050	288	163	108	86	56
14	69	395	362	1670	439	1720	848	323	160	112	84	62
15	69	335	307	1320	405	1400	749	314	156	114	84	61
16	69	241	275	1040	379	1200	659	300	152	125	83	59
17	69	181	242	828	356	1040	586	417	148	152	82	58
18	82	163	268	684	342	935	525	1650	143	139	81	54
19	129	185	624	577	357	900	489	2200	163	126	83	50
20	98	235	533	486	346	828	461	1460	177	120	81	53
21	86	336	410	422	333	757	452	1020	160	116	77	57
22	101	397	314	376	324	665	415	783	148	114	77	59
23	107	329	e275	336	307	666	394	629	142	115	75	60
24	91	262	e260	304	289	801	396	521	137	112	80	54
25	84	376	e270	281	276	824	444	458	134	112	80	51
26	81	866	275	265	262	786	437	407	133	112	77	50
27	80	564	245	247	255	681	439	371	135	112	72	48
28	83	458	297	231	250	592	418	344	141	109	74	49
29	83	399	314	217	---	530	400	323	151	108	81	47
30	103	534	276	204	---	501	379	333	139	105	75	47
31	686	---	237	200	---	499	---	316	---	104	72	---
TOTAL	2981	8428	11286	21534	21676	50153	20770	15990	5224	3610	2674	1816
MEAN	96.2	281	364	695	774	1618	692	516	174	116	86.3	60.5
MAX	686	866	625	3780	3980	6950	1440	2200	283	152	103	80
MIN	58	118	237	185	194	248	379	247	133	104	72	47
AC-FT	5910	16720	22390	42710	42990	99480	41200	31720	10360	7160	5300	3600

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1955 - 1991, BY WATER YEAR (WY)

MEAN	126	824	1816	2172	1919	1636	918	413	156	71.7	42.5	51.1
MAX	633	4712	6574	5889	5902	3398	2718	1943	264	135	111	156
(WY)	1963	1974	1956	1956	1958	1974	1982	1963	1958	1983	1989	1978
MIN	40.7	59.3	58.3	84.5	161	291	194	147	75.1	24.6	14.9	25.9
(WY)	1975	1977	1977	1977	1977	1988	1990	1987	1973	1977	1977	1974

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1955 - 1991
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ANNUAL TOTAL	136964		166142				
ANNUAL MEAN	375		455			841	
HIGHEST ANNUAL MEAN						1809	1974
LOWEST ANNUAL MEAN						147	1977
HIGHEST DAILY MEAN	5670	Jan 8	6950	Mar 4	33100		Jan 16 1974
LOWEST DAILY MEAN	45	Sep 25	47	Sep 29		7.8	Aug 17 1977
ANNUAL SEVEN-DAY MINIMUM	51	Aug 7	49	Sep 24		8.0	Aug 14 1977
ANNUAL RUNOFF (AC-FT)	271700		329500			609400	
10 PERCENT EXCEEDS	910		1040			2110	
50 PERCENT EXCEEDS	163		248			237	
90 PERCENT EXCEEDS	60		69			36	

UMPQUA RIVER BASIN

357

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, 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 for period of backwater from beaver dams, July 16 to Sept. 5, which are poor. Some regulation by Ben Irving Reservoir 17 mi upstream on Berry Creek, capacity, 11,200 acre-ft since January 1980. 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; 11 years (water years 1981-91), 225 ft³/s, 162,700 acre-ft/yr.

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, 2,460 ft³/s Mar. 4, gage height, 7.48 ft; minimum discharge, 0.61 ft³/s July 29, 30.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.7	49	139	83	55	62	106	71	57	14	3.5	9.8
2	7.1	30	167	71	147	256	96	66	50	12	4.7	10
3	7.3	22	129	64	297	1590	87	61	44	10	6.7	6.3
4	6.7	18	102	58	510	2010	83	56	38	9.3	4.8	8.3
5	6.4	25	95	52	1140	1660	119	52	35	11	4.6	9.8
6	6.8	25	79	49	705	968	306	48	32	11	4.4	9.9
7	6.3	20	69	51	452	684	730	48	32	11	5.5	10
8	5.2	15	60	61	326	507	589	60	30	11	5.4	9.1
9	6.4	15	53	72	252	402	681	70	28	11	6.8	8.6
10	6.0	16	117	161	205	416	683	69	26	10	10	10
11	7.5	14	165	375	172	371	637	66	23	10	7.4	9.8
12	8.4	12	130	826	148	604	507	62	22	9.0	5.3	9.0
13	9.1	12	102	638	178	723	400	73	20	9.2	4.7	8.9
14	9.1	35	82	508	158	585	317	98	22	6.3	4.3	9.0
15	10	45	70	478	144	459	262	98	24	9.7	4.4	11
16	10	31	60	398	133	368	219	91	22	10	5.2	11
17	7.7	24	51	329	120	306	184	106	21	11	6.0	9.0
18	8.9	22	61	270	116	258	158	215	20	5.8	6.5	11
19	12	20	225	223	112	234	139	357	28	3.6	9.8	10
20	11	24	181	181	103	219	123	293	38	2.2	9.2	11
21	10	64	124	149	96	245	119	227	30	2.6	7.7	11
22	11	79	97	127	90	209	105	177	26	1.4	6.8	11
23	12	55	93	111	83	254	94	143	23	1.8	6.0	9.8
24	12	41	74	98	77	279	92	116	22	1.7	5.5	9.2
25	10	72	69	91	72	265	102	98	21	1.5	5.7	9.6
26	9.1	173	63	81	67	239	101	84	20	1.3	5.6	9.2
27	8.3	114	63	73	63	201	95	74	20	1.4	6.5	9.0
28	8.0	83	99	67	62	168	87	64	20	.93	12	10
29	8.3	72	130	61	---	144	83	60	18	.85	17	11
30	13	147	112	57	---	128	77	72	16	1.0	9.4	12
31	55	---	96	57	---	115	---	68	---	2.3	12	---
TOTAL	315.3	1374	3157	5920	6083	14929	7381	3243	828	203.88	213.4	293.3
MEAN	10.2	45.8	102	191	217	482	246	105	27.6	6.58	6.88	9.78
MAX	55	173	225	826	1140	2010	730	357	57	14	17	12
MIN	5.2	12	51	49	55	62	77	48	16	.85	3.5	6.3
AC-FT	625	2730	6260	11740	12070	29610	14640	6430	1640	404	423	582

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1981 - 1991, BY WATER YEAR (WY)

MEAN	29.4	260	587	447	656	397	229	72.0	20.1	7.74	6.34	9.97
MAX	86.3	809	1961	1036	1544	965	826	149	45.5	21.9	13.0	23.3
(WY)	1987	1985	1982	1982	1983	1983	1982	1988	1988	1983	1983	1986
MIN	7.74	13.4	33.0	122	133	100	38.4	15.1	6.00	3.06	4.10	5.37
(WY)	1988	1988	1990	1981	1988	1988	1990	1987	1987	1985	1982	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1981 - 1991

ANNUAL TOTAL	37669.1	43940.88	
ANNUAL MEAN	103	120	
HIGHEST ANNUAL MEAN			225
LOWEST ANNUAL MEAN			451
HIGHEST DAILY MEAN	1690	2010	9670
LOWEST DAILY MEAN	2.1	.85	.03
ANNUAL SEVEN-DAY MINIMUM	2.6	1.2	.17
ANNUAL RUNOFF (AC-FT)	74720	87160	162700
10 PERCENT EXCEEDS	241	306	626
50 PERCENT EXCEEDS	24	55	45
90 PERCENT EXCEEDS	4.6	6.4	5.0

UMPQUA RIVER BASIN

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 National Geodetic Vertical Datum of 1929 (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 National Geodetic Vertical Datum of 1929 (State Highway Department bench mark).

REMARKS.--No estimated daily discharges. Records excellent. Regulation from Ben Irving Reservoir, since January 1980, on Berry Creek during summer months. Many small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--57 years (water years 1907-11, 1924-26, 1943-91), 2,803 ft³/s, 22.79 in/yr, 2,031,000 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)
Mar. 3	1900	24,800	14.95	Mar. 5	0300	(a)	*16.73
Mar. 5	0300	*31,000	16.60				

Minimum discharge, 94 ft³/s Sept. 26-28.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	140	2030	2470	932	942	1270	2420	1940	1630	508	208	154
2	132	1190	2310	912	1120	1770	2370	1830	1480	466	201	155
3	129	753	2040	852	3460	14900	2180	1730	1380	431	193	142
4	125	570	1730	856	4330	19900	2020	1610	1300	404	197	129
5	124	672	1730	839	9600	23500	2010	1500	1210	384	198	125
6	127	1050	1770	842	7930	11700	3280	1440	1120	370	187	118
7	127	838	1490	858	5270	8230	5080	1440	1050	349	183	117
8	129	673	1290	1200	3870	6320	4740	1600	983	336	191	119
9	130	1250	1190	1510	3080	5240	5290	2390	919	321	199	131
10	127	1210	1660	1960	2590	4710	7330	2250	876	303	201	131
11	126	865	5850	7700	2240	4210	6220	2080	842	302	203	123
12	130	671	4010	10500	1990	4410	5200	1890	826	292	193	116
13	133	593	2840	12200	2470	5740	4400	1810	783	286	180	114
14	140	1390	2230	10800	3830	5150	3770	1970	741	280	165	112
15	150	1860	1840	10500	3030	4770	3360	1970	704	282	156	114
16	152	1220	1580	7840	2610	4150	3000	1850	662	309	153	122
17	152	926	1350	5550	2420	3710	2680	2920	627	401	154	117
18	186	780	1270	4260	2410	3320	2410	8300	598	536	152	107
19	237	776	3070	3590	3050	3380	2220	9070	613	444	151	107
20	334	832	2780	2960	3110	3100	2050	6470	768	357	148	100
21	286	1230	2080	2520	2710	2880	2080	5180	840	328	142	98
22	254	2330	1500	2180	2390	2580	2110	4270	691	304	138	106
23	356	2040	1400	1930	2110	2540	2010	3510	617	285	139	110
24	361	1590	1270	1720	1880	3000	1990	2950	574	277	139	112
25	274	1400	1230	1550	1670	3230	2180	2560	554	280	140	106
26	237	4270	1240	1420	1510	3210	2240	2240	531	262	138	97
27	221	3010	1120	1290	1400	2980	2590	2000	516	255	138	96
28	214	2410	1170	1190	1310	2700	2590	1810	521	250	135	96
29	215	2050	1300	1100	---	2420	2310	1650	543	241	150	103
30	254	2270	1160	1020	---	2220	2090	1750	541	228	156	103
31	1050	---	974	980	---	2230	---	1860	---	216	154	---
TOTAL	6752	42749	58944	103561	84332	169470	94220	85840	25040	10287	5182	3480
MEAN	218	1425	1901	3341	3012	5467	3141	2769	835	332	167	116
MAX	1050	4270	5850	12200	9600	23500	7330	9070	1630	536	208	155
MIN	124	570	974	839	942	1270	1990	1440	516	216	135	96
AC-FT	13390	84790	116900	205400	167300	336100	186900	170300	49670	20400	10280	6900
CFSM	.13	.85	1.14	2.00	1.80	3.27	1.88	1.66	.50	.20	.10	.07
IN.	.15	.95	1.31	2.31	1.88	3.78	2.10	1.91	.56	.23	.12	.08

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1906 - 1991, BY WATER YEAR (WY)

	MEAN	MAX	(WY)	MIN	(WY)
1906	486	6045	1951	103	1988
1907	2822	13590	1974	190	1953
1908	5595	19540	1956	184	1977
1909	6880	16010	1956	262	1977
1910	6428	15370	1958	341	1977
1911	4852	10950	1974	1372	1924
1912	3175	7378	1963	589	1926
1913	1957	6909	1963	446	1926
1914	878	3312	1953	142	1926
1915	263	576	1953	40.2	1973
1916	132	332	1976	69.3	1967

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1906 - 1991
ANNUAL TOTAL	541248	689857	2801
ANNUAL MEAN	1483	1890	5567
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	18700	23500	90200
LOWEST DAILY MEAN	78	96	17
ANNUAL SEVEN-DAY MINIMUM	82	102	18
ANNUAL RUNOFF (AC-FT)	1074000	1368000	2029000
ANNUAL RUNOFF (CFSM)	.89	1.13	1.68
ANNUAL RUNOFF (INCHES)	12.06	15.37	22.79
10 PERCENT EXCEEDS	3980	4270	6820
50 PERCENT EXCEEDS	890	1210	1100
90 PERCENT EXCEEDS	121	131	113

UMPQUA RIVER BASIN

359

14312170 SOUTH FORK DEER CREEK NEAR DIXONVILLE, OR

LOCATION.--Lat 43°10'16", long 122°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, from topographic map.

REMARKS.--Records fair. No regulation. Minor diversion for irrigation upstream from station. Several measurements of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 356 ft³/s Mar. 4, 1991, gage height, 3.52 ft; minimum discharge, 0.72 ft³/s Aug. 10, 11, 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)
Mar. 4	1530	*356	*3.52	May 18	1330	250	3.15

Minimum discharge, 0.95 ft³/s, Oct. 1, 3, 4.

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.1	9.7	30	10	6.7	9.5	14	11	12	3.5	2.2	2.2
2	1.3	5.0	24	8.5	17	40	14	10	11	3.2	2.1	2.0
3	1.1	3.3	19	8.0	18	135	11	9.0	9.3	3.1	2.1	1.5
4	1.0	5.8	16	7.4	33	221	10	8.1	8.8	3.0	2.1	1.3
5	1.4	8.4	14	7.0	73	161	19	7.2	8.2	3.0	2.1	1.2
6	1.4	7.1	12	6.6	52	94	41	6.8	7.7	3.0	2.2	1.2
7	1.2	5.2	11	8.3	36	81	49	7.7	7.1	2.8	2.2	1.6
8	1.2	4.5	9.3	10	28	62	41	18	6.7	2.8	2.2	1.7
9	1.2	4.2	8.0	10	22	49	46	23	6.5	2.7	4.0	1.6
10	1.2	3.5	96	26	20	45	46	20	6.2	2.6	3.2	1.6
11	1.3	3.1	95	37	17	37	50	17	6.1	2.5	2.5	1.5
12	1.4	2.8	47	96	16	57	43	15	5.8	2.4	2.2	1.5
13	1.6	22	30	75	18	72	35	22	5.7	2.5	2.0	1.4
14	1.5	36	21	57	16	72	29	22	5.4	2.6	2.1	1.4
15	1.8	15	17	46	15	68	27	19	5.2	2.6	2.1	1.4
16	2.1	10	15	38	18	56	23	18	4.9	4.9	2.0	1.3
17	1.9	7.0	12	33	19	44	20	122	4.6	5.7	1.9	1.3
18	5.6	9.0	16	27	21	36	18	191	4.5	3.3	1.9	1.2
19	3.2	9.0	22	25	22	32	17	123	6.5	2.8	1.9	1.3
20	1.8	14	19	21	20	27	15	73	6.5	2.7	1.7	1.4
21	2.1	21	e17	19	19	23	14	51	4.9	2.5	1.5	1.6
22	5.5	19	e13	16	17	22	12	39	4.6	2.5	1.4	1.7
23	2.9	14	10	14	15	30	11	31	4.5	2.5	1.5	1.6
24	2.3	11	9.0	12	14	46	12	25	4.4	2.4	1.5	1.5
25	2.6	37	6.9	11	13	39	14	22	4.4	2.4	1.4	1.5
26	4.3	45	4.3	9.9	12	32	17	19	4.2	2.3	1.3	1.6
27	3.2	31	7.6	9.2	9.9	26	19	17	4.2	2.1	1.4	1.7
28	5.3	24	13	8.5	9.6	21	17	16	4.3	2.0	1.8	1.9
29	5.1	25	13	7.7	---	19	15	16	4.0	2.0	2.0	2.0
30	14	38	13	7.2	---	17	13	17	3.7	2.1	1.8	1.8
31	21	---	11	6.8	---	16	---	14	---	2.0	1.9	---
TOTAL	102.6	449.6	651.1	678.1	597.2	1689.5	712	1009.8	181.9	86.5	62.2	46.5
MEAN	3.31	15.0	21.0	21.9	21.3	54.5	23.7	32.6	6.06	2.79	2.01	1.55
MAX	21	45	96	96	73	221	50	191	12	5.7	4.0	2.2
MIN	1.0	2.8	4.3	6.6	6.7	9.5	10	6.8	3.7	2.0	1.3	1.2
AC-FT	204	892	1290	1350	1180	3350	1410	2000	361	172	123	92
CFSM	.22	.98	1.38	1.44	1.40	3.58	1.56	2.14	.40	.18	.13	.10
IN.	.25	1.10	1.59	1.66	1.46	4.13	1.74	2.47	.44	.21	.15	.11

CAL YR 1990 TOTAL 4495.94 MEAN 12.3 MAX 113 MIN .86 AC-FT 8920 CFSM .81 IN. 10.98
WTR YR 1991 TOTAL 6267.0 MEAN 17.2 MAX 221 MIN 1.0 AC-FT 12430 CFSM 1.13 IN. 15.31

e Estimated

UMPQUA RIVER BASIN

14312260 SOUTH UMPQUA RIVER NEAR ROSEBURG, OR
(National stream quality accounting network station)

LOCATION (REVISED).--Lat 43°13'23", long 123°24'48", in SW 1/4 NE 1/4 sec.16, T.27 S., R.6 W., Douglas County, Hydrologic Unit 17100302, on left bank, 3.7 mi west of Roseburg, and at mile 117.7.

DRAINAGE AREA.--1,798 mi².

PERIOD OF RECORD.--Water years 1970 to current year.

PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: October 1970 to current year.

pH: August 1971 to current year.

DISSOLVED OXYGEN: October 1970 to current year.

WATER TEMPERATURE: October 1970 to current year.

INSTRUMENTATION.--Water-quality monitor from October 1970 to current year.

REMARKS.--Water-discharge records for South Umpqua River near Brockway (station 14312000) are used for computation of weighted averages or suspended-sediment loads. Some samples were analyzed by different methods and may have data with different levels of detection.

EXTREMES FOR PERIOD OF DAILY RECORD.--

SPECIFIC CONDUCTANCE: Maximum, 423 microsiemens Sept. 18, 1971; minimum, 37 microsiemens Feb. 18, 1983.

pH: Maximum, 10.0 units Sept. 8, 9, 1971; minimum, 5.0 units Sept. 29, 1971.

DISSOLVED OXYGEN: Maximum, 18.5 mg/L Aug. 24, 1986; minimum, 0.2 mg/L Sept. 25, 1990.

WATER TEMPERATURE: Maximum, 35.0°C July 16, 1976; minimum, 0.0°C on several days in water years 1973, 1974, 1989, 1991.

EXTREMES FOR CURRENT YEAR.--

SPECIFIC CONDUCTANCE: Maximum, 188 microsiemens Sept. 29, 30; minimum recorded, 63 microsiemens Jan. 13-15.

pH: Maximum recorded, 9.1 units several days in August and September; minimum recorded, 7.0 units

Aug. 22, 23.

DISSOLVED OXYGEN: Maximum recorded, 14.9 mg/L Dec. 30; minimum, 2.5 mg/L Oct. 1, 2.

WATER TEMPERATURE: Maximum recorded, 29.0°C July 23, 30, 31; minimum, 0.0°C Dec. 21, 22, 30, 31, Jan. 1, 2, and may have occurred during period of missing record, Dec. 23-27.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	CALCIUM, DIS- SOLVED (MG/L AS CA)
OCT 1990												
17...	0930	156	179	7.9	13.5	1.2	9.0	88	K14	21	66	15
NOV												
07...	0930	844	131	7.5	10.5	--	10.2	92	K33	57	55	13
DEC												
05...	1330	1600	105	7.6	6.5	7.0	11.8	95	39	37	42	10
JAN 1991												
15...	1400	10500	67	7.4	7.5	--	11.6	97	41	40	26	6.1
FEB												
27...	1000	1360	109	7.7	8.0	4.0	9.6	83	K18	K12	46	11
MAR												
26...	0930	3210	99	7.6	7.0	--	11.7	99	36	55	40	9.0
MAY												
01...	1330	1890	95	7.9	12.5	40	10.0	95	K33	K3	40	9.6
30...	1430	1710	107	7.7	14.5	--	10.2	101	23	K7	43	9.5
JUN												
25...	1130	536	126	8.0	19.5	0.40	10.1	112	20	K5	51	12
JUL												
25...	1000	280	147	7.6	25.0	--	6.8	83	K1	53	57	13
AUG												
13...	1400	179	158	8.9	24.5	0.90	12.1	148	<1	K510	59	13
SEP												
04...	1400	126	170	8.9	24.0	--	13.5	163	K20	31	57	12
24...	1522	171	178	9.0	21.0	--	12.2	140	--	--	--	--

DATE	MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM, AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, DIS IT FIELD (MG/L AS CACO3)	BICAR- BONATE, DIS IT FIELD (MG/L AS HCO3)	CAR- BONATE, DIS IT FIELD (MG/L AS CO3)	SULFATE, DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SiO2)
OCT 1990												
17...	6.8	9.8	24	0.5	1.4	62	76	0	7.4	14	0.1	6.3
NOV												
07...	5.4	--	--	--	--	49	59	0	7.4	9.5	<0.1	--
DEC												
05...	4.2	5.3	21	0.4	0.7	40	49	0	5.6	5.7	<0.1	15
JAN 1991												
15...	2.5	--	--	--	--	26	31	0	2.3	1.5	<0.1	--
FEB												
27...	4.5	5.3	20	0.3	0.6	44	54	0	4.4	4.8	<0.1	16
MAR												
26...	4.3	--	--	--	--	41	50	0	4.7	3.7	<0.1	--
MAY												
01...	3.9	5.0	21	0.3	0.6	40	49	0	3.4	3.4	<0.1	15
30...	4.6	--	--	--	--	43	52	0	3.7	3.9	0.1	--
JUN												
25...	5.1	6.1	20	0.4	0.7	49	--	--	5.0	6.8	<0.1	14
JUL												
25...	5.9	--	--	--	--	50	61	0	6.7	10	<0.1	--
AUG												
13...	6.5	9.4	25	0.5	1.3	--	--	--	6.1	11	<0.1	11
SEP												
04...	6.5	--	--	--	--	58	56	7	7.9	13	<0.1	--
24...	--	--	--	--	--	--	--	--	--	--	--	11

K - Results based on colony count outside acceptable range (non-ideal colony count).

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WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE, DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA, DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC TOTAL (MG/L AS N)	PHOS- PHORUS, TOTAL (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)
OCT 1990											
17...	102	100	0.14	43.0	0.04	0.2	0.15	0.5	0.09	0.11	0.11
NOV 07...	95	--	--	--	<0.01	<0.1	0.08	0.5	0.05	--	0.05
DEC 05...	70	71	0.09	302	<0.01	0.1	0.08	0.2	0.05	0.02	0.03
JAN 1991											
15...	50	--	--	--	--	--	--	0.4	0.07	--	--
FEB 27...	64	74	0.09	235	0.02	<0.1	0.04	<0.2	0.06	0.04	0.03
MAR 26...	77	--	--	--	--	0.1	--	0.3	0.03	--	0.01
MAY 01...	75	65	0.10	383	<0.01	<0.0	0.03	0.3	0.03	0.02	<0.01
30...	152	--	--	--	--	0.0	--	0.4	0.03	--	0.01
JUN 25...	79	80	0.11	114	0.02	0.0	0.08	0.3	0.05	0.05	0.03
JUL 25...	94	--	--	--	--	0.0	--	0.4	0.03	--	<0.01
AUG 13...	92	93	0.13	44.5	0.04	0.1	0.11	0.8	0.09	0.09	0.07
SEP 04...	95	--	--	--	--	0.1	--	0.4	0.11	--	0.07
24...	--	--	--	--	0.08	0.3	0.13	0.4	0.16	0.15	0.14
DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ANTI- MONY, DIS- SOLVED (UG/L AS SB)	ARSENIC, DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM, DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)
OCT 1990											
17...	<10	--	<1	17	<0.5	<1	<1	<3	2	26	<1
NOV 07...	--	--	--	--	--	--	--	--	--	--	--
DEC 05...	--	--	--	--	--	--	--	--	--	--	--
JAN 1991											
15...	150	<1	<1	9	<0.5	<1	<1	<3	3	110	<1
FEB 27...	80	--	<1	12	<0.5	1	<1	<3	1	100	<1
MAR 26...	--	--	--	--	--	--	--	--	--	--	--
MAY 01...	90	--	<1	11	<0.5	2	<1	<3	1	72	<1
30...	--	--	--	--	--	--	--	--	--	--	--
JUN 25...	--	--	--	--	--	--	--	--	--	--	--
JUL 25...	--	--	--	--	--	--	--	--	--	--	--
AUG 13...	10	--	<1	14	0.6	<1	<1	<3	3	28	<1
SEP 04...	--	--	--	--	--	--	--	--	--	--	--
24...	--	--	--	--	--	--	--	--	--	--	--
DATE	LITHIUM, DIS- SOLVED (UG/L AS LI)	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY, DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDED (MG/L)
OCT 1990											
17...	<4	5	<0.1	<10	1	<1	<1	140	<6	8	1
NOV 07...	--	--	--	--	--	--	--	--	--	--	5
DEC 05...	--	--	--	--	--	--	--	--	--	--	8
JAN 1991											
15...	<4	5	<0.1	<10	<1	<1	<1	--	--	32	39
FEB 27...	<4	9	<0.1	<10	1	<1	<1	82	<6	25	2
MAR 26...	--	--	--	--	--	--	--	--	--	--	5
MAY 01...	<4	6	<0.1	<10	<1	<1	<1	72	<6	<3	--
30...	--	--	--	--	--	--	--	--	--	--	5
JUN 25...	--	--	--	--	--	--	--	--	--	--	0
JUL 25...	--	--	--	--	--	--	--	--	--	--	1
AUG 13...	<4	4	<0.1	<10	1	<1	<1	120	<6	7	2
SEP 04...	--	--	--	--	--	--	--	--	--	--	1
24...	--	--	--	--	--	--	--	--	--	--	--

[illegible][illegible]

UMPQUA RIVER BASIN

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14312260 SOUTH UMPQUA RIVER NEAR ROSEBURG, OR---Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	183	175	178	173	146	162	106	104	105	125	121	123
2	183	175	179	145	120	133	105	102	103	127	124	126
3	180	174	177	122	118	120	103	102	102	129	127	128
4	---	---	---	127	119	123	105	102	103	131	128	129
5	---	---	---	138	126	131	107	105	106	131	128	129
6	182	173	179	138	130	133	107	104	106	131	129	130
7	183	173	179	133	124	130	104	102	103	132	129	131
8	182	173	178	123	120	122	104	102	103	131	127	130
9	182	174	179	121	116	118	109	103	105	127	119	123
10	182	175	179	116	107	113	124	108	116	118	113	116
11	182	173	179	106	102	104	122	81	100	116	70	88
12	182	172	179	106	101	103	86	81	83	80	66	76
13	182	173	179	111	104	107	92	86	89	66	63	64
14	183	173	180	131	109	120	97	92	95	65	63	64
15	183	180	182	129	118	123	102	97	100	66	63	64
16	183	---	---	121	115	118	105	102	104	---	---	---
17	---	---	---	117	113	114	107	105	106	---	---	---
18	181	170	177	121	115	118	115	107	110	---	---	---
19	171	165	168	127	120	124	115	101	112	---	---	---
20	180	171	177	128	123	126	99	92	94	88	84	86
21	181	174	176	129	126	127	96	91	93	91	88	89
22	182	177	179	129	117	125	104	96	99	94	91	92
23	181	176	178	116	100	106	---	---	---	97	94	95
24	182	179	180	99	97	98	---	---	---	99	97	98
25	180	177	179	108	97	101	---	---	---	102	99	101
26	179	175	177	108	88	101	---	---	---	105	102	103
27	182	178	179	87	83	85	---	---	---	107	104	105
28	181	178	179	94	87	91	120	116	118	108	106	107
29	---	---	---	98	93	95	119	117	118	110	108	109
30	---	---	---	104	99	103	120	118	119	112	110	111
31	177	157	164	---	---	---	121	119	120	116	112	114
MONTH	---	---	---	173	83	116	---	---	---	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	117	114	116	116	113	115	102	99	101	94	92	94
2	125	116	119	121	114	116	99	94	96	96	94	95
3	126	102	118	122	68	98	95	94	94	98	96	97
4	99	93	95	76	66	71	96	94	95	99	97	98
5	97	79	87	---	---	---	104	96	99	99	97	98
6	80	77	78	79	68	73	105	100	103	101	98	100
7	85	80	82	84	79	81	99	88	93	102	99	100
8	91	85	88	88	84	86	87	85	86	105	101	102
9	95	91	93	91	88	89	89	86	88	102	92	99
10	100	95	97	94	92	93	85	73	77	91	85	88
11	103	99	101	95	94	94	81	76	78	89	86	87
12	106	102	104	98	94	97	86	81	83	90	88	89
13	110	106	108	95	86	91	89	86	87	98	90	93
14	109	84	96	90	86	88	92	89	90	98	96	97
15	87	83	84	92	89	91	94	92	93	98	96	97
16	93	87	90	94	91	93	95	93	94	97	95	96
17	95	93	94	96	94	95	97	95	96	111	95	104
18	99	95	97	99	96	97	100	97	98	102	84	91
19	99	94	97	103	100	101	102	99	100	83	81	82
20	93	89	90	101	100	101	104	101	102	85	82	84
21	92	89	90	103	101	102	105	104	104	87	85	86
22	95	92	93	105	103	103	104	103	104	88	87	87
23	98	95	97	110	105	106	103	102	102	90	87	88
24	102	99	100	113	104	108	102	101	101	92	90	91
25	104	102	103	104	98	101	101	99	100	95	92	93
26	107	104	105	98	96	97	99	96	98	96	94	95
27	109	106	108	96	95	96	97	93	94	98	96	97
28	113	109	111	97	95	96	92	88	90	101	98	100
29	---	---	---	99	96	97	91	88	89	104	101	102
30	---	---	---	101	98	100	93	90	92	106	104	105
31	---	---	---	103	101	102	---	---	---	105	102	104
MONTH	126	77	98	---	---	---	105	73	94	111	81	95

UMPQUA RIVER BASIN

14312260 SOUTH UMPQUA RIVER NEAR ROSEBURG, OR--Continued

SPECIFIC CONDUCTANCE, US/CM @ 25 DEGREES CENTIGRADE, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	102	100	101	136	132	135	157	149	153	177	169	173
2	103	101	102	138	134	136	157	152	155	175	168	172
3	105	102	103	139	135	137	158	151	155	175	168	172
4	---	---	---	139	135	138	158	153	156	175	168	172
5	---	---	---	141	135	138	158	153	156	---	---	---
6	106	104	105	142	136	140	160	153	157	---	---	---
7	108	105	106	144	138	141	161	155	159	---	---	---
8	110	107	108	146	140	143	162	155	159	176	168	173
9	112	108	110	146	141	144	164	157	161	177	169	174
10	114	110	112	147	141	145	163	156	161	177	169	174
11	114	112	113	147	142	145	163	156	160	---	---	---
12	118	112	116	147	142	145	163	157	161	---	---	---
13	119	116	117	148	143	146	163	156	160	---	---	---
14	120	116	118	148	143	146	165	157	161	---	---	---
15	120	117	119	149	144	147	165	157	162	180	171	176
16	122	117	120	151	146	148	167	159	163	180	171	176
17	124	119	121	150	144	147	168	159	164	179	171	176
18	125	121	123	152	146	149	168	161	165	179	171	176
19	127	123	125	147	144	146	170	163	167	181	173	178
20	130	125	128	148	144	146	173	165	169	181	173	178
21	128	125	127	148	144	147	174	165	170	181	173	178
22	128	126	127	148	143	146	174	165	171	181	173	178
23	126	122	124	150	143	146	174	166	170	---	---	---
24	127	123	125	152	146	149	173	163	169	---	---	---
25	129	126	127	151	147	149	171	163	168	183	176	180
26	131	126	128	151	146	149	172	163	168	185	177	182
27	132	129	130	151	146	149	173	165	170	186	179	184
28	134	130	132	151	146	149	174	166	170	187	180	185
29	134	131	133	153	146	150	174	167	171	188	179	185
30	135	132	134	154	149	152	176	167	172	188	180	185
31	---	---	---	155	149	152	178	170	175	---	---	---
MONTH	---	---	---	155	132	145	178	149	164	---	---	---

UMPQUA RIVER BASIN

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14312260 SOUTH UMPQUA RIVER NEAR ROSEBURG, OR--Continued

PH (STANDARD UNITS), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
OCTOBER			NOVEMBER		DECEMBER		JANUARY		FEBRUARY		MARCH	
1	8.2	7.1	7.5	7.4	7.5	7.5	7.8	7.6	7.8	7.7	8.1	7.6
2	8.5	7.1	7.5	7.4	7.5	7.4	7.8	7.7	7.8	7.7	8.0	7.6
3	8.6	7.2	7.4	7.3	7.6	7.5	7.9	7.7	7.7	7.6	7.6	7.2
4	8.9	7.2	7.5	7.3	7.6	7.5	7.9	7.7	7.6	7.5	7.4	7.2
5	8.7	---	7.6	7.3	7.6	7.5	7.9	7.8	7.5	7.4	---	---
6	8.9	7.2	7.5	7.4	7.7	7.4	7.9	7.8	7.5	7.4	7.4	7.3
7	8.8	7.2	7.5	7.4	7.8	7.6	8.0	7.7	7.5	7.5	7.4	7.3
8	8.9	7.3	7.6	7.4	7.8	7.6	8.1	7.8	7.6	7.5	7.4	7.4
9	8.9	7.3	7.6	7.4	7.8	7.6	8.1	7.7	7.6	7.5	7.5	7.4
10	8.7	7.4	7.6	7.4	7.6	7.5	7.9	7.7	7.7	7.5	7.5	7.5
11	8.9	7.4	7.5	7.4	7.6	7.5	7.7	7.4	7.8	7.6	7.5	7.5
12	8.6	7.3	7.6	7.4	7.5	7.5	7.4	7.3	7.7	7.6	7.5	7.5
13	8.8	7.3	7.4	7.3	7.6	7.5	7.3	7.3	7.8	7.6	7.5	7.5
14	8.9	7.4	7.5	7.3	7.7	7.6	7.4	7.3	7.7	7.6	7.5	7.5
15	8.6	7.3	7.5	7.4	7.7	7.6	7.4	7.4	7.7	7.5	7.5	7.5
16	---	7.4	7.5	7.4	7.8	7.6	---	---	7.8	7.6	7.6	7.5
17	8.8	---	7.5	7.4	7.8	7.6	---	---	7.8	7.6	7.6	7.5
18	7.8	7.3	7.4	7.4	7.8	7.6	---	---	7.7	7.6	7.6	7.5
19	8.2	7.4	7.6	7.4	7.8	7.7	---	---	7.8	7.5	7.6	7.5
20	8.1	7.4	7.7	7.5	7.7	7.6	7.6	7.5	7.7	7.5	7.7	7.6
21	7.9	7.4	7.7	7.5	7.7	7.6	7.6	7.5	7.7	7.5	7.6	7.6
22	7.9	7.4	7.6	7.5	7.7	7.6	7.6	7.5	7.8	7.6	7.7	7.5
23	8.1	7.4	7.5	7.4	---	---	7.6	7.5	7.9	7.6	7.6	7.5
24	8.0	7.5	7.6	7.4	---	---	7.7	7.5	7.9	7.6	7.7	7.6
25	7.9	7.4	7.6	7.5	---	---	7.7	7.6	8.0	7.6	7.7	7.5
26	7.9	7.3	7.5	7.4	---	---	7.7	7.6	8.1	7.6	7.7	7.5
27	8.0	7.3	7.4	7.3	7.8	---	7.7	7.6	8.1	7.7	7.7	7.5
28	7.9	7.4	7.4	7.3	7.8	7.7	7.8	7.6	8.0	7.5	7.7	7.5
29	7.9	7.3	7.5	7.4	7.8	7.6	7.8	7.6	---	---	7.8	7.5
30	---	---	7.5	7.4	7.7	7.6	7.8	7.6	---	---	7.8	7.5
31	7.5	7.3	---	---	7.8	7.6	7.8	7.6	---	---	7.9	7.5
MONTH	---	---	7.7	7.3	---	---	---	---	8.1	7.4	---	---
DAY	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN	MAX	MIN
APRIL			MAY		JUNE		JULY		AUGUST		SEPTEMBER	
1	7.8	7.5	8.1	7.5	8.0	7.6	8.7	7.5	8.8	7.3	9.0	7.2
2	8.0	7.5	8.1	7.5	8.1	7.6	8.7	7.5	8.8	7.3	9.0	7.2
3	7.7	7.5	8.1	7.6	8.1	7.6	8.7	7.4	8.9	7.3	9.0	7.2
4	7.9	7.5	8.2	7.6	---	---	8.7	7.3	8.8	7.3	9.0	7.2
5	7.7	7.5	8.3	7.6	---	---	8.7	7.3	8.7	7.2	---	7.1
6	7.7	7.6	8.1	7.7	8.0	7.6	8.7	7.3	8.7	7.2	---	---
7	7.6	7.5	7.9	7.6	8.0	7.7	8.8	7.3	8.5	7.2	9.0	7.2
8	7.5	7.5	8.0	7.6	8.0	7.7	8.8	7.3	8.7	7.1	9.1	7.3
9	7.6	7.5	8.1	7.6	8.0	7.7	8.8	7.3	8.3	7.1	9.0	7.2
10	7.5	7.4	7.9	7.5	8.0	7.6	8.8	7.3	8.7	7.2	9.0	7.3
11	7.5	7.4	7.9	7.5	8.0	7.6	8.8	7.3	8.8	7.2	---	7.3
12	7.6	7.4	8.0	7.5	8.1	7.7	8.9	7.2	8.8	7.2	---	---
13	7.7	7.5	7.9	7.5	8.1	7.7	8.8	7.2	8.9	7.2	---	---
14	7.7	7.5	8.2	7.6	8.2	7.7	8.8	7.2	8.9	7.2	9.1	---
15	7.8	7.5	8.1	7.7	8.3	7.7	8.7	7.2	8.9	7.1	9.1	7.2
16	7.8	7.5	7.9	7.5	8.3	7.6	8.4	7.2	8.9	7.2	9.1	7.2
17	7.8	7.5	7.7	7.5	8.4	7.6	8.4	7.2	9.0	7.1	9.0	7.2
18	7.9	7.5	7.6	7.5	8.5	7.6	8.4	7.3	8.9	7.1	9.0	7.2
19	8.0	7.5	7.5	7.5	7.9	7.4	8.5	7.4	8.9	7.1	9.0	7.1
20	7.9	7.5	7.5	7.5	8.1	7.4	8.6	7.3	8.9	7.1	9.0	7.1
21	8.0	7.5	7.6	7.5	8.2	7.7	8.6	7.3	8.9	7.1	9.0	7.2
22	8.0	7.6	7.7	7.5	8.4	7.6	8.6	7.2	8.9	7.0	9.0	7.2
23	7.9	7.5	7.7	7.5	8.5	7.6	8.6	7.2	8.8	7.0	---	7.2
24	8.0	7.5	7.8	7.5	8.5	7.5	8.6	7.1	9.0	7.1	8.9	---
25	8.0	7.5	7.9	7.5	8.4	7.5	8.6	7.3	9.1	7.1	8.8	7.2
26	7.9	7.6	7.9	7.6	8.6	7.5	8.7	7.3	9.1	7.2	8.8	7.1
27	8.0	7.5	7.9	7.6	8.6	7.6	8.8	7.3	8.8	7.2	8.6	7.1
28	7.9	7.5	8.0	7.6	8.6	7.5	8.8	7.3	8.9	7.2	8.4	7.1
29	8.1	7.5	7.9	7.6	8.6	7.5	8.8	7.3	9.0	7.2	8.7	7.1
30	8.1	7.5	8.0	7.6	8.7	7.5	8.8	7.3	9.0	7.2	8.7	7.1
31	---	---	8.0	7.5	---	---	8.8	7.3	8.8	7.2	---	---
MONTH	8.1	7.4	8.3	7.5	---	---	8.9	7.1	9.1	7.0	---	---

UMPQUA RIVER BASIN

14312260 SOUTH UMPQUA RIVER NEAR ROSEBURG, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	20.0	18.5	19.5	13.5	11.5	12.5	6.5	6.0	6.5	.5	.0	.5
2	20.0	17.5	18.5	11.5	10.5	11.0	6.5	6.0	6.5	.5	.0	.5
3	20.5	18.0	19.0	11.0	10.5	11.0	6.0	6.0	6.0	1.0	.5	.5
4	20.5	17.0	---	12.0	11.0	11.5	6.5	6.0	6.5	1.0	1.0	1.0
5	---	---	---	11.5	10.5	11.5	6.5	6.0	6.5	1.0	1.0	1.0
6	18.5	15.5	17.0	11.0	10.5	10.5	7.0	6.5	6.5	1.5	1.0	1.5
7	18.0	14.5	16.0	10.5	10.0	10.5	6.5	6.0	6.5	2.5	1.5	2.0
8	17.5	14.0	15.5	11.0	10.0	10.5	6.5	6.0	6.5	3.0	2.5	3.0
9	17.0	13.5	15.0	11.5	10.5	11.0	7.0	6.5	6.5	3.5	2.5	3.0
10	16.0	14.0	15.0	10.5	10.0	10.5	7.5	7.0	7.5	4.0	3.0	3.5
11	16.0	12.5	14.5	10.0	9.5	10.0	7.5	7.0	7.5	5.5	4.0	5.0
12	15.0	14.0	14.5	10.5	10.0	10.0	7.0	6.5	7.0	7.0	6.0	6.5
13	15.5	13.5	14.5	10.5	10.0	10.5	6.5	6.0	6.5	7.5	7.0	7.5
14	16.0	13.0	14.5	10.5	10.0	10.0	6.0	5.5	5.5	8.0	7.5	7.5
15	15.5	14.5	14.5	9.5	8.5	9.0	5.5	5.0	5.0	8.0	7.5	7.5
16	---	13.5	---	8.0	7.5	8.0	5.0	5.0	5.0	---	---	---
17	14.5	---	---	8.0	7.5	7.5	6.0	5.0	5.5	---	---	---
18	14.0	13.0	13.5	8.0	7.5	7.5	6.5	6.0	6.0	---	---	---
19	14.5	12.5	13.5	8.0	7.5	7.5	6.0	4.5	5.5	6.5	---	---
20	13.5	12.0	12.5	8.0	7.5	7.5	4.0	2.0	3.0	7.0	6.5	6.5
21	13.0	12.0	12.5	8.5	8.0	8.0	2.0	.0	1.0	6.5	5.5	6.0
22	13.0	12.0	12.5	8.5	8.0	8.0	.5	.0	.5	5.5	4.5	5.0
23	14.5	12.5	13.5	8.0	8.0	8.0	---	---	---	4.5	3.5	4.0
24	14.5	13.0	13.5	8.5	7.5	8.0	---	---	---	3.5	3.5	3.5
25	14.5	12.5	13.5	8.5	8.5	8.5	---	---	---	3.5	3.0	3.5
26	15.0	13.5	14.0	8.0	7.0	7.5	---	---	---	3.5	3.0	3.5
27	16.0	14.0	14.5	7.5	7.0	7.5	1.0	---	---	3.5	3.0	3.0
28	16.0	14.0	14.5	7.0	7.0	7.0	1.5	1.0	1.0	3.0	2.5	2.5
29	15.0	13.5	---	7.0	6.5	7.0	1.0	.5	.5	3.0	2.0	2.5
30	14.0	---	---	7.0	6.5	7.0	.5	.0	.5	2.5	1.5	2.0
31	14.0	13.5	14.0	---	---	---	.5	.0	.5	3.0	2.0	2.5
MONTH	---	---	---	13.5	6.5	9.0	---	---	---	---	---	---
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.0	3.0	3.5	9.0	8.5	9.0	11.0	11.0	11.0	13.5	12.0	12.5
2	6.0	4.0	5.0	9.0	8.5	9.0	11.0	10.5	10.5	14.0	12.5	13.5
3	7.0	5.5	6.5	9.0	8.5	8.5	10.5	10.0	10.5	14.0	12.5	13.5
4	7.5	7.0	7.5	9.0	8.5	9.0	10.5	10.0	10.0	15.0	13.5	14.0
5	8.0	7.5	7.5	---	---	---	10.5	10.0	10.0	16.0	14.5	15.0
6	8.0	7.5	8.0	7.5	7.0	7.0	10.0	9.5	9.5	15.5	14.5	15.0
7	8.0	7.5	7.5	7.5	7.0	7.5	9.5	8.5	9.0	14.5	14.0	14.5
8	7.5	7.0	7.5	7.5	7.0	7.5	8.5	8.0	8.5	14.0	13.0	13.5
9	8.0	7.0	7.5	8.0	7.0	7.5	9.0	8.0	8.5	13.0	12.0	12.5
10	7.5	7.0	7.5	7.5	7.0	7.5	8.5	7.5	8.0	12.5	11.5	12.0
11	8.0	7.5	7.5	7.0	6.5	7.0	8.0	7.0	7.5	12.0	11.0	11.5
12	8.0	8.0	8.0	7.5	6.5	7.0	9.0	7.5	8.0	12.5	11.5	12.0
13	9.0	8.0	8.5	8.0	7.0	7.5	11.0	8.5	9.5	12.5	12.0	12.5
14	9.5	9.0	9.0	7.5	7.0	7.5	11.5	10.0	10.5	14.5	12.5	13.5
15	9.5	9.0	9.5	8.0	6.5	7.0	11.0	10.0	10.5	14.5	13.5	14.0
16	10.0	9.0	9.5	7.5	6.5	7.0	10.0	9.5	10.0	14.5	14.0	14.5
17	9.5	9.5	9.5	8.0	7.0	7.5	11.0	9.5	10.0	14.0	12.5	13.5
18	9.5	9.0	9.0	9.0	7.5	8.5	11.5	10.0	10.5	12.0	9.5	10.5
19	9.0	8.5	9.0	9.0	8.0	8.5	12.5	11.0	11.5	9.5	9.0	9.5
20	10.0	8.5	9.0	9.0	8.0	8.5	12.5	12.0	12.5	10.5	9.5	10.0
21	9.5	9.0	9.5	8.0	7.5	8.0	13.0	12.0	12.5	12.0	10.5	11.0
22	9.0	8.5	9.0	8.0	7.0	7.5	14.0	12.0	13.0	13.0	12.0	12.5
23	9.0	8.0	8.5	8.0	7.5	7.5	13.5	13.0	13.0	15.0	12.5	13.5
24	9.0	8.5	9.0	8.5	7.5	8.0	13.0	12.0	12.5	15.5	13.5	14.5
25	9.5	8.5	9.0	8.5	7.5	8.0	12.0	11.5	12.0	15.5	13.5	14.5
26	9.5	8.5	9.0	8.5	7.0	8.0	11.5	10.5	11.0	15.5	13.5	14.5
27	9.0	8.5	9.0	9.0	7.0	8.0	11.5	10.0	10.5	15.0	14.0	14.5
28	---	---	---	9.0	8.0	8.5	11.0	10.0	10.5	15.5	14.0	14.5
29	---	---	---	9.5	8.0	9.0	12.0	10.0	11.0	15.0	14.5	14.5
30	---	---	---	10.5	8.5	9.5	12.5	11.0	11.5	14.5	13.5	14.5
31	---	---	---	11.5	10.0	10.5	---	---	---	15.0	13.0	14.0
MONTH	---	---	---	---	---	---	14.0	7.0	10.5	16.0	9.0	13.0

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TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	JUNE			JULY			AUGUST			SEPTEMBER		
1	16.5	14.0	15.5	24.0	20.5	22.5	28.0	24.5	26.0	24.0	21.5	22.5
2	18.5	16.0	17.0	26.0	22.0	24.0	28.0	24.5	26.0	24.0	20.5	22.5
3	18.5	17.0	18.0	27.5	24.0	25.5	27.5	24.0	26.0	25.0	21.0	23.0
4	---	---	---	27.5	24.5	26.0	27.0	24.5	25.5	25.5	21.5	23.5
5	---	---	---	27.0	24.0	25.5	26.5	24.0	25.0	---	22.0	---
6	19.0	16.5	18.0	26.5	23.0	24.5	27.0	24.0	25.5	---	---	---
7	19.0	17.5	18.5	26.5	22.5	24.5	25.0	24.0	24.5	24.0	---	---
8	20.0	18.0	19.0	27.0	23.0	25.0	27.5	23.5	25.5	23.0	20.5	22.0
9	21.0	19.0	20.0	27.0	23.0	25.0	26.5	24.0	24.5	23.0	20.0	21.5
10	22.0	21.0	21.5	27.0	23.0	24.5	26.0	23.0	24.0	23.5	20.0	21.5
11	22.0	21.0	21.5	27.0	23.0	25.0	25.5	22.0	24.0	---	19.5	---
12	21.5	20.0	21.0	27.5	23.5	25.5	26.0	22.0	24.0	---	---	---
13	20.5	19.0	20.0	26.5	24.0	25.5	26.5	22.5	24.5	---	---	---
14	20.5	19.0	19.5	26.5	24.0	25.0	27.0	23.0	25.0	---	---	---
15	20.0	18.5	19.5	25.5	23.0	24.5	27.0	23.5	25.5	23.0	19.0	21.0
16	20.0	18.5	19.5	24.5	23.0	23.5	27.0	23.5	25.0	23.5	19.5	21.5
17	20.5	18.5	19.5	25.0	22.0	23.5	27.5	24.0	25.5	23.5	20.0	22.0
18	21.0	19.5	20.0	25.0	22.0	23.5	27.0	24.0	25.5	24.5	20.5	22.5
19	19.5	18.0	19.0	25.5	22.5	24.0	27.5	24.0	25.5	24.0	21.0	22.5
20	19.0	17.5	18.0	26.0	22.5	24.0	28.0	24.5	26.0	23.0	20.5	21.5
21	19.5	18.0	18.5	26.5	22.0	24.5	28.0	24.5	26.0	22.0	19.0	20.5
22	20.5	19.0	19.5	27.5	23.0	25.5	27.5	24.5	26.0	22.0	18.0	20.0
23	21.0	19.0	20.0	29.0	24.5	26.5	25.5	23.5	24.5	---	18.5	---
24	21.0	19.5	20.0	28.0	25.5	26.5	25.5	22.5	24.0	---	---	---
25	20.0	19.0	19.5	26.5	24.5	25.5	25.0	22.0	23.5	22.5	19.0	21.0
26	21.0	19.0	20.0	26.5	23.5	25.0	24.5	21.0	23.0	22.0	19.0	20.5
27	21.0	19.5	20.5	27.5	23.5	25.5	22.5	21.0	22.0	21.5	19.5	20.5
28	21.5	19.5	20.5	28.0	24.0	26.0	23.0	21.0	22.0	21.0	19.0	20.0
29	22.0	20.0	21.0	28.5	24.5	26.5	24.5	21.0	22.5	21.0	18.0	19.5
30	22.5	20.0	21.0	29.0	25.0	27.0	24.5	21.0	23.0	22.0	18.5	20.5
31	---	---	---	29.0	25.5	27.0	23.5	21.5	22.5	---	---	---
MONTH	---	---	---	29.0	20.5	25.0	28.0	21.0	24.5	---	---	---

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	9.3	2.5	5.3	10.0	7.4	8.8	11.2	10.6	11.0	---	---	---
2	12.4	2.5	6.7	11.3	10.1	10.8	11.2	10.8	11.0	---	---	---
3	11.0	4.3	7.1	10.6	7.5	9.4	11.2	10.2	11.0	---	---	---
4	11.8	4.4	7.4	9.8	7.1	8.2	11.5	10.3	10.9	---	---	---
5	10.8	3.2	---	12.4	8.9	11.0	11.9	11.4	11.7	---	---	---
6	12.7	4.8	8.3	11.5	---	---	12.1	11.2	11.6	---	---	---
7	13.4	4.5	8.9	11.3	---	---	12.1	11.4	11.7	---	---	---
8	13.5	6.2	9.3	11.7	10.4	10.8	12.8	11.2	11.9	---	---	---
9	13.6	6.7	9.6	10.7	10.0	10.3	11.9	10.8	11.4	---	---	---
10	12.1	6.3	8.8	11.0	9.9	10.3	10.8	9.7	10.2	---	---	---
11	14.7	6.5	10.0	10.9	9.9	10.4	10.2	9.7	9.9	---	---	---
12	11.9	6.5	8.9	11.4	9.8	10.3	11.5	10.4	11.0	---	---	---
13	13.0	6.4	9.3	10.0	8.7	9.5	11.3	11.0	11.2	---	---	---
14	13.3	6.9	9.5	10.5	8.9	9.7	11.5	11.0	11.3	---	---	---
15	13.7	6.1	9.7	11.0	10.4	10.8	11.7	11.0	11.4	---	---	---
16	---	---	---	11.6	10.6	11.0	13.3	11.3	12.0	---	---	---
17	13.0	---	---	11.1	10.3	10.7	13.0	11.6	12.3	---	---	---
18	8.3	5.7	7.2	10.4	10.0	10.2	11.7	10.9	11.2	---	---	---
19	10.4	7.2	8.6	11.2	10.0	10.7	12.0	11.0	11.5	12.7	---	---
20	9.8	7.7	8.6	11.5	10.6	11.0	13.5	11.9	12.6	13.0	11.6	12.4
21	8.8	6.0	7.5	11.8	10.6	11.0	14.7	13.4	14.2	13.2	12.4	12.8
22	8.8	5.5	7.1	10.9	10.0	10.5	15.3	14.4	14.8	13.9	13.0	13.5
23	8.9	6.5	7.5	10.6	10.1	10.3	---	---	---	14.1	13.5	13.9
24	---	6.7	---	11.1	9.9	10.4	---	---	---	14.5	13.7	14.1
25	---	---	---	10.7	9.8	10.2	---	---	---	15.0	13.6	14.2
26	---	---	---	10.6	10.2	10.4	---	---	---	13.8	13.2	13.5
27	---	---	---	11.2	10.1	10.7	---	---	---	14.1	13.3	13.7
28	---	---	---	10.9	10.4	10.7	13.5	12.7	13.1	14.2	13.6	13.9
29	---	---	---	10.8	10.3	10.5	14.8	12.6	14.0	15.8	13.5	14.6
30	8.4	---	---	11.6	10.6	11.0	14.9	14.3	14.5	14.8	13.5	14.3
31	8.6	6.5	7.7	---	---	---	---	---	---	13.7	13.2	13.5
MONTH	---	---	---	12.4	---	---	---	---	---	---	---	---

UMPQUA RIVER BASIN

14312260 SOUTH UMPQUA RIVER NEAR ROSEBURG, OR--Continued

OXYGEN DISSOLVED (MG/L), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	13.6	12.5	13.1	11.1	9.9	10.5	10.4	9.6	10.0	10.5	9.2	9.8
2	12.5	11.3	11.7	11.0	10.2	10.5	11.0	9.6	10.3	11.2	8.5	10.1
3	11.3	10.6	11.0	10.1	9.0	9.7	11.1	9.8	10.5	11.0	9.2	10.1
4	10.8	10.1	10.5	9.3	8.6	8.9	11.5	10.1	10.7	10.9	8.5	9.8
5	10.3	9.7	10.1	---	---	---	10.7	9.9	10.3	10.2	8.3	9.4
6	10.0	9.6	9.9	---	---	---	10.7	9.9	10.3	9.5	8.4	9.0
7	11.1	9.9	10.5	12.2	11.2	11.7	10.8	10.2	10.6	9.7	8.5	9.1
8	11.4	10.9	11.1	12.3	11.5	11.9	11.3	10.8	11.1	10.3	8.4	9.4
9	11.2	10.7	11.0	12.1	11.3	11.8	10.8	10.5	10.7	11.9	9.6	10.8
10	11.2	10.6	10.9	11.8	11.3	11.5	11.0	10.4	10.8	11.8	10.6	11.3
11	11.9	10.6	11.2	11.8	11.5	11.7	11.7	11.1	11.5	11.8	10.6	11.2
12	11.4	10.7	11.1	11.9	11.4	11.6	11.4	10.6	11.2	11.4	10.4	10.9
13	11.1	10.2	10.7	12.1	11.5	11.8	10.7	10.0	10.4	10.7	9.5	10.2
14	10.7	9.9	10.3	11.8	11.3	11.6	9.9	9.4	9.7	11.3	9.4	10.4
15	10.2	9.9	10.0	12.2	11.5	11.8	10.2	9.4	9.8	10.4	9.0	9.7
16	10.6	9.9	10.1	11.7	11.4	11.6	10.9	9.8	10.3	11.0	8.2	9.5
17	11.4	10.0	10.7	11.7	11.0	11.4	10.5	9.8	10.2	10.5	8.9	9.6
18	11.3	10.3	10.8	11.2	10.4	10.8	11.4	9.6	10.5	12.1	10.0	11.1
19	11.2	10.4	10.8	10.6	10.1	10.3	10.8	9.6	10.2	12.2	11.7	12.0
20	11.3	10.1	10.8	10.9	10.2	10.6	10.4	9.1	9.7	11.9	11.0	11.4
21	10.8	10.1	10.4	11.4	10.5	11.0	10.4	8.8	9.6	11.1	10.2	10.8
22	11.6	10.3	10.9	12.4	11.1	11.7	10.1	9.0	9.5	10.7	10.1	10.4
23	11.6	10.8	11.1	11.7	11.1	11.4	10.2	8.4	9.4	10.8	9.6	10.3
24	11.3	10.6	10.9	11.4	10.7	11.1	10.6	9.0	9.9	10.2	9.1	9.6
25	11.0	10.3	10.6	11.6	10.7	11.2	11.1	9.5	10.4	10.3	9.2	9.8
26	10.9	10.1	10.4	12.1	11.2	11.8	11.4	10.0	10.7	10.4	9.2	9.7
27	11.0	10.1	10.5	12.6	11.6	12.1	12.2	10.5	11.3	10.4	9.0	9.7
28	11.2	9.9	10.5	12.1	11.4	11.8	12.1	10.6	11.3	10.5	9.2	9.8
29	---	---	---	12.8	11.3	11.9	11.8	10.2	11.0	9.7	8.7	9.2
30	---	---	---	12.1	10.5	11.4	11.2	9.8	10.4	10.4	9.0	9.7
31	---	---	---	11.3	9.8	10.6	---	---	---	10.9	9.5	10.1
MONTH	13.6	9.6	10.8	---	---	---	12.2	8.4	10.4	12.2	8.2	10.1
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	9.5	7.8	8.9	11.3	7.6	9.3	12.9	5.8	9.0	13.3	6.3	9.2
2	8.1	6.8	7.6	10.7	6.7	8.6	13.5	5.5	8.8	13.7	6.5	9.5
3	8.0	6.5	7.3	12.0	6.2	8.6	13.1	6.1	9.3	14.1	6.6	9.8
4	---	6.6	---	11.5	7.2	9.1	12.5	5.5	8.8	13.5	6.2	9.4
5	---	---	---	11.5	6.9	8.9	12.0	5.6	8.3	---	5.8	---
6	---	---	---	11.9	6.8	9.3	13.2	5.3	8.8	---	---	---
7	---	---	---	13.0	7.9	10.0	11.2	5.8	8.4	14.1	---	---
8	---	---	---	12.4	7.3	9.5	12.4	5.7	8.7	14.7	5.5	9.7
9	---	---	---	12.3	6.8	9.1	10.1	5.1	7.4	14.3	5.7	9.5
10	---	---	---	11.9	6.5	8.6	13.3	5.2	8.7	12.9	5.7	9.0
11	---	---	---	12.2	6.6	9.1	13.4	6.1	9.5	---	5.5	---
12	10.2	---	---	13.7	7.0	10.0	13.5	6.3	9.4	---	---	---
13	10.8	9.0	9.9	13.3	6.7	9.6	13.7	6.0	9.4	---	---	---
14	10.9	9.0	9.9	13.0	6.6	9.1	13.4	5.7	9.1	---	---	---
15	10.5	8.9	9.7	12.6	6.7	9.2	12.7	5.1	8.5	14.1	5.4	9.3
16	10.4	8.8	9.5	10.8	6.6	8.2	14.7	4.5	8.6	14.0	5.3	9.1
17	10.1	8.6	9.4	10.7	6.6	8.6	14.7	4.9	9.2	13.4	5.0	8.6
18	10.7	8.3	9.4	12.4	8.7	10.2	13.8	4.5	8.4	12.2	4.7	7.9
19	9.9	8.3	8.9	12.2	8.6	10.2	13.0	4.7	8.1	11.5	3.9	7.2
20	10.6	8.3	9.4	12.6	8.1	10.0	13.2	4.5	8.7	11.1	3.7	7.1
21	10.4	8.9	9.6	12.7	8.2	10.1	14.1	4.5	8.9	10.8	4.1	7.1
22	10.5	8.6	9.4	12.5	7.6	9.7	13.6	4.1	8.4	12.3	4.8	7.9
23	10.2	8.1	9.0	11.9	7.1	9.1	13.1	4.0	7.8	---	---	---
24	11.7	7.9	9.2	10.5	6.2	7.8	14.4	4.5	8.9	---	---	---
25	11.0	8.7	9.6	10.7	5.4	7.7	14.3	4.9	9.1	13.2	5.7	9.0
26	11.3	8.5	9.9	13.4	5.8	9.1	14.6	5.3	9.5	14.7	4.9	9.4
27	11.7	8.7	9.9	13.0	7.3	9.8	13.9	6.3	9.6	13.1	4.9	8.2
28	11.7	8.6	10.0	13.1	6.8	9.6	13.7	6.3	9.4	12.1	4.8	7.7
29	11.6	8.4	9.7	12.9	6.4	9.2	14.1	6.1	9.7	12.9	4.6	8.1
30	11.4	8.4	9.6	13.1	5.6	9.1	14.3	6.3	9.8	12.3	4.5	8.1
31	---	---	---	12.9	6.0	9.1	13.7	5.8	9.0	---	---	---
MONTH	---	---	---	13.7	5.4	9.2	14.7	4.0	8.9	---	---	---

UMPQUA RIVER BASIN

369

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 National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.).

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 & Light Co.

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, 13,410 acre-ft May 19, elevation, 4,148.15 ft; minimum observed, 1,380 acre-ft Jan. 1, 2, elevation, 4,101.00 ft.

MONTHEND ELEVATION AND CONTENTS AT 0900, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Date	Elevation (feet)	Contents (acre-feet)	Change in contents (acre-feet)
Sept.30.....	4,141.2	10,670	--
Oct. 31.....	4,135.4	8,680	-1,990
Nov. 30.....	4,129.7	6,900	-1,780
Dec. 31.....	4,105.5	1,820	-5,080
CAL YR 1990.....	--	--	-1,730
Jan. 31.....	4,114.4	3,070	+1,250
Feb. 28.....	4,110.9	2,510	-560
Mar. 31.....	4,121.1	4,520	+2,010
Apr. 30.....	4,134.3	8,330	+3,810
May 31.....	4,146.4	12,680	+4,350
June 30.....	4,147.1	12,970	+290
July 31.....	4,147.5	13,140	+170
Aug. 31.....	4,145.9	12,480	-660
Sept.30.....	4,139.2	9,960	-2,520
WTR YR 1991.....	--	--	-710

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. WRD OR-75-1: 1964(M).

GAGE.--Water-stage recorder. Elevation of gage is 4,025 ft, 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.--No estimated daily discharges. Records excellent. 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 (1928-83), 423 ft³/s, 33.79 in/yr, 306,500 acre-ft/yr, adjusted for storage.

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, 565 ft³/s July 21, 22, gage height, 6.59 ft; minimum discharge, 25 ft³/s Dec. 22, Jan. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	29	27	28	26	29	29	32	32	39	40	43	39
2	29	27	28	25	29	29	32	32	39	40	43	40
3	29	27	28	26	29	30	32	32	39	41	43	39
4	29	27	28	26	29	32	32	33	39	41	43	39
5	29	27	27	26	29	33	32	33	39	41	43	39
6	29	27	27	26	29	33	33	33	39	41	43	40
7	29	27	27	26	28	34	33	33	39	41	43	40
8	29	27	27	26	28	33	33	34	40	40	42	40
9	29	28	27	26	28	33	33	35	41	40	42	40
10	29	28	27	26	28	33	33	35	43	40	42	39
11	28	28	27	26	28	33	33	35	45	40	41	39
12	28	28	27	28	28	33	33	35	45	40	41	39
13	28	27	27	29	29	33	33	41	44	40	40	39
14	28	27	27	31	29	33	33	47	42	40	41	39
15	28	27	27	33	29	33	33	48	41	41	41	39
16	28	27	27	33	29	33	33	50	42	42	40	39
17	28	27	27	34	29	33	33	113	41	42	40	39
18	28	26	27	35	29	33	33	262	43	43	40	39
19	28	26	26	35	29	33	33	421	44	47	40	38
20	27	26	26	35	29	33	34	550	44	47	40	38
21	27	26	26	35	29	32	35	551	45	46	40	38
22	28	26	28	34	29	32	35	516	45	44	40	38
23	27	27	31	35	29	32	35	430	44	43	40	38
24	27	27	31	34	29	32	35	302	42	43	41	37
25	27	27	30	33	29	32	35	49	42	43	40	37
26	27	26	29	33	29	32	36	44	42	42	40	37
27	27	26	29	31	29	32	33	42	42	42	40	37
28	27	27	29	31	29	31	31	42	43	42	40	37
29	27	28	28	31	---	31	31	40	43	43	39	36
30	27	28	27	30	---	31	31	40	42	43	39	36
31	27	---	26	30	---	32	---	40	---	43	40	---
TOTAL	867	809	856	935	806	998	993	4030	1258	1301	1270	1154
MEAN	28.0	27.0	27.6	30.2	28.8	32.2	33.1	130	41.9	42.0	41.0	38.5
MAX	29	28	31	35	29	34	36	551	45	47	43	40
MIN	27	26	26	25	28	29	31	32	39	40	39	36
AC-FT	1720	1600	1700	1850	1600	1980	1970	7990	2500	2580	2520	2290

CAL YR 1990 TOTAL 17551 MEAN 48.1 MAX 330 MIN 26 AC-FT 34810
WTR YR 1991 TOTAL 15277 MEAN 41.9 MAX 551 MIN 25 AC-FT 30300

UMPQUA RIVER BASIN

371

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 National Geodetic Vertical Datum of 1929 (levels by Pacific Power & Light Co.). Prior to Dec. 1, 1953, at two sites about 0.4 mi downstream at different datums.

REMARKS.--Records excellent except for estimated daily discharges, which are fair. 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 (1928-83), 173 ft³/s, 125,300 acre-ft/yr.

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, 216 ft³/s May 8, gage height, 4.55 ft; minimum discharge, 4.8 ft³/s Oct. 12, 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	5.0	5.2	5.0	e5.0	5.2	5.7	5.6	6.3	6.7	6.4	130	5.5
2	5.0	5.0	5.0	e5.0	5.6	5.9	5.6	6.3	7.0	6.3	130	5.6
3	5.0	5.0	5.0	e5.0	5.6	6.7	5.6	6.3	7.2	6.3	130	5.6
4	5.0	5.4	5.1	e5.0	5.7	7.5	5.6	6.3	7.1	6.2	130	5.7
5	5.2	5.3	5.0	e5.0	5.9	6.8	6.0	6.3	6.9	6.1	130	5.8
6	5.2	5.2	5.0	e5.0	5.8	6.4	5.9	6.5	6.8	6.0	85	5.9
7	5.1	5.2	5.0	e5.0	5.6	6.3	5.9	15	6.7	6.0	5.7	6.1
8	5.0	5.6	5.0	e5.0	5.4	6.2	5.8	75	6.7	6.0	5.6	6.3
9	5.0	5.2	5.1	e5.0	5.4	6.1	6.2	132	6.8	5.8	60	6.3
10	5.0	5.1	5.6	e6.0	5.4	6.2	5.9	7.3	39	5.8	129	6.3
11	5.0	5.0	5.2	e8.0	5.4	6.0	5.8	7.0	126	5.8	128	6.3
12	4.9	5.0	5.1	e7.0	5.5	6.0	5.9	6.9	7.4	5.8	128	6.5
13	5.0	5.1	5.1	e6.0	6.2	6.0	6.0	7.1	6.9	5.9	75	6.5
14	5.0	5.0	5.1	e6.0	5.8	6.0	6.0	7.1	6.6	5.8	5.7	6.5
15	5.0	5.0	5.0	6.1	5.8	5.8	5.9	7.0	6.5	5.8	5.6	6.5
16	5.0	5.0	5.0	5.7	5.8	5.8	5.8	7.1	6.5	6.1	5.6	6.3
17	5.0	5.0	5.0	5.6	5.8	5.8	5.8	8.5	6.6	6.1	5.6	6.3
18	5.2	5.0	5.2	5.6	5.9	5.8	5.8	7.4	6.5	5.8	5.6	6.3
19	5.1	5.0	5.2	5.5	5.8	5.8	5.8	7.0	6.9	5.8	5.5	6.3
20	5.0	5.0	e6.0	5.4	5.6	5.8	5.9	7.0	6.8	5.7	5.4	6.3
21	5.1	5.0	e5.0	5.4	5.6	5.6	6.1	7.0	6.6	5.6	5.4	6.3
22	5.3	5.0	e5.0	5.4	5.6	5.6	6.0	7.2	6.4	55	5.4	6.3
23	5.0	5.0	e5.0	5.4	5.6	5.7	6.1	7.4	6.3	134	5.4	6.3
24	5.0	5.0	e5.0	5.2	5.6	5.7	6.5	7.6	6.4	135	5.4	6.3
25	5.0	5.3	e5.0	5.4	5.6	5.6	6.3	7.5	6.3	134	5.3	6.3
26	5.0	5.2	e5.0	5.3	5.6	5.6	6.4	7.2	6.3	133	5.2	6.3
27	5.0	5.2	e5.0	5.2	5.6	5.6	6.3	7.1	6.3	132	5.2	6.3
28	5.1	5.0	e5.0	5.2	5.6	5.6	6.3	7.0	6.4	131	5.3	6.3
29	5.0	5.0	e5.0	5.2	---	5.6	6.3	7.0	6.3	131	5.3	6.3
30	5.3	5.0	e5.0	5.2	---	5.6	6.3	7.2	6.3	131	5.2	6.3
31	5.7	---	e5.0	5.2	---	5.6	---	6.8	---	130	5.3	---
TOTAL	157.2	153.0	211.7	170.0	158.0	184.4	179.4	418.4	351.2	1371.1	1363.7	185.9
MEAN	5.07	5.10	6.83	5.48	5.64	5.95	5.98	13.5	11.7	44.2	44.0	6.20
MAX	5.7	5.6	6.0	8.0	6.2	7.5	6.5	132	126	135	130	6.5
MIN	4.9	5.0	5.0	5.0	5.2	5.6	5.6	6.3	6.3	5.6	5.2	5.5
AC-FT	312	303	420	337	313	366	356	830	697	2720	2700	369

CAL YR 1990 TOTAL 3906.9 MEAN 10.7 MAX 181 MIN 4.8 AC-FT 7750
WTR YR 1991 TOTAL 4904.0 MEAN 13.4 MAX 135 MIN 4.9 AC-FT 9730

e Estimated

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 National Geodetic Vertical Datum of 1929 (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.--Records good except for estimated daily discharges, which are fair. 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 (1947-83), 237 ft³/s, 46.78 in/yr, 171,700 acre-ft/yr.

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, 987 ft³/s Jan. 14, gage height, 5.56 ft; minimum discharge, 9.9 ft³/s Oct. 20.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	12	46	27	e70	21	43	89	104	141	27	31	31
2	12	21	22	e65	78	94	94	139	167	27	31	30
3	12	15	21	e60	124	336	104	138	192	28	30	29
4	13	46	38	e60	197	576	83	134	160	26	29	28
5	13	42	38	e60	246	492	175	154	115	29	29	27
6	12	19	27	e55	173	323	196	180	97	32	29	25
7	11	23	22	e50	124	236	151	214	84	28	28	21
8	13	38	20	e65	94	183	124	474	82	31	30	18
9	13	31	29	45	70	150	213	335	90	41	30	18
10	12	17	209	68	53	128	181	261	133	39	30	17
11	12	16	112	107	43	97	139	210	139	36	28	16
12	12	16	62	532	43	82	117	195	94	34	27	17
13	13	31	41	755	179	66	108	231	70	32	28	17
14	13	40	27	799	134	54	102	232	51	31	31	16
15	15	29	25	744	108	44	92	213	41	29	31	16
16	16	26	22	501	100	37	80	236	35	48	30	15
17	14	25	20	386	79	31	66	311	30	72	30	14
18	29	31	22	317	71	31	59	257	43	41	31	15
19	17	25	23	273	79	30	51	241	95	41	28	19
20	11	21	77	239	65	29	62	249	72	38	27	19
21	20	30	111	198	52	29	103	279	41	34	27	19
22	54	34	e200	161	42	28	122	287	29	32	26	19
23	49	28	e190	122	32	30	139	288	30	34	25	19
24	44	22	e170	92	26	31	198	271	49	39	25	18
25	42	90	e155	92	26	32	184	239	37	34	26	17
26	31	47	e160	69	26	32	161	210	27	31	28	18
27	13	35	e150	60	26	31	134	189	31	31	27	17
28	17	28	e125	40	32	29	120	170	39	34	33	16
29	13	33	e100	47	---	29	113	162	40	36	29	16
30	78	36	e80	64	---	35	113	200	30	35	23	16
31	158	---	e75	24	---	65	---	157	---	33	26	---
TOTAL	793	941	2400	6220	2343	3433	3673	6960	2284	1083	883	583
MEAN	25.6	31.4	77.4	201	83.7	111	122	225	76.1	34.9	28.5	19.4
MAX	158	90	209	799	246	576	213	474	192	72	33	31
MIN	11	15	20	24	21	28	51	104	27	26	23	14
AC-FT	1570	1870	4760	12340	4650	6810	7290	13810	4530	2150	1750	1160
CFSM	.37	.46	1.13	2.92	1.22	1.61	1.78	3.26	1.11	.51	.41	.28
IN.	.43	.51	1.30	3.36	1.27	1.86	1.99	3.76	1.23	.59	.48	.32

CAL YR 1990 TOTAL 28976.5 MEAN 79.4 MAX 1170 MIN 9.5 AC-FT 57470 CFSM 1.15 IN. 15.67
WTR YR 1991 TOTAL 31596 MEAN 86.6 MAX 799 MIN 11 AC-FT 62670 CFSM 1.26 IN. 17.08

e Estimated

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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 Tokete Falls. and at mile 67.2.

PERIOD OF RECORD.--September 1949 to current year. Monthly discharge only September 1949, published in WSP 1318. Prior to October 1952, published as "above Copeland Creek."

GAGE.--Water-stage recorder. Elevation of gage is 1,580 ft, from river-profile map. Prior to Aug. 1, 1976, on right bank at same datum.

AVERAGE DISCHARGE.--42 years, 1,484 ft³/s, 1,075,000 acre-ft/yr.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 4,290 ft³/s Mar. 4, gage height, 8.64 ft; minimum discharge, 380 ft³/s Sept. 5, result of regulation.

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	728	883	1070	880	1070	1240	1480	1520	1610	1210	830	750
2	720	801	995	793	1210	1460	1510	1700	1630	1060	816	771
3	721	806	938	743	1320	1830	1440	1600	1680	1030	759	740
4	732	998	1020	782	1470	3110	1430	1630	1630	1080	742	687
5	737	1090	1080	748	1740	3080	1620	1570	1610	967	791	660
6	721	919	1030	772	1680	2150	1860	1660	1390	962	830	683
7	730	836	972	836	1380	1880	1760	1710	1370	1120	853	675
8	728	1020	922	822	1400	1780	1640	2280	1380	888	823	701
9	703	1160	972	816	1310	1700	2100	1980	1370	1040	765	782
10	730	959	1590	973	1280	1660	1990	1910	1290	898	763	789
11	727	887	1530	1230	1160	1570	1730	1900	1400	949	764	712
12	719	920	1430	2480	1240	1450	1660	1840	1600	890	847	712
13	721	1030	1240	3240	1950	1520	1650	1640	1460	867	806	678
14	720	1080	1120	3480	2020	1480	1650	1510	1390	866	780	757
15	723	958	1070	3580	1720	1420	1610	1440	1170	870	769	760
16	735	886	1020	2660	1570	1380	1610	1450	1250	921	723	732
17	751	898	1010	1940	1550	1370	1390	1810	1130	1050	728	740
18	734	885	1110	1870	1580	1290	1340	2010	1140	826	815	765
19	793	928	1090	1600	1720	1330	1400	2040	1350	824	724	771
20	733	956	925	1500	1620	1340	1200	2260	1340	962	762	776
21	749	994	990	1430	1540	1270	1320	2260	1220	912	713	768
22	872	1000	1140	1360	1480	1260	1440	2190	1160	974	682	765
23	757	1020	1140	1230	1340	1340	1540	2050	1310	762	731	766
24	748	1010	1110	1300	1330	1270	1700	1930	1350	911	691	776
25	739	1390	984	1280	1250	1330	1640	1900	1140	804	730	779
26	736	1210	960	1260	1240	1280	1610	1880	1160	802	760	779
27	736	1080	1040	1210	1190	1340	1610	1860	1060	801	771	761
28	724	1040	1020	1210	1200	1250	1570	1810	1200	832	792	739
29	744	1040	927	995	---	1230	1530	1700	1170	828	846	748
30	843	1040	867	1190	---	1260	1530	1830	1340	827	824	773
31	1240	---	889	1090	---	1400	---	1660	---	830	706	---
TOTAL	23494	29724	33202	45300	40560	48270	47560	56560	40300	28563	23936	22295
MEAN	758	991	1071	1461	1449	1557	1585	1825	1343	921	772	743
MAX	1240	1390	1590	3580	2020	3110	2100	2280	1680	1210	853	789
MIN	703	801	867	743	1070	1230	1200	1440	1060	762	682	660
AC-FT	46600	58960	65860									

MEAN	945	1294	1774	1803	1833	1761	1863	2029	1687	1085	895	857
MAX	1568	2298	5163	3418	3254	4221	2876	3191	2933	1652	1178	1107
(WY)	1951	1951	1965	1956	1958	1972	1956	1956	1974	1953	1972	1972
MIN	693	754	803	788	670	873	1065	1066	904	689	684	653
(WY)	1988	1988	1977	1977	1977	1977	1968	1968	1968	1968	1981	1968

ANNUAL TOTAL	423040		439764					
ANNUAL MEAN	1159		1205			1484		
HIGHEST ANNUAL MEAN						2080		1956
LOWEST ANNUAL MEAN						897		1977
HIGHEST DAILY MEAN	4500	Apr 28	3580	Jan 15	24300		Dec 22	1964
LOWEST DAILY MEAN	665	Aug 10	660	Sep 5	565		Sep 13	1959
ANNUAL SEVEN-DAY MINIMUM	702	Aug 6	702	Sep 2	605		Aug 12	1966
ANNUAL RUNOFF (AC-FT)	839100		872300		1075000			
19 PERCENT EXCEEDS	179		179		2450			
50 PERCENT EXCEEDS	1020		1090		1250			
90 PERCENT EXCEEDS	730		736		776			

UMPQUA RIVER BASIN

14316700 STEAMBOAT CREEK NEAR GLIDE, OR

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.

DRAINAGE AREA.--227 mi².

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 National Geodetic Vertical Datum of 1929 (levels by Federal Highway Administration). October 1955 to June 1956, nonrecording gage at site 100 ft upstream at same datum.

REMARKS.--No estimated daily discharges. Records excellent. No regulation or diversion upstream from station. Several measurements of water temperature were made during the year.

AVERAGE DISCHARGE.--35 years, 728 ft³/s, 43.55 in/yr, 527,400 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, 30 ft³/s Sept. 15-17, 1973.

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)
Jan. 12	0530	*7,720	*9.01	No other peak greater than base discharge.			
Minimum discharge, 36 ft ³ /s Sept. 26-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	43	666	839	205	232	338	848	678	418	139	64	47
2	42	315	698	198	325	455	771	626	394	132	65	46
3	42	202	572	197	512	1820	675	594	363	123	62	45
4	43	585	703	200	794	4310	637	528	322	116	62	44
5	43	914	1150	202	2080	3510	992	490	290	112	61	43
6	45	627	753	202	1430	1870	1660	471	267	107	60	42
7	43	384	578	413	928	1390	1720	483	250	104	61	42
8	42	754	526	851	697	1150	1480	1220	236	101	61	43
9	41	824	588	640	566	1010	3550	1150	228	98	61	42
10	41	487	2090	1660	482	926	2580	1060	225	96	73	42
11	41	330	2080	2500	424	808	1670	931	219	93	64	42
12	42	246	1210	6660	408	925	1300	768	205	91	59	41
13	46	301	833	4770	1830	1270	1190	731	190	89	57	41
14	47	826	628	4690	1750	1110	1120	785	179	88	56	41
15	53	507	519	4710	1110	925	969	696	169	87	55	40
16	63	359	430	2700	869	830	839	623	162	103	53	40
17	59	278	365	1700	837	753	717	1460	156	158	52	39
18	71	310	811	1220	1010	872	646	2330	151	111	52	39
19	108	294	947	941	1730	879	613	2040	179	96	51	38
20	71	321	657	753	1270	740	601	1580	249	89	51	38
21	80	885	464	623	954	657	624	1380	187	85	50	38
22	321	1090	420	535	759	615	599	1090	163	82	49	37
23	129	968	380	470	616	698	575	852	153	80	48	37
24	86	665	345	417	523	1000	662	698	157	77	48	37
25	71	1750	314	377	455	1030	823	592	148	76	48	37
26	67	1550	277	345	405	872	1050	513	143	73	46	37
27	64	960	268	313	369	743	1220	456	142	72	46	36
28	75	785	296	288	345	655	996	413	165	69	50	36
29	77	683	257	266	---	585	842	397	168	68	54	37
30	336	1080	216	250	---	592	753	497	147	66	51	36
31	1360	---	223	241	---	842	---	475	---	65	48	---
TOTAL	3692	19946	20437	39537	23710	34180	32722	26607	6425	2946	1718	1203
MEAN	119	665	659	1275	847	1103	1091	858	214	95.0	55.4	40.1
MAX	1360	1750	2090	6660	2080	4310	3550	2330	418	158	73	47
MIN	41	202	216	197	232	338	575	397	142	65	46	36
AC-FT	7320	39560	40540	78420	47030	67800	64900	52770	12740	5840	3410	2390
CFSM	.52	2.93	2.90	5.62	3.73	4.86	4.80	3.78	.94	.42	.24	.18
IN.	.61	3.27	3.35	6.48	3.89	5.60	5.36	4.36	1.05	.48	.28	.20

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1957 - 1991, BY WATER YEAR (WY)

	1957	1958	1959	1960	1961	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	
MEAN	171	892	1460	1502	1405	1269	951	622	270	95.9	60.5	68.8																								
MAX	536	2887	5391	3415	3195	2774	1406	1337	780	193	158	260																								
(WY)	1957	1974	1965	1970	1986	1972	1960	1963	1984	1983	1976	1986																								
MIN	31.5	76.8	62.5	108	142	383	287	179	88.2	56.6	38.6	35.9																								
(WY)	1988	1977	1977	1977	1977	1978	1968	1987	1987	1973	1973	1987																								

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1957 - 1991

	1990	1991	1957-1991
ANNUAL TOTAL	213323	213123	728
ANNUAL MEAN	584	584	1253
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	8650	6660	33000
LOWEST DAILY MEAN	39	36	30
ANNUAL SEVEN-DAY MINIMUM	41	37	31
ANNUAL RUNOFF (AC-FT)	423100	422700	527100
ANNUAL RUNOFF (CFSM)	2.57	2.57	3.21
ANNUAL RUNOFF (INCHES)	34.96	34.93	43.55
10 PERCENT EXCEEDS	1520	1270	1700
50 PERCENT EXCEEDS	324	359	337
90 PERCENT EXCEEDS	47	43	48

UMPQUA RIVER BASIN

14319500 NORTH UMPQUA RIVER AT WINCHESTER, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1967-69, 1971 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: January 1971 to September 1991 (discontinued).

INSTRUMENTATION.--Temperature recorder since 1971.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 26.5°C Aug. 10, 1972, Aug. 8, 9, 1978, Aug. 9, 10, 1981; minimum, 0.0°C on several days in water years 1972, 1974, 1977, 1980, 1984, 1989, 1991.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 26.0°C July 30; minimum, 0.0°C Dec. 21-27, 31, Jan. 1, 2.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	---	---	---	9.5	8.0	9.0	---	---	---	.0	.0	.0
2	---	---	---	9.0	8.0	8.5	---	---	---	.5	.0	.0
3	---	---	---	9.0	8.5	9.0	---	---	---	.5	.5	.5
4	---	---	---	9.0	8.5	9.0	6.0	5.5	6.0	1.0	.5	1.0
5	---	---	---	9.0	8.5	9.0	6.0	5.5	6.0	1.0	1.0	1.0
6	---	---	---	9.0	8.0	8.5	6.0	5.5	5.5	1.0	1.0	1.0
7	---	---	---	---	---	---	5.5	4.5	5.0	2.5	1.0	1.5
8	---	---	---	---	---	---	5.5	4.5	5.0	3.5	2.5	3.0
9	---	---	---	---	---	---	6.5	5.5	6.0	4.0	3.0	3.5
10	---	---	---	---	---	---	7.5	6.0	6.5	5.0	4.0	4.5
11	---	---	---	---	---	---	7.5	6.5	7.0	6.0	4.5	5.0
12	---	---	---	---	---	---	6.5	5.5	6.0	7.0	6.0	6.5
13	---	---	---	---	---	---	5.5	5.5	5.5	7.5	7.0	7.0
14	---	---	---	---	---	---	5.5	5.0	5.0	7.5	7.5	7.5
15	---	---	---	---	---	---	5.0	4.5	4.5	7.5	7.5	7.5
16	---	---	---	---	---	---	5.0	4.5	4.5	7.5	6.5	7.0
17	12.0	---	---	---	---	---	5.5	5.0	5.0	6.0	6.0	6.0
18	11.5	11.5	11.5	---	---	---	6.0	5.5	5.5	6.0	6.0	6.0
19	11.5	10.5	11.0	---	---	---	5.5	3.5	4.5	6.5	6.0	6.0
20	10.5	10.0	10.5	---	---	---	3.5	1.5	2.5	6.5	5.5	6.0
21	10.0	10.0	10.0	---	---	---	1.0	.0	.0	5.5	4.0	4.5
22	10.0	10.0	10.0	---	---	---	.0	.0	.0	4.0	3.0	3.5
23	11.0	9.5	10.0	---	---	---	.0	.0	.0	3.5	3.0	3.0
24	11.5	10.5	10.5	---	---	---	.0	.0	.0	3.5	3.0	3.5
25	11.5	10.5	11.0	---	---	---	.0	.0	.0	3.5	3.0	3.5
26	11.5	11.0	11.0	---	---	---	.0	.0	.0	3.0	2.5	3.0
27	11.5	11.0	11.0	---	---	---	.5	.0	.0	2.5	2.0	2.0
28	12.5	11.5	11.5	---	---	---	2.0	.5	1.5	2.5	2.0	2.0
29	12.5	11.0	11.5	---	---	---	2.0	1.0	1.5	2.5	2.0	2.0
30	11.0	9.5	10.5	---	---	---	1.0	1.0	1.0	2.0	1.5	2.0
31	10.5	9.5	10.0	---	---	---	1.0	.0	.0	3.0	1.5	2.0
MONTH	---	---	---	---	---	---	---	---	---	7.5	.0	3.5

UMPQUA RIVER BASIN

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14319500 NORTH UMPQUA RIVER AT WINCHESTER, OR--Continued
TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.5	3.0	3.5	8.0	7.0	7.5	10.5	9.5	9.5			
2	6.0	4.5	5.5	8.0	8.0	8.0	10.0	9.0	9.5			
3	6.5	6.0	6.0	8.5	7.5	8.0	9.5	8.5	8.5			
4	7.0	6.5	6.5	8.0	7.5	8.0	9.0	8.0	8.5			
5	7.5	7.0	7.5	7.5	6.5	7.0	9.0	8.5	9.0			
6	7.5	7.0	7.0	6.5	6.0	6.5	---	---	---			
7	7.0	6.5	6.5	7.0	6.0	6.5	---	---	---			
8	7.0	6.0	6.5	7.0	6.0	6.5	---	---	---			
9	6.5	6.0	6.0	7.0	6.0	6.5	---	---	---			
10	6.5	6.0	6.5	7.0	6.5	6.5	---	---	---			
11	7.0	6.5	6.5	6.5	6.0	6.0	---	---	---			
12	7.5	7.0	7.0	7.0	6.0	6.5	---	---	---			
13	8.0	7.5	7.5	7.0	6.5	6.5	---	---	---			
14	8.5	8.0	8.0	7.0	6.5	6.5	---	---	---			
15	8.5	8.0	8.5	7.0	6.0	6.5	---	---	---			
16	9.0	8.0	8.5	7.0	6.0	6.5	---	---	---			
17	9.0	8.5	8.5	7.5	6.0	7.0	---	---	---			
18	8.5	8.0	8.0	8.5	7.0	7.5	---	---	---			
19	8.0	7.5	7.5	8.5	7.0	8.0	---	---	---			
20	9.0	8.0	8.5	8.0	7.0	7.5	---	---	---			
21	9.0	8.0	8.5	7.0	6.5	6.5	---	---	---			
22	8.0	7.5	7.5	7.5	6.5	6.5	---	---	---			
23	8.0	7.0	7.5	7.5	7.0	7.0	---	---	---			
24	8.0	7.0	7.5	8.0	6.5	7.5	---	---	---			
25	7.5	6.5	7.0	7.5	7.0	7.0	---	---	---			
26	7.5	6.5	7.0	7.5	6.0	7.0	---	---	---			
27	7.5	7.0	7.0	8.5	6.5	7.5	---	---	---			
28	7.0	7.0	7.0	8.5	7.5	8.0	---	---	---			
29	---	---	---	9.0	7.0	8.0	---	---	---			
30	---	---	---	10.0	7.5	9.0	---	---	---			
31	---	---	---	10.5	9.0	9.5	---	---	---			
MONTH	9.0	3.0	7.0	10.5	6.0	7.0	---	---	---			

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	---	---	---	20.5	18.0	19.0	25.0	22.0	23.5	21.0	18.5	19.5
2	---	---	---	22.0	19.0	20.5	24.5	22.0	23.0	21.0	18.0	19.5
3	---	---	---	24.0	21.0	22.0	24.5	22.0	23.0	21.5	19.0	20.0
4	---	---	---	24.0	21.5	22.5	24.5	22.5	23.0	22.0	19.5	20.5
5	---	---	---	23.5	21.5	22.5	23.5	22.0	22.5	22.5	20.5	21.0
6	15.5	---	---	23.0	21.0	22.0	24.0	22.0	22.5	22.5	20.5	21.0
7	15.5	14.5	15.0	23.5	21.0	22.0	23.0	22.0	22.5	22.5	20.0	20.5
8	16.5	15.5	16.0	23.5	21.0	22.5	24.0	21.5	22.5	20.0	18.0	19.0
9	18.0	16.5	17.0	23.5	21.0	22.0	23.0	21.5	22.5	19.5	17.5	18.5
10	19.0	17.0	18.0	22.5	20.5	21.5	22.5	20.5	21.5	20.0	17.0	18.5
11	19.0	18.0	18.5	23.0	20.5	22.0	23.0	20.5	21.5	19.5	17.5	18.5
12	18.5	17.0	18.0	23.5	21.0	22.5	23.5	21.0	21.5	20.0	17.5	18.5
13	17.0	16.0	16.5	23.0	22.0	22.5	24.0	21.5	22.5	19.0	16.5	18.0
14	17.0	15.5	16.0	23.0	21.0	22.0	24.0	21.5	22.5	19.0	17.0	18.0
15	16.5	15.5	16.0	22.0	21.0	21.5	24.0	21.5	22.5	19.0	17.0	17.5
16	17.0	15.0	16.0	21.5	20.5	21.0	23.5	21.5	22.0	19.0	17.0	17.5
17	18.0	15.0	16.5	21.0	19.0	20.0	24.0	21.0	22.5	19.5	17.0	18.0
18	17.5	16.5	17.0	22.0	19.0	20.0	24.5	22.5	23.0	20.0	17.0	18.5
19	16.5	15.0	16.0	22.5	19.5	21.0	24.5	22.5	23.0	20.0	17.5	18.5
20	15.5	14.0	15.0	23.0	20.0	21.5	25.0	22.5	23.5	19.0	17.0	18.0
21	16.0	14.5	15.5	23.0	20.5	22.0	24.5	22.5	23.5	18.0	16.0	17.0
22	17.5	15.5	16.0	24.0	21.5	22.5	24.5	22.0	23.0	17.5	15.5	16.5
23	18.0	16.0	17.0	25.5	22.5	24.0	23.0	21.5	22.5	17.0	15.5	16.0
24	17.5	16.5	17.0	25.0	23.5	24.0	22.0	20.5	21.0	17.5	15.5	16.0
25	16.5	15.5	16.5	23.5	22.0	22.5	22.0	20.0	20.5	18.0	16.0	16.5
26	18.0	15.5	16.5	24.0	20.5	22.0	22.0	19.5	20.5	18.0	16.0	16.5
27	17.5	16.5	17.0	25.0	21.5	23.0	20.0	19.0	19.5	17.5	16.0	16.5
28	18.5	16.5	17.5	25.5	20.5	23.5	19.5	18.5	19.0	17.0	16.0	16.0
29	18.5	16.5	17.5	25.5	20.5	24.0	21.0	18.0	19.5	17.0	15.5	16.0
30	19.0	16.5	17.5	26.0	22.5	24.0	21.5	19.5	20.0	17.5	15.5	16.0
31	---	---	---	25.5	22.5	24.0	20.5	19.5	20.0	---	---	---
MONTH	---	---	---	26.0	18.0	22.0	25.0	18.0	22.0	22.5	15.5	18.0

UMPQUA RIVER BASIN

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, from topographic map.

REMARKS.--No estimated daily discharges. Records good. No diversion upstream from station. Several measurements of water temperature were made during the year.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,190 ft³/s Jan. 10, 1989, gage height, 3.61 ft, from rating curve extended above 340 ft³/s; 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)
Mar. 4	1830	*266	*2.97	No other peak greater than base discharge.			
No flow Oct. 1-5, Aug. 16-27, Sept. 4-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.00	9.2	21	8.7	3.4	6.1	7.7	8.2	6.1	1.5	.04	.03
2	.00	4.2	20	7.8	5.0	13	7.6	7.0	4.9	1.3	.03	.03
3	.00	2.6	16	7.2	6.8	58	6.9	6.3	4.3	1.1	.03	.02
4	.00	5.4	14	6.8	16	159	6.9	5.6	3.8	.93	.03	.00
5	.00	11	16	6.1	55	118	27	5.1	3.5	.78	.01	.00
6	.01	9.5	14	5.8	36	60	52	4.8	3.3	.70	.02	.00
7	.04	6.1	11	9.5	23	45	54	4.5	3.0	.64	.02	.00
8	.04	4.5	8.6	20	17	35	35	8.3	2.8	.57	.03	.00
9	.04	3.9	7.4	21	13	29	42	13	2.5	.51	.08	.00
10	.03	3.6	88	33	11	28	44	15	2.4	.46	.37	.00
11	.03	3.0	71	46	9.2	29	40	13	2.2	.45	.19	.00
12	.05	2.4	34	112	8.1	51	31	12	2.1	.40	.11	.00
13	.09	14	22	77	11	67	23	16	1.9	.36	.07	.00
14	.14	31	16	53	11	56	18	22	1.9	.34	.05	.00
15	.15	12	14	45	10	58	15	20	1.7	.37	.01	.00
16	.18	7.1	11	31	10	43	12	18	1.6	.78	.00	.00
17	.18	5.4	9.4	23	11	31	10	144	1.5	1.4	.00	.00
18	.98	7.4	29	17	14	23	9.3	173	1.4	.90	.00	.00
19	1.6	8.2	40	13	17	19	8.7	83	2.3	.61	.00	.00
20	.79	11	27	10	17	16	7.9	44	6.2	.45	.00	.00
21	.68	26	22	8.4	15	14	7.4	27	4.0	.35	.00	.00
22	2.0	20	18	7.3	12	14	6.8	17	3.0	.28	.00	.00
23	1.2	12	15	6.5	10	20	6.4	13	2.5	.28	.00	.00
24	.74	8.1	13	5.8	8.6	64	6.9	9.9	2.2	.21	.00	.00
25	.78	31	12	5.3	7.7	41	9.7	8.1	2.1	.18	.00	.00
26	2.2	36	7.8	4.8	7.1	26	13	6.8	2.1	.20	.00	.00
27	2.5	22	7.3	4.4	6.6	17	14	6.1	1.8	.16	.00	.00
28	2.7	15	11	4.0	6.2	13	13	5.5	2.0	.13	.01	.00
29	2.9	14	13	3.7	---	11	11	6.1	2.1	.11	.16	.00
30	8.3	23	12	3.9	---	9.1	9.3	6.8	1.7	.08	.09	.00
31	18	---	10	3.5	---	8.2	---	6.6	---	.06	.03	---
TOTAL	46.35	368.6	630.5	610.5	377.7	1181.4	555.5	735.7	82.9	16.59	1.38	0.08
MEAN	1.50	12.3	20.3	19.7	13.5	38.1	18.5	23.7	2.76	.54	.045	.003
MAX	.18	.36	.88	.112	.55	.159	.54	.173	.62	1.5	.37	.03
MIN	.00	2.4	7.3	3.5	3.4	6.1	6.4	4.5	1.4	.06	.00	.00
AC-FT	.92	.731	1250	1210	.749	2340	1100	1460	.164	.33	2.7	.2
CFSM	.16	1.34	2.21	2.14	1.47	4.15	2.01	2.58	.30	.06	.00	.00
IN.	.19	1.49	2.55	2.47	1.53	4.78	2.25	2.98	.34	.07	.01	.00

CAL YR 1990 TOTAL 3962.25 MEAN 10.9 MAX 176 MIN .00 AC-FT 7860 CFSM 1.18 IN. 16.04
WTR YR 1991 TOTAL 4607.20 MEAN 12.6 MAX 173 MIN .00 AC-FT 9140 CFSM 1.37 IN. 18.65

UMPQUA RIVER BASIN

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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 National Geodetic Vertical Datum of 1929. Prior to June 22, 1968, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Records good for flows above 50 ft³/s, fair below. Diversion upstream from station for municipal supply of cities of Sutherlin and Oakland. Small diversions by pumping for irrigation upstream from station.

AVERAGE DISCHARGE.--23 years (water years 1956-73, 1987-91), 460 ft³/s, 29.75 in/yr, 333,300 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 26,600 ft³/s Nov. 23, 1961, gage height, 21.55 ft; no flow Sept. 9-11, 1966, Sept. 8, 1988.

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)
Mar. 4	1630	*4,280	*10.11				
Minimum discharge, 1.4 ft ³ /s Sept. 22, 23.							

 DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.5	292	755	280	159	224	355	276	233	64	4.9	5.8
2	7.0	143	739	250	308	504	357	242	206	58	4.9	5.8
3	6.9	88	584	232	424	1890	325	218	181	54	5.0	5.4
4	8.3	91	516	216	621	3020	344	196	162	47	5.1	5.3
5	6.8	306	505	197	1630	2540	455	178	149	42	4.7	4.9
6	9.6	276	430	184	1010	1620	998	165	138	38	4.6	4.2
7	11	186	372	262	702	1340	1130	163	128	36	4.9	3.6
8	9.4	161	315	345	548	1020	946	289	120	34	5.5	3.3
9	8.2	204	295	347	453	852	1120	383	112	30	6.7	2.8
10	7.3	165	1450	641	393	973	1210	388	104	28	6.3	3.0
11	7.2	124	1480	1020	342	891	1110	365	98	26	14	3.2
12	8.2	98	898	2760	327	1410	905	323	97	24	9.7	3.2
13	11	151	697	2040	625	1550	735	342	95	23	5.7	2.9
14	16	739	577	1880	543	1260	638	412	91	21	4.1	2.8
15	17	377	478	1860	473	1120	601	368	86	20	3.8	2.6
16	18	242	408	1310	434	920	519	321	82	22	3.2	2.5
17	26	186	342	946	461	749	457	1260	79	35	2.9	2.2
18	30	250	882	745	545	654	407	2990	75	48	3.2	2.4
19	53	229	1160	602	661	598	374	2210	98	38	3.8	2.1
20	33	295	786	502	606	526	333	1380	187	30	3.5	1.9
21	19	595	579	428	523	492	328	992	127	26	3.5	1.7
22	55	576	501	374	452	479	289	772	101	23	3.1	1.6
23	57	407	413	328	393	549	261	614	95	20	2.9	1.5
24	29	308	355	290	343	1000	279	504	88	19	3.3	1.8
25	19	816	302	261	302	832	382	431	83	17	3.2	2.2
26	18	1060	288	235	267	691	391	373	80	16	3.6	2.3
27	42	735	317	213	241	557	414	323	77	16	3.2	2.6
28	29	599	475	196	226	470	386	284	73	13	3.4	2.7
29	49	540	429	182	---	415	353	268	71	9.3	4.4	2.7
30	51	845	363	168	---	379	310	334	69	6.3	5.7	2.9
31	401	---	316	166	---	363	---	279	---	5.3	5.8	---
TOTAL	1069.4	11084	18007	19460	14012	29888	16712	17643	3385	888.9	148.6	91.9
MEAN	34.5	369	581	628	500	964	557	569	113	28.7	4.79	3.06
MAX	401	1060	1480	2760	1630	3020	1210	2990	233	64	14	5.8
MIN	6.5	88	288	166	159	224	261	163	69	5.3	2.9	1.5
AC-FT	2120	21990	35720	38600	27790	59280	33150	34990	6710	1760	295	182
CFSM	.16	1.76	2.77	2.99	2.38	4.59	2.65	2.71	.54	.14	.02	.01
IN.	.19	1.96	3.19	3.45	2.48	5.29	2.96	3.13	.60	.16	.03	.02

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1956 - 1991, BY WATER YEAR (WY)

	MEAN	66.0	483	1073	1194	943	889	449	286	99.1	27.2	10.8	13.9
MAX	329	1240	3856	2296	2229	1912	1342	912	248	59.7	28.7	35.0	
(WY)	1957	1962	1956	1956	1961	1961	1963	1963	1988	1969	1968	1971	
MIN	6.48	48.9	104	120	290	208	164	58.0	24.8	9.05	2.58	3.06	
(WY)	1988	1988	1990	1963	1973	1965	1987	1966	1987	1973	1966	1991	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1956 - 1991

ANNUAL TOTAL	116190.8			132389.8			460		
ANNUAL MEAN	318			363			905		1956
HIGHEST ANNUAL MEAN							250		1973
LOWEST ANNUAL MEAN							15200		1955
HIGHEST DAILY MEAN	3490	Jan 8		3020	Mar 4				
LOWEST DAILY MEAN	2.6	Sep 25		1.5	Sep 23				
ANNUAL SEVEN-DAY MINIMUM	3.4	Sep 21		1.8	Sep 19		.00	Sep 9	1966
ANNUAL RUNOFF (AC-FT)	230500			262600			.83	Sep 6	1966
ANNUAL RUNOFF (CFSM)	1.52			1.73			2.19		
ANNUAL RUNOFF (INCHES)	20.58			23.45			29.74		
10 PERCENT EXCEEDS	881			930			1200		
50 PERCENT EXCEEDS	126			241			144		
90 PERCENT EXCEEDS	6.4			3.7			8.9		

UMPQUA RIVER BASIN
14321000 UMPQUA RIVER NEAR ELKTON, OR--Continued

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WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: April 1971 to current year.

INSTRUMENTATION.--Temperature recorder since April 1971.

REMARKS.--Chemical analyses available October 1965 to September 1986.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 30.0°C July 14, 1971; minimum, 0.0°C Jan. 7, 8, 11, 12, and probably Jan. 9, 10, 1974, Feb. 6-9, 1989, Dec. 22-27, 29-31, 1990, Jan. 1, 2, 1991.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 26.0°C July 23; minimum, 0.0°C Dec. 22-27, 29-31, Jan. 1, 2.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	19.0	17.5	18.0	12.0	10.5	11.5	6.5	6.0	6.5	.5	.0	.5
2	17.5	17.0	17.5	10.5	10.0	10.0	6.0	6.0	6.0	.5	.0	.5
3	17.5	17.0	17.5	10.5	10.0	10.5	6.0	6.0	6.0	.5	.5	.5
4	18.0	17.5	17.5	10.5	10.5	10.5	6.5	6.0	6.0	.5	.5	.5
5	17.5	17.5	17.5	10.5	10.0	10.0	6.0	6.0	6.0	1.0	.5	.5
6	17.5	16.0	16.5	10.0	9.0	9.5	6.0	6.0	6.0	1.0	1.0	1.0
7	16.0	14.5	15.5	9.0	9.0	9.0	6.0	6.0	6.0	2.0	1.0	1.5
8	15.0	14.0	14.5	9.5	9.0	9.5	6.0	6.0	6.0	2.5	2.0	2.0
9	14.5	13.5	14.0	10.0	9.5	10.0	6.0	6.0	6.0	3.0	2.5	2.5
10	14.5	14.0	14.5	9.5	9.0	9.5	6.5	6.0	6.5	4.0	3.5	3.5
11	14.5	13.0	14.0	10.0	9.5	10.0	7.0	6.5	7.0	5.0	4.0	4.5
12	13.5	13.0	13.5	10.0	9.5	10.0	7.0	7.0	7.0	7.0	5.0	6.0
13	13.5	13.0	13.5	9.5	9.0	9.5	7.0	6.0	6.5	7.5	7.0	7.5
14	13.5	13.0	13.0	9.0	9.0	9.0	6.0	5.5	6.0	8.0	7.5	8.0
15	13.5	13.0	13.0	9.0	8.0	8.5	5.5	5.0	5.5	8.0	8.0	8.0
16	13.5	13.0	13.5	8.0	8.0	8.0	5.0	5.0	5.0	8.0	7.5	8.0
17	13.5	12.5	13.0	8.0	7.5	8.0	5.5	5.0	5.5	7.5	6.5	7.0
18	13.0	12.5	13.0	7.5	7.0	7.5	5.5	5.5	5.5	6.5	6.5	6.5
19	12.5	12.5	12.5	7.0	7.0	7.0	5.5	4.5	5.0	6.5	6.5	6.5
20	12.5	12.0	12.0	7.0	6.5	6.5	4.5	2.5	3.5	6.5	6.0	6.5
21	12.0	12.0	12.0	7.5	6.5	7.0	2.5	.5	1.5	6.5	5.5	6.0
22	12.0	11.5	12.0	7.5	7.5	7.5	.5	.0	.0	5.5	5.0	5.5
23	12.5	11.5	12.0	8.0	7.5	7.5	.0	.0	.0	5.0	4.5	4.5
24	12.0	12.0	12.0	8.0	8.0	8.0	.0	.0	.0	4.5	4.0	4.5
25	12.5	11.5	12.0	8.0	8.0	8.0	.0	.0	.0	4.0	3.5	4.0
26	12.5	12.0	12.5	8.0	7.5	7.5	.0	.0	.0	4.0	3.5	3.5
27	13.0	12.5	12.5	7.5	7.0	7.0	.5	.0	.5	3.5	3.0	3.5
28	13.5	13.0	13.0	7.0	7.0	7.0	1.0	.5	1.0	3.5	3.0	3.0
29	13.5	13.0	13.0	7.0	7.0	7.0	.5	.0	.5	3.0	3.0	3.0
30	13.0	12.5	13.0	6.5	6.5	6.5	.5	.0	.5	3.0	2.5	2.5
31	12.5	12.0	12.5	---	---	---	.5	.0	.5	3.0	2.5	3.0
MONTH	19.0	11.5	14.0	12.0	6.5	8.5	7.0	.0	4.0	8.0	.0	4.0

UMPQUA RIVER BASIN

14321000 UMPQUA RIVER NEAR ELKTON, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	4.5	3.0	3.5	9.0	8.5	8.5	10.5	10.5	10.5	12.5	11.0	11.5
2	5.0	4.5	5.0	8.5	8.5	8.5	11.0	10.5	10.5	13.0	12.0	12.5
3	6.0	5.0	5.5	9.0	8.5	8.5	10.0	10.0	10.0	13.5	12.5	13.0
4	7.5	6.5	7.0	8.5	8.5	8.5	10.0	10.0	10.0	14.0	12.5	13.0
5	8.0	7.5	7.5	8.5	7.5	8.0	10.0	9.5	10.0	14.0	13.5	13.5
6	8.0	7.5	8.0	7.5	7.0	7.5	9.5	9.0	9.5	14.0	13.5	14.0
7	8.0	7.5	8.0	7.5	7.0	7.0	9.0	8.0	8.5	14.0	13.5	13.5
8	8.0	7.5	7.5	7.5	7.0	7.5	8.0	8.0	8.0	13.5	12.5	13.0
9	8.0	7.5	7.5	7.5	7.0	7.0	8.5	7.5	8.0	12.5	11.5	12.0
10	7.5	7.5	7.5	7.0	7.0	7.0	8.0	7.5	8.0	11.5	10.5	11.0
11	8.0	7.5	7.5	7.0	7.0	7.0	8.0	7.0	7.5	11.0	10.0	10.5
12	8.0	7.5	7.5	7.0	6.5	7.0	8.5	7.0	8.0	10.5	10.0	10.5
13	8.5	8.0	8.5	7.5	7.0	7.0	9.5	8.0	8.5	11.0	10.5	10.5
14	9.5	8.5	9.0	7.5	7.0	7.0	10.5	9.0	9.5	12.5	11.0	11.5
15	9.5	9.0	9.5	7.5	7.0	7.0	10.5	9.5	10.0	12.5	12.0	12.5
16	9.5	9.0	9.5	7.0	6.5	7.0	10.0	9.5	9.5	13.5	12.5	13.0
17	9.5	9.0	9.0	8.0	7.0	7.5	10.0	9.5	9.5	13.0	12.0	12.5
18	9.0	9.0	9.0	8.0	7.5	8.0	10.5	9.5	10.0	12.0	9.0	10.5
19	9.0	9.0	9.0	9.0	8.0	8.5	11.5	10.5	11.0	9.0	8.5	8.5
20	9.0	8.5	9.0	9.0	8.0	8.5	12.0	11.5	11.5	9.5	8.5	9.0
21	9.5	9.0	9.0	8.5	8.0	8.0	12.0	11.5	12.0	10.5	9.5	10.0
22	9.5	9.0	9.0	8.0	7.5	7.5	13.0	11.5	12.0	12.5	10.5	11.5
23	9.0	8.5	8.5	7.5	7.5	7.5	13.0	12.5	12.5	13.5	12.0	12.5
24	9.0	8.0	8.5	8.0	7.5	8.0	12.5	12.0	12.0	13.5	12.5	13.0
25	9.5	8.5	9.0	8.0	8.0	8.0	12.0	11.5	11.5	13.5	12.5	13.0
26	9.5	8.5	9.0	8.5	7.5	8.0	11.5	10.0	10.5	14.0	13.0	13.5
27	9.0	8.5	9.0	8.5	7.5	8.0	10.5	9.5	10.0	14.0	13.5	14.0
28	9.0	8.5	8.5	8.5	8.0	8.0	10.0	9.0	9.5	14.5	13.0	13.5
29	---	---	---	9.0	8.0	8.5	11.0	9.5	10.0	14.0	13.0	13.5
30	---	---	---	10.0	8.5	9.0	11.0	10.0	10.5	14.0	12.5	13.0
31	---	---	---	10.5	9.5	10.0	---	---	---	14.5	12.5	13.5
MONTH	9.5	3.0	8.0	10.5	6.5	8.0	13.0	7.0	10.0	14.5	8.5	12.0

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	15.5	13.5	14.5	21.5	18.5	20.0	---	---	---	20.5	19.5	20.0
2	16.5	15.0	15.5	23.0	20.5	21.5	---	---	---	20.5	19.0	20.0
3	17.5	15.5	16.5	24.5	22.0	23.0	---	---	---	21.5	20.0	20.5
4	17.5	15.5	16.5	24.5	22.5	23.5	---	---	---	22.0	20.5	21.5
5	17.5	15.5	16.5	24.5	22.5	23.5	---	---	---	22.5	21.5	22.0
6	17.5	16.0	16.5	24.0	22.5	23.5	---	---	---	22.5	21.5	22.0
7	17.5	16.0	17.0	24.5	22.5	23.5	---	---	---	22.0	21.0	21.5
8	18.5	16.5	17.5	24.5	22.5	23.5	---	---	---	21.0	20.0	20.5
9	20.0	17.5	18.5	23.5	22.0	23.0	---	---	---	20.0	19.0	20.0
10	21.0	18.5	19.5	23.5	21.5	22.5	---	---	---	20.0	19.0	19.5
11	21.0	19.5	20.0	24.0	22.0	23.0	---	---	---	20.0	19.5	20.0
12	20.0	19.0	19.5	24.5	22.0	23.5	---	---	---	20.0	19.0	20.0
13	19.0	18.0	18.5	24.0	22.5	23.5	---	---	---	20.0	19.0	19.5
14	19.0	17.5	18.0	23.5	22.0	23.0	---	22.0	---	19.5	18.5	19.0
15	18.5	17.5	18.0	23.0	22.0	22.5	23.5	22.0	23.0	19.5	18.0	19.0
16	18.0	17.0	17.5	22.5	21.5	22.0	23.0	22.0	22.5	19.5	18.5	19.0
17	18.5	16.5	17.5	22.0	21.0	21.5	23.5	22.0	23.0	20.0	19.0	19.5
18	18.0	17.5	18.0	23.0	21.0	22.0	23.5	22.5	23.0	20.5	19.5	20.0
19	18.0	16.5	17.5	23.0	21.5	22.0	23.5	22.5	23.0	21.0	20.0	20.5
20	16.5	16.0	16.5	23.5	21.5	22.5	24.0	23.0	23.5	20.5	19.5	20.0
21	17.0	16.0	16.5	23.5	21.5	22.5	24.0	22.5	23.5	19.5	18.0	18.5
22	17.5	16.0	16.5	24.5	22.0	23.5	23.5	22.5	23.0	18.5	17.5	18.0
23	18.5	17.0	17.5	26.0	24.0	25.0	23.0	22.0	22.5	18.0	17.0	17.5
24	18.0	17.5	17.5	25.5	24.0	24.5	22.0	21.0	21.5	18.5	17.5	18.0
25	17.5	17.0	17.5	24.5	23.0	23.5	21.5	20.5	21.0	19.0	18.0	18.5
26	18.5	17.0	17.5	24.0	22.0	23.0	21.5	20.0	21.0	18.5	18.0	18.5
27	18.5	17.5	18.0	24.5	22.5	23.5	21.0	19.5	20.5	18.5	17.5	18.0
28	19.5	18.0	18.5	25.0	23.0	24.0	20.0	19.5	19.5	18.0	17.0	17.5
29	19.0	18.5	18.5	25.5	23.5	24.5	21.0	19.5	20.0	18.0	17.0	17.5
30	19.5	18.0	18.5	---	24.0	---	21.0	20.0	20.5	18.0	17.0	17.5
31	---	---	---	---	---	---	21.0	20.5	20.5	---	---	---
MONTH	21.0	13.5	17.5	---	---	---	---	---	---	22.5	17.0	19.5

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.

GAGE.--Water-stage recorder and crest-stage gage. Datum of gage is 463.99 ft above National Geodetic Vertical Datum of 1929 (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.--No estimated daily discharges. Records for flows greater than 10 ft³/s good, those below fair.

AVERAGE DISCHARGE.--8 years (water years 1969-71, 1987-91), 50.2 ft³/s, 23.75 in/yr, 36,370 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 2,320 ft³/s Jan. 10, 1988, gage height, 6.77 ft, from crest-stage gage; maximum gage height, 7.74 ft Dec 21, 1969; minimum discharge, 0.36 ft³/s Sept. 9, 1971.

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)
Mar. 4	2000	*821	4.94	No other peak greater than base discharge.			
Mar. 4	2000	(a)	*5.36				

Minimum discharge, 0.81 ft³/s Sept. 24, 26.

(a) From outside high-water mark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1.6	35	107	33	18	24	34	24	23	7.0	2.2	2.1
2	1.7	18	104	30	32	71	32	22	20	6.7	2.2	2.1
3	1.8	13	77	28	47	261	29	20	18	6.1	2.1	1.9
4	1.8	22	71	26	65	554	35	18	17	5.7	2.0	1.6
5	2.8	38	61	23	216	385	108	17	15	5.0	2.0	1.4
6	2.7	30	51	22	126	212	153	16	15	5.0	2.0	1.3
7	2.3	22	43	32	85	172	189	17	14	4.9	2.1	1.3
8	2.2	19	38	37	63	127	145	45	14	4.6	2.1	1.3
9	1.9	17	37	38	51	99	155	51	12	4.5	2.2	1.3
10	1.9	15	214	71	43	116	150	50	12	4.3	2.4	1.3
11	1.8	13	170	119	38	112	139	44	11	4.5	2.3	1.3
12	1.9	11	103	479	34	257	107	38	10	3.9	2.2	1.2
13	2.2	58	76	303	46	285	81	36	10	3.9	2.0	1.1
14	2.2	121	60	245	43	188	68	40	10	3.9	1.8	1.0
15	2.7	51	49	223	39	152	64	35	9.2	4.0	1.8	1.0
16	3.0	33	42	140	37	118	53	32	9.2	4.5	1.8	.98
17	3.2	27	35	99	39	90	45	316	8.9	5.8	1.7	.95
18	8.2	46	85	77	46	72	40	520	8.5	5.2	1.6	.95
19	9.0	40	109	60	56	60	36	316	11	4.2	1.7	.93
20	5.1	52	77	49	55	50	33	175	18	4.1	1.7	.93
21	5.6	105	57	42	48	47	30	116	12	3.8	1.6	.89
22	11	77	46	36	42	43	27	83	11	3.4	1.5	.85
23	7.0	50	39	33	37	65	26	62	9.5	3.3	1.4	.86
24	5.1	38	33	29	33	211	28	49	8.9	3.1	1.5	.89
25	4.7	187	30	27	30	137	32	41	8.8	3.0	1.5	.88
26	7.2	168	29	25	27	100	32	36	8.8	3.0	1.5	.87
27	8.0	103	34	22	25	73	31	31	8.2	3.0	1.6	.85
28	8.3	76	57	21	24	57	28	28	8.2	2.8	2.0	.89
29	8.9	76	48	20	---	48	27	27	8.2	2.7	2.4	.93
30	30	112	41	19	---	42	25	33	7.9	2.5	2.3	.97
31	62	---	36	18	---	37	---	26	---	2.4	2.0	---
TOTAL	217.8	1673	2059	2426	1445	4265	1982	2364	357.3	130.8	59.2	34.82
MEAN	7.03	55.8	66.4	78.3	51.6	138	66.1	76.3	11.9	4.22	1.91	1.16
MAX	62	187	214	479	216	554	189	520	23	7.0	2.4	2.1
MIN	1.6	11	29	18	18	24	25	16	7.9	2.4	1.4	.85
AC-FT	432	3320	4080	4810	2870	8460	3930	4690	709	259	117	69
CFSM	.24	1.94	2.31	2.73	1.80	4.79	2.30	2.66	.41	.15	.07	.04
IN.	.28	2.17	2.67	3.14	1.87	5.53	2.57	3.06	.46	.17	.08	.05

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1968 - 1991, BY WATER YEAR (WY)

	MEAN	5.37	55.5	106	164	90.1	102	50.6	31.5	11.1	3.47	1.67	2.10
	MAX	10.1	104	193	253	152	184	94.8	76.3	21.5	4.48	2.20	4.01
	(WY)	1970	1987	1970	1970	1990	1972	1972	1991	1988	1971	1989	1971
	MIN	1.51	5.55	15.6	78.3	31.1	44.4	21.0	8.16	3.38	1.79	1.00	1.01
	(WY)	1988	1988	1990	1991	1988	1988	1987	1987	1987	1970	1988	1988

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1968 - 1991

ANNUAL TOTAL	14550.60	17013.92	
ANNUAL MEAN	39.9	46.6	47.9
HIGHEST ANNUAL MEAN			69.4
LOWEST ANNUAL MEAN			31.6
HIGHEST DAILY MEAN	444	554	1400
LOWEST DAILY MEAN	.96	.85	.57
ANNUAL SEVEN-DAY MINIMUM	1.0	.87	.61
ANNUAL RUNOFF (AC-FT)	28860	33750	34710
ANNUAL RUNOFF (CFSM)	1.39	1.62	1.67
ANNUAL RUNOFF (INCHES)	18.86	22.05	22.68
10 PERCENT EXCEEDS	104	117	126
50 PERCENT EXCEEDS	16	26	17
90 PERCENT EXCEEDS	1.6	1.7	1.5

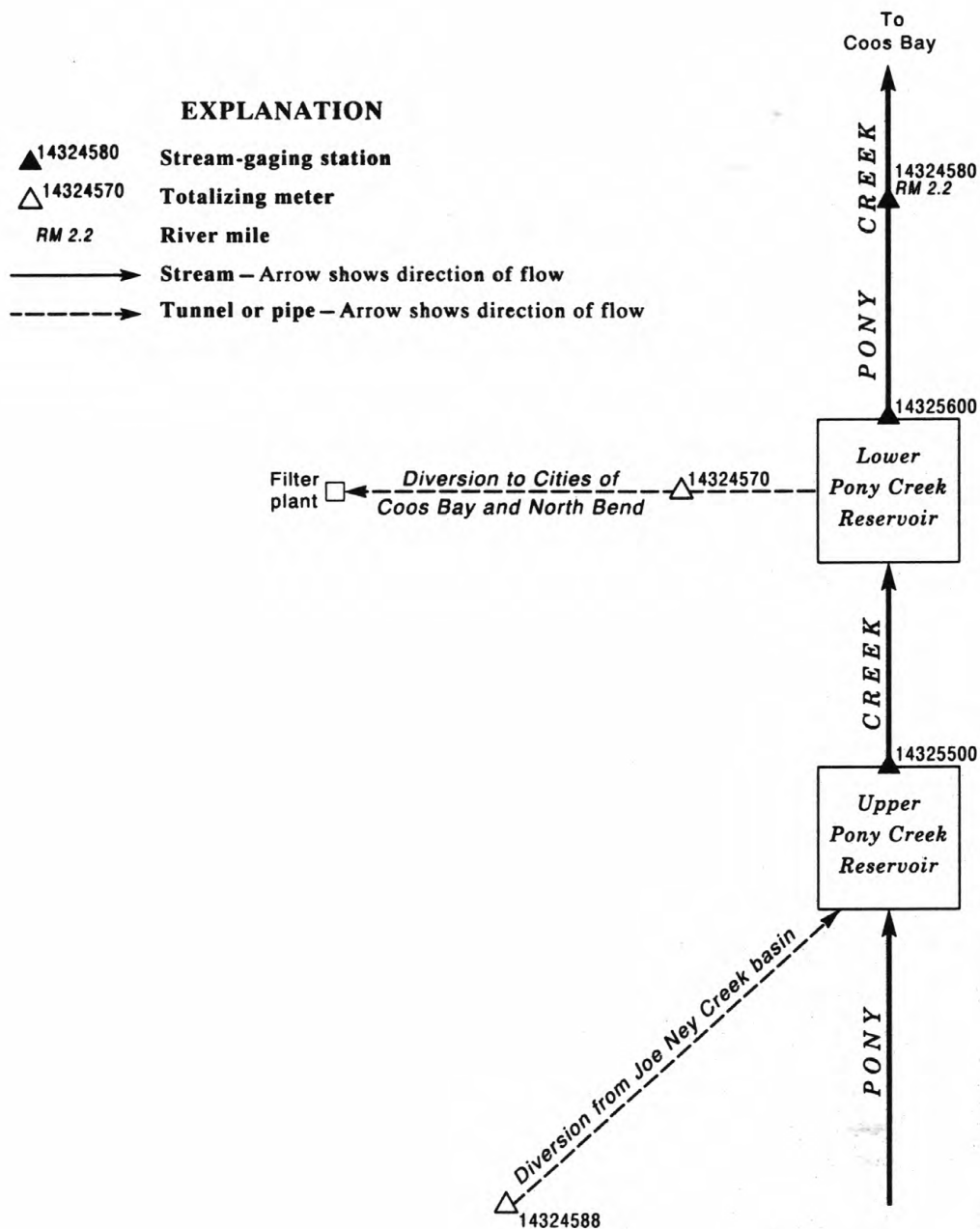


Figure 18.--Schematic diagram showing gaging stations and diversions on Pony Creek.

COOS RIVER BASIN

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14324580 PONY CREEK AT COOS BAY, OR

LOCATION.--Lat 43°22'50", long 124°14'25", in NE 1/4 NE 1/4 sec.28, T.25 S., R.13 W., Coos County, Hydrologic Unit 17100304, at the downstream end of culvert under Ocean Boulevard, in Coos Bay, and at mile 2.2.

DRAINAGE AREA.--3.90 mi².

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

GAGE.--Water-stage recorder. Datum of gage is at 12.23 ft above National Geodetic Vertical Datum of 1929 (Coos Bay-North Bend Water Board bench mark). Oct. 1, 1982, to September 30, 1987, gage at site 260 ft upstream set at National Geodetic Vertical Datum of 1929.

REMARKS.--Records good above 1.0 ft³/s, poor below. 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.--16 years, 10.1 ft³/s, 35.17 in/yr, 7,320 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 July 28, Sept. 15, 29, Oct. 4-8, Oct. 26 to Nov. 2, 1988, during construction of new dam for Lower Pony Creek Reservoir.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 52 ft³/s Mar. 4, gage height, 3.65 ft; minimum daily discharge, 0.02 ft³/s many days November through January.

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 1990 TO SEPTEMBER 1991

	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	7.1	323.7	+18.4	+75.0	424.2 2.04
November.....	0	23.1	314.6	+43.8	+407.0	788.5 3.79
December.....	0	443.6	396.0	+4.5	-120.0	724.1 3.48
CAL YR 1990...	-270.5	2,165.2	3,988.6	+85.4	+346.0	6,239.8 30.36
January.....	0	21.4	364.6	-11.0	+203.0	578.0 2.78
February.....	0	70.8	322.4	+7.4	+133.0	533.6 2.57
March.....	0	858.3	343.8	+9.4	+10.0	1,221.5 5.87
April.....	0	398.9	333.8	-6.1	-8.0	718.6 3.46
May.....	0	156.0	423.6	-13.5	-40.0	562.1 2.70
June.....	0	3.9	388.4	-54.2	-139.0	199.1 0.96
July.....	-70.6	2.1	471.1	+43.2	-335.0	110.8 0.53
August.....	-92.6	3.4	436.9	-6.6	-272.0	69.1 0.33
September.....	-75.0	1.8	395.6	-46.8	-266.0	9.6 0.05
WTR YR 1991...	-238.2	1,990.4	4,514.5	-11.5	-316.0	5,864.3 28.56

COOS RIVER BASIN

14324580 PONY CREEK AT COOS BAY, OR--Continued

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.05	e1.10	e1.3	e2.8	.78	.61	6.3	1.1	.05	.03	.03	.03
2	.05	e.02	e1.9	e2.7	6.7	5.3	4.6	.38	.04	.03	.03	.04
3	.05	e.02	e.74	e1.8	6.9	20	5.0	.35	.05	.04	.03	.03
4	.05	e.02	e.23	e.02	2.6	40	4.3	.25	.08	.06	.03	.03
5	.05	e.02	e.02	e.02	.56	37	14	.17	.11	.07	.03	.03
6	.04	e.02	e.02	e.02	.09	28	20	.18	.11	.03	.04	.03
7	.05	e.02	e.02	e.02	.09	16	18	2.3	.11	.03	.04	.03
8	.05	e.02	e.02	e.02	.08	13	15	.14	.11	.03	.04	.03
9	.05	e.02	e.02	.07	.07	12	13	.12	.07	.03	.11	.03
10	.05	e.02	e.75	.11	.07	17	12	8.3	.07	.03	.11	.03
11	.05	e.02	e1.5	.12	.08	16	9.4	6.1	.07	.03	.13	.03
12	.05	e.02	e.43	.13	.10	20	7.5	5.4	.07	.03	.46	.03
13	.05	e.02	e.02	.12	.12	18	6.9	5.7	.06	.03	.06	.03
14	.05	e.02	e1.8	.12	.08	20	8.3	3.7	.06	.03	.03	.03
15	.07	e.02	12	.39	.08	16	7.3	2.2	.07	.03	.03	.03
16	.09	e.02	18	.41	.11	13	5.0	1.4	.07	.04	.03	.03
17	.05	e.02	19	.09	.09	11	3.8	1.6	.07	.03	.03	.03
18	.60	e.02	21	.09	.10	10	2.9	2.4	.07	.03	.03	.03
19	.05	e.02	19	.08	.62	8.9	2.5	3.4	.08	.04	.03	.03
20	.05	e.02	20	.08	2.2	7.3	2.9	3.3	.07	.03	.03	.03
21	.08	e.02	17	.07	2.6	7.7	2.6	1.4	.07	.03	.03	.03
22	.07	e.02	16	.09	2.1	7.2	3.0	1.0	.08	.06	.03	.03
23	.06	e.02	13	.12	2.5	9.7	1.6	.71	.08	.03	.03	.03
24	.05	e.02	12	.08	2.3	16	2.0	.43	.04	.03	.03	.03
25	.09	e2.6	12	.30	2.3	14	3.8	.22	.04	.03	.03	.03
26	.06	e2.6	12	.06	1.0	12	4.7	.16	.03	.03	.03	.03
27	.08	3.0	11	.06	.59	9.4	3.7	.22	.03	.03	.04	.03
28	.11	e1.4	3.7	.35	.79	7.6	3.9	.13	.03	.03	.04	.03
29	.19	e.63	3.3	.22	---	7.7	4.1	.06	.03	.03	.03	.03
30	1.0	e.88	3.1	.13	---	6.2	3.0	.06	.03	.03	.03	.03
31	.20	---	e2.8	.08	---	6.1	---	.05	---	.03	.04	---
TOTAL	3.59	11.67	223.67	10.77	35.70	432.71	201.1	78.67	1.95	1.06	1.71	0.91
MEAN	.12	.39	7.22	.35	1.27	14.0	6.70	2.54	.065	.034	.055	.030
MAX	1.0	3.0	21	2.8	6.9	40	20	14	.11	.07	.46	.04
MIN	.04	.02	.02	.02	.07	.61	1.6	.05	.03	.03	.03	.03
AC-FT	7.1	23	444	21	71	858	399	156	3.9	2.1	3.4	1.8

CAL YR 1990 TOTAL 1091.67 MEAN 2.99 MAX 85 MIN .02 AC-FT 2170
WTR YR 1991 TOTAL 1003.51 MEAN 2.75 MAX 40 MIN .02 AC-FT 1990

e Estimated

COQUILLE RIVER BASIN

387

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 National Geodetic Vertical Datum of 1929. Prior to Nov. 17, 1938, nonrecording gage at various sites within 1 mi of present site at different datums.

REMARKS.--No estimated daily discharges. Records good. No regulation. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--72 years (water years 1917-26, 1930-91), 782 ft³/s, 62.84 in/yr, 566,600 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, 8.8 ft³/s Sept. 28, 1987.

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)
Mar. 4	1430	*8,590	*9.07				
Minimum discharge, 13 ft ³ /s Sept. 26, 27.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	19	655	1030	290	201	212	760	376	287	76	32	29
2	18	337	1050	265	1550	1760	712	339	259	73	32	26
3	18	227	835	249	1750	4620	640	307	237	69	32	23
4	18	184	968	240	2530	6620	595	280	218	67	31	22
5	19	209	1040	227	3470	4410	1870	257	204	64	31	21
6	19	219	784	224	2130	2580	1990	244	193	61	31	20
7	18	187	615	602	1390	1960	1850	426	180	60	30	20
8	17	241	493	711	1010	1490	1510	943	169	58	28	20
9	17	274	430	606	781	1240	2030	638	160	57	29	20
10	17	211	1250	881	640	1290	1710	538	151	55	31	20
11	16	169	1170	2050	542	1280	1340	471	145	53	30	19
12	17	140	887	6650	475	2960	1080	421	137	51	28	19
13	19	399	708	3630	446	2320	890	436	130	50	27	19
14	21	945	578	2460	404	1830	787	400	125	50	26	19
15	20	519	505	2020	364	1630	800	359	119	50	26	19
16	22	353	486	1580	347	1410	744	369	116	55	26	18
17	23	281	428	1220	344	1170	662	1600	111	64	26	18
18	76	372	716	965	388	1100	589	2670	106	59	25	17
19	100	330	1200	780	439	1090	531	2180	123	53	25	17
20	52	537	859	643	410	987	477	1460	126	49	25	16
21	39	829	656	541	371	970	432	1100	110	46	24	16
22	50	848	566	464	336	946	394	835	101	44	23	16
23	49	620	459	409	304	1040	376	699	96	43	23	15
24	40	467	396	363	278	1170	535	601	93	41	23	15
25	34	1800	356	328	255	1040	651	509	91	39	23	15
26	33	1600	334	299	237	894	606	442	89	39	22	15
27	36	1050	338	271	223	728	567	390	86	38	22	14
28	39	800	453	251	212	659	517	347	85	37	24	15
29	46	750	417	233	---	638	467	324	84	36	30	16
30	921	1210	357	217	---	664	420	368	81	35	29	15
31	1600	---	315	207	---	752	---	331	---	33	27	---
TOTAL	3433	16763	20679	29876	21827	51460	26532	20660	4212	1605	841	554
MEAN	111	559	667	964	780	1660	884	666	140	51.8	27.1	18.5
MAX	1600	1800	1250	6650	3470	6620	2030	2670	287	76	32	29
MIN	16	140	315	207	201	212	376	244	81	33	22	14
AC-FT	6810	33250	41020	59260	43290	102100	52630	40980	8350	3180	1670	1100
CFSM	.66	3.31	3.95	5.70	4.61	9.82	5.23	3.94	.83	.31	.16	.11
IN.	.76	3.69	4.55	6.58	4.80	11.33	5.84	4.55	.93	.35	.19	.12

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1917 - 1991, BY WATER YEAR (WY)

	MEAN	213	1039	1701	1786	1643	1345	903	452	170	61.4	34.6	46.6
MAX	1945	4232	5361	4244	4151	3818	2451	1568	699	186	101	384	
(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 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1917 - 1991

ANNUAL TOTAL	187753	198442	781
ANNUAL MEAN	514	544	1374
HIGHEST ANNUAL MEAN			237
LOWEST ANNUAL MEAN			34900
HIGHEST DAILY MEAN	10500	Jan 7	Dec 22 1964
LOWEST DAILY MEAN	16	Oct 11	10
ANNUAL SEVEN-DAY MINIMUM	17	Oct 6	11
ANNUAL RUNOFF (AC-FT)	372400	393600	566100
ANNUAL RUNOFF (CFSM)	3.04	3.22	4.62
ANNUAL RUNOFF (INCHES)	41.33	43.68	62.83
10 PERCENT EXCEEDS	1310	1400	2000
50 PERCENT EXCEEDS	223	290	259
90 PERCENT EXCEEDS	26	20	26

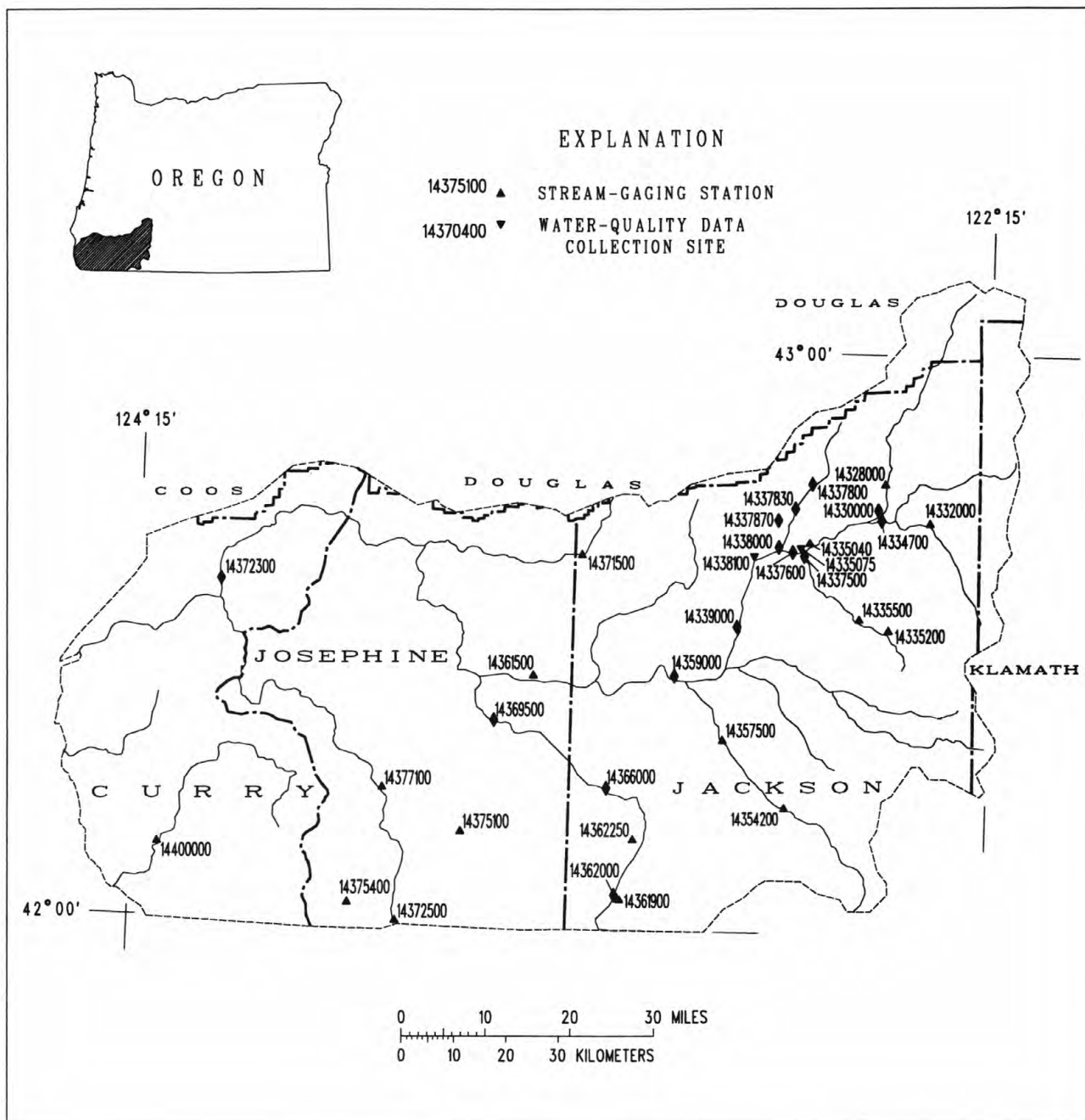


Figure 19.--Location of surface-water and water-quality stations in the Rogue River, and Chetco River basins.

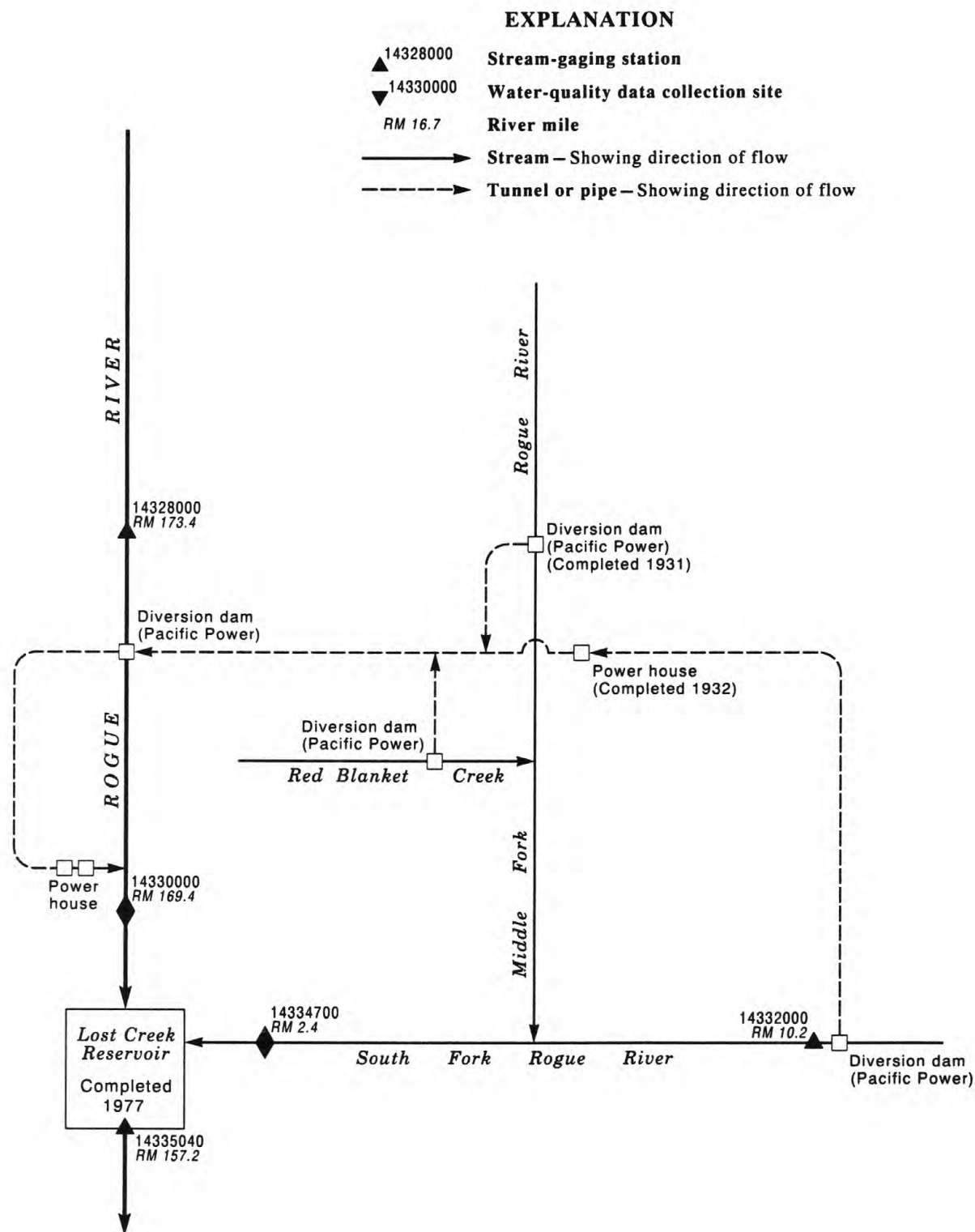


Figure 20.--Schematic diagram showing gaging stations and diversions in the Rogue River basin, above Lost Creek Reservoir.

ROGUE RIVER BASIN

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 current year. 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, from river-profile map. Prior to Feb. 17, 1912, nonrecording gage at several sites within a few hundred feet upstream at various datums.

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

AVERAGE DISCHARGE.--71 years (water years 1909-11, 1924-91), 820 ft³/s, 35.69 in/yr, 594,100 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. 15	0300	3,110	4.15	Mar. 4	2130	*3,400	*4.36
Minimum discharge, 292 ft ³ /s Sept. 24-30.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	323	459	432	e350	504	708	912	908	869	536	366	318
2	322	384	428	e340	587	893	909	976	903	527	366	314
3	323	365	412	e330	781	1660	897	988	922	521	363	313
4	329	406	416	e320	1000	2540	878	975	883	515	361	310
5	324	539	436	e310	1260	2330	1010	1000	832	502	361	309
6	325	435	410	e330	1070	1600	1160	1040	797	489	361	309
7	322	401	402	e350	930	1290	1040	1050	767	473	361	309
8	322	518	405	e340	854	1150	972	1320	755	460	357	309
9	319	572	414	331	802	1070	1180	1150	751	453	352	309
10	318	461	781	375	759	1020	1140	1020	778	442	350	306
11	318	421	791	478	728	945	1000	951	801	435	350	304
12	318	396	614	1370	724	922	957	912	771	429	348	304
13	326	396	549	2160	1250	869	947	975	724	423	345	304
14	322	456	504	2460	1220	839	959	980	683	418	343	303
15	343	403	486	2750	1090	799	929	956	655	412	340	300
16	344	386	466	1800	1030	777	889	960	637	443	340	300
17	329	379	451	1300	990	752	850	1270	622	533	340	300
18	354	401	492	1090	931	749	831	1190	606	439	357	298
19	401	401	e440	964	956	742	823	1130	705	417	332	296
20	340	414	e400	867	923	720	870	1070	727	406	327	296
21	341	424	e300	792	880	703	984	1130	644	396	331	296
22	476	433	e320	735	837	686	1030	1160	611	394	324	296
23	366	443	e350	690	792	702	1100	1120	595	415	322	296
24	344	424	e370	647	752	716	1140	1100	612	404	319	294
25	335	588	e380	603	720	706	1090	1050	587	394	318	292
26	331	582	e390	584	696	694	1030	983	569	384	318	292
27	327	498	e350	553	678	694	999	936	563	379	315	292
28	338	461	e340	530	663	698	965	911	557	377	331	292
29	339	448	e320	529	---	697	932	893	572	377	363	292
30	375	452	e310	545	---	745	922	1000	557	373	329	292
31	604	---	e320	520	---	854	---	900	---	368	319	---
TOTAL	10798	13346	13479	25343	24407	30270	29345	32004	21055	13534	10609	9045
MEAN	348	445	435	818	872	976	978	1032	702	437	342	301
MAX	604	588	791	2750	1260	2540	1180	1320	922	536	366	318
MIN	318	365	300	310	504	686	823	893	557	368	315	292
AC-FT	21420	26470	26740	50270	48410	60040	58210	63480	41760	26840	21040	17940
CFSM	1.12	1.43	1.39	2.62	2.79	3.13	3.14	3.31	2.25	1.40	1.10	.97
IN.	1.29	1.59	1.61	3.02	2.91	3.61	3.50	3.82	2.51	1.61	1.26	1.08

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1908 - 1991, BY WATER YEAR (WY)

MEAN	456	703	913	912	957	977	1185	1347	983	546	439	420
MAX	957	2062	3368	2158	2092	2820	1888	2263	2564	1010	659	602
(WY)	1951	1910	1965	1970	1958	1972	1966	1952	1933	1953	1976	1972
MIN	283	292	313	292	325	480	649	491	335	253	222	230
(WY)	1932	1932	1931	1937	1937	1977	1926	1934	1931	1931	1931	1931

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1908 - 1991

ANNUAL TOTAL	224276	233235	820
ANNUAL MEAN	614	639	1268
HIGHEST ANNUAL MEAN			1974
LOWEST ANNUAL MEAN			411
HIGHEST DAILY MEAN	2770	Jan 8	16000
LOWEST DAILY MEAN	300	Dec 21	210
ANNUAL SEVEN-DAY MINIMUM	320	Oct 6	216
ANNUAL RUNOFF (AC-FT)	444900	462600	594300
ANNUAL RUNOFF (CFSM)	1.97	2.05	2.63
ANNUAL RUNOFF (INCHES)	26.74	27.81	35.73
10 PERCENT EXCEEDS	1080	1050	1480
50 PERCENT EXCEEDS	492	518	636
90 PERCENT EXCEEDS	334	318	360

ROGUE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929 (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. Water-discharge records good. Fluctuations caused by powerplant 600 ft upstream from station. Small diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--40 years (water years 1914-30, 1969-91), 1,295 ft³/s, 938,200 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 10,900 ft³/s Jan. 18, 1971, gage height, 7.62 ft, from high-water mark; minimum discharge, 205 ft³/s Sept. 17, 22, 24, 1980, 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, 4,100 ft³/s Mar. 4, gage height 4.52 ft; maximum gage height, 5.03 ft, from crest-stage gage; minimum discharge, 352 ft³/s Nov. 15, result of regulation by upstream diversion gates.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	730	898	902	752	1090	1400	1600	1620	1650	1240	990	880
2	728	815	890	736	1200	1610	1600	1690	1680	1230	984	873
3	727	787	872	735	1440	2340	1580	1690	1620	1230	982	867
4	736	847	880	727	1710	3190	1550	1680	1610	1210	978	863
5	733	1000	910	715	1970	3000	1680	1700	1540	1190	981	852
6	734	892	869	735	1800	2320	1840	1760	1500	1180	975	852
7	725	850	860	788	1650	2000	1740	1770	1450	1160	968	851
8	723	1010	860	777	1570	1840	1670	2040	1500	1100	957	850
9	721	1060	871	752	1500	1760	1880	1870	1500	1160	952	845
10	721	944	1380	837	1420	1720	1860	1730	1480	1140	952	838
11	720	882	1430	936	1420	1620	1720	1660	1510	1140	948	837
12	722	842	1210	1840	1400	1600	1700	1620	1510	1120	940	836
13	731	842	1110	2710	1890	1540	1680	1690	1450	1110	934	831
14	724	940	1060	3040	1910	1490	1680	1580	1400	1110	932	828
15	658	850	1040	3320	1800	1440	1620	1480	1360	1100	925	828
16	602	837	1010	2440	1760	1400	1580	1480	1340	1160	922	821
17	580	818	974	1930	1730	1380	1520	1810	1340	1250	925	823
18	630	846	1060	1750	1660	1390	1510	1920	1310	1140	950	812
19	748	854	1010	1680	1700	1380	1510	1870	1450	1100	925	817
20	742	875	832	1550	1660	1370	1540	1720	1480	1100	916	813
21	758	903	598	1460	1610	1360	1680	1690	1370	1080	931	811
22	931	917	708	1340	1550	1330	1740	1740	1330	1060	910	806
23	788	918	840	1250	1500	1370	1810	1760	1310	1070	898	807
24	753	879	869	1290	1440	1380	1830	1760	1280	1070	897	803
25	738	1100	909	1250	1400	1380	1790	1860	1290	1060	895	802
26	728	1130	953	1230	1360	1370	1740	1780	1280	1050	893	799
27	712	1000	845	1180	1340	1370	1730	1750	1270	1030	885	800
28	742	939	844	1170	1320	1360	1700	1600	1270	1020	920	795
29	747	920	735	1110	---	1360	1650	1480	1280	1010	942	802
30	812	941	665	1110	---	1410	1630	1610	1250	1000	899	795
31	1130	---	705	1120	---	1540	---	1560	---	994	883	---
TOTAL	22974	27336	28701	42260	43800	51020	50360	52970	42610	34614	28989	24837
MEAN	741	911	926	1363	1564	1646	1679	1709	1420	1117	935	828
MAX	1130	1130	1430	3320	1970	3190	1880	2040	1680	1250	990	880
MIN	580	787	598	715	1090	1330	1510	1480	1250	994	883	795
AC-FT	45570	54220	56930	83820	86880	101200	99890	105100	84520	68660	57500	49260

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1991, BY WATER YEAR (WY)

	MEAN	979	1278	1572	1703	1680	1826	1859	2063	1688	1225	1042	971
MAX	1342	2100	2736	2894	2722	3627	2668	3282	2923	1660	1356	1267	
(WY)	1985	1974	1982	1974	1986	1972	1989	1971	1974	1971	1984	1984	
MIN	741	817	926	946	946	1045	1272	1276	1095	873	770	754	
(WY)	1991	1988	1991	1977	1977	1977	1977	1981	1987	1977	1981	1990	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1969 - 1991

ANNUAL TOTAL	420961	450471	1490
ANNUAL MEAN	1153	1234	2053
HIGHEST ANNUAL MEAN			1022
LOWEST ANNUAL MEAN			1974
HIGHEST DAILY MEAN	3390	Jan 8	9780
LOWEST DAILY MEAN	580	Oct 17	580
ANNUAL SEVEN-DAY MINIMUM	664	Oct 12	650
ANNUAL RUNOFF (AC-FT)	835000	893500	1079000
10 PERCENT EXCEEDS	1760	1750	2260
50 PERCENT EXCEEDS	1020	1130	1330
90 PERCENT EXCEEDS	741	752	862

ROGUE RIVER BASIN

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, 16.0°C July 3, 4; minimum, 0.0°C Dec. 21, 22.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.0	9.0	9.5	6.5	5.0	6.0	3.0	2.5	2.5	1.0	.5	1.0
2	9.5	8.0	9.0	5.0	4.0	4.5	3.0	2.0	2.5	1.0	1.0	1.0
3	9.0	8.0	8.5	5.5	4.0	4.5	3.5	2.5	3.0	1.0	1.0	1.0
4	9.0	7.0	8.0	6.0	5.0	5.5	3.5	3.0	3.0	1.0	1.0	1.0
5	8.5	8.0	8.5	6.0	5.5	6.0	3.5	3.0	3.5	1.0	1.0	1.0
6	8.0	6.5	7.0	5.5	4.5	5.0	3.0	2.5	2.5	1.5	1.0	1.0
7	6.5	5.5	6.0	4.5	4.0	4.5	3.0	2.0	2.5	1.5	1.0	1.5
8	6.5	5.5	6.0	6.0	4.5	5.0	3.5	2.5	3.0	1.5	1.0	1.5
9	7.0	5.5	6.0	7.0	6.0	6.5	4.0	3.0	3.5	1.5	1.0	1.5
10	7.5	6.0	6.5	6.0	5.5	5.5	4.0	4.0	4.0	1.5	1.5	1.5
11	7.0	5.5	6.5	5.0	4.5	5.0	4.0	3.0	3.5	1.5	1.5	1.5
12	6.5	5.5	6.0	5.0	4.0	5.0	3.0	2.5	2.5	1.5	1.0	1.5
13	7.0	6.0	6.5	5.0	5.0	5.0	3.0	2.5	2.5	3.5	2.0	3.0
14	7.0	5.5	6.5	5.0	4.5	5.0	2.5	2.0	2.5	4.0	3.5	4.0
15	7.5	6.5	7.0	4.5	3.5	4.0	3.0	2.5	2.5	4.5	4.0	4.0
16	8.0	7.5	7.5	4.0	3.0	3.5	3.0	2.5	3.0	4.0	3.5	3.5
17	7.0	6.0	7.0	4.0	3.0	3.5	3.5	3.0	3.0	4.0	3.5	3.5
18	6.5	6.0	6.5	5.0	4.0	4.5	4.0	2.5	3.5	4.0	3.5	3.5
19	6.5	6.0	6.0	5.5	5.0	5.5	2.5	1.0	1.5	4.0	3.0	3.5
20	6.0	5.0	5.5	5.0	3.5	4.0	1.0	.5	1.0	3.0	2.5	2.5
21	6.0	5.0	5.5	3.5	3.5	3.5	1.0	.0	.5	3.0	2.0	2.5
22	7.0	6.0	6.5	4.5	3.5	4.0	1.0	.0	.5	3.0	2.0	2.5
23	7.0	6.0	6.5	4.0	3.5	4.0	1.0	.5	1.0	3.0	2.0	2.5
24	7.0	6.0	6.5	3.5	3.0	3.5	1.0	.5	1.0	3.0	2.0	2.0
25	7.0	6.0	6.5	4.0	3.5	4.0	1.0	.5	1.0	2.0	1.5	2.0
26	7.5	6.5	7.0	3.5	3.0	3.5	1.0	1.0	1.0	2.5	1.5	2.0
27	7.5	6.5	7.0	3.5	3.5	3.5	1.0	1.0	1.0	2.0	1.5	2.0
28	7.0	6.5	7.0	3.5	3.0	3.5	1.0	1.0	1.0	2.0	1.0	1.5
29	6.5	6.0	6.5	3.5	3.0	3.0	1.0	1.0	1.0	1.5	1.0	1.5
30	6.5	6.0	6.5	3.5	3.0	3.5	1.0	.5	1.0	2.0	1.0	1.5
31	7.0	6.5	6.5	---	---	---	1.0	.5	1.0	3.0	2.0	2.5
MONTH	10.0	5.0	7.0	7.0	3.0	4.5	4.0	.0	2.0	4.5	.5	2.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

YEAR	16.0	.0	7.0
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ROGUE RIVER BASIN

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, from topographic map. Prior to Sept. 10, 1965, at site 1,000 ft upstream at different datum.

REMARKS.--Records good except for estimated daily discharges, which are 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 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).

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, 436 ft³/s Jan. 14, 15, gage height, 3.49 ft; minimum discharge, 9.0 ft³/s Oct. 20, 21.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	13	15	14	e12	11	15	15	72	163	24	11	12
2	13	14	14	12	13	17	16	72	184	18	12	12
3	13	14	13	13	15	40	16	70	194	16	12	11
4	13	18	14	13	27	98	16	68	176	15	12	12
5	13	32	14	13	61	116	42	77	142	14	12	13
6	14	15	13	13	38	82	64	88	118	13	12	13
7	13	14	12	13	16	66	45	97	109	13	12	13
8	13	31	12	12	15	57	37	152	113	12	12	13
9	13	34	12	12	14	51	102	116	118	12	12	13
10	13	15	66	15	13	46	98	87	140	12	12	12
11	13	13	45	13	13	34	82	76	153	12	12	12
12	13	12	16	27	13	28	74	72	132	12	12	12
13	13	13	14	206	63	21	71	129	103	12	12	12
14	13	14	14	294	83	18	71	158	84	12	12	12
15	13	13	13	379	67	17	68	132	73	12	12	12
16	13	13	13	206	57	16	63	146	68	14	12	11
17	12	13	13	124	46	15	55	200	61	16	12	11
18	13	13	14	90	38	15	47	172	68	13	12	12
19	12	14	14	68	43	14	40	170	100	12	11	13
20	9.4	14	e11	46	32	14	48	175	133	12	12	13
21	10	14	e12	28	24	14	79	194	84	12	13	13
22	16	14	e13	99	19	13	80	207	65	12	12	13
23	11	13	e14	92	16	13	86	216	54	12	12	13
24	12	13	e15	16	15	13	118	217	45	12	12	13
25	13	18	e16	15	14	13	100	203	37	12	12	13
26	13	13	e15	14	14	13	85	182	29	12	12	13
27	13	13	e15	13	13	13	83	166	31	12	12	13
28	13	13	e15	12	14	13	77	159	30	11	13	12
29	13	14	e14	13	---	13	72	153	47	11	13	12
30	15	14	e13	12	---	13	73	209	41	12	12	12
31	27	---	e12	12	---	15	---	179	---	12	12	---
TOTAL	411.4	473	505	1907	807	926	1923	4414	2895	406	373	371
MEAN	13.3	15.8	16.3	61.5	28.8	29.9	64.1	142	96.5	13.1	12.0	12.4
MAX	27	34	66	379	83	116	118	217	194	24	13	13
MIN	9.4	12	11	12	11	13	15	68	29	11	11	11
AC-FT	816	938	1000	3780	1600	1840	3810	8760	5740	805	740	736

CAL YR 1990 TOTAL 11572.2 MEAN 31.7 MAX 359 MIN 5.5 AC-FT 22950
WTR YR 1991 TOTAL 15411.4 MEAN 42.2 MAX 379 MIN 9.4 AC-FT 30570

e Estimated

14334700 SOUTH FORK ROGUE RIVER, SOUTH OF PROSPECT, OR

LOCATION.--Lat 42°42'45", long 122°30'20", in NW 1/4 SE 1/4 sec.7, T.33 S., R.3 E., Jackson County, Hydrologic Unit 17100307, on right bank 200 ft upstream from unnamed tributary, 0.6 mi upstream from Smith Creek, 1.2 mi downstream from Beaver Creek, 2.8 mi southwest of Prospect, and at mile 2.4.

DRAINAGE AREA.--246 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1968 to current year.

GAGE.--Water-stage recorder and crest-stage gage. Elevation of gage is 2,030 ft, from topographic map.

REMARKS.--Water-discharge records good. Some regulation by South Fork canal dam upstream. Power diversions upstream from station from South Fork Rogue River, Middle Fork Rogue River, and Red Blanket Creek divert water to Rogue River via Main Canal. During summer months, most of base flow is diverted for power except that required for fish life. Base flow at station is principally from springs downstream from power diversions.

AVERAGE DISCHARGE.--23 years, 377 ft³/s, 273,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 9,880 ft³/s Mar. 3, 1972, gage height, 12.71 ft, from floodmark; minimum discharge, 54 ft³/s Sept. 24-30, 1970, but may have been lower during period of no record Sept. 24-30, 1970, Aug. 16-19, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1890, 20.1 ft, Dec. 22, 1964, from floodmarks at gage, discharge, 28,500 ft³/s.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,920 ft³/s Jan. 14, gage height, 7.33 ft; maximum gage height, 7.50 ft Jan. 14, from crest-stage gage; minimum discharge, 88 ft³/s Oct. 3.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	90	145	114	173	138	226	272	373	592	243	103	98
2	89	113	111	181	160	260	281	374	652	215	103	98
3	89	105	107	191	191	398	292	363	768	208	103	98
4	90	147	112	190	238	668	289	353	706	203	103	97
5	90	219	117	188	338	790	385	368	639	198	103	99
6	94	114	106	190	288	599	472	395	573	194	102	104
7	93	104	103	208	237	502	418	424	547	186	102	99
8	93	195	102	200	218	450	388	573	496	227	102	99
9	93	217	103	196	209	419	577	516	513	153	101	100
10	92	119	286	271	197	410	574	484	622	147	102	100
11	92	103	283	286	190	367	508	454	673	144	101	99
12	94	98	198	463	191	354	477	440	582	141	101	99
13	98	106	178	1040	439	340	451	573	494	139	100	98
14	96	134	152	1340	435	327	438	763	429	136	100	97
15	180	110	130	1610	382	311	420	790	396	133	100	97
16	240	102	123	1010	358	301	394	837	382	152	100	97
17	234	101	118	732	345	289	368	969	339	167	99	96
18	250	102	139	579	316	268	348	777	343	141	99	95
19	202	104	136	449	310	247	330	765	438	135	98	96
20	101	109	117	378	285	230	336	901	496	132	98	96
21	107	131	e150	326	268	210	394	1000	383	129	107	96
22	172	128	e170	335	251	203	391	1000	334	131	99	95
23	107	114	e175	341	236	222	403	963	312	156	98	95
24	100	106	e180	221	222	243	498	918	373	120	98	96
25	105	159	e185	202	213	252	455	724	292	116	97	96
26	104	149	e175	184	207	258	429	662	274	113	97	97
27	112	131	164	175	202	254	417	615	273	110	97	97
28	123	121	175	163	203	246	396	744	273	107	101	99
29	103	116	170	151	---	242	379	793	285	106	102	96
30	112	125	164	144	---	247	379	895	280	105	98	95
31	184	---	174	142	---	266	---	764	---	104	97	---
TOTAL	3829	3827	4717	12259	7267	10399	12159	20570	13759	4691	3111	2924
MEAN	124	128	152	395	260	335	405	664	459	151	100	97.5
MAX	250	219	286	1610	439	790	577	1000	768	243	107	104
MIN	89	98	102	142	138	203	272	353	273	104	97	95
AC-FT	7590	7590	9360	24320	14410	20630	24120	40800	27290	9300	6170	5800

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1969 - 1991, 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
MEAN	130	254	433	504	486	575	528	626	500	204	126	120											
MAX	251	761	1327	1143	1331	2240	1058	1049	1043	479	257	214											
(WY)	1985	1974	1982	1971	1986	1972	1989	1969	1984	1984	1984	1984											
MIN	64.9	69.0	86.2	85.3	80.8	99.4	134	253	150	70.8	60.6	46.7											
(WY)	1969	1970	1977	1977	1977	1977	1977	1977	1973	1977	1970	1972											

SUMMARY STATISTICS

	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1969 - 1991
ANNUAL TOTAL	89738	99512	
ANNUAL MEAN	246	273	
HIGHEST ANNUAL MEAN			364
LOWEST ANNUAL MEAN			641
HIGHEST DAILY MEAN	1370	1610	114
LOWEST DAILY MEAN	88	89	9570
ANNUAL SEVEN-DAY MINIMUM	90	91	45
ANNUAL RUNOFF (AC-FT)	178000	197400	263500
10 PERCENT EXCEEDS	537	575	809
50 PERCENT EXCEEDS	145	191	236
90 PERCENT EXCEEDS	97	98	84

ROGUE RIVER BASIN

14334700 SOUTH FORK ROGUE RIVER SOUTH OF PROSPECT, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 1969 to current year.

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1968 to current year.

SEDIMENT RECORDS: October 1976 to April 1981 (October to April only 1980 water year, November to April only 1981 water year).

INSTRUMENTATION.--Water temperature recorder since October 1968.

EXTREMES FOR PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: Maximum, 20.0°C July 18, 19, 1979; minimum, 0.0°C on several days during winter periods.

SEDIMENT CONCENTRATION: Maximum daily, 654 mg/L Nov. 26, 1977; minimum daily, 0 mg/L on several days each year.

SEDIMENT DISCHARGE: Maximum daily, 6,180 tons Nov. 26, 1977; minimum daily, 0 tons on several days each year.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 16.5°C July 4, 5, 24, 25; minimum, 0.5°C Dec. 21-24, 30.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.5	10.0	10.5	7.0	6.0	6.5	4.5	4.0	4.0	2.0	1.5	1.5
2	11.0	9.0	10.0	6.0	4.5	5.0	4.5	4.0	4.5	2.0	1.5	2.0
3	10.0	9.0	9.5	6.5	5.0	5.5	5.0	4.0	4.5	2.5	2.0	2.5
4	10.0	8.5	9.5	7.0	6.5	7.0	5.0	4.5	4.5	2.5	2.0	2.5
5	10.0	9.5	10.0	7.0	6.0	6.5	5.0	4.5	5.0	2.5	2.0	2.0
6	9.0	7.0	7.5	6.5	5.0	5.5	4.5	3.5	4.0	3.5	2.5	3.0
7	7.5	5.5	6.5	6.0	5.0	5.0	4.0	3.5	3.5	4.0	3.5	3.5
8	7.0	5.5	6.5	7.0	6.0	6.5	4.5	4.0	4.5	4.0	3.5	3.5
9	7.5	6.0	7.0	7.0	6.5	7.0	6.0	4.5	5.0	4.5	3.5	4.0
10	8.0	7.0	7.5	7.0	5.5	6.0	6.0	5.5	6.0	4.5	3.5	4.0
11	8.0	6.0	7.0	6.0	5.0	5.5	5.5	4.0	5.0	4.5	3.5	4.0
12	7.5	6.0	6.5	6.0	5.0	5.5	4.0	3.5	4.0	4.5	4.0	4.5
13	8.0	7.5	8.0	6.5	6.0	6.0	4.0	4.0	4.0	4.5	4.0	4.0
14	8.0	6.0	7.0	6.5	5.5	6.0	4.0	3.0	3.5	4.5	4.0	4.5
15	8.5	7.5	8.0	5.5	4.0	4.5	4.0	3.5	4.0	4.5	4.0	4.5
16	8.5	7.0	8.0	4.5	4.0	4.0	4.5	4.0	4.5	4.0	3.5	4.0
17	7.0	5.5	6.0	5.5	4.0	4.5	5.0	4.5	4.5	4.5	4.0	4.0
18	7.0	6.5	7.0	6.5	5.5	6.0	5.0	4.5	5.0	4.5	4.0	4.5
19	7.0	6.5	6.5	6.5	6.5	6.5	4.5	2.5	3.5	4.5	4.5	4.5
20	7.0	5.5	6.0	6.0	5.5	5.5	2.0	1.0	1.5	4.0	3.0	3.5
21	7.0	6.0	6.0	6.0	5.5	5.5	.5	.5	.5	3.5	3.0	3.5
22	8.0	7.0	7.5	6.5	6.0	6.0	.5	.5	.5	3.5	3.0	3.0
23	8.0	7.0	7.5	6.0	4.5	5.0	1.0	.5	.5	3.5	3.0	3.0
24	8.0	7.0	7.5	4.5	4.0	4.0	1.0	.5	1.0	3.0	2.5	3.0
25	8.0	7.0	7.5	5.0	4.5	5.0	1.5	1.0	1.0	3.0	2.0	2.5
26	8.5	7.5	8.0	5.0	4.5	4.5	2.0	1.5	1.5	3.0	2.0	2.5
27	8.5	7.0	7.5	5.0	4.5	5.0	2.5	1.5	2.0	3.0	2.0	2.5
28	8.5	8.0	8.0	5.0	4.5	4.5	3.0	2.5	3.0	2.5	1.5	2.0
29	8.0	6.0	6.5	5.0	4.0	4.5	3.0	1.0	1.5	2.5	1.5	2.0
30	8.0	7.0	7.5	5.0	4.5	5.0	1.0	.5	.5	3.0	1.5	2.0
31	8.0	7.0	8.0	---	---	---	1.5	1.0	1.0	5.0	3.0	4.0
MONTH	11.5	5.5	7.5	7.0	4.0	5.5	6.0	.5	3.0	5.0	1.5	3.0

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DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	4.0	4.5	7.0	6.5	6.5	7.5	6.0	6.5	8.0	7.5	7.5
2	6.0	5.0	5.5	7.0	6.0	6.5	7.5	6.5	7.0	8.5	7.0	7.5
3	6.0	5.5	5.5	7.0	6.0	6.5	7.0	5.5	6.0	9.0	7.0	8.0
4	5.5	5.5	5.5	7.0	5.5	6.5	7.5	6.0	6.5	9.5	6.5	8.0
5	6.0	5.5	5.5	5.5	4.5	5.0	7.5	6.0	6.5	9.5	8.0	9.0
6	5.5	4.0	5.0	4.5	4.0	4.5	5.5	5.0	5.5	9.5	7.5	8.5
7	5.5	4.0	5.0	5.0	4.0	4.5	6.0	4.5	5.0	8.0	7.0	7.5
8	5.5	4.5	5.0	5.5	4.0	4.5	5.5	4.5	5.0	7.5	6.5	7.0
9	5.5	4.0	5.0	5.5	4.5	5.0	6.0	5.5	5.5	7.0	5.5	6.0
10	6.0	4.5	5.0	5.5	4.0	4.5	5.5	4.0	5.0	7.0	6.0	6.5
11	6.0	5.0	5.5	4.5	4.0	4.5	6.5	4.0	5.0	8.0	6.5	7.0
12	5.5	5.0	5.0	5.0	4.5	5.0	7.0	4.5	6.0	9.5	7.5	8.5
13	6.5	5.5	6.0	5.5	4.5	5.0	7.5	5.5	6.5	9.5	7.5	8.0
14	6.5	5.0	6.0	5.5	4.5	5.0	7.5	5.5	6.5	9.0	7.0	8.0
15	6.5	5.5	6.0	5.5	4.0	5.0	6.5	5.5	6.0	8.5	6.5	7.5
16	6.5	6.0	6.0	5.5	4.0	4.5	6.5	5.0	6.0	8.5	7.5	8.0
17	6.0	4.5	5.5	6.0	4.5	5.0	7.0	5.0	6.0	8.0	6.5	7.0
18	6.0	5.5	6.0	6.0	5.5	6.0	8.0	5.5	6.5	6.5	5.5	6.0
19	6.0	5.5	6.0	5.5	4.5	5.0	8.5	6.0	7.5	7.0	6.0	6.5
20	6.5	5.5	6.0	6.0	4.5	5.5	8.5	7.0	7.5	9.0	7.0	7.5
21	6.0	5.0	5.5	6.0	5.5	5.5	7.5	7.0	7.5	9.0	7.5	8.0
22	6.0	4.5	5.5	6.0	5.0	5.5	8.5	7.0	7.5	10.0	7.5	8.5
23	5.5	4.5	5.0	5.5	5.5	5.5	8.5	6.5	7.5	10.0	7.5	9.0
24	5.5	4.5	5.0	5.5	4.0	5.0	7.5	6.5	7.0	9.5	7.5	8.5
25	6.0	4.5	5.0	5.5	4.5	4.5	6.5	5.5	6.0	9.5	7.0	8.5
26	6.0	4.5	5.5	6.0	4.0	4.5	6.0	5.5	5.5	9.0	7.0	8.0
27	6.0	4.5	5.5	6.5	3.5	5.0	7.5	5.0	6.0	10.0	7.0	8.5
28	6.5	5.5	6.0	6.0	4.0	5.0	7.5	5.5	6.5	9.5	7.5	8.5
29	---	---	---	7.5	5.0	6.0	8.5	5.5	7.0	8.5	7.0	7.5
30	---	---	---	8.0	5.5	6.5	8.5	6.5	7.5	7.5	6.5	7.0
31	---	---	---	8.0	6.0	7.0	---	---	---	9.5	6.0	7.5
MONTH	6.5	4.0	5.5	8.0	3.5	5.5	8.5	4.0	6.5	10.0	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	14.0	11.0	12.5	15.5	13.0	14.5	14.0	12.5	13.5
2	11.5	9.0	10.5	15.5	12.5	14.0	15.0	13.0	14.0	14.0	11.5	12.5
3	11.0	9.0	10.0	16.0	13.5	15.0	15.5	13.5	14.5	13.5	12.0	12.5
4	10.0	7.5	9.0	16.5	14.0	15.5	15.5	14.0	14.5	14.0		

ROGUE RIVER BASIN

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 National Geodetic Vertical Datum of 1929 (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, 464,800 acre-ft May 8, elevation, 1,871.94 ft; minimum contents, 260,300 acre-ft Jan. 9, 10, elevation, 1,802.30 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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1814.26	1809.71	1809.36	1802.94	1820.82	1841.73	1861.60	1870.73	1871.66	1866.21	1850.52	1828.63
2	1814.06	1809.59	1809.33	1802.82	1821.36	1842.51	1862.00	1870.96	1871.74	1865.78	1849.96	1827.84
3	1813.86	1809.46	1809.28	1802.72	1822.03	1844.07	1862.40	1871.19	1871.77	1865.36	1849.38	1827.03
4	1813.66	1809.40	1809.25	1802.62	1823.00	1846.57	1862.76	1871.41	1871.73	1864.91	1848.80	1826.23
5	1813.43	1809.51	1809.22	1802.51	1824.24	1848.78	1863.34	1871.61	1871.66	1864.44	1848.22	1825.41
6	1813.20	1809.47	1809.16	1802.42	1825.21	1850.28	1864.06	1871.74	1871.68	1863.95	1847.63	1824.60
7	1812.98	1809.40	1809.09	1802.41	1826.02	1851.46	1864.62	1871.79	1871.66	1863.46	1847.05	1823.78
8	1812.76	1809.47	1809.01	1802.36	1826.74	1852.46	1865.14	1871.93	1871.59	1862.95	1846.41	1822.95
9	1812.58	1809.64	1808.95	1802.30	1827.38	1853.37	1865.84	1871.88	1871.54	1862.42	1845.74	1822.13
10	1812.43	1809.64	1809.39	1802.59	1827.98	1854.25	1866.11	1871.81	1871.51	1861.88	1845.03	1821.35
11	1812.24	1809.58	1809.74	1802.85	1828.53	1855.02	1866.07	1871.70	1871.53	1861.33	1844.33	1820.70
12	1812.03	1809.50	1809.81	1804.03	1829.11	1855.69	1865.97	1871.56	1871.50	1860.78	1843.61	1820.17
13	1811.83	1809.46	1809.98	1806.43	1830.29	1856.22	1866.03	1871.56	1871.39	1860.21	1842.91	1819.68
14	1811.63	1809.49	1810.06	1809.22	1831.40	1856.73	1866.29	1871.57	1871.21	1859.65	1842.19	1819.20
15	1811.49	1809.43	1810.08	1812.41	1832.37	1857.16	1866.56	1871.55	1870.99	1859.09	1841.46	1818.71
16	1811.33	1809.33	1810.09	1814.30	1833.27	1857.57	1866.77	1871.61	1870.76	1858.67	1840.75	1818.15
17	1811.14	1809.23	1810.10	1815.55	1834.15	1857.92	1866.94	1871.82	1870.49	1858.25	1840.02	1817.68
18	1811.03	1809.15	1810.12	1816.52	1834.98	1858.23	1867.08	1871.78	1870.24	1857.73	1839.33	1817.22
19	1810.93	1809.08	1810.51	1817.28	1835.83	1858.54	1867.21	1871.82	1870.18	1857.21	1838.59	1816.69
20	1810.75	1809.04	1810.55	1817.88	1836.61	1858.84	1867.78	1871.81	1870.11	1856.73	1837.86	1816.21
21	1810.63	1809.03	1810.19	1818.39	1837.33	1859.13	1867.67	1871.83	1869.89	1856.24	1837.13	1815.75
22	1810.65	1809.02	1809.07	1818.80	1838.00	1859.39	1867.97	1871.86	1869.57	1855.75	1836.39	1815.30
23	1810.53	1808.99	1807.81	1819.16	1838.61	1859.58	1868.34	1871.82	1869.25	1855.30	1835.63	1814.87
24	1810.39	1808.93	1806.53	1819.46	1839.17	1859.78	1868.81	1871.76	1868.92	1854.82	1834.85	1814.46
25	1810.21	1809.12	1805.23	1819.73	1839.70	1860.06	1869.20	1871.67	1868.55	1854.32	1834.07	1814.04
26	1810.05	1809.30	1804.05	1819.95	1840.20	1860.28	1869.56	1871.62	1868.23	1853.80	1833.30	1813.62
27	1809.87	1809.36	1803.52	1820.13	1840.67	1860.47	1869.86	1871.59	1867.82	1853.28	1832.49	1813.22
28	1809.73	1809.37	1803.46	1820.29	1841.16	1860.65	1870.11	1871.57	1867.43	1852.75	1831.75	1812.84
29	1809.57	1809.36	1803.38	1820.40	---	1860.82	1870.32	1871.60	1867.04	1852.20	1830.99	1812.53
30	1809.51	1809.37	1803.20	1820.51	---	1860.99	1870.52	1871.70	1866.63	1851.66	1830.22	1812.30
31	1809.71	---	1803.06	1820.62	---	1861.25	---	1871.66	---	1851.09	1829.43	---
MAX	1814.26	1809.71	1810.55	1820.62	1841.16	1861.25	1870.52	1871.93	1871.77	1866.21	1850.52	1828.63
MIN	1809.51	1808.93	1803.06	1802.30	1820.82	1841.73	1861.60	1870.73	1866.63	1851.09	1829.43	1812.30
(†)	279100	278200	262200	307900	366200	429000	459900	463800	446800	396500	332200	285800
(‡)	-12500	-900	-16000	+45700	+58300	+62800	+30900	+3900	-17000	-50300	-64300	-46400

CAL YR 1990 MAX 1871.81 MIN 1803.06 AC-FT† -22100
WTR YR 1991 MAX 1871.93 MIN 1802.30 AC-FT‡ -5800

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

ROGUE RIVER BASIN

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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.

REMARKS.--Water-discharge records, obtained by subtracting Big Butte Creek near McLeod (station 14337500) from Rogue River near McLeod (station 14337600), were used for computation of daily sediment loads.

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; 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, 14.0°C Aug. 25; minimum, 4.5°C many days during January through March.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

ROGUE RIVER BASIN

14335075 ROGUE RIVER AT MCLEOD, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	5.0	5.0	5.0	4.5	5.0	5.5	5.0	5.0	7.5	6.5	7.0
2	5.0	5.0	5.0	---	---	---	5.5	5.0	5.0	8.5	7.0	7.5
3	5.0	5.0	5.0	---	---	---	5.5	5.0	5.0	8.0	7.0	7.5
4	5.0	5.0	5.0	---	---	---	6.0	5.0	5.5	8.0	7.0	7.5
5	5.5	4.5	5.0	---	---	---	5.5	5.0	5.5	7.5	7.0	7.5
6	5.5	4.5	5.0	---	---	---	5.5	5.0	5.5	7.5	7.0	7.5
7	5.5	4.5	5.0	6.0	5.0	5.0	6.0	5.0	5.5	7.5	7.0	7.5
8	5.0	4.5	5.0	6.0	5.0	5.0	5.5	5.0	5.5	8.0	7.0	7.0
9	5.5	4.5	5.0	5.5	5.0	5.0	6.0	5.0	5.5	8.0	7.0	7.5
10	5.5	4.5	5.0	5.5	5.0	5.0	5.5	5.0	5.5	8.0	7.0	7.5
11	5.5	4.5	5.0	5.5	5.0	5.0	6.0	5.5	5.5	8.0	7.0	7.5
12	5.0	4.5	4.5	5.0	5.0	5.0	6.0	5.5	5.5	8.5	7.5	8.0
13	5.5	5.0	5.0	5.5	5.0	5.0	6.0	5.5	6.0	8.5	7.0	8.0
14	5.5	4.5	5.0	5.0	5.0	5.0	6.0	5.5	5.5	8.5	7.5	8.0
15	5.5	5.0	5.0	5.5	5.0	5.0	7.5	5.5	6.5	9.0	7.5	8.5
16	5.5	5.0	5.0	5.5	5.0	5.0	7.0	6.5	6.5	8.5	7.5	8.0
17	5.0	5.0	5.0	5.5	5.0	5.0	7.0	6.5	6.5	8.0	7.5	8.0
18	5.5	5.0	5.0	5.5	5.0	5.0	7.0	6.5	7.0	8.0	7.5	7.5
19	5.5	5.0	5.0	5.5	4.5	5.0	7.5	6.5	7.0	8.0	7.5	7.5
20	5.5	4.5	5.0	5.0	4.5	5.0	7.5	7.0	7.0	8.5	7.5	8.0
21	5.5	4.5	5.0	5.0	4.5	5.0	7.0	6.5	7.0	9.0	7.5	8.0
22	5.5	4.5	5.0	5.5	4.5	5.0	7.5	6.5	7.0	9.0	7.5	8.5
23	5.5	4.5	5.0	5.0	4.5	5.0	7.5	6.5	7.0	9.0	7.5	8.5
24	5.5	4.5	5.0	5.0	4.5	5.0	7.0	6.0	6.5	9.0	8.0	8.5
25	5.5	4.5	5.0	5.0	4.5	5.0	7.0	6.0	7.0	8.5	7.5	8.0
26	5.5	4.5	5.0	5.5	4.5	5.0	7.0	6.5	6.5	9.0	7.5	8.5
27	5.5	4.5	5.0	5.5	4.5	5.0	7.5	6.5	7.0	9.5	7.5	8.5
28	5.0	4.5	5.0	5.5	4.5	5.0	7.0	6.5	7.0	9.0	7.5	8.5
29	---	---	---	5.5	4.5	5.0	7.5	6.5	7.0	8.5	8.0	8.5
30	---	---	---	5.5	5.0	5.0	7.5	7.0	7.0	8.5	8.0	8.5
31	---	---	---	5.5	5.0	5.0	---	---	---	9.0	8.0	8.5
MONTH	5.5	4.5	5.0	---	---	---	7.5	5.0	6.0	9.5	6.5	8.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	9.5	8.0	8.5	9.5	8.5	9.0	11.0	9.5	11.0	12.5	11.5	12.0
2	9.5	8.0	9.0	9.5	8.5	9.0	11.5	10.0	11.0	12.5	10.5	11.5
3	9.5	8.5	9.0	10.0	8.5	9.0	11.5	10.0	11.0	11.0	10.5	11.0
4	9.5	8.5	9.0	9.5	8.5	9.5	11.5	10.0	11.0	11.5	11.0	11.0
5	9.5	8.5	9.0	9.5	9.0	9.5	11.5	10.0	11.0	11.5	11.0	11.0
6	9.0	8.0	8.5	9.5	8.5	9.0	11.5	10.5	11.5	11.5	11.0	11.5
7	9.0	8.0	8.5	9.5	8.5	9.0	11.5	11.0	11.5	11.5	11.0	11.5
8	9.0	7.5	8.5	9.5	8.5	9.0	11.5	11.0	11.5	11.0	9.5	10.5
9	9.0	7.5	8.5	9.5	8.5	9.0	12.5	10.0	11.5	10.0	9.5	9.5
10	9.0	7.5	8.5	9.5	8.5	9.0	12.0	10.5	11.5	10.0	9.5	10.0
11	9.0	7.5	8.5	10.0	8.5	9.0	12.0	11.0	12.0	10.0	9.5	10.0
12	9.0	7.5	8.5	10.0	9.0	9.5	12.0	11.0	12.0	10.5	9.5	10.0
13	9.0	7.5	8.5	10.0	8.5	9.5	12.5	11.5	12.0	10.5	9.5	10.0
14	9.0	8.0	8.5	10.5	9.5	10.0	12.5	10.5	12.0	10.5	9.5	10.0
15	9.0	8.0	8.5	10.5	9.0	10.0	12.5	11.5	12.0	10.5	8.5	9.5
16	9.0	7.5	8.5	9.5	8.5	9.0	12.5	11.5	12.5	9.5	8.5	9.0
17	9.0	7.5	8.5	9.5	8.5	9.5	13.0	11.5	12.5	9.5	9.0	9.0
18	9.5	8.0	9.0	10.0	8.5	9.5	13.0	12.0	12.5	9.5	8.5	9.0
19	9.0	8.5	8.5	10.0	8.5	9.5	13.0	12.0	13.0	9.5	8.5	9.0
20	9.0	8.5	9.0	10.0	9.0	10.0	14.0	12.0	13.0	9.5	8.5	9.0
21	9.0	8.0	9.0	10.5	9.0	10.0	13.5	11.5	13.0	9.5	8.5	9.0
22	9.5	8.0	9.0	10.5	---	---	13.5	12.0	13.0	9.0	6.5	8.0
23	9.5	8.0	9.0	11.0	---	---	13.5	12.5	13.0	7.5	6.5	7.0
24	9.5	8.5	9.0	11.0	9.0	10.0	13.5	12.5	13.0	8.0	7.0	7.5
25	9.5	8.5	9.0	10.5	9.0	10.5	14.0	12.5	13.5	8.0	7.0	7.5
26	9.5	8.5	9.0	10.5	9.5	10.5	13.5	11.5	12.5	8.0	7.0	7.5
27	9.5	9.0	9.0	10.5	9.5	10.5	12.0	11.0	11.5	8.0	7.0	7.5
28	9.5	9.0	9.0	11.0	9.5	10.5	12.0	11.5	11.5	8.0	7.0	7.5
29	9.5	8.5	9.0	11.0	9.5	10.5	12.0	11.5	12.0	8.0	7.0	7.5
30	9.5	8.5	9.0	11.0	10.0	10.5	12.5	11.5	12.0	8.5	7.5	8.0
31	---	---	---	11.0	9.5	10.5	12.5	11.5	12.0	---	---	---
MONTH	9.5	7.5	9.0	11.0	---	---	14.0	9.5	12.0	12.5	6.5	9.5

ROGUE RIVER BASIN

401

14335200 SOUTH FORK BIG BUTTE CREEK ABOVE WILLOW CREEK, NEAR BUTTE FALLS, OR

LOCATION.--Lat 42°31'15", long 122°29'05", in SE 1/4 sec.17, T.35 S., R.3 E., Jackson County, Hydrologic Unit 17100307, on right bank about 200 ft upstream from Willow Creek, 4.0 mi east of town of Butte Falls, and at mile 18.4.

DRAINAGE AREA.--67.6 mi².

PERIOD OF RECORD.--October 1985 to September 1991 (discontinued). Records prior to October 1978 published by the Oregon State Water Resources Department. Records for October 1978 to September 1985 and after September 1991 available at the Oregon Water Resources Department, Salem, OR.

GAGE.--Water-stage recorder. Elevation of gage is 26.03 ft above National Geodetic Vertical Datum of 1929, from topographic map. May 1935 to October 1949, nonrecording gage and October 1949 to December 1964, water-stage recorder at different datum.

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

AVERAGE DISCHARGE.--54 years (1936-50, 1952-64, 1966-91), 78.7 ft³/s, 57,020 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,560 ft³/s Mar. 3, 1972, gage height, 7.03 ft; minimum discharge, 20 ft³/s Jan. 1, Aug. 24, 25, 29, Sept. 2-4, 1988, Sept. 19-23, 1990.

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)
May 17	1030	*327	*3.86	No other peak greater than base discharge.			
Minimum discharge, 23 ft ³ /s Oct. 1-2.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	24	34	34	27	38	51	62	105	126	59	41	33
2	24	30	33	27	45	50	63	101	122	57	39	33
3	25	30	32	27	44	62	62	96	118	55	37	33
4	25	31	33	27	48	90	63	88	111	54	36	32
5	26	36	35	27	59	103	78	84	104	53	36	31
6	27	32	32	27	52	85	90	83	98	52	37	31
7	26	32	31	30	50	74	83	84	92	50	36	32
8	26	42	31	30	48	69	78	99	89	50	36	32
9	25	37	31	29	46	68	103	91	86	49	35	32
10	25	32	53	53	45	73	107	84	83	47	35	31
11	26	30	52	49	44	67	100	82	83	48	35	31
12	26	29	41	63	44	67	94	79	81	47	35	31
13	27	33	39	125	59	66	89	105	77	48	35	31
14	26	41	37	131	56	66	85	122	72	48	35	31
15	28	33	35	148	54	64	87	110	68	48	35	28
16	28	31	34	118	54	62	85	130	66	59	35	29
17	27	31	32	92	53	61	80	301	63	61	35	30
18	30	31	39	83	55	60	75	297	62	53	35	29
19	31	32	38	78	58	59	71	263	102	49	35	29
20	29	34	31	65	54	58	72	235	106	48	34	29
21	31	38	26	60	52	56	87	225	79	47	35	29
22	37	38	26	55	50	56	89	212	70	50	34	29
23	30	34	29	52	49	57	92	209	67	52	33	29
24	30	32	30	49	47	56	113	199	65	49	33	28
25	29	51	30	46	45	61	118	184	63	48	33	29
26	29	42	31	44	44	63	128	168	61	46	33	29
27	29	37	29	42	44	58	132	154	63	44	33	29
28	30	34	30	39	45	56	123	144	63	42	33	29
29	30	35	29	37	---	55	114	144	65	42	33	28
30	30	37	27	38	---	56	109	158	63	39	33	28
31	38	---	27	39	---	61	---	140	---	40	34	---
TOTAL	874	1039	1037	1757	1382	1990	2732	4576	2468	1534	1084	905
MEAN	28.2	34.6	33.5	56.7	49.4	64.2	91.1	148	82.3	49.5	35.0	30.2
MAX	38	51	53	148	59	103	132	301	126	61	41	33
MIN	24	29	26	27	38	50	62	79	61	39	33	28
AC-FT	1730	2060	2060	3490	2740	3950	5420	9080	4900	3040	2150	1800

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1991, BY WATER YEAR (WY)

	1986	1987	1988	1989	1990	1991
MEAN	35.0	42.9	42.8	58.4	78.9	105
MAX	50.6	55.0	68.7	71.9	181	205
(WY)	1986	1987	1986	1986	1989	1989
MIN	24.0	32.0	31.8	46.3	44.2	49.2
(WY)	1989	1988	1989	1988	1988	1988

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1986 - 1991

ANNUAL TOTAL	17419	21378	59.3	
ANNUAL MEAN	47.7	58.6	78.3	
HIGHEST ANNUAL MEAN			43.7	1989
LOWEST ANNUAL MEAN				1988
HIGHEST DAILY MEAN	153	Jan 8	596	Feb 23 1986
LOWEST DAILY MEAN	21	Sep 20	21	Aug 25 1988
ANNUAL SEVEN-DAY MINIMUM	22	Sep 18	22	Sep 18 1990
ANNUAL RUNOFF (AC-FT)	34550	42400	42970	
10 PERCENT EXCEEDS	86	105	98	
50 PERCENT EXCEEDS	39	46	46	
90 PERCENT EXCEEDS	25	29	27	

ROGUE RIVER BASIN

14335500 SOUTH FORK BIG BUTTE CREEK NEAR BUTTE FALLS, OR

LOCATION.--Lat 42°32'25", long 122°33'15", in NE 1/4 SW 1/4 sec.11, T.35 S., R.2 E., Jackson County, Hydrologic Unit 17100307, on right bank 10 ft downstream from Ginger Creek, 0.6 mi east of town of Butte Falls, and at mile 14.0.

DRAINAGE AREA.--138 mi².

PERIOD OF RECORD.--September 1910 to October 1911 (published as "at Butte Falls"), August to October 1915, October 1917 to September 1922, March 1925 to September 1991 (discontinued). Monthly discharge only August, September 1915, published in WSP 1318. See REMARKS.

REVISED RECORDS.--WSP 1288: 1911, 1918-19, 1921-22, 1929. WSP 1318: 1918-19. WSP 1738: Drainage area. WDR OR-86-2: 1984(P,M), 1985(P,M).

GAGE.--Water-stage recorder. Concrete control since Oct. 1, 1968. Elevation of gage is 2,360 ft, from river-profile map. Sept. 21, 1910, to Sept. 30, 1922, nonrecording gage at site 300 ft upstream at different datum.

REMARKS.--Records good except those for Mar. 4 to June 16, which are fair. Flow slightly regulated since 1952 by Willow Creek Reservoir, capacity, 7,320 acre-ft. Diversions for irrigation upstream from station and for municipal water supply for Medford (since 1927) and Butte Falls. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--72 years (water years 1911, 1918-22, 1926-91), 152 ft³/s, 110,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 12,600 ft³/s Dec. 22, 1964, gage height, 7.65 ft, from rating curve extended above 1,600 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 26 ft³/s Oct. 28, 1988.

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

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
May 18	0800	*730	*2.36	No other peak greater than base discharge.			
Minimum discharge, 38 ft ³ /s Oct. 8.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	47	57	61	51	75	86	146	197	211	94	78	83
2	47	53	60	50	82	86	145	191	198	90	78	82
3	46	51	59	50	84	107	136	178	189	86	76	81
4	47	52	58	50	90	161	134	161	179	83	76	79
5	47	58	61	50	109	207	157	150	168	80	77	80
6	47	54	58	50	105	169	192	145	159	77	89	79
7	47	52	56	57	103	148	181	145	149	74	88	79
8	46	58	55	55	100	135	168	167	142	72	87	78
9	46	59	55	54	96	131	216	154	137	71	86	78
10	46	53	86	92	94	140	236	143	133	69	86	79
11	46	51	89	89	85	e130	222	137	129	71	85	79
12	47	51	75	114	79	e125	205	131	125	79	84	79
13	47	56	69	215	101	e125	189	175	120	91	84	78
14	47	68	65	205	99	e130	177	209	114	91	84	77
15	48	55	63	214	91	e120	174	189	109	90	84	75
16	48	53	61	177	90	e115	171	209	105	102	83	76
17	47	53	59	149	89	e112	158	631	101	104	83	75
18	51	53	66	134	91	e110	147	707	99	95	83	75
19	51	53	68	133	94	e108	138	599	158	91	82	75
20	48	56	59	114	92	107	136	512	165	90	83	74
21	51	62	e54	103	88	104	159	464	128	88	85	75
22	58	60	e50	95	85	103	157	422	114	88	85	74
23	50	58	e52	91	84	105	164	393	108	91	85	74
24	48	55	54	85	80	104	199	361	103	88	85	66
25	51	83	54	81	77	113	220	326	100	87	85	44
26	55	74	55	81	76	124	243	294	98	85	84	42
27	53	63	55	78	75	118	255	266	102	83	82	42
28	55	60	55	72	77	130	240	244	101	80	83	42
29	54	60	53	69	---	135	222	238	103	80	83	42
30	54	65	53	72	---	138	207	262	101	78	83	42
31	64	---	51	75	---	143	---	233	---	78	82	---
TOTAL	1539	1736	1869	3005	2491	3869	5494	8633	3948	2626	2578	2104
MEAN	49.6	57.9	60.3	96.9	89.0	125	183	278	132	84.7	83.2	70.1
MAX	64	83	89	215	109	207	255	707	211	104	89	83
MIN	46	51	50	50	75	86	134	131	98	69	76	42
AC-FT	3050	3440	3710	5960	4940	7670	10900	17120	7830	5210	5110	4170

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1911 - 1991, BY WATER YEAR (WY)

	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956	1957	1958	1959	1960	1961	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
MEAN	78.0	103	178	204	224	245	233	184	127	90.2	82.2	79.1	127	263	1073	1965	1921	1972	1919	1933	1953	1921	1956	1921	1921	1951	46.5	59.5	53.6	58.4	66.7	68.2	70.8	53.4	51.5	46.0	45.3	1989	1988	1977	1981	1977	1977	1988	1968	1931	1931	1931	1931	1981																															
MAX	127	263	1073	1965	1921	1972	1919	1933	1953	1921	1956	1921	1921	1951	46.5	59.5	53.6	58.4	66.7	68.2	70.8	53.4	51.5	46.0	45.3	1989	1988	1977	1981	1977	1977	1988	1968	1931	1931	1931	1931	1981																																											
MIN	39.2	46.5	59.5	53.6	58.4	66.7	68.2	70.8	53.4	51.5	46.0	45.3	1989	1988	1977	1981	1977	1977	1988	1968	1931	1931	1931	1931	1981																																																								

SUMMARY STATISTICS

	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1911 - 1991
ANNUAL TOTAL	32568	39892	151
ANNUAL MEAN	89.2	109	297
HIGHEST ANNUAL MEAN			63.6
LOWEST ANNUAL MEAN			1981
HIGHEST DAILY MEAN	262	707	5670
LOWEST DAILY MEAN	46	42	31
ANNUAL SEVEN-DAY MINIMUM	46	46	33
ANNUAL RUNOFF (AC-FT)	64600	79130	109700
10 PERCENT EXCEEDS	156	191	290
50 PERCENT EXCEEDS	71	85	105
90 PERCENT EXCEEDS	51	51	65

14337500 BIG BUTTE CREEK NEAR MCLEOD, OR

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.

DRAINAGE AREA.--245 mi².

WATER-DISCHARGE RECORDS

PERIOD OF RECORD.--October 1945 to September 1957. October 1967 to current year.

REVISED RECORDS.--WSP 1738: Drainage area.

GAGE.--Water-stage recorder. Datum of gage is 1,525.95 ft above National Geodetic Vertical Datum of 1929. Oct. 9, 1945, to Sept. 30, 1957, nonrecording gage at site 260 ft downstream at datum 0.53 ft higher.

REMARKS.--Records good. Slight regulation by fish hatchery 600 ft upstream from station. Several diversions in the vicinity of Butte Falls, the two largest being the city of Medford diversion and Eagle Point Irrigation District Canal.

AVERAGE DISCHARGE.--36 years (water years 1946-57, 1968-91), 266 ft³/s, 192,700 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,950 ft³/s Dec. 22, 1955, gage height, 12.75 ft, site and datum then in use, from rating curve extended above 3,300 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 6.4 ft³/s June 23, 24, 1977.

EXTREMES OUTSIDE PERIOD OF RECORD.--Flood of Dec. 22, 1964, reached a stage of 18.6 ft, present site, from floodmark by local resident, discharge, 16,800 ft³/s, from rating curve, at former site, extended above 9,000 ft³/s and field estimate of overflow.

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)
Mar. 4	1730	*1,350	5.94	Mar. 4	1730	(a)	*6.05

Minimum discharge, 49 ft³/s Oct. 25-28.

(a) From outside high-water mark.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	98	63	69	117	101	156	225	251	240	87	65	63
2	98	55	67	116	190	187	215	241	219	83	68	62
3	99	52	64	117	240	499	194	225	202	80	62	59
4	98	53	65	116	288	707	191	201	188	75	62	61
5	99	55	70	115	388	661	231	183	170	71	61	61
6	101	54	66	115	250	423	316	169	156	71	66	59
7	100	52	63	149	204	341	283	166	145	67	71	60
8	99	58	64	154	181	277	247	195	136	63	69	62
9	98	58	80	127	163	249	347	186	130	63	67	64
10	98	54	175	382	151	288	362	163	118	66	67	70
11	100	52	183	282	143	259	336	153	114	62	68	62
12	100	51	109	440	141	261	303	140	111	65	67	61
13	100	59	91	726	233	271	275	189	106	73	67	61
14	99	90	81	536	198	260	251	249	98	77	68	61
15	101	62	76	502	171	246	243	214	93	72	66	61
16	100	56	72	376	166	221	246	264	89	86	66	61
17	102	54	69	294	158	202	221	1180	85	99	66	59
18	93	54	72	245	170	186	201	1180	83	80	68	60
19	58	55	88	224	173	175	184	942	156	76	64	61
20	52	59	76	176	150	167	176	780	185	77	63	58
21	52	66	e64	150	133	161	211	673	128	75	68	59
22	59	69	e68	134	129	164	198	582	105	74	65	61
23	58	62	e106	121	122	202	208	513	97	94	63	61
24	76	59	118	110	115	298	247	454	93	82	62	63
25	50	122	118	100	108	294	274	401	89	77	63	71
26	50	110	118	103	104	304	336	352	87	76	63	101
27	49	77	122	111	101	243	350	316	94	73	64	102
28	52	69	123	108	104	230	311	286	94	69	68	103
29	51	67	117	100	---	225	286	278	94	68	67	102
30	55	75	113	98	---	220	266	321	94	65	64	101
31	73	---	117	103	---	221	---	276	---	64	63	---
TOTAL	2518	1922	2884	6547	4775	8598	7734	11723	3799	2310	2031	2050
MEAN	81.2	64.1	93.0	211	171	277	258	378	127	74.5	65.5	68.3
MAX	102	122	183	726	388	707	362	1180	240	99	71	103
MIN	49	51	63	98	101	156	176	140	83	62	61	58
AC-FT	4990	3810	5720	12990	9470	17050	15340	23250	7540	4580	4030	4070

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1946 - 1991, BY WATER YEAR (WY)

	129	203	402	479	491	517	378	242	138	81.3	69.0	71.5
MEAN	129	203	402	479	491	517	378	242	138	81.3	69.0	71.5
MAX	330	535	1334	1325	1121	1362	723	492	450	148	121	106
(WY)	1951	1974	1956	1956	1982	1972	1974	1953	1953	1948	1956	1948
MIN	64.4	60.2	58.0	64.2	91.7	126	73.4	57.0	43.7	36.7	43.1	43.8
(WY)	1982	1988	1977	1977	1977	1968	1977	1968	1968	1968	1977	1988

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1946 - 1991

ANNUAL TOTAL	44786	56891	266
ANNUAL MEAN	123	156	501
HIGHEST ANNUAL MEAN			79.8
LOWEST ANNUAL MEAN			1977
HIGHEST DAILY MEAN	839	1180	7190
LOWEST DAILY MEAN	46	49	15
ANNUAL SEVEN-DAY MINIMUM	47	54	30
ANNUAL RUNOFF (AC-FT)	88830	112800	192500
10 PERCENT EXCEEDS	255	290	597
50 PERCENT EXCEEDS	80	101	148
90 PERCENT EXCEEDS	49	61	58

ROGUE RIVER BASIN

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 3; minimum, 0.0°C Dec. 21-24, 30.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	---	---	---	9.5	7.0	8.5	5.0	4.0	4.5	3.0	1.0	2.0
2	---	---	---	7.5	5.5	6.5	6.0	4.5	5.5	3.0	1.0	2.0
3	---	---	---	9.0	6.0	7.5	6.0	5.0	5.5	3.5	2.0	2.5
4	13.0	---	---	8.5	7.5	8.0	6.0	5.0	5.5	3.5	2.0	3.0
5	11.5	10.0	11.0	8.5	7.5	8.0	6.5	5.0	6.0	3.5	1.5	2.5
6	10.5	7.5	9.0	8.0	6.0	7.0	5.0	3.5	4.5	4.0	2.5	3.5
7	10.0	6.0	8.0	7.0	5.5	6.5	5.0	3.0	4.0	4.5	3.0	4.0
8	10.0	6.5	8.0	9.0	7.5	8.0	5.0	4.0	5.0	4.0	3.0	3.5
9	10.5	6.5	8.5	10.0	8.0	9.0	6.5	4.5	5.5	5.0	3.5	4.0
10	10.5	7.5	9.0	8.0	6.0	7.5	7.0	6.5	6.5	4.0	1.5	3.0
11	10.0	6.5	8.5	7.5	5.5	6.5	6.5	4.5	5.5	4.0	2.5	3.5
12	9.5	6.5	8.0	7.5	5.5	6.5	4.5	3.5	4.0	5.5	4.0	4.5
13	10.5	8.0	9.5	7.5	6.5	7.0	4.5	4.0	4.5	6.0	5.0	5.5
14	10.0	7.0	8.5	7.5	6.0	7.0	4.5	3.0	4.0	6.5	5.5	6.0
15	11.0	9.0	10.0	6.0	4.5	5.5	5.0	4.0	4.5	6.5	5.0	6.0
16	11.0	8.5	10.0	6.0	4.0	5.0	5.5	4.5	5.0	5.0	4.0	4.5
17	9.5	7.0	8.0	6.5	4.5	5.5	6.0	5.0	5.5	5.0	4.0	4.5
18	9.0	8.5	8.5	8.0	6.5	7.5	6.5	5.0	6.0	5.5	4.0	4.5
19	10.0	7.5	8.5	8.5	7.0	8.0	4.5	3.0	3.5	6.5	5.0	5.5
20	9.0	6.0	7.5	7.0	6.5	7.0	2.5	.5	2.0	5.0	3.5	4.5
21	8.5	7.0	7.5	7.5	6.5	7.0	.5	.0	.0	4.5	2.5	3.5
22	11.0	8.5	9.5	8.5	7.0	7.5	.0	.0	.0	4.5	2.5	3.5
23	11.0	8.5	9.5	6.5	5.5	6.0	1.0	.0	.5	4.5	2.5	3.5
24	10.5	7.5	9.0	6.0	4.5	5.5	1.5	.0	1.0	4.0	2.5	3.0
25	10.5	7.5	9.0	6.0	5.0	5.5	2.5	1.0	2.0	4.0	1.5	2.5
26	12.0	9.5	10.5	6.0	4.5	5.5	4.5	2.5	3.5	4.0	2.0	3.0
27	11.0	8.5	9.5	6.5	5.5	6.0	3.5	2.5	3.0	4.0	1.5	2.5
28	11.0	9.0	10.0	6.0	5.0	5.5	4.5	3.5	4.0	3.5	1.5	2.5
29	9.0	7.0	8.5	6.5	5.0	5.5	3.5	1.0	2.0	3.5	1.0	2.0
30	9.5	8.5	9.0	6.5	5.0	6.0	1.5	.0	1.0	3.5	1.0	2.5
31	10.0	9.0	9.5	---	---	---	2.0	.5	1.5	5.5	3.5	4.5
MONTH	---	---	---	10.0	4.0	6.5	7.0	.0	3.5	6.5	1.0	3.5

ROGUE RIVER BASIN

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14337500 BIG BUTTE CREEK NEAR MCLEOD, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	6.5	4.5	5.5	9.0	7.0	8.0	10.0	8.0	9.0	11.0	9.5	10.0
2	6.5	6.0	6.5	8.0	7.0	7.5	11.5	8.5	9.5	12.0	8.5	10.5
3	6.0	5.5	6.0	9.5	7.0	8.0	8.5	7.5	8.0	13.0	9.0	11.0
4	6.5	5.5	6.0	8.5	7.0	8.0	10.5	7.5	8.5	13.5	9.0	11.0
5	7.5	6.0	6.5	7.0	5.5	6.5	9.0	7.5	8.5	13.5	11.0	12.0
6	6.5	4.5	5.5	6.5	5.0	5.5	8.5	7.0	7.5	12.0	10.0	11.0
7	6.5	4.0	5.5	7.5	5.0	6.0	8.0	6.5	7.0	10.5	9.5	10.5
8	6.0	4.5	5.5	8.0	5.0	6.5	8.0	5.5	7.0	11.0	9.5	10.0
9	6.5	4.0	5.5	7.5	5.5	6.5	9.5	7.5	8.0	12.0	8.5	10.0
10	7.0	4.5	6.0	7.0	5.5	6.5	8.0	6.0	7.0	11.0	8.5	9.5
11	7.5	5.5	6.5	6.0	5.0	5.5	9.0	5.5	7.0	11.5	8.0	9.5
12	7.0	5.5	6.0	7.0	5.5	6.5	10.5	6.5	8.5	14.0	10.0	11.5
13	9.0	6.5	7.5	7.5	5.5	6.5	11.5	7.5	9.5	12.0	10.5	11.5
14	8.5	6.0	7.5	6.5	5.5	6.0	11.0	7.5	9.0	13.5	9.5	11.5
15	9.0	7.0	8.0	8.0	5.0	6.0	9.5	8.0	8.5	12.0	9.5	11.0
16	9.0	7.5	8.0	7.0	5.0	6.0	8.5	6.5	8.0	13.0	10.5	11.5
17	8.0	7.0	7.5	8.0	5.5	7.0	10.0	6.5	8.5	11.5	9.5	10.0
18	8.5	7.0	7.5	9.0	6.5	7.5	11.5	7.0	9.0	9.5	8.5	8.5
19	9.0	7.5	8.0	9.0	6.0	7.5	12.0	8.0	10.0	10.0	8.5	9.0
20	9.0	7.5	8.0	8.0	6.0	7.0	11.5	9.0	10.0	13.0	9.0	11.0
21	8.0	6.0	7.0	8.0	6.0	7.0	11.0	9.0	10.0	12.0	10.0	11.0
22	8.5	5.5	7.0	7.5	5.5	7.0	13.5	9.0	11.0	14.0	9.5	12.0
23	8.5	5.0	7.0	8.0	6.5	7.0	11.5	9.5	10.5	14.0	10.0	12.5
24	8.5	5.0	6.5	8.0	5.0	6.5	11.0	9.0	10.0	13.5	10.5	12.5
25	8.5	4.5	6.5	7.0	5.5	6.5	9.0	7.5	8.5	13.0	9.5	11.5
26	9.0	5.0	7.0	8.5	5.0	6.5	9.0	7.5	8.0	13.0	9.0	11.5
27	8.0	5.0	6.5	9.5	5.0	7.5	10.5	6.5	8.5	13.5	9.5	11.5
28	8.0	6.0	7.0	9.0	5.5	7.5	9.5	7.5	8.5	12.5	10.0	11.5
29	---	---	---	10.0	6.0	8.0	12.0	7.5	9.5	11.0	9.5	10.0
30	---	---	---	11.5	6.5	9.0	11.5	9.0	10.0	12.0	9.0	10.5
31	---	---	---	10.0	7.5	9.0	---	---	---	13.5	8.5	11.0
MONTH	9.0	4.0	6.5	11.5	5.0	7.0	13.5	5.5	9.0	14.0	8.0	11.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	15.5	10.5	13.0	19.5	13.0	16.0	20.0	14.5	17.0	18.0	14.0	16.0
2	16.5	12.0	14.0	21.0	15.0	18.0	19.5	14.0	16.5	17.5	12.5	15.0
3	16.0	12.0	14.0	22.0	16.0	19.0	20.5	14.5	17.5	18.5	13.0	15.5
4	14.5	10.5	12.5	21.5	16.5	19.0	19.0	15.5	17.5	18.5	13.5	16.0
5	14.5	9.5	12.0	20.5	15.5	18.0	20.5	14.5	17.5	19.0	14.0	16.0
6	15.0	10.5	12.5	20.5	14.5	17.5	19.5	15.5	17.5	18.5	14.0	16.0
7	16.0	11.0	13.5	21.0	15.0	17.5	17.0	14.5	16.0	16.5	13.0	15.0
8	16.0	11.5	13.5	21.0	15.0	18.0	19.5	13.0	16.0	16.5	11.5	14.0
9	18.0	12.0	15.0	20.0	14.5	17.0	18.5	14.5	16.0	15.5	10.5	13.0
10	19.5	13.5	16.5	19.5	13.5	16.0	18.0	12.5	15.0	16.0	11.0	13.5
11	18.5	14.0	16.0	20.0	13.5	16.5	18.5	12.5	15.5	15.5	11.0	13.0
12	16.0	12.0	14.0	21.0	14.5	17.5	19.0	13.0	15.5	16.5	11.0	13.5
13	15.5	11.0	13.0	20.0	16.0	18.0	19.0	13.5	16.0	16.5	11.5	14.0
14	16.0	10.0	13.0	20.0	14.5	17.0	19.0	13.5	16.0	16.0	11.0	13.5
15	16.5	11.0	13.5	17.5	15.0	16.5	19.5	14.0	16.5	16.0	11.0	13.5
16	17.0	12.0	14.0	16.0	14.5	15.5	20.0	14.5	17.0	16.0	11.0	13.5
17	17.0	11.0	14.0	19.0	13.5	16.0	20.0	14.5	17.0	16.5	11.5	14.0
18	16.5	12.0	14.5	19.5	14.0	16.5	19.5	15.0	17.0	17.0	12.0	14.5
19	14.5	11.5	12.5	20.0	14.0	17.0	20.0	15.0	17.5	17.0	12.5	14.5
20	15.5	11.0	13.0	19.5	14.0	16.5	20.0	15.0	17.5	16.0	12.0	14.0
21	16.0	11.0	13.5	19.5	13.5	16.5	20.0	15.0	17.5	14.0	9.5	12.0
22	17.5	11.5	14.5	20.5	14.5	17.0	20.0	15.0	17.5	14.0	9.0	11.5
23	16.0	12.0	14.5	21.0	15.0	18.0	18.5	14.5	16.5	14.5	10.0	12.0
24	17.5	12.0	14.5	20.5	16.5	18.5	18.5	13.0	15.5	15.5	10.5	13.0
25	16.0	12.5	14.5	19.5	15.0	17.0	17.5	12.5	15.0	16.0	11.0	13.5
26	17.5	13.0	15.0	19.5	14.0	16.5	17.5	12.0	14.5	14.5	11.0	13.0
27	15.0	12.5	14.0	20.0	14.5	17.0	15.0	12.0	14.0	15.0	11.0	12.5
28	15.0	12.5	13.5	21.0	15.0	18.0	15.5	13.0	14.0	14.5	10.5	12.5
29	15.5	12.5	14.0	21.0	15.5	18.0	18.0	12.5	15.0	14.5	10.0	12.0
30	17.0	12.0	14.5	21.0	15.0	18.0	18.0	13.0	15.5	14.5	10.5	12.0
31	---	---	---	20.5	15.0	18.0	18.0	13.0	15.5	---	---	---
MONTH	19.5	9.5	14.0	22.0	13.0	17.5	20.5	12.0	16.0	19.0	9.0	13.5

ROGUE RIVER BASIN

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 Obstinate 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 National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. 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.--26 years, 2,098 ft³/s, 1,520,000 acre-ft/yr.

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, 4,440 ft³/s May 18, gage height, 4.25 ft; maximum gage height, 4.32 ft May 18, from crest-stage gage; minimum discharge, 863 ft³/s Feb. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1300	1140	1160	e1200	1070	944	1550	1880	2400	2190	1970	2100
2	1180	1140	1160	e1190	972	986	1440	1870	2350	2160	1980	2100
3	1190	1130	1150	1180	1060	1340	1430	1840	2430	2150	1980	2090
4	1200	1130	1140	1180	1100	1530	1420	1810	2470	2140	1970	2090
5	1240	1130	1140	1180	1170	1540	1470	1860	2350	2130	1970	2090
6	1240	1130	1140	1180	1050	1270	1580	2050	2140	2130	1970	2080
7	1220	1130	1140	1220	998	1190	1560	2210	2140	2120	1970	2070
8	1220	1130	1140	1220	973	1110	1510	2570	2190	2120	2000	2070
9	1150	1130	1150	1190	953	1080	1770	2640	2180	2120	2060	2070
10	1140	1130	1280	1420	939	1110	2400	2410	2180	2140	2100	2010
11	1160	1130	1310	1370	927	1090	2660	2380	2180	2130	2110	1830
12	1180	1130	1220	1540	958	1220	2630	2360	2180	2130	2110	1650
13	1190	1130	1200	1790	1080	1380	2290	2390	2170	2140	2090	1580
14	1190	1170	1190	1620	1030	1340	1930	2460	2170	2140	2090	1580
15	1180	1170	1190	1610	1000	1350	1860	2400	2160	2120	2090	1580
16	1210	1160	1180	1490	978	1320	1860	2430	2150	2150	2090	1560
17	1190	1140	1180	1400	949	1330	1830	3720	2150	2130	2090	1550
18	1190	1140	1170	1360	954	1350	1800	4090	2150	2100	2080	1550
19	1170	1140	1170	1340	958	1340	1780	3510	2210	2050	2090	1550
20	1140	1140	1210	1300	932	1290	1770	3350	2240	1990	2070	1530
21	1140	1140	1640	1260	912	1260	1810	3270	2220	1980	2100	1500
22	1130	1140	2690	1230	909	1330	1800	3210	2260	1970	2090	1510
23	1130	1140	2700	1220	903	1570	1800	3220	2240	1990	2090	1450
24	1140	1140	2700	1200	898	1660	1840	3160	2220	1980	2080	1450
25	1120	1190	2710	1190	892	1650	1870	3070	2220	1970	2090	1450
26	1120	1220	2310	1190	888	1690	1950	2790	2230	1970	2100	1490
27	1120	1180	1350	1200	886	1620	1970	2630	2240	1970	2110	1470
28	1120	1170	1210	1200	883	1600	1930	2530	2240	1960	2110	1430
29	1120	1160	1190	1190	---	1590	1910	2440	2230	1960	2110	1350
30	1120	1160	1190	1190	---	1610	1890	2620	2230	1950	2100	1240
31	1140	---	1190	1190	---	1620	---	2600	---	1960	2100	---
TOTAL	36280	34410	44500	40240	27222	42310	55310	81770	66920	64140	63960	51070
MEAN	1170	1147	1435	1298	972	1365	1844	2638	2231	2069	2063	1702
MAX	1300	1220	2710	1790	1170	1690	2660	4090	2470	2190	2110	2100
MIN	1120	1130	1140	1180	883	944	1420	1810	2140	1950	1970	1240
AC-FT	71960	68250	88270	79820	53990	83920	109700	162200	132700	127200	126900	101300

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1991, BY WATER YEAR (WY)

	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
MEAN	1279	1749	2268	2474	2130	2519	2538	2811	2361	1906	1743	1453														
MAX	1905	3932	5081	5290	4586	8565	4240	4503	4025	3024	2921	2195														
(WY)	1984	1974	1982	1974	1972	1972	1974	1971	1975	1984	1984	1983														
MIN	917	909	1003	1044	844	843	763	862	1001	903	887	843														
(WY)	1969	1988	1988	1977	1988	1988	1977	1977	1977	1968	1968	1968														

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1966 - 1991

ANNUAL TOTAL	575162	608132	2103
ANNUAL MEAN	1576	1666	3340
HIGHEST ANNUAL MEAN			1023
LOWEST ANNUAL MEAN			24800
HIGHEST DAILY MEAN	3920	4090	Mar 3 1972
LOWEST DAILY MEAN	859	883	Feb 19 1977
ANNUAL SEVEN-DAY MINIMUM	872	894	Feb 22
ANNUAL RUNOFF (AC-FT)	1141000	1206000	1524000
10 PERCENT EXCEEDS	2090	2330	3510
50 PERCENT EXCEEDS	1580	1550	1820
90 PERCENT EXCEEDS	1100	1120	1040

ROGUE RIVER BASIN

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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, 15.0°C July 1, 1980; minimum, 3.0°C Feb. 2, 1979, Feb. 6, 7, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 15.0°C Aug. 23-25; minimum, 4.5°C many days in December and January.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

14337600 ROGUE RIVER NEAR MCLEOD, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

ROGUE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929 (levels by Corps of Engineers).

REMARKS.--Water-discharge records good except for estimated daily discharges, which are fair. No regulation. Many diversions upstream from station for irrigation.

AVERAGE DISCHARGE.--18 years, 140 ft³/s, 24.13 in/yr, 101,400 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 daily discharge, 0.72 ft³/s Aug. 24, 1973.

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. 4	unknown	*2,980	*a6.82	No other peak greater than base discharge.			
Minimum discharge, 2.1 ft ³ /s Oct. 3.							
a From outside high-water mark.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	2.7	46	87	e35	55	94	200	132	107	24	9.3	5.3
2	2.7	25	74	e34	101	e300	182	128	96	22	9.1	5.0
3	2.4	17	64	e35	171	e1100	161	121	88	21	9.1	4.6
4	2.7	19	62	e36	263	e1600	145	113	80	20	9.2	4.0
5	2.7	40	78	e37	419	e1300	177	106	73	19	9.5	3.4
6	2.6	30	71	48	308	e700	237	100	69	18	8.8	3.4
7	2.4	24	61	62	220	367	63	97	63	17	8.8	4.0
8	2.4	63	54	83	174	298	236	113	57	16	8.4	4.2
9	2.4	70	52	79	144	256	366	113	55	16	7.4	4.4
10	2.7	41	206	398	125	239	375	109	51	15	7.8	4.3
11	2.4	28	275	439	111	214	302	103	47	14	7.3	4.7
12	2.3	21	163	941	115	247	250	98	44	14	6.6	3.6
13	2.9	27	115	952	345	283	218	104	42	15	6.5	4.0
14	2.9	73	89	780	298	252	195	108	40	14	6.4	3.6
15	3.7	56	74	713	223	220	177	99	38	14	6.1	3.8
16	4.1	42	63	458	184	198	161	98	35	24	5.9	3.5
17	3.4	34	55	312	167	180	146	225	35	37	5.6	3.3
18	5.1	36	117	242	172	177	135	365	34	22	6.0	3.2
19	8.2	38	160	206	211	177	125	336	47	18	5.6	3.0
20	5.3	51	111	172	198	160	121	288	44	16	5.0	3.1
21	5.9	99	e55	146	172	140	136	275	36	14	6.0	3.2
22	18	114	e35	126	148	128	134	235	33	13	4.9	3.2
23	9.6	90	e36	112	130	159	131	194	31	17	4.6	3.1
24	6.9	71	e38	100	114	200	132	166	30	17	4.9	2.9
25	5.8	179	e40	90	101	214	132	143	28	15	4.4	2.8
26	5.3	175	e42	83	92	231	153	126	28	13	4.2	2.9
27	5.2	111	49	76	85	216	190	113	28	13	3.9	2.9
28	5.3	89	47	71	81	192	173	100	28	12	6.2	2.6
29	6.2	76	e44	e66	---	173	155	100	29	11	8.9	2.6
30	9.8	95	e39	e60	---	169	142	128	26	10	6.5	2.8
31	74	---	e36	58	---	198	---	119	---	9.5	5.6	---
TOTAL	218.0	1880	2492	7050	4927	10382	5639	4655	1442	520.5	208.5	107.4
MEAN	7.03	62.7	80.4	227	176	335	188	150	48.1	16.8	6.73	3.58
MAX	74	179	275	952	419	1600	375	365	107	37	9.5	5.3
MIN	2.3	17	35	34	55	94	121	97	26	9.5	3.9	2.6
AC-FT	432	3730	4940	13980	9770	20590	11180	9230	2860	1030	414	213
CFSM	.09	.80	1.02	2.89	2.23	4.25	2.39	1.91	.61	.21	.09	.05
IN.	.10	.89	1.18	3.33	2.33	4.90	2.66	2.20	.68	.25	.10	.05

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1991, BY WATER YEAR (WY)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	13.9	145	281	278	314	266	195	123	45.9	12.1	5.36	6.85							
MAX	39.8	656	828	802	713	556	339	300	112	19.1	16.3	33.7							
(WY)	1980	1974	1982	1974	1986	1974	1974	1975	1984	1983	1976	1986							
MIN	2.47	9.60	8.00	11.3	11.2	68.0	67.1	28.6	9.58	6.46	1.22	2.42							
(WY)	1989	1977	1977	1977	1977	1977	1988	1987	1987	1977	1973	1974							

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1973 - 1991

ANNUAL TOTAL	31028.3	39521.4	
ANNUAL MEAN	85.0	108	
HIGHEST ANNUAL MEAN			140
LOWEST ANNUAL MEAN			292
HIGHEST DAILY MEAN	843	1600	5200
LOWEST DAILY MEAN	1.5	2.3	.72
ANNUAL SEVEN-DAY MINIMUM	1.8	2.5	.88
ANNUAL RUNOFF (AC-FT)	61540	78390	101200
ANNUAL RUNOFF (CFSM)	1.08	1.37	1.77
ANNUAL RUNOFF (INCHES)	14.65	18.66	24.08
10 PERCENT EXCEEDS	230	238	352
50 PERCENT EXCEEDS	42	57	50
90 PERCENT EXCEEDS	2.5	3.9	3.9

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 Aug. 19, 20; minimum, 0.0°C many days during winter months.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	17.5	13.0	15.0	8.5	5.5	7.0	4.5	4.0	4.0	.0	.0	.0
2	16.0	11.5	13.5	7.0	3.5	5.5	5.5	4.0	4.5	.0	.0	.0
3	15.5	11.0	13.0	8.5	5.0	7.0	5.5	3.5	4.5	.0	.0	.0
4	16.0	10.0	13.0	8.5	7.0	8.0	5.5	4.0	5.0	.0	.0	.0
5	14.5	11.0	13.0	8.5	5.5	7.0	5.0	3.5	4.0	.0	.0	.0
6	13.0	8.0	10.0	7.5	4.0	5.5	4.5	3.0	3.5	.0	.0	.0
7	12.0	6.5	9.0	6.5	4.5	5.5	4.5	2.5	3.5	1.0	.0	.5
8	12.0	6.5	9.0	8.0	6.0	7.5	6.5	4.0	5.0	3.0	.5	2.0
9	12.5	6.5	9.5	10.0	7.0	8.5	6.5	4.5	5.5	3.5	2.0	3.0
10	13.5	8.5	10.5	9.5	6.0	7.5	6.5	6.5	6.5	4.5	.5	2.5
11	12.0	6.5	9.0	8.0	5.0	6.0	6.5	5.0	5.5	5.5	4.5	5.0
12	10.0	7.0	8.5	7.5	4.5	6.0	5.5	4.5	5.0	6.0	4.5	5.5
13	10.5	7.5	9.0	7.5	6.0	6.5	5.0	4.0	4.5	6.5	5.5	6.0
14	10.0	6.0	8.0	7.5	5.0	6.0	4.5	3.5	4.0	6.5	6.0	6.5
15	13.0	9.0	10.5	6.5	4.0	4.5	4.5	3.5	4.0	7.0	5.5	6.5
16	12.5	8.5	10.5	6.0	3.0	4.0	4.5	3.5	4.0	6.0	5.0	5.5
17	11.0	6.5	8.5	6.0	3.5	4.5	5.0	4.0	4.5	6.0	5.0	5.5
18	9.0	8.0	8.5	8.5	6.0	7.0	5.5	4.0	4.5	6.0	5.0	5.5
19	10.5	6.0	7.5	8.0	6.0	7.0	3.5	2.5	3.0	6.0	4.5	5.5
20	9.0	4.5	7.0	5.5	4.5	5.0	2.5	.0	1.5	5.0	3.5	4.0
21	8.0	6.0	7.0	6.5	5.0	6.0	.0	.0	.0	4.5	2.5	3.5
22	10.5	7.5	8.5	8.0	6.0	7.0	.0	.0	.0	4.5	2.5	3.0
23	11.5	8.0	9.5	6.5	5.0	5.5	.0	.0	.0	4.5	2.0	3.0
24	12.0	7.0	9.5	6.0	4.0	5.0	.0	.0	.0	3.5	1.5	2.5
25	12.0	7.5	9.5	6.5	5.0	6.0	.0	.0	.0	3.0	.5	1.5
26	13.0	9.0	11.0	6.5	6.0	6.0	.5	.0	.0	3.5	.5	1.5
27	11.5	8.0	10.0	6.0	5.0	6.0	1.0	.0	.5	3.0	.0	1.5
28	12.5	8.0	10.5	6.0	5.0	5.5	1.5	.5	1.0	2.5	.0	1.0
29	10.0	7.0	8.5	5.5	4.5	5.0	.5	.0	.0	2.0	.0	.5
30	9.5	8.5	9.5	6.5	4.0	5.0	.0	.0	.0	1.5	.0	1.0
31	9.5	7.5	8.5	---	---	---	.0	.0	.0	4.5	1.5	3.0
MONTH	17.5	4.5	10.0	10.0	3.0	6.0	6.5	.0	3.0	7.0	.0	3.0

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TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	5.5	2.5	4.0	9.0	6.5	7.5	8.5	6.0	7.0	10.5	7.5	8.5
2	6.0	5.0	5.5	7.0	6.5	7.0	9.0	6.0	7.5	11.5	6.5	9.0
3	5.5	5.0	5.0	8.0	7.0	7.5	6.5	5.0	6.0	12.5	6.0	9.0
4	6.5	5.5	6.0	7.5	6.5	7.5	8.0	6.0	7.0	13.5	6.0	9.5
5	7.5	6.0	6.5	7.0	5.5	6.5	7.0	6.0	6.5	12.5	8.5	10.5
6	7.0	5.5	6.0	6.0	5.0	5.5	6.5	5.0	6.0	11.0	8.5	9.5
7	7.5	5.0	6.0	7.0	5.0	6.0	7.0	4.5	5.5	9.5	8.0	8.5
8	7.0	5.0	6.0	7.5	4.5	5.5	6.0	4.0	5.0	9.0	6.5	8.0
9	7.5	4.5	5.5	7.5	5.0	6.0	7.0	5.0	6.0	10.5	5.5	7.0
10	7.5	4.5	6.0	6.0	4.5	5.5	6.0	4.0	5.0	10.0	6.0	7.5
11	8.0	5.5	6.5	5.5	4.5	5.0	8.0	4.0	5.5	10.5	6.0	8.0
12	6.5	5.0	6.0	6.0	4.5	5.0	9.5	4.0	6.0	13.0	7.5	10.0
13	8.0	6.5	7.0	7.0	5.0	6.0	10.0	5.0	7.0	11.0	8.5	9.5
14	8.5	6.5	7.5	6.0	5.0	5.5	9.0	5.0	6.5	13.5	7.5	10.0
15	9.0	7.0	8.0	7.5	4.5	5.5	9.0	5.5	7.0	11.5	6.5	9.0
16	8.5	7.0	7.5	7.0	4.0	5.5	7.5	4.5	6.0	13.0	8.5	10.0
17	8.0	6.5	7.0	7.5	4.5	6.0	8.0	4.0	6.0	9.0	6.5	7.5
18	7.5	6.5	7.0	7.5	5.5	6.5	10.5	4.5	7.0	7.5	6.0	6.5
19	9.0	7.0	8.0	8.0	5.0	6.0	11.5	5.5	8.0	7.5	6.5	7.0
20	9.0	6.5	7.5	7.0	4.5	5.5	10.0	6.5	8.0	10.5	7.0	8.5
21	8.5	5.5	7.0	7.0	5.0	6.0	10.0	7.5	8.5	10.5	7.5	9.0
22	9.0	5.5	7.0	7.0	4.5	5.5	12.5	7.0	9.0	12.0	7.0	9.5
23	8.5	5.0	6.5	6.0	4.0	5.0	9.5	6.5	8.0	12.5	7.5	10.0
24	9.0	4.5	6.5	7.0	4.5	5.5	9.5	6.0	8.0	12.5	8.0	10.0
25	9.0	4.5	6.5	6.0	4.5	5.0	8.0	5.0	6.0	12.0	6.5	9.0
26	9.5	4.5	6.5	8.0	4.5	6.0	7.0	5.0	6.0	12.5	6.5	9.0
27	9.0	4.5	6.5	8.5	4.5	6.0	10.0	5.0	6.5	13.0	7.0	9.5
28	8.0	5.5	6.5	8.0	4.5	6.0	8.5	4.5	6.5	11.5	7.0	9.0
29	---	---	---	9.5	4.5	6.5	11.5	4.5	7.5	8.5	7.0	8.0
30	---	---	---	10.5	5.0	7.0	10.0	6.0	8.0	10.0	7.0	8.5
31	---	---	---	8.5	5.5	7.0	---	---	---	12.5	6.0	9.0
MONTH	9.5	2.5	6.5	10.5	4.0	6.0	12.5	4.0	7.0	13.5	5.5	9.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	14.5	8.0	11.0	20.0	12.0	16.0	22.0	15.0	18.5	21.0	16.0	18.0
2	15.5	9.0	12.0	22.0	14.5	18.0	22.5	15.0	18.5	20.5	14.0	17.0
3	15.0	9.5	11.5	23.5	16.0	19.5	22.5	15.5	19.0	21.5	14.5	17.5
4	14.0	7.5	10.0	23.5	16.5	19.5	22.0	16.5	19.0	22.0	15.0	18.5
5	14.0	7.0	10.0	21.5	15.0	18.0	23.0	16.5	19.5	22.5	15.5	18.5
6	14.0	8.0	10.5	21.5	14.0	17.5	22.0	17.5	19.5	22.0	16.0	18.5
7	15.5	8.5	11.5	22.0	14.5	18.0	20.0	16.5	18.5	19.5	15.0	17.0
8	15.5	9.0	12.5	22.0	14.5	18.0	22.5	15.5	19.0	19.0	13.0	15.5
9	18.5	10.5	14.0	21.0	14.5	17.5	21.0	16.5	18.5	18.0	11.0	14.5
10	19.5	12.0	15.5	20.5	12.5	16.5	20.5	13.5	16.5	18.0	12.0	14.5
11	18.5	13.0	15.5	20.5	13.0	16.5	21.0	13.5	17.0	17.0	11.5	14.5
12	16.5	10.0	13.0	22.0	14.5	18.0	21.5	14.0	17.5	18.5	12.0	15.0
13	14.5	9.5	11.5	22.0	16.5	19.0	22.0	14.5	18.0	18.5	12.5	15.0
14	16.0	8.0	11.5	22.0	15.5	18.5	22.0	14.5	18.0	18.0	11.5	14.5
15	16.5	9.0	12.5	18.5	15.5	17.0	22.5	15.5	18.5	18.0	11.5	14.5
16	16.5	9.5	12.5	17.5	15.5	16.5	23.0	16.0	19.0	18.5	12.0	15.0
17	16.5	8.5	12.0	19.5	14.0	16.5	23.5	16.5	19.5	19.0	12.5	15.5
18	16.5	10.0	13.0	20.5	13.0	16.5	24.0	17.5	20.0	19.5	13.0	16.0
19	13.0	10.5	11.5	21.0	14.0	17.0	24.5	17.5	20.5	19.5	14.0	16.5
20	16.0	9.5	12.0	21.0	14.0	17.5	24.5	18.0	20.5	18.0	13.0	15.5
21	16.5	9.0	12.5	21.0	13.5	17.0	24.0	18.0	20.5	15.0	9.5	12.5
22	17.0	9.5	13.0	22.5	15.0	18.0	24.0	17.5	20.0	15.5	9.0	12.0
23	16.0	10.0	13.0	23.0	17.0	20.0	22.5	17.0	19.5	16.0	10.5	13.0
24	18.0	11.0	14.0	23.0	17.5	20.0	22.0	15.0	18.0	17.5	11.0	14.0
25	16.5	11.0	13.5	21.5	15.0	18.0	21.0	14.0	17.0	18.0	12.0	14.5
26	17.5	11.5	14.0	21.5	14.5	17.5	20.5	13.0	16.5	17.5	13.0	15.0
27	14.5	12.0	13.5	22.0	15.0	18.5	17.0	13.5	15.5	17.5	12.5	15.0
28	14.5	12.0	13.0	23.0	16.0	19.0	17.0	15.5	16.0	17.0	12.0	14.5
29	17.0	12.0	14.0	23.0	16.0	19.0	20.5	15.0	17.5	17.0	11.5	14.0
30	18.0	11.0	14.0	23.0	15.5	19.0	21.0	15.0	17.5	17.0	12.0	14.5
31	---	---	---	23.0	16.0	19.0	21.0	15.0	17.5	---	---	---
MONTH	19.5	7.0	12.5	23.5	12.0	18.0	24.5	13.0	18.5	22.5	9.0	15.5
YEAR	24.5	.0	9.5									

ROGUE RIVER BASIN

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 National Geodetic Vertical Datum of 1929, from topographic map.

REMARKS.--Records poor. No regulation. Some diversions upstream from station for irrigation. Operated as a low-flow station only. Discharges above 585 ft³/s not estimated.

EXTREMES FOR PERIOD OF RECORD.--Minimum discharge recorded, 0.60 ft³/s Aug. 16, 17, 1986.EXTREMES FOR CURRENT YEAR.--Minimum daily discharge, 2.8 ft³/s Sept. 26, 28-30.DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	6.2	66	110	e36	e59	97	263	156	131	34	e9.5	e5.8
2	e5.5	35	90	e35	e100	332	230	147	114	31	e9.0	e5.4
3	e5.0	e26	74	e36	221	---	199	135	101	28	e9.0	e5.0
4	e5.4	e21	69	e37	384	---	178	121	91	25	e8.9	e4.6
5	e5.5	e42	88	e38	---	---	220	110	83	22	e8.8	e4.0
6	e5.2	e40	80	45	481	---	331	104	78	21	e8.4	e3.8
7	e5.5	e34	67	60	314	537	370	101	72	21	e8.2	e3.8
8	e5.8	e66	61	93	e230	418	344	124	67	18	e8.5	e3.9
9	e5.5	e80	59	89	e180	351	525	129	64	18	7.4	e4.1
10	e6.0	e52	251	492	e140	319	579	120	60	17	9.0	e3.8
11	e5.5	e37	397	---	e130	280	443	114	56	16	e8.4	e4.1
12	e5.5	e31	215	---	e120	328	355	107	53	15	e7.8	e4.2
13	6.6	e29	143	---	e370	410	294	115	51	14	e7.0	e3.9
14	7.6	e76	108	---	e360	358	254	117	49	15	6.2	e3.6
15	8.7	e60	88	---	e260	302	225	108	47	15	e5.8	e3.6
16	10	e45	75	---	e220	266	201	106	45	19	e5.6	e3.5
17	9.6	e38	64	429	e200	235	177	358	43	42	e5.4	e3.4
18	9.4	e38	125	318	e210	235	161	---	41	26	e5.4	e3.3
19	e15	40	197	263	e280	229	146	567	56	21	e5.2	e3.2
20	e11	54	137	215	e250	206	139	443	56	19	e4.9	e3.3
21	e9.2	111	e60	178	202	182	158	402	46	18	e4.9	e3.3
22	e22	151	e38	148	173	163	151	322	42	17	e4.7	e3.3
23	e19	111	e39	130	155	209	146	249	39	23	e4.5	e3.2
24	e12	79	e40	112	135	294	151	202	37	19	e4.5	e3.4
25	e9.8	225	e44	100	124	314	153	171	36	18	e4.4	e3.0
26	e8.8	239	e46	e91	111	346	188	148	36	16	e4.2	e2.8
27	e8.2	136	52	e80	103	316	257	131	38	14	e4.2	e2.9
28	e9.0	103	51	e72	89	266	223	117	41	13	e5.4	e2.8
29	e9.5	85	e46	e68	---	229	192	114	42	12	e7.5	e2.8
30	e12	115	e41	e64	---	220	171	156	37	11	e6.8	e2.8
31	82	---	e38	e60	---	267	---	153	---	10	e6.4	---
TOTAL	346.0	2265	2993	---	---	---	7424	---	1752	608	205.9	110.6
MEAN	11.2	75.5	96.5	---	---	---	247	---	58.4	19.6	6.64	3.69
MAX	82	239	397	---	---	---	579	---	131	42	9.5	5.8
MIN	5.0	21	38	---	---	---	139	---	36	10	4.2	2.8
AC-FT	686	4490	5940	---	---	---	14730	---	3480	1210	408	219
CFSM	.10	.68	.87	---	---	---	2.23	---	.53	.18	.06	.03
IN.	.12	.76	1.00	---	---	---	2.49	---	.59	.20	.07	.04

e Estimated

ROGUE RIVER BASIN

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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, 31.0°C July 13, 1987, July 26, 1988; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 28.5°C Aug. 19, 20; minimum, 0.0°C many days during winter months.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	19.5	15.5	17.5	9.5	6.5	8.0	5.0	4.0	---	.5	.0	.0
2	18.0	13.5	15.5	7.5	5.0	6.5	5.5	4.5	---	.5	.0	.0
3	17.5	13.5	15.0	9.0	6.5	8.0	5.5	4.0	---	.5	.0	.0
4	18.5	12.5	15.5	9.0	8.0	9.0	5.5	4.5	---	.5	.0	.0
5	16.0	13.0	15.0	8.5	7.0	8.0	5.5	4.0	---	.5	.0	.0
6	15.0	10.0	12.5	8.0	5.5	6.5	4.0	3.0	---	.5	.0	.0
7	14.0	8.5	11.0	7.0	5.5	6.0	4.0	2.5	---	.5	.0	.0
8	14.5	8.5	11.0	8.5	7.0	8.0	5.5	3.5	---	1.0	.0	.5
9	15.0	9.0	11.5	10.5	8.0	9.0	6.5	---	---	3.0	1.0	2.0
10	15.0	10.5	12.5	9.0	7.0	8.0	7.0	6.5	---	4.0	1.0	2.5
11	14.0	9.0	11.5	8.0	5.5	7.0	6.5	5.0	---	5.0	4.0	4.5
12	12.5	9.0	11.0	7.5	5.5	6.5	5.5	4.5	---	6.0	5.0	5.5
13	12.5	9.5	11.0	7.5	6.5	7.0	4.5	4.0	---	7.0	6.0	6.5
14	12.5	8.0	10.5	7.5	5.5	7.0	---	3.5	---	7.0	6.5	6.5
15	14.5	11.0	12.5	6.0	---	---	4.5	3.5	---	7.0	5.5	6.5
16	14.5	11.5	12.5	5.5	3.5	4.5	4.5	3.5	---	6.0	4.5	5.5
17	13.0	8.5	10.5	6.0	4.0	5.0	5.0	4.0	---	6.0	4.5	5.0
18	11.0	10.0	10.5	8.0	6.0	7.0	5.5	3.5	---	6.0	4.5	5.0
19	12.0	8.5	9.5	8.5	7.0	7.5	5.5	2.0	---	6.0	4.5	5.5
20	11.0	6.5	8.5	7.0	5.5	6.0	2.0	.0	---	4.5	3.0	4.0
21	9.0	8.0	8.5	7.0	5.5	6.0	.0	.0	.0	4.0	2.0	3.0
22	11.0	9.0	10.0	8.0	6.0	7.0	.0	.0	.0	4.0	2.0	3.0
23	13.0	10.0	11.0	6.5	5.5	6.0	.0	.0	.0	3.5	2.0	3.0
24	13.0	9.0	11.0	5.5	4.0	5.0	.0	.0	---	3.0	1.0	2.0
25	13.0	9.0	11.0	6.5	4.5	6.0	.0	.0	.0	2.5	.5	1.5
26	14.5	11.0	12.5	6.5	5.5	6.0	.5	.0	---	2.5	.5	1.5
27	13.5	10.0	11.5	6.5	5.0	6.0	.5	.0	.0	2.0	.0	1.0
28	12.5	10.5	11.5	6.0	5.5	5.5	1.0	.0	.5	2.0	.0	1.0
29	11.5	9.0	10.5	5.5	4.5	5.0	.5	.0	.0	1.5	.0	.5
30	11.0	10.0	10.5	6.0	4.5	---	.0	.0	.0	1.0	.0	.5
31	10.5	9.0	10.0	---	---	---	.0	.0	.0	4.0	1.0	2.5
MONTH	19.5	6.5	11.5	10.5	---	---	---	---	---	7.0	.0	2.5

ROGUE RIVER BASIN

14337830 ELK CREEK BELOW ALCO CREEK, NEAR TRAIL, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY			MARCH			APRIL			MAY			
1	5.0	2.5	3.5	8.5	6.5	7.5	9.0	6.0	7.5	11.5	8.0	9.5
2	5.5	5.0	5.5	7.5	6.5	7.0	10.0	7.0	8.0	12.5	7.5	10.0
3	5.5	4.5	5.0	8.0	6.5	7.5	6.5	5.5	6.0	13.0	7.0	10.0
4	6.5	5.0	5.5	7.5	6.5	7.5	9.0	6.0	7.5	13.5	7.0	10.0
5	7.0	5.5	6.5	7.0	5.5	6.5	7.5	6.5	7.0	13.0	9.5	11.5
6	7.0	5.0	5.5	6.0	5.0	5.5	7.0	5.5	6.5	11.5	9.0	10.5
7	7.0	4.5	5.5	7.0	5.0	6.0	7.5	5.0	6.0	10.0	8.5	9.5
8	6.5	4.5	5.5	7.5	4.0	5.5	6.5	4.0	5.5	9.5	7.5	9.0
9	6.5	4.0	5.5	7.5	4.5	6.0	8.0	5.5	6.5	10.5	6.0	8.0
10	7.0	4.0	5.5	6.5	5.0	5.5	7.0	4.5	5.5	10.5	6.5	8.5
11	7.5	5.0	6.0	5.5	4.0	5.0	8.5	4.0	6.0	11.0	6.5	8.5
12	6.0	4.5	5.5	6.0	4.5	5.0	10.0	4.5	7.0	13.0	8.5	10.5
13	8.0	6.0	7.0	7.5	5.0	5.5	10.5	5.5	8.0	11.5	9.0	10.0
14	8.5	6.0	7.0	5.5	4.5	5.0	9.5	5.5	7.5	14.0	8.0	11.0
15	8.5	6.5	7.5	7.5	4.5	5.5	10.0	6.0	7.5	11.5	7.5	10.0
16	8.0	6.5	7.5	6.5	4.0	5.0	7.5	5.0	6.5	13.0	9.0	11.0
17	7.5	6.0	7.0	7.5	4.5	6.0	8.5	4.5	7.0	10.0	7.0	8.5
18	7.5	6.0	6.5	8.0	5.5	6.5	10.5	5.0	8.0	8.0	6.5	7.0
19	9.0	7.0	7.5	8.0	4.5	6.0	11.5	6.0	9.0	8.0	7.0	7.5
20	8.5	6.0	7.0	7.0	4.5	5.5	10.5	7.5	9.0	12.0	7.5	9.5
21	8.0	5.5	6.5	7.0	5.0	5.5	10.5	8.0	9.0	11.0	8.0	9.5
22	8.0	5.0	6.5	6.5	4.5	5.5	12.0	7.5	9.5	13.0	7.5	10.0
23	7.5	4.5	6.0	6.0	4.5	5.5	10.0	7.5	9.0	13.5	8.0	10.5
24	7.5	4.0	6.0	7.0	4.5	6.0	9.5	7.5	8.5	13.5	8.5	11.0
25	8.0	4.0	6.0	6.0	4.5	5.5	8.5	6.0	7.0	12.5	7.5	10.0
26	8.0	4.0	6.0	8.5	4.5	6.0	8.0	5.5	6.5	13.0	7.0	10.0
27	7.5	4.0	6.0	9.0	4.0	6.0	10.5	5.5	7.5	13.5	7.5	10.5
28	7.0	5.5	6.5	8.5	4.5	6.0	9.5	5.0	7.5	13.0	8.0	10.5
29	---	---	---	10.0	4.5	7.0	12.0	5.5	8.5	10.0	8.0	8.5
30	---	---	---	11.0	5.0	7.5	11.0	6.5	8.5	12.0	7.5	9.0
31	---	---	---	9.0	6.0	7.5	---	---	---	13.5	6.5	9.5
MONTH	9.0	2.5	6.0	11.0	4.0	6.0	12.0	4.0	7.5	14.0	6.0	9.5
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE			JULY			AUGUST			SEPTEMBER			
1	15.5	8.5	12.0	22.0	14.0	18.0	25.0	17.5	21.0	24.0	17.5	20.0
2	16.5	10.0	13.0	24.0	16.5	20.0	25.5	17.5	21.0	24.0	16.0	19.5
3	15.5	10.5	13.0	25.5	18.0	22.0	25.5	18.5	21.5	25.0	16.5	20.5
4	14.5	8.5	11.5	25.0	19.0	22.0	25.0	19.5	22.0	26.0	17.5	21.5
5	14.5	8.0	11.5	23.5	17.0	20.5	26.5	19.0	22.0	26.0	18.0	21.5
6	15.5	9.0	12.0	23.5	16.0	19.5	26.0	19.5	22.5	25.5	18.0	21.5
7	15.5	9.5	12.5	24.0	16.5	20.0	22.5	19.0	21.0	21.5	17.5	19.5
8	16.5	10.5	13.5	24.0	17.0	20.5	26.0	17.5	21.5	21.5	14.5	17.5
9	19.0	11.5	15.0	23.0	17.0	20.0	24.0	19.5	21.0	21.0	13.0	17.0
10	20.0	13.5	17.0	22.5	15.5	19.0	23.5	16.0	19.5	21.5	14.0	17.5
11	19.5	14.5	17.0	23.0	15.5	19.5	24.5	16.0	20.0	21.0	14.0	17.5
12	17.5	12.0	14.5	24.5	17.0	21.0	25.0	16.5	20.5	22.5	14.5	18.0
13	16.0	10.5	13.5	24.5	18.5	21.5	26.0	17.5	21.5	22.0	15.0	18.0
14	16.5	9.5	13.0	24.0	18.0	21.0	26.5	18.0	21.5	21.5	14.5	17.5
15	17.5	10.5	14.0	20.5	17.5	19.5	26.5	18.5	22.0	22.0	14.0	17.5
16	17.5	11.0	14.0	19.5	17.0	18.0	27.0	18.5	22.5	22.5	14.5	18.0
17	17.5	10.5	14.0	21.0	15.0	18.0	27.5	19.0	23.0	23.5	15.0	19.0
18	17.5	12.0	15.0	22.5	15.0	18.5	27.5	20.0	23.5	23.5	15.5	19.5
19	14.5	11.5	12.5	23.0	15.5	19.0	28.5	20.0	23.5	23.0	16.5	19.5
20	16.5	10.5	13.0	23.0	16.0	19.5	28.5	20.5	24.0	21.5	15.5	18.5
21	16.5	10.5	14.0	23.0	15.5	19.5	28.0	20.0	23.5	19.0	12.0	15.5
22	18.0	11.5	15.0	25.0	17.0	21.0	27.5	20.0	23.0	19.5	11.5	15.5
23	17.5	12.0	15.0	25.5	18.5	22.0	25.5	19.0	22.0	20.0	12.5	16.0
24	19.0	12.5	15.5	24.0	19.5	22.0	25.0	17.0	20.5	21.5	13.5	17.5
25	17.5	13.0	15.0	23.5	17.0	20.5	23.5	16.5	19.5	21.5	14.5	18.0
26	18.5	13.0	15.5	24.0	16.5	20.5	23.5	15.5	19.0	20.5	15.5	18.0
27	16.0	13.5	15.0	25.0	17.5	21.0	20.0	15.5	18.0	21.0	14.5	17.5
28	16.5	13.0	14.5	25.5	18.5	22.0	19.5	17.0	18.0	20.5	14.5	17.5
29	16.5	13.0	15.0	26.0	18.5	22.0	23.5	16.5	19.5	21.0	14.0	17.0
30	19.0	12.5	16.0	26.0	18.5	22.0	24.0	17.0	20.0	21.0	14.0	17.5
31	---	---	---	26.0	18.5	22.0	23.5	17.0	20.0	---	---	---
MONTH	20.0	8.0	14.0	26.0	14.0	20.5	28.5	15.5	21.0	26.0	11.5	18.5

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 1,773.24 ft above National Geodetic Vertical Datum of 1929 (Corps of Engineers bench mark).

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

AVERAGE DISCHARGE.--17 years, 20.3 ft³/s, 19.41 in/yr, 14,710 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,410 ft³/s Jan. 15, 1974, gage height, 5.30 ft, from rating curve extended above 600 ft³/s on basis of slope-area measurement of peak flow; minimum, 0.26 ft³/s Sept. 16, 1981.

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)
Mar. 4	1900	*342	2.70	No other peak greater than base discharge.			
Mar. 4	1900	(a)	*3.03				
Minimum discharge, 0.63 ft ³ /s Sept. 27.							
(a) From crest-stage gage.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	.76	4.0	7.9	2.8	3.6	5.2	21	9.0	9.8	2.2	1.1	1.0
2	.74	2.6	6.2	2.8	10	35	15	7.7	8.2	1.9	1.2	1.0
3	.79	2.0	5.1	2.8	24	161	13	6.9	6.9	1.7	1.2	.94
4	.85	1.9	4.7	3.0	46	188	10	6.1	5.8	1.5	1.2	.88
5	.80	2.1	6.0	3.0	88	128	12	5.5	5.3	1.4	1.2	.86
6	.83	2.1	5.9	3.1	49	58	18	4.9	4.8	1.4	1.2	.80
7	.85	2.3	4.9	5.1	27	37	24	4.8	4.4	1.3	1.3	.79
8	.87	3.7	4.4	6.4	16	29	25	5.7	4.0	1.3	1.2	.89
9	.91	3.6	4.3	6.1	11	24	32	6.3	3.8	1.3	1.2	.88
10	.85	2.8	22	41	8.6	21	39	7.7	3.5	1.2	1.3	.87
11	.89	2.2	28	53	7.3	17	32	8.7	3.3	1.2	1.2	.83
12	.91	1.9	13	158	6.7	19	26	8.1	3.2	1.2	1.1	.83
13	1.0	2.9	8.7	124	12	25	21	8.0	3.2	1.1	1.1	.79
14	1.0	6.8	6.6	66	15	26	17	8.1	2.9	1.2	1.1	.80
15	1.1	4.4	5.4	49	12	23	14	8.1	2.8	1.3	1.1	.79
16	1.1	3.4	4.6	33	9.9	21	12	8.2	2.7	2.9	1.0	.76
17	1.1	2.8	3.9	22	8.9	20	11	52	2.7	3.5	1.0	.71
18	1.5	2.8	5.4	16	10	22	9.5	87	2.5	1.9	1.0	.71
19	1.4	2.9	7.5	14	22	23	8.8	66	3.5	1.5	.99	.73
20	1.1	4.0	6.6	12	20	19	7.9	56	3.4	1.4	.95	.74
21	1.2	6.4	e3.5	10	14	15	7.5	52	2.8	1.3	.97	.77
22	1.8	7.4	e2.8	8.4	11	13	6.8	33	2.6	1.4	.90	.78
23	1.3	5.4	e2.9	7.4	8.7	18	6.5	21	2.5	2.0	.93	.75
24	1.2	4.1	e3.0	6.5	7.1	31	6.7	15	2.5	1.5	.95	.73
25	1.1	17	e3.2	5.7	6.0	34	7.1	12	2.4	1.5	.95	.69
26	1.1	15	e3.3	5.2	5.3	34	10	9.7	2.3	1.5	.96	.69
27	1.1	9.3	3.4	5.3	4.9	30	16	8.5	2.9	1.4	.96	.67
28	1.5	7.5	3.4	4.9	4.7	26	14	7.5	3.1	1.3	1.5	.73
29	1.4	6.4	3.0	4.6	---	20	12	7.7	2.7	1.2	1.6	.76
30	2.6	8.8	2.8	4.5	---	19	10	10	2.4	1.2	1.1	.74
31	6.8	---	2.8	3.9	---	24	---	12	---	1.2	1.1	---
TOTAL	40.45	148.5	195.2	689.5	468.7	1165.2	464.8	563.2	112.9	47.9	34.56	23.91
MEAN	1.30	4.95	6.30	22.2	16.7	37.6	15.5	18.2	3.76	1.55	1.11	.80
MAX	6.8	17	28	158	88	188	39	87	9.8	3.5	1.6	1.0
MIN	.74	1.9	2.8	2.8	3.6	5.2	6.5	4.8	2.3	1.1	.90	.67
AC-FT	.80	295	387	1370	930	2310	922	1120	224	95	69	47
CFSM	.09	.35	.44	1.57	1.18	2.65	1.09	1.28	.27	.11	.08	.06
IN.	.11	.39	.51	1.81	1.23	3.05	1.22	1.48	.30	.13	.09	.06

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1973 - 1991, BY WATER YEAR (WY)

	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	3.42	22.6	39.1	42.1	49.7	40.8	25.6	11.5	4.83	2.29	1.76	2.01							
MAX	7.27	102	104	140	100	124	52.4	28.2	11.3	4.94	4.29	4.44							
(WY)	1980	1974	1982	1974	1983	1974	1974	1979	1984	1983	1976	1986							
MIN	.75	2.68	3.45	6.69	9.47	6.51	4.54	3.07	1.29	1.03	.58	.73							
(WY)	1989	1988	1990	1981	1988	1988	1990	1987	1987	1990	1981	1981							

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1973 - 1991

ANNUAL TOTAL	3338.24	3954.82	
ANNUAL MEAN	9.15	10.8	
HIGHEST ANNUAL MEAN			20.3
LOWEST ANNUAL MEAN			49.8
HIGHEST DAILY MEAN	155	188	8.00
LOWEST DAILY MEAN	.69	.67	904
ANNUAL SEVEN-DAY MINIMUM	.74	.72	.29
ANNUAL RUNOFF (AC-FT)	6620	7840	.33
ANNUAL RUNOFF (CFSM)			14730
ANNUAL RUNOFF (INCHES)	.64	.76	1.43
10 PERCENT EXCEEDS	21	25	19.45
50 PERCENT EXCEEDS	3.0	4.0	5.1
90 PERCENT EXCEEDS	.85	.89	5.6
			1.1

ROGUE RIVER BASIN

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, 25.5°C Aug. 8, 1978; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 22.5°C Aug. 20; minimum, 0.0°C many days during winter months.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	15.5	12.5	14.0	8.0	5.5	7.0	4.0	3.5	3.5	.0	.0	.0
2	15.0	11.0	12.5	7.0	4.5	5.5	5.0	3.5	4.0	.0	.0	.0
3	14.0	11.0	12.0	8.5	5.5	7.0	5.0	3.5	4.0	.0	.0	.0
4	14.0	10.0	12.0	8.5	7.5	8.0	5.0	3.5	4.5	.0	.0	.0
5	13.0	10.0	12.5	8.5	6.0	7.5	4.5	3.0	3.5	.5	.0	.0
6	11.5	7.5	9.5	6.0	4.5	5.5	3.5	2.5	3.0	.5	.0	.5
7	10.5	6.0	8.0	6.5	4.5	5.5	3.5	2.0	3.0	.5	.0	.0
8	10.5	6.0	8.0	8.5	6.5	7.5	4.5	3.5	4.0	1.5	.5	1.0
9	11.0	6.5	9.0	9.5	7.5	8.5	6.0	4.0	5.0	2.5	1.5	2.0
10	11.5	8.5	9.5	8.0	6.0	7.0	7.0	6.0	6.5	4.0	.5	2.5
11	10.5	6.5	8.5	7.0	5.0	6.0	6.5	4.5	5.5	5.0	4.0	4.5
12	10.0	7.0	8.5	7.0	4.5	6.0	5.0	4.0	4.5	6.5	5.0	6.0
13	10.0	7.5	9.0	7.5	6.0	7.0	4.0	3.5	4.0	7.5	6.5	7.0
14	10.0	6.5	8.5	7.5	5.0	6.5	4.0	3.0	3.5	7.5	7.0	7.0
15	11.0	9.5	10.0	5.5	4.0	4.5	4.0	3.0	3.5	7.0	5.5	6.5
16	11.0	8.5	10.0	5.0	3.5	4.0	4.0	3.0	3.5	5.5	4.5	5.0
17	9.5	6.0	8.0	6.0	3.5	5.0	5.0	3.5	4.5	5.0	4.0	4.5
18	9.0	8.0	8.5	7.5	6.0	7.0	5.5	3.0	4.5	5.5	4.0	5.0
19	8.5	6.5	7.5	7.5	6.0	7.0	3.0	1.5	2.0	6.0	4.0	5.0
20	8.0	5.0	6.5	6.0	5.0	5.5	1.0	.0	.5	4.0	2.5	3.5
21	8.0	6.0	7.0	6.5	5.5	6.0	.0	.0	.0	3.0	2.0	2.5
22	9.5	7.5	8.5	7.5	6.0	6.5	.0	.0	.0	3.0	1.5	2.0
23	10.5	8.5	9.5	5.5	4.5	5.0	.0	.0	.0	3.0	1.5	2.0
24	10.0	7.5	9.0	5.0	4.0	4.5	.0	.0	.0	2.0	.5	1.0
25	10.0	7.5	9.0	6.5	4.5	5.5	.0	.0	.0	1.5	.0	.5
26	11.5	9.5	10.5	5.5	5.0	5.5	.0	.0	.0	1.5	.0	.5
27	10.5	8.0	9.5	6.0	5.0	5.5	.0	.0	.0	.5	.0	.0
28	11.0	8.5	10.0	5.5	4.5	5.0	.5	.0	.5	.0	.0	.0
29	9.0	7.5	8.5	5.5	4.0	5.0	.5	.0	.0	.0	.0	.0
30	9.5	8.5	9.5	5.5	4.0	5.0	.0	.0	.0	.5	.0	.0
31	9.5	8.0	9.0	---	---	---	.0	.0	.0	3.0	.5	2.0
MONTH	15.5	5.0	9.5	9.5	3.5	6.0	7.0	.0	2.5	7.5	.0	2.5

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TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.5	2.0	3.0	8.0	6.0	7.0	8.5	6.5	7.5	11.5	7.5	9.0
2	5.0	4.5	5.0	6.5	6.0	6.5	9.5	6.5	7.5	12.5	7.0	9.5
3	5.5	5.0	5.5	7.5	6.5	7.0	7.0	5.5	6.0	13.0	7.0	10.0
4	6.5	5.5	6.0	7.5	6.5	7.0	9.5	6.0	7.5	13.5	7.0	10.0
5	7.0	5.5	6.5	6.5	5.0	6.0	7.5	6.5	7.0	13.0	9.0	11.0
6	7.0	5.0	6.0	6.0	5.0	5.5	7.0	5.5	6.0	11.5	9.0	10.5
7	7.0	4.5	5.5	6.5	4.5	5.5	6.5	5.0	5.5	10.5	8.5	9.5
8	6.5	4.5	5.5	7.0	4.0	5.5	6.5	4.0	5.5	9.5	7.0	9.0
9	6.0	4.0	5.0	7.0	4.5	5.5	8.0	5.0	6.5	10.0	6.0	8.0
10	6.5	4.0	5.0	6.0	4.5	5.0	6.5	4.5	5.0	9.5	6.5	8.5
11	7.0	4.5	5.5	5.0	3.5	4.5	8.0	4.0	5.5	10.0	6.5	8.0
12	6.0	4.5	5.0	5.5	4.0	4.5	9.5	4.0	6.5	12.0	8.0	10.0
13	7.5	5.5	6.5	6.0	4.0	5.0	9.5	5.0	7.5	10.5	8.5	9.5
14	7.5	5.5	6.5	5.0	4.0	4.5	8.5	5.5	7.0	13.0	7.5	9.5
15	8.0	6.0	7.0	6.0	4.0	4.5	10.0	6.0	7.5	11.0	7.0	9.0
16	7.5	6.0	7.0	6.5	3.5	5.0	7.5	5.0	6.0	12.5	8.5	10.0
17	7.0	5.5	6.5	7.0	4.0	6.0	9.0	4.5	6.5	9.0	7.0	8.0
18	7.0	6.0	6.5	7.5	5.0	6.0	10.0	4.5	7.5	7.5	6.5	7.0
19	8.0	6.5	7.0	7.0	4.5	5.5	12.0	6.0	8.5	8.0	7.0	7.5
20	8.0	5.5	6.5	6.5	4.0	5.5	10.5	7.5	9.0	10.5	7.5	9.0
21	8.0	5.0	6.5	6.0	4.5	5.5	10.5	8.0	9.0	10.0	8.0	9.0
22	7.5	4.5	6.0	6.0	4.0	5.0	12.0	7.5	9.5	12.0	7.5	9.5
23	7.0	4.0	5.5	6.0	4.0	5.0	10.0	7.0	9.0	12.5	7.5	10.0
24	7.5	4.0	5.5	6.5	4.5	5.5	10.0	7.0	8.5	12.5	8.5	10.5
25	7.5	4.0	5.5	6.0	4.5	5.0	8.0	6.0	7.0	12.0	7.0	9.5
26	7.5	4.0	5.5	7.5	4.0	5.5	7.5	5.5	6.5	12.5	7.0	9.5
27	7.5	4.0	5.5	8.0	4.0	5.5	10.0	5.0	7.0	13.0	7.0	10.0
28	7.0	5.0	6.0	7.5	4.0	5.5	9.0	5.0	7.0	11.5	7.5	9.5
29	---	---	---	9.0	4.5	6.5	12.0	5.0	8.0	9.0	7.5	8.5
30	---	---	---	10.0	5.0	7.5	11.0	6.5	8.5	10.5	7.5	8.5
31	---	---	---	9.0	6.0	7.5	---	---	---	12.0	6.5	9.0
MONTH	8.0	2.0	6.0	10.0	3.5	5.5	12.0	4.0	7.0	13.5	6.0	9.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	14.0	8.5	11.0	19.0	12.0	15.0	19.5	14.0	17.0	19.0	15.0	17.0
2	15.0	9.5	12.0	20.5	13.5	17.0	20.0	14.0	17.0	18.0	13.0	15.5
3	14.0	10.0	11.5	22.0	15.0	18.5	20.0	15.0	17.5	19.5	14.0	16.5
4	13.0	8.0	10.0	21.5	16.0	18.5	20.5	16.0	18.0	20.5	15.0	17.5
5	13.5	7.5	10.0	20.0	14.0	17.0	20.5	16.0	18.5	20.5	15.5	18.0
6	13.0	8.0	10.5	20.0	13.5	16.5	20.5	16.0	18.5	20.5	15.5	17.5
7	14.5	9.0	11.5	20.0	13.5	17.0	18.5	16.0	17.5	18.0	15.0	16.0
8	15.0	9.5	12.5	20.5	14.0	17.0	20.5	15.0	17.5	17.0	12.5	14.5
9	17.5	10.5	14.0	19.5	13.5	16.5	19.5	16.0	17.5	16.0	11.0	13.5
10	18.5	12.5	15.0	18.5	12.0	15.5	18.5	13.0	16.0	16.5	11.5	14.0
11	18.0	13.0	15.0	19.0	12.5	15.5	18.5	13.0	16.0	16.0	11.5	14.0
12	15.5	10.5	12.5	20.5	14.0	17.0	19.0	13.5	16.5	17.5	12.0	14.5
13	14.0	9.0	11.5	20.5	15.5	18.0	19.5	14.0	17.0	17.5	12.5	14.5
14	15.0	8.5	11.5	20.0	15.0	17.5	20.0	14.5	17.5	17.0	12.0	14.0
15	15.5	9.5	12.0	17.0	14.5	16.0	20.0	15.0	17.5	17.0	11.5	14.0
16	15.0	9.5	12.0	16.5	14.5	15.5	20.5	15.5	18.0	17.5	11.5	14.5
17	15.5	8.5	11.5	18.5	14.0	15.5	21.0	16.0	18.0	18.5	12.5	15.0
18	15.5	10.0	12.5	19.0	12.5	15.5	21.5	16.5	19.0	19.0	13.0	15.5
19	12.5	10.5	11.5	19.0	13.0	16.0	22.0	16.5	19.5	19.0	13.5	16.0
20	15.0	10.0	12.0	19.0	13.0	16.0	22.5	17.0	19.5	18.0	13.5	15.0
21	15.0	9.0	12.0	19.0	13.0	16.0	22.0	17.0	19.5	15.0	10.0	12.5
22	15.5	10.0	12.5	20.5	14.0	17.0	22.0	17.0	19.5	15.0	9.5	12.0
23	14.5	10.0	12.5	21.5	15.5	18.5	20.5	16.5	18.5	16.0	10.5	13.0
24	16.0	11.0	13.0	20.5	16.5	18.5	19.5	14.5	17.0	17.0	11.5	14.0
25	15.0	11.0	12.5	19.5	14.5	17.0	18.5	14.0	16.0	17.5	12.0	14.5
26	16.0	11.0	13.0	19.5	13.5	16.5	18.0	13.0	15.5	17.0	13.0	15.0
27	14.0	11.5	12.5	20.0	14.0	17.5	16.0	13.0	15.0	17.5	12.5	14.5
28	13.5	12.0	12.5	20.5	15.0	18.0	16.5	15.0	15.5	17.0	12.5	14.5
29	14.5	12.0	13.0	20.5	15.0	18.0	18.5	14.5	16.5	16.5	11.5	14.0
30	16.5	11.0	13.5	20.5	15.0	18.0	18.5	14.0	16.5	17.0	12.0	14.0
31	---	---	---	20.5	15.0	18.0	19.0	14.0	16.5	---	---	---
MONTH	18.5	7.5	12.0	22.0	12.0	17.0	22.5	13.0	17.5	20.5	9.5	15.0
YEAR	22.5	.0	9.0									

ROGUE RIVER BASIN

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14338000 ELK CREEK NEAR TRAIL, OR--Continued

WATER-QUALITY RECORDS

PERIOD OF RECORD.--Water years 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; minimum, 0.0°C at times during most winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 26.5°C Aug. 18-20; minimum, 0.0°C Dec. 20-31, Jan. 1-9, 28-30.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	20.0	17.5	18.5	9.5	8.5	9.0	4.5	4.0	4.0	.0	.0	.0
2	19.0	16.0	17.0	8.0	6.5	7.0	5.5	4.0	4.5	.0	.0	.0
3	18.5	16.0	16.5	8.5	6.5	7.5	5.0	4.0	5.0	.0	.0	.0
4	18.0	15.0	16.5	9.0	8.5	8.5	5.5	4.5	5.0	.0	.0	.0
5	17.0	14.5	16.0	8.5	8.0	8.5	5.0	4.5	5.0	.5	.0	.0
6	16.5	13.5	14.5	8.0	7.0	7.5	4.0	3.0	3.5	.0	.0	.0
7	16.0	12.5	13.5	7.0	6.0	6.5	4.0	2.5	3.0	.5	.0	.0
8	14.5	11.5	13.0	8.5	7.0	7.5	5.0	4.0	4.5	.0	.0	.0
9	14.0	11.0	12.5	10.5	8.5	9.0	6.0	4.5	5.0	2.0	.0	1.0
10	14.0	11.5	12.5	9.5	8.5	9.0	7.0	6.0	6.5	3.5	1.0	2.0
11	14.5	10.5	12.0	8.5	7.0	7.5	6.5	5.0	6.0	5.0	4.0	4.5
12	13.0	10.5	11.5	7.5	6.5	7.0	5.0	4.0	4.5	6.0	5.0	5.5
13	13.0	10.5	11.5	7.5	7.0	7.0	4.5	4.0	4.5	7.0	6.0	6.5
14	12.5	10.0	11.0	7.5	6.5	7.0	4.5	4.0	4.5	7.0	6.5	6.5
15	14.0	11.5	12.5	6.0	5.0	5.5	4.5	3.5	4.0	7.0	5.5	6.5
16	14.0	12.0	13.0	5.5	4.0	4.5	4.5	4.0	4.0	5.5	4.5	5.0
17	13.5	11.0	12.0	5.5	4.0	4.5	5.5	4.5	4.5	5.5	4.5	5.0
18	11.5	10.5	11.0	7.5	5.5	6.5	6.0	4.5	5.5	5.5	4.0	5.0
19	11.5	10.0	10.5	8.0	7.5	8.0	4.0	2.0	3.0	6.5	5.0	5.5
20	11.0	9.0	10.0	7.5	6.0	7.0	2.0	.0	1.5	4.5	3.5	4.0
21	10.0	9.0	9.5	6.5	6.0	6.0	.0	.0	.0	4.0	2.0	3.0
22	11.0	9.0	10.0	8.0	6.5	7.0	.0	.0	.0	3.5	2.0	3.0
23	12.5	10.5	11.5	7.0	6.0	6.5	.0	.0	.0	3.5	2.0	2.5
24	12.5	10.5	12.0	6.0	5.5	5.5	.0	.0	.0	3.0	1.5	2.0
25	13.0	10.5	11.5	6.5	5.0	5.5	.0	.0	.0	2.5	.5	1.5
26	14.0	12.0	13.0	6.5	5.5	6.0	.0	.0	.0	2.5	.5	1.5
27	13.5	11.5	12.5	6.5	5.5	6.0	.0	.0	.0	2.0	.5	1.0
28	13.0	11.5	12.5	6.5	5.5	6.0	.5	.0	.0	1.5	.0	1.0
29	12.5	11.0	11.5	5.5	5.0	5.5	.0	.0	.0	1.5	.0	.5
30	11.0	11.0	11.0	6.0	5.0	5.5	.0	.0	.0	1.0	.0	.5
31	11.0	9.5	10.5	---	---	---	.0	.0	.0	3.5	.5	2.0
MONTH	20.0	9.0	12.5	10.5	4.0	7.0	7.0	.0	3.0	7.0	.0	2.5

ROGUE RIVER BASIN

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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 recorded, 16.0°C Aug. 9-12, 1988, Aug. 13, 14, 1990; minimum, 2.0°C Feb. 5, 6, 1989, Feb. 14, 15, 1990.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 15.5°C Aug. 19-22, 24, 25; minimum, 3.0°C Jan. 25, 29, 30.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	10.0	7.5	8.5	8.5	7.0	7.5	6.5	6.0	6.0	5.0	4.0	4.5
2	9.5	7.0	8.0	8.0	6.0	7.0	7.0	6.0	6.5	5.0	4.0	4.5
3	9.5	7.0	7.5	7.5	6.0	6.5	7.0	6.0	6.5	5.0	4.0	4.5
4	9.5	6.5	8.0	7.0	6.0	6.5	7.0	6.0	6.5	5.0	4.0	4.5
5	8.0	6.5	7.5	7.0	6.0	6.5	7.0	6.0	6.5	5.0	4.0	4.5
6	9.0	6.0	7.0	7.0	5.5	6.0	6.5	5.5	6.0	5.0	4.0	4.5
7	9.0	6.0	7.0	6.5	5.5	6.0	6.5	5.5	6.0	5.5	4.5	5.0
8	9.0	6.0	7.0	7.0	6.0	6.5	7.0	6.0	6.5	5.0	4.0	4.5
9	9.0	6.0	7.5	7.5	6.0	7.0	7.0	6.0	6.5	5.5	4.0	4.5
10	9.0	6.5	7.5	7.5	6.0	6.5	7.0	6.5	7.0	5.0	3.5	4.0
11	9.0	6.0	7.0	7.0	5.5	6.0	6.5	5.5	6.5	5.0	4.0	4.5
12	8.5	6.0	7.0	7.0	5.5	6.0	6.0	5.5	6.0	5.5	5.0	5.5
13	9.0	6.5	7.0	6.5	6.0	6.0	6.5	5.5	6.0	6.0	5.5	6.0
14	8.5	6.0	7.0	7.0	5.5	6.5	6.5	5.5	6.0	6.0	6.0	6.0
15	8.5	7.0	7.5	6.5	5.5	6.0	6.5	6.0	6.0	6.5	5.0	6.0
16	8.5	6.5	7.5	6.5	5.0	5.5	6.5	6.0	6.0	5.5	4.5	5.0
17	8.5	6.0	7.0	6.5	5.5	6.0	6.5	6.0	6.5	5.5	4.0	4.5
18	7.5	6.5	7.0	7.0	6.5	6.5	6.5	5.5	6.0	5.0	4.5	4.5
19	8.5	6.5	7.0	7.5	6.5	7.0	5.5	5.0	5.0	6.0	4.5	5.5
20	8.5	6.0	7.0	7.0	6.5	6.5	5.5	4.0	5.0	5.0	4.0	4.5
21	7.0	6.0	6.5	7.0	6.5	6.5	5.5	4.0	4.5	5.0	3.5	4.0
22	8.5	6.5	7.5	7.5	6.5	7.0	6.0	5.5	5.5	5.0	3.5	4.0
23	9.0	6.5	7.5	7.5	6.5	7.0	6.0	5.5	5.5	5.0	3.5	4.0
24	9.0	6.5	7.5	7.0	6.5	6.5	6.0	5.5	5.5	5.0	3.5	4.0
25	9.0	6.5	7.5	7.0	6.5	6.5	6.0	5.5	5.5	5.0	3.0	4.0
26	9.0	7.0	7.5	7.5	6.5	7.0	6.0	5.0	5.5	5.0	3.5	4.0
27	9.0	6.5	7.5	7.5	6.5	7.0	5.5	5.0	5.0	5.0	3.5	4.0
28	8.5	6.5	7.5	7.5	6.5	7.0	5.5	4.5	5.0	5.0	3.5	4.0
29	8.0	6.5	7.0	7.5	6.5	7.0	5.0	4.0	4.5	5.0	3.0	4.0
30	8.0	7.0	7.5	7.5	6.0	7.0	5.0	4.0	4.5	5.0	3.0	4.0
31	8.0	7.0	7.5	---	---	---	5.0	4.0	4.5	5.5	4.0	4.5
MONTH	10.0	6.0	7.5	8.5	5.0	6.5	7.0	4.0	6.0	6.5	3.0	4.5

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	5.5	4.5	5.0	7.0	5.5	6.0	7.0	5.5	6.5	9.0	7.5	8.0
2	5.5	5.0	5.0	6.5	5.5	6.0	8.0	7.0	7.0	10.5	7.5	8.0
3	5.0	5.0	5.0	8.0	6.0	7.0	8.0	6.0	6.0	10.5	7.5	9.0
4	6.0	5.0	5.5	7.5	6.5	7.0	7.5	5.5	6.5	10.5	8.0	9.0
5	7.0	5.5	6.0	7.0	5.5	6.5	6.5	6.0	6.0	10.0	8.0	9.0
6	6.0	4.5	5.5	6.0	5.0	5.5	7.0	5.5	6.0	9.5	7.5	8.5
7	6.0	4.5	5.0	7.5	5.0	6.0	7.0	5.0	6.0	8.5	8.0	8.0
8	5.5	4.5	5.0	7.0	4.5	6.0	6.5	5.0	5.5	8.5	7.5	8.0
9	6.0	4.0	5.0	7.0	5.0	6.0	8.0	5.5	6.5	9.5	7.5	8.5
10	6.0	4.5	5.0	6.5	5.0	5.5	6.5	5.0	5.5	9.5	7.5	8.5
11	6.5	4.5	5.5	5.5	4.5	5.0	7.5	5.0	6.0	9.5	7.5	8.5
12	5.5	4.5	5.0	6.0	5.0	5.5	7.5	5.5	6.5	10.0	8.5	9.0
13	7.0	5.0	6.0	7.0	5.0	5.5	8.0	5.5	7.0	10.0	8.0	9.0
14	7.0	5.5	6.0	5.5	4.5	5.0	7.5	5.5	6.5	10.5	8.0	9.0
15	7.0	5.5	6.0	7.0	4.5	5.5	8.0	6.0	7.0	10.5	8.0	9.0
16	7.0	5.5	6.0	6.0	4.5	5.0	7.5	6.5	7.0	10.5	8.5	9.0
17	6.0	5.0	5.5	6.5	4.5	5.5	8.5	6.0	7.0	9.5	8.5	8.5
18	6.5	5.5	6.0	7.5	5.0	6.0	9.0	6.5	7.5	8.5	7.5	8.0
19	8.0	5.5	6.5	7.0	5.0	5.5	9.5	7.0	8.0	8.5	8.0	8.0
20	7.5	5.5	6.5	6.0	5.0	5.5	9.0	7.5	8.0	10.5	8.0	9.0
21	6.5	5.0	5.5	6.0	5.0	5.5	9.0	7.5	8.0	10.0	8.5	9.0
22	7.0	4.5	5.5	6.5	5.0	5.5	10.0	7.5	8.0	11.0	8.0	9.5
23	7.0	4.5	5.5	6.0	5.0	5.5	8.5	7.5	8.0	11.0	8.5	9.5
24	7.0	4.5	5.5	6.0	5.0	5.5	8.5	7.0	7.5	10.5	9.0	10.0
25	7.5	4.5	5.5	5.5	5.0	5.5	8.0	6.5	7.5	10.5	8.0	9.5
26	7.5	4.5	5.5	7.5	4.5	6.0	8.0	7.0	7.5	11.0	8.0	9.5
27	7.0	4.5	5.5	7.5	4.5	6.0	9.5	6.5	7.5	11.0	8.0	9.5
28	6.0	5.0	5.5	7.0	4.5	5.5	8.5	7.0	7.5	11.0	8.0	9.5
29	---	---	---	8.0	5.0	6.0	10.0	7.0	8.0	9.5	8.5	9.0
30	---	---	---	8.0	5.0	6.5	9.5	7.5	8.5	10.0	8.0	9.0
31	---	---	---	7.0	5.5	6.0	---	---	---	11.0	8.0	9.5
MONTH	8.0	4.0	5.5	8.0	4.5	6.0	10.0	5.0	7.0	11.0	7.5	9.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	11.5	8.5	10.0	12.0	8.5	10.0	13.5	9.5	12.0	14.5	12.0	13.0
2	12.0	9.0	10.5	12.0	9.0	10.5	13.5	10.0	12.0	14.0	11.0	12.5
3	12.0	9.5	10.5	12.5	9.0	10.5	14.0	10.5	12.0	13.5	10.5	11.5
4	11.5	9.0	10.0	12.5	9.5	10.5	13.5	10.5	12.0	13.5	11.0	12.0
5	11.5	9.0	10.0	12.5	9.5	10.5	14.0	10.5	12.5	13.5	11.0	12.0
6	12.0	8.5	10.0	12.0	9.5	10.5	14.0	11.0	12.5	13.5	11.0	12.0
7	11.5	8.5	10.0	12.0	9.0	10.0	13.0	11.5	12.0	13.0	11.0	12.0
8	11.0	8.0	9.5	12.0	9.0	10.0	14.0	11.0	12.5	12.5	9.5	11.0
9	12.0	8.5	10.0	12.0	9.0	10.0	14.0	10.5	12.5	12.0	9.0	10.5
10	12.0	8.5	10.0	12.0	9.0	10.0	14.5	11.0	12.5	12.0	9.5	10.5
11	12.0	8.5	10.0	12.0	9.0	10.5	14.5	11.0	12.5	12.0	9.5	10.5
12	11.5	8.0	9.5	12.5	9.0	10.5	14.5	11.0	13.0	12.5	9.5	10.5
13	11.0	8.0	9.5	12.5	9.0	10.5	14.5	11.5	13.0	12.5	9.5	10.5
14	11.5	8.0	9.5	13.0	9.5	10.5	15.0	11.5	13.0	12.5	9.5	10.5
15	11.5	8.0	9.5	12.0	10.0	11.0	15.0	11.0	13.0	12.5	9.0	10.5
16	11.5	8.0	9.5	11.0	9.5	10.0	15.0	11.5	13.5	12.0	8.5	10.0
17	11.5	8.0	9.5	12.5	9.5	10.5	15.0	12.0	13.5	12.0	9.0	10.0
18	11.5	8.0	10.0	12.5	9.0	10.5	15.0	12.0	13.5	12.0	9.0	10.0
19	10.0	9.0	9.5	12.5	9.0	10.0	15.5	12.5	14.0	12.0	8.5	10.0
20	11.5	9.0	10.0	12.5	9.0	11.0	15.5	12.5	14.0	12.0	8.5	10.0
21	11.5	8.5	10.0	13.0	9.0	11.0	15.5	12.5	14.0	11.5	8.5	9.5
22	12.0	8.5	10.0	13.0	9.5	11.5	15.5	12.0	14.0	11.0	7.0	9.0
23	11.5	8.5	10.0	13.5	10.0	11.5	15.0	12.0	14.0	10.0	6.5	8.0
24	11.5	9.0	10.0	13.5	10.0	11.5	15.5	12.5	14.0	10.0	7.0	8.0
25	11.5	9.0	10.0	13.0	9.5	11.5	15.5	12.5	14.0	10.0	7.0	8.0
26	11.5	9.0	10.0	13.0	10.0	11.5	14.5	12.0	13.0	9.5	7.5	8.5
27	11.0	9.5	10.0	13.5	10.0	11.5	13.0	11.0	12.0	10.5	7.5	8.5
28	11.0	9.5	10.0	13.5	10.0	11.5	13.0	11.5	12.5	10.5	7.0	8.5
29	11.0	9.0	10.0	13.5	10.0	12.0	14.0	12.0	12.5	10.5	7.5	8.5
30	11.0	9.0	10.0	13.5	10.0	12.0	14.5	12.0	13.0	11.0	7.5	9.0
31	---	---	---	13.5	10.0	12.0	14.5	12.0	13.0	---	---	---
MONTH	12.0	8.0	10.0	13.5	8.5	11.0	15.5	9.5	13.0	14.5	6.5	10.0
YEAR	15.5	3.0	8.0									

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.

WATER-DISCHARGE RECORDS

GAGE.--Water-stage recorder. Datum of gage is 1,271.99 ft above National Geodetic Vertical Datum of 1929. 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.

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.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1991, BY WATER YEAR (WY)

MEAN	1364	2058	3097	2475	2691	2622	2782	2768	2363	2255	2219	1755
MAX	1931	4925	7983	4749	6045	4645	4520	4330	3939	3152	3092	2200
(WY)	1983	1985	1982	1980	1982	1989	1989	1984	1984	1984	1984	1983
MIN	1135	928	1274	1262	1080	1004	1341	1726	1760	1858	1941	1288
(WY)	1988	1988	1990	1981	1988	1988	1981	1981	1981	1988	1978	1980

WATER YEARS 1978 - 1991

ANNUAL TOTAL	644400		693330		
ANNUAL MEAN	1765		1900		2370
HIGHEST ANNUAL MEAN					3671
LOWEST ANNUAL MEAN					1582
HIGHEST DAILY MEAN	4950	Jan 8	5460	Mar 4	23000
LOWEST DAILY MEAN	1110	Feb 19	1010	Feb 28	823
ANNUAL SEVEN-DAY MINIMUM	1150	Oct 23	1070	Feb 23	842
ANNUAL UNOFE (AC-FT)	1278000		1375000		1717000
90 PERCENT EXCEEDS	2240		2660		3820
50 PERCENT EXCEEDS	1840		1970		2020
90 PERCENT EXCEEDS	1190		1190		1210

ROGUE RIVER BASIN

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: Maximum, 20.0°C July 27, 28, 1975; minimum, 0.0°C Jan. 6-8, 10, 11, 1974, Jan. 6-9, 1977.

Maximum since full operation of Lost Creek Lake, 19.5°C July 3, 1981; minimum, 0.5°C Feb. 5, 6, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum recorded, 18.5°C Aug. 21, 22 but may have been higher during period of missing record, Aug. 17-20; minimum, 2.0°C Dec. 21.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	11.0	8.5	9.5	8.5	7.0	8.0	6.5	5.5	6.0	4.5	3.0	4.0
2	10.0	7.0	8.5	8.5	5.5	7.0	7.0	6.0	6.5	4.5	3.0	4.0
3	9.5	6.5	8.0	8.0	5.5	7.0	7.0	6.0	6.5	4.5	3.0	4.0
4	10.5	6.5	8.0	7.0	6.0	6.5	7.0	6.0	6.5	4.5	3.0	4.0
5	8.0	6.5	7.0	7.5	5.5	6.5	7.5	6.0	6.5	4.5	3.0	3.5
6	9.5	6.0	7.5	7.5	5.5	6.5	6.0	5.5	6.0	4.5	3.5	4.0
7	9.5	5.5	7.5	6.5	5.5	6.0	6.0	5.0	5.5	5.5	4.5	5.0
8	9.5	6.0	7.5	7.5	6.5	7.0	6.5	6.0	6.0	5.0	4.0	4.5
9	10.0	6.0	8.0	8.5	7.0	7.5	7.0	5.5	6.5	5.0	4.0	4.5
10	9.5	6.5	8.0	7.5	6.0	6.5	7.0	7.0	7.0	5.0	3.5	4.0
11	9.5	6.0	7.5	7.0	6.0	6.5	7.0	5.5	6.5	5.0	3.5	4.5
12	9.0	6.0	7.5	7.0	6.0	6.5	6.0	5.0	5.5	5.5	5.0	5.0
13	9.0	6.5	8.0	6.5	6.0	6.0	6.0	5.5	6.0	6.0	5.5	6.0
14	9.0	6.0	7.5	7.5	6.0	6.5	6.0	5.5	6.0	6.0	6.0	6.0
15	10.0	7.5	8.5	6.0	5.0	5.5	6.5	5.5	6.0	6.5	5.0	6.0
16	9.5	7.0	8.5	6.0	5.0	5.5	6.5	5.5	6.0	5.0	4.5	4.5
17	9.0	6.0	7.5	6.5	5.0	6.0	7.0	6.0	6.5	5.0	4.0	4.5
18	8.0	7.0	7.5	7.5	6.5	7.0	7.0	5.5	6.5	5.0	4.0	4.5
19	8.5	6.5	7.5	8.0	6.5	7.0	5.5	4.5	5.0	6.0	4.5	5.0
20	8.5	5.5	7.0	7.0	6.5	7.0	4.5	3.5	4.0	5.5	4.0	4.5
21	7.5	6.0	7.0	7.5	6.5	7.0	4.0	2.0	3.0	5.0	3.0	4.0
22	9.0	7.0	8.0	8.0	7.0	7.5	5.5	4.0	4.5	5.0	3.0	4.0
23	9.5	7.0	8.0	7.0	6.0	6.5	5.5	4.5	5.0	5.0	3.0	4.0
24	9.5	6.5	8.0	7.0	6.5	6.5	6.0	4.5	5.0	4.5	2.5	3.5
25	9.5	6.5	8.0	7.0	6.5	6.5	6.0	4.5	5.5	4.5	2.5	3.5
26	9.5	7.5	8.5	7.5	6.0	7.0	6.5	5.0	5.5	4.5	3.0	3.5
27	9.5	6.5	8.0	7.5	6.5	7.0	5.0	4.5	5.0	4.5	2.5	3.5
28	9.0	7.5	8.0	7.5	6.5	7.0	5.5	4.5	5.0	4.5	2.5	3.5
29	8.5	6.5	7.5	7.5	6.5	7.0	4.5	3.0	3.5	4.5	2.5	3.5
30	8.0	7.5	8.0	7.5	6.0	7.0	4.0	2.5	3.5	4.5	2.5	3.5
31	9.0	7.5	8.0	---	---	---	4.0	2.5	3.5	5.5	3.5	4.5
MONTH	11.0	5.5	8.0	8.5	5.0	6.5	7.5	2.0	5.5	6.5	2.5	4.5

ROGUE RIVER BASIN

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14339000 ROGUE RIVER AT DODGE BRIDGE, NEAR EAGLE POINT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

ROGUE RIVER BASIN

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 National Geodetic Vertical Datum of 1929.

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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 1,920 ft³/s May 16, 1991, gage height 3.92 ft; minimum discharge, 0.33 ft³/s Oct. 18, 1991.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 1,920 ft³/s May 16, gage height, 3.92 ft; minimum discharge, 0.33 ft³/s Oct. 18.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	3.5	18	11	e11	22	49	36	55	23	51	43
2	7.0	2.6	17	e9.6	e60	48	46	37	62	17	56	40
3	7.7	2.2	15	e9.8	e50	334	41	30	55	30	56	42
4	10	2.8	12	e9.8	e80	255	37	25	45	45	59	38
5	11	2.8	10	e9.6	e54	197	49	23	42	47	58	34
6	13	3.2	9.6	e11	30	120	63	22	38	48	59	30
7	12	4.0	9.1	e11	21	93	51	26	33	44	65	36
8	11	5.2	9.2	e10	20	79	41	32	35	43	65	38
9	8.6	6.3	8.7	e10	18	76	50	41	38	48	55	40
10	8.0	7.0	32	e21	18	70	49	29	42	52	59	36
11	7.8	7.0	42	e20	17	58	46	32	35	67	54	46
12	5.0	8.3	23	e40	17	52	45	32	34	58	48	53
13	4.4	17	16	e84	21	53	43	193	31	57	49	51
14	1.8	35	13	e80	25	50	41	147	27	53	51	53
15	3.4	20	17	e30	22	53	44	73	24	54	52	48
16	3.2	18	18	e26	28	57	48	324	28	101	57	38
17	4.3	18	16	e24	32	50	37	964	29	61	59	39
18	2.8	19	14	e26	e29	47	34	467	32	44	59	42
19	1.6	18	16	e37	e30	36	33	280	77	39	57	45
20	.9	19	12	e25	e29	31	28	298	53	36	77	40
21	1.3	18	6.8	e21	e27	27	42	274	36	32	78	34
22	3.6	17	9.7	e18	e26	25	41	259	28	28	58	34
23	1.3	17	9.9	e17	21	26	64	231	32	34	61	40
24	1.2	18	12	e15	20	25	61	186	38	43	65	35
25	1.2	37	12	e14	18	39	64	148	32	53	64	35
26	1.0	28	15	e15	18	46	69	123	27	50	60	43
27	1.3	21	11	e14	16	49	67	95	38	48	34	57
28	1.8	21	12	e13	17	42	55	62	31	43	37	37
29	2.2	21	14	e12	---	36	48	70	37	40	36	33
30	1.4	21	8.4	e11	---	40	43	85	32	35	38	32
31	3.8	---	9.5	e12	---	48	---	68	---	37	43	---
TOTAL	152.9	437.9	447.9	666.8	775	2184	1429	4712	1146	1410	1720	1212
MEAN	4.93	14.6	14.4	21.5	27.7	70.5	47.6	152	38.2	45.5	55.5	40.4
MAX	13	37	42	84	80	334	69	964	77	101	78	57
MIN	.90	2.2	6.8	9.6	11	22	28	22	24	17	34	30
AC-FT	303	869	888	1320	1540	4330	2830	9350	2270	2800	3410	2400

WTR YR 1991 TOTAL 16293.5 MEAN 44.6 MAX 964 MIN .90 AC-FT 32320

e Estimated

ROGUE RIVER BASIN

427

14357500 BEAR CREEK AT MEDFORD, OR

LOCATION REVISED.--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 and concrete control. Datum of gage is 1,343.27 ft above National Geodetic Vertical Datum of 1929. 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.--Records good, except for estimated daily discharges, which are fair. 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.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 14,500 ft³/s Dec. 2, 1962, gage height, 10.04 ft, present datum; maximum gage height, about 13.0 ft Feb. 20, 1927, from floodmarks, present datum, site then in use; no flow at times.

EXTREMES FOR CURRENT YEAR.--Maximum discharge 2,110 ft³/s May 17, gage height, 5.91 ft; minimum daily discharge, 10 ft³/s Oct. 2.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e11	32	33	24	25	38	59	66	67	54	30	31
2	e10	28	32	23	59	59	57	66	63	27	32	30
3	12	27	30	24	44	540	52	59	61	27	32	27
4	12	27	29	24	65	443	49	58	52	26	36	24
5	12	28	27	23	99	408	60	54	54	30	44	26
6	12	29	26	27	61	194	89	58	53	38	39	29
7	11	29	25	27	48	149	73	65	37	32	42	28
8	12	31	25	26	43	131	56	68	46	31	48	31
9	14	32	26	25	41	122	69	81	45	26	37	e31
10	13	32	78	43	38	115	67	73	44	33	44	e29
11	13	31	94	42	37	101	55	72	33	48	43	e40
12	15	32	50	50	38	79	54	70	35	35	46	e50
13	17	46	39	102	42	81	58	198	38	42	43	e47
14	19	69	34	102	39	75	62	205	32	50	37	e50
15	21	40	34	69	41	72	70	119	25	65	33	e43
16	21	35	34	56	56	79	72	220	28	203	40	e35
17	19	34	32	44	46	69	66	1590	39	161	43	e36
18	32	34	31	45	44	65	76	779	49	113	45	e43
19	28	33	34	57	45	58	66	443	117	95	45	e37
20	19	33	30	43	42	60	57	430	113	72	40	36
21	23	33	21	37	40	58	75	393	74	74	143	35
22	27	31	23	34	39	59	73	336	53	72	82	37
23	23	31	25	32	36	59	91	292	61	47	69	40
24	20	32	25	31	35	57	96	236	70	50	73	38
25	19	51	25	27	33	57	94	187	57	67	82	35
26	18	47	29	28	32	67	96	146	46	71	96	33
27	17	37	27	27	31	64	94	120	57	65	69	48
28	24	35	28	26	32	56	81	87	75	60	77	29
29	23	35	26	24	---	48	74	92	72	60	60	19
30	27	37	24	24	---	48	67	111	63	46	45	16
31	36	---	24	27	---	54	---	94	---	33	43	---
TOTAL	580	1051	1020	1193	1231	3565	2108	6868	1659	1853	1638	1033
MEAN	18.7	35.0	32.9	38.5	44.0	115	70.3	222	55.3	59.8	52.8	34.4
MAX	36	69	94	102	99	540	96	1590	117	203	143	50
MIN	10	27	21	23	25	38	49	54	25	26	30	16
AC-FT	1150	2080	2020	2370	2440	7070	4180	13620	3290	3680	3250	2050

CAL YR 1990 TOTAL 21837 MEAN 59.8 MAX 428 MIN 10 AC-FT 43310
WTR YR 1991 TOTAL 23799 MEAN 65.2 MAX 1590 MIN 10 AC-FT 47210

e Estimated

ROGUE RIVER BASIN

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 National Geodetic Vertical Datum of 1929. 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.--No estimated daily discharges. Water-discharge records excellent. Flow regulated since February 1977 by Lost Creek Lake (station 14335040). Slight regulation by Fish Lake (published with station 14342500) and Emigrant Lake. Many diversions for irrigation upstream from station.

AVERAGE DISCHARGE.--86 years (water years 1906-91), 2,955 ft³/s, 2,141,000 acre-ft/yr.

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 lowered during periods of no record during water years 1931-34.

EXTREMES FOR CURRENT YEAR.--Maximum discharge, 16,000 ft³/s Mar. 4, gage height, 7.61 ft; minimum discharge, 1,230 ft³/s Oct. 9-12.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1460	1470	1540	1380	1490	1390	2470	2550	3080	2400	1970	2210
2	1300	1370	1510	1400	1540	1590	2310	2520	2840	2260	2000	2220
3	1310	1340	1470	1380	2320	5970	2210	2440	2860	2220	2040	2190
4	1280	1320	1450	1380	2510	7750	2170	2350	2880	2220	2040	2170
5	1360	1350	1470	1370	4190	8970	2200	2300	2770	2230	2050	2160
6	1350	1360	1490	1390	2730	4270	2750	2400	2490	2210	2030	2150
7	1350	1350	1470	1480	2120	3300	2720	2670	2350	2200	2040	2150
8	1340	1340	1450	1570	1840	2710	2520	2880	2410	2200	2030	2150
9	1300	1410	1440	1560	1670	2420	2810	3380	2400	2170	2090	2170
10	1230	1370	1850	2590	1570	2440	3820	3010	2370	2180	2150	2150
11	1270	1350	2520	2870	1490	2370	3950	2950	2310	2190	2190	2010
12	1290	1330	2000	4250	1450	2280	3730	2900	2280	2170	2190	1830
13	1310	1370	1850	5720	1920	2770	3470	3150	2270	2170	2140	1710
14	1300	1630	1780	4360	2040	2630	2790	3500	2260	2190	2130	1690
15	1290	1480	1760	3870	1820	2660	2710	3220	2250	2210	2120	1700
16	1290	1390	1740	3160	1730	2470	2690	3320	2240	2480	2140	1690
17	1290	1360	1730	2570	1640	2340	2570	11100	2240	2600	2150	1640
18	1320	1350	1730	2300	1620	2270	2480	10100	2230	2400	2150	1630
19	1350	1350	1930	2370	1770	2220	2390	7170	2440	2310	2160	1620
20	1320	1370	1840	2110	1740	2120	2340	6140	2650	2190	2110	1620
21	1320	1400	1670	1950	1640	2030	2460	5880	2460	2160	2270	1590
22	1380	1530	2820	1840	1560	2000	2490	5370	2430	2140	2190	1590
23	1340	1500	3030	1750	1500	2390	2480	5030	2420	2160	2170	1570
24	1310	1450	3010	1700	1440	2740	2570	4610	2440	2180	2170	1530
25	1300	1630	3000	1650	1400	2710	2740	4310	2380	2110	2200	1520
26	1280	1980	2830	1620	1360	3160	2870	3910	2370	2090	2220	1540
27	1280	1670	1780	1590	1330	2780	3090	3540	2410	2080	2190	1560
28	1300	1560	1430	1560	1310	2580	2890	3310	2490	2060	2240	1570
29	1290	1510	1400	1530	---	2460	2740	3110	2510	2040	2260	1450
30	1310	1530	1360	1510	---	2400	2620	3410	2480	1990	2220	1340
31	1410	---	1360	1510	---	2460	---	3390	---	1980	2200	---
TOTAL	40830	43420	57710	67290	50740	92650	82050	125920	74010	68190	66250	54120
MEAN	1317	1447	1862	2171	1812	2989	2735	4062	2467	2200	2137	1804
MAX	1460	1980	3030	5720	4190	8970	3950	11100	3080	2600	2270	2220
MIN	1230	1320	1360	1370	1310	1390	2170	2300	2230	1980	1970	1340
AC-FT	80990	86120	114500	133500	100600	183800	162700	249800	146800	135300	131400	107300

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1905 - 1991, BY WATER YEAR (WY)

	MEAN	1421	2361	3722	4334	4495	4114	4057	3773	2769	1714	1427	1345
MAX	3799	8409	18830	11960	12540	12520	7805	6702	5749	3161	3115	2508	
(WY)	1951	1910	1965	1965	1907	1972	1907	1917	1917	1984	1984	1983	
MIN	846	923	1073	1112	1115	1286	989	1279	920	747	642	679	
(WY)	1932	1930	1931	1937	1977	1988	1977	1931	1931	1931	1931	1931	

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1905 - 1991

ANNUAL TOTAL	736790	823180		
ANNUAL MEAN	2019	2255		
HIGHEST ANNUAL MEAN			2953	
LOWEST ANNUAL MEAN			5132	1974
HIGHEST DAILY MEAN	8260	Jan 8	11100	May 17
LOWEST DAILY MEAN	1230	Oct 10	1230	Oct 10
ANNUAL SEVEN-DAY MINIMUM	1280	Oct 10	1280	Oct 10
ANNUAL RUNOFF (AC-FT)	1461000		1633000	
10 PERCENT EXCEEDS	2640		3100	
50 PERCENT EXCEEDS	1960		2150	
90 PERCENT EXCEEDS	1360		1350	

ROGUE RIVER BASIN

429

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, 22.0°C July 25, 26, 1976; minimum, 0.0°C Jan. 7, 1974. Maximum since full operation of Lost Creek Lake, 20.5°C July 3, 4, 1981; minimum, 1.0°C Dec. 30, 1978, Jan. 30, 1980, Feb. 5, 6, 1989, Dec. 21, 1990.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 18.5°C July 30, Aug. 17, 18, 21, 22; minimum, 1.0°C Dec. 21.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	13.0	11.0	12.0	9.5	8.5	9.0	7.0	5.5	6.0	3.5	2.0	2.5
2	12.0	10.5	11.0	8.5	7.0	8.0	6.5	5.5	6.0	3.0	2.5	3.0
3	11.5	10.0	10.5	8.0	7.5	8.0	6.5	6.0	6.0	3.5	2.5	3.0
4	12.0	10.0	11.0	8.0	7.0	7.5	6.5	6.0	6.0	3.5	3.0	3.5
5	12.0	10.0	11.0	8.0	7.0	7.5	7.0	6.5	6.5	3.5	2.5	3.0
6	10.0	8.5	9.0	8.0	6.5	7.0	6.5	5.5	6.0	3.5	2.5	3.0
7	9.5	8.0	9.0	7.5	6.5	7.0	6.0	5.0	5.5	5.0	3.5	4.0
8	9.5	8.0	9.0	8.5	7.0	7.5	6.0	5.5	5.5	4.5	4.0	4.5
9	10.0	8.5	9.0	9.5	8.0	8.5	6.5	5.5	6.0	4.5	4.0	4.5
10	10.0	9.0	9.5	9.0	7.0	8.0	7.0	6.5	7.0	4.5	3.0	4.0
11	10.0	8.5	9.0	8.0	7.0	7.0	7.0	6.0	6.5	4.5	3.0	3.5
12	9.5	8.5	9.0	7.0	6.5	7.0	6.0	5.0	5.5	5.5	4.5	5.0
13	10.0	9.5	9.5	7.0	6.5	7.0	5.5	5.0	5.5	6.0	5.5	5.5
14	10.0	8.5	9.0	7.5	7.0	7.5	5.5	5.0	5.0	6.0	6.0	6.0
15	11.0	9.5	10.0	7.5	5.5	6.5	5.5	5.0	5.5	6.5	6.0	6.5
16	11.0	9.5	10.0	6.0	5.5	5.5	6.0	5.5	5.5	6.0	4.5	5.0
17	10.0	8.0	9.0	6.5	5.5	6.0	6.5	5.5	6.0	4.5	4.0	4.5
18	9.5	8.5	9.0	7.5	6.5	7.0	6.5	6.0	6.5	4.5	4.0	4.5
19	9.0	8.0	8.5	8.0	7.5	8.0	6.0	4.0	5.0	5.5	4.5	5.0
20	9.0	7.5	8.0	8.0	7.0	7.5	4.0	3.0	3.5	5.5	4.5	5.0
21	8.5	7.5	8.0	7.5	7.0	7.5	3.0	1.0	2.0	5.0	3.5	4.0
22	9.5	8.0	9.0	8.5	7.5	7.5	4.5	2.5	3.5	4.5	3.5	4.0
23	10.5	9.5	9.5	8.0	6.5	7.0	4.5	3.5	4.0	4.5	3.0	4.0
24	10.5	9.0	9.5	7.0	6.5	7.0	5.0	3.5	4.0	4.0	3.0	3.5
25	10.0	9.0	9.5	7.0	6.5	6.5	5.0	4.0	4.5	4.0	2.5	3.5
26	11.0	10.0	10.5	7.0	6.0	6.5	5.5	4.5	5.0	4.0	3.0	3.5
27	11.0	9.0	10.0	7.5	6.5	7.0	5.0	4.0	4.0	4.0	2.5	3.5
28	10.0	9.5	10.0	7.5	6.5	7.0	4.5	4.0	4.0	4.0	2.5	3.5
29	9.5	8.0	8.5	7.0	6.5	7.0	4.5	2.5	3.5	4.0	2.5	3.0
30	9.0	8.5	9.0	7.5	6.5	7.0	3.0	1.5	2.5	3.5	2.5	3.0
31	10.0	9.0	9.5	---	---	---	3.0	2.0	2.5	5.5	3.5	4.0
MONTH	13.0	7.5	9.5	9.5	5.5	7.0	7.0	1.0	5.0	6.5	2.0	4.0

ROGUE RIVER BASIN

14359000 ROGUE RIVER AT RAYGOLD, NEAR CENTRAL POINT, OR--Continued

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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

14361500 ROGUE RIVER AT GRANTS PASS, OR

LOCATION.--Lat 42°25'50", 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 National Geodetic Vertical Datum of 1929. 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.

AVERAGE DISCHARGE.--53 years (water years 1939-91), 3,433 ft³/s, 2,487,000 acre-ft/yr.

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, 18,300 ft³/s Mar. 5, gage height, 9.45 ft; minimum discharge, 788 ft³/s Oct. 4.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1240	1510	1560	1310	1430	1330	2620	2250	3150	2350	1850	2010
2	1130	1370	1520	1320	1450	1620	2440	2420	2810	2170	1850	2020
3	1060	1310	1480	1290	2780	6910	2300	2480	2820	2060	1900	1970
4	959	1280	1450	1290	2650	9590	2240	2390	2840	2060	1890	1950
5	1030	1300	1470	1270	5340	12300	2260	2310	2760	2090	1900	1920
6	1130	1320	1480	1290	3500	5540	2900	2360	2460	2070	1890	1920
7	1140	1300	1450	1400	2490	4070	2970	2660	2180	2060	1890	1930
8	1440	1290	1420	1520	2050	3240	2730	2780	2300	2080	1870	1940
9	1400	1360	1410	1520	1810	2790	2830	3440	2290	2030	1910	1970
10	1400	1330	1660	2150	1650	2720	3960	3050	2240	2050	2000	1980
11	1180	1300	2700	3430	1540	2690	4160	2970	2190	2060	2040	1870
12	1170	1270	2120	4650	1460	2570	3940	2930	2150	2050	2030	1610
13	1220	1310	1790	6390	1800	3240	3750	3060	2120	2040	1970	1490
14	1210	1640	1670	4970	2160	3030	3010	3570	2130	2080	1950	1470
15	1200	1540	1580	4200	1880	3030	2860	3320	2120	2110	1950	1480
16	1210	1390	1530	3550	1760	2760	2810	3240	2120	2450	1950	1470
17	1190	1340	1500	2780	1660	2570	2670	9840	2110	2660	1960	1420
18	1240	1340	1480	2400	1620	2470	2580	10600	2100	2430	1970	1410
19	1280	1320	1670	2420	1770	2410	2460	8000	2290	2290	1980	1400
20	1280	1330	1680	2170	1780	2300	2390	6590	2680	2110	1930	1390
21	1250	1370	1500	1960	1660	2180	2490	6240	2420	2070	2080	1380
22	1310	1530	2590	1830	1570	2110	2660	5690	2360	2080	2030	1380
23	1280	1530	3140	1730	1500	2500	2540	5230	2340	2170	1990	1380
24	1240	1460	3140	1670	1420	3000	2600	4780	2380	2150	1990	1310
25	1230	1550	3150	1600	1360	2970	2840	4440	2300	2050	2010	1300
26	1210	2130	3120	1560	1300	3460	2930	4080	2300	2000	2020	1310
27	1210	1760	2040	1520	1280	3060	3190	3620	2330	2000	2010	1350
28	1240	1600	1410	1490	1250	2790	3020	3370	2450	1960	2070	1380
29	1240	1540	1350	1450	---	2630	2860	3130	2460	1930	2110	1300
30	1300	1540	1290	1430	---	2530	2650	3400	2440	1880	2040	1190
31	1410	---	1280	1440	---	2570	---	3460	---	1850	2010	---
TOTAL	38029	43160	56630	69000	53920	106980	85660	127700	71640	65440	61040	47900
MEAN	1227	1439	1827	2226	1926	3451	2855	4119	2388	2111	1969	1597
MAX	1440	2130	3150	6390	5340	12300	4160	10600	3150	2660	2110	2020
MIN	959	1270	1280	1270	1250	1330	2240	2250	2100	1850	1850	1190
AC-FT	75430	85610	112300	136900	107000	212200	169900	253300	142100	129800	121100	95010

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1978 - 1991, BY WATER YEAR (WY)

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	1591	2908	4970	3918	4700	4168	4043	3430	2534	2224	2196	1876		
MAX	2282	7669	14030	7754	10960	8119	6843	5587	4519	3127	3080	2642		
(WY)	1984	1985	1982	1980	1983	1983	1984	1984	1984	1984	1984	1983		
MIN	1128	1160	1557	1715	1642	1255	1684	1958	1805	1648	1773	1333		
(WY)	1989	1988	1990	1981	1988	1988	1988	1987	1981	1988	1988	1980		

SUMMARY STATISTICS

	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1978 - 1991
ANNUAL TOTAL	750529	827099	
ANNUAL MEAN	2056	2266	
HIGHEST ANNUAL MEAN			3206
LOWEST ANNUAL MEAN			5276
HIGHEST DAILY MEAN			1894
LOWEST DAILY MEAN	10200	12300	50400
ANNUAL SEVEN-DAY MINIMUM	959	959	906
ANNUAL RUNOFF (AC-FT)	1489000	1641000	2323000
10 PERCENT EXCEEDS	2960	3240	5890
50 PERCENT EXCEEDS	1970	2010	2270
90 PERCENT EXCEEDS	1290	1290	1410

ROGUE RIVER BASIN

14361900 APPLEGATE 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 National Geodetic Vertical Datum of 1929 (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.

COOPERATION.--Capacity table furnished by Corps of Engineers.

EXTREMES FOR PERIOD OF RECORD.--Maximum contents, 82,220 acre-ft May 9, 1989, elevation, 1,987.02 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, 68,640 acre-ft June 11, 12, elevation, 1,972.51 ft; minimum contents, 7,230 acre-ft Jan. 11, elevation, 1,855.1 ft, from graph of gage readings furnished by Corps of Engineers.

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

1,840.0	4,400	1,900.0	21,380	1,960.0	58,010
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 1990 TO SEPTEMBER 1991
DAILY OBSERVATION AT 24:00 VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1937.08	1901.15	1876.28	1860.30	1868.25	1894.99	1931.43	1955.02	1971.18	1970.11	1963.61	1952.89
2	1935.99	1900.31	1875.66	1859.80	1871.91	1895.74	1932.07	1955.67	1971.58	1969.98	1963.30	1952.54
3	1934.89	1899.44	1875.08	1859.40	1875.38	1901.11	1932.70	1956.29	1971.91	1969.84	1962.99	1952.18
4	1933.80	1898.60	1874.49	1858.70	1881.09	1909.81	1933.31	1956.91	1972.14	1969.67	1962.66	1951.80
5	1932.71	1897.79	1873.90	1858.20	1886.95	1914.53	1934.84	1957.56	1972.32	1969.50	1962.34	1951.40
6	1931.58	1896.93	1873.25	1857.60	1889.51	1916.94	1936.38	1958.21	1972.39	1969.31	1962.03	1951.01
7	1930.47	1896.01	1872.59	1857.20	1891.04	1918.56	1937.32	1958.78	1972.43	1969.11	1961.70	1950.57
8	1929.31	1895.13	1871.91	1856.70	1892.05	1919.80	1938.16	1959.47	1972.45	1968.90	1961.37	1950.16
9	1928.16	1894.21	1871.26	1856.00	1892.76	1920.83	1939.14	1959.92	1972.48	1968.68	1961.05	1949.72
10	1927.02	1893.29	1871.55	1855.20	1893.32	1921.74	1940.04	1960.28	1972.50	1968.47	1960.70	1949.30
11	1925.85	1892.33	1871.64	1856.00	1893.74	1922.50	1940.77	1960.57	1972.51	1968.29	1960.36	1948.88
12	1924.66	1891.35	1871.32	1858.80	1894.05	1923.30	1941.43	1960.86	1972.47	1968.15	1960.03	1948.44
13	1923.47	1890.43	1870.89	1865.46	1894.36	1923.97	1942.07	1961.27	1972.40	1968.00	1959.67	1948.02
14	1922.26	1889.57	1870.36	1867.96	1894.62	1924.59	1942.73	1961.60	1972.28	1967.60	1959.31	1947.56
15	1921.06	1888.61	1869.82	1869.56	1894.85	1925.10	1943.42	1961.88	1972.13	1967.30	1958.95	1947.07
16	1919.87	1887.66	1869.23	1870.37	1895.03	1925.58	1944.01	1962.23	1971.96	1967.20	1958.59	1946.51
17	1918.63	1886.76	1868.69	1870.82	1895.15	1926.00	1944.57	1962.73	1971.78	1967.00	1958.22	1945.96
18	1917.47	1885.86	1868.24	1871.06	1895.27	1926.40	1945.14	1963.22	1971.59	1966.80	1957.86	1945.39
19	1916.33	1884.99	1867.83	1871.29	1895.40	1926.76	1945.73	1963.74	1971.49	1966.60	1957.50	1944.83
20	1915.11	1884.06	1867.28	1871.35	1895.45	1927.10	1946.47	1964.37	1971.32	1966.30	1957.14	1944.26
21	1913.90	1883.16	1866.55	1871.32	1895.47	1927.40	1947.37	1965.14	1971.16	1966.10	1956.78	1943.69
22	1912.69	1882.24	1865.82	1871.21	1895.47	1927.69	1948.24	1965.94	1971.06	1966.00	1956.41	1943.11
23	1911.46	1881.29	1865.25	1871.08	1895.44	1928.09	1949.25	1966.70	1970.98	1965.81	1956.08	1942.54
24	1910.20	1880.33	1864.71	1870.87	1895.38	1928.41	1950.30	1967.39	1970.91	1965.76	1955.69	1941.98
25	1908.90	1879.60	1864.23	1870.59	1895.29	1928.74	1951.15	1968.01	1970.80	1965.62	1955.31	1941.39
26	1907.64	1879.07	1863.72	1870.32	1895.20	1929.03	1951.88	1968.56	1970.69	1965.30	1954.95	1940.81
27	1906.41	1878.57	1863.18	1870.01	1895.09	1929.30	1952.53	1969.06	1970.57	1965.00	1954.58	1940.25
28	1905.18	1878.03	1862.65	1869.63	1894.99	1929.55	1953.14	1969.51	1970.48	1964.70	1954.25	1939.68
29	1903.97	1877.45	1862.04	1869.21	---	1929.84	1953.74	1969.97	1970.37	1964.50	1953.95	1938.97
30	1902.85	1876.89	1861.38	1868.89	---	1930.20	1954.35	1970.45	1970.23	1964.22	1953.59	1938.12
31	1902.01	---	1860.84	1868.58	---	1930.77	---	1970.82	---	1963.92	1953.24	---
MAX	1937.08	1901.15	1876.28	1871.35	1895.47	1930.77	1954.35	1970.82	1972.51	1970.11	1963.61	1952.89
MIN	1902.01	1876.89	1860.84	1855.20	1868.25	1894.99	1931.43	1955.02	1970.23	1963.92	1953.24	1938.12
(†)	22240	12900	8530	10500	19300	37120	53550	67150	66630	61250	52690	41820
(‡)	-19520	-9340	-4370	+1970	+8800	+17820	+16430	+13600	-520	-5380	-8560	-10870

CAL YR 1990 MAX 1968.78 MIN 1860.84 AC-FT† -2620
WTR YR 1991 MAX 1972.51 MIN 1855.20 AC-FT‡ +60

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

ROGUE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929. Prior to Oct. 1, 1977, at site 0.6 mi upstream at datum 12.15 ft higher.

REMARKS.--No estimated daily discharges. Water-discharge 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.

AVERAGE DISCHARGE.--53 years, 435 ft³/s, 315,200 acre-ft/yr, adjusted for storage.

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, 407 ft³/s Oct. 15, gage height, 3.02 ft; minimum discharge, 78 ft³/s Jan. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	340	267	144	113	117	127	117	127	171	182	178	180
2	396	236	144	113	117	127	118	127	171	173	183	180
3	393	235	144	112	119	129	118	140	194	173	183	180
4	390	233	142	111	123	118	118	150	205	173	183	186
5	390	232	142	111	120	113	119	151	212	175	183	197
6	390	231	142	111	119	113	119	177	243	177	181	197
7	389	230	142	109	120	114	119	213	251	178	182	197
8	387	229	142	109	121	115	121	241	252	178	183	197
9	389	229	142	108	122	115	121	241	252	178	183	197
10	386	228	142	94	123	115	122	235	252	177	183	197
11	388	228	142	120	123	116	121	231	252	176	182	197
12	386	226	142	122	123	117	122	231	252	176	182	197
13	385	228	142	128	123	117	123	242	255	176	181	196
14	383	229	142	120	124	118	125	264	258	174	184	195
15	375	229	142	119	125	119	123	264	261	174	185	215
16	368	219	141	117	125	117	123	264	261	174	185	235
17	366	210	127	117	125	118	123	237	260	173	184	235
18	365	208	116	117	125	117	123	202	259	173	185	235
19	363	208	117	117	125	118	123	175	258	171	185	235
20	361	207	117	117	125	119	123	166	258	171	185	235
21	359	207	117	117	125	119	125	166	229	172	184	235
22	357	205	117	117	125	119	125	169	195	173	185	235
23	355	205	117	117	125	119	125	169	195	171	183	234
24	353	205	117	117	125	119	125	169	197	172	184	233
25	351	206	115	117	125	119	126	171	195	171	184	232
26	343	207	115	117	125	120	126	170	195	171	183	232
27	323	174	115	117	125	121	126	171	195	172	183	232
28	320	144	115	117	125	121	127	171	195	173	183	232
29	317	144	115	117	---	118	127	170	195	173	183	278
30	316	144	113	115	---	115	127	171	195	172	182	318
31	315	---	113	117	---	116	---	171	---	172	180	---
TOTAL	11299	6383	4023	3570	3444	3668	3680	5946	6763	5394	5674	6544
MEAN	364	213	130	115	123	118	123	192	225	174	183	218
MAX	396	267	144	128	125	129	127	264	261	182	185	318
MIN	315	144	113	94	117	113	117	127	171	171	178	180
AC-FT	22410	12660	7980	7080	6830	7280	7300	11790	13410	10700	11250	12980
MEAN†	47.0	55.8	58.7	147	281	408	399	413	217	86.5	43.7	35.5
AC-FT†	2890	3320	3610	9050	15630	25100	23730	25390	12890	5320	2690	2110
CAL YR 1990	TOTAL 72659	MEAN 199	MAX 827	MIN 112	AC-FT 144100	MEAN† 195	AC-FT† 141500					
WTR YR 1991	TOTAL 66388	MEAN 182	MAX 396	MIN 94	AC-FT 131700	MEAN† 182	AC-FT† 131800					

† Adjusted for change in contents of Applegate Lake.

ROGUE RIVER BASIN

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, 20.0°C Sept. 4, during regulation; minimum, 3.0°C Jan. 7-9.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	15.0	12.5	13.5	9.5	8.5	9.0	9.0	8.5	8.5	4.0	3.5	4.0
2	14.0	13.0	13.0	10.5	9.5	10.0	8.5	8.0	8.5	4.0	3.5	4.0
3	14.0	13.5	13.5	11.0	10.5	11.0	8.5	8.0	8.0	4.0	3.5	3.5
4	14.0	13.0	14.0	11.5	11.0	11.5	8.5	7.5	8.0	4.0	3.5	3.5
5	13.5	13.0	13.5	12.0	11.5	11.5	8.5	8.0	8.0	3.5	3.5	3.5
6	13.5	13.0	13.5	12.0	11.5	12.0	8.0	7.5	8.0	3.5	3.5	3.5
7	14.0	13.0	13.5	12.0	11.5	11.5	8.0	7.5	7.5	4.0	3.0	3.5
8	14.0	11.0	13.0	12.0	11.5	12.0	7.5	7.0	7.5	3.5	3.0	3.5
9	11.5	11.0	11.5	12.0	11.5	11.5	7.0	7.0	7.0	3.5	3.0	3.5
10	11.5	11.0	11.0	12.0	11.5	11.5	7.0	7.0	7.0	3.5	3.5	3.5
11	11.5	11.0	11.0	12.0	11.5	11.5	7.5	7.0	7.0	3.5	3.5	3.5
12	11.5	11.0	11.0	12.0	11.5	11.5	7.0	7.0	7.0	4.0	3.5	3.5
13	11.5	11.0	11.0	11.5	11.0	11.5	7.0	6.5	7.0	4.0	3.5	3.5
14	11.5	11.0	11.0	11.5	11.0	11.5	7.0	6.5	6.5	4.0	3.5	4.0
15	11.0	8.0	9.5	11.5	11.0	11.0	6.5	6.5	6.5	4.0	3.5	4.0
16	8.5	8.0	8.5	11.0	10.5	11.0	6.5	6.0	6.5	4.0	3.5	3.5
17	8.5	8.0	8.5	10.5	10.5	10.5	6.5	6.0	6.0	4.0	3.5	4.0
18	8.5	8.0	8.5	10.5	10.0	10.5	6.5	6.0	6.0	4.0	3.5	4.0
19	8.5	8.5	8.5	10.5	10.0	10.0	6.0	6.0	6.0	4.0	3.5	4.0
20	8.5	8.5	8.5	10.5	10.0	10.0	6.0	5.5	6.0	4.0	3.5	4.0
21	9.0	8.5	8.5	10.5	10.0	10.5	6.0	5.5	5.5	4.0	3.5	4.0
22	9.0	8.5	9.0	10.5	10.0	10.0	6.0	5.5	5.5	4.5	3.5	4.0
23	9.5	9.0	9.0	10.0	9.5	10.0	5.5	5.0	5.5	4.5	3.5	4.0
24	9.5	9.0	9.5	10.0	9.5	9.5	5.5	4.5	5.0	4.5	3.5	4.0
25	10.5	9.5	10.0	9.5	9.5	9.5	5.0	4.5	5.0	4.0	3.5	4.0
26	10.5	8.0	9.0	9.5	9.0	9.5	5.0	4.5	4.5	4.5	3.5	4.0
27	8.0	6.5	7.0	9.0	8.5	9.0	4.5	4.5	4.5	4.5	3.5	4.0
28	7.0	6.5	7.0	9.0	8.5	8.5	4.5	4.0	4.5	4.5	3.5	4.0
29	7.0	7.0	7.0	9.0	8.5	8.5	4.5	4.0	4.5	4.5	3.5	4.0
30	8.0	7.0	7.5	9.0	8.5	8.5	4.5	4.0	4.0	4.0	3.5	4.0
31	8.5	8.0	8.5	---	---	---	4.5	4.0	4.0	4.5	3.5	4.0
MONTH	15.0	6.5	10.5	12.0	8.5	10.5	9.0	4.0	6.5	4.5	3.0	4.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	4.0	3.5	3.5	5.0	4.5	5.0	7.0	6.0	6.5	9.0	8.0	8.5
2	4.0	3.5	4.0	5.0	4.5	5.0	8.0	6.0	7.0	9.0	8.0	8.5
3	3.5	3.5	3.5	5.0	5.0	5.0	8.5	7.0	7.5	9.5	8.0	8.5
4	4.0	3.5	4.0	6.0	5.0	5.5	9.5	7.0	8.0	9.5	8.0	8.5
5	4.5	3.5	4.0	6.0	5.5	6.0	9.0	7.5	8.5	9.0	8.0	8.5
6	4.0	3.5	4.0	6.0	5.5	6.0	8.0	7.0	7.5	9.0	8.0	8.5
7	4.5	3.5	4.0	6.5	5.5	6.0	7.5	6.5	7.5	10.0	8.5	9.0
8	4.5	4.0	4.0	6.5	5.5	6.0	8.0	6.5	7.0	9.0	7.5	8.5
9	4.5	4.0	4.0	6.5	5.5	6.0	8.0	6.5	7.5	8.5	8.0	8.5
10	4.5	4.0	4.0	6.5	5.5	6.0	7.0	6.5	6.5	9.0	8.0	8.5
11	4.5	4.0	4.0	6.5	5.5	6.0	7.5	6.5	7.0	9.5	8.5	9.0
12	4.5	4.0	4.0	6.5	5.5	6.0	7.5	6.5	7.0	9.5	8.5	9.0
13	5.0	4.0	4.5	6.5	5.5	6.0	7.5	6.5	7.0	9.5	8.5	9.0
14	5.0	4.0	4.5	6.0	5.5	6.0	7.5	6.5	7.0	9.0	8.5	9.0
15	4.5	4.0	4.5	6.5	5.5	6.0	8.5	6.5	7.5	10.0	8.5	9.0
16	5.0	4.0	4.5	6.0	5.5	5.5	9.0	8.0	8.0	10.0	8.5	9.0
17	5.0	4.0	4.5	6.0	5.5	5.5	9.0	8.0	8.5	10.0	9.0	9.5
18	4.5	4.5	4.5	6.0	5.5	5.5	9.0	8.0	8.5	10.0	9.0	9.5
19	5.0	4.5	4.5	6.0	5.5	5.5	9.5	8.5	9.0	10.0	9.0	9.5
20	5.0	4.5	4.5	6.0	5.5	5.5	9.0	8.5	8.5	10.5	9.0	9.5
21	5.0	4.5	4.5	6.0	5.5	5.5	9.0	8.5	9.0	10.0	9.0	9.5
22	5.0	4.5	4.5	6.0	5.5	5.5	9.5	8.5	8.5	12.0	9.0	10.5
23	5.0	4.5	4.5	5.5	5.5	5.5	9.5	8.5	9.0	12.5	11.0	11.5
24	5.0	4.5	4.5	6.0	5.5	5.5	9.5	8.5	9.0	12.5	10.5	11.5
25	5.0	4.5	4.5	6.0	5.5	5.5	8.5	8.0	8.5	12.5	11.0	11.5
26	5.0	4.5	4.5	6.0	5.5	5.5	9.0	8.0	8.5	12.5	11.0	11.5
27	5.0	4.5	4.5	6.0	5.5	5.5	9.0	7.5	8.5	12.5	11.0	12.0
28	5.0	4.5	5.0	6.0	5.5	5.5	9.0	8.0	8.5	12.5	10.5	11.5
29	---	---	---	6.5	5.5	6.0	9.0	7.5	8.5	13.0	11.5	12.5
30	---	---	---	7.0	6.0	6.5	9.0	8.0	8.5	12.5	11.5	12.0
31	---	---	---	7.0	6.0	6.5	---	---	---	12.5	11.0	11.5
MONTH	5.0	3.5	4.5	7.0	4.5	5.5	9.5	6.0	8.0	13.0	7.5	10.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	13.5	11.5	12.5	15.5	15.0	15.5	15.5	13.5	14.5	16.0	15.0	16.0
2	15.0	13.0	14.0	16.0	15.5	15.5	15.0	13.5	14.5	16.5	15.5	16.0
3	14.0	12.5	13.5	16.0	15.5	16.0	15.5	14.5	15.0	16.5	15.5	16.0
4	14.5	13.0	14.0	16.0	15.5	16.0	16.0	14.0	15.0	20.0	15.5	16.0
5	14.5	13.0	14.0	16.5	15.5	16.0	17.0	14.5	15.5	16.0	15.0	15.5
6	14.5	13.5	14.5	16.5	15.0	16.0	17.0	15.5	16.5	16.0	15.0	15.5
7	15.0	12.5	13.5	16.0	15.5	16.0	16.5	14.5	16.0	15.5	15.0	15.5
8	14.0	12.5	13.5	16.5	15.5	16.0	17.0	15.5	16.5	15.5	14.5	15.0
9	14.0	13.0	13.5	16.5	15.0	16.0	16.5	15.5	16.0	15.5	14.5	15.0
10	14.0	13.0	14.0	16.5	15.0	16.0	17.0	16.0	16.5	15.5	15.0	15.0
11	14.5	13.0	14.0	16.0	15.0	15.5	17.5	15.5	16.5	15.5	14.5	15.0
12	14.5	13.0	13.5	16.0	15.5	16.0	18.0	16.5	17.0	15.5	14.5	15.0
13	14.5	13.5	14.0	16.5	15.0	15.5	18.0	16.5	17.5	15.5	14.5	15.0
14	14.5	13.5	14.0	16.5	15.5	16.0	18.0	14.0	15.5	15.5	14.5	15.0
15	14.5	13.0	14.0	16.5	15.5	16.0	14.5	14.0	14.5	15.5	14.5	15.0
16	14.0	13.0	13.5	16.5	15.5	16.0	14.5	14.0	14.5	15.5	15.0	15.0
17	14.5	13.0	14.0	16.5	15.5	16.0	15.0	14.5	14.5	15.5	15.0	15.0
18	14.5	13.5	14.0	16.5	15.5	16.0	15.0	14.5	15.0	15.5	15.0	15.0
19	14.5	13.5	14.0	16.5	15.5	16.0	15.5	14.5	15.0	15.5	15.0	15.5
20	14.5	13.0	14.0	17.0	15.5	16.5	15.5	15.0	15.0	15.5	15.0	15.0
21	14.5	14.0	14.5	17.0	16.0	16.5	16.0	15.0	15.5	15.5	14.5	15.0
22	15.0	13.5	14.5	17.5	16.0	17.0	16.0	15.0	15.5	15.0	14.5	15.0
23	15.0	14.5	15.0	17.5	16.0	17.0	16.0	15.0	15.5	15.0	14.5	15.0
24	15.0	14.0	14.5	18.0	16.5	17.0	16.0	15.0	15.5	15.5	14.5	15.0
25	15.0	14.5	14.5	17.5	16.5	17.0	16.5	15.0	15.5	15.0	14.5	15.0
26	15.5	15.0	15.0	17.5	13.0	16.0	16.5	15.5	16.0	15.0	14.5	15.0
27	15.0	14.5	15.0	15.0	13.5	14.0	16.5	15.5	16.0	15.0	14.5	15.0
28	15.5	14.5	15.0	15.0	13.5	14.0	17.5	15.5	16.0	15.0	14.5	15.0
29	15.5	15.0	15.0	15.0	13.5	14.5	17.0	15.5	16.0	15.5	14.5	15.0
30	15.5	14.5	15.0	15.5	14.0	14.5	17.0	15.5	16.0	15.0	12.0	14.5
31	---	---	---	15.5	14.5	15.0	16.5	15.5	16.0	---	---	---
MONTH	15.5	11.5	14.0	18.0	13.0	16.0	18.0	13.5	15.5	20.0	12.0	15.0
YEAR	20.0	3.0	10.0									

ROGUE RIVER BASIN

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 National Geodetic Vertical Datum of 1929.

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

AVERAGE DISCHARGE.--8 years, 3.47 ft³/s, 2,514 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 153 ft³/s Dec. 14, 1983, Nov. 28, 1985, gage height, 3.11 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)
Mar. 4	2100	*34	*2.16				

No flow part of each day Aug. 14, 15, and all of each day Aug. 16 to Sept. 30.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	e.05	e1.1	e.80	e.70	.92	.91	3.7	2.5	1.8	.31	.04	.00
2	e.05	e.60	e.70	e.75	4.8	5.5	3.4	2.3	1.6	.24	.04	.00
3	e.04	e.50	.60	e.75	5.7	20	3.0	2.1	1.5	.18	.04	.00
4	e.05	e.80	.60	e.70	5.5	26	2.7	1.9	1.4	.15	.03	.00
5	e.06	e1.1	e.70	e.70	7.8	22	2.9	1.7	1.4	.13	.03	.00
6	e.07	e.70	e.65	e.80	5.8	12	3.1	1.7	1.3	.12	.03	.00
7	e.06	e.60	e.60	e2.0	4.0	8.6	2.8	1.7	1.2	.11	.04	.00
8	e.06	e.55	e.55	e1.8	2.9	6.7	2.6	1.6	1.0	.10	.05	.00
9	e.06	e.50	e.55	e1.2	2.3	5.7	2.8	1.7	.91	.10	.05	.00
10	e.06	e.50	e1.6	e1.4	1.9	5.4	2.7	1.5	.75	.09	.05	.00
11	e.05	e.45	e1.4	e6.0	1.6	4.9	2.6	1.5	.68	.09	.04	.00
12	e.06	e.45	e1.0	e5.0	1.4	4.7	2.5	1.4	.66	.08	.03	.00
13	e.07	e.80	e1.2	3.9	1.3	5.1	2.4	1.7	.68	.07	.02	.00
14	e.06	e1.4	e1.0	2.9	1.2	5.3	2.3	1.8	.64	.07	.02	.00
15	e.07	e.80	e1.0	2.0	1.2	5.1	2.6	1.5	.56	.11	.01	.00
16	e.10	e.70	e1.0	1.6	1.1	4.9	2.5	1.5	.51	1.2	.00	.00
17	e.09	e.60	e.95	1.4	1.0	4.5	2.3	4.4	.50	1.5	.00	.00
18	e.50	e.65	e1.1	1.3	1.0	4.3	2.2	7.3	.46	.63	.00	.00
19	e.59	e.70	e1.2	1.3	.96	4.2	2.1	8.1	.83	.30	.00	.00
20	.51	e.75	e1.0	1.2	.91	4.0	2.1	7.3	.94	.20	.00	.00
21	.59	e.90	e.80	1.1	.83	3.5	5.6	6.3	.66	.16	.00	.00
22	e.85	e.80	e.70	1.0	.82	3.2	6.1	5.3	.46	.14	.00	.00
23	e.50	e.70	e.80	1.0	.82	3.5	5.8	4.3	.47	.13	.00	.00
24	e.40	e.60	e.90	1.0	.76	4.5	5.2	3.6	.98	.31	.00	.00
25	e.35	e1.5	e1.0	.94	.74	4.8	4.5	3.1	.76	.22	.00	.00
26	e.35	e1.4	e.90	.92	.72	5.1	3.9	2.8	.54	.17	.00	.00
27	e.30	e1.2	e.85	.91	.71	4.6	3.3	2.5	.62	.14	.00	.00
28	e.70	e1.0	e.80	.91	.74	4.2	2.9	2.3	.79	.11	.00	.00
29	e.60	e.90	e.80	.91	---	3.8	2.6	2.2	.71	.09	.00	.00
30	e1.1	e1.0	e.75	.91	---	3.7	2.5	2.2	.44	.07	.00	.00
31	e1.7	---	e.75	.91	---	3.6	---	2.0	---	.06	.00	---
TOTAL	10.10	24.25	27.25	47.91	59.43	204.31	95.7	91.8	25.75	7.40	0.52	0.00
MEAN	.33	.81	.88	1.55	2.12	6.59	3.19	2.96	.86	.24	.017	.000
MAX	1.7	1.5	1.6	6.0	7.8	26	6.1	8.1	1.8	1.5	.05	.00
MIN	.04	.45	.55	.70	.71	.91	2.1	1.4	.44	.06	.00	.00
AC-FT	20	48	54	95	118	405	190	182	51	15	1.0	.00

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1983 - 1991, BY WATER YEAR (WY)

	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	.90	4.26	7.07	4.59	7.95	8.07	4.45	2.40	1.22
MAX	1.98	18.0	36.5	11.3	18.6	20.5	12.5	5.68	3.27
(WY)	1984	1985	1984	1984	1986	1984	1984	1984	1983
MIN	.16	.60	.87	1.55	1.72	1.28	1.12	.69	.34
(WY)	1988	1988	1990	1991	1988	1988	1988	1987	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1983 - 1991

ANNUAL TOTAL	499.00	594.42	
ANNUAL MEAN	1.37	1.63	
HIGHEST ANNUAL MEAN			3.47
LOWEST ANNUAL MEAN			9.81
HIGHEST DAILY MEAN	31	Jan 8	1.33
LOWEST DAILY MEAN	.00	Aug 1	139
ANNUAL SEVEN-DAY MINIMUM	.00	Aug 1	.00
ANNUAL RUNOFF (AC-FT)	990	1180	2520
10 PERCENT EXCEEDS	3.4	4.5	7.6
50 PERCENT EXCEEDS	.80	.80	1.3
90 PERCENT EXCEEDS	.04	.00	.07

ROGUE RIVER BASIN

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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 National Geodetic Vertical Datum of 1929. Prior to Dec. 23, 1938, nonrecording gage at same site and datum.

REMARKS.--No estimated daily discharges. Water-discharge 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.

AVERAGE DISCHARGE.--53 years (water years 1939-91), 535 ft³/s, 387,600 acre-ft/yr, unadjusted.

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, 84 ft³/s July 19, 1988.

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, 665 ft³/s Mar. 3, gage height, 2.88 ft; minimum discharge, 108 ft³/s Jan. 10.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	281	305	173	135	141	157	183	192	288	219	157	165
2	354	255	172	134	175	175	184	192	299	203	162	166
3	354	253	170	135	183	383	185	195	319	198	165	161
4	354	253	170	135	189	407	183	207	326	193	165	160
5	356	252	170	134	259	422	192	209	314	190	162	171
6	359	252	167	135	201	291	204	225	336	189	161	171
7	366	250	166	139	184	247	195	259	342	187	160	174
8	368	251	166	135	175	225	182	302	343	185	157	175
9	366	250	166	135	170	212	178	299	342	180	160	172
10	363	246	182	118	165	210	172	288	346	177	161	174
11	364	245	191	139	159	203	171	276	351	171	160	176
12	362	243	178	152	161	201	170	279	347	172	161	176
13	362	248	175	177	161	197	169	294	329	171	163	178
14	359	259	171	172	161	196	169	325	325	173	162	176
15	355	251	171	166	161	193	177	324	317	174	167	181
16	346	243	170	153	162	191	180	349	313	209	168	212
17	348	229	164	150	162	189	175	505	303	203	164	211
18	356	229	148	148	161	191	173	495	295	189	164	212
19	366	228	148	147	161	189	175	422	320	184	167	218
20	356	229	140	146	158	185	177	400	315	182	165	221
21	349	227	e137	142	157	183	243	432	295	179	164	219
22	350	226	e133	139	157	181	240	435	298	172	156	217
23	347	224	e135	139	156	182	243	424	244	179	158	215
24	344	223	e137	137	154	182	231	404	243	179	160	216
25	343	231	140	134	155	181	216	387	228	168	164	214
26	340	222	143	136	154	183	208	362	225	169	163	212
27	326	178	141	136	152	179	201	341	229	166	163	214
28	326	175	139	135	153	178	195	327	238	167	163	216
29	323	173	138	132	---	177	192	315	235	162	166	233
30	322	174	141	134	---	174	189	307	233	156	167	292
31	330	---	143	143	---	177	---	292	---	157	165	---
TOTAL	10795	7024	4885	4392	4687	6641	5752	10063	8888	5603	5040	5898
MEAN	348	234	158	142	167	214	192	325	296	181	163	197
MAX	368	305	191	177	259	422	243	505	351	219	168	292
MIN	281	173	133	118	141	157	169	192	225	156	156	160
AC-FT	21410	13930	9690	8710	9300	13170	11410	19960	17630	11110	10000	11700

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1991, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	346	559	853	571	840	656	567	685	447	214
MAX	507	1261	3077	1201	2552	1596	1304	1705	1237	370
(WY)	1983	1985	1982	1982	1983	1983	1982	1983	1983	1983
MIN	218	195	158	142	167	197	167	228	174	116
(WY)	1982	1988	1991	1991	1991	1988	1988	1988	1990	1988

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1982 - 1991

ANNUAL TOTAL	78747	79668	511
ANNUAL MEAN	216	218	1072
HIGHEST ANNUAL MEAN			1983
LOWEST ANNUAL MEAN			1991
HIGHEST DAILY MEAN	935	505	7230
LOWEST DAILY MEAN	108	118	90
ANNUAL SEVEN-DAY MINIMUM	110	133	101
ANNUAL RUNOFF (AC-FT)	156200	158000	370400
10 PERCENT EXCEEDS	343	347	1080
50 PERCENT EXCEEDS	193	184	278
90 PERCENT EXCEEDS	124	147	153

ROGUE RIVER BASIN

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. Maximum since full operation of Applegate Lake, 25.5°C July 5, 1984; minimum, 0.0°C on several days during winter periods.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 23.5°C July 3, 23; minimum, 0.0°C Dec. 21-24, 30, 31, Jan. 1, 2.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
	OCTOBER			NOVEMBER			DECEMBER			JANUARY		
1	16.0	14.0	15.5	10.0	8.0	9.0	7.5	6.0	6.5	2.0	.0	1.0
2	15.0	12.5	14.0	9.5	7.0	8.0	7.0	6.0	6.5	2.0	.0	1.0
3	16.0	12.0	14.0	10.5	8.5	9.5	6.5	5.5	6.0	3.0	1.0	2.0
4	16.0	12.0	14.5	10.5	9.0	10.0	7.5	5.5	6.0	2.5	1.0	2.0
5	15.5	13.0	14.0	11.5	9.5	10.5	8.0	6.5	7.5	2.5	.5	1.5
6	14.5	11.5	13.0	11.0	9.5	10.0	6.0	5.0	5.5	2.5	1.0	1.5
7	14.0	10.5	12.5	10.5	9.0	9.5	6.0	4.0	5.0	4.0	2.5	3.0
8	14.0	10.5	12.5	12.5	10.0	11.0	6.0	4.5	5.5	3.0	2.5	3.0
9	13.5	10.0	12.0	12.5	10.5	11.0	6.5	5.0	5.5	4.5	2.5	3.5
10	13.0	10.0	11.5	11.0	9.0	10.0	7.5	7.0	7.5	5.0	3.5	4.5
11	12.5	9.5	11.0	10.0	8.5	9.5	7.0	5.5	6.5	5.0	3.5	4.0
12	13.0	9.5	11.5	10.5	8.0	9.5	6.0	5.0	5.5	5.0	4.5	5.0
13	13.5	11.0	12.5	10.0	9.5	9.5	5.5	5.0	5.5	6.0	5.0	5.5
14	13.0	9.5	11.5	11.0	9.0	10.0	5.0	4.0	4.5	6.0	4.5	5.5
15	13.5	11.0	12.5	9.5	7.5	8.5	5.0	4.0	4.5	6.5	5.0	5.5
16	12.0	9.5	10.5	9.0	7.0	8.0	6.5	5.0	5.5	4.5	3.0	4.0
17	10.5	7.0	9.0	9.0	7.5	8.0	6.5	5.5	6.0	4.5	2.5	3.5
18	10.0	9.0	9.5	10.0	9.0	9.5	6.5	5.5	6.0	4.0	2.5	3.5
19	11.0	8.5	9.5	10.5	9.5	10.0	5.5	3.0	4.0	5.0	3.5	4.5
20	10.0	7.0	8.5	9.5	8.5	9.0	2.5	1.0	2.0	5.5	4.0	4.5
21	10.0	7.5	9.0	10.0	9.0	9.5	1.0	.0	.0	4.0	2.0	3.0
22	11.5	9.5	10.5	10.0	8.5	9.0	.0	.0	.0	3.5	1.5	2.5
23	11.5	9.5	10.0	8.5	7.0	8.0	.0	.0	.0	4.0	1.5	2.5
24	11.5	8.5	10.0	8.0	7.0	7.5	1.0	.0	.5	4.0	2.0	3.0
25	11.5	8.5	10.5	9.0	7.0	8.0	2.5	.5	1.5	3.5	1.0	2.0
26	12.5	10.5	11.5	8.5	7.0	7.5	3.5	2.0	2.5	3.5	1.0	2.0
27	11.5	8.0	10.0	8.0	7.0	7.5	2.5	1.5	2.0	3.5	1.0	2.0
28	9.5	8.0	9.0	8.5	7.5	8.0	3.5	2.5	3.0	3.0	.5	2.0
29	9.0	6.5	8.0	8.5	6.5	7.5	2.5	1.0	2.0	3.5	.5	1.5
30	9.5	8.0	9.0	8.5	7.0	8.0	1.5	.0	.5	3.0	.5	2.0
31	10.0	8.5	9.0	---	---	---	1.5	.0	.5	5.0	2.0	3.5
MONTH	16.0	6.5	11.0	12.5	6.5	9.0	8.0	.0	4.0	6.5	.0	3.0

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TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
FEBRUARY				MARCH			APRIL			MAY		
1	5.0	3.5	4.0	9.5	6.5	8.0	10.5	8.0	9.0	13.0	9.5	11.0
2	6.0	5.0	5.5	7.5	6.0	6.5	11.5	8.0	9.5	14.0	9.5	11.5
3	5.0	4.5	5.0	8.0	6.0	7.0	9.0	8.0	8.5	15.0	10.0	12.5
4	6.0	4.5	5.5	7.5	6.0	7.0	12.0	7.0	9.0	14.5	10.5	12.5
5	7.0	5.0	6.0	7.0	5.0	6.0	10.0	8.5	9.5	14.0	11.0	12.5
6	6.0	4.5	5.0	7.5	5.0	6.0	10.0	7.5	8.5	12.0	10.0	11.0
7	6.0	3.5	4.5	8.5	5.5	6.5	11.0	6.5	8.5	12.5	9.5	10.5
8	5.5	3.5	4.5	9.0	5.0	6.5	8.5	6.5	7.5	12.0	9.5	11.0
9	6.0	3.5	4.5	8.0	5.5	6.5	10.5	7.5	8.5	11.5	8.0	10.0
10	7.0	4.5	5.5	8.5	5.5	7.0	9.0	6.5	8.0	11.0	8.5	9.5
11	7.5	5.0	6.0	6.5	4.5	5.5	11.5	6.0	8.5	13.5	8.5	11.0
12	5.5	5.0	5.5	8.0	5.5	6.5	12.5	6.5	9.5	13.5	10.0	12.0
13	8.5	5.5	7.0	9.0	6.0	7.5	13.0	8.0	10.5	12.0	10.0	11.0
14	8.5	6.0	7.0	7.0	5.5	6.0	12.5	8.5	10.5	12.5	9.0	11.5
15	8.5	6.5	7.5	9.0	5.0	6.5	11.5	9.0	10.0	14.5	8.5	11.0
16	8.5	6.5	7.5	7.0	5.5	6.0	11.0	8.0	9.5	13.0	10.0	11.5
17	7.0	5.5	6.5	7.5	5.5	6.5	12.5	7.5	10.0	11.0	8.0	9.0
18	7.5	6.0	6.5	8.5	5.5	7.0	12.5	9.0	11.0	8.5	7.5	8.0
19	8.5	6.5	7.5	9.0	5.5	7.0	13.5	9.0	11.5	10.0	8.0	9.0
20	8.5	6.0	7.5	8.0	5.5	7.0	12.5	10.0	11.0	13.5	9.0	11.0
21	7.5	5.5	6.5	8.5	6.0	7.0	10.5	9.5	10.0	11.5	9.5	10.5
22	8.5	5.0	6.5	7.5	5.5	6.5	13.5	9.0	11.0	14.0	9.0	11.0
23	8.0	5.0	6.0	8.0	6.5	7.0	11.0	9.5	10.5	14.0	9.5	12.0
24	8.0	4.5	6.0	7.5	5.5	6.5	11.0	9.0	10.0	14.5	10.5	12.5
25	8.5	4.5	6.5	6.5	5.5	6.0	11.0	8.5	9.5	14.0	9.5	12.0
26	8.5	5.0	6.5	9.5	5.5	7.5	11.0	8.0	9.5	14.0	9.5	12.0
27	7.5	5.0	6.5	10.5	5.5	8.0	13.0	8.0	10.0	14.5	9.5	12.0
28	7.5	6.0	6.5	10.0	6.5	8.0	10.5	8.5	10.0	14.5	10.0	12.5
29	---	---	---	11.0	6.5	8.5	14.5	8.0	11.0	12.0	9.5	10.5
30	---	---	---	12.5	7.0	9.5	12.0	9.5	11.0	13.5	10.0	11.5
31	---	---	---	10.5	8.5	9.5	---	---	---	15.0	9.0	11.5
MONTH	8.5	3.5	6.0	12.5	4.5	7.0	14.5	6.0	9.5	15.0	7.5	11.0
DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
JUNE				JULY			AUGUST			SEPTEMBER		
1	16.5	11.5	14.0	21.5	16.0	18.5	21.0	16.5	19.0	20.5	17.5	18.5
2	17.5	12.5	15.0	23.0	17.5	20.0	21.5	16.5	19.0	20.0	15.5	17.5
3	16.0	12.5	14.5	23.5	18.5	21.0	21.5	17.5	19.5	21.0	16.5	18.5
4	15.5	10.5	13.0	23.0	19.0	21.0	22.0	17.5	19.5	21.5	17.5	19.0
5	16.0	10.5	13.0	22.0	17.5	19.5	22.0	18.0	20.0	20.5	17.5	19.0
6	16.5	11.5	14.0	21.5	17.0	19.0	20.0	18.0	19.0	20.5	17.0	18.5
7	17.5	12.5	15.0	22.0	17.0	19.5	19.5	17.0	18.5	19.0	17.0	18.0
8	17.5	12.5	15.0	22.0	17.5	20.0	22.0	17.0	19.0	18.5	15.5	16.5
9	19.0	13.0	16.0	21.5	17.0	19.5	21.5	18.0	19.5	17.5	14.0	15.5
10	19.5	14.0	16.5	21.5	16.5	19.0	21.0	16.5	18.5	18.5	14.5	16.5
11	18.5	14.0	16.5	21.5	17.0	19.0	21.0	16.5	19.0	18.0	14.5	16.0
12	17.0	13.0	15.0	22.5	17.5	20.0	21.5	17.0	19.0	18.5	14.5	16.5
13	16.5	12.0	14.5	22.5	18.5	20.5	22.0	17.0	19.5	18.5	15.0	17.0
14	17.0	11.5	14.5	22.5	18.5	20.0	22.0	17.5	19.5	18.5	15.0	17.0
15	17.5	12.0	14.5	20.0	16.5	18.5	21.0	17.0	19.0	18.5	14.0	16.0
16	17.5	12.5	15.0	18.5	17.0	17.5	21.0	17.0	19.0	18.0	14.5	16.0
17	18.0	12.0	15.0	21.5	16.0	18.5	21.5	17.5	19.5	18.5	14.5	16.5
18	18.0	13.0	15.5	21.5	16.5	19.0	22.0	18.0	20.0	19.0	14.5	17.0
19	16.5	13.0	14.5	21.5	17.0	19.5	22.0	18.0	20.0	18.5	15.0	17.0
20	18.0	12.5	14.5	21.5	17.0	19.0	21.0	18.0	19.5	17.5	15.0	16.5
21	18.0	12.5	15.5	21.5	17.0	19.0	22.0	18.0	20.0	16.5	12.5	14.5
22	18.5	13.0	15.5	22.5	17.5	20.0	22.0	18.0	20.0	16.5	12.5	14.5
23	17.5	14.5	16.0	23.5	18.5	21.0	21.0	18.0	19.5	17.0	13.0	15.0
24	19.0	13.5	16.0	23.0	19.5	21.5	20.0	16.5	18.5	17.5	13.5	15.5
25	19.0	15.0	17.0	22.0	18.0	20.0	19.5	16.0	18.0	18.0	14.0	16.0
26	18.5	15.0	16.5	22.5	17.5	19.5	19.5	15.5	17.5	17.5	14.5	16.0
27	16.5	14.5	15.5	22.0	18.0	20.0	17.5	16.0	17.0	18.0	14.5	16.0
28	18.5	14.0	16.0	22.0	17.5	19.5	19.0	16.5	17.5	18.0	14.5	16.0
29	19.0	15.0	17.0	22.0	17.5	20.0	21.0	16.5	18.5	17.5	13.5	15.5
30	20.0	14.0	16.5	22.0	17.5	19.5	21.0	17.0	18.5	17.5	13.5	16.0
31	---	---	---	21.5	17.5	19.5	20.5	16.5	18.5	---	---	---
MONTH	20.0	10.5	15.0	23.5	16.0	19.5	22.0	15.5	19.0	21.5	12.5	16.5
YEAR	23.5	.0	11.0									

ROGUE RIVER BASIN

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 National Geodetic Vertical Datum of 1929 (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.--Water-discharge 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.

AVERAGE DISCHARGE.--30 years (water years 1939-55, 1979-91), 705 ft³/s, 510,800 acre-ft/yr.

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, 54 ft³/s August 23, 1990.

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, 2,770 ft³/s Mar. 4, gage height, 5.25 ft; minimum discharge, 117 ft³/s Aug. 23.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	260	396	214	157	178	205	342	304	355	237	133	145
2	357	318	212	156	302	310	345	300	352	201	134	150
3	372	305	209	156	478	1020	337	283	359	185	136	138
4	374	302	207	156	400	1820	332	290	376	177	137	132
5	382	299	212	155	686	1760	351	289	361	172	136	137
6	e390	299	212	154	513	904	414	291	362	170	129	138
7	e395	297	208	178	400	660	410	324	366	162	130	135
8	e405	296	207	184	343	540	377	366	370	162	133	140
9	e405	298	203	179	310	473	369	382	367	157	131	142
10	e400	295	224	174	288	477	375	373	361	153	136	143
11	e400	290	262	183	269	459	364	356	366	148	136	147
12	e400	286	241	321	257	554	345	348	361	147	132	152
13	e400	292	226	420	252	580	331	355	343	149	133	154
14	e395	320	219	377	247	497	321	390	335	154	133	162
15	e395	306	211	314	240	448	336	398	327	153	134	155
16	386	295	211	272	235	411	327	415	325	184	133	178
17	386	278	206	247	232	391	317	573	319	210	140	185
18	409	278	193	232	228	376	305	679	307	196	135	182
19	421	277	188	224	224	365	304	624	329	187	137	180
20	407	275	181	214	221	353	299	569	349	180	129	187
21	397	275	167	204	216	343	348	578	328	171	135	189
22	396	271	e153	198	211	339	369	579	277	166	121	194
23	395	269	e156	195	207	361	363	565	249	170	119	196
24	418	265	e177	192	204	388	365	535	257	158	123	198
25	398	288	190	187	201	385	356	508	241	150	124	198
26	396	313	177	181	200	376	343	467	228	144	126	187
27	384	247	175	180	197	351	332	441	225	143	124	188
28	384	226	171	177	196	334	322	418	244	142	133	192
29	377	218	167	176	---	327	313	404	256	140	141	200
30	388	216	159	173	---	318	305	402	247	130	142	244
31	405	---	153	176	---	329	---	377	---	130	143	---
TOTAL	12077	8590	6091	6492	7935	16454	10317	13183	9542	5128	4108	5068
MEAN	390	286	196	209	283	531	344	425	318	165	133	169
MAX	421	396	262	420	686	1820	414	679	376	237	143	244
MIN	260	216	153	154	178	205	299	283	225	130	119	132
AC-FT	23950	17040	12080	12880	15740	32640	20460	26150	18930	10170	8150	10050

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1982 - 1991, BY WATER YEAR (WY)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	387	804	1356	949	1442	1095	867	481	205	248
MAX	569	2099	4719	1963	4241	2715	2177	1916	1333	482
(WY)	1984	1985	1982	1982	1983	1983	1982	1983	1983	1983
MIN	272	239	196	209	283	271	197	276	238	114
(WY)	1982	1988	1991	1991	1991	1988	1988	1988	1990	1988

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1982 - 1991
ANNUAL TOTAL	104111	104985	
ANNUAL MEAN	285	288	
HIGHEST ANNUAL MEAN			726
LOWEST ANNUAL MEAN			1546
HIGHEST DAILY MEAN			288
LOWEST DAILY MEAN	2440	1820	16200
ANNUAL SEVEN-DAY MINIMUM	84	119	63
ANNUAL RUNOFF (AC-FT)	87	124	70
10 PERCENT EXCEEDS	436	408	1650
50 PERCENT EXCEEDS	277	269	358
90 PERCENT EXCEEDS	101	140	150

ROGUE RIVER BASIN

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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, 28.5°C July 12, 21, 22, 1990; minimum, 0.0°C Feb. 6, 7, 1989.

EXTREMES FOR CURRENT YEAR.--

WATER TEMPERATURE: Maximum, 27.0°C July 3; minimum, 0.5°C Dec. 21-25, 30, 31, Jan. 1, 2.

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DAY	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN	MAX	MIN	MEAN
OCTOBER			NOVEMBER			DECEMBER			JANUARY			
1	18.5	16.0	17.5	11.0	10.0	10.5	7.5	6.5	7.0	1.5	.5	1.0
2	17.0	14.5	16.0	9.5	8.0	9.0	7.0	6.0	6.5	1.5	.5	1.0
3	16.5	14.0	15.0	10.5	8.5	9.5	6.5	6.0	6.5	2.5	1.0	2.0
4	17.0	14.0	15.5	10.5	9.0	10.0	7.5	6.0	6.5	2.5	2.0	2.0
5	16.5	14.0	15.5	10.5	9.5	10.0	7.5	7.0	7.5	2.0	1.5	2.0
6	14.5	12.0	13.0	10.5	9.0	10.0	7.0	6.5	6.5	2.5	1.5	2.0
7	14.0	11.0	12.5	10.0	9.0	9.5	6.5	6.0	6.0	4.0	2.5	3.5
8	14.0	11.0	12.5	12.0	9.5	10.5	6.0	6.0	6.0	4.5	4.0	4.0
9	14.5	11.5	13.0	12.5	11.0	12.0	7.0	6.0	6.5	5.0	4.0	4.5
10	13.5	12.0	13.0	11.5	10.0	10.5	7.5	7.0	7.5	6.0	4.5	5.5
11	13.5	10.5	12.0	10.5	9.5	10.0	7.5	6.5	7.5	6.0	5.0	5.5
12	13.5	11.0	12.0	10.0	9.0	9.5	6.5	6.0	6.0	7.5	6.0	6.5
13	14.5	12.5	13.5	9.5	8.5	9.0	6.0	5.5	6.0	8.0	6.5	7.0
14	13.5	11.0	12.5	10.5	9.0	9.5	6.0	5.5	5.5	8.0	7.0	7.5
15	14.5	12.5	13.5	9.5	8.0	8.5	5.5	5.0	5.5	8.0	7.0	7.5
16	14.5	12.5	13.5	8.0	7.0	7.5	6.5	5.5	6.0	6.5	5.0	5.5
17	12.0	9.5	11.0	8.0	7.0	7.5	7.5	6.0	6.5	5.0	4.0	4.5
18	11.5	10.5	11.0	9.5	8.0	8.5	7.0	6.0	6.5	5.0	4.0	4.5
19	11.5	10.0	11.0	10.0	9.5	9.5	6.0	4.0	5.0	6.0	5.0	5.5
20	11.0	9.5	10.5	9.5	9.0	9.5	4.0	1.5	3.0	6.0	4.5	5.5
21	11.0	9.5	10.0	10.0	9.0	9.5	1.5	.5	.5	5.0	3.5	4.5
22	12.5	10.5	11.5	10.0	9.0	9.5	.5	.5	.5	4.0	3.0	3.5
23	13.0	11.0	12.0	9.0	8.0	8.5	.5	.5	.5	4.0	2.5	3.5
24	12.5	10.5	11.5	8.5	7.5	8.0	.5	.5	.5	4.5	3.0	4.0
25	13.0	10.5	11.5	8.0	7.5	8.0	1.0	.5	.5	3.5	2.5	3.0
26	14.0	12.0	13.0	8.5	7.5	8.0	2.0	1.0	1.5	3.5	2.0	3.0
27	13.5	11.5	12.5	8.5	7.5	8.0	3.0	2.0	2.5	3.5	2.0	2.5
28	12.5	10.5	12.0	8.5	8.0	8.5	4.0	3.0	3.5	3.5	1.5	2.5
29	11.0	9.0	10.0	8.5	7.5	8.0	3.0	2.0	2.5	3.0	1.5	2.5
30	11.0	10.0	10.5	8.5	7.5	8.0	1.5	.5	1.5	3.0	1.5	2.5
31	11.5	10.5	11.0	---	---	---	1.5	.5	1.0	5.0	2.5	3.5
MONTH	18.5	9.0	12.5	12.5	7.0	9.0	7.5	.5	4.5	8.0	.5	4.0

TEMPERATURE, WATER (DEG. C), WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
February				March			April			May		
1	8.5	4.0	5.0	10.0	8.0	9.0	11.5	10.0	10.5	15.0	11.0	13.0
2	7.0	6.0	6.5	9.0	8.0	8.5	13.0	9.5	11.0	15.5	11.0	13.5
3	6.5	6.0	6.5	9.0	7.5	8.5	11.5	9.5	10.0	17.0	11.5	14.5
4	7.0	6.0	6.5	8.5	7.5	8.0	12.5	8.5	10.0	16.5	13.0	15.0
5	8.0	6.5	7.5	8.0	6.5	7.5	12.0	9.5	10.5	15.5	13.0	14.5
6	7.0	6.0	6.5	8.0	6.5	7.0	11.0	8.5	9.5	14.5	13.0	14.0
7	7.0	6.0	6.5	9.0	6.5	7.5	11.0	7.5	9.5	14.5	11.5	13.0
8	6.5	5.5	6.0	9.0	6.0	7.5	10.0	7.5	9.0	14.5	11.0	13.0
9	6.5	5.5	6.0	9.0	6.5	8.0	11.0	8.5	9.5	13.5	11.0	12.5
10	7.5	5.5	6.5	8.5	7.0	8.0	9.5	7.5	9.0	12.5	10.5	11.5
11	8.5	6.5	7.5	8.0	6.0	7.0	11.0	7.5	9.0	15.0	10.0	12.5
12	8.0	6.5	7.0	8.5	7.0	7.5	13.0	8.0	10.5	15.5	12.5	14.5
13	9.5	7.0	8.0	8.5	6.5	7.5	14.0	9.5	11.5	15.0	12.5	13.5
14	9.5	8.0	8.5	8.0	7.0	7.5	13.0	10.0	11.5	16.0	11.5	14.0
15	9.5	8.0	9.0	9.5	6.0	7.5	12.5	10.0	11.5	15.5	12.0	14.0
16	9.5	8.5	9.0	8.0	6.5	7.5	12.5	9.5	11.5	14.0	12.0	13.0
17	8.5	7.5	8.0	8.0	7.0	7.5	14.0	9.5	11.5	12.5	10.0	11.5
18	9.0	7.5	8.5	9.0	7.0	8.0	14.0	10.5	12.5	10.0	9.0	9.5
19	10.5	8.5	9.5	10.0	7.0	8.5	14.0	11.0	12.5	11.0	9.0	10.0
20	10.5	8.5	9.5	9.0	7.0	8.0	13.5	11.5	12.5	15.5	10.5	12.5
21	10.0	8.0	9.0	8.5	7.0	8.0	14.5	11.5	13.0	14.5	12.5	13.5
22	9.5	7.5	8.5	8.5	7.0	8.0	14.5	10.5	12.5	16.0	11.0	13.5
23	9.5	7.5	8.5	8.5	7.0	8.0	13.5	12.0	12.5	16.5	12.0	14.5
24	9.0	6.5	8.0	8.5	7.0	7.5	13.0	11.0	12.0	16.5	12.5	14.5
25	9.5	6.5	8.0	8.0	7.0	7.5	12.0	10.0	11.0	16.5	12.5	14.5
26	9.5	7.0	8.5	10.5	6.5	8.5	12.5	10.0	11.0	16.5	12.0	14.0
27	9.0	7.0	8.0	11.0	7.0	9.0	14.0	9.5	12.0	17.0	12.0	14.5
28	8.5	7.5	8.0	11.0	8.0	9.5	12.5	10.5	11.5	17.0	12.0	14.5
29	---	---	---	12.0	7.5	10.0	15.0	9.5	12.5	15.5	12.5	13.0
30	---	---	---	13.0	8.5	11.0	14.0	11.0	12.5	15.0	11.0	13.0
31	---	---	---	12.0	9.5	11.0	---	---	---	17.0	11.5	14.0
MONTH	10.5	4.0	7.5	13.0	6.0	8.0	15.0	7.5	11.0	17.0	9.0	13.5
Day	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min	Mean
June				July			August			September		
1	19.0	13.0	16.0	24.0	18.5	21.0	25.0	20.0	22.5	23.0	19.5	21.0
2	20.0	15.0	17.5	26.0	20.5	23.0	25.0	20.0	22.5	22.5	18.0	20.0
3	19.0	15.0	17.0	27.0	22.5	24.5	25.0	20.5	22.5	23.5	18.5	20.5
4	18.0	13.0	15.5	26.0	22.5	24.0	25.5	20.5	22.5	24.5	20.0	22.0
5	18.0	12.5	15.5	25.0	20.5	23.0	25.0	20.5	22.5	24.5	20.5	22.0
6	19.0	13.5	16.0	24.5	19.5	22.0	23.5	20.5	22.0	23.5	20.0	21.5
7	19.5	14.5	17.0	25.0	19.5	22.0	22.5	19.5	21.0	21.0	19.0	20.5
8	20.5	15.0	18.0	25.0	20.5	22.5	24.5	19.5	22.0	21.0	17.5	19.0
9	21.5	15.5	18.5	25.0	20.0	22.5	23.0	20.5	22.0	20.0	16.0	18.0
10	22.5	17.0	19.5	24.5	19.0	21.5	24.0	19.0	21.0	20.5	17.0	18.5
11	21.5	17.5	19.5	25.0	20.0	22.0	24.0	19.0	21.0	20.5	17.0	18.5
12	20.0	15.5	18.0	26.0	20.5	23.0	24.5	19.0	21.5	21.0	17.0	18.5
13	19.0	14.5	17.0	24.5	21.0	23.0	24.5	19.5	22.0	21.0	17.5	19.0
14	19.5	14.0	17.0	25.5	20.5	22.5	25.0	19.5	22.0	21.0	17.5	19.0
15	19.5	14.5	17.0	23.5	20.0	21.5	25.0	20.0	22.5	20.5	17.0	18.5
16	20.0	15.0	17.5	21.0	19.0	19.5	25.0	20.5	22.5	20.0	17.0	18.5
17	20.5	14.5	17.5	23.0	18.0	20.5	25.5	21.0	23.0	20.5	16.5	18.5
18	19.5	15.0	18.0	24.0	19.0	21.5	26.0	21.5	23.5	21.0	17.5	19.0
19	19.5	15.0	16.5	24.0	19.5	21.5	26.0	21.5	23.5	21.0	18.0	19.0
20	19.5	13.5	16.0	24.5	19.5	21.5	26.0	22.0	23.5	20.0	17.5	18.5
21	20.5	15.0	17.5	24.5	19.5	22.0	26.0	21.5	23.5	17.5	14.5	16.5
22	21.0	15.5	18.0	25.5	20.0	22.5	26.0	21.5	23.5	17.5	14.5	16.0
23	20.5	16.5	18.5	26.5	21.5	24.0	24.5	21.0	22.5	18.0	15.0	16.5
24	20.5	16.0	18.5	26.5	22.5	24.0	23.5	19.5	21.5	19.0	15.5	17.0
25	20.5	17.0	18.5	24.5	21.0	22.5	23.0	19.0	21.0	19.5	16.0	17.5
26	20.5	17.5	19.0	25.0	19.5	22.0	22.5	17.5	20.0	19.0	17.0	18.0
27	20.0	17.0	18.5	25.5	20.5	23.0	20.0	18.0	19.0	19.5	16.5	18.0
28	19.5	16.0	17.5	26.0	21.0	23.5	21.0	18.0	19.0	19.5	16.5	18.0
29	21.0	17.5	19.0	26.5	21.5	23.5	23.0	18.0	20.0	19.0	16.0	17.5
30	22.0	17.0	19.5	26.5	21.0	23.5	23.5	19.0	21.0	19.0	16.0	17.5
31	---	---	---	26.0	21.0	23.5	22.5	19.0	21.0	---	---	---
MONTH	22.5	12.5	17.5	27.0	18.0	22.5	26.0	17.5	22.0	24.5	14.5	19.0
YEAR	27.0	.5	12.5									

ROGUE RIVER BASIN

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14372300 ROGUE RIVER NEAR AGNESS, OR
(National stream-quality accounting network station)

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 National Geodetic Vertical Datum of 1929 (levels by U.S. Bureau of Public Roads).

REMARKS.--Water-discharge 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.

AVERAGE DISCHARGE.--31 years, 5,886 ft³/s, 4,264,000 acre-ft/yr.

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, 31,800 ft³/s Mar. 5, gage height, 12.30 ft; minimum discharge, 1,300 ft³/s Oct. 5.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	1590	2090	2160	1690	1970	1900	4190	3500	4080	2710	1900	2140
2	1580	1850	2140	1700	3100	3450	4070	3080	3680	2550	1800	2150
3	1540	1590	2010	1700	5540	12900	3780	3210	3380	2340	1930	2160
4	1520	1530	2100	1670	6660	23700	3580	3190	3420	2240	1970	2090
5	1380	1500	2130	1660	11300	27700	3970	3070	3420	2230	1990	2060
6	1520	1480	2020	1650	9380	14400	5050	3010	3270	2220	1990	2040
7	1580	1490	1910	1960	6200	9310	6100	3200	2960	2220	1970	2020
8	1590	1510	1800	2270	4670	7160	5630	3710	2760	2200	2010	2040
9	1910	1500	1780	2310	3840	6010	6010	3990	2870	2190	1980	2070
10	1740	1530	2390	2680	3340	5540	6410	4250	2840	2170	2050	2120
11	1740	1480	2970	5140	3000	5530	6740	3890	2730	2170	2110	2090
12	1540	1430	3650	11100	2740	6640	6420	3790	2680	2150	2140	1960
13	1550	1620	2900	11800	2640	7910	5960	3770	2650	2130	2130	1700
14	1580	2040	2540	10300	3040	7120	5330	4040	2590	2140	2070	1620
15	1590	2080	2360	7900	3030	6370	4620	4290	2590	2170	2060	1630
16	1560	1790	2210	6610	2740	5740	4390	4000	2530	2250	2050	1640
17	1550	1630	2110	5230	2600	5180	4220	6070	2530	2800	2080	1660
18	1660	1590	2150	4270	2500	4850	3950	13000	2520	2790	2100	1610
19	1780	1610	2340	3750	2480	4650	3750	11500	2580	2540	2080	1590
20	1690	1650	2440	3560	2610	4430	3560	8640	2930	2420	2090	1570
21	1680	1850	2250	3140	2520	4120	3550	7770	3040	2200	2050	1600
22	1690	1890	2020	2840	2390	3890	3670	7370	2790	2180	2180	1590
23	1700	1940	3440	2640	2270	4070	3690	6760	2670	2320	2090	1600
24	1660	1820	3580	2480	2150	5000	3730	6190	2670	2310	2060	1610
25	1630	2750	3530	2360	2060	5280	3920	5720	2680	2210	2080	1560
26	1600	3000	3540	2250	2000	5250	3990	5300	2590	2130	2120	1540
27	1580	2880	3280	2170	1910	5200	4120	4770	2570	2090	2130	1540
28	1560	2290	2290	2100	1880	4620	4180	4350	2640	2050	2150	1590
29	1600	2120	1880	2030	---	4280	3930	4020	2770	2030	2270	1620
30	2130	2210	1780	1960	---	4070	3710	4020	2770	2000	2250	1550
31	2800	---	1690	1930	---	4070	---	4210	---	1930	2210	---
TOTAL	51820	55740	75390	114850	100560	220340	136220	157680	86200	70080	64190	53760
MEAN	1672	1858	2432	3705	3591	7108	4541	5086	2873	2261	2071	1792
MAX	2800	3000	3650	11800	11300	27700	6740	13000	4080	2800	2270	2160
MIN	1380	1430	1690	1650	1880	1900	3550	3010	2520	1930	1900	1540
AC-FT	102800	110600	149500	227800	199500	437000	270200	312800	171000	139000	127300	106600

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1961 - 1991, BY WATER YEAR (WY)

	1965	5294	10240	11990	10540	9653	7007	5358	3317	2022	1750	1695
MEAN	1965	5294	10240	11990	10540	9653	7007	5358	3317	2022	1750	1695
MAX	5070	20240	43980	32610	30280	25590	15090	11310	6128	3446	3370	3187
(WY)	1963	1974	1965	1974	1983	1972	1982	1963	1975	1984	1984	1983
MIN	1320	1386	1555	1623	1550	2207	1479	2156	1293	864	877	935
(WY)	1961	1988	1977	1977	1977	1988	1977	1977	1977	1968	1973	1968

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1961 - 1991
ANNUAL TOTAL	1100410	1186830	
ANNUAL MEAN	3015	3252	5885
HIGHEST ANNUAL MEAN			11990
LOWEST ANNUAL MEAN			1583
HIGHEST DAILY MEAN	26600	27700	240000
LOWEST DAILY MEAN	1380	1380	704
ANNUAL SEVEN-DAY MINIMUM	1490	1490	742
ANNUAL RUNOFF (AC-FT)	2183000	2354000	4263000
10 PERCENT EXCEEDS	5590	5670	12000
50 PERCENT EXCEEDS	2360	2320	3200
90 PERCENT EXCEEDS	1600	1600	1390

ROGUE RIVER BASIN
14372300 ROGUE RIVER NEAR AGNESS, OR--Continued
WATER-QUALITY RECORDS

PERIOD OF DAILY RECORD.--

WATER TEMPERATURE: October 1960 to September 1987.

INSTRUMENTATION.--Temperature recorder from October 1960 to September 1987.

REMARKS.--Some samples were analyzed by different methods and may have data with different levels of detection.

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.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	DIS- CHARGE, INST. CUBIC FEET PER SECOND	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	TEMPER- ATURE WATER (DEG C)	TUR- BID- ITY (NTU)	OXYGEN, DIS- SOLVED (MG/L)	OXYGEN, DIS- SOLVED SATUR- ATION	COLI- FORM, FECAL, 0.7 UM-MF (COLS./ 100 ML)	STREP- TOCOCCI FECAL, KF AGAR (COLS. PER 100 ML)	HARD- NESS (MG/L AS CACO3)	CALCIUM, DIS- SOLVED (MG/L AS CA)
OCT 1990												
16...	1300	1700	101	7.9	13.0	1.6	10.4	99	K9	K6	40	9.4
DEC												
04...	1630	2410	113	7.8	8.0	2.2	11.6	98	21	K18	44	10
FEB 1991												
26...	1230	1970	119	7.7	14.5	2.8	9.9	97	K5	K1	47	11
APR												
30...	1100	3590	102	7.8	13.0	5.0	10.1	97	K15	0	42	10
JUN												
26...	1130	2700	96	7.9	19.5	1.8	9.9	109	K10	K3	39	9.2
AUG												
14...	1130	2070	91	8.0	21.0	2.5	9.0	102	K1	120	33	8.2
DATE		MAGNE- SIUM, DIS- SOLVED (MG/L AS MG)	SODIUM, DIS- SOLVED (MG/L AS NA)	SODIUM, AD- SORP- TION RATIO	POTAS- SIUM, DIS- SOLVED (MG/L AS K)	ALKA- LINITY, DIS IT FIELD (MG/L AS CACO3)	BICAR- BONATE, DIS IT FIELD (MG/L AS HCO3)	CAR- BONATE, DIS IT FIELD (MG/L AS CO3)	SULFATE, DIS- SOLVED (MG/L AS SO4)	CHLO- RIDE, DIS- SOLVED (MG/L AS CL)	FLUO- RIDE, DIS- SOLVED (MG/L AS F)	SILICA, DIS- SOLVED (MG/L AS SIO2)
OCT 1990												
16...	3.9	5.0	21	0.3	1.1	43	53	0	3.1	4.3	0.1	20
DEC												
04...	4.6	5.4	21	0.4	1.0	46	56	0	4.2	4.2	<0.1	20
FEB 1991												
26...	4.6	5.7	21	0.4	0.9	51	62	0	3.9	3.7	<0.1	18
APR												
30...	4.2	5.5	22	0.4	0.8	46	56	0	2.9	2.7	<0.1	20
JUN												
26...	3.8	4.8	21	0.3	1.1	42	51	0	2.3	3.1	0.1	22
AUG												
14...	3.1	5.0	24	0.4	1.2	--	--	--	1.7	2.4	0.1	24
DATE		SOLIDS, RESIDUE AT 180 DEG. C DIS- SOLVED (MG/L)	SOLIDS, SUM OF CONSTI- TUENTS, DIS- SOLVED (MG/L)	SOLIDS, DIS- SOLVED (TONS PER AC-FT)	SOLIDS, DIS- SOLVED (TONS PER DAY)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN,AM- MONIA + ORGANIC, TOTAL (MG/L AS N)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS, DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)
OCT 1990												
16...	76	74	0.10	349	<0.01	0.100	<0.01	0.4	0.04	0.05	0.05	
DEC												
04...	76	78	0.10	495	0.01	0.200	0.03	<0.2	0.04	0.03	0.05	
FEB 1991												
26...	68	79	0.09	362	0.01	0.130	0.02	<0.2	0.07	0.09	0.10	
APR												
30...	87	75	0.12	843	<0.01	0.220	<0.01	0.2	0.06	0.02	0.03	
JUN												
26...	85	72	0.12	620	<0.01	0.100	0.05	0.6	0.06	0.05	0.04	
AUG												
14...	64	72	0.09	358	<0.01	0.085	<0.01	0.3	0.07	0.05	0.05	

K - Results based on colony count outside acceptable range (non-ideal colony count).

ROGUE RIVER BASIN

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14372300 ROGUE RIVER NEAR AGNESS, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	ALUM- INUM, DIS- SOLVED (UG/L AS AL)	ARSENIC, DIS- SOLVED (UG/L AS AS)	BARIUM, DIS- SOLVED (UG/L AS BA)	BERYL- LIUM, DIS- SOLVED (UG/L AS BE)	CADMIUM, DIS- SOLVED (UG/L AS CD)	CHRO- MIUM, DIS- SOLVED (UG/L AS CR)	COBALT, DIS- SOLVED (UG/L AS CO)	COPPER, DIS- SOLVED (UG/L AS CU)	IRON, DIS- SOLVED (UG/L AS FE)	LEAD, DIS- SOLVED (UG/L AS PB)	LITHIUM, DIS- SOLVED (UG/L AS LI)
OCT 1990											
16...	10	<1	8	<0.5	<1	<1	<3	2	27	1	<4
DEC											
04...	--	--	--	--	--	--	--	--	--	--	--
FEB 1991											
26...	<10	<1	9	<0.5	1	<1	<3	2	31	<1	<4
APR											
30...	60	<1	8	<0.5	1	<1	<3	1	51	1	<4
JUN											
26...	--	--	--	--	--	--	--	--	--	--	--
AUG											
14...	<10	<1	7	<0.5	<1	<1	<3	2	25	<1	<4
DATE	MANGA- NESE, DIS- SOLVED (UG/L AS MN)	MERCURY, DIS- SOLVED (UG/L AS HG)	MOLYB- DENUM, DIS- SOLVED (UG/L AS MO)	NICKEL, DIS- SOLVED (UG/L AS NI)	SELE- NIUM, DIS- SOLVED (UG/L AS SE)	SILVER, DIS- SOLVED (UG/L AS AG)	STRON- TIUM, DIS- SOLVED (UG/L AS SR)	VANA- DIUM, DIS- SOLVED (UG/L AS V)	ZINC, DIS- SOLVED (UG/L AS ZN)	SEDI- MENT, SUS- PENDE (MG/L)	SEDI- MENT, DIS- CHARGE, SUS- PENDE (T/DAY)
OCT 1990											
16...	2	<0.1	<10	<1	<1	<1	68	<6	6	3	14
DEC											
04...	--	--	--	--	--	--	--	--	--	4	26
FEB 1991											
26...	3	<0.1	<10	1	<1	<1	81	<6	10	3	16
APR											
30...	3	<0.1	<10	<1	<1	<1	74	<6	<3	7	68
JUN											
26...	--	--	--	--	--	--	--	--	--	6	44
AUG											
14...	1	<0.1	<10	<1	<1	<1	68	<6	4	9	50

ROGUE RIVER BASIN

14372500 EAST FORK ILLINOIS RIVER NEAR TAKILMA, OR

LOCATION.--Lat 42°00'10", long 123°37'30", in SE 1/4 NE 1/4 sec.15, T.41 S., R.8 W., Josephine County, Hydrologic Unit 17100311, Siskiyou National Forest, on right bank 0.3 mi downstream from Dunn Creek (California-Oregon State line), 3.4 mi south of Takilma, and at mile 71.2.

DRAINAGE AREA.--42.3 mi².

PERIOD OF RECORD.--April to September 1926, April 1927 to April 1932, October 1940 to September 1991 (discontinued). Monthly discharge only for some periods, published in WSP 1318. Records prior to 1942 water year not equivalent owing to large diversions. See REMARKS.

REVISED RECORDS.--WSP 1184: 1948. WSP 1288: 1951(P). WSP 1398: 1946, 1947(M), 1949. WSP 1738: Drainage area (former site).

GAGE.--Water-stage recorder. Elevation of gage is 1,780 ft, from topographic map. Prior to Oct. 31, 1946, nonrecording gage at sites 0.6 mi downstream at different datums. Oct. 31, 1946, to May 13, 1949, nonrecording gage and May 14, 1949, to Aug. 23, 1965, water-stage recorder at site 0.6 mi downstream at datum 1,746.6 ft above National Geodetic Vertical Datum of 1929.

REMARKS.--Records good. No regulation. Two small diversions for irrigation upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--50 years (water years 1942-91), 174 ft³/s, 55.86 in/yr, 126,100 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 15,700 ft³/s Dec. 22, 1964, gage height, 14.90 ft, present site and datum, from floodmark, from rating curve extended above 4,400 ft³/s on basis of slope-area measurement of peak flow; minimum discharge, 4.6 ft³/s Nov. 3, 1960.

EXTREMES FOR CURRENT YEAR.--Peak discharge 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)
Mar. 4	1600	*3,000	*7.50	No other peak greater than base discharge.			
Minimum discharge, 5.7 ft ³ /s Sept. 27.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	9.3	39	40	22	34	44	220	115	78	24	13	10
2	9.3	24	37	22	660	248	190	111	74	23	13	9.9
3	9.3	19	33	22	605	1110	162	109	69	22	13	9.3
4	9.3	18	51	21	658	1950	147	106	63	21	13	8.7
5	9.7	18	67	20	945	1020	299	106	58	21	12	8.4
6	10	17	53	23	480	476	362	107	55	20	12	8.2
7	10	16	44	66	272	280	293	108	52	19	12	8.2
8	9.9	16	38	63	188	201	223	153	49	19	12	8.4
9	9.6	16	36	51	141	162	396	119	47	18	12	8.4
10	9.3	15	156	59	115	178	364	105	44	18	12	8.3
11	9.4	14	120	144	98	150	256	97	42	18	11	8.0
12	9.3	13	84	908	85	195	202	93	40	17	11	7.9
13	10	20	65	895	77	202	175	104	39	17	10	7.8
14	9.6	36	54	450	70	157	162	110	38	17	10	7.8
15	9.8	24	48	271	65	132	149	100	36	17	10	7.7
16	10	20	42	183	61	121	133	96	35	32	10	7.5
17	9.7	18	38	132	57	116	121	115	34	26	10	7.1
18	15	21	42	108	54	116	116	123	33	21	9.9	7.0
19	17	23	45	91	51	114	114	127	36	19	9.8	6.9
20	12	22	39	78	48	111	120	149	34	18	9.6	7.0
21	11	23	e30	68	46	106	127	172	31	17	9.4	6.9
22	15	26	e25	61	43	100	128	156	30	16	9.1	7.0
23	13	24	e30	56	41	113	140	133	29	16	9.0	6.7
24	12	22	34	51	39	123	160	117	28	15	9.2	6.7
25	11	69	29	47	38	117	147	105	27	15	9.1	6.5
26	11	62	27	44	36	120	136	93	27	15	9.0	6.5
27	11	43	26	41	35	117	132	83	27	14	9.1	6.6
28	13	38	26	39	36	114	124	76	28	14	12	6.7
29	12	35	24	37	---	113	120	82	28	14	13	6.6
30	31	44	e23	35	---	133	118	107	25	13	11	6.6
31	92	---	e23	34	---	188	---	87	---	13	9.9	---
TOTAL	439.5	795	1429	4142	5078	8427	5536	3464	1236	569	335.1	229.3
MEAN	14.2	26.5	46.1	134	181	272	185	112	41.2	18.4	10.8	7.64
MAX	92	69	156	908	945	1950	396	172	78	32	13	10
MIN	9.3	13	23	20	34	44	114	76	25	13	9.0	6.5
AC-FT	872	1580	2830	8220	10070	16710	10980	6870	2450	1130	665	455
CFSM	.34	.63	1.09	3.16	4.29	6.43	4.36	2.64	.97	.43	.26	.18
IN.	.39	.70	1.26	3.64	4.47	7.41	4.87	3.05	1.09	.50	.29	.22

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1942 - 1991, BY WATER YEAR (WY)

MEAN	47.7	210	340	365	335	276	226	176	72.4	22.9	13.3	13.1
MAX	469	872	1511	1036	969	612	437	382	228	55.7	23.9	51.4
(WY)	1951	1974	1965	1953	1958	1989	1948	1963	1953	1983	1983	1986
MIN	6.73	12.1	12.1	21.6	37.3	84.7	73.9	43.6	22.9	12.8	7.80	7.08
(WY)	1988	1960	1977	1977	1977	1942	1970	1947	1987	1987	1977	1944

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1942 - 1991
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ANNUAL TOTAL	35176.6			31679.9				
ANNUAL MEAN	96.4			86.8			174	
HIGHEST ANNUAL MEAN							315	1974
LOWEST ANNUAL MEAN							39.6	1977
HIGHEST DAILY MEAN	2750	Jan 8		1950	Mar 4		13000	Dec 22 1964
LOWEST DAILY MEAN	9.2	Sep 22		6.5	Sep 25		5.2	Sep 24 1944
ANNUAL SEVEN-DAY MINIMUM	9.5	Sep 29		6.6	Sep 24		5.3	Sep 23 1944
ANNUAL RUNOFF (AC-FT)	69770			62840			126000	
ANNUAL RUNOFF (CFSM)	2.28			2.05			4.11	
ANNUAL RUNOFF (INCHES)	30.94			27.86			55.89	
10 PERCENT EXCEEDS	209			162			388	
50 PERCENT EXCEEDS	40			36			78	
90 PERCENT EXCEEDS	11			9.3			11	

LOCATION.--Lat 42°09'35", long 123°28'40", in NE 1/4 SW 1/4 sec.24, T.39 S., R.7 W., Josephine County, Hydrologic Unit 17100311, on right bank 500 ft downstream from Little Grayback Creek, 2.0 mi downstream from Grayback Creek, 3.7 mi northeast of Holland, and at mile 9.3.

PERIOD OF RECORD.--October 1965 to September 1991 (discontinued). See REMARKS.

REVISÉD RECORDS.--WDR OR-86-2: 1985.

GAGE.--Water-stage recorder. Datum of gage is 1,713.92 ft above National Geodetic Vertical Datum of 1929 (Bureau of Reclamation bench mark).

REMARKS.--Records fair. Grayback Canal and 3 small diversions from Grayback and Cave Creeks divert water for domestic use and irrigation upstream from station. Return flow from these diversions enters creek upstream from station. Records after September 30, 1991 available at the Oregon Water Resources Department, Salem, OR.

AVERAGE DISCHARGE.--26 years, 225 ft³/s, 36.42 in/yr, 163,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 8,550 ft³/s Jan. 15, 1974, gage height, 8.20 ft; minimum discharge, 9.7 ft³/s Sept. 21, 1991.

EXTREMES OUTSIDE PERIOD OF RECORD.--Maximum stage since at least 1940, 10.8 ft on Dec. 22, 1964, from floodmark, discharge, 19,300 ft³/s, from estimate based on slope-area measurement of peak flow at site 0.7 mi upstream.

EXTREMES FOR CURRENT YEAR.--Peak discharges greater than base discharge of 1,500 ft³/s and maximum (*):

Date	Time	Discharge (ft ³ /s)	Gage height (ft)	Date	Time	Discharge (ft ³ /s)	Gage height (ft)
Mar. 4	1800	*1,590	*4.45	No other peak greater than base discharge.			
Minimum discharge, 9.7 ft ³ /s Sept. 21.							

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	22	51	44	e32	49	77	203	165	154	74	47	30
2	23	36	39	e31	366	159	188	163	152	71	46	28
3	23	30	36	e31	380	539	198	160	148	68	45	27
4	22	33	43	e30	445	1010	181	156	139	65	46	26
5	24	40	50	29	660	792	273	158	132	65	45	26
6	26	31	43	31	422	477	330	160	127	64	46	25
7	24	28	38	61	288	356	323	160	124	63	46	24
8	24	29	37	52	214	286	286	190	122	61	45	26
9	23	29	38	46	174	234	347	164	117	60	45	25
10	21	26	121	54	149	219	333	157	116	58	44	25
11	22	25	101	82	130	195	282	152	113	57	43	24
12	21	24	72	312	118	213	241	150	110	56	41	23
13	25	35	61	469	115	230	220	167	106	56	40	22
14	24	61	52	311	107	216	208	167	103	56	40	22
15	26	39	49	217	101	199	198	156	99	55	38	21
16	26	33	45	163	97	187	185	161	98	103	38	20
17	23	30	41	131	91	174	176	228	95	91	36	19
18	37	35	47	116	89	169	170	239	94	69	37	19
19	39	37	50	104	86	165	169	239	105	64	37	18
20	28	36	41	91	82	159	168	259	98	60	36	15
21	29	37	e28	81	79	152	173	283	93	59	38	12
22	45	40	e25	75	76	145	174	262	88	57	36	13
23	32	35	e40	70	72	158	186	237	89	56	35	13
24	29	32	e45	66	69	170	203	220	94	57	35	13
25	26	79	45	62	67	168	188	206	87	55	34	13
26	27	70	40	58	65	164	179	192	84	55	34	12
27	26	51	36	55	64	156	176	180	83	52	34	13
28	32	45	37	53	66	150	169	171	84	51	40	13
29	30	43	e35	51	---	149	167	176	81	51	39	14
30	47	52	e34	49	---	166	165	180	77	49	31	13
31	93	---	e34	48	---	194	---	162	---	48	28	---
TOTAL	919	1172	1447	3061	4721	7828	6460	5820	3212	1906	1225	594
MEAN	29.6	39.1	46.7	98.7	169	253	215	188	107	61.5	39.5	19.8
MAX	93	79	121	469	660	1010	347	283	154	103	47	30
MIN	21	24	25	29	49	77	165	150	77	48	28	12
AC-FT	1820	2320	2870	6070	9360	15530	12810	11540	6370	3780	2430	1180
CFSM	.35	.47	.56	1.18	2.01	3.01	2.57	2.24	1.28	.73	.47	.24
IN.	.41	.52	.64	1.36	2.09	3.47	2.86	2.58	1.42	.85	.54	.26

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1966 - 1991, BY WATER YEAR (WY)

MEAN	42.7	183	323	422	399	414	329	293	160	65.5	38.6	33.1
MAX	88.5	911	1191	1153	1052	953	700	617	345	129	65.2	61.4
(WY)	1980	1974	1982	1974	1986	1972	1982	1969	1971	1983	1983	1978
MIN	16.8	28.9	31.3	35.5	42.6	92.7	100	105	57.6	29.1	18.3	18.6
(WY)	1988	1988	1977	1977	1977	1977	1977	1981	1987	1977	1977	1987

SUMMARY STATISTICS	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1966 - 1991
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ANNUAL TOTAL	39306		38365			
ANNUAL MEAN	108		105		224	
HIGHEST ANNUAL MEAN					463	1974
LOWEST ANNUAL MEAN					53.7	1977
HIGHEST DAILY MEAN	1680	Jan 8	1010	Mar 4	6140	Jan 16 1974
LOWEST DAILY MEAN	21	Oct 10	12	Sep 21	12	Sep 21 1991
ANNUAL SEVEN-DAY MINIMUM	23	Oct 7	13	Sep 21	13	Sep 21 1991
ANNUAL RUNOFF (AC-FT)	77960		76100		162600	
ANNUAL RUNOFF (CFSM)	1.28		1.25		2.67	
ANNUAL RUNOFF (INCHES)	17.43		17.01		36.34	
10 PERCENT EXCEEDS	223		216		515	
50 PERCENT EXCEEDS	70		61		119	
90 PERCENT EXCEEDS	26		25		29	

ROGUE RIVER BASIN

14375400 ELK CREEK NEAR O'BRIEN, OR

LOCATION.--Lat 42°02'00", long 123°44'32", in SE 1/4 NE 1/4 sec.3, T.41 S., R.9 W., Josephine County, Hydrologic Unit 17100311, on right bank 0.7 mi downstream from Gilligan Creek, 0.8 mi west of U.S. Highway 199, about 3.1 mi southwest of O'Brien, and at mile 0.6.

DRAINAGE AREA.--26.6 mi².

PERIOD OF RECORD.--October 1985 to September 1991 (discontinued). Records November 1969 to September 1985 and after September 1991 available at the Oregon Water Resources Department, Salem, OR.

REVISED RECORDS.--WDR OR-87-2: Drainage area.

GAGE.--Water-stage recorder. Elevation of gage is 1,560 ft, from topographic map. Prior to November 1978, at site 1,100 ft upstream at different datum.

REMARKS.--Records good. No regulation. Minor diversion for irrigation.

AVERAGE DISCHARGE.--6 years (water years 1986-91), 73.8 ft³/s, 37.40 in/yr, 53,470 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 4,610 ft³/s Jan. 16, 1971; minimum, 0.33 ft³/s Aug. 11, 12, 1981.

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. 4	1630	*1,570	*6.21				

Minimum discharge, 1.2 ft³/s several days in September.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	4.6	17	10	e11	19	34	85	42	22	7.6	3.0	3.0
2	4.3	7.8	10	e11	200	152	77	39	20	7.2	3.6	2.6
3	4.2	6.5	9.3	11	253	433	70	38	20	6.9	3.2	2.2
4	4.5	e6.0	17	11	275	1010	64	36	19	6.6	3.4	2.0
5	4.7	e6.4	26	11	385	549	109	34	17	6.4	3.0	1.8
6	5.5	e6.0	21	12	228	272	168	34	17	6.2	2.9	1.8
7	5.3	e5.8	16	42	159	182	188	34	16	6.3	3.2	1.7
8	5.3	e5.6	13	45	120	142	154	45	15	6.1	3.1	1.9
9	5.3	e5.8	12	34	94	119	162	40	14	6.0	2.8	1.8
10	5.2	e5.4	70	40	78	127	154	37	13	5.9	3.1	1.8
11	5.0	e5.2	54	77	66	125	128	35	13	5.8	2.7	1.8
12	5.3	e5.0	37	407	58	259	108	33	12	5.6	2.3	1.8
13	5.4	12	30	382	52	279	94	37	11	5.5	2.2	1.9
14	5.5	29	25	205	48	192	83	38	11	5.7	2.0	1.7
15	5.3	14	22	135	44	148	76	35	11	6.0	2.0	1.7
16	5.7	8.7	21	99	41	122	69	34	10	11	1.9	1.6
17	5.4	7.3	18	76	38	103	63	40	9.8	9.0	1.9	1.6
18	7.8	8.0	21	64	35	94	59	43	10	7.1	1.9	1.4
19	8.7	8.2	26	54	33	87	55	43	12	6.6	1.9	1.5
20	6.8	9.0	22	47	31	80	53	41	12	6.3	1.9	1.4
21	6.8	9.3	e15	42	33	74	50	38	9.9	5.9	1.9	1.4
22	8.1	11	e13	38	32	69	48	35	9.1	5.7	1.8	1.3
23	7.5	9.5	e15	34	31	100	47	33	8.8	5.7	1.7	1.4
24	6.9	8.3	e17	32	30	161	52	31	8.8	5.4	1.6	1.3
25	6.6	32	14	29	28	149	54	29	8.3	5.2	1.7	1.4
26	6.9	35	14	27	27	138	51	28	8.2	4.8	1.7	1.3
27	7.3	21	14	25	27	127	48	26	8.2	4.6	1.7	1.3
28	9.1	14	15	24	27	112	46	25	9.2	4.3	4.1	1.5
29	9.0	11	13	22	---	98	44	27	11	3.9	5.4	1.4
30	27	12	e11	21	---	91	42	30	8.1	3.5	4.3	1.5
31	41	---	e10	19	---	94	---	24	---	3.4	3.3	---
TOTAL	246.0	341.8	631.3	2087	2492	5722	2501	1084	374.4	186.2	81.2	50.8
MEAN	7.94	11.4	20.4	67.3	89.0	185	83.4	35.0	12.5	6.01	2.62	1.69
MAX	41	35	70	407	385	1010	188	45	22	11	5.4	3.0
MIN	4.2	5.0	9.3	11	19	34	42	24	8.1	3.4	1.6	1.3
AC-FT	488	678	1250	4140	4940	11350	4960	2150	743	369	161	101
CFSM	.30	.43	.77	2.53	3.35	6.94	3.13	1.31	.47	.23	.10	.06
IN.	.34	.48	.88	2.92	3.49	8.00	3.50	1.52	.52	.26	.11	.07

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1986 - 1991, BY WATER YEAR (WY)

	9.95	53.6	84.1	201	213	183	59.0	44.5	29.5	7.53	3.11	5.36
MEAN												
MAX	23.6	197	184	276	627	342	118	78.4	67.9	10.9	4.85	18.8
(WY)	1987	1989	1988	1988	1986	1989	1989	1986	1990	1990	1990	1986
MIN	2.61	8.19	20.4	67.3	48.3	31.7	32.2	18.6	7.94	3.19	1.18	1.66
(WY)	1988	1988	1991	1991	1988	1988	1990	1987	1987	1987	1987	1987

SUMMARY STATISTICS

FOR 1990 CALENDAR YEAR

FOR 1991 WATER YEAR

WATER YEARS 1986 - 1991

ANNUAL TOTAL	20001.1	15797.7	
ANNUAL MEAN	54.8	43.3	
HIGHEST ANNUAL MEAN			73.8
LOWEST ANNUAL MEAN			114
HIGHEST DAILY MEAN	1540	1010	2180
LOWEST DAILY MEAN	2.9	1.3	43.3
ANNUAL SEVEN-DAY MINIMUM	3.1	1.3	.69
ANNUAL RUNOFF (AC-FT)	39670	31330	.80
ANNUAL RUNOFF (CFSM)	2.06	1.63	53440
ANNUAL RUNOFF (INCHES)	27.97	22.09	2.77
10 PERCENT EXCEEDS	133	115	37.68
50 PERCENT EXCEEDS	19	14	180
90 PERCENT EXCEEDS	4.8	1.9	25
			2.5

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 National Geodetic Vertical Datum of 1929. 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. No regulation. Diversions for irrigation upstream from station. Several observations of water temperature were obtained during the year.

AVERAGE DISCHARGE.--30 years, 1,260 ft³/s, 45.03 in/yr, 912,900 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, 14 ft³/s Aug. 11, 13, 14, 1977, Sept. 10, 11, 1986.

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)
Mar. 4	1800	*17,000	*20.63	No other peak greater than base discharge.			
Minimum discharge, 18 ft ³ /s several days in August and September.							

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	50	324	296	186	275	334	1440	696	442	117	39	26
2	45	208	283	181	2070	1850	1340	661	414	106	37	26
3	43	164	263	180	3390	6140	1230	632	387	92	37	26
4	43	147	269	176	3450	11600	1100	602	363	85	37	25
5	44	146	462	171	5240	7320	1710	582	342	74	37	25
6	46	145	411	172	2890	3550	2640	569	320	72	39	26
7	45	137	351	369	1910	2420	2500	577	302	70	38	25
8	44	129	305	641	1410	1900	1990	736	281	69	31	26
9	42	125	278	496	1120	1580	2200	748	260	64	31	25
10	42	123	654	527	932	1680	2200	670	248	61	34	25
11	50	119	858	932	807	1540	1770	616	231	59	33	24
12	48	116	614	5880	716	2880	1490	580	221	60	35	24
13	46	126	489	5290	662	2900	1310	603	215	49	35	23
14	48	241	e400	2910	608	2070	1180	640	208	50	30	23
15	47	241	e400	2020	565	1670	1090	584	198	e48	27	25
16	46	192	e360	1450	528	1430	992	557	196	e51	26	26
17	47	166	e330	1080	501	1270	916	654	185	e104	25	24
18	59	161	e360	876	477	1210	864	734	154	93	27	19
19	76	167	e390	748	450	1180	826	749	160	78	27	18
20	85	171	359	643	427	1120	793	763	184	71	23	18
21	80	187	311	568	406	1070	790	804	161	66	23	19
22	83	306	264	509	388	1010	768	771	149	63	20	20
23	91	253	259	463	368	1310	769	702	152	62	19	19
24	97	217	250	425	352	1730	849	640	155	58	21	18
25	90	400	245	392	336	1580	907	597	147	53	26	18
26	89	672	235	368	323	1500	885	548	134	51	26	18
27	85	442	225	345	313	1370	843	505	130	50	21	19
28	84	349	228	325	309	1260	785	474	134	47	23	20
29	87	301	218	306	---	1180	742	461	134	43	22	19
30	135	301	199	290	---	1190	708	545	125	41	22	21
31	360	---	189	280	---	1360	---	492	---	41	26	---
TOTAL	2277	6776	10755	29199	31223	70204	37627	19492	6732	2048	897	670
MEAN	73.5	226	347	942	1115	2265	1254	629	224	66.1	28.9	22.3
MAX	360	672	858	5880	5240	11600	2640	804	442	117	39	26
MIN	42	116	189	171	275	334	708	461	125	41	19	18
AC-FT	4520	13440	21330	57920	61930	139200	74630	38660	13350	4060	1780	1330
CFSM	.19	.59	.91	2.48	2.93	5.96	3.30	1.65	.59	.17	.08	.06
IN.	.22	.66	1.05	2.86	3.06	6.87	3.68	1.91	.66	.20	.09	.07

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1962 - 1991, 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
MEAN	254	1619	2653	2822	2524	2346	1522	887	348	93.0	46.3	69.5																		
MAX	1771	6344	9242	7184	6686	4867	4518	2439	939	280	116	358																		
(WY)	1963	1974	1965	1970	1986	1983	1982	1963	1990	1983	1976	1978																		
MIN	25.0	82.4	115	236	358	508	433	321	104	36.5	20.7	22.1																		
(WY)	1988	1988	1977	1977	1977	1988	1977	1981	1987	1987	1977	1987																		

SUMMARY STATISTICS

	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1962 - 1991
ANNUAL TOTAL	249667	217900	
ANNUAL MEAN	684	597	1260
HIGHEST ANNUAL MEAN			2372
LOWEST ANNUAL MEAN			275
HIGHEST DAILY MEAN	16800	11600	64000
ANNUAL SEVEN-DAY MINIMUM	28	18	14
ANNUAL RUNOFF (AC-FT)	495200	432200	912800
ANNUAL RUNOFF (CFSM)	1.80	1.57	3.32
ANNUAL RUNOFF (INCHES)	24.44	21.33	45.05
10 PERCENT EXCEEDS	1860	1440	3100
50 PERCENT EXCEEDS	278	264	510
90 PERCENT EXCEEDS	46	26	39

CHETCO RIVER BASIN

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, from topographic map.

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

AVERAGE DISCHARGE.--22 years, 2,225 ft³/s, 111.49 in/yr, 1,612,000 acre-ft/yr.

EXTREMES FOR PERIOD OF RECORD.--Maximum discharge, 65,800 ft³/s Jan. 16, 1971, gage height, 27.45 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)
Jan. 12	0500	21,200	13.76	Mar. 4	1700	(a)	*15.17
Mar. 4	1700	*23,400	14.57				

Minimum discharge, 50 ft³/s Sept. 24, 25.

(a) From crest-stage gage.

DISCHARGE, CUBIC FEET PER SECOND, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991
DAILY MEAN VALUES

DAY	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
1	94	1790	1360	506	989	e1000	1880	959	528	229	92	109
2	92	1000	1260	482	3290	e3500	1790	888	502	216	91	98
3	91	693	1120	463	4650	e10000	1670	824	476	204	89	89
4	90	598	1530	447	6640	18000	1510	776	455	194	89	83
5	89	615	1990	426	9550	11500	2790	731	444	181	90	79
6	88	524	1680	436	5420	6110	3970	708	432	170	89	76
7	87	447	1390	1380	3830	4260	3430	830	421	163	90	74
8	86	442	1180	1760	3010	e3500	2850	1890	406	161	90	74
9	85	410	1100	1220	2520	e2700	3300	1620	394	158	90	71
10	85	372	2450	2250	2170	e3000	3150	1350	383	154	90	69
11	84	339	2370	4990	1940	e2600	2620	1190	371	151	86	68
12	83	306	1900	20200	1740	e4500	2260	1060	360	149	82	67
13	86	639	1590	14800	1730	e6000	1990	1050	351	147	80	68
14	87	1340	1350	9400	1600	e4500	1790	992	343	145	78	68
15	90	968	1340	7020	1470	3210	1640	888	334	143	76	65
16	95	736	1140	5200	1360	2690	1480	826	333	160	75	63
17	92	610	1000	4040	1310	2370	1350	843	324	184	76	62
18	154	587	1050	3310	1260	2180	1240	827	315	162	75	61
19	204	536	1300	2800	1200	2010	1150	820	316	146	75	60
20	139	594	1120	2420	1150	1850	1070	803	325	135	74	60
21	117	1170	984	2130	1100	1690	994	766	306	130	74	56
22	153	1540	894	1910	1050	1600	927	725	292	126	72	53
23	140	1170	831	1720	998	2210	900	686	281	121	72	54
24	122	955	763	1560	951	2800	1270	649	275	118	70	53
25	113	3050	722	1440	917	2520	1470	621	268	116	69	52
26	135	2940	679	1340	e880	2350	1410	593	262	113	67	52
27	135	2090	646	1250	e860	2160	1320	566	256	108	67	52
28	188	1620	662	1170	e850	2040	1220	545	259	104	127	53
29	204	1430	603	1110	---	1910	1130	561	255	102	291	55
30	3650	1510	560	1050	---	1870	1030	634	245	99	193	53
31	4160	---	530	1010	---	1960	---	564	---	93	125	---
TOTAL	11118	31021	37094	99240	64435	118590	54601	26785	10512	4582	2904	1997
MEAN	359	1034	1197	3201	2301	3825	1820	864	350	148	93.7	66.6
MAX	4160	3050	2450	20200	9550	18000	3970	1890	528	229	291	109
MIN	83	306	530	426	850	1000	900	545	245	93	67	52
AC-FT	22050	61530	73580	196800	127800	235200	108300	53130	20850	9090	5760	3960
CFSM	1.32	3.82	4.42	11.8	8.49	14.1	6.72	3.19	1.29	.55	.35	.25
IN.	1.53	4.26	5.09	13.62	8.84	16.28	7.50	3.68	1.44	.63	.40	.27

e Estimated

STATISTICS OF MONTHLY MEAN DATA FOR WATER YEARS 1970 - 1991, BY WATER YEAR (WY)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991
MEAN	651	3545	5007	4856	4471	3972	2123	1082	570	193	121	230										
MAX	2540	10230	12770	13150	11490	7041	6956	2508	2047	442	310	1531										
(WY)	1982	1974	1982	1970	1986	1989	1982	1979	1990	1983	1983	1978										
MIN	48.3	229	121	479	619	859	673	430	229	121	69.1	54.9										
(WY)	1988	1977	1977	1977	1977	1988	1977	1973	1974	1973	1987	1987										

SUMMARY STATISTICS

	FOR 1990 CALENDAR YEAR	FOR 1991 WATER YEAR	WATER YEARS 1970 - 1991
ANNUAL TOTAL	554673	462879	
ANNUAL MEAN	1520	1268	2225
HIGHEST ANNUAL MEAN			3911
LOWEST ANNUAL MEAN			549
HIGHEST DAILY MEAN	29400	Jan 8	48500
LOWEST DAILY MEAN	83	Oct 12	46
ANNUAL SEVEN-DAY MINIMUM	85	Oct 7	46
ANNUAL RUNOFF (AC-FT)	1100000	918100	1612000
ANNUAL RUNOFF (CFSM)	5.61	4.68	8.21
ANNUAL RUNOFF (INCHES)	76.14	63.54	111.56
10 PERCENT EXCEEDS	3900	2820	5840
50 PERCENT EXCEEDS	642	649	751
90 PERCENT EXCEEDS	119	76	83

451

430701121040001 SILVER LAKE RANGER STATION, OR

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. The sensing circuit is activated by wet deposition, causing the motor to move the cover from the wet bucket and cover the dry bucket. When the heater in the sensor evaporates the precipitation, the cycle is reversed. The sample buckets are polyethylene and have a capacity of 13 liters (28.6 cm inside diameter, 23.2 cm deep). The opening of the collector is approximately 5 ft above ground level.

REMARKS.--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. Data for period after June 4 was not available at time of publication. These data will be published in the next annual data report.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

	TIME	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN)	COL- LECTOR EFFI- CIENCY WET DEPOS. PERCENT	SPEC. CONDUCT- TANCE CK.SOL. ATM DEP WET TOT (US/CM)	SPEC. CONDUCT- TANCE FIELD ATM DEP WET TOT (US/CM)	SPEC. CONDUCT- TANCE LAB ATM DEP WET TOT (US/CM)	PH CK.SOL. ATM DEP WET TOT (UNITS)	PH FIELD ATM DEP WET TOT (UNITS)	PH LAB ATM DEP WET TOT (UNITS)	CALCIUM ATM DEP WET DIS (MG/L)	MAG- NESIUM ATM DEP WET DIS (MG/L)	SODIUM ATM DEP WET DIS (MG/L)
OCT 1990 16-23	1529	0.05	52	--	--	--	--	--	--	--	--	--
OCT 30- NOV 06	1600	0.25	79	--	--	--	--	--	--	--	--	--
NOV 13-20	1615	0.26	103	--	--	--	--	--	--	--	--	--
DEC 04-11	1639	0.15	106	--	--	--	--	--	--	--	--	--
JAN 1991 08-15	1615	0.08	136	--	--	--	--	--	--	--	--	--
FEB 12-19	1615	0.14	62	--	--	--	--	--	--	--	--	--
FEB 26- MAR 05	1629	0.75	76	--	--	--	--	--	--	--	--	--
MAR 05-12	1644	0.17	93	--	--	--	--	--	--	--	--	--
MAR 12-19	1531	0.31	101	--	--	--	--	--	--	--	--	--
MAR 19-26	1606	0.30	73	--	--	--	--	--	--	--	--	--
APR 02-09	1609	0.09	29	--	--	--	--	--	--	--	--	--
APR 09-16	1520	0.10	104	--	--	--	--	--	--	--	--	--
APR 16-23	1525	0.60	86	--	--	--	--	--	--	--	--	--
APR 23-30	1500	0.08	96	22.5	7.1	4.5	4.32	5.05	5.98	0.12	0.021	0.066
MAY 07-14	1535	0.99	96	22.3	5.3	3.7	4.35	5.10	5.45	0.05	0.009	0.026
MAY 14-21	1520	0.97	82	23.2	9.4	7.2	4.32	4.90	5.29	0.20	0.028	0.068
MAY 28- JUN 04	1435	0.01	58	--	--	38.0	--	--	5.56	--	--	--

[illegible]

430701121040001 SILVER LAKE RANGER STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

[illegible]

CHEMICAL QUALITY OF PRECIPITATION

453

GRANDE RONDE RIVER BASIN

451328118304100 STARKEY EXPERIMENTAL STATION, OR

LOCATION.--Lat 45°13'28", long 118°30'41", in NE 1/4 NW 1/4 sec.14, T.4 S., R.34 E., Union County, Hydrologic Unit 17060104, in the Starkey Experimental Forest, 2.5 mi north of State Highway 244, 29 mi west of LaGrande.

PERIOD OF RECORD.--March 1984 to current year (weekly composite).

INSTRUMENTATION.--The wet-deposition sample collector is an Aerochem Metrics Model 301* wet/dry deposition collector. The sensing circuit is activated by wet deposition, causing the motor to move the cover from the wet bucket and cover the dry bucket. When the heater in the sensor evaporates the precipitation, the cycle is reversed. The sample buckets are polyethylene and have a capacity of 13 liters (28.6 cm inside diameter, 23.2 cm deep). The opening of the collector is approximately 8 ft above ground level.

REMARKS.--Inches of precipitation obtained from an on-site recording weighing-bucket gage. Samples are collected by U.S. Forest Service personnel and analyzed by the Illinois State Water Survey Central Analytical Laboratory. Data for period after June 4 was not available at time of publication. These data will be published in the next annual data report.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN)	COL- LECTOR EFFI- CIENCY WET DEPOS. PERCENT	SPEC. CONDUCT- TANCE CK.SOL. ATM DEP WET TOT (US/CM)	SPEC. CONDUCT- TANCE FIELD ATM DEP WET TOT (US/CM)	SPEC. CONDUCT- TANCE LAB ATM DEP WET TOT (US/CM)	PH CK.SOL. ATM DEP WET TOT (UNITS)	PH FIELD ATM DEP WET TOT (UNITS)	PH LAB ATM DEP WET TOT (UNITS)
OCT 1990									
02-09	1545	0.37	83	21.8	4.1	2.1	4.36	5.20	5.71
OCT 09-16	1430	--	--	21.6	4.5	2.5	4.35	4.65	5.72
OCT 16-23	1510	0.73	93	21.6	4.4	2.5	4.35	5.01	5.32
OCT 23-30	1450	0.08	88	21.7	5.2	3.7	4.31	4.96	5.41
OCT 30-NOV 06	1645	0.98	84	21.8	2.6	2.5	4.33	4.64	5.93
NOV 06-13	1540	0.30	92	21.6	3.9	3.8	4.30	4.80	5.69
NOV 13-20	1530	0.53	86	21.8	16.1	16.5	4.33	6.32	7.10
NOV 20-27	1610	0.98	80	21.6	2.8	1.8	4.30	4.68	5.68
NOV 27-DEC 04	1610	0.57	90	21.8	3.7	2.1	4.31	4.71	5.51
DEC 04-11	1600	0.62	82	21.6	2.1	2.0	4.30	5.01	5.55
DEC 11-18	1600	0.07	17	--	--	6.3	--	--	6.46
DEC 18-25	1630	0.13	33	21.9	2.9	3.2	4.34	4.80	6.13
DEC 25 1990- JAN 02 1991	1730	0.85	69	21.7	2.9	2.2	4.30	4.91	5.37
JAN 02-08	1545	0.02	61	--	--	5.1	--	--	6.06
JAN 08-15	1545	1.65	88	21.5	2.6	1.9	4.32	4.77	5.43
JAN 15-22	1530	0.05	16	--	--	11.2	--	--	5.61
JAN 22-29	1530	0.12	50	21.7	4.9	4.9	4.29	4.68	6.29
JAN 29-FEB 05	1600	0.20	96	20.8	3.5	2.2	4.38	4.72	6.05
FEB 12-19	1530	0.68	65	21.3	3.8	1.9	4.32	4.83	5.50
FEB 19-26	1525	0.05	69	--	--	3.5	--	--	5.29
FEB 26-MAR 05	1525	1.15	90	21.5	3.1	2.1	4.29	4.63	6.02
MAR 05-12	1545	0.25	49	21.4	4.7	3.1	4.31	4.76	5.94
MAR 12-19	1555	0.62	88	21.5	3.7	2.3	4.32	4.87	5.57
MAR 19-26	1610	0.81	66	21.6	4.2	2.5	4.30	4.93	5.46
MAR 26-APR 02	1635	0.03	77	--	--	11.3	--	--	5.97
APR 02-09	1545	0.95	92	21.2	3.9	2.6	4.38	4.83	5.57
APR 09-16	1445	0.67	66	21.6	6.4	4.1	4.43	4.90	5.31
APR 16-23	1510	0.05	66	--	--	8.5	--	--	5.92
APR 23-30	1530	1.11	79	21.4	6.7	3.5	4.36	4.66	5.41
APR 30-MAY 07	1500	0.12	77	21.6	10.5	3.9	4.36	4.61	5.57
MAY 07-14	1430	--	--	21.7	3.2	2.4	4.30	4.71	5.50
MAY 14-21	1650	2.76	92	21.2	3.8	2.9	4.47	--	5.55
MAY 21-28	1551	0.02	63	--	--	9.9	--	--	6.12
MAY 28-JUN 04	1450	0.20	89	21.6	4.2	2.8	4.25	4.91	5.85

CHEMICAL QUALITY OF PRECIPITATION

GRANDE RONDE RIVER BASIN

451328118304100 STARKEY EXPERIMENTAL STATION, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	CALCIUM ATM DEP WET DIS (MG/L)	MAG- NESIUM ATM DEP WET DIS (MG/L)	SODIUM ATM DEP WET DIS (MG/L)	POTAS- SIUM ATM DEP WET DIS (MG/L)	SULFATE ATM DEP WET DIS AS SO4 (MG/L)	CHLO- RIDE ATM DEP WET DIS (MG/L)	NI- TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L)	NI- TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L)	PHOS- PHORUS ORTHO ATM DEP WET DIS AS PO4 (MG/L)
OCT 1990									
02-09	0.03	0.007	0.076	0.008	0.14	0.10	<0.02	0.20	<0.02
OCT 09-16	0.01	0.007	0.081	0.009	0.16	0.10	<0.02	0.31	<0.02
OCT 16-23	<0.01	0.003	0.013	0.007	0.11	<0.03	<0.02	0.18	<0.02
OCT 23-30	0.05	0.013	0.042	0.010	0.35	0.06	0.05	0.35	0.08
OCT 30-NOV 06	0.05	0.009	0.190	0.019	0.15	0.10	0.04	0.20	<0.02
NOV 06-13	0.02	0.005	0.058	<0.003	0.15	0.07	<0.02	0.11	<0.02
NOV 13-20	0.42	0.076	3.12	0.209	0.51	0.37	<0.02	0.40	<0.02
NOV 20-27	0.03	0.006	0.105	0.003	0.09	0.06	0.03	0.08	<0.02
NOV 27-DEC 04	0.03	0.009	0.076	0.009	0.12	0.09	<0.02	0.13	<0.02
DEC 04-11	0.01	<0.003	0.053	<0.003	0.07	0.07	<0.02	0.11	<0.02
DEC 11-18	0.08	0.025	0.755	0.022	0.29	0.44	<0.07	0.18	<0.07
DEC 18-25	0.01	0.006	0.306	0.006	0.11	0.12	<0.02	0.11	<0.02
DEC 25 1990-JAN 02 1991	0.01	0.004	0.047	0.005	0.07	0.07	0.02	0.15	<0.02
JAN 02-08	<0.04	0.013	0.398	0.013	0.21	0.29	0.21	0.75	<0.08
JAN 08-15	<0.01	<0.003	0.019	<0.003	0.04	0.04	<0.02	0.11	<0.02
JAN 15-22	0.15	0.056	0.787	<0.021	0.42	0.56	<0.14	0.42	<0.14
JAN 22-29	0.05	0.014	0.100	0.004	0.19	0.15	<0.02	0.51	<0.02
JAN 29-FEB 05	0.02	0.008	0.341	0.017	0.13	0.09	<0.02	0.14	<0.02
FEB 05-12	0.03	0.007	0.035	<0.003	0.08	0.04	<0.02	0.13	<0.02
FEB 12-19	0.03	0.007	0.035	<0.003	0.08	0.04	<0.02	0.13	<0.02
FEB 19-26	0.08	0.009	0.090	0.010	0.09	0.10	<0.02	0.12	<0.02
FEB 26-MAR 05	0.13	0.022	0.140	0.039	0.08	0.08	<0.02	0.13	<0.02
MAR 05-12	0.06	0.011	0.176	0.010	0.17	0.14	0.04	0.35	<0.02
MAR 12-19	0.03	0.008	0.053	0.005	0.14	0.05	<0.02	0.23	<0.02
MAR 19-26	0.02	<0.003	0.011	0.005	0.13	0.03	0.04	0.27	<0.02
MAR 26-APR 02	0.26	0.048	0.190	0.027	1.37	0.21	0.50	1.99	<0.02
APR 02-09	0.05	0.011	0.053	0.013	0.20	0.06	0.03	0.25	<0.02
APR 09-16	0.06	0.010	0.051	0.014	0.43	0.07	0.18	0.55	<0.02
APR 16-23	0.15	0.020	0.115	0.034	0.98	0.13	0.73	1.36	<0.02
APR 23-30	0.05	0.010	0.032	0.025	0.33	0.05	0.05	0.33	<0.02
APR 30-MAY 07	0.08	0.013	0.061	0.017	0.43	0.07	0.06	0.32	<0.02
MAY 07-14	0.04	0.005	0.016	0.008	0.17	0.04	<0.02	0.21	<0.02
MAY 14-21	0.06	0.008	0.153	0.012	0.20	0.03	0.04	0.35	<0.02
MAY 21-28	0.28	0.059	0.316	0.059	0.71	0.30	<0.07	1.41	<0.07
MAY 28-JUN 04	0.05	0.007	0.029	0.007	0.26	0.05	0.02	0.27	<0.02

CHEMICAL QUALITY OF PRECIPITATION

455

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. The sensing circuit is activated by wet deposition, causing the motor to move the cover from the wet bucket and cover the dry bucket. When the heater in the sensor evaporates the precipitation, the cycle is reversed. The sample buckets are polyethylene and have a capacity of 13 liters (28.6 cm inside diameter, 23.2 cm deep). The opening of the collector is approximately 5 ft above ground level and has been used for the weekly composite sampling period of record September 1981 to current year.

REMARKS.--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 State Water Supply Central Analytical Laboratory. Data for period after June 4 was not available at time of publication. These data will be published in the next annual data report.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	TIME	TOTAL PRECIP- ITATION FOR DEFINED PERIOD (IN)	COL- LECTOR EFFI- CIENCY WET DEPOS. PERCENT	SPEC. CONDUCT- ANCE CK.SOL.* ATM DEP WET TOT (US/CM)	SPEC. CONDUCT- TANCE FIELD ATM DEP WET TOT (US/CM)	SPEC. CONDUCT- TANCE LAB ATM DEP WET TOT (US/CM)	PH CK.SOL. ATM DEP WET TOT (UNITS)	PH FIELD ATM DEP WET TOT (UNITS)	PH LAB ATM DEP WET TOT (UNITS)
OCT 1990									
02-09	1605	2.41	--	21.2	5.7	5.3	4.41	5.30	5.28
OCT 09-16	1715	2.61	104	21.5	12.1	10.2	4.38	5.04	5.07
OCT 16-23	1600	3.13	102	21.7	5.2	4.0	4.36	5.40	5.30
OCT 23-30	1645	2.73	99	22.0	4.2	3.2	4.41	5.68	5.43
OCT 30-NOV 06	1700	2.16	106	22.8	7.2	6.0	4.43	5.19	5.13
NOV 06-13	1700	1.41	96	22.4	3.8	3.6	4.41	5.41	5.85
NOV 13-20	1700	2.61	103	22.2	5.4	4.3	4.40	5.71	5.35
NOV 20-27	1705	3.53	97	21.9	8.5	5.1	4.39	6.39	5.49
NOV 27-DEC 04	1710	2.64	102	21.0	12.6	8.1	4.37	5.56	5.25
DEC 04-11	1705	--	--	23.2	12.6	7.4	4.36	5.36	5.13
DEC 11-18	1705	1.55	106	--	--	--	--	--	--
DEC 18-26	1700	1.25	76	--	--	--	--	--	--
DEC 26 1990-JAN 02 1991	1705	1.08	101	--	--	--	--	--	--
JAN 02-08	1705	0.63	105	22.3	11.9	3.3	4.37	5.29	5.44
JAN 08-15	1705	5.67	98	--	--	--	--	--	--
JAN 15-22	1710	0.30	93	20.4	13.2	8.0	4.36	5.21	5.86
JAN 22-29	1700	0.18	108	21.7	7.3	6.4	4.27	5.01	5.20
JAN 29-FEB 05	1605	2.52	103	21.9	6.6	3.9	4.30	5.47	5.41
FEB 05-12	1715	0.20	108	21.1	9.8	7.3	4.33	5.11	5.43
FEB 12-19	1710	--	--	--	5.4	2.8	--	6.37	5.31
FEB 19-26	1705	1.90	100	--	4.5	2.4	--	6.05	5.39
FEB 26-MAR 05	1710	2.26	103	21.9	5.3	5.8	4.28	5.82	6.34
MAR 05-12	1645	2.34	108	21.6	9.7	7.6	4.38	5.11	5.15
MAR 12-19	1705	--	--	21.3	18.5	13.4	4.39	5.42	4.78
MAR 19-26	1705	--	--	22.3	10.4	5.5	4.39	5.66	5.16
MAR 26-APR 02	1700	--	--	19.2	16.9	15.2	4.38	5.13	5.53
APR 02-09	1705	--	--	21.5	8.1	4.2	4.39	5.30	5.56
APR 09-16	1600	--	--	21.2	19.2	11.8	4.34	5.08	5.00
APR 23-30	1605	2.50	103	22.1	12.2	9.6	4.30	5.08	5.16
APR 30-MAY 07	1550	0.66	130	21.9	9.5	6.1	4.38	5.05	5.22
MAY 07-14	1605	2.45	102	20.9	16.3	9.9	4.40	4.90	4.94
MAY 14-21	1605	3.80	100	22.4	10.1	6.8	4.38	4.95	4.97
MAY 21-28	1605	0.47	105	22.2	18.4	12.4	4.31	4.67	4.83
MAY 28-JUN 04	1515	0.59	113	22.8	7.3	5.4	4.33	5.19	5.27

* Measurements of low ionic strength standard solution, with theoretical values of conductance 21.8 us/cm +/- 3 us/cm, pH 4.30 +/- 0.1, made prior to the corresponding sample measurement.

CHEMICAL QUALITY OF PRECIPITATION

SANDY RIVER BASIN

452650122091801 BULL RUN RESERVOIR NUMBER TWO, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	CALCIUM ATM DEP WET DIS (MG/L)	MAG- NESIUM ATM DEP WET DIS (MG/L)	SODIUM ATM DEP WET DIS (MG/L)	POTAS- SIUM ATM DEP WET DIS (MG/L)	SULFATE ATM DEP WET DIS AS SO4 (MG/L)	CHLO- RIDE ATM DEP WET DIS (MG/L)	NI- TROGEN AMMON. ATM DEP WET DIS AS NH4 (MG/L)	NI- TROGEN NITRATE ATM DEP WET DIS AS NO3 (MG/L)	PHOS- PHORUS ORTHO ATM DEP WET DIS AS PO4 (MG/L)
OCT 1990									
02-09	0.03	0.027	0.244	0.026	0.32	0.41	0.09	0.32	<0.02
OCT 09-16	0.04	0.081	0.669	0.040	0.67	1.19	0.15	0.48	<0.02
OCT 16-23	0.01	0.019	0.188	0.012	0.17	0.33	0.06	0.21	<0.02
OCT 23-30	---	---	---	---	---	---	---	---	---
OCT 30-NOV 06	<0.01	0.028	0.273	0.016	0.36	0.42	0.08	0.41	<0.02
NOV 06-13	0.05	0.010	0.081	0.021	0.18	0.15	0.21	0.21	<0.02
NOV 13-20	0.01	0.032	0.309	0.012	0.19	0.50	<0.02	0.17	<0.02
NOV 20-27	0.03	0.055	0.487	0.015	0.24	0.81	0.03	0.13	<0.02
NOV 27-DEC 04	0.03	0.080	0.763	0.025	0.40	1.28	0.09	0.22	<0.02
DEC 04-11	0.02	0.056	0.480	0.017	0.38	0.86	0.05	0.28	<0.02
DEC 11-18	---	---	---	---	---	---	---	---	---
DEC 18-26	---	---	---	---	---	---	---	---	---
DEC 26 1990- JAN 02 1991	---	---	---	---	---	---	---	---	---
JAN 02-08	<0.01	0.023	0.186	0.035	0.14	0.31	0.02	0.18	<0.02
JAN 08-15	---	---	---	---	---	---	---	---	---
JAN 15-22	0.05	0.063	0.560	0.031	0.47	0.97	0.40	0.60	<0.02
JAN 22-29	0.02	0.030	0.303	0.020	0.56	0.42	0.14	0.50	<0.02
JAN 29-FEB 05	0.02	0.026	0.196	0.023	0.22	0.36	0.03	0.18	<0.02
FEB 05-12	0.05	0.080	0.629	0.045	0.36	1.13	0.08	0.33	<0.02
FEB 12-19	<0.01	0.003	0.053	0.014	0.14	0.06	0.02	0.18	<0.02
FEB 19-26	0.01	0.003	0.050	0.007	0.16	0.09	<0.02	0.11	<0.02
FEB 26-MAR 05	0.48	0.045	0.196	0.088	0.32	0.31	0.20	0.17	0.21
MAR 05-12	0.05	0.052	0.441	0.029	0.55	0.73	0.10	0.46	<0.02
MAR 12-19	0.06	0.052	0.402	0.031	0.79	0.65	0.22	1.25	<0.02
MAR 19-26	0.03	0.016	0.107	0.006	0.38	0.20	0.14	0.57	<0.02
MAR 26-APR 02	0.21	0.092	0.637	0.071	1.89	1.06	0.89	1.88	<0.02
APR 02-09	0.06	0.032	0.220	0.020	0.29	0.38	0.05	0.20	<0.02
APR 09-16	0.05	0.090	0.745	0.069	0.96	1.25	0.23	0.61	<0.02
APR 16-23	0.05	0.086	0.677	0.078	0.55	1.29	0.11	0.38	<0.02
APR 23-30	0.11	0.020	0.064	0.055	0.55	0.10	0.16	0.66	<0.02
MAY 07-14	0.05	0.049	0.381	0.025	0.71	0.64	0.16	0.66	<0.02
MAY 14-21	0.05	0.019	0.129	0.017	0.49	0.22	0.04	0.49	<0.02
MAY 21-28	0.06	0.060	0.500	0.030	1.05	0.90	0.18	0.71	<0.02
MAY 28-JUN 04	0.04	0.036	0.305	0.016	0.30	0.52	0.05	0.26	<0.02

CHEMICAL QUALITY OF PRECIPITATION

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SANDY RIVER BASIN

452650122091801 BULL RUN RESERVOIR NUMBER TWO, OR--Continued

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

DATE	CALCIUM ATM DEP BLK DIS (MG/L)	CHLO- RIDE ATM DEP BLK DIS (MG/L)	MAG- NESIUM ATM DEP BLK DIS (MG/L)	NI- TROGEN AMMON. ATM DEP BLK DIS AS NH4 (MG/L)	NI- TROGEN NITRATE ATM DEP BLK DIS AS NO3 (MG/L)	PH CK.SOL. ATM DEP BLK TOT (UNITS)	PH FIELD ATM DEP BLK TOT (UNITS)	PH LAB ATM DEP BLK TOT (UNITS)
DEC 11-18	0.04	0.96	0.061	0.12	0.34	4.36	5.13	5.27
DEC 18-26	0.11	2.24	0.152	0.14	0.50	4.38	5.14	5.11
DEC 26 1990- JAN 02 1991	0.06	2.20	0.139	0.08	0.33	4.33	5.20	5.30
JAN 02-08	--	--	--	--	--	--	--	--
JAN 08-15	<0.01	0.44	0.029	0.04	0.14	4.36	5.39	5.48
DATE	PHOS- PHORUS ORTHO ATM DEP BLK DIS AS PO4 (MG/L)	POTAS- SIUM ATM DEP BLK DIS (MG/L)	SODIUM ATM DEP BLK DIS (MG/L)	SPEC. CONDUCT- TANCE CK.SOL. ATM DEP BLK TOT (US/CM)	SPEC. CONDUCT- TANCE FIELD ATM DEP BLK TOT (US/CM)	SPEC. CONDUCT- TANCE LAB ATM DEP BLK TOT (US/CM)	SULFATE ATM DEP BLK DIS AS SO4 (MG/L)	VOLUME ATM DEP BULK (L)
DEC 11-18	<0.02	0.019	0.516	21.7	15.6	7.1	0.39	2.819
DEC 18-26	<0.02	0.056	1.28	22.1	20.0	13.9	0.90	1.647
DEC 26 1990- JAN 02 1991	<0.02	0.045	1.14	22.1	10.3	11.4	0.55	1.871
JAN 02-08	--	--	--	--	--	--	--	--
JAN 08-15	<0.02	0.007	0.250	20.7	6.5	3.6	0.16	9.629

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 1991

Station name and number	Location and drainage area	Period of record	Water year 1991 maximum		Dis- charge (ft ³ /s)	Period of record maximum		Dis- charge (ft ³ /s)
			Date	Gage height (ft)		Date	Gage height (ft)	
Sandy River basin								
Deer Creek near Bull Run, OR (14138950)	Lat 45°29'31", long 122°03'27", in SE 1/4 SW 1/4 sec.10, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, at culvert on Forest Service road S10, 300 ft upstream from Bull Run Reservoir Number One, and 9.6 mi northeast of Bull Run. Drainage area is 1.62 mi ² .	1978-91	1-15-91	4.29	337	1-23-82	4.73	640
Cougar Creek near Bull Run, OR (14138960)	Lat 45°29'28", long 122°03'40", in SW 1/4 SW 1/4 sec.10, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, at culvert on Forest Service road S10, 300 ft upstream from Bull Run Reservoir Number One, and 9.4 mi northeast of Bull Run. Drainage area is 3.06 mi ² .	1978-91	1-15-91	3.36	354	12- 2-77	5.04	789
Bear Creek near Bull Run, OR (14138990)	Lat 45°29'18", long 122°04'58", in NW 1/4 NW 1/4 sec.16, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, at culvert on Forest Service road S10, 400 ft upstream from Bull Run Reservoir Number One, and 8.3 mi northeast of Bull Run. Drainage area is 1.68 mi ² .	1978-91	1-15-91	1.62	156	2-20-82	--	280
Fivemile Creek near Bull Run, OR (14139510)	Lat 45°28'57", long 122°05'25", in SW 1/4 NE 1/4 sec.17, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, at culvert on Forest Service road S10, 800 ft upstream from Bull Run Reservoir Number Two, and 7.9 mi northeast of Bull Run. Drainage area is 0.79 mi ² .	1978-91	1-15-91	1.77	45	12- 2-77	3.05	92.7
Camp Creek near Bull Run, OR (14139600)	Lat 45°27'41", long 122°06'13", in SW 1/4 SW 1/4 sec.20, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, 15 ft downstream from falls at confluence with West Branch of Camp Creek, 0.3 mi upstream from Bull Run Reservoir Number Two, and 6.6 mi northeast of Bull Run. Drainage area is 3.27 mi ² .	1978-91	1-15-91	3.57	324	2-20-82	4.12	561

Measurements of streamflow at points other than gaging stations or partial-record stations are given in the following table.

Discharge measurements at miscellaneous sites during water year 1991

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
KLAMATH RIVER BASIN						
North Fork Sprague River	Sprague River	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 Fred D. Ehler power plant 0.1 mi upstream from Yaden Creek and 7.6 mi northeast of Bly. Measurements made in diverted channel upstream from powerplant.	---	1990	4-16-91 7-29-91	a60 b26
Tailwater of Fred D. Ehlers Powerplant	North Fork Sprague River	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 Fred D. Ehler powerplant 0.1 mi upstream from Yaden Creek and 7.6 mi northeast of Bly. Measurement made at outlet of powerplant.	---	1990	7-29-91	b12
DESCHUTES RIVER BASIN						
14054100 Deschutes River below Sheep Springs, near La Pine	Columbia River	Lat 43°43'56", long 121°47'10", in SE 1/4 SE 1/4 sec.20, T.21 S., R.8 E., Deschutes County, Hydrologic Unit 17070301, on left bank about 500 ft upstream from Sheep Bridge, and about 15 mi northwest of La Pine.	256	c1938-48+, 1950, 1952-57, 1960-89	10-23-90 11-30-90 1-4-91 9-6-91 9-24-91	d396 d378 d288 d547 d538
SANDY RIVER BASIN						
14138950 Deer Creek	Bull Run River	Lat 45°29'31", long 122°03'27", in SE 1/4 SW 1/4 sec.10, T.1 S., Multnomah County, Hydrologic Unit 17080001, at culvert on Forest Service road S10, 300 ft upstream from Bull Run Reservoir Number One, and 9.6 mi northeast of Bull Run.	1.62	1978-90	10-4-90 12-14-90 2-27-91 7-24-91	0.98 11 6.6 1.0
14138960 Cougar Creek	.....do.....	Lat 45°29'28", long 122°03'40", in SW 1/4 SW 1/4 sec.10, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, at culvert on Forest Service Road S10, 300 ft upstream from Bull Run Reservoir Number One, and 9.4 mi northeast of Bull Run.	3.06	1978-90	10-4-90 12-14-90 2-27-91 7-24-91	2.2 22 18 2.7
14138990 Bear Creek	.....do.....	Lat 45°29'18", long 122°04'58", in NW 1/4 NW 1/4 sec.16, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, at culvert on Forest Service Road S10, 400 ft upstream from Bull Run Reservoir Number One, and 8.3 mi northeast of Bull Run.	1.68	1978-90	10-4-90 12-14-90 2-27-91 7-24-91	0.56 12 6.4 0.90
14139510 Fivemile Creek	.....do.....	Lat 45°28'57", long 122°05'25", in SW 1/4 NE 1/4 sec.17, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, at culvert on Forest Service Road S10, 800 ft from Bull Run Reservoir Number Two, and 7.9 mi northeast of Bull Run.	0.79	1977-90	10-4-90 12-14-90 2-27-91 7-24-91	0.08 8.1 4.6 0.32
14139600 Camp Creek	.....do.....	Lat 45°27'41", long 122°06'13", in SW 1/4 SW 1/4 sec.20, T.1 S., R.6 E., Multnomah County, Hydrologic Unit 17080001, 15 ft downstream from falls at confluence with West Branch of Camp Creek, 0.3 mi upstream from Bull Run Reservoir Number Two, and 6.6 mi northeast of Bull Run.	3.27	1978-90	10-3-90 12-12-90 2-27-91 7-24-91	2.8 45 18 2.1

Operated as a continuous-record gaging station.

a Plant shut down.

b Plant operating.

c Published by State of Oregon Water Resources Department.

d Base flow from intervening springs can be obtained by subtracting flow of Deschutes River below Crane Prairie Reservoir.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements at miscellaneous sites during water year 1991--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
WILLAMETTE RIVER BASIN						
14203700 Carpenter Creek	Willamette River	Lat 45°30'12", long 123°06'57", in NE 1/4 NE 1/4 sec.7, T.1 S., R.4 W., Washington County, Hydrologic Unit 17090010, on Route 47 bridge near Forest Grove.	---	1990	6-28-91	0.0
14205780 East Fork Dairy Creek	Dairy Creek	Lat 45°34'43", long 123°04'10", in SW 1/4 SW 1/4 sec.9, T.1 N., R.3 W., Washington County, Hydrologic Unit 17090010, on Roy Road near Roy.	65.5	1967, 1973-77, 1987, 1990	5-13-91 6-14-91 6-26-91 7-15-91 7-31-91 8-12-91 8-29-91 9-12-91 9-24-91	f72 f40 f34 f19 f11 f12 f14 f9.3 f7.0
14206180 McKay Creek	.....do.....	Lat 45°32'25", long 123°00'11", in SE 1/4 NW 1/4 sec.25, T.1 N., R.3 W., Washington County, Hydrologic Unit 17090010, on Hornecker Road near Hillsboro.	61.0	1967, 1972, 1973-76, 1990	5-13-91 5-23-91 6- 3-91 6-10-91 6-13-91 6-26-91 7- 1-91 7-15-91 7-31-91 8-15-91 8-19-91 8-27-91 9-12-91 9-23-91	f36 f47 f25 f18 f14 f19 f13 f5.4 f4.7 f3.2 f1.9 f2.9 f2.9 f2.9
14206450 Rock Creek	Tualatin River	Lat 45°30'09", long 122°56'48", in NW 1/4 NW 1/4 sec.9, T.1 N., R.2 W., Washington County, Hydrologic Unit 17090010, on Highway 8 near Hillsboro.	74.0	1973-77, 1987, 1990	5-31-91 6-10-91 6-12-91 6-18-91 6-19-91 6-27-91 6-28-91 7- 9-91 7-16-91 7-24-91 7-31-91 8- 8-91 8-15-91 8-20-91 8-27-91 9-12-91 9-18-91 9-30-91	39 f22 f17 f21 f17 f33 25 f14 f18 f16 f12 f10 f12 f9.0 f9.9 f7.9 f7.8 f7.4
14206480 Butternut Creek	.....do.....	Lat 45°28'52", long 122°54'45", in NE 1/4 SE 1/4 sec.15, T.1 S., R.2 W., Washington County, Hydrologic Unit 17090010, on Southwest 229th near Farmington.	---	1990	6-12-91 6-25-91 6-28-91	f0.86 f6.8 f1.6
14206600 Christensen Creek	.....do.....	Lat 45°26'19", long 122°58'27", in NE 1/4 SE 1/4 sec.31, T.1 S., R.2 W., Washington County, Hydrologic Unit 17090010, on Robinson Road near Farmington.	---	1990	6-21-91 7- 9-91 8- 2-91	6.8 0.78 0.22
14206650 Burris Creek	.....do.....	Lat 45°25'32", long 122°57'35", in NE 1/4 SW 1/4 sec.5, T.2 S., R.2 W., Washington County, Hydrologic Unit 17090010, on Highway 219 near Farmington.	3.30	1966-67, 1990	6-14-91 6-21-91 6-28-91 7- 9-91 7-31-91	2.2 5.8 2.4 1.4 0.43
14206670 McFee Creek	.....do.....	Lat 45°24'05", long 122°56'14", in NW 1/4 NE 1/4 sec.16, T.2 S., R.2 W., Washington County, Hydrologic Unit 17090010, at Highway 219 bridge near Scholls.	6.56	1966-67, 1990	6- 7-91 6-14-91 6-21-91 6-28-91 7-12-91 8- 2-91 8-21-91	7.4 7.0 1.7 5.8 3.5 1.3 1.2
14206680 Baker Creek	McFee Creek	Lat 45°24'08", long 122°55'36", in NW 1/4 NW 1/4 sec.15, T.2 S., R.2 W., Washington County, Hydrologic Unit 17090010, at Highway 210 bridge near Scholls.	9.31	1966-67, 1990	6-21-91 7-12-91 8- 2-91 8- 7-91 8- 9-91 8-21-91	11 2.4 0.90 0.87 1.2 1.2

f Measurements made by Oregon Water Resources Department.

Discharge measurements at miscellaneous sites during water year 1991--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
WILLAMETTE RIVER BASIN--Continued						
14206700 Tualatin River	Willamette River	Lat 45°23'39", long 122°53'51", in NE 1/4 SW 1/4 sec.14, T.2 S., R.2 W., Washington County, Hydrologic Unit 17090010, 3.60 mi downstream from Scholls Bridge, at mile 23.30.	---	1990	7-16-91	234
14206720 Tualatin River	.....do.....	Lat 45°23'09", long 122°51'49", in SE 1/4 NW 1/4 sec.19, T.2 S., R.1 W., Washington County, Hydrologic Unit 17090010, 0.70 mi upstream from Elsner Road, at mile 16.9.	---	1990	7-23-91	165
14206750 Chicken Creek	Tualatin River	Lat 45°22'30", long 122°51'19", in NW 1/4 NE 1/4 sec.30, T.2 S., R.1 W., Washington County, Hydrologic Unit 17090010, at Sherwood-Scholls Road near Sherwood.	6.20	1967, 1990	5- 1-91 f15 5-23-91 f24 5-29-91 f15 6- 5-91 f9.3 6-11-91 f7.7 6-18-91 f6.2 6-25-91 f20 7- 3-91 f5.3 7- 8-91 f4.6 7-23-91 f4.2 7-31-91 f2.6 8- 6-91 f3.4 8-16-91 f2.0 8-23-91 f2.1 9- 4-91 f2.5 9-18-91 f1.9	
14206760 Rock Creek	.....do.....	Lat 45°22'54", long 122°49'32", in NE 1/4 SE 1/4 sec.20, T.2 S., R.1 W., Washington County, Hydrologic Unit 17090010, at Highway 99 West bridge near Sherwood.	---	1990	6-28-91 2.9 7-31-91 0.92 8- 7-91 0.62 8- 9-91 0.76 8-21-91 0.60	
14206800 Tualatin River	Willamette River	Lat 45°23'28", long 122°46'22", in NW 1/4 SE 1/4 sec.14, T.2 S., R.1 W., Washington County, Hydrologic Unit 17090010, near Cook Park at mile 10.02.	---	1990	7-26-91	148
14206950 Fanno Creek	Tualatin River	Lat 45°24'13", long 122°45'13", in NE 1/4 NW 1/4 sec.13, T.2 S., R.1 W., Washington County, Hydrologic Unit 17090010, at Durham Road near Durham.	31.5	1966-67, 1973-77, 1987, 1990	2-22-91 74 3- 1-91 26 4-29-91 f23 5-20-91 f55 5-30-91 f24 6- 5-91 f12 6- 7-91 13 6-25-91 f22 7- 8-91 f7.7 7-23-91 f6.5 8- 6-91 f6.0 8-22-91 f3.9 9- 4-91 f4.6 9-18-91 f2.9	
14206970 Nyberg Creek	.....do.....	Lat 45°22'58", long 122°44'21", in SE 1/4 NW 1/4 sec.19, T.2 S., R.1 E., Clackamas County, Hydrologic Unit 17090010, at Nyberg Road at Tualatin.	---	1990	6-28-91 1.4 7-31-91 1.1 8-21-91 1.1	
NESTUCCA RIVER BASIN						
14302850 Walker Creek	Nestucca River	Lat 45°18'12", long 123°24'53", in SE 1/4 SW 1/4 sec.15, T.3 S., R.6 W., Tillamook County, Hydrologic Unit 17100203, 0.4 mi upstream from Nestucca River, near Fairdale gaging station.	2.72	---	9-20-91	*0.17
UMPQUA RIVER BASIN						
South Umpqua near Canyonville	Umpqua River	Lat 123°14'50", long 42°56'45", in NE 1/4 SW 1/4 sec.23, T.30 S., R.5 W., Douglas County, Hydrologic Unit 17100302, in Canyonville Park.	---	---	7-19-91 187 9-12-91 53	
South Umpqua near Riddle	.....do.....	Lat 123°20'25", long 42°59'19", in SW 1/4 SW 1/4 sec.6, T.30 S., R.5 W., Douglas County, Hydrologic Unit 17100302.	---	---	7-18-91 420 9-11-91 110	
South Umpqua near Myrtle Creek	.....do.....	Lat 123°22'12", long 43°04'11", in NW 1/4 NE 1/4 sec.11, T.29 S., R.6 W., Douglas County, Hydrologic Unit 17100302.	---	---	7-17-91 373 9-10-91 123	

* Base flow.

f Measurements made by Oregon Water Resources Department.

DISCHARGE AT PARTIAL-RECORD STATIONS AND MISCELLANEOUS SITES

Discharge measurements at miscellaneous sites during water year 1991--Continued

Stream	Tributary to	Location	Drainage area (mi ²)	Measured previously (water years)	Measurements Date	Discharge (ft ³ /s)
UMPQUA RIVER BASIN--Continued						
South Umpqua near Winston	Umpqua River	Lat 123°24'57", long 43°08'42", in NE 1/4 SW 1/4, sec.9, T.28 S., R.6 W., Douglas County, Hydrologic Unit 17100302.	---	---	7-16-91 9-10-91	310 129
14308600 South Umpqua	.....do.....	Lat 42°58'05", long 123°10'00", in NW 1/4 sec.15, T.30 S., R.4 W., Douglas County, Hydrologic Unit 17100302, 500 ft upstream from Days Creek bridge.	641	1975-90†	10- 5-90 12-12-90 6- 3-91 8- 1-91 8-26-91 9-23-91	61 2,280 891 110 67 48
Days Creek	South Umpqua River	Lat 42°57'48", long 123°10'07", in NE 1/4 SE 1/4 sec.9, T.30 S., R.4 W., Douglas County, Hydrologic Unit 17100302, 10 ft upstream from mouth.	---	---	8-26-91	0.16
14308905 Canyon Creek	.....do.....	Lat 42°56'33", long 123°16'50", in lot 51, T.30 S., R.5 W., Douglas County, Hydrologic Unit 17100302, 100 ft upstream from mouth.	---	---	7-22-91 8-26-91 9-23-91	1.8 1.4 0.87
14308910 South Umpqua River at Canyonville	Umpqua River	Lat 42°56'38", long 123°17'03", near line between sec.21 and 22, T.30 S., R.5 W., Douglas County, Hydrologic Unit 17100302, 0.2 mi downstream from Canyon Creek, and at mile 162.7.	---	1990	6-10-91 7-22-91 8-26-91 9-23-91	583 142 68 52
14310500 Cow Creek at Riddle	South Umpqua River	Lat 42°56'32", long 123°20'05", in SW 1/4 sec.19, T.30 S., R.5 W., Douglas County, Hydrologic Unit 17100302, 600 ft upstream from highway bridge, 1.4 mi southeast of Riddle, and at mile 0.4.	489	1911-12†, 1926-32†, 1990	7-22-91	117
14310550 South Umpqua River at Missouri Bottom, near Riddle	Umpqua River	Lat 42°58'55", long 123°20'46", in NE 1/4 NE 1/4 sec.12, T.30 S., R.6 W., Douglas County, Hydrologic Unit 17100302, 4,000 ft downstream from Lane Creek.	---	---	8-26-91 9-23-91	137 93
14311100 Myrtle Creek at Myrtle Creek	South Umpqua River	Lat 43°01'24", long 123°17'08", near line between sec.27 and 28, T.29 S., R.5 W., Douglas County, Hydrologic Unit 17100302, 120 ft upstream from highway bridge in Myrtle Creek, and at mile 0.41.	115	1990	6-10-91 7-23-91 8-27-91 9-24-91	44 9.8 3.7 4.0
14311110 South Umpqua River near Myrtle Creek	Umpqua River	Lat 43°01'50", long 123°18'57", in SW 1/4 sec.20, T.29 S., R.5 W., Douglas County, Hydrologic Unit 17100302, 1.5 mi northwest of Myrtle Creek, and at mile 149.3.	---	1990	7-23-91 8-27-91 9-24-91	273 132 100
14311170 South Umpqua River at Dillard	.....do.....	Lat 43°06'10", long 123°26'00", in S 1/2, sec.29, T.28 S., R.6 W., Douglas County, Hydrologic Unit 17100302, 0.4 mi downstream from Dillard-Brockway road bridge, and at mile 138.3.	---	1990	6-10-91 7-23-91 8-27-91 9-24-91	890 269 139 93
14312060 South Umpqua River at Shady	.....do.....	Lat 43°10'39", long 123°21'43", in NW 1/4 SW 1/4 sec.36, T.27 S., R.6 W., Douglas County, Hydrologic Unit 17100302, and at mile 126.8.	---	---	8-27-91 9-24-91	151 87
14312150 South Umpqua River at Riverside Bridge, at Roseburg	.....do.....	Lat 43°12'15", long 123°20'47", in NE 1/4 NE 1/4 sec.24, T.27 S., R.6 W., Douglas County, Hydrologic Unit 17100302, 100 ft downstream from west bound Riverside bridge, and at mile 123.4.	---	---	7-23-91	289
14312210 Deer Creek at mouth, at Roseburg	South Umpqua River	Lat 42°12'52", long 123°20'31", in SW 1/4 SW 1/4 sec.19, T.27 S., R.5 W., Douglas County, Hydrologic Unit 17100302, 50 ft upstream from mouth.	---	---	7-24-91 8-28-91 9-25-91	3.0 2.2 0.48
14312261 South Umpqua River at Melrose Road	Umpqua River	Lat 43°14'26", long 123°24'46", in NE 1/4 sec.9, T.27 S., R.6 W., Douglas County, Hydrologic Unit 17100302, 0.2 mi upstream from bridge, and at mile 116.7.	---	1988, 1990	2-25-91 7-24-91 8-27-91 9-24-91	1,780 290 141 105

† Operated as a continuous-record gaging station.

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CHEMICAL ANALYSES OF SYNOPTIC SAMPLES IN UMPQUA RIVER BASIN WATER-QUALITY ASSESSMENT STUDY

The South Umpqua Water Quality Study collected water samples from selected sites synoptically in 1991 to determine spatial variability and dynamics of nutrients. The chemical analyses for each site are listed in downstream order using matching pages.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

MISCELLANEOUS STATION ANALYSES

DATE	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	OXYGEN, DIS- SOLVED (MG/L)	PH (STAND- ARD UNITS)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)
14308000 SOUTH UMPQUA RIVER AT TILLER, OR (LAT 42°55'50" LONG 122°56'50")							
JUN 1991							
10...	15.5	740	72	9.9	7.6	0.027	0.007
JUL							
22...	22.0	735	102	10.1	8.5	0.002	0.001
AUG							
26...	20.0	735	126	9.4	8.0	0.004	<0.001
SEP							
23...	16.0	741	139	10.0	8.7	0.050	0.002
14308500 ELK CREEK NEAR DREW, OR (LAT 42°53'25" LONG 122°55'00")							
JUN 1991							
10...	E16.0	730	112	9.8	8.0	0.016	0.001
JUL							
22...	22.5	730	149	9.5	8.5	0.011	0.003
AUG							
26...	16.5	730	226	10.1	7.9	0.007	<0.001
SEP							
23...	12.5	740	248	10.5	8.0	0.018	0.002
14308600 SOUTH UMPQUA RIVER AT DAYS CREEK, OR (LAT 42°58'03" LONG 123°09'59")							
JUN 1991							
10...	19.5	745	81	10.4	7.8	0.032	0.007
10...	21.0	742	86	9.0	8.2	0.021	0.005
JUL							
22...	26.0	741	113	8.5	8.3	0.008	0.001
AUG							
26...	21.5	741	137	9.6	8.4	<0.002	<0.001
SEP							
23...	18.5	748	155	9.9	8.2	0.017	0.003
14308700 DAYS CREEK AT DAYS CREEK, OR (LAT 42°58'23" LONG 123°10'13")							
JUN 1991							
10...	20.0	742	169	9.0	8.5	--	--
AUG							
26...	19.0	741	294	8.8	8.1	--	--
14308905 CANYON CREEK AT HAMLINE ROAD, AT CANYONVILLE, OR (LAT 42°56'04" LONG 123°16'38")							
JUN 1991							
10...	15.0	745	159	9.6	7.9	0.036	0.004
JUL							
22...	19.5	743	194	9.5	8.0	0.004	0.002
AUG							
26...	16.5	748	198	9.8	8.1	0.017	<0.001
SEP							
23...	16.0	750	202	9.5	8.0	0.022	0.002
14308910 SOUTH UMPQUA AT CANYONVILLE, OR (LAT 42°56'38" LONG 123°17'03")							
JUN 1991							
10...	16.5	743	87	9.0	7.7	0.014	0.003
10...	18.0	743	86	9.4	8.0	0.012	0.001
JUL							
22...	25.0	744	121	9.1	8.3	0.029	0.007
22...	--	744	--	--	--	0.032	0.008
AUG							
26...	22.5	745	151	9.7	8.6	0.013	<0.001
26...	--	--	--	--	--	0.010	<0.001
SEP							
23...	19.0	752	163	10.7	8.6	0.022	0.003
23...	19.0	752	163	10.7	8.6	0.016	0.002
14310000 COW CREEK NEAR RIDDLE, OR (LAT 42°55'25" LONG 123°25'40")							
JUN 1991							
10...	22.5	744	123	8.9	8.3	0.029	0.002
JUL							
22...	24.0	748	135	8.8	8.3	0.005	0.003
AUG							
26...	20.5	743	135	9.5	8.3	0.010	0.001
SEP							
23...	17.0	747	138	10.5	8.3	0.017	0.003

E - Estimated value.

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

MISCELLANEOUS STATION ANALYSES

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	SILICA, DIS- SOLVED (MG/L AS SiO2)	ALKA- LINITY LAB (MG/L AS CaCO3)
14308000 SOUTH UMPQUA RIVER AT TILLER, OR (LAT 42°55'50" LONG 122°56'50")								
JUN 1991								
10...	<0.20	0.011	0.020	0.016	0.014	--	17	27
JUL								
22...	0.20	0.014	0.012	0.008	0.004	--	14	39
AUG								
26...	<0.20	<0.005	0.010	0.006	0.002	--	15	43
SEP								
23...	0.40	0.023	0.009	0.007	0.004	1.0	13	44
14308500 ELK CREEK NEAR DREW, OR (LAT 42°53'25" LONG 122°55'00")								
JUN 1991								
10...	<0.20	<0.005	0.038	0.022	0.016	--	21	55
JUL								
22...	0.80	0.009	0.026	0.021	0.015	--	16	67
AUG								
26...	0.30	0.012	0.016	0.011	0.002	--	14	83
SEP								
23...	<0.20	0.017	0.020	0.009	0.004	--	13	85
14308600 SOUTH UMPQUA RIVER AT DAYS CREEK, OR (LAT 42°58'03" LONG 123°09'59")								
JUN 1991								
10...	<0.20	0.010	0.021	0.014	0.008	--	17	34
10...	0.50	0.008	0.018	0.015	0.009	--	17	35
JUL								
22...	0.50	0.007	0.015	0.008	0.003	--	14	44
AUG								
26...	0.60	<0.005	0.009	0.003	0.003	--	13	49
SEP								
23...	0.30	0.011	0.011	0.007	0.002	--	13	51
14308700 DAYS CREEK AT DAYS CREEK, OR (LAT 42°58'23" LONG 123°10'13")								
JUN 1991								
10...	--	--	--	--	--	--	--	--
AUG								
26...	--	--	--	--	--	--	--	--
14308905 CANYON CREEK AT HAMLINE ROAD, AT CANYONVILLE, OR (LAT 42°56'04" LONG 123°16'38")								
JUN 1991								
10...	<0.20	0.074	0.024	0.021	0.009	--	17	62
JUL								
22...	0.30	0.090	0.013	0.010	0.002	--	16	70
AUG								
26...	0.30	<0.005	0.020	0.010	0.003	--	15	76
SEP								
23...	<0.20	0.046	0.013	0.009	0.006	--	15	75
14308910 SOUTH UMPQUA AT CANYONVILLE, OR (LAT 42°56'38" LONG 123°17'03")								
JUN 1991								
10...	0.40	0.022	0.018	0.013	0.008	--	17	36
10...	0.40	0.014	0.019	0.014	0.009	--	17	36
JUL								
22...	0.30	0.026	0.012	0.008	0.003	--	15	47
22...	0.30	0.027	0.014	0.008	0.006	--	15	46
AUG								
26...	<0.40	0.043	--	0.009	0.008	--	13	53
26...	--	0.033	0.017	0.008	0.002	--	13	53
SEP								
23...	0.30	0.057	0.017	0.011	0.008	1.5	14	55
23...	0.30	0.055	0.017	0.011	0.008	--	14	55
14310000 COW CREEK NEAR RIDDLE, OR (LAT 42°55'25" LONG 123°25'40")								
JUN 1991								
10...	<0.20	0.009	0.013	0.008	0.003	--	15	53
JUL								
22...	0.30	0.009	0.013	0.007	0.005	--	15	58
AUG								
26...	<0.20	<0.005	0.014	0.008	0.001	--	17	63
SEP								
23...	0.30	0.006	0.008	0.008	0.003	2.3	16	61

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

MISCELLANEOUS STATION ANALYSES

DATE	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	OXYGEN, DIS- SOLVED (MG/L)	PH (STAND- ARD UNITS)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)
14310550 SOUTH UMPQUA RIVER AT MISSOURI BOTTOM BRIDGE, AT TRICITY, OR (LAT 42°58'24" LONG 123°20'46")							
JUN 1991							
10...	21.5	748	100	9.7	8.1	0.015	0.002
JUL							
23...	24.5	749	131	7.4	7.9	0.004	0.003
AUG							
27...	20.0	743	146	8.1	7.9	0.019	<0.001
SEP							
23...	19.5	749	153	10.4	8.6	0.013	0.003
23...	19.5	749	153	10.4	8.6	0.013	0.003
14311100 MYRTLE CREEK AT MYRTLE CREEK, OR (LAT 43°01'24" LONG 123°17'18")							
JUN 1991							
10...	19.0	742	197	9.1	8.1	0.014	0.001
JUL							
23...	22.0	749	234	8.7	8.1	0.008	0.001
AUG							
27...	15.5	746	257	10.2	8.2	0.003	<0.001
SEP							
24...	14.5	750	270	10.7	8.0	0.057	0.004
14311105 SOUTH UMPQUA RIVER AT MYRTLE CREEK, OR (LAT 43°01'21" LONG 123°17'46")							
AUG 1991							
27...	20.5	748	150	7.4	8.1	0.017	<0.001
SEP							
24...	17.0	753	159	7.9	7.8	0.019	0.002
14311110 SOUTH UMPQUA RIVER NEAR MYRTLE CREEK, OR (LAT 43°01'50" LONG 123°18'57")							
JUN 1991							
11...	20.5	749	107	8.2	7.8	0.029	0.004
JUL							
11...	20.5	751	108	8.9	7.9	0.104	0.007
JUL							
23...	24.5	747	133	7.3	7.8	0.055	0.005
AUG							
27...	20.5	738	152	7.9	8.2	0.023	0.021
SEP							
24...	17.0	754	166	8.6	7.9	0.062	0.016
14311140 SOUTH UMPQUA RIVER ABOVE MARY MOORE BRIDGE, NEAR DILLARD, OR (LAT 43°04'49" LONG 123°22'00")							
JUN 1991							
11...	22.0	750	109	9.2	8.3	0.027	0.004
JUL							
23...	24.0	749	134	7.4	7.8	0.012	0.003
AUG							
27...	20.5	740	149	7.9	8.4	<0.002	<0.001
SEP							
24...	20.0	754	164	10.9	8.8	0.015	0.005
14311160 SOUTH UMPQUA RIVER, AT RM 141.5, NEAR DILLARD, OR (LAT 43°04'51" LONG 123°23'07")							
AUG 1991							
27...	21.0	745	150	9.1	8.4	<0.002	<0.001
14311170 SOUTH UMPQUA RIVER AT DILLARD, OR (LAT 43°06'10" LONG 123°26'00")							
JUN 1991							
11...	22.0	751	111	9.4	8.4	0.045	0.003
JUL							
23...	25.0	750	142	7.7	8.2	0.007	0.003
AUG							
27...	21.0	749	161	8.4	8.4	0.013	<0.001
27...	21.0	749	161	8.4	8.4	0.014	<0.001

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

MISCELLANEOUS STATION ANALYSES

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	SILICA, DIS- SOLVED (MG/L AS SIO2)	ALKA- LITY LAB (MG/L AS CACO3)
14310550 SOUTH UMPQUA RIVER AT MISSOURI BOTTOM BRIDGE, AT TRICITY, OR (LAT 42°58'24" LONG 123°20'46")								
JUN 1991								
10...	<0.20	0.010	0.018	0.011	0.008	--	16	42
JUL								
23...	0.30	0.017	0.012	0.004	<0.001	--	14	52
AUG								
27...	0.20	<0.005	0.011	0.008	0.005	--	14	58
SEP								
23...	0.40	0.012	0.011	0.005	0.001	--	14	60
23...	0.20	0.009	0.010	0.006	0.001	--	14	60
14311100 MYRTLE CREEK AT MYRTLE CREEK, OR (LAT 43°01'24" LONG 123°17'18")								
JUN 1991								
10...	0.40	0.063	0.014	0.010	0.005	--	23	77
JUL								
23...	<0.20	0.038	0.010	0.006	0.003	--	19	86
AUG								
27...	0.30	0.059	0.011	0.006	0.001	--	22	90
SEP								
24...	<0.40	0.062	0.006	0.005	0.043	--	20	91
14311105 SOUTH UMPQUA RIVER AT MYRTLE CREEK, OR (LAT 43°01'21" LONG 123°17'46")								
AUG 1991								
27...	0.30	0.008	0.010	0.005	<0.001	--	13	58
SEP								
24...	0.40	0.019	0.010	0.005	0.001	2.1	14	60
14311110 SOUTH UMPQUA RIVER NEAR MYRTLE CREEK, OR (LAT 43°01'50" LONG 123°18'57")								
JUN 1991								
11...	0.40	0.029	0.015	0.020	0.011	--	16	44
11...	0.20	0.071	0.024	0.019	0.015	--	16	45
JUL								
23...	<0.20	0.036	0.026	0.020	0.015	--	14	55
AUG								
27...	0.40	0.034	0.035	0.033	0.017	--	14	60
SEP								
24...	0.20	0.059	0.031	0.024	0.019	2.0	13	58
14311140 SOUTH UMPQUA RIVER ABOVE MARY MOORE BRIDGE, NEAR DILLARD, OR (LAT 43°04'49" LONG 123°22'00")								
JUN 1991								
11...	0.40	0.030	0.017	0.017	0.010	--	16	45
JUL								
23...	0.28	0.015	0.020	0.012	0.006	--	13	54
AUG								
27...	0.40	<0.005	0.017	0.010	0.007	--	14	60
SEP								
24...	0.30	0.013	0.017	0.012	0.006	--	13	62
14311160 SOUTH UMPQUA RIVER AT RM 141.5, NEAR DILLARD, OR (LAT 43°04'51" LONG 123°23'07")								
AUG 1991								
27...	0.40	0.006	0.019	0.014	0.007	--	14	60
14311170 SOUTH UMPQUA RIVER AT DILLARD, OR (LAT 43°06'10" LONG 123°26'00")								
JUN 1991								
11...	0.30	0.037	0.025	0.018	0.014	--	16	45
JUL								
23...	0.30	0.012	<0.019	0.011	0.004	--	14	55
AUG								
27...	0.20	0.008	0.019	0.011	0.007	--	12	60
27...	--	0.086	0.015	0.009	0.005	--	12	60

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

MISCELLANEOUS STATION ANALYSES

DATE	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	OXYGEN, DIS- SOLVED (MG/L)	PH (STAND- ARD UNITS)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)
14311500 LOOKINGGLASS CREEK AT BROCKWAY, OR (LAT 43°07'50" LONG 123°27'50")							
JUN 1991							
11...	21.0	752	130	7.9	7.5	0.045	0.003
JUL							
23...	25.0	749	134	6.8	7.2	0.008	0.003
AUG							
27...	19.0	749	102	9.5	7.8	0.019	<0.001
SEP							
24...	15.0	755	101	8.0	7.3	0.060	0.003
14312000 SOUTH UMPQUA RIVER NEAR BROCKWAY, OR (LAT 43°08'00" LONG 123°23'50")							
JUN 1991							
11...	22.0	750	114	9.2	8.3	0.047	0.003
JUL							
23...	26.5	750	144	7.5	8.1	0.012	0.003
AUG							
27...	22.0	751	166	8.8	8.5	0.020	<0.001
SEP							
24...	20.0	754	174	9.0	8.2	0.044	0.004
14312005 SOUTH UMPQUA RIVER NEAR WINSTON, OR (LAT 43°08'39" LONG 123°24'57")							
JUN 1991							
11...	21.0	752	114	8.1	7.8	0.038	0.003
11...	21.0	753	114	8.8	7.9	0.090	0.013
JUL							
23...	28.5	747	146	8.9	8.6	0.019	0.005
23...	28.5	747	146	8.9	8.6	0.017	0.005
AUG							
27...	22.0	751	169	10.7	8.8	0.030	0.010
SEP							
24...	21.0	754	177	10.7	8.7	0.084	0.007
14312060 SOUTH UMPQUA RIVER AT SHADY, NEAR ROSEBURG, OR (LAT 43°10'31" LONG 123°21'40")							
JUL 1991							
23...	26.0	754	148	7.1	7.9	0.009	0.003
AUG							
27...	22.0	748	164	10.1	9.0	0.019	<0.001
SEP							
24...	19.5	748	173	9.4	8.6	0.019	0.006
14312150 SOUTH UMPQUA RIVER AT RIVERSIDE PARK, AT ROSEBURG, OR (LAT 43°12'45" LONG 123°20'50")							
JUN 1991							
11...	22.5	754	112	10.1	8.6	0.058	0.009
JUL							
23...	26.5	754	153	8.5	8.3	0.008	0.003
AUG							
27...	21.5	749	169	8.5	8.5	0.022	<0.001
SEP							
24...	19.5	752	172	8.0	8.5	0.017	0.003
14312210 DEER CREEK AT MOUTH, AT ROSEBURG, OR (LAT 43°12'54" LONG 123°20'31")							
JUL 1991							
24...	21.5	753	355	7.8	7.8	0.012	0.003
AUG							
28...	17.5	748	441	7.6	7.7	0.095	0.017
SEP							
25...	15.0	752	621	9.0	7.8	0.029	0.005
14312260 SOUTH UMPQUA RIVER NEAR ROSEBURG, OR (LAT 43°13'20" LONG 123°24'45")							
SEP 1991							
24...	21.0	748	178	12.2	9.0	0.136	0.085
14312261 SOUTH UMPQUA RIVER AT MELROSE ROAD (DEQ), OR (LAT 43°14'26" LONG 123°24'46")							
JUN 1991							
11...	20.5	755	117	7.9	7.7	0.063	0.008
11...	23.5	755	121	10.1	8.8	0.074	0.013
JUL							
23...	30.0	754	150	13.1	9.3	0.008	0.024
AUG							
27...	22.5	748	170	15.5	9.4	0.013	0.073
SEP							
24...	23.0	750	177	14.5	9.5	0.019	0.070

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

MISCELLANEOUS STATION ANALYSES

DATE	NITRO- GEN, AM- MONIA + ORGANIC TOTAL (MG/L AS N)	NITRO- GEN, NO2+NO3 DIS- SOLVED (MG/L AS N)	PHOS- PHORUS TOTAL (MG/L AS P)	PHOS- PHORUS DIS- SOLVED (MG/L AS P)	PHOS- PHORUS ORTHO, DIS- SOLVED (MG/L AS P)	CARBON, ORGANIC DIS- SOLVED (MG/L AS C)	SILICA, DIS- SOLVED (MG/L AS SIO2)	ALKA- LITY LAB (MG/L AS CACO3)
14311500	LOOKINGGLASS CREEK AT BROCKWAY, OR (LAT 43°07'50" LONG 123°27'50")							
JUN 1991								
11...	0.30	0.036	0.025	0.013	0.016	--	10	50
JUL								
23...	0.40	0.008	0.027	0.015	0.002	--	6.1	46
AUG								
27...	0.50	<0.005	0.018	0.009	0.002	--	5.2	39
SEP								
24...	0.60	0.034	0.027	0.013	0.005	--	6.7	40
14312000	SOUTH UMPQUA RIVER NEAR BROCKWAY, OR (LAT 43°08'00" LONG 123°23'50")							
JUN 1991								
11...	0.50	0.034	0.026	0.021	0.013	--	16	46
JUL								
23...	0.30	0.011	0.020	0.012	0.009	--	13	55
AUG								
27...	0.40	0.008	0.015	0.008	0.002	--	11	60
SEP								
24...	0.40	0.039	0.017	0.013	0.008	2.7	12	61
14312005	SOUTH UMPQUA RIVER NEAR WINSTON, OR (LAT 43°08'39" LONG 123°24'57")							
JUN 1991								
11...	<0.20	0.031	0.028	0.017	0.011	--	16	46
11...	0.20	0.064	0.027	0.026	0.021	--	15	46
JUL								
23...	0.40	0.053	0.022	0.014	0.013	--	14	55
23...	0.30	0.043	0.022	0.014	0.010	--	14	55
AUG								
27...	0.30	0.069	0.019	0.011	0.003	--	11	60
SEP								
24...	0.40	0.097	0.024	0.017	0.021	2.5	11	61
14312060	SOUTH UMPQUA RIVER AT SHADY, NEAR ROSEBURG, OR (LAT 43°10'31" LONG 123°21'40")							
JUL 1991								
23...	0.70	0.010	0.017	0.009	0.007	--	13	54
AUG								
27...	0.20	<0.005	0.015	0.003	0.001	--	11	60
SEP								
24...	0.30	0.027	0.015	0.007	0.001	--	11	61
14312150	SOUTH UMPQUA RIVER AT RIVERSIDE PARK, AT ROSEBURG, OR (LAT 43°12'45" LONG 123°20'50")							
JUN 1991								
11...	0.30	0.058	0.032	0.026	0.015	--	15	46
JUL								
23...	0.30	0.007	0.020	0.010	0.008	--	13	54
AUG								
27...	0.30	<0.005	0.023	0.006	0.005	--	11	60
SEP								
24...	0.30	0.011	0.015	0.007	0.002	2.7	11	61
14312210	DEER CREEK AT MOUTH, AT ROSEBURG, OR (LAT 43°12'54" LONG 123°20'31")							
JUL 1991								
24...	0.20	0.038	0.053	0.036	0.030	--	19	106
AUG								
28...	1.0	0.189	0.095	0.052	0.023	--	18	97
SEP								
25...	0.20	0.067	0.052	0.037	0.029	--	21	126
14312260	SOUTH UMPQUA RIVER NEAR ROSEBURG, OR (LAT 43°13'20" LONG 123°24'45")							
SEP 1991								
24...	0.40	0.338	0.169	0.158	0.148	--	11	61
14312261	SOUTH UMPQUA RIVER AT MELROSE ROAD (DEQ), OR (LAT 43°14'26" LONG 123°24'46")							
JUN 1991								
11...	0.30	0.057	0.049	0.039	0.033	--	15	47
11...	0.30	0.058	0.046	0.039	0.036	--	15	48
JUL								
23...	0.40	0.077	0.084	0.072	0.060	--	13	53
AUG								
27...	0.40	0.169	0.111	0.093	0.051	--	10	58
SEP								
24...	0.40	0.294	0.138	0.127	0.111	2.9	10	60

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

MISCELLANEOUS STATION ANALYSES

DATE	TEMPER- ATURE WATER (DEG C)	BARO- METRIC PRES- SURE (MM OF HG)	SPE- CIFIC CON- DUCT- ANCE (US/CM)	PH (STAND- ARD UNITS)	NITRO- GEN, AMMONIA DIS- SOLVED (MG/L AS N)	NITRO- GEN, NITRITE DIS- SOLVED (MG/L AS N)
425602123165701 WASTE WATER TREATMENT PLANT, CANYONVILLE, OR (LAT 42°56'02" LONG 123°16'57")						
JUN 1991						
10...	--	--	425	7.6	0.080	0.030
10...	--	--	445	7.2	0.100	0.020
JUL						
22...	--	743	554	7.4	16.0	0.390
22...	--	743	554	7.2	9.10	0.054
AUG						
26...	--	--	448	7.3	0.740	0.040
26...	--	--	448	7.2	0.280	0.030
26...	--	--	448	7.2	0.290	0.030
SEP						
23...	9.0	--	498	7.3	0.850	0.010
23...	--	--	489	7.4	0.230	0.020
425705123212001 WASTE WATER TREATMENT PLANT, RIDDLE, OR (LAT 42°57'05" LONG 123°21'20")						
JUN 1991						
10...	--	--	370	7.4	0.500	0.160
10...	--	--	359	7.3	0.450	0.090
JUL						
22...	--	--	446	7.1	1.10	0.490
22...	--	--	440	7.0	0.220	0.160
AUG						
26...	--	--	402	6.9	0.280	0.120
26...	--	--	420	6.8	0.190	0.070
SEP						
23...	--	--	478	7.0	4.10	1.40
23...	--	--	440	7.0	2.50	0.680
430117123174701 WASTE WATER TREATMENT PLANT, MYRTLE CREEK, OR (LAT 43°01'17" LONG 123°17'47")						
JUN 1991						
11...	17.0	--	518	7.5	15.0	0.030
11...	20.0	--	508	7.3	15.0	0.030
JUL						
23...	19.0	--	564	7.1	15.0	0.180
23...	21.0	--	595	7.1	16.0	1.40
AUG						
27...	--	--	576	7.2	12.0	0.120
27...	--	--	511	7.0	11.0	0.430
SEP						
24...	13.5	--	513	7.1	11.0	0.680
24...	20.0	--	491	7.0	9.60	2.60
430812123240101 WASTE WATER TREATMENT PLANT, WINSTON-GREEN, OR (LAT 43°08'12" LONG 123°24'01")						
JUN 1991						
11...	--	--	610	7.2	9.60	0.900
11...	--	--	594	7.0	6.40	1.10
JUL						
23...	--	--	592	7.1	4.40	0.970
23...	--	--	590	6.9	5.70	0.560
AUG						
27...	--	--	598	6.6	6.10	0.640
27...	--	--	586	6.6	5.50	0.460
SEP						
24...	13.0	--	594	6.9	8.00	0.660
24...	24.0	--	588	7.1	5.40	0.830
431233123234301 WASTE WATER TREATMENT PLANT, ROSEBURG, OR (LAT 43°12'33" LONG 123°23'43")						
JUN 1991						
11...	--	--	462	7.3	7.50	0.880
11...	--	--	443	7.3	5.90	1.10
JUL						
23...	--	--	460	7.3	6.70	1.30
23...	--	--	446	7.2	6.40	1.60
AUG						
27...	--	--	480	7.1	15.0	0.660
27...	--	--	478	7.2	7.70	1.10
SEP						
24...	--	750	472	7.2	11.0	1.00
24...	--	750	454	7.2	10.0	1.30

WATER QUALITY DATA, WATER YEAR OCTOBER 1990 TO SEPTEMBER 1991

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425602123165701 WASTE WATER TREATMENT PLANT, CANYONVILLE, OR (LAT 42°56'02" LONG 123°16'57")							
JUN 1991							
10...	2.4	16.0	3.40	3.30	3.30	20	50
10...	2.0	15.0	3.60	3.20	3.40	20	51
JUL							
22...	20	1.80	0.700	0.780	0.680	19	153
22...	17	2.00	--	--	0.281	20	123
AUG							
26...	2.0	9.00	3.30	3.20	3.00	18	73
26...	1.7	7.60	3.10	3.10	2.80	19	76
26...	1.6	7.80	3.20	3.00	3.00	18	76
SEP							
23...	1.9	7.30	2.00	1.90	1.80	17	90
23...	1.1	5.40	2.10	1.90	1.80	18	98
5123212001 WASTE WATER TREATMENT PLANT, RIDDLE, OR (LAT 42°57'05" LONG 123°21'20")							
JUN 1991							
10...	2.5	3.50	2.70	2.30	2.40	20	96
10...	2.1	3.70	2.60	2.30	2.20	19	93
JUL							
22...	4.0	12.0	2.90	3.00	2.50	21	74
22...	2.0	13.0	2.90	2.80	2.50	21	73
AUG							
26...	1.9	14.0	2.90	2.60	2.20	22	63
26...	1.9	14.0	2.80	2.60	2.30	22	61
SEP							
23...	6.3	3.90	3.40	2.90	2.70	20	90
23...	4.9	8.70	2.90	2.90	3.90	20	82
430117123174701 WASTE WATER TREATMENT PLANT, MYRTLE CREEK, OR (LAT 43°01'17" LONG 123°17'47")							
JUN 1991							
11...	17	0.055	3.90	3.30	3.30	22	174
11...	17	0.051	3.60	3.30	3.30	22	156
JUL							
23...	17	0.230	2.30	2.20	2.60	21	97
23...	23	5.20	3.40	3.50	3.00	24	99
AUG							
27...	13	0.650	2.70	2.60	2.50	21	104
27...	11	5.40	1.70	1.60	1.40	21	64
SEP							
24...	11	2.20	1.90	--	1.00	19	84
24...	12	8.00	2.90	2.30	2.00	19	57
430812123240101 WASTE WATER TREATMENT PLANT, WINSTON-GREEN, OR (LAT 43°08'12" LONG 123°24'01")							
JUN 1991							
11...	14	5.90	4.20	3.50	3.70	20	111
11...	10	9.30	4.50	3.90	3.80	19	82
JUL							
23...	6.8	9.30	0.710	0.270	0.180	17	21
23...	8.9	9.10	0.710	0.290	0.190	17	20
AUG							
27...	9.0	9.00	0.760	0.720	0.250	16	22
27...	9.6	10.0	0.680	0.610	0.180	16	13
SEP							
24...	11	10.0	1.30	0.480	0.430	16	23
24...	12	11.0	0.850	0.310	0.260	16	17
431233123234301 WASTE WATER TREATMENT PLANT, ROSEBURG, OR (LAT 43°12'33" LONG 123°23'43")							
JUN 1991							
11...	11	4.10	4.00	3.40	3.40	26	114
11...	10	5.20	3.30	2.90	3.10	26	104
JUL							
23...	11	4.50	3.90	3.90	3.40	27	98
23...	8.5	5.60	3.60	3.40	3.20	27	79
AUG							
27...	15	1.20	3.90	3.80	3.60	28	50
27...	14	2.00	3.90	3.70	3.50	28	93
SEP							
24...	15	3.60	4.00	4.00	3.60	28	55
24...	13	4.60	4.10	4.10	4.10	28	52

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FACTORS FOR CONVERTING INCH-POUND UNITS TO INTERNATIONAL SYSTEM UNITS (SI)

The following factors may be used to convert the inch-pound units published herein to the International System of Units (SI).

Multiply inch-pound units	By	To obtain SI units
<i>Length</i>		
inches (in)	2.54×10^1	millimeters (mm)
	2.54×10^{-2}	meters (m)
feet (ft)	3.048×10^{-1}	meters (m)
miles (mi)	1.609×10^0	kilometers (km)
<i>Area</i>		
acres	4.047×10^3	square meters (m ²)
	4.047×10^{-1}	square hectometers (hm ²)
	4.047×10^{-3}	square kilometers (km ²)
square miles (mi ²)	2.590×10^0	square kilometers (km ²)
<i>Volume</i>		
gallons (gal)	3.785×10^0	liters (L)
	3.785×10^0	cubic decimeters (dm ³)
	3.785×10^{-3}	cubic meters (m ³)
million gallons	3.785×10^3	cubic meters (m ³)
	3.785×10^{-3}	cubic hectometers (hm ³)
cubic feet (ft ³)	2.832×10^1	cubic decimeters (dm ³)
	2.832×10^{-2}	cubic meters (m ³)
cfs-days	2.447×10^3	cubic meters (m ³)
	2.447×10^{-3}	cubic hectometers (hm ³)
acre-feet (acre-ft)	1.233×10^3	cubic meters (m ³)
	1.233×10^{-3}	cubic hectometers (hm ³)
	1.233×10^{-6}	cubic kilometers (km ³)
<i>Flow</i>		
cubic feet per second (ft ³ /s)	2.832×10^1	liters per second (L/s)
	2.832×10^1	cubic decimeters per second (dm ³ /s)
	2.832×10^{-2}	cubic meters per second (m ³ /s)
gallons per minute (gal/min)	6.309×10^{-2}	liters per second (L/s)
	6.309×10^{-2}	cubic decimeters per second (dm ³ /s)
	6.309×10^{-5}	cubic meters per second (m ³ /s)
million gallons per day	4.381×10^1	cubic decimeters per second (dm ³ /s)
	4.381×10^{-2}	cubic meters per second (m ³ /s)
<i>Mass</i>		
tons (short)	9.072×10^{-1}	megagrams (Mg) or metric tons

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